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CAPACITOR SERIES TABLE, CONTENTS

| Category & Series | | | | Features | Endurance (hours) | Rated Voltage Range (Vdc) | Operating Temperature Range(°C) | Capacitance Range(μF) | Page |
|---|------------------------------|--|--|---|--|---------------------------|---------------------------------|-----------------------|------|
| Conductive Polymer Aluminum Electrolytic Capacitors | Solid | Multilayer Type | A1 | Low ESR | 105°C 2,000 | 2-25 | -55~+105 | 6.8-470 | 19 |
| | | | A2 | Low ESR | 105°C 2,000 | 2-25 | -55~+105 | 6.8-470 | 21 |
| | | Radial Type | PZ | Standard | 105°C 2,000 | 6.3-100 | -55~+105 | 4.7-5600 | 23 |
| | | | PD | Low ESR, small size | 105°C 2,000 | 6.3-35 | -55~+105 | 47-4700 | 28 |
| | | | PV | High voltage | 125°C 2,000 | 35-100 | -55~+125 | 4.7-1000 | 32 |
| | | | PH | Huge capacitance, jumbo size | 105°C 2,000 | 6.3-25 | -55~+105 | 10-2200 | 34 |
| | | | PT | Resistance to high temperature | 125°C 2,000 | 6.3-25 | -55~+125 | 22-5600 | 38 |
| | | | PK | Resistance to high temperature | 135°C 1,000 | 6.3-25 | -55~+135 | 100-1500 | 42 |
| | | | PF | Long life | 105°C 3,000-5,000 | 6.3-100 | -55~+105 | 4.7-5600 | 44 |
| | | | PU | Ultra-low ESR | 105°C 2,000 | 6.3-25 | -55~+105 | 39-5600 | 49 |
| | | | PR(new) | Long life, ripple current resistant | 105°C 5,000 | 2.5-35 | -55~+105 | 47-1500 | 53 |
| | | | RZ(new) | Low ESR, ripple current resistant | 105°C 2,000 | 2.5-35 | -55~+105 | 47-1500 | 55 |
| | | RT(new) | Resistance to high temperature | 125°C 2,000 | 2.5-35 | -55~+125 | 47-1500 | 57 | |
| | | SMD Type | VZ | Standard | 105°C 2,000 | 2.5-100 | -55~+105 | 22-2200 | 59 |
| | VS | | Low ESR | 105°C 2,000 | 2.5-25 | -55~+105 | 27-2200 | 61 | |
| | VD | | High voltage | 105°C 2,000 | 35-63 | -55~+105 | 22-470 | 64 | |
| | VT(new) | | Resistance to high temperature | 125°C 2,000 | 2.5-63 | -55~+125 | 22-2200 | 66 | |
| | Hybrid | Radial Type | DA(new) | Standard; Low ESR, high voltage resistant | 125°C 4,000 | 25-80 | -55~+125 | 15-470 | 68 |
| SMD Type | | SA(new) | Standard; Low ESR, high voltage resistant | 125°C 4,000 | 25-80 | -55~+125 | 15-470 | 70 | |
| Aluminum Electrolytic Capacitors | Surface Mount Type | SMD Type | MK | Standard | 105°C 2,000-3,000 | 6.3-450 | -40~+105 | 1-1,000 | 72 |
| | | | MF | Long life | 105°C 6,000 | 6.3-450 | -40~+105 | 1-470 | 74 |
| | | | MA | Long life | 105°C 10,000 | 16-450 | -40~+105 | 2.2-1000 | 76 |
| | | | MH | Resistant to 130°C, long life | 130°C 1,000-5,000 | 10-450 | -40~+130 | 2.2-4700 | 78 |
| | Radial Type | Low Profile | M5 | 85°C 5mm Height, Standard type | 85°C 1,000 | 4-50 | -40~+85 | 0.1-470 | 80 |
| | | | H5 | 105°C 5mm Height | 105°C 1,000 | 6.3-50 | -40~+105 | 0.1-100 | 82 |
| | | | M7 | 85°C 7mm Height, Standard type | 85°C 1,000 | 4-100 | -40~+85 | 0.1-330 | 84 |
| | | | H7 | 105°C 7mm Height, Standard type | 105°C 1,000 | 6.3-50 | -40~+105 | 0.1-100 | 86 |
| | | | L7 | 105°C 7mm Height, Long life | 105°C 2,000 | 6.3-63 | -40~+105 | 0.1-220 | 88 |
| | | Standard | WK | Standard series for general purpose | 85°C 2,000 | 6.3-100 160-450 | -40~+85 -25~+85 | 0.1-22000 | 90 |
| | | | WH | Standard series for general purpose | 105°C 2,000 | 6.3-400 450-500 | -40~+105 -25~+105 | 0.1-22000 | 93 |
| | | | HP | Standard bi-polarized series | 105°C 1,000 | 6.3-100 | -40~+105 | 0.47-6800 | 96 |
| | | High reliability, long life. Especially designed for LED driver, electronic ballast, electronic energy saving lamp | CD11GC | Resistant to 130°C, Long life | 130°C 4,000-5,000 105°C 15,000-20,000 | 160-450 | -40~+130 | 1-220 | 98 |
| | | | CD11GES | Resistant to 130°C, miniaturized, high ripple current and long life | 130°C 3,000 105°C 12,000 | 160-450 | -40~+130 | 1-220 | 100 |
| | | | CD11GK | Extremely miniaturized, long life | 105°C 12,000-20,000 | 160-450 | -40~+105 | 1-47 | 103 |
| | | | CD11GN | Resistant to 130°C, miniaturized and long life | 130°C 1,000-2,000 105°C 8,000-12,000 | 160-450 | -40~+130 | 1-330 | 105 |
| | | | CD11GZ(new) | Long life, suited for outdoor lighting | 105°C 12,000 | 250-500 | -40~+105 | 10-150 | 108 |
| | | | CD11GAS | Miniaturized and long life | 105°C 10,000 105°C 8,000 | 140-450 500 | -40~+105 | 1-470 | 110 |
| | | | CD11GD (upgrade) | Miniaturized and long life | 105°C 8,000 | 140-450 | -40~+105 | 1-330 | 114 |
| | | | CD11GHS | Miniaturized, long life and high cost performance | 105°C 6,000 | 140-500 | -40~+105 | 1-330 | 118 |
| | CD11GM | | Miniaturized and high cost performance | 105°C 3,000 | 160-450 | -40~+105 | 1-100 | 121 | |
| | For Input And Output Circuit | RR | High frequency, low impedance, Standard | 105°C 2,000 | 6.3-50 | -40~+105 | 22-6800 | 123 | |
| | | RE | Miniaturized, low impedance | 105°C 2,000-4,000 | 6.3-100 | -40~+105 | 15-4700 | 125 | |
| | | RF | High ripple current, low impedance | 105°C 3,000-6,000 | 6.3-120 | -40~+105 | 6.8-6800 | 128 | |
| | | RS | High ripple current, low impedance and long life | 105°C 4,000-10,000 | 6.3-120 | -40~+105 | 6.8-18000 | 131 | |

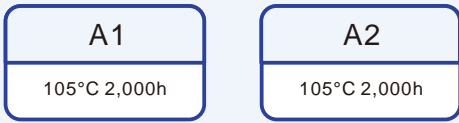
Continued

| Category & Series | | | Features | Endurance (hours) | Rated Voltage Range (Vdc) | Operating Temperature Range(°C) | Capacitance Range(µF) | Page | | |
|----------------------------------|---------------------------|------------------------------|----------------------------|---|-----------------------------------|---------------------------------|-----------------------|------------|------------|-----|
| Aluminum Electrolytic Capacitors | Radial Type | For Input And Output Circuit | RN | Miniaturized, large capacitance | 105°C 5,000-10,000 | 25-120 | -40~+105 | 2.7-1500 | 135 | |
| | | | RZ | Miniaturized, long life and low impedance, high reliability | 105°C 6,000-10,000 | 6.3-50 | -40~+105 | 22-10000 | 138 | |
| | | | RJ | Downsized, long life and low impedance | 105°C 8,000-12,000 | 10-120 | -40~+105 | 8.2-5600 | 140 | |
| | | | RH | High frequency, low impedance | 105°C 2,000-3,000 | 160-400 450 | -40~+105 -25~+105 | 0.47-470 | 143 | |
| | | | HH | High ripple current | 105°C 2,000 | 400 420-450 | -40~+105 -25~+105 | 22-120 | 145 | |
| | | | HS | High ripple current | 105°C 3,000-5,000 | 160-400 450 | -40~+105 -25~+105 | 0.47-330 | 147 | |
| | | | HF | Long life and high ripple current | 105°C 5,000-10,000 | 160-400 450 | -40~+105 -25~+105 | 1-330 | 149 | |
| | | | HL | Long life, downsized and high ripple current | 105°C 8,000-12,000 | 160-400 450-500 | -40~+105 -25~+105 | 6.8-680 | 151 | |
| | | | RK(upgrade) | Miniaturized, high voltage. Specially designed for charger | 105°C 2,000 | 400 450-550 | -40~+105 -25~+105 | 2.2-68 | 154 | |
| | | High Reliability | RG | "GBL"system,high reliability | 105°C 2,000-8,000 | 6.3-63 | -55~+105 | 10-10000 | 156 | |
| | | | RV | High reliability, low impedance, small size | 105°C 4,000-5,000 | 6.3-35 | -55~+105 | 330-6800 | 158 | |
| | | | ML | 105°C 5-9mm Height, long life | 105°C 3,000-5,000 | 6.3-50 | -40~+105 | 1-1000 | 160 | |
| | | | RM | Miniaturized, long life | 105°C 10,000 | 10-100 | -40~+105 | 0.47-330 | 162 | |
| | | | NB(upgrade) | Resistant to 130°C,long life | 130°C 2,000-5,000 | 10-120 | -40~+130 | 1-4700 | 164 | |
| | | Special Purpose | RD | Low water content series | 105°C 2,000-5,000 | 6.3-100 | -40~+105 | 0.47-15000 | 166 | |
| | | | GH(upgrade) | For intelligent instrument, high reliability | 105°C 5,000-8,000 105°C 10,000 | 6.3-100 160-450 | -40~+105 | 1-18000 | 169 | |
| | | | LL | Extremely low leakage current | 105°C 2,000 | 6.3-100 | -40~+105 | 0.47-2200 | 173 | |
| | | | BG | Large capacitance, low impedance; For airbags | 105°C 5,000 | 25-35 | -55~+105 | 1000-11000 | 176 | |
| | BH(new) | | For automobile electronics | 130°C 3,000 | 25-400 | -40~+130 | 12-11000 | 178 | | |
| | Snap-in&Lug Terminal Type | General Purpose | LK(upgrade) | Standard series for general purpose | 85°C 2,000 | 10-100 160-500 | -40~+85 -25~+85 | 56-82000 | 181 | |
| | | | LH(upgrade) | Withstand high temperature, general purpose | 105°C 2,000 | 10-100 160-500 | -40~+105 -25~+105 | 47-56000 | 187 | |
| | | | LC | Wide temperature range; miniaturized | 105°C 2,000 | 400-500 | -40~+105 | 47-680 | 193 | |
| | | | LS | Downsized, Long life | 85°C 3,000 | 160-600 | -25~+85 | 47-3300 | 195 | |
| | | | LM | Downsized, long life | 105°C 3,000 | 160-550 | -25~+105 | 47-3300 | 199 | |
| | | | LP | High ripple current, long life | 105°C 3,000 | 400-450 | -40~+105 | 82-820 | 203 | |
| | | High Reliability | LQ | Long life | 85°C 5,000 | 160-450 | -25~+85 | 68-2200 | 205 | |
| | | | LG | Long life, high ripple current | 85°C 12,000 | 350-450 | -25~+85 | 470-2700 | 209 | |
| | | | LT | Long life, downsized | 105°C 5,000 | 160-550 | -25~+105 | 82-2700 | 211 | |
| | | | LX | Extremely long life | 105°C 7,000 | 160-450 | -25~+105 | 47-2200 | 215 | |
| | | | LB | High reliability, long life | 105°C 10,000 | 200-450 | -25~+105 | 39-1500 | 218 | |
| | | | LU | No sparks against DC overvoltage | 105°C 2,000 | 200-450 | -25~+105 | 56-1200 | 220 | |
| | | Screw-mount Terminal Type | Standard | NR | Screw terminal, standard series | 85°C 2,000 | 350-550 | -25~+85 | 1000-15000 | 222 |
| | | | | NS | Screw terminal, standard series | 105°C 2,000 | 350-450 | -25~+105 | 1000-15000 | 224 |
| | | | Long Life | NX | High ripple, downsized, long life | 85°C 5,000 | 350-500 | -25~+85 | 1000-12000 | 226 |
| | | | | NL | Long life | 85°C 12,000 | 350-450 | -25~+85 | 1500-15000 | 228 |
| | | | | NE | High ripple, long life | 85°C 20,000 | 350-450 | -25~+85 | 1500-15000 | 230 |
| NT(new) | | | | Long life | 105°C 3,000 | 350-450 | -25~+105 | 1000-15000 | 232 | |
| NF | Long life | | | 105°C 5,000 | 350-450 | -25~+105 | 1000-15000 | 234 | | |
| NK | High ripple, long life | | | 105°C 5,000 | 350-450 | -25~+105 | 1000-15000 | 236 | | |

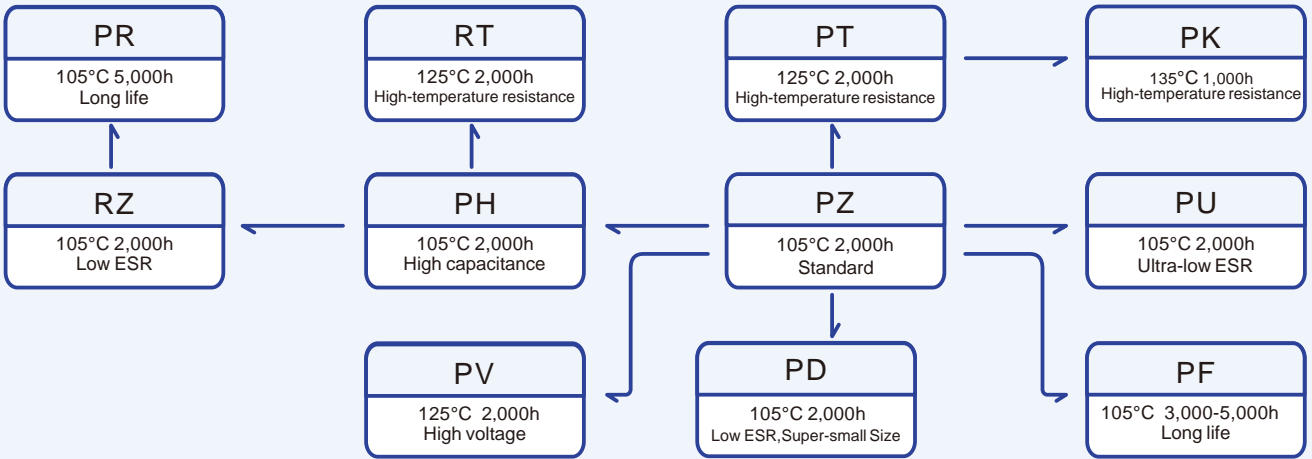
Group Chart

CONDUCTIVE POLYMER ALUMINUM SOLID CAPACITORS

Multilayer Type

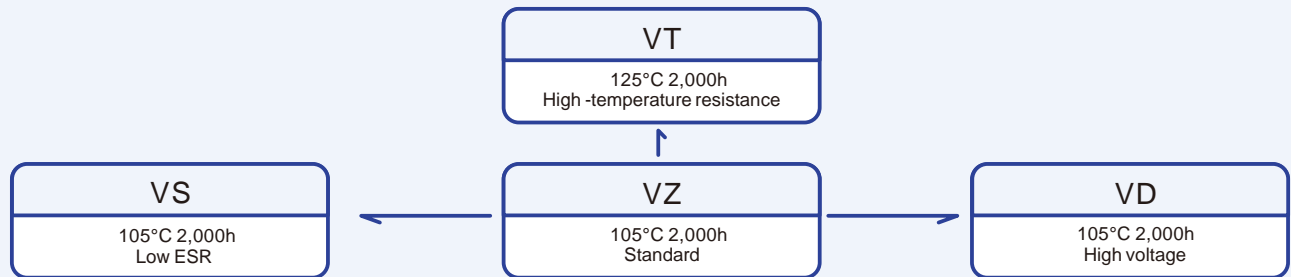


Radial Type

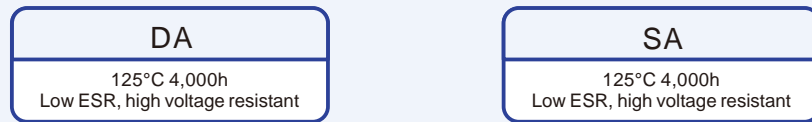


Surface Mount Type

Downsized & Low Profile

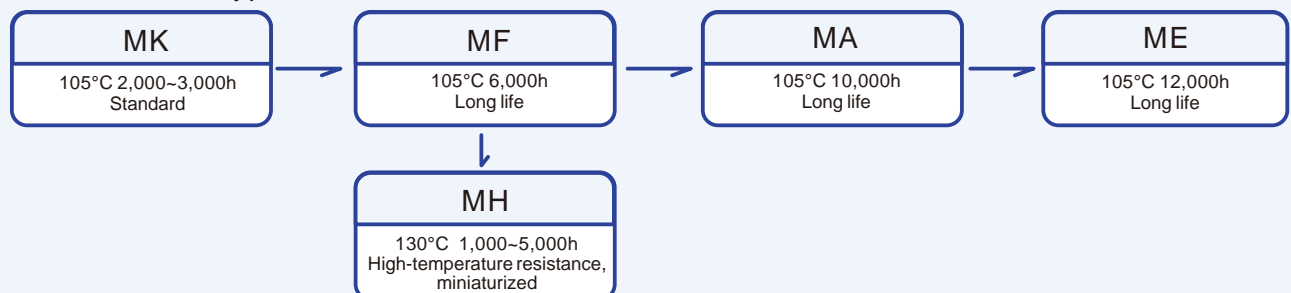


CONDUCTIVE POLYMER HYBRID ALUMINUM ELECTROLYTIC CAPACITORS

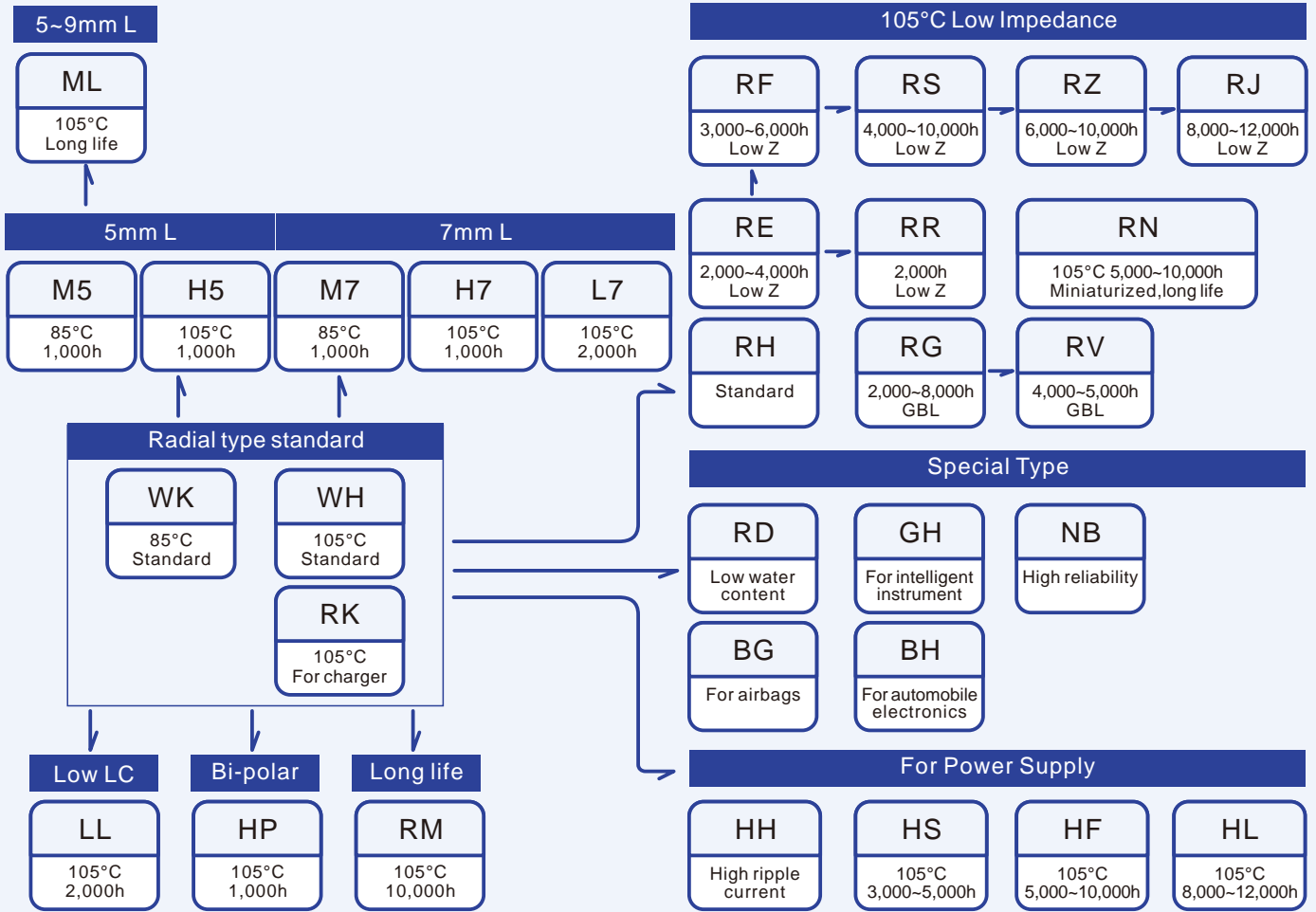


ALUMINUM ELECTROLYTIC CAPACITORS

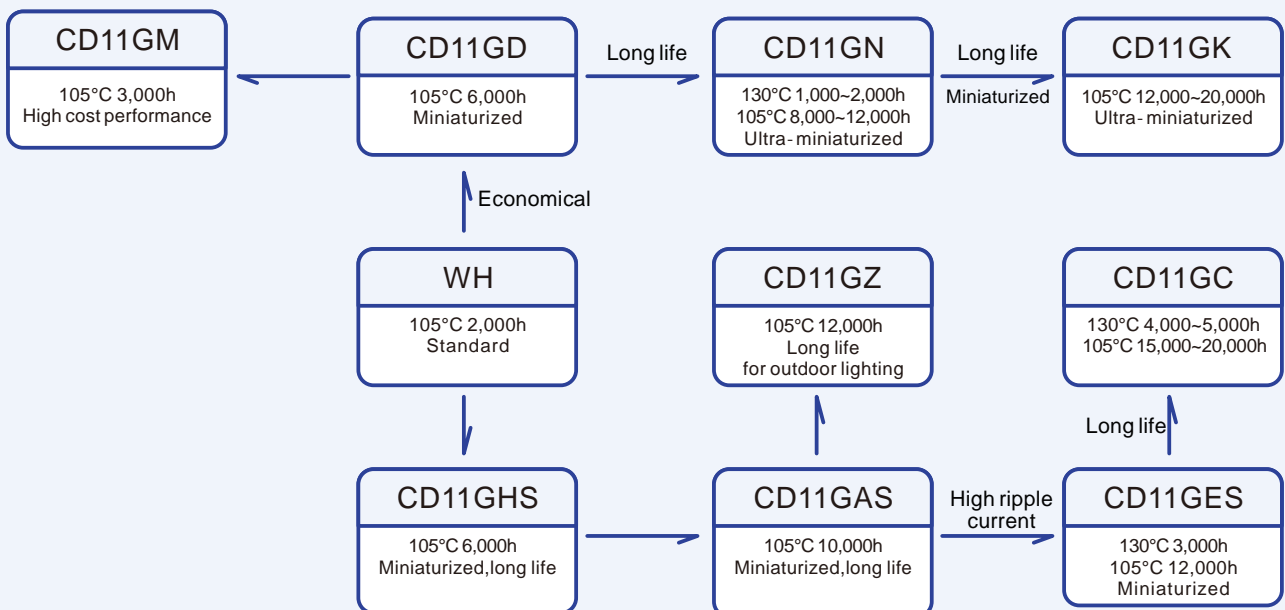
Surface Mount Type



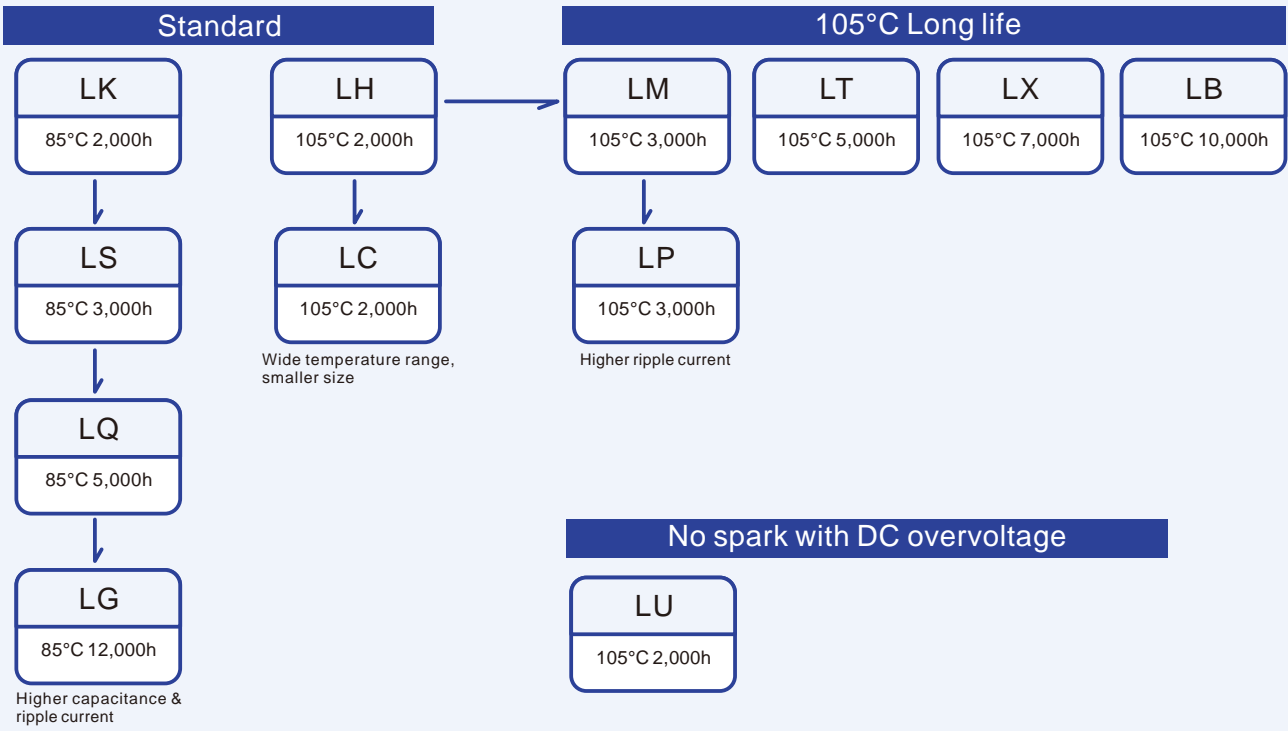
RADIAL TYPE



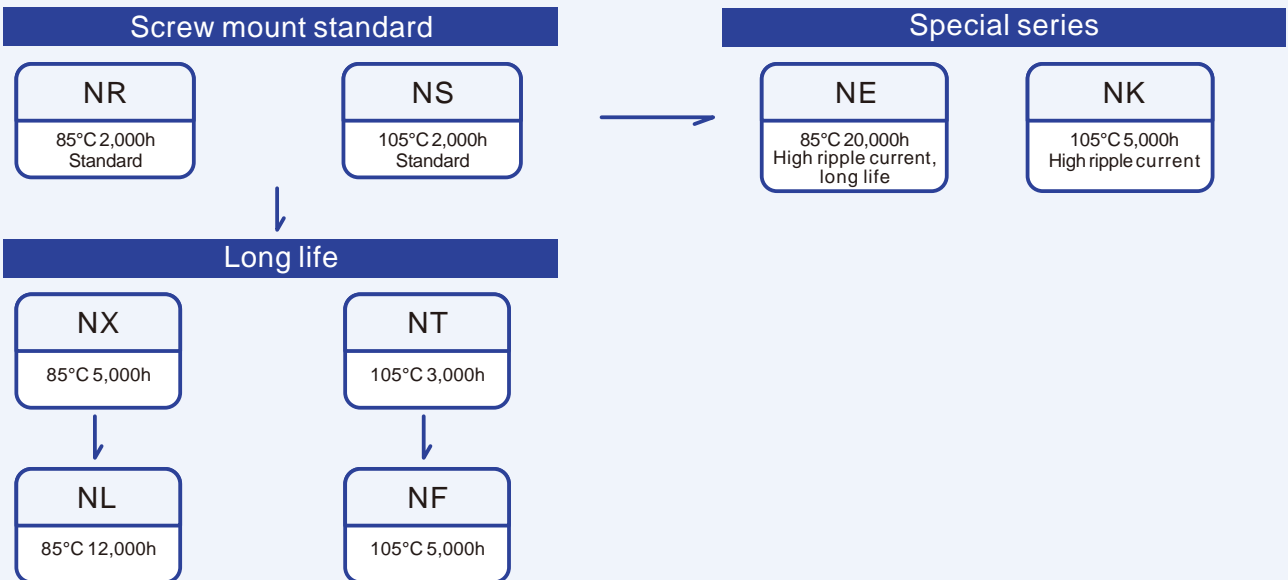
For Lighting Application



Snap-in & Lug Terminal Type

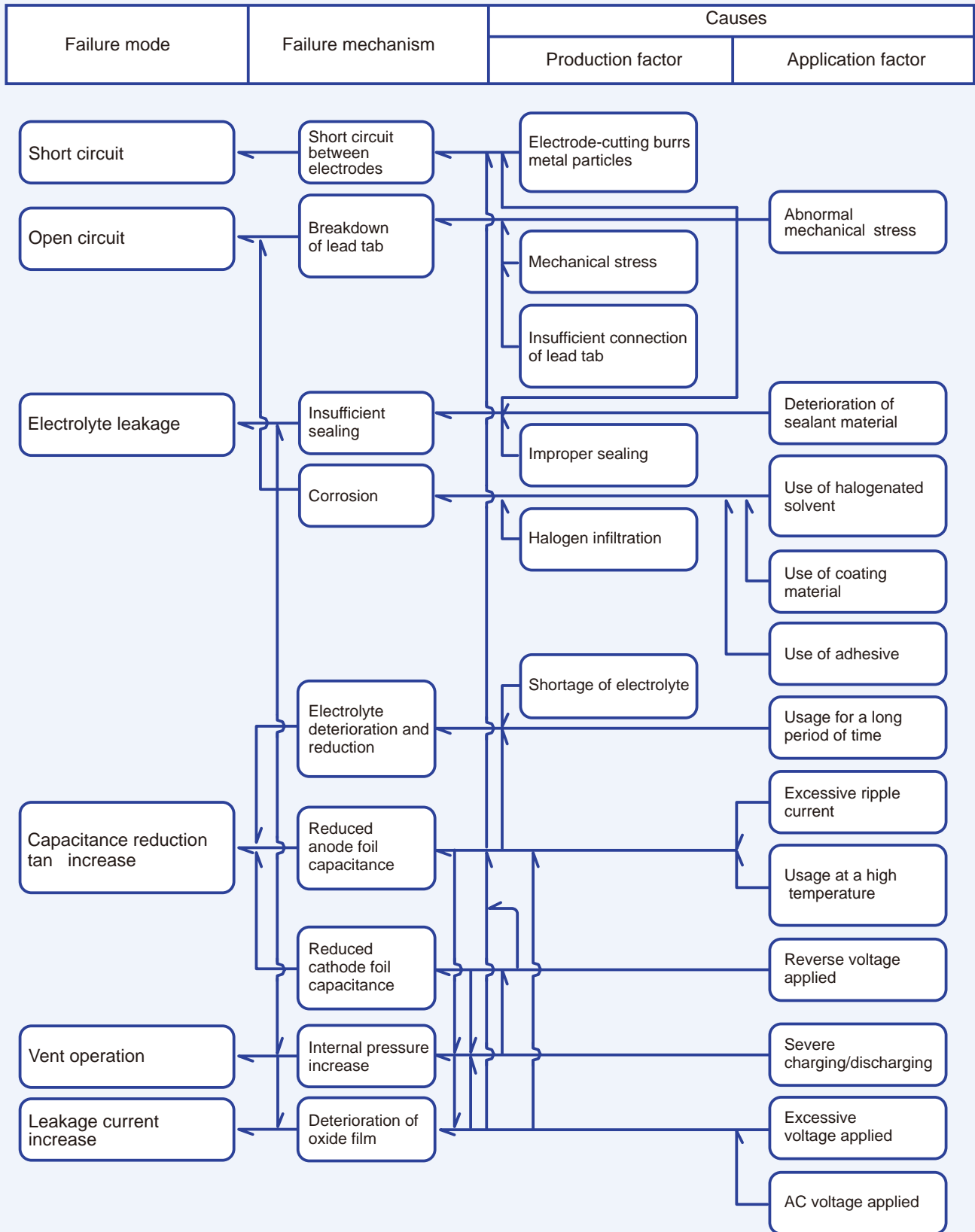


Screw-mount Terminal Type



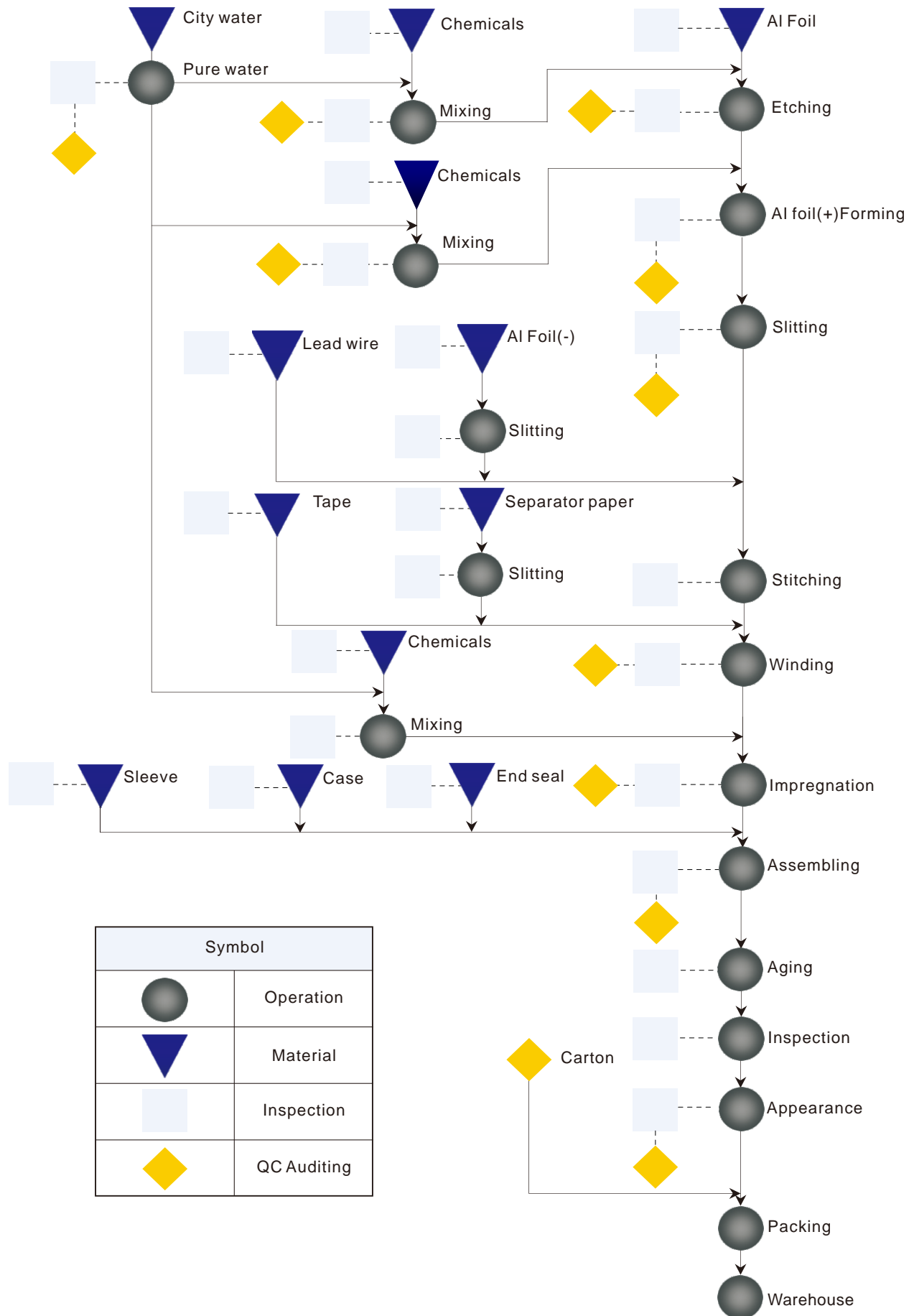
■ Failure Modes

Aluminum Electrolytic Capacitors Show Various Failure Modes in Different Applications



■ Flow Chart

Aluminum Electrolytic Capacitors Flow Chart



Application Guidelines for Conductive Polymer Aluminum Solid Electrolytic Capacitors

1. Polarity

AishiCAP is a solid aluminum electrolytic capacitor with positive and negative electrodes. Do not reverse the polarity when using. If it is used with the polarities reversed, its life may be shortened because of increasing leakage current or short circuit.

2. Prohibited circuits

Since leakage current may be increased during soldering and other processes, AishiCAP cannot be used in the following circuits.

- 1) High impedance circuits;
- 2) Coupling circuits;
- 3) Time-limited constant circuits;
- 4) Connection of two or more capacitors in series for higher withstand voltage;
- 5) Circuits to get bad influence by large leakage current.

* In addition to the leakage current fluctuation, the operational conditions such as characteristics at high and low temperature, damp heat and endurance stipulated in the specifications will affect the capacitance. The fluctuation of the capacitance may cause problem if it is used as a time-limited constant capacitor, which is extremely sensitive to the fluctuation of the capacitance. So do not use it as a time-limited constant capacitor.

Additionally, please contact Hunan Aihua Group Co., Ltd. for usage of two or more AishiCAP in series for voltage proof.

3. Over voltage

Over voltage cannot be applied even for an instant as it may cause a short circuit.

4. Sudden charge and discharge

Sudden charge and discharge are prohibited (for maintenance of high reliability). A protection circuit is recommended when a sudden charge or discharge causes excessive rush current because this is a main cause of short circuits and large leakage current. Use protection circuits if the rush current exceeds 10A. If the rush current exceeds 10 times the maximum allowable ripple current of AishiCAP, be sure to insert a protection resistor of about 1k Ω for charge and discharge when measuring the leakage current.

5. Considerations when soldering

The soldering conditions are to be within the range prescribed in specifications. If the specifications are not followed, there is a possibility of the intensive increase of leakage current, and the capacitance reduction. Things to be noted before mounting:

- a) Do not reuse capacitors that have been assembled in a set and energized.
Capacitors that have been removed for measuring electrical characteristics during a periodic inspection also cannot be reused.
- b) Leakage current may increase when capacitors are stored for one year. In this case, apply rated voltage for 2 hours at 105°C with load of 1k Ω resistor.
- c) Reflow soldering
Do not apply reflow soldering to radial lead type capacitors.
- d) Handling after soldering
Do not tilt, bend or twist the AishiCAP;
Do not move the PCB with catching AishiCAP itself.
When stacking PCB, make sure that the AishiCAP does not touch other PCB or components.
Do not dump the AishiCAP with other objects.

6. Application of AishiCAP in industrial equipments

To ensure reliability, when using the AishiCAP in industrial equipments, appropriate design is required.

7. Use of AishiCAP for human life equipments

In case of using in equipments regarding human life (e.g. Space equipment, aeronautic equipment and atomic equipment, etc.), be sure to consult with Hunan Aihua Group Co., Ltd. Don't use products without recognition document of Hunan Aihua Group Co., Ltd.

8. Storage

- 1) Store AishiCAP with the temperature range between 5 to 35°C (If between 35 to 85°C, it should be less than three months), and the relative humidity of 75% without direct sunshine and store AishiCAP in the package states if possible.
- 2) It is recommended that you open the bag just before use and use up as early as possible.
- 3) Store the capacitors in places free from water, oil or salt water or in condensation status.
- 4) Never store AishiCAP in any area filled with poisonous gases (including hydrogen sulfide, sulfurous acid, nitrous acid, chlorine and ammonia).
- 5) Store the capacitors in places free from ozone, ultraviolet rays or radiation.

Before unseal: within 1 year after delivery

After opening: within 7 days

9. Cleaning

Concerning about HCFC, soak with high concentration alcohol, petroleum and terpene, water or surface active agent and other solvents (separate or blended), wash under the maker's recommendation by ultrasonic wave, boiling and evaporation, etc. Please contact us if you require further details.

10. Notes on circuit designs for AishiCAP

10.1 Performance

Use AishiCAP within the rated performance ranges defined in this specification.

10.2 Operating temperature and ripple current

If AishiCAP is used at a temperature higher than the upper category temperature (105°C), or excess ripple current flows through AishiCAP, there are high possibilities of service life reduction or leakage current increase to cause AishiCAP defective.

10.3 Leakage current

The leakage current of AishiCAP may increase slightly by soldering conditions. The application of DC voltage enables the capacitors to be repaired by itself and this leads the leakage current to be smaller gradually.

10.4 Applied voltage

For the reliability of AishiCAP, it is recommended that the voltage applied to AishiCAP should be less than 80% of the rated voltage. Peak value of the DC and AC voltage should not exceed its rated voltage.

10.5 Failure mode

AishiCAP contains conductive polymer. The life ends mostly due to random failure mode, mainly short circuit. In case of short circuit, AishiCAP can be overheated by continuous current flow, and then Al case of AishiCAP would be separated by increased internal pressure.

Application Guidelines for Aluminum Electrolytic Capacitors

■ Designing Device Circuits

1. Select the capacitors to suit installation and operating conditions, and use the capacitors to meet the performance limits prescribed in this catalog or the product specifications.

2. Polarity

Aluminum Electrolytic Capacitors are polarized.

Apply neither reverse voltage nor AC voltage to polarized capacitors. Using reversed polarity causes a short circuit or venting. Before use, refer to the catalog, product specifications or capacitor body to identify the polarity marking. (The shape of rubber seal does not represent the directional rule for polarity.) Use a bi-polar type of non-solid aluminum electrolytic capacitor for a circuit where the polarity is occasionally reversed. However, note that even a bi-polar aluminum electrolytic capacitor must not be used for AC voltage applications.

3. Operating voltage

Do not apply a DC voltage which exceeds the full rated voltage. The peak voltage of a superimposed AC voltage (ripple voltage) on the DC voltage must not exceed the full rated voltage.

A surge voltage value, which exceeds the full rated voltage, is prescribed in the catalogs, but it is a restricted condition, for especially short periods of time.

4. Ripple current

The rated ripple current has been specified at a certain ripple frequency. The rated ripple current at several frequencies must be calculated by multiplying the rated ripple current at the original frequency using the frequency multipliers for each product series.

5. Category temperature

The use of a capacitor outside the maximum rated category temperature will considerably shorten the life or cause the capacitor to vent.

The relation between the lifetime of aluminum electrolytic capacitors and ambient temperature follows Arrhenius' rule that the lifetime is approximately halved with each 10°C rise in ambient temperature.

6. Life expectancy

Select the capacitors to meet the service life of a device.

7. Charge and discharge

Do not use capacitors in circuits where heavy charge and discharge cycles are frequently repeated. Frequent and sharp heavy discharging cycles will result in decreasing capacitance and damage to the capacitors due to generated heat. Specified capacitors can be designed to enduring such a condition. Rapid charging/discharging may be repeated in a circuit where the ripple voltage at the two terminals of the aluminum electrolytic capacitor fluctuates greatly. If the variation range of voltage exceeds 70Vp-p, please consult us.

8. Failure modes of capacitors

Non-solid aluminum electrolytic capacitors, in general, have a lifetime which ends in an open circuit, the period is dependent upon temperature. Consequently, lifetime of capacitors can be extended by reducing the ambient temperature and/or ripple current.

9. Insulating

- a) Electrically isolate the following parts of a capacitor from the negative terminal, the positive terminal and the circuit traces.
 - The outer can case of a non-solid aluminum electrolytic capacitors.
 - The dummy terminal of a non-solid aluminum electrolytic capacitors, which is designed for mounting stability.
- b) The outer sleeve of a capacitor is not assured as an insulator (Except for screw type). For applications that require an insulated outer sleeve, a custom-designed capacitor is recommended.

10. Conditions

Do not use/expose capacitors to the following conditions.

- a) Oil, water, salty water. Avoid storage in damp locations.
- b) Direct sunlight.
- c) Toxic gases such as hydrogen sulfide, sulfurous acid, nitrous acid, chlorine or its compounds, and ammonium.
- d) Ozone, ultraviolet rays or radiation.
- e) Severe vibration or mechanical shock conditions beyond the limits prescribed in the catalogs or the product specification.

11. Mounting

- a) The electrolytic paper and the electrolytic-conductive electrolyte in a non-solid aluminum electrolytic capacitor are flammable. Leaking electrolyte on a printed circuit board can gradually erode the copper traces, possibly causing smoke or burning by shortcircuiting the copper traces.

Verify the following points when designing a PC board.

- Provide the appropriate hole spacing on the PC board to match the terminal spacing of the capacitor.
- Make the following open space over the vent so that the vent can operate correctly.

| Case diameter | Clearance |
|---------------|-------------|
| Ø6.3 to Ø16mm | 2mm minimum |
| Ø18 to Ø35mm | 3mm minimum |
| Ø40mm or more | 5mm minimum |

- Do not place any wires or copper traces over the vent of the capacitor.
- Installing a capacitor with the vent facing the PC board needs an appropriate ventilation hole in PC board.
- Do not pass any copper traces beneath the seal side of a capacitor. The trace must pass 1 or 2mm to the side of the capacitor.
- Avoid placing any heat-generating objects adjacent to a capacitor or even on the reverse side of the PC board.
- Do not pass anything via holes or underneath a capacitor.
- In designing double-sided PC boards, do not locate any copper trace under the seal side of a capacitor.
- b) Do not mount the terminal side of a screw mount capacitor downwards. If a screw terminal capacitor is mounted on its side, make sure the positive terminal is higher than the negative terminal.

Do not fasten the screws of the terminals and the mounting clamps over

the specified torque prescribed in the catalog or the product specifications.

- c) For a surface mount capacitor, design the copper pads of the PC board in accordance with the catalog or the product specifications.

12. Others

- a) The electrical characteristics of capacitors vary in respect to temperature, frequency and service life. Design the device circuits by taking these changes into account.
- b) Capacitors mounted in parallel need the current to flow equally through the individual capacitors.
- c) Capacitors mounted in series require resistors in parallel with the individual capacitors to balance the voltage.
- d) Using capacitor for applications which always consider safety. Consult with our factory before use in applications which can affect human life.(space equipment, aerial equipment, nuclear equipment, medical equipment, vehicle control equipment, etc.) Please note that the product which is designed only for specific usage can not be used for other purposes.(ex.Photo flash type, etc.)

Installing Capacitors

1. Installing

- a) Used capacitors are not reusable, except in the case that the capacitors are detached from a device for periodic inspection to measure their electrical characteristics.
- b) If the capacitors have self-charged, discharge the capacitors through a resistor of approximately 1k before use.
- c) If capacitors are stored at a temperature of 35°C or more and more than 75% RH, the leakage current may increase. In this case, they can be reformed by applying the rated voltage through a resistor of approximately 1k .
- d) Verify the rated capacitance and voltage of the capacitors when installing.
- e) Verify the polarity of the capacitors.
- f) Do not use the capacitors if they have been dropped on the floor.
- g) Do not deform the cases of capacitors.
- h) Verify that the lead spacing of the capacitor fits the hole spacing in the PC board before installing the capacitors. Some standard pre-formed leads are available.
- i) For pin terminals or snap-in terminals, insert the terminals into PC board and press the capacitor downward until the bottom of the capacitor body reaches PC board surface.
- j) Do not apply any mechanical force in excess of the limits prescribed in the catalogs or the product specifications of the capacitors. Also, note the capacitors may be damaged by mechanical shocks caused by the vacuum/insertion head, component checker or centering operation of an automatic mounting or insertion machine.

2. Soldering and Solderability

- a) When soldering with a soldering iron
 - Soldering conditions (temperature and time) should be within the limits prescribed in the catalogs or the product specifications.
 - If the terminal spacing of a capacitor does not fit the terminal hole spacing of the PC board, reform the terminals in a manner to minimize a mechanical stress into the body of the capacitor.
 - Remove the capacitors from the PC board , after the solder is completely melted, reworking by using a soldering iron minimizes the mechanical stress to the capacitors.
 - Do not touch the capacitor body with the hot tip of the soldering iron.
- b) Flow soldering
 - Do not dip the body of a capacitor into the solder bath, only dip the terminals in. The soldering must be done on the reverse side of PC board.
 - Soldering conditions (preheat, solder temperature and dipping time) should be within the limits prescribed in the catalogs or the product specifications.
 - Do not apply flux to any part of capacitors other than their terminals.
 - Make sure the capacitors do not come into contact with any other components while soldering.
- c) Reflow soldering (only applicable for SMD type)
 - Soldering conditions (preheat, solder temperature and dipping time) should be within the limits prescribed in the catalogs or the product specifications.
 - When setting the temperature infrared heaters, consider that the infrared absorption causes material to be discolored and change in appearance.
 - Do not solder capacitors more than once using reflow. If it should be done for twice, please consult us first.
 - Make sure capacitors do not come into contact with copper traces.
- d) Do not re-use surface mount capacitors which have already been soldered. In addition, when installing a new capacitor onto the assembly board to rework, remove old residual flux from the surface of the PC board, and then use a soldering iron within the prescribed conditions.
- e) Confirm whether reflow soldering is applicable for the capacitors.

3. Handling after soldering

- Do not apply any mechanical stress to the capacitor after soldering onto the PC board.
- a) Do not lean or twist the body of the capacitor after soldering the capacitors onto the PC board.
- b) Do not use the capacitors for lifting or carrying the assembly board.
- c) Do not hit or poke the capacitor after soldering to PC board. When stacking the assembly board, be careful that other components do not touch the aluminum electrolytic capacitors.
- d) Do not drop the assembly board.

4. Cleaning PC board

- a) Do not wash capacitors by using the following cleaning agents.
 - Halogenated solvents: cause capacitors to fail due to corrosion.
 - Alkali system solvents: corrode (dissolve) an aluminum case.
 - Petroleum and terpene system solvents: cause the rubber seal material to deteriorate.
 - Xylene: cause the rubber seal material to deteriorate.
 - Acetone: erase the marking. Solvent-proof capacitors are only suitable for washing within the cleaning conditions prescribed in the catalogs or the product specifications. In particular, ultrasonic cleaning will accelerate damaging capacitors.

- b) Verify the following points when washing capacitors.
- Monitor conductivity, pH, specific gravity, and the water content of cleaning agents. Contamination adversely affects these characteristics.
 - Be sure not to keep the capacitors in an atmosphere containing the cleaning agent or in an air tight container.
- In addition, please dry the solvent sufficiently on the PC board and the capacitor with an air knife (temperature should be less than the maximum rated category temperature of the capacitor) over 10 minutes. Aluminum electrolytic capacitors can be characteristically and catastrophically damaged by halogen ions, particularly by chlorine ions, though the degree of the damage mainly depends upon the characteristics of the electrolyte and rubber seal material. When halogen ions come into contact with the capacitors, the foil corrodes when voltage is applied. This corrosion causes extremely high leakage current, which in turn, causes venting and an open circuit.

5. Precautions for using adhesives and coating

- a) Do not use any adhesive and coating materials containing halogenated solvent.
- b) Verify the following before using adhesive and coating material.
- Remove flux and dust leftover between the rubber seal and the PC board before applying adhesive or coating materials to the capacitor.
 - Dry and remove any residual cleaning agents before applying adhesive and coating materials to the capacitors. Do not cover over the whole surface of the rubber seal with the adhesive or coating materials.
 - For permissible heat conditions for curing adhesives or coating materials, follow the instructions in the catalogs or the product specifications of the capacitors.
 - Covering over the whole surface of the capacitor rubber seal with resin may result in a hazardous condition because the inside pressure cannot be released completely. Also, a large amount of halogen ions in resins will cause the capacitors to fail because the halogen ions penetrate into the rubber seal and the inside of the capacitor.
- c) Some of coating material cannot be cured over the capacitor. Please note that loose luster and whitening on the surface of the outer sleeve might be caused according to the kind of solvents used for mounting adhesives and coating agents.

6. Fumigation

In many cases when exporting or importing electronic devices, such as capacitors, wooden packaging is used. In order to control insects, most often, it becomes necessary to fumigate the shipments. Precautions during "Fumigation" using halogenated chemical such as Methyl Bromide must be taken. Halogen gas can penetrate packaging materials used, such as, cardboard boxes and vinyl bags. Penetration of the halogenated gas can cause corrosion of electrolytic capacitors.

The Operation of Devices

- a) Do not touch a capacitor directly with bare hands.
- b) Do not short-circuit the terminal of a capacitor by letting it come into contact with any conductive object. Also, do not spill conductive liquid such as acid or alkaline solution over the capacitor.
- c) Do not use capacitors in circumstance where they would be subject to exposure to the following materials:
- Oil, water, salty water or damp location.
 - Direct sunlight.
 - Toxic gases such as hydrogen sulfide, sulfurous acid, nitrous acid,

chlorine or its compounds, and ammonium.

- Ozone, ultraviolet rays or radiation.
- Severe vibration or mechanical shock conditions beyond the limits prescribed in the catalogs or product specification.

Maintenance Inspection

- a) Make periodic inspections of capacitors that have been used in industrial applications. Before inspection, turn off the power supply and carefully discharge the electricity in the capacitors. Verify the polarity when measuring the capacitors with a volt-ohm meter. Also, do not apply any mechanical stress to the terminals of the capacitors.
- b) The following items should be checked during the periodic inspections.
- Significant damage in appearance: venting and electrolyte leakage.
 - Electrical characteristics: leakage current, capacitance, tan and other characteristics prescribed in the catalog or product specifications. We recommend replacing the capacitors if the parts are out of specification.

In Case of Venting

- a) If a non-solid aluminum electrolytic capacitor expels gas when venting, it will discharge odors or smoke, or burn in the case of a short-circuit failure. Immediately turn off or unplug the main power supply of the device.
- b) When venting, a non-solid aluminum electrolytic capacitor blows out gas with a temperature of over 100°C. (A solid aluminum electrolytic capacitor discharges decomposition gas or burning gas while the outer resin case is burning.) Never expose the face close to a venting capacitor.

If your eyes inadvertently become exposed to the spouting gas or you inhale it, immediately flush the open eyes with large amounts of water and gargle with water respectively. If electrolyte is on the skin, wash the electrolyte away from the skin with soap and plenty of water. Do not lick the electrolyte of non-solid aluminum electrolytic capacitors.

Storage

We recommend the following conditions for storage.

- a) Do not store capacitors at a high temperature or in high humidity. Store the capacitors indoors at a temperature of 5 to 35°C and a relative humidity of 75% or below.
- b) Store the capacitors in places free from water, oil or salt water.
- c) Store the capacitors in places free from toxic gases (hydrogen sulfide, sulfurous acid, chlorine, ammonium, etc.)
- d) Store the capacitors in places free from ozone, ultraviolet rays or radiation.
- e) Keep capacitors in the original package.

Disposal

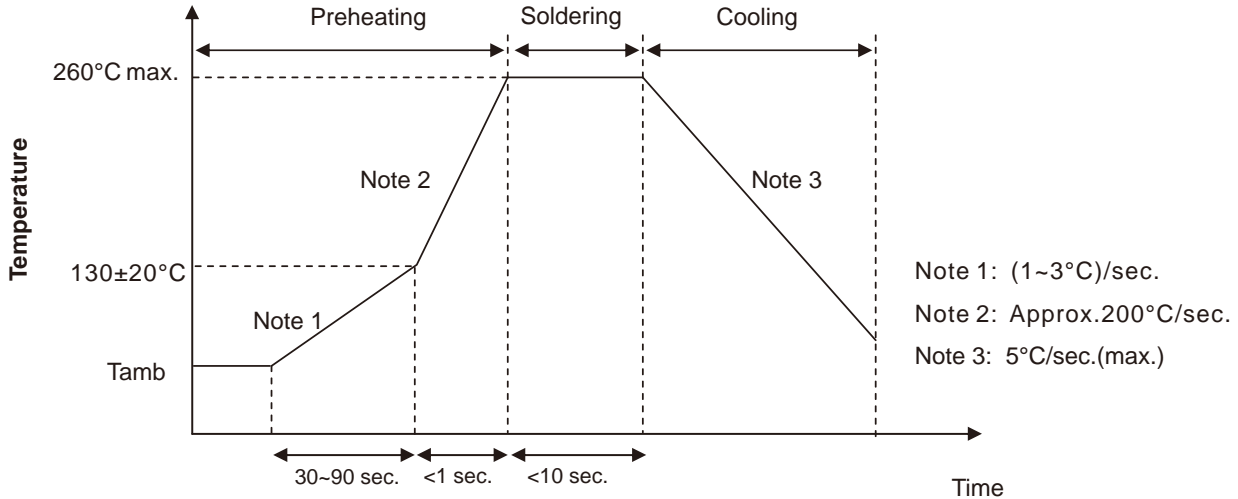
Please consult with a local industrial waste disposal specialist when disposing aluminum electrolytic capacitors.

Catalog

Specifications in the catalog may be subject to change without notice. Please consult us first before use. Hunan Aihua Group reserves the right of final interpretation of all the content.

Soldering Recommendation

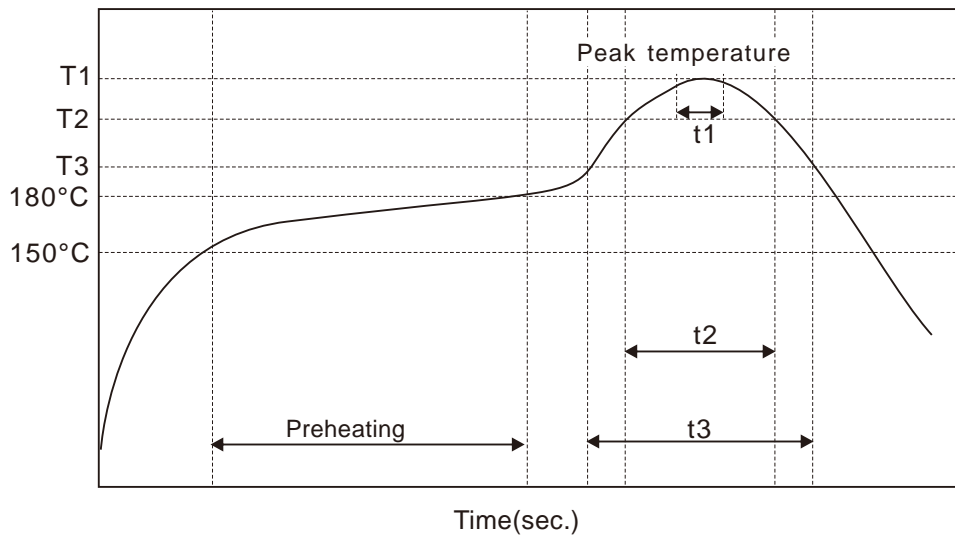
■ Flow Soldering(Radial Lead Type)



■ Reflow Soldering

- (For Polymer SMD Type)

Recommended Reflow Profile

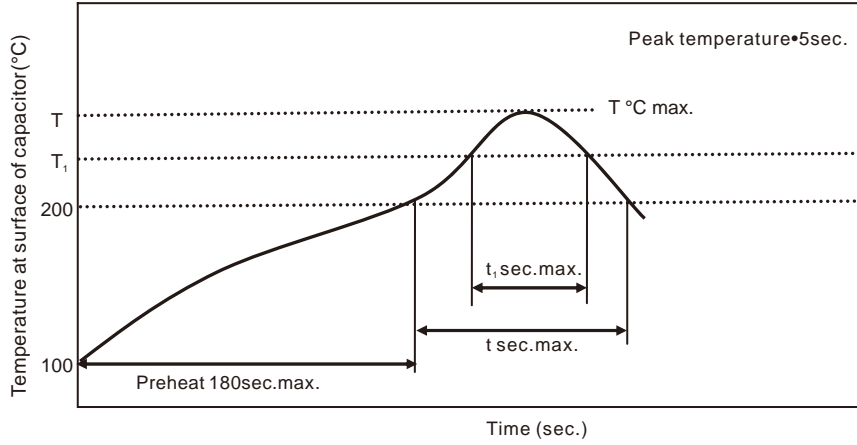


| Item | Preheating | T1(°C) | T2(°C) | T3(°C) | t1(sec.) | t2(sec.) | t3(sec.) | Reflow cycle |
|-------------|---------------------------------|--------|--------|--------|----------|----------|----------|--------------|
| Condition 1 | 150°C to 180°C Within 90sec. | 260 | 230 | 200 | 10 | 40 | 60 | 1 |
| Condition 2 | | 250 | 230 | 200 | 10 | 40 | 60 | 2 |

• (For Liquid SMD Type)

Case size: 6.3~ 10mm:

- Temperature at surface of capacitor shall not exceed T°C.
- The duration for over 200°C temperature and T₁°C at surface of capacitor shall not exceed t and t₁ seconds, respectively.
- Preheat shall be done at 100°C to 200°C and for Maximum 180 seconds.



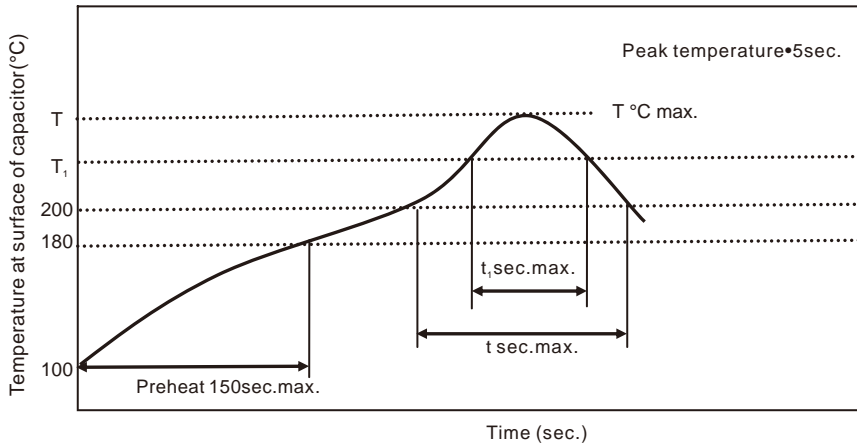
| Case size (mm) | T(°C) | T ₁ (°C) | t(sec.) | t ₁ (sec.) | Reflow cycle |
|----------------|-------|---------------------|---------|-----------------------|--------------|
| 6.3 | 250 | 230 | 90 | 40 | 1 |
| 8 | 240 | 230 | 90 | 30 | 1 |
| 10 | 240 | 230 | 60 | 30 | 1 |

Peak temperature
The duration over 200°C (max.)
The duration over T₁°C

- Please contact us if capacitors are subject to the conditions other than the allowable range of reflow.

Case size: 12.5~ 18mm:

- Temperature at surface of capacitor shall not exceed T°C.
- The duration for over 200°C temperature and T₁°C at surface of capacitor shall not exceed t and t₁ seconds, respectively.
- Preheat shall be done at 100°C to 180°C and for Maximum 150 seconds.

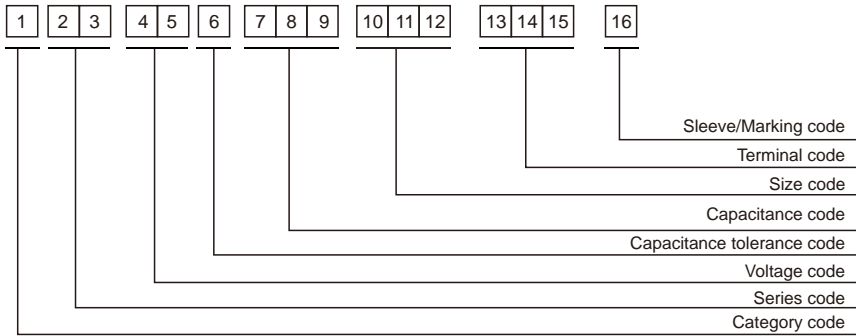


| Case size (mm) | Rated Voltage (Vdc) | T(°C) | T ₁ (°C) | t(sec.) | t ₁ (sec.) | Reflow cycle |
|----------------|---------------------|-------|---------------------|---------|-----------------------|--------------|
| 12.5~ 18 | 100 | 240 | 230 | 60 | 30 | 1 |
| | 120 | 230 | 220 | 60 | 30 | |

Peak temperature
The duration over 200°C (max.)
The duration over T₁°C

- Please contact us if capacitors are subject to the conditions other than the allowable range of reflow.

Part Numbering System



Category code

| Type | Code |
|---------------------------------|------|
| | 1 |
| Aluminum electrolytic capacitor | E |

Voltage code

| WV (V _{dc}) | Code | |
|-----------------------|------|---|
| | 4 | 5 |
| 2.5 | 0 | E |
| 3 | 0 | D |
| 4 | 0 | G |
| 6.3 | 0 | J |
| 6.8 | 0 | C |
| 7 | 0 | Q |
| 7.5 | 0 | A |
| 10 | 1 | A |
| 12 | 1 | T |
| 16 | 1 | C |
| 25 | 1 | E |
| 35 | 1 | V |
| 40 | 1 | G |
| 50 | 1 | H |
| 63 | 1 | J |
| 80 | 1 | B |
| 100 | 1 | K |
| 120 | 2 | B |
| 160 | 2 | C |
| 180 | 2 | L |
| 200 | 2 | D |
| 220 | 2 | N |
| 250 | 2 | E |
| 315 | 2 | F |
| 350 | 2 | V |
| 380 | 2 | P |
| 400 | 2 | G |
| 420 | 2 | T |
| 450 | 2 | W |
| 500 | 2 | H |
| 550 | 2 | J |
| 600 | 2 | K |

Capacitance tolerance code

| Tol. (%) | Code |
|----------|------|
| | 6 |
| -10~+10 | K |
| -20~+20 | M |
| -10~+30 | Q |
| -10~+20 | V |
| 0~+20 | A |
| -5~+20 | C |
| -10~-20 | B |
| -5~-+5 | D |
| 0~+10 | E |
| -5~-20 | F |
| -15~-+5 | N |

Capacitance code

| Cap (μF) | Code | | |
|----------|------|---|---|
| | 7 | 8 | 9 |
| 0.10 | R | 1 | 0 |
| 0.22 | R | 2 | 2 |
| 0.33 | R | 3 | 3 |
| 0.47 | R | 4 | 7 |
| 0.68 | R | 6 | 8 |
| 1 | 0 | 1 | 0 |
| 2.2 | 2 | R | 2 |
| 3.3 | 3 | R | 3 |
| 4.7 | 4 | R | 7 |
| 6.8 | 6 | R | 8 |
| 10 | 1 | 0 | 0 |
| 22 | 2 | 2 | 0 |
| 33 | 3 | 3 | 0 |
| 47 | 4 | 7 | 0 |
| 68 | 6 | 8 | 0 |
| 100 | 1 | 0 | 1 |
| 220 | 2 | 2 | 1 |
| 330 | 3 | 3 | 1 |
| 470 | 4 | 7 | 1 |
| 680 | 6 | 8 | 1 |
| 1000 | 1 | 0 | 2 |
| 2200 | 2 | 2 | 2 |
| 3300 | 3 | 3 | 2 |
| 4700 | 4 | 7 | 2 |
| 6800 | 6 | 8 | 2 |
| 10000 | 1 | 0 | 3 |
| 22000 | 2 | 2 | 3 |
| 33000 | 3 | 3 | 3 |
| 68000 | 6 | 8 | 3 |

Series code

| Series name | Code | |
|-------------|------|---|
| | 2 | 3 |
| WH | W | H |
| CD11GE | G | E |
| CD11GES | G | X |
| CD11GAS | G | W |
| CD11GHS | G | S |
| NR | N | R |

Size code

| D (mm) | Code | L (mm) | Code | |
|--------|------|--------|------|----|
| | 10 | | 11 | 12 |
| 4 | C | 5 | 0 | 5 |
| 5 | D | 7 | 0 | 7 |
| 6.3 | E | 11 | 1 | 1 |
| 8 | F | 12 | 1 | 2 |
| 10 | G | 16 | 1 | 6 |
| 11 | H | 20 | 2 | 0 |
| 12 | J | 25 | 2 | 5 |
| 12.5 | W | 30 | 3 | 0 |
| 13 | K | 35 | 3 | 5 |
| 14 | X | 40 | 4 | 0 |
| 16 | L | 46 | 4 | 6 |
| 18 | M | 50 | 5 | 0 |
| 19 | Z | 60 | 6 | 0 |
| 20 | N | 80 | 8 | 0 |
| 22 | O | 100 | A | 0 |
| 25 | P | 115 | B | 5 |
| 30 | Q | 120 | C | 0 |
| 35 | R | 130 | D | 0 |
| 40 | Y | 140 | E | 0 |
| 51.6 | S | 160 | G | 0 |
| 64.3 | T | 200 | K | 0 |
| 76.9 | U | 220 | M | 0 |
| 91 | V | 236 | N | 6 |
| 100 | A | 250 | P | 0 |

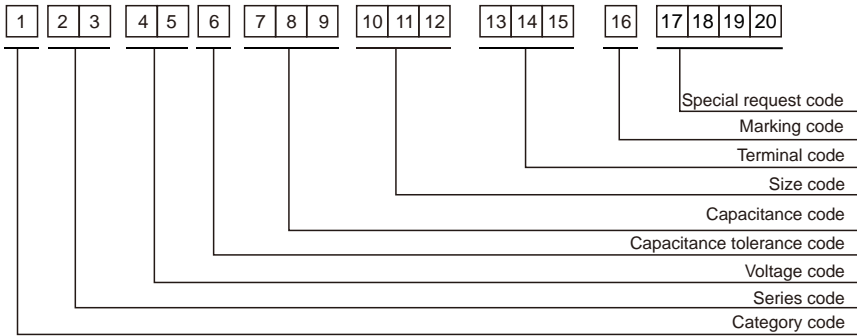
Terminal code

| Specification | Code | Size | |
|---------------------------------------|------|------|----|
| | 13 | 14 | 15 |
| Bulk packing | O | - | - |
| Taping (SMD Type) | D | 0 | 0 |
| 4~8 Taping F=5.0mm | P | 5 | 0 |
| 10~12.5 Taping F=5.0mm | B | 5 | 0 |
| Lead Cut L=3.5mm | C | 3 | 5 |
| Lead Cut L=11.0mm | C | B | 0 |
| Lead Forming & Cut L=4.5mm | F | - | - |
| Kink & Cut L=4.5mm | J | - | - |
| Snap-in type Terminal 4.0mm in length | K | - | - |
| Three Terminals | T | - | - |
| Ring clip mounting standard design | A | 0 | 0 |
| Ring clip mounting special design | S | - | - |

Sleeve/Marking code

| Sleeve/Marking | Code |
|----------------|------|
| PVC | C |
| PET | T |
| Dark blue | B |
| Bright red | R |
| Sky-blue | S |
| Light blue | T |
| Pink | Z |
| Black | H |
| Purple-blue | V |
| Red | O |

Part Numbering System(Conductive polymer solid & hybrid capacitors)



Category code

| Type | Code |
|---|------|
| | 1 |
| Conductive polymer aluminum solid capacitor | S |
| Conductive polymer hybrid aluminum electrolytic capacitor | H |

Voltage code

| WV (V _{dc}) | Code | |
|-----------------------|------|---|
| | 4 | 5 |
| 2 | 0 | B |
| 2.5 | 0 | E |
| 3 | 0 | D |
| 4 | 0 | G |
| 6.3 | 0 | J |
| 6.5 | 0 | F |
| 6.8 | 0 | C |
| 7 | 0 | Q |
| 7.5 | 0 | A |
| 10 | 1 | A |
| 12 | 1 | T |
| 14 | 1 | L |
| 16 | 1 | C |
| 18 | 1 | Q |
| 20 | 1 | D |
| 22 | 1 | I |
| 25 | 1 | E |
| 30 | 1 | S |
| 32 | 1 | F |
| 35 | 1 | V |
| 38 | 1 | N |
| 40 | 1 | G |
| 50 | 1 | H |
| 63 | 1 | J |
| 80 | 1 | B |
| 100 | 1 | K |
| 160 | 2 | C |
| 180 | 2 | L |
| 200 | 2 | D |
| 220 | 2 | N |
| 250 | 2 | E |
| 315 | 2 | F |

Capacitance tolerance code

| Tol. (%) | Code |
|----------|------|
| -10~+10 | K |
| -20~+20 | M |
| -10~+30 | Q |
| -10~+50 | T |
| -10~+20 | V |
| -8~+20 | H |
| 0~+20 | A |
| 0~+30 | |
| -5~+20 | C |
| +6~+20 | J |
| +6~+30 | O |
| -10~-20 | B |
| -5~-+5 | D |
| -0~+10 | E |
| -5~-20 | F |
| -15~+5 | N |
| -15~+15 | W |
| -15~+20 | G |
| -35~+10 | L |
| +4~+30 | I |

Capacitance code

| Cap (μF) | Code | | |
|----------|------|---|---|
| | 7 | 8 | 9 |
| 0.10 | R | 1 | 0 |
| 0.22 | R | 2 | 2 |
| 1 | 0 | 1 | 0 |
| 2.2 | 2 | R | 2 |
| 9.8 | 6 | R | 8 |
| 10 | 1 | 0 | 0 |
| 22 | 2 | 2 | 0 |
| 33 | 3 | 3 | 0 |
| 47 | 4 | 7 | 0 |
| 56 | 5 | 6 | 0 |
| 68 | 6 | 8 | 0 |
| 100 | 1 | 0 | 1 |
| 150 | 1 | 5 | 1 |
| 180 | 1 | 8 | 1 |
| 220 | 2 | 2 | 1 |
| 270 | 2 | 7 | 1 |
| 470 | 4 | 7 | 1 |
| 560 | 5 | 6 | 1 |
| 680 | 6 | 8 | 1 |
| 820 | 8 | 2 | 1 |
| 1000 | 1 | 0 | 2 |
| 1200 | 1 | 2 | 2 |
| 2200 | 2 | 2 | 2 |
| 3300 | 3 | 3 | 2 |

Series code

| Series | Code | | |
|-------------|------|---|---|
| | 2 | 3 | |
| Radial Type | PR | P | R |
| | PZ | P | Z |
| | PU | P | U |
| | PD | P | D |
| | PH | P | H |
| | PT | P | T |
| | PK | P | K |
| | PV | P | V |
| SMD type | PF | P | F |
| | VS | V | S |
| | VZ | V | Z |
| | VD | V | D |
| | VT | V | T |

Size code

| D (mm) | Code |
|--------|------|
| 4 | 10 |
| 4.5 | C |
| 5 | A |
| 5.5 | D |
| 6.3 | B |
| 6.8 | E |
| 7 | Q |
| 8 | R |
| 10 | F |
| 11 | G |
| 12 | H |
| 12.5 | J |
| 13 | W |
| 14 | K |
| 16 | X |
| 18 | L |
| 19 | M |
| 20 | Z |
| | N |

| L (mm) | Code | |
|--------|------|----|
| | 11 | 12 |
| 5 | 0 | 5 |
| 7 | 0 | 7 |
| 7.5 | 7 | R |
| 8 | 0 | 8 |
| 9 | 0 | 9 |
| 10 | 1 | 0 |
| 11 | 1 | 1 |
| 12 | 1 | 2 |
| 16 | 1 | 6 |
| 20 | 2 | 0 |
| 25 | 2 | 5 |
| 10.5 | A | R |
| 11.5 | B | R |
| 12.5 | C | R |

Terminal code

| Specification | Code | | | Specification | Code | | |
|------------------------------------|------|----|----|----------------------|------|----|----|
| | 13 | 14 | 15 | | 13 | 14 | 15 |
| Bulk packing (standard lead pitch) | O | 0 | 0 | Base plate(SMD type) | D | 0 | 0 |
| Bulk packing (special lead pitch) | O | - | - | Taping(SMD type) | E | 0 | 0 |

Marking code

| MARKING | Code |
|--------------------|------|
| | 16 |
| Dark blue | B |
| Baby blue | L |
| Bright red | R |
| Sky-blue | S |
| Black | H |
| Purple-blue sleeve | V |
| Red sleeve | O |
| Black sleeve | A |

Lead Forming

Taping Specifications (Unit: mm)

Fig.1 code: X

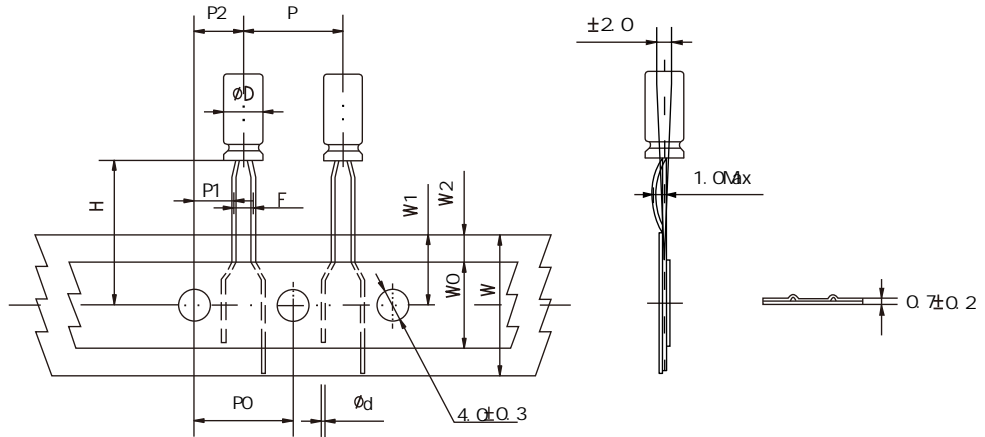


Fig.2 code: B

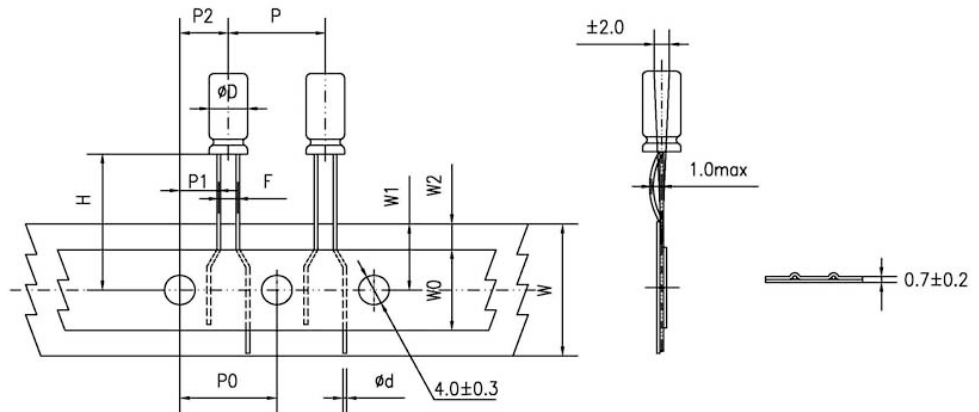


Fig.3 code: B

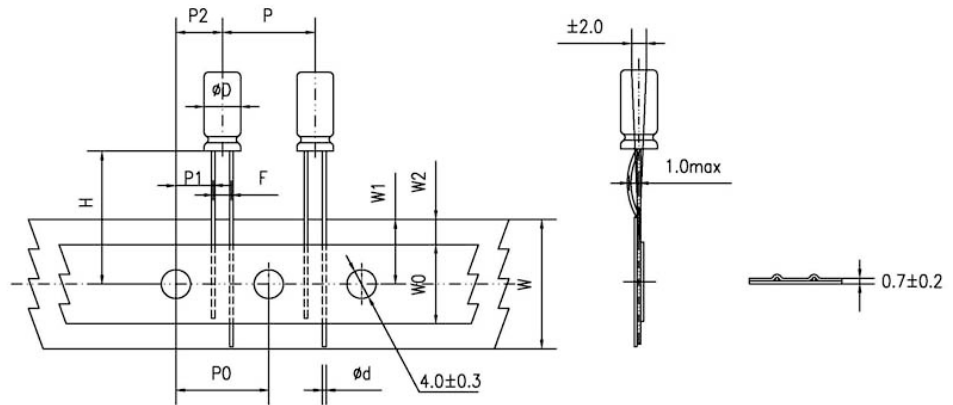
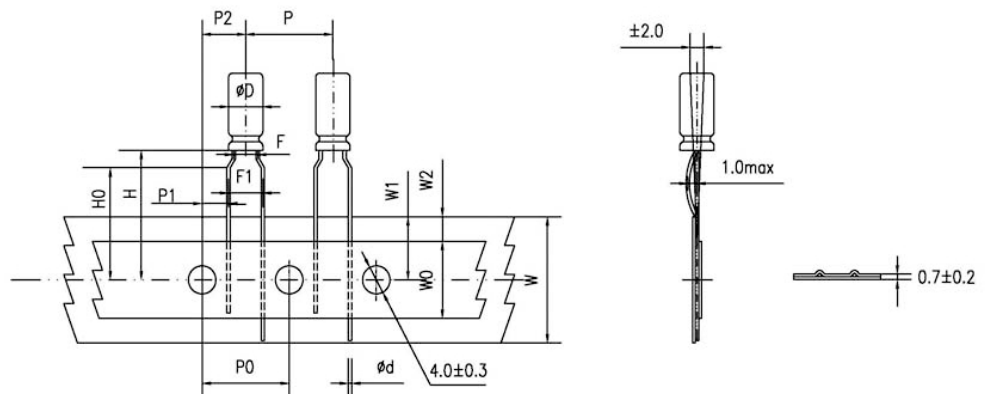


Fig.4 code: P



Lead Forming

Specification Fig.1 & Fig.2 & Fig.3

(mm)

| Items | Symbol | Case size | | | | | | | | | | | Tolerance | |
|---|--------|------------|-----|------------|------|------|------|-------|------------------------------------|-----------------------------------|--------------|---------------------------------------|-----------|-----------------------------|
| | | 4x5 4x7 | | 5x5 5x7 | | 5x11 | | 6.3x5 | 6.3x7 6.3x9 6.3x11 6.3x12 | 8x5/7 8x9/11 8x11.5 8x12 | 8x16 8x20 | 10x9 10x12 10x13/16 10x20/25 | | 12.5x16 12.5x20 13x20 |
| Pin Code | | X | B | X | B | X | B | B | B | B | B | B | B | |
| Lead wire diameter | d | 0.45 | | 0.45 | | 0.5 | | 0.45 | 0.5 | 0.45/0.5 | 0.6 | 0.6 | 0.6 | ±0.05 |
| Pitch of body | P | 12.7 | | 12.7 | | 12.7 | | 12.7 | 12.7 | 12.7 | 12.7 | 12.7 | 15 | ±1.0 |
| Feed hole pitch | P0 | 12.7 | | 12.7 | | 12.7 | | 12.7 | 12.7 | 12.7 | 12.7 | 12.7 | 15 | ±0.2 |
| Distance from hole center to lead | P1 | 5.1 | 5.6 | 5.1 | 5.35 | 5.1 | 5.35 | 5.1 | 5.1 | 4.6 | 4.6 | 3.85 | 5.0 | ±0.7 |
| Distance from feed hole center to body center | P2 | 6.35 | | 6.35 | | 6.35 | | 6.35 | 6.35 | 6.35 | 6.35 | 6.35 | 7.5 | ±1.0 |
| Lead-to-lead distance | F | 2.5 | 1.5 | 2.5 | 2.0 | 2.5 | 2.0 | 2.5 | 2.5 | 3.5 | 3.5 | 5.0 | 5.0 | ±0.5 |
| Height of body from tape center | H | 18.5 | | 18.5 | | 18.5 | | 18.5 | 18.5 | 18.5 | 18.5 | 18.5 | 18.5 | ±0.75 |
| Base tape width | W | 18.0 | | 18.0 | | 18.0 | | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | ±0.5 |
| Adhesive tape width | W0 | 6.0 | | 6.0 | | 6.0 | | 6.0 | 8.0 | 8.0 | 8.0 | 11.0 | 11.0 | min |
| Hole position | W1 | 9.0 | | 9.0 | | 9.0 | | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | +0.75 -0.5 |
| Hole down tape position | W2 | 1.5 | | 1.5 | | 1.5 | | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | max |

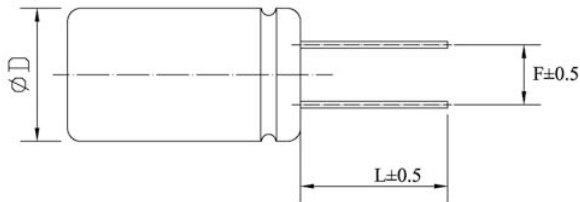
Specification Fig.4

(mm)

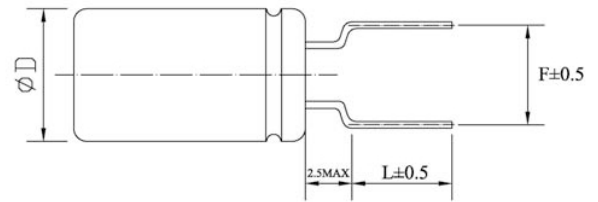
| Items | Symbol | Case size | | | | | | | | | Tolerance |
|---|--------|------------|------|------|------|-------|----------------|------------------|------------------------------|--------------|---------------|
| | | 4x5 4x7 | 5x5 | 5x7 | 5x11 | 6.3x5 | 6.3x7 6.3x9 | 6.3x11 6.3x12 | 8x5/7 8x9/11 8x11.5/12 | 8x16 8x20 | |
| Pin Code | | P | P | P | P | P | P | P | P | P | |
| Lead wire diameter | d | 0.45 | 0.45 | 0.45 | 0.5 | 0.45 | 0.5 | 0.5 | 0.45/0.5 | 0.6 | ±0.05 |
| Pitch of body | P | 12.7 | 12.7 | 12.7 | 12.7 | 12.7 | 12.7 | 12.7 | 12.7 | 12.7 | ±1.0 |
| Feed hole pitch | P0 | 12.7 | 12.7 | 12.7 | 12.7 | 12.7 | 12.7 | 12.7 | 12.7 | 12.7 | ±0.2 |
| Distance from hole center to lead | P1 | 3.85 | 3.85 | 3.85 | 3.85 | 3.85 | 3.85 | 3.85 | 3.85 | 3.85 | ±0.7 |
| Distance from feed hole center to body center | P2 | 6.35 | 6.35 | 6.35 | 6.35 | 6.35 | 6.35 | 6.35 | 6.35 | 6.35 | ±1.0 |
| Lead-to-lead distance | F | 1.5 | 2.0 | 2.0 | 2.0 | 2.5 | 2.5 | 2.5 | 3.5 | 3.5 | ±0.5 |
| Lead to lead distance | F1 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | +0.8 -0.2 |
| Height of body from tape center | H | 18.5 | 18.5 | 18.5 | 18.5 | 18.5 | 18.5 | 18.5 | 18.5 | 18.5 | ±0.75 |
| Lead wire clinch height | H0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | ±0.5 |
| Base tape width | W | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | 18.0 | ±0.5 |
| Adhesive tape width | W0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 8.0 | 8.0 | 8.0 | min |
| Hole position | W1 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | 9.0 | +0.75 -0.5 |
| Hole down tape position | W2 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | max |

Lead Forming
Lead Forming & Cut

Code:C
RANGE: 4~ 18



Code:F
RANGE: 4~ 8

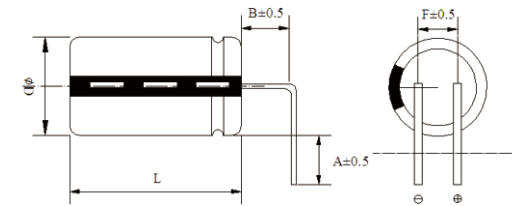


(mm)

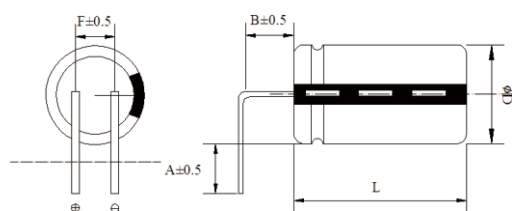
| D | F | L | D | F | L |
|------|-----|----------|-----|-----|--------------------|
| 4 | 1.5 | 3.0~12.0 | 4 | 5.0 | 3.5, 4.5, 5.0, 7.0 |
| 5 | 2.0 | 3.0~12.0 | 5 | 5.0 | 3.5, 4.5, 5.0, 7.0 |
| 6.3 | 2.5 | 3.0~12.0 | 6.3 | 5.0 | 3.5, 4.5, 5.0, 7.0 |
| 8 | 3.5 | 3.0~12.0 | 8 | 5.0 | 3.5, 4.5, 5.0, 7.0 |
| 10 | 5.0 | 3.0~12.0 | - | - | - |
| 12.5 | 5.0 | 3.0~12.0 | - | - | - |
| 16 | 7.5 | 3.0~12.0 | - | - | - |
| 18 | 7.5 | 3.0~12.0 | - | - | - |

Code:R/L
RANGE: 10~ 18

Right horizontal forming



Left horizontal forming

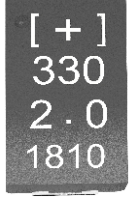


(mm)

| D | F | A | B |
|---------|-----|------------------------------|----------|
| 10~12.5 | 5.0 | 2.5, 3.0, 3.5, 4.0, 4.5, 5.0 | 1.5, 2.5 |
| 16~18 | 7.5 | 2.5, 3.0, 3.5, 4.0, 4.5, 5.0 | 1.5, 2.5 |

A1 series

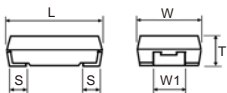
- Endurance: 2,000 hours at 105°C
- Low ESR
- Recommended Applications: System Board, Display Card, Small Charger and intelligent TV
- **RoHS Compliant and lead-free**



SPECIFICATIONS

| Items | Characteristics | | | | | | | | | | |
|--|--|-------------------------------------|-----|----------|-----|----------|----|----------|----|------|------------------|
| Category Temperature Range | -55~+105°C | | | | | | | | | | |
| Rated Working Voltage Range | 2~25 Vdc | | | | | | | | | | |
| Nominal Capacitance Range | 6.8~470μF | | | | | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | | | | | | | | | |
| DC Leakage Current | I 0.1CV W.V.:2V~25V Where, I: Leakage current (μA), C:Nominal capacitance (μF), V: Rated voltage (V) (at 20°C after 2 minutes) | | | | | | | | | | |
| Dissipation Factor (tan) | Rated Voltage(Vdc) | 2 | 2.5 | 4 | 6.3 | 7.5 | 10 | 12.5 | 16 | 25 | (at 20°C, 120Hz) |
| | tan (max.) | 0.06 | | | | | | | | 0.10 | |
| ESR(100k~300kHz,20°C) | Value in characteristics table | | | | | | | | | | |
| Temperature Characteristic (Impedance Ratio at 100kHz) | Z(+105°C)/Z(+20°C) 1.25 Z(-55°C)/Z(+20°C) 1.25 | | | | | | | | | | |
| Endurance | After applying rated voltage with rated ripple current for 2,000 hours at 105°C, the capacitors shall meet the following requirements. | | | | | | | | | | |
| | Appearance | No significant damage | | | | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | | | | |
| | D.F. (tan) | 150% of the initial specified value | | | | | | | | | |
| | Leakage Current | The initial specified value | | | | | | | | | |
| Humidity Test | After subjecting to 90%~95% RH for 500 hours at 60°C (no voltage), the capacitors shall meet the requirement as Endurance. | | | | | | | | | | |
| | Rated Voltage(Vdc) | 2~2.5 | | 4 | | 6.3~7.5 | | 8~16 | | 25 | |
| | Capacitance Change | +70,-20% | | +60,-20% | | +50,-20% | | +40,-20% | | | |
| | D.F. (tan) | 200% of the initial specified value | | | | | | | | | |
| | Leakage Current | The initial specified value | | | | | | | | | |
| Surge Test | After subjecting to 1,000 cycles each consisting of charge with the surge voltage specified at normal temperature for 30 seconds through a protective resistor and discharge for 5 minutes 30 seconds, the capacitors shall meet the following requirements. | | | | | | | | | | |
| | Appearance | No significant damage | | | | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | | | | |
| | D.F. (tan) | 150% of the initial specified value | | | | | | | | | |
| | Leakage Current | The initial specified value | | | | | | | | | |

DIMENSIONS[mm]



| Case Size | L±0.3(mm) | W±0.2(mm) | T±0.1(mm) | W1±0.2(mm) | S±0.2(mm) |
|-------------|-----------|-----------|-----------|------------|-----------|
| 7.3x4.3x1.9 | 7.3 | 4.3 | 1.9 | 2.4 | 1.3 |

MARKING



PART NUMBERING SYSTEM



A1 series

■ STANDARD RATINGS

| VDC (SV) | Cap (μF) | Size (LxWxT mm) | ESR (mΩ, 20°C, 100kHz) (max.) | Rated ripple current (100kHz, 20~105°C)(mA rms) | Leakage Current (20°C) (μA max.) | Part Number |
|-------------|-------------|-----------------|-------------------------------|---|----------------------------------|--------------------|
| 2 (2.3) | 100 | 7.3x4.3x1.9 | 16 | 2000 | 20.0 | SA10BM101A19R16XXX |
| | 150 | 7.3x4.3x1.9 | 9 | 3000 | 30.0 | SA10BM151A19R09XXX |
| | 220 | 7.3x4.3x1.9 | 9 | 3000 | 44.0 | SA10BM221A19R09XXX |
| | 270 | 7.3x4.3x1.9 | 9 | 3500 | 54.0 | SA10BM271A19R09XXX |
| | 330 | 7.3x4.3x1.9 | 7 | 3500 | 66.0 | SA10BM331A19R07XXX |
| | | 7.3x4.3x1.9 | 9 | 3500 | 66.0 | SA10BM331A19R09XXX |
| | 470 | 7.3x4.3x1.9 | 4.5 | 3500 | 94.0 | SA10BM471A19R04XXX |
| | | 7.3x4.3x1.9 | 6 | 3500 | 94.0 | SA10BM471A19R06XXX |
| 7.3x4.3x1.9 | | 9 | 3500 | 94.0 | SA10BM471A19R09XXX | |
| 2.5 (2.5) | 100 | 7.3x4.3x1.9 | 16 | 2000 | 25.0 | SA10EM101A19R16XXX |
| | 150 | 7.3x4.3x1.9 | 9 | 3000 | 37.5 | SA10EM151A19R09XXX |
| | 220 | 7.3x4.3x1.9 | 9 | 3000 | 55.0 | SA10EM221A19R09XXX |
| | 270 | 7.3x4.3x1.9 | 9 | 3500 | 67.5 | SA10EM271A19R09XXX |
| | 330 | 7.3x4.3x1.9 | 9 | 3500 | 82.5 | SA10EM331A19R09XXX |
| 4 (4.6) | 68 | 7.3x4.3x1.9 | 20 | 1900 | 27.2 | SA10GM680A19R20XXX |
| | 82 | 7.3x4.3x1.9 | 16 | 2100 | 32.8 | SA10GM820A19R16XXX |
| | 150 | 7.3x4.3x1.9 | 16 | 2100 | 60.0 | SA10GM151A19R16XXX |
| 6.3 (7.2) | 10 | 7.3x4.3x1.9 | 55 | 1000 | 6.3 | SA10JM100A19R55XXX |
| | 22 | 7.3x4.3x1.9 | 80 | 1000 | 13.9 | SA10JM220A19R80XXX |
| | 33 | 7.3x4.3x1.9 | 80 | 1800 | 20.8 | SA10JM330A19R80XXX |
| | 47 | 7.3x4.3x1.9 | 35 | 1800 | 29.6 | SA10JM470A19R35XXX |
| | 68 | 7.3x4.3x1.9 | 15 | 2000 | 42.8 | SA10JM680A19R15XXX |
| | 100 | 7.3x4.3x1.9 | 15 | 2000 | 63.0 | SA10JM101A19R15XXX |
| | 150 | 7.3x4.3x1.9 | 10 | 3000 | 94.5 | SA10JM151A19R10XXX |
| | | 7.3x4.3x1.9 | 15 | 3000 | 94.5 | SA10JM151A19R15XXX |
| 220 | 7.3x4.3x1.9 | 10 | 3000 | 138.6 | SA10JM221A19R10XXX | |
| | 7.3x4.3x1.9 | 15 | 3000 | 138.6 | SA10JM221A19R15XXX | |
| 7.5 (8.6) | 150 | 7.3x4.3x1.9 | 10 | 3000 | 112.5 | SA10AM151A19R10XXX |
| | 200 | 7.3x4.3x1.9 | 12 | 3000 | 150.0 | SA10AM201A19R12XXX |
| 10 (11.5) | 10 | 7.3x4.3x1.9 | 55 | 1000 | 10.0 | SA11AM100A19R55XXX |
| | 22 | 7.3x4.3x1.9 | 120 | 1600 | 22 | SA11AM220A19RA2XXX |
| | 33 | 7.3x4.3x1.9 | 25 | 1800 | 33 | SA11AM330A19R25XXX |
| | 100 | 7.3x4.3x1.9 | 15 | 2500 | 100.0 | SA11AM101A19R15XXX |
| 12.5 (14.4) | 10 | 7.3x4.3x1.9 | 55 | 1000 | 12.5 | SA11TM100A19R55XXX |
| | 15 | 7.3x4.3x1.9 | 45 | 1000 | 18.8 | SA11TM150A19R45XXX |
| | 22 | 7.3x4.3x1.9 | 30 | 1600 | 27.5 | SA11TM220A19R30XXX |
| | 33 | 7.3x4.3x1.9 | 25 | 1800 | 41.3 | SA11TM330A19R25XXX |
| | 47 | 7.3x4.3x1.9 | 20 | 2000 | 58.8 | SA11TM470A19R20XXX |
| | 56 | 7.3x4.3x1.9 | 15 | 2000 | 70.0 | SA11TM560A19R15XXX |
| | 100 | 7.3x4.3x1.9 | 12 | 2500 | 125.0 | SA11TM101A19R12XXX |
| 16 (18.4) | 6.8 | 7.3x4.3x1.9 | 70 | 1000 | 10.9 | SA11CM6R8A19R70XXX |
| | 10 | 7.3x4.3x1.9 | 60 | 1000 | 16.0 | SA11CM100A19R60XXX |
| | 15 | 7.3x4.3x1.9 | 40 | 1000 | 24.0 | SA11CM150A19R40XXX |
| | 47 | 7.3x4.3x1.9 | 55 | 1400 | 75.2 | SA11CM470A19R55XXX |
| | 68 | 7.3x4.3x1.9 | 30 | 1600 | 108.8 | SA11CM680A19R30XXX |
| 25 (28.8) | 10 | 7.3x4.3x1.9 | 35 | 1000 | 25.0 | SA11EM100A19R35XXX |
| | 33 | 7.3x4.3x1.9 | 60 | 1400 | 82.5 | SA11EM330A19R60XXX |

Conductive Polymer Multilayer Type

Specifications may be subject to change without notice.

A2 series

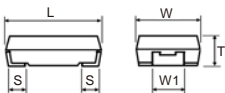
- Endurance: 2,000 hours at 105°C
- Low ESR
- Recommended Applications: System Board, Display Card, Small Charger and intelligent TV
- **RoHS Compliant and lead-free**



SPECIFICATIONS

| Items | Characteristics | | | | | | | | | | |
|--|--|-------------------------------------|-----|----------|-----|----------|----|----------|----|------|-----------------|
| Category Temperature Range | -55~+105°C | | | | | | | | | | |
| Rated Working Voltage Range | 2~25 V _{dc} | | | | | | | | | | |
| Nominal Capacitance Range | 6.8~470μF | | | | | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C,120Hz) | | | | | | | | | | |
| DC Leakage Current | I 0.1CV W.V.:2V~25V Where, I: Leakage current (μA), C:Nominal capacitance (μF), V: Rated voltage (V) (at 20°C after 2 minutes) | | | | | | | | | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 2 | 2.5 | 4 | 6.3 | 7.5 | 10 | 12.5 | 16 | 25 | (at 20°C,120Hz) |
| | tan δ (max.) | 0.06 | | | | | | | | 0.10 | |
| ESR(100k~300kHz,20°C) | Value in characteristics table | | | | | | | | | | |
| Temperature Characteristic (Impedance Ratio at 100kHz) | Z(+105°C)/Z(+20°C) 1.25 Z(-55°C)/Z(+20°C) 1.25 | | | | | | | | | | |
| Endurance | After applying rated voltage with rated ripple current for 2,000 hours at 105°C, the capacitors shall meet the following requirements. | | | | | | | | | | |
| | Appearance | No significant damage | | | | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | | | | |
| | D.F. (tan δ) | 150% of the initial specified value | | | | | | | | | |
| | Leakage Current | The initial specified value | | | | | | | | | |
| Humidity Test | After subjecting to 90%-95% RH for 500 hours at 60°C(no voltage), the capacitors shall meet the requirement as Endurance. | | | | | | | | | | |
| | Rated Voltage(V _{dc}) | 2~2.5 | | 4 | | 6.3~7.5 | | 8~16 | | 25 | |
| | Capacitance Change | +70,-20% | | +60,-20% | | +50,-20% | | +40,-20% | | | |
| | D.F. (tan δ) | 200% of the initial specified value | | | | | | | | | |
| | Leakage Current | The initial specified value | | | | | | | | | |
| Surge Test | After subjecting to 1,000 cycles each consisting of charge with the surge voltage specified at normal temperature for 30 seconds through a protective resistor and discharge for 5 minutes 30 seconds, the capacitors shall meet the following requirements. | | | | | | | | | | |
| | Appearance | No significant damage | | | | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | | | | |
| | D.F. (tan δ) | 150% of the initial specified value | | | | | | | | | |
| | Leakage Current | The initial specified value | | | | | | | | | |

DIMENSIONS[mm]

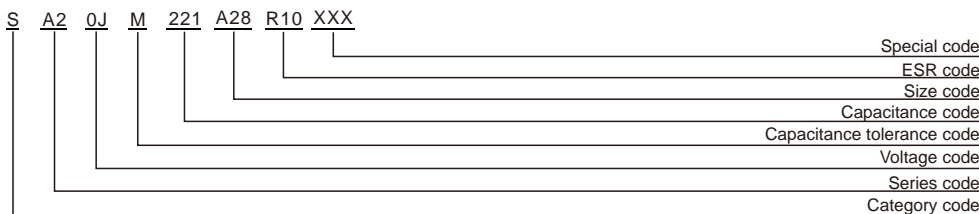


| Case Size | L±0.3(mm) | W±0.2(mm) | T±0.1(mm) | W1±0.2(mm) | S±0.2(mm) |
|-------------|-----------|-----------|-----------|------------|-----------|
| 7.3x4.3x2.8 | 7.3 | 4.3 | 2.8 | 2.4 | 1.3 |

MARKING



PART NUMBERING SYSTEM



A2 series

■ STANDARD RATINGS

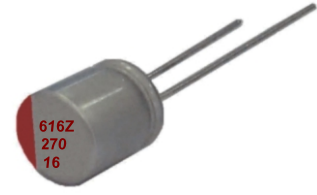
| VDC (SV) | Cap (μF) | Size (LxWxT mm) | ESR (mΩ, 20°C, 100kHz) (max.) | Rated ripple current (100kHz, 20~105°C)(mA rms) | Leakage Current (20°C) (μA max.) | Part Number |
|----------------|----------|-----------------|-------------------------------|---|----------------------------------|--------------------|
| 2 (2.3) | 100 | 7.3x4.3x2.8 | 16 | 2000 | 20 | SA20BM101A28R16XXX |
| | 150 | 7.3x4.3x2.8 | 9 | 3000 | 30 | SA20BM151A28R09XXX |
| | 220 | 7.3x4.3x2.8 | 9 | 3000 | 44 | SA20BM221A28R09XXX |
| | 270 | 7.3x4.3x2.8 | 9 | 3500 | 54 | SA20BM271A28R09XXX |
| | 330 | 7.3x4.3x2.8 | 9 | 3500 | 66 | SA20BM331A28R09XXX |
| | 470 | 7.3x4.3x2.8 | 9 | 3500 | 94 | SA20BM471A28R09XXX |
| 2.5 (2.5) | 100 | 7.3x4.3x2.8 | 16 | 2000 | 25 | SA20EM101A28R16XXX |
| | 150 | 7.3x4.3x2.8 | 9 | 3000 | 37.5 | SA20EM151A28R09XXX |
| | 180 | 7.3x4.3x2.8 | 12 | 2500 | 45 | SA20EM181A28R12XXX |
| | 220 | 7.3x4.3x2.8 | 9 | 3000 | 55 | SA20EM221A28R09XXX |
| | 270 | 7.3x4.3x2.8 | 9 | 3500 | 67.5 | SA20EM271A28R09XXX |
| | 330 | 7.3x4.3x2.8 | 7 | 3500 | 82.5 | SA20EM331A28R07XXX |
| | | 7.3x4.3x2.8 | 9 | 3500 | 82.5 | SA20EM331A28R09XXX |
| | | 7.3x4.3x2.8 | 4.5 | 3500 | 117.5 | SA20EM471A28R04XXX |
| | 470 | 7.3x4.3x2.8 | 6 | 3500 | 117.5 | SA20EM471A28R06XXX |
| 7.3x4.3x2.8 | | 9 | 3500 | 117.5 | SA20EM471A28R09XXX | |
| | | | | | | |
| 4 (4.6) | 68 | 7.3x4.3x2.8 | 20 | 1900 | 27.2 | SA20GM680A28R20XXX |
| | 82 | 7.3x4.3x2.8 | 16 | 2100 | 32.8 | SA20GM820A28R16XXX |
| | 150 | 7.3x4.3x2.8 | 18 | 2100 | 60 | SA20GM151A28R18XXX |
| 6.3 (7.2) | 10 | 7.3x4.3x2.8 | 55 | 1000 | 6.3 | SA20JM100A28R55XXX |
| | 22 | 7.3x4.3x2.8 | 45 | 1000 | 13.9 | SA20JM220A28R45XXX |
| | 33 | 7.3x4.3x2.8 | 25 | 1800 | 20.8 | SA20JM330A28R25XXX |
| | 47 | 7.3x4.3x2.8 | 25 | 1800 | 29.6 | SA20JM470A28R25XXX |
| | 68 | 7.3x4.3x2.8 | 15 | 2000 | 42.8 | SA20JM680A28R15XXX |
| | 100 | 7.3x4.3x2.8 | 15 | 2000 | 63 | SA20JM101A28R15XXX |
| | 150 | 7.3x4.3x2.8 | 10 | 3000 | 94.5 | SA20JM151A28R10XXX |
| | | 7.3x4.3x2.8 | 15 | 3000 | 94.5 | SA20JM151A28R15XXX |
| | 220 | 7.3x4.3x2.8 | 10 | 3000 | 138.6 | SA20JM221A28R10XXX |
| | | 7.3x4.3x2.8 | 15 | 3000 | 138.6 | SA20JM221A28R15XXX |
| 7.5 (8.6) | 150 | 7.3x4.3x2.8 | 10 | 3000 | 112.5 | SA20AM151A28R10XXX |
| | 200 | 7.3x4.3x2.8 | 12 | 3000 | 150 | SA20AM201A28R12XXX |
| 10 (11.5) | 10 | 7.3x4.3x2.8 | 55 | 1000 | 10 | SA21AM100A28R55XXX |
| | 22 | 7.3x4.3x2.8 | 28 | 1600 | 22 | SA21AM220A28R28XXX |
| | 33 | 7.3x4.3x2.8 | 25 | 1800 | 33 | SA21AM330A28R25XXX |
| | 68 | 7.3x4.3x2.8 | 15 | 2000 | 68 | SA21AM680A28R15XXX |
| | 100 | 7.3x4.3x2.8 | 15 | 2500 | 100 | SA21AM101A28R15XXX |
| 12.5 (14.4) | 10 | 7.3x4.3x2.8 | 55 | 1000 | 12.5 | SA21TM100A28R55XXX |
| | 15 | 7.3x4.3x2.8 | 45 | 1000 | 18.8 | SA21TM150A28R45XXX |
| | 22 | 7.3x4.3x2.8 | 30 | 1600 | 27.5 | SA21TM220A28R30XXX |
| | 33 | 7.3x4.3x2.8 | 25 | 1800 | 41.3 | SA21TM330A28R25XXX |
| | 47 | 7.3x4.3x2.8 | 20 | 2000 | 58.8 | SA21TM470A28R20XXX |
| | 56 | 7.3x4.3x2.8 | 15 | 2000 | 70.0 | SA21TM560A28R15XXX |
| | 100 | 7.3x4.3x2.8 | 12 | 2500 | 125.0 | SA21TM101A28R12XXX |
| 16 (18.4) | 6.8 | 7.3x4.3x2.8 | 70 | 1000 | 10.9 | SA21CM68A28R70XXX |
| | 10 | 7.3x4.3x2.8 | 60 | 1000 | 16.0 | SA21CM100A28R60XXX |
| | 15 | 7.3x4.3x2.8 | 40 | 1000 | 24.0 | SA21CM150A28R40XXX |
| | 22 | 7.3x4.3x2.8 | 30 | 1600 | 35.2 | SA21CM220A28R30XXX |
| | 33 | 7.3x4.3x2.8 | 30 | 1600 | 52.8 | SA21CM330A28R30XXX |
| | 47 | 7.3x4.3x2.8 | 30 | 1600 | 75.2 | SA21CM470A28R30XXX |
| | 68 | 7.3x4.3x2.8 | 30 | 1600 | 108.8 | SA21CM680A28R30XXX |
| | 100 | 7.3x4.3x2.8 | 25 | 1800 | 160 | SA21CM101A28R25XXX |
| 25 (28.8) | 10 | 7.3x4.3x2.8 | 45 | 1000 | 25.0 | SA21EM100A28R45XXX |
| | 33 | 7.3x4.3x2.8 | 60 | 1400 | 82.5 | SA21EM330A28R60XXX |

Conductive Polymer Multilayer Type

Specifications may be subject to change without notice.

PZ series

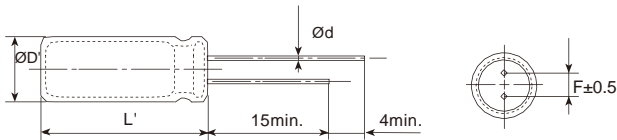
- Endurance: +105°C 2,000 hours
- Low ESR
- Recommended Applications: System Board, Display Card, Small Charger and intelligent TV
- RoHS Compliant and lead-free



SPECIFICATIONS

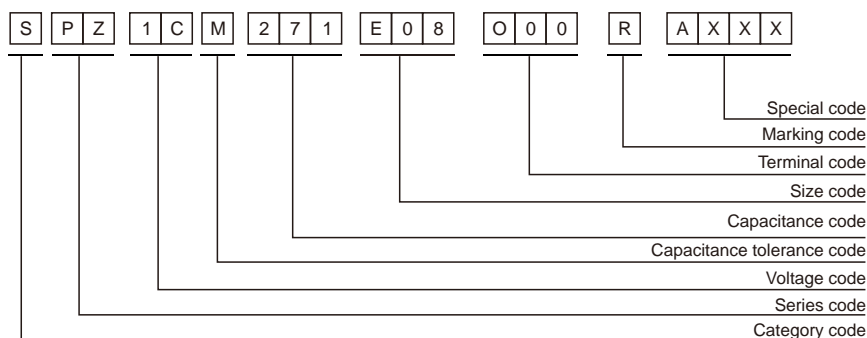
| Items | Characteristics | | | | | | | | | | | |
|--|--|--|---------------------------|------|----|----|----|----|------|----|------------------|--|
| Category Temperature Range | -55~+105°C | | | | | | | | | | | |
| Rated Working Voltage Range | 6.3~100 V _{dc} | | | | | | | | | | | |
| Nominal Capacitance Range | 4.7~5600μF | | | | | | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | | | | | | | | | | |
| DC Leakage Current | I ≤ 0.2CV or 500μA, whichever is greater. Where, I:Max.leakage current (μA), C:Nominal capacitance (μF), V: Rated voltage (V) (at 20°C after 2 minutes) | | | | | | | | | | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 6.3 | 6.8 | 7.5 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | |
| | tan δ (max.) | 0.08 | | 0.12 | | | | | 0.15 | | (at 20°C, 120Hz) | |
| ESR(100kHz, 20°C) | Value in characteristics table | | | | | | | | | | | |
| Temperature Characteristic (Impedance Ratio at 100kHz) | Z(+105°C)/Z(+20°C) 1.25 Z(-55°C)/Z(+20°C) 1.25 | | | | | | | | | | | |
| Endurance | After applying rated voltage for 2,000 hours at 105°C, the capacitors shall meet the following requirements. | | | | | | | | | | | |
| | Appearance | No significant damage | | | | | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | | | | | |
| | D.F. (tan δ) | 150% of the initial specified value | | | | | | | | | | |
| | ESR | 150% of the initial specified value | | | | | | | | | | |
| Leakage Current | The initial specified value | | | | | | | | | | | |
| | After subjecting to 90%~95% RH for 2,000 hours at 60°C without voltage applied, the capacitors shall meet the specified values for the Endurance characteristics listed above. | | | | | | | | | | | |
| | Surge Test | After subjecting to 1,000 cycles each consisting of charge with the surge voltage specified at normal temperature for 30 seconds through a protective resistor and discharge for 5 minutes 30 seconds, the capacitors shall meet the following requirements. | | | | | | | | | | |
| | | Appearance | No significant damage | | | | | | | | | |
| | | Capacitance Change | ±20% of the initial value | | | | | | | | | |
| D.F. (tan δ) | | 150% of the initial specified value | | | | | | | | | | |
| ESR | | 150% of the initial specified value | | | | | | | | | | |
| Leakage Current | The initial specified value | | | | | | | | | | | |

DIMENSIONS[mm]



| | | | | | |
|-----|-------------|-----|-----|----------|-----|
| ØD | 5 | 5.5 | 6.3 | 8 | 10 |
| Ød | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 |
| F | 2.0 | 2.5 | 2.5 | 3.5 | 5.0 |
| ØD' | ØD-0.1~+0.5 | | | | |
| L' | L+1.0max. | | | L-0.5~+1 | |

PART NUMBERING SYSTEM



PZ series

■ STANDARD RATINGS

| VDC (SV) | Cap (μF) | Size DxL(mm) | ESR (mΩ, 20°C, 100kHz) (max.) | Rated ripple current (mArms/105°C, 100kHz) | Leakage Current (μA)(max.) | Part Number |
|-----------|----------|--------------|-------------------------------|--|----------------------------|----------------------|
| 6.3 (7.2) | 100 | 5x7 | 30 | 1800 | 500 | SPZ0JM101D07O00RAXXX |
| | 220 | 5x7 | 20 | 3500 | 500 | SPZ0JM221D07O00RAXXX |
| | 270 | 6.3x7 | 20 | 3900 | 500 | SPZ0JM221E07O00RAXXX |
| | | 5x7 | 20 | 3800 | 500 | SPZ0JM271D07O00RAXXX |
| | 330 | 5x8 | 20 | 4000 | 500 | SPZ0JM331D08O00RAXXX |
| | | 6.3x5 | 25 | 3160 | 500 | SPZ0JM331E05O00RAXXX |
| | 390 | 6.3x8 | 15 | 4000 | 500 | SPZ0JM331E08O00RAXXX |
| | | 5x9 | 20 | 4100 | 500 | SPZ0JM391D09O00RAXXX |
| | 470 | 5x10 | 20 | 4300 | 592 | SPZ0JM471D10O00RAXXX |
| | | 5.5x9 | 20 | 4100 | 592 | SPZ0JM471B09O00RAXXX |
| | | 6.3x7 | 20 | 3900 | 592 | SPZ0JM471E07O00RAXXX |
| | 500 | 6.3x8 | 15 | 4400 | 592 | SPZ0JM471E08O00RAXXX |
| | | 5x9 | 20 | 4100 | 630 | SPZ0JM501D09O00RAXXX |
| | | 6.3x7 | 20 | 4200 | 706 | SPZ0JM561E07O00RAXXX |
| | 560 | 6.3x8 | 20 | 4800 | 706 | SPZ0JM561E08O00RAXXX |
| | | 5.5x9 | 20 | 4300 | 706 | SPZ0JM561B09O00RAXXX |
| | 680 | 6.3x9 | 20 | 5080 | 857 | SPZ0JM681E09O00RAXXX |
| | | 5.5x9 | 20 | 4800 | 857 | SPZ0JM681B09O00RAXXX |
| | | 8x9 | 20 | 4600 | 857 | SPZ0JM681F09O00RAXXX |
| | 820 | 5.5x12 | 20 | 5000 | 1033 | SPZ0JM821B12O00RAXXX |
| | | 6.3x9 | 20 | 5080 | 1033 | SPZ0JM821E09O00RAXXX |
| | | 8x9 | 15 | 4700 | 1033 | SPZ0JM821F09O00RAXXX |
| | 1000 | 6.3x10 | 10 | 5150 | 1260 | SPZ0JM102E10O00RAXXX |
| | | 8x9 | 12 | 4800 | 1260 | SPZ0JM102F09O00RAXXX |
| | | 8x11 | 10 | 5200 | 1260 | SPZ0JM102F11O00RAXXX |
| | 1200 | 6.3x11 | 10 | 5200 | 1512 | SPZ0JM122E11O00RAXXX |
| | | 8x11 | 10 | 5300 | 1512 | SPZ0JM122F11O00RAXXX |
| | 1500 | 8x11 | 10 | 5400 | 1890 | SPZ0JM152F11O00RAXXX |
| 1800 | 10x12 | 10 | 5500 | 1890 | SPZ0JM152G12O00RAXXX | |
| | 10x10 | 10 | 5560 | 2268 | SPZ0JM182G10O00RAXXX | |
| 2200 | 8x14 | 10 | 5700 | 2772 | SPZ0JM222F14O00RAXXX | |
| 4700 | 10x12 | 10 | 5800 | 2772 | SPZ0JM222G12O00RAXXX | |
| | 10x14 | 10 | 5900 | 4158 | SPZ0JM332G14O00RAXXX | |
| | 10x17 | 10 | 6100 | 5000 | SPZ0JM472G17O00RAXXX | |
| | 10x18 | 10 | 6300 | 5000 | SPZ0JM562G18O00RAXXX | |
| 6.8 (7.8) | 220 | 5x7 | 20 | 3300 | 500 | SPZ0CM221D07O00RAXXX |
| | 270 | 5x7 | 20 | 3600 | 500 | SPZ0CM271D07O00RAXXX |
| | | 6.3x8 | 20 | 3900 | 500 | SPZ0CM271E08O00RAXXX |
| | 330 | 5x8 | 20 | 3800 | 500 | SPZ0CM331D08O00RAXXX |
| | | 6.3x5 | 25 | 3100 | 500 | SPZ0CM331E05O00RAXXX |
| | 390 | 6.3x7 | 20 | 3400 | 500 | SPZ0CM331E07O00RAXXX |
| | | 5x9 | 20 | 3900 | 530 | SPZ0CM391D09O00RAXXX |
| | 470 | 5x9 | 20 | 4100 | 639 | SPZ0CM471D09O00RAXXX |
| | | 6.3x7 | 20 | 3700 | 639 | SPZ0CM471E07O00RAXXX |
| | 560 | 6.3x8 | 20 | 4500 | 762 | SPZ0CM561E08O00RAXXX |
| | 680 | 6.3x9 | 20 | 4800 | 925 | SPZ0CM681E09O00RAXXX |
| | 820 | 6.3x9 | 20 | 4900 | 1115 | SPZ0CM821E09O00RAXXX |
| 6.3x11 | | 12 | 5100 | 1360 | SPZ0CM102E11O00RAXXX | |
| 1000 | 8x11 | 10 | 5150 | 1360 | SPZ0CM102F11O00RAXXX | |
| 7 (8.1) | 150 | 5x6 | 30 | 1500 | 500 | SPZ0QM151D06O00RAXXX |
| | 220 | 5x7 | 20 | 3200 | 500 | SPZ0QM221D07O00RAXXX |
| | 270 | 5x8 | 20 | 3400 | 500 | SPZ0QM271D08O00RAXXX |
| | 330 | 5x9 | 20 | 3600 | 500 | SPZ0QM331D09O00RAXXX |
| | | 6.3x8 | 20 | 3800 | 658 | SPZ0QM471E08O00RAXXX |
| | 470 | 5.5x9 | 20 | 3600 | 658 | SPZ0QM471B09O00RAXXX |
| | | 6.3x8 | 20 | 4000 | 784 | SPZ0QM561E08O00RAXXX |
| | 680 | 6.3x9 | 12 | 4200 | 952 | SPZ0QM681E09O00RAXXX |
| 820 | 6.3x10 | 12 | 4500 | 1148 | SPZ0QM821E10O00RAXXX | |
| | 8x9 | 12 | 4600 | 1148 | SPZ0QM821F09O00RAXXX | |
| 7.5 (8.6) | 220 | 5x7 | 20 | 3100 | 500 | SPZ0AM221D07O00RAXXX |
| | 270 | 5x8 | 20 | 3300 | 500 | SPZ0AM271D08O00RAXXX |
| | 330 | 5x8 | 20 | 3500 | 500 | SPZ0AM331D08O00RAXXX |
| | 390 | 5x9 | 20 | 3500 | 585 | SPZ0AM391D09O00RAXXX |
| | | 6.3x7 | 25 | 3200 | 705 | SPZ0AM471E07O00RAXXX |
| | 470 | 5.5x9 | 20 | 3550 | 705 | SPZ0AM471B09O00RAXXX |
| | | 5x9 | 20 | 3550 | 705 | SPZ0AM471D09O00RAXXX |
| | | 5.5x8 | 25 | 3100 | 705 | SPZ0AM471B08O00RAXXX |
| | 500 | 5.5x9 | 20 | 3600 | 750 | SPZ0AM501B09O00RAXXX |
| | 560 | 6.3x8 | 20 | 3900 | 840 | SPZ0AM561E08O00RAXXX |
| | 680 | 6.3x9 | 12 | 4100 | 1020 | SPZ0AM681E09O00RAXXX |
| | 820 | 6.3x10 | 12 | 4400 | 1230 | SPZ0AM821E10O00RAXXX |
| | | 8x9 | 12 | 4550 | 1230 | SPZ0AM821F09O00RAXXX |
| | 1000 | 8x11 | 12 | 4700 | 1500 | SPZ0AM102F11O00RAXXX |
| | | 6.3x11 | 12 | 4500 | 1500 | SPZ0AM102E11O00RAXXX |
| | | 8x11 | 12 | 4800 | 1800 | SPZ0AM122F11O00RAXXX |
| | | 8x11 | 12 | 4900 | 2250 | SPZ0AM152F11O00RAXXX |
| | | 1500 | 6.8x13 | 12 | 4800 | 2250 |
| 1800 | | 8x14 | 12 | 5100 | 2700 | SPZ0AM182F14O00RAXXX |
| 2200 | 10x12 | 12 | 5700 | 3300 | SPZ0AM222G12O00RAXXX | |
| 10 (11.5) | 47 | 5x7 | 35 | 2200 | 500 | SPZ1AM470D07O00RAXXX |
| | 56 | 5x7 | 35 | 2250 | 500 | SPZ1AM560D07O00RAXXX |
| | 68 | 5x7 | 35 | 2300 | 500 | SPZ1AM680D07O00RAXXX |
| | 82 | 5x7 | 35 | 2350 | 500 | SPZ1AM820D07O00RAXXX |
| | 100 | 5x7 | 35 | 2400 | 500 | SPZ1AM101D07O00RAXXX |
| | 120 | 6.3x5 | 30 | 2300 | 500 | SPZ1AM101E05O00RAXXX |
| | 5x7 | 20 | 2450 | 500 | SPZ1AM121D07O00RAXXX | |

Conductive Polymer Radial Type

PZ series

■ STANDARD RATINGS

| VDC (SV) | Cap (µF) | Size DxL(mm) | ESR (mΩ, 20°C, 100kHz) (max.) | Rated ripple current (mArms/105°C, 100kHz) | Leakage Current (µA)(max.) | Part Number | |
|--------------|--------------|--------------|-------------------------------|--|----------------------------|----------------------|----------------------|
| 10 (11.5) | 150 | 5x7 | 20 | 2500 | 500 | SPZ1AM151D07000RAXXX | |
| | 180 | 6.3x7 | 20 | 2800 | 500 | SPZ1AM181E07000RAXXX | |
| | | 5x8 | 20 | 2700 | 500 | SPZ1AM181D08000RAXXX | |
| | 220 | 5x9 | 20 | 2820 | 500 | SPZ1AM221D09000RAXXX | |
| | | 6.3x5 | 25 | 2800 | 500 | SPZ1AM221E05000RAXXX | |
| | 270 | 6.3x8 | 15 | 3160 | 500 | SPZ1AM221E08000RAXXX | |
| | | 6.3x8 | 20 | 3100 | 540 | SPZ1AM271E08000RAXXX | |
| | 330 | 6.3x8 | 20 | 3300 | 660 | SPZ1AM331E08000RAXXX | |
| | | 8x9 | 15 | 3400 | 660 | SPZ1AM331F09000RAXXX | |
| | 390 | 6.3x10 | 12 | 3500 | 660 | SPZ1AM331E10000RAXXX | |
| | | 6.3x8 | 20 | 3400 | 780 | SPZ1AM391E08000RAXXX | |
| | 470 | 5.5x9 | 20 | 3400 | 940 | SPZ1AM471B09000RAXXX | |
| | | 6.3x8 | 20 | 3500 | 940 | SPZ1AM471E08000RAXXX | |
| | 560 | 8x9 | 15 | 3550 | 940 | SPZ1AM471F09000RAXXX | |
| | | 8x11 | 12 | 5650 | 940 | SPZ1AM471F11000RAXXX | |
| | 680 | 6.3x10 | 13 | 3600 | 1120 | SPZ1AM561E10000RAXXX | |
| | | 8x9 | 15 | 3600 | 1120 | SPZ1AM561F09000RAXXX | |
| | 820 | 8x11 | 12 | 3900 | 1360 | SPZ1AM681F11000RAXXX | |
| | | 8x8 | 20 | 3300 | 1360 | SPZ1AM681F08000RAXXX | |
| | 1000 | 8x11 | 12 | 4000 | 1640 | SPZ1AM821F11000RAXXX | |
| | | 10x12 | 10 | 4200 | 2000 | SPZ1AM102F11000RAXXX | |
| 1200 | 8x12 | 10 | 5300 | 2000 | SPZ1AM102G12000RAXXX | | |
| | 10x12 | 10 | 4500 | 2400 | SPZ1AM122F12000RAXXX | | |
| 1500 | 10x12 | 10 | 5450 | 2400 | SPZ1AM122G12000RAXXX | | |
| | 8x14 | 10 | 5500 | 3000 | SPZ1AM152G12000RAXXX | | |
| 1800 | 10x13 | 10 | 4800 | 3000 | SPZ1AM152F14000RAXXX | | |
| | 10x15 | 10 | 5800 | 3600 | SPZ1AM182G13000RAXXX | | |
| 2200 | 10x15 | 10 | 6100 | 4400 | SPZ1AM222G15000RAXXX | | |
| | 10x18 | 10 | 6200 | 5000 | SPZ1AM332G18000RAXXX | | |
| 12 (13.8) | 330 | 5.5x9 | 20 | 3100 | 792 | SPZ1TM331B09000RAXXX | |
| | | 6.3x8 | 20 | 3100 | 792 | SPZ1TM331E08000RAXXX | |
| | 470 | 5.5x9 | 20 | 3200 | 1128 | SPZ1TM471B09000RAXXX | |
| | | 6.3x9 | 20 | 3450 | 1128 | SPZ1TM471E09000RAXXX | |
| | 560 | 6.3x10 | 15 | 3400 | 1344 | SPZ1TM561E10000RAXXX | |
| | | 6.3x11 | 15 | 3600 | 1632 | SPZ1TM681E11000RAXXX | |
| | 680 | 8x10 | 15 | 3700 | 1632 | SPZ1TM681F10000RAXXX | |
| | | 8x11 | 12 | 3800 | 1968 | SPZ1TM821F11000RAXXX | |
| | 1000 | 8x12 | 12 | 4000 | 2400 | SPZ1TM102F12000RAXXX | |
| | | 8x14 | 12 | 4400 | 2880 | SPZ1TM122F14000RAXXX | |
| | 1500 | 8x16 | 12 | 4800 | 3600 | SPZ1TM152F16000RAXXX | |
| 16 (18.4) | 22 | 5x9 | 80 | 1600 | 500 | SPZ1CM220D09000RAXXX | |
| | 47 | 5x7 | 20 | 2050 | 500 | SPZ1CM470D07000RAXXX | |
| | | 5x7 | 20 | 2100 | 500 | SPZ1CM560D07000RAXXX | |
| | 68 | 5x7 | 20 | 2150 | 500 | SPZ1CM680D07000RAXXX | |
| | | 5x8 | 20 | 2200 | 500 | SPZ1CM820D08000RAXXX | |
| | 82 | 5x7 | 20 | 2250 | 500 | SPZ1CM101D07000RAXXX | |
| | | 6.3x5 | 25 | 2100 | 500 | SPZ1CM101E05000RAXXX | |
| | 100 | 6.3x8 | 20 | 2800 | 500 | SPZ1CM101E08000RAXXX | |
| | | 5x8 | 20 | 2350 | 500 | SPZ1CM121D08000RAXXX | |
| | 120 | 5x8 | 20 | 2400 | 500 | SPZ1CM151D08000RAXXX | |
| | | 5x8 | 20 | 2450 | 576 | SPZ1CM181D08000RAXXX | |
| | 150 | 6.3x7 | 16 | 2500 | 576 | SPZ1CM181E07000RAXXX | |
| | | 5x10 | 20 | 2600 | 704 | SPZ1CM221D10000RAXXX | |
| | 220 | 6.3x8 | 20 | 2700 | 704 | SPZ1CM221E08000RAXXX | |
| | | 6.3x10 | 15 | 2900 | 704 | SPZ1CM221E10000RAXXX | |
| | 270 | 5.5x9 | 20 | 2750 | 864 | SPZ1CM271B09000RAXXX | |
| | | 6.3x8 | 20 | 2800 | 864 | SPZ1CM271E08000RAXXX | |
| | 330 | 8x9 | 20 | 2900 | 864 | SPZ1CM271F09000RAXXX | |
| | | 5.5x9 | 20 | 2900 | 1056 | SPZ1CM331B09000RAXXX | |
| | 390 | 6.3x9 | 20 | 2900 | 1056 | SPZ1CM331E09000RAXXX | |
| | | 6.3x10 | 15 | 3100 | 1056 | SPZ1CM331E10000RAXXX | |
| | 470 | 5.5x11 | 20 | 3100 | 1504 | SPZ1CM471B11000RAXXX | |
| | | 6.3x11 | 15 | 3200 | 1504 | SPZ1CM471E11000RAXXX | |
| | 560 | 8x11 | 11 | 4600 | 1504 | SPZ1CM471F11000RAXXX | |
| | | 8x9 | 13 | 4100 | 1504 | SPZ1CM471F09000RAXXX | |
| | 680 | 8x11 | 11 | 3200 | 1792 | SPZ1CM561F11000RAXXX | |
| | | 8x13 | 15 | 3300 | 1792 | SPZ1CM561F13000RAXXX | |
| | 820 | 10x12 | 11 | 3500 | 1792 | SPZ1CM561G12000RAXXX | |
| | | 8x11 | 15 | 3400 | 2176 | SPZ1CM681F11000RAXXX | |
| | 1000 | 10x12 | 11 | 3600 | 2176 | SPZ1CM681G12000RAXXX | |
| | | 8x13 | 11 | 3500 | 2624 | SPZ1CM821F13000RAXXX | |
| | 1200 | 10x12 | 11 | 3800 | 2624 | SPZ1CM821G12000RAXXX | |
| | | 10x12 | 11 | 4000 | 3200 | SPZ1CM102G12000RAXXX | |
| | 1500 | 8x14 | 11 | 3600 | 3200 | SPZ1CM102F14000RAXXX | |
| | | 10x15 | 12 | 4300 | 3840 | SPZ1CM122G15000RAXXX | |
| | 1800 | 10x12 | 12 | 4200 | 3840 | SPZ1CM122G12000RAXXX | |
| | | 10x12 | 12 | 4800 | 4800 | SPZ1CM152G12000RAXXX | |
| | 2200 | 10x18 | 12 | 5500 | 4800 | SPZ1CM152G18000RAXXX | |
| | | 10x14 | 12 | 5400 | 5000 | SPZ1CM182G14000RAXXX | |
| | 270 | 10x17 | 12 | 5800 | 5000 | SPZ1CM222G17000RAXXX | |
| | | 10x15 | 12 | 5500 | 5000 | SPZ1CM222G15000RAXXX | |
| | 20 (23.0) | 120 | 6.3x8 | 30 | 2300 | 500 | SPZ1DM121E08000RAXXX |
| | | 150 | 6.3x10 | 20 | 2350 | 600 | SPZ1DM151E10000RAXXX |
| 8x11 | | | 20 | 2550 | 880 | SPZ1DM221F11000RAXXX | |
| 220 | | 8x11 | 20 | 2700 | 1080 | SPZ1DM271F11000RAXXX | |
| | | 8x11 | 20 | 2800 | 1320 | SPZ1DM331F11000RAXXX | |
| 330 | | 6.3x10 | 20 | 2100 | 1320 | SPZ1DM331E10000RAXXX | |
| | | 10x12 | 20 | 2900 | 1880 | SPZ1DM471G12000RAXXX | |
| 470 | 8x16 | 20 | 3000 | 1880 | SPZ1DM471F16000RAXXX | | |
| | 8x11 | 20 | 2400 | 1880 | SPZ1DM471F11000RAXXX | | |

PZ series

■ STANDARD RATINGS

Conductive Polymer
Radial Type

| VDC (SV) | Cap (μF) | Size DxL(mm) | ESR (m, 20°C, 100kHz) (max.) | Rated ripple current (mArms/105°C, 100kHz) | Leakage Current (μA)(max.) | Part Number |
|-----------|----------|--------------|------------------------------|--|----------------------------|----------------------|
| 20 (23.0) | 560 | 10x12 | 20 | 3100 | 2240 | SPZ1DM561G12O00RAXXX |
| | | 8x16 | 20 | 3200 | 2240 | SPZ1DM561F16O00RAXXX |
| | 680 | 10x15 | 20 | 3300 | 2720 | SPZ1DM681G15O00RAXXX |
| | | 8x14 | 20 | 2700 | 2720 | SPZ1DM681F14O00RAXXX |
| | 820 | 10x18 | 20 | 3400 | 3280 | SPZ1DM821G18O00RAXXX |
| | 1000 | 10x18 | 20 | 3900 | 4000 | SPZ1DM102G18O00RAXXX |
| 25 (28.8) | 6.8 | 6.3x5 | 100 | 1100 | 500 | SPZ1EM6R8E05O00RAXXX |
| | 10 | 5x8 | 70 | 1800 | 500 | SPZ1EM100D08O00RAXXX |
| | 22 | 5x9 | 60 | 1810 | 500 | SPZ1EM220D09O00RAXXX |
| | 33 | 5x9 | 50 | 1850 | 500 | SPZ1EM330D09O00RAXXX |
| | 39 | 5x8 | 60 | 1900 | 500 | SPZ1EM390D08O00RAXXX |
| | 47 | 5x9 | 60 | 1950 | 500 | SPZ1EM470D09O00RAXXX |
| | 56 | 5x9 | 60 | 2050 | 500 | SPZ1EM560D09O00RAXXX |
| | 68 | 6.3x7 | 30 | 2100 | 500 | SPZ1EM680E07O00RAXXX |
| | 82 | 6.3x7 | 30 | 2150 | 500 | SPZ1EM820E07O00RAXXX |
| | | 6.3x8 | 30 | 2500 | 500 | SPZ1EM101E08O00RAXXX |
| | 100 | 6.3x10 | 20 | 2800 | 500 | SPZ1EM101E10O00RAXXX |
| | | 8x11 | 20 | 3000 | 500 | SPZ1EM101F11O00RAXXX |
| | 120 | 6.3x8 | 30 | 2500 | 600 | SPZ1EM121E08O00RAXXX |
| | 150 | 6.3x10 | 20 | 2800 | 750 | SPZ1EM151E10O00RAXXX |
| | 180 | 6.3x10 | 20 | 2800 | 900 | SPZ1EM181E10O00RAXXX |
| | | 8x9 | 30 | 2500 | 900 | SPZ1EM181F09O00RAXXX |
| | | 8x11 | 20 | 3000 | 1100 | SPZ1EM221F11O00RAXXX |
| | 220 | 10x12 | 20 | 3500 | 1100 | SPZ1EM221G12O00RAXXX |
| | | 5.5x11 | 20 | 1900 | 1100 | SPZ1EM221B11O00RAXXX |
| | 270 | 8x11 | 20 | 3000 | 1350 | SPZ1EM271F11O00RAXXX |
| | | 8x11 | 20 | 3100 | 1650 | SPZ1EM331F11O00RAXXX |
| | 330 | 10x12 | 20 | 3800 | 1650 | SPZ1EM331G12O00RAXXX |
| | | 10x10 | 25 | 2800 | 1650 | SPZ1EM331G10O00RAXXX |
| | | 10x12 | 20 | 4000 | 2350 | SPZ1EM471G12O00RAXXX |
| | 470 | 8x16 | 20 | 3400 | 2350 | SPZ1EM471F16O00RAXXX |
| | | 8x11 | 20 | 3000 | 2350 | SPZ1EM471F11O00RAXXX |
| | | 10x10 | 25 | 2800 | 2350 | SPZ1EM471G10O00RAXXX |
| | | 10x12 | 20 | 4000 | 2800 | SPZ1EM561G12O00RAXXX |
| 560 | 8x12 | 20 | 3100 | 2800 | SPZ1EM561F12O00RAXXX | |
| | 10x15 | 20 | 4300 | 3400 | SPZ1EM681G15O00RAXXX | |
| 680 | 10x12 | 20 | 4100 | 3400 | SPZ1EM681G12O00RAXXX | |
| | 8x14 | 20 | 3400 | 3400 | SPZ1EM681F14O00RAXXX | |
| | 10x18 | 20 | 4500 | 4100 | SPZ1EM821G18O00RAXXX | |
| 820 | 10x12 | 20 | 4100 | 4100 | SPZ1EM821G12O00RAXXX | |
| | 8x16 | 20 | 3600 | 4100 | SPZ1EM821F16O00RAXXX | |
| 1000 | 10x18 | 20 | 4500 | 5000 | SPZ1EM102G18O00RAXXX | |
| 35 (40.3) | 4.7 | 5x8 | 60 | 1700 | 500 | SPZ1VM4R7D08O00RAXXX |
| | 10 | 5x8 | 60 | 1800 | 500 | SPZ1VM100D08O00RAXXX |
| | 15 | 5x8 | 60 | 1850 | 500 | SPZ1VM150D08O00RAXXX |
| | 22 | 5x9 | 100 | 1950 | 500 | SPZ1VM220D09O00RAXXX |
| | 33 | 5x9 | 50 | 2000 | 500 | SPZ1VM330D09O00RAXXX |
| | 39 | 5x9 | 50 | 2050 | 500 | SPZ1VM390D09O00RAXXX |
| | 47 | 6.3x7 | 50 | 2100 | 500 | SPZ1VM470E07O00RAXXX |
| | 56 | 6.3x7 | 50 | 2150 | 500 | SPZ1VM560E07O00RAXXX |
| | 68 | 6.3x7 | 50 | 2200 | 500 | SPZ1VM680E07O00RAXXX |
| | 82 | 6.3x7 | 50 | 2250 | 574 | SPZ1VM820E07O00RAXXX |
| | | 6.3x8 | 50 | 2350 | 700 | SPZ1VM101E08O00RAXXX |
| | 100 | 6.3x10 | 40 | 2400 | 700 | SPZ1VM101E10O00RAXXX |
| | | 8x11 | 40 | 2600 | 700 | SPZ1VM101F11O00RAXXX |
| | 120 | 6.3x10 | 40 | 2500 | 840 | SPZ1VM121E10O00RAXXX |
| | 150 | 6.3x10 | 40 | 2550 | 1050 | SPZ1VM151E10O00RAXXX |
| | 180 | 6.3x11 | 40 | 2600 | 1260 | SPZ1VM181E11O00RAXXX |
| | | 8x11 | 40 | 2800 | 1540 | SPZ1VM221F11O00RAXXX |
| | 220 | 10x12 | 30 | 2900 | 1540 | SPZ1VM221G12O00RAXXX |
| | | 6.3x11 | 40 | 2600 | 1540 | SPZ1VM221E11O00RAXXX |
| | 270 | 10x12 | 30 | 3000 | 1890 | SPZ1VM271G12O00RAXXX |
| | 330 | 10x12 | 30 | 3100 | 2310 | SPZ1VM331G12O00RAXXX |
| 470 | 10x13 | 20 | 3200 | 3290 | SPZ1VM471G13O00RAXXX | |
| 560 | 10x14 | 20 | 3300 | 3920 | SPZ1VM561G14O00RAXXX | |
| 680 | 10x16 | 20 | 3400 | 4760 | SPZ1VM681G16O00RAXXX | |
| 820 | 10x18 | 20 | 3500 | 5000 | SPZ1VM821G18O00RAXXX | |
| 1000 | 10x18 | 20 | 3700 | 5000 | SPZ1VM102G18O00RAXXX | |
| 50 (57.5) | 4.7 | 5x8 | 60 | 1600 | 500 | SPZ1HM4R7D08O00RAXXX |
| | 10 | 6.3x7 | 35 | 1850 | 500 | SPZ1HM100E07O00RAXXX |
| | | 5x8 | 70 | 1630 | 500 | SPZ1HM100D08O00RAXXX |
| | 15 | 5x8 | 70 | 1660 | 500 | SPZ1HM150D08O00RAXXX |
| | 22 | 6.3x7 | 40 | 1900 | 500 | SPZ1HM220E07O00RAXXX |
| | 33 | 6.3x7 | 40 | 2000 | 500 | SPZ1HM330E07O00RAXXX |
| | 47 | 6.3x8 | 35 | 2100 | 500 | SPZ1HM470E08O00RAXXX |
| | 56 | 6.3x8 | 35 | 2120 | 560 | SPZ1HM560E08O00RAXXX |
| | 68 | 6.3x10 | 30 | 2150 | 680 | SPZ1HM680E10O00RAXXX |
| | 100 | 8x11 | 30 | 2300 | 1000 | SPZ1HM101F11O00RAXXX |
| | | 8x9 | 40 | 2100 | 1000 | SPZ1HM101F09O00RAXXX |
| | 120 | 8x11 | 30 | 2400 | 1200 | SPZ1HM121F11O00RAXXX |
| | 150 | 10x12 | 30 | 2500 | 1500 | SPZ1HM151G12O00RAXXX |
| | 180 | 10x12 | 30 | 2600 | 1800 | SPZ1HM181G12O00RAXXX |
| | 220 | 10x12 | 30 | 2700 | 2200 | SPZ1HM221G12O00RAXXX |
| | 270 | 10x13 | 20 | 2900 | 2700 | SPZ1HM271G13O00RAXXX |
| | 330 | 10x15 | 20 | 3000 | 3300 | SPZ1HM331G15O00RAXXX |
| 440 | 10x18 | 20 | 3100 | 4400 | SPZ1HM441G18O00RAXXX | |
| 470 | 10x18 | 20 | 3150 | 4700 | SPZ1HM471G18O00RAXXX | |
| 63(72.5) | 4.7 | 6.3x8 | 60 | 1600 | 500 | SPZ1JM4R7E08O00RAXXX |

PZ series

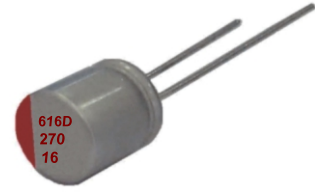
■ STANDARD RATINGS

| VDC (SV) | Cap (μF) | Size DxL(mm) | ESR (mΩ, 20°C, 100kHz) (max.) | Rated ripple current (mA rms/105°C, 100kHz) | Leakage Current (μA)(max.) | Part Number |
|-------------|-----------|--------------|-------------------------------|---|----------------------------|----------------------|
| 63 (72.5) | 6.8 | 6.3x8 | 60 | 1650 | 500 | SPZ1JM6R8E08O00RAXXX |
| | 10 | 6.3x5 | 60 | 1600 | 500 | SPZ1JM100E05O00RAXXX |
| | 33 | 6.3x8 | 30 | 1700 | 500 | SPZ1JM330E08O00RAXXX |
| | 39 | 6.3x8 | 30 | 1750 | 500 | SPZ1JM390E08O00RAXXX |
| | 47 | 6.3x9 | 30 | 1900 | 592 | SPZ1JM470E09O00RAXXX |
| | 56 | 8x9 | 30 | 1800 | 706 | SPZ1JM560F09O00RAXXX |
| | 68 | 8x11 | 30 | 2000 | 857 | SPZ1JM680F11O00RAXXX |
| | 82 | 8x11 | 30 | 2100 | 1033 | SPZ1JM820F11O00RAXXX |
| | 100 | 10x12 | 30 | 2200 | 1260 | SPZ1JM101G12O00RAXXX |
| | 150 | 10x12 | 30 | 2500 | 1890 | SPZ1JM151G12O00RAXXX |
| | 180 | 10x13 | 20 | 2600 | 2268 | SPZ1JM181G13O00RAXXX |
| | 220 | 10x15 | 20 | 2650 | 2772 | SPZ1JM221G15O00RAXXX |
| | 270 | 10x17 | 20 | 2850 | 3402 | SPZ1JM271G17O00RAXXX |
| | 330 | 10x18 | 20 | 2950 | 4158 | SPZ1JM331G18O00RAXXX |
| | 80 (92.0) | 4.7 | 6.3x8 | 60 | 1500 | 500 |
| 6.8 | | 6.3x8 | 60 | 1550 | 500 | SPZ1BM6R8E08O00RAXXX |
| 22 | | 6.3x10 | 60 | 1650 | 500 | SPZ1BM220E10O00RAXXX |
| 33 | | 8x11 | 35 | 1700 | 528 | SPZ1BM330F11O00RAXXX |
| 47 | | 10x12 | 35 | 1850 | 752 | SPZ1BM470G12O00RAXXX |
| 68 | | 10x12 | 35 | 1900 | 1088 | SPZ1BM680G12O00RAXXX |
| 100 | | 10x14 | 35 | 2100 | 1600 | SPZ1BM101G14O00RAXXX |
| 100 (115.0) | 4.7 | 6.3x8 | 120 | 1400 | 500 | SPZ1KM4R7E08O00RAXXX |
| | 6.8 | 6.3x8 | 120 | 1450 | 500 | SPZ1KM6R8E08O00RAXXX |
| | 10 | 6.3x10 | 50 | 1500 | 500 | SPZ1KM100E10O00RAXXX |
| | 15 | 8x11 | 50 | 1550 | 500 | SPZ1KM100F11O00RAXXX |
| | 22 | 8x11 | 35 | 1550 | 500 | SPZ1KM150F11O00RAXXX |
| | 33 | 10x12 | 35 | 1600 | 500 | SPZ1KM220G12O00RAXXX |
| | 47 | 10x14 | 35 | 1650 | 660 | SPZ1KM330G14O00RAXXX |
| | 68 | 10x16 | 35 | 1800 | 940 | SPZ1KM470G16O00RAXXX |

Specifications subject to change without notice.

PD series

- Endurance: +105°C 2,000 hours
- Low ESR, Small Size
- Recommended Applications: High order main board, Industrial computer
- RoHS Compliant and lead-free

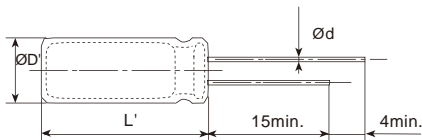


SPECIFICATIONS

| Items | Characteristics | | | | | | | |
|--|--|-------------------------------------|-----|-----|------|----|----|----|
| Category Temperature Range | -55~+105°C | | | | | | | |
| Rated Working Voltage Range | 6.3~35 V _{dc} | | | | | | | |
| Nominal Capacitance Range | 47~4700μF | | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C,120Hz) | | | | | | | |
| DC Leakage Current | I 0.2CV or 500μA, whichever is greater. Where, I:Max.leakage current (μA),C:Nominal capacitance (μF),V: Rated voltage (V) (at 20°C after 2 minutes) | | | | | | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 6.3 | 6.8 | 7.5 | 10 | 16 | 20 | 35 |
| | tan δ (max.) | 0.08 | | | 0.12 | | | |
| ESR(100kHz,20°C) | Value in characteristics table | | | | | | | |
| Temperature Characteristic (Impedance Ratio at 100kHz) | Z(+105°C)/Z(+20°C) 1.25 Z(-55°C)/Z(+20°C) 1.25 | | | | | | | |
| Endurance | After applying rated voltage for 2,000 hours at 105°C, the capacitors shall meet the following requirements. | | | | | | | |
| | Appearance | No significant damage | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | |
| | D.F. (tan δ) | 150% of the initial specified value | | | | | | |
| | ESR | 150% of the initial specified value | | | | | | |
| | Leakage Current | The initial specified value | | | | | | |
| Humidity Test | After subjecting to 90%~95% RH for 2,000 hours at 60°C without voltage applied, the capacitors shall meet the specified values for the endurance characteristics listed above. | | | | | | | |
| Surge Test | After subjecting to 1,000 cycles each consisting of charge with the surge voltage specified at normal temperature for 30 seconds through a protective resistor and discharge for 5 minutes 30 seconds, the capacitors shall meet the following requirements. | | | | | | | |
| | Appearance | No significant damage | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | |
| | D.F. (tan δ) | 150% of the initial specified value | | | | | | |
| | ESR | 150% of the initial specified value | | | | | | |
| | Leakage Current | The initial specified value | | | | | | |

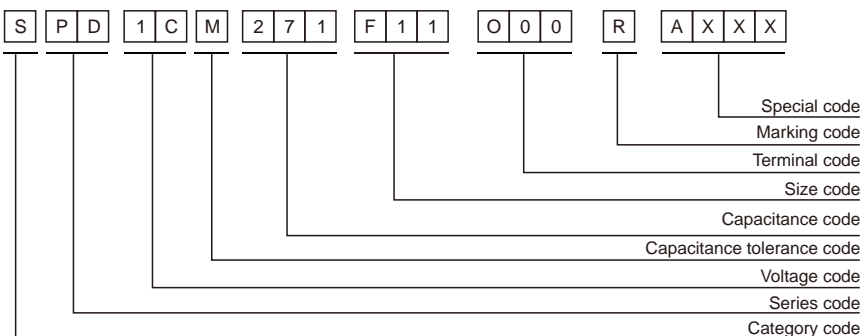
Conductive Polymer Radial Type

DIMENSIONS[mm]



| | | | | | |
|-----|-------------|-----|-----|----------|-----|
| øD | 5 | 5.5 | 6.3 | 8 | 10 |
| ød | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 |
| F | 2.0 | 2.5 | 2.5 | 3.5 | 5.0 |
| øD' | øD-0.1~+0.5 | | | | |
| L' | L+1.0max. | | | L-0.5~+1 | |

PART NUMBERING SYSTEM



PD series

■ STANDARD RATINGS

| VDC (SV) | Cap (μF) | Size DxL(mm) | ESR (mΩ, 20°C, 100kHz) (max.) | Rated ripple current (mA rms/105°C, 100kHz) | Leakage Current (μA)(max.) | Part Number |
|-----------|----------|--------------|-------------------------------|---|----------------------------|----------------------|
| 6.3 (7.2) | 220 | 5x7 | 18 | 3600 | 500 | SPD0JM221D07000RAXXX |
| | 270 | 5x7 | 18 | 3900 | 500 | SPD0JM271D07000RAXXX |
| | 330 | 5x8 | 18 | 4200 | 500 | SPD0JM331D08000RAXXX |
| | 390 | 5x9 | 18 | 4300 | 500 | SPD0JM391D09000RAXXX |
| | 470 | 5x10 | 18 | 4500 | 592 | SPD0JM471D10000RAXXX |
| | | 5.5x9 | 18 | 4300 | 592 | SPD0JM471B09000RAXXX |
| | | 6.3x7 | 18 | 4000 | 592 | SPD0JM471E07000RAXXX |
| | 500 | 5x9 | 18 | 4300 | 630 | SPD0JM501D09000RAXXX |
| | | 6.3x7 | 18 | 4400 | 706 | SPD0JM561E07000RAXXX |
| | 560 | 5.5x9 | 18 | 4500 | 706 | SPD0JM561B09000RAXXX |
| | | 6.3x9 | 18 | 5300 | 857 | SPD0JM681E09000RAXXX |
| | 680 | 5.5x9 | 18 | 5000 | 857 | SPD0JM681B09000RAXXX |
| | | 5.5x11 | 18 | 5000 | 1033 | SPD0JM821B11000RAXXX |
| | 820 | 6.3x9 | 18 | 5300 | 1033 | SPD0JM821E09000RAXXX |
| | | 6.3x10 | 9 | 5400 | 1260 | SPD0JM102E10000RAXXX |
| | 1000 | 8x9 | 10 | 5000 | 1260 | SPD0JM102F09000RAXXX |
| | 1500 | 8x11 | 9 | 5600 | 1890 | SPD0JM152F11000RAXXX |
| | 1800 | 10x10 | 9 | 5800 | 2268 | SPD0JM182G10000RAXXX |
| 2200 | 8x14 | 9 | 5900 | 2772 | SPD0JM222F14000RAXXX | |
| | 10x12 | 9 | 6000 | 2772 | SPD0JM222G12000RAXXX | |
| 3300 | 10x14 | 9 | 6100 | 4158 | SPD0JM332G14000RAXXX | |
| 6.8 (7.8) | 47 | 6.3x5 | 40 | 1100 | 500 | SPD0CM470E05000RAXXX |
| | 82 | 6.3x5 | 40 | 1100 | 500 | SPD0CM820E05000RAXXX |
| | | 4x7 | 30 | 1500 | 500 | SPD0CM101C07000RAXXX |
| | 100 | 5x7 | 30 | 1800 | 500 | SPD0CM101D07000RAXXX |
| | | 6.3x6 | 40 | 1900 | 500 | SPD0CM101E06000RAXXX |
| | 150 | 4x7 | 30 | 2100 | 500 | SPD0CM151C07000RAXXX |
| | | 5x7 | 30 | 2600 | 500 | SPD0CM151D07000RAXXX |
| | 220 | 5x7 | 20 | 3500 | 500 | SPD0CM221D07000RAXXX |
| | | 6.3x7 | 20 | 3550 | 500 | SPD0CM221E07000RAXXX |
| | | 6.3x8 | 15 | 3600 | 500 | SPD0CM221E08000RAXXX |
| | 270 | 5x7 | 20 | 3800 | 500 | SPD0CM271D07000RAXXX |
| | | 5x6 | 20 | 3200 | 500 | SPD0CM271D06000RAXXX |
| | 330 | 5x8 | 20 | 4000 | 500 | SPD0CM331D08000RAXXX |
| | | 6.3x5 | 25 | 3160 | 500 | SPD0CM331E05000RAXXX |
| | | 6.3x8 | 15 | 4000 | 500 | SPD0CM331E08000RAXXX |
| | 390 | 5x9 | 20 | 4100 | 530 | SPD0CM391D09000RAXXX |
| | | 5x10 | 20 | 4300 | 639 | SPD0CM471D10000RAXXX |
| | 470 | 5.5x9 | 20 | 4100 | 639 | SPD0CM471B09000RAXXX |
| | | 6.3x7 | 20 | 3900 | 639 | SPD0CM471E07000RAXXX |
| | | 6.3x8 | 15 | 4400 | 639 | SPD0CM471E08000RAXXX |
| | 500 | 5x9 | 20 | 4100 | 680 | SPD0CM501D09000RAXXX |
| | | 6.3x7 | 20 | 4200 | 762 | SPD0CM561E07000RAXXX |
| | 560 | 6.3x8 | 20 | 4800 | 762 | SPD0CM561E08000RAXXX |
| | | 5.5x9 | 20 | 4300 | 762 | SPD0CM561B09000RAXXX |
| | 680 | 6.3x9 | 20 | 5080 | 925 | SPD0CM681E09000RAXXX |
| | | 5.5x9 | 20 | 4800 | 925 | SPD0CM681B09000RAXXX |
| | | 8x9 | 20 | 4600 | 925 | SPD0CM681F09000RAXXX |
| | 820 | 5.5x10 | 20 | 4800 | 1115 | SPD0CM821B10000RAXXX |
| | | 6.3x9 | 20 | 5080 | 1115 | SPD0CM821E09000RAXXX |
| | | 8x9 | 15 | 4700 | 1115 | SPD0CM821F09000RAXXX |
| | 1000 | 6.3x10 | 10 | 5150 | 1360 | SPD0CM102E10000RAXXX |
| | | 8x9 | 12 | 4800 | 1360 | SPD0CM102F09000RAXXX |
| | | 8x11 | 10 | 5200 | 1360 | SPD0CM102F11000RAXXX |
| | | 6.3x11 | 10 | 5200 | 1632 | SPD0CM122E11000RAXXX |
| | 1200 | 8x11 | 10 | 5300 | 1632 | SPD0CM122F11000RAXXX |
| | | 8x11 | 10 | 5400 | 2040 | SPD0CM152F11000RAXXX |
| | 1500 | 10x12 | 10 | 5500 | 2040 | SPD0CM152G12000RAXXX |
| | | 10x10 | 10 | 5560 | 2448 | SPD0CM182G10000RAXXX |
| | 2200 | 8x14 | 10 | 5700 | 2992 | SPD0CM222F14000RAXXX |
| | | 10x12 | 10 | 5800 | 2992 | SPD0CM222G12000RAXXX |
| | 3300 | 10x14 | 10 | 5900 | 4488 | SPD0CM332G14000RAXXX |
| | 4700 | 10x17 | 10 | 6100 | 5000 | SPD0CM472G17000RAXXX |
| 7 (8.1) | 150 | 5x6 | 30 | 1500 | 500 | SPD0QM151D06000RAXXX |
| | 220 | 5x7 | 20 | 3200 | 500 | SPD0QM221D07000RAXXX |
| | 270 | 5x8 | 20 | 3400 | 500 | SPD0QM271D08000RAXXX |
| | 330 | 5x9 | 20 | 3600 | 500 | SPD0QM331D09000RAXXX |
| | 470 | 6.3x8 | 20 | 3800 | 658 | SPD0QM471E08000RAXXX |
| | | 5.5x9 | 20 | 3600 | 658 | SPD0QM471B09000RAXXX |
| | 560 | 6.3x8 | 20 | 4000 | 784 | SPD0QM561E08000RAXXX |
| | 680 | 6.3x8 | 12 | 4200 | 952 | SPD0QM681E08000RAXXX |
| 820 | 6.3x10 | 12 | 4500 | 1148 | SPD0QM821E10000RAXXX | |
| | 8x9 | 12 | 4600 | 1148 | SPD0QM821F09000RAXXX | |
| 7.5 (8.6) | 220 | 5x7 | 20 | 3100 | 500 | SPD0AM221D07000RAXXX |
| | 270 | 5x8 | 20 | 3300 | 500 | SPD0AM271D08000RAXXX |
| | 330 | 5x9 | 20 | 3500 | 500 | SPD0AM331D09000RAXXX |
| | 390 | 5x9 | 20 | 3500 | 585 | SPD0AM391D09000RAXXX |
| | | 6.3x7 | 25 | 3200 | 705 | SPD0AM471E07000RAXXX |
| | 470 | 5.5x9 | 20 | 3550 | 705 | SPD0AM471B09000RAXXX |
| | | 5x9 | 20 | 3550 | 705 | SPD0AM471D09000RAXXX |
| 5.5x8 | 25 | 3100 | 705 | SPD0AM471B08000RAXXX | | |

PD series

■ STANDARD RATINGS

| VDC (SV) | Cap (µF) | Size DxL(mm) | ESR (mΩ, 20°C, 100kHz) (max.) | Rated ripple current (mA rms/105°C, 100kHz) | Leakage Current (µA)(max.) | Part Number | |
|-----------|-----------|--------------|-------------------------------|---|----------------------------|----------------------|----------------------|
| 7.5 (8.6) | 500 | 5.5x9 | 20 | 3600 | 750 | SPD0AM501B09O00RAXXX | |
| | 560 | 6.3x8 | 20 | 3900 | 840 | SPD0AM561E08O00RAXXX | |
| | 680 | 6.3x9 | 12 | 4100 | 1020 | SPD0AM681E09O00RAXXX | |
| | 820 | 6.3x10 | 12 | 4400 | 1230 | SPD0AM821E10O00RAXXX | |
| | | 8x9 | 12 | 4550 | 1230 | SPD0AM821F09O00RAXXX | |
| | 1000 | 8x11 | 12 | 4700 | 1500 | SPD0AM102F11O00RAXXX | |
| | | 6.3x11 | 12 | 4500 | 1500 | SPD0AM102E11O00RAXXX | |
| | 1200 | 8x11 | 12 | 4800 | 1800 | SPD0AM122F11O00RAXXX | |
| | 1500 | 8x11 | 12 | 4900 | 2250 | SPD0AM152F11O00RAXXX | |
| | 1800 | 8x14 | 12 | 5100 | 2700 | SPD0AM182F14O00RAXXX | |
| 2200 | 10x12 | 12 | 5700 | 3300 | SPD0AM222G12O00RAXXX | | |
| 10 (11.5) | 100 | 5x7 | 31 | 2500 | 500 | SPD1AM101D07O00RAXXX | |
| | | 6.3x5 | 27 | 2400 | 500 | SPD1AM101E05O00RAXXX | |
| | 120 | 5x7 | 18 | 2500 | 500 | SPD1AM121D07O00RAXXX | |
| | 150 | 5x7 | 18 | 2600 | 500 | SPD1AM151D07O00RAXXX | |
| | | 6.3x7 | 18 | 2900 | 500 | SPD1AM181E07O00RAXXX | |
| | 180 | 5x8 | 18 | 2800 | 500 | SPD1AM181D08O00RAXXX | |
| | | 5x9 | 18 | 2900 | 500 | SPD1AM221D09O00RAXXX | |
| | 220 | 6.3x5 | 22 | 2900 | 500 | SPD1AM221E05O00RAXXX | |
| | | 6.3x8 | 18 | 3200 | 540 | SPD1AM271E08O00RAXXX | |
| | 330 | 6.3x8 | 18 | 3400 | 660 | SPD1AM331E08O00RAXXX | |
| | 390 | 6.3x8 | 18 | 3500 | 780 | SPD1AM391E08O00RAXXX | |
| | | 5.5x9 | 18 | 3500 | 940 | SPD1AM471B09O00RAXXX | |
| | 470 | 6.3x8 | 18 | 3600 | 940 | SPD1AM471E08O00RAXXX | |
| | | 8x9 | 13 | 3700 | 940 | SPD1AM471F09O00RAXXX | |
| | 560 | 6.3x10 | 11 | 3700 | 1120 | SPD1AM561E10O00RAXXX | |
| | | 8x9 | 13 | 3700 | 1120 | SPD1AM561F09O00RAXXX | |
| | 680 | 8x8 | 18 | 3400 | 1360 | SPD1AM681F08O00RAXXX | |
| | 820 | 8x11 | 10 | 4200 | 1640 | SPD1AM821F11O00RAXXX | |
| | 1000 | 8x11 | 10 | 4400 | 2000 | SPD1AM102F11O00RAXXX | |
| | 1200 | 8x12 | 9 | 4700 | 2400 | SPD1AM122F12O00RAXXX | |
| | 1500 | 8x14 | 9 | 5000 | 3000 | SPD1AM152F14O00RAXXX | |
| | 1800 | 10x13 | 9 | 6000 | 3600 | SPD1AM182G13O00RAXXX | |
| | 12 (13.8) | 47 | 5x7 | 35 | 2200 | 500 | SPD1TM470D07O00RAXXX |
| | | 56 | 5x7 | 35 | 2250 | 500 | SPD1TM560D07O00RAXXX |
| 68 | | 5x7 | 35 | 2300 | 500 | SPD1TM680D07O00RAXXX | |
| 82 | | 5x7 | 35 | 2350 | 500 | SPD1TM820D07O00RAXXX | |
| | | 5x7 | 35 | 2400 | 500 | SPD1TM101D07O00RAXXX | |
| 100 | | 6.3x5 | 30 | 2300 | 500 | SPD1TM101E05O00RAXXX | |
| | | 5x5 | 30 | 2000 | 500 | SPD1TM101D05O00RAXXX | |
| 120 | | 5x7 | 20 | 2450 | 500 | SPD1TM121D07O00RAXXX | |
| | | 5x7 | 20 | 2500 | 500 | SPD1TM151D07O00RAXXX | |
| 150 | | 6.3x7 | 20 | 2800 | 500 | SPD1TM181E07O00RAXXX | |
| | | 5x8 | 20 | 2700 | 500 | SPD1TM181D08O00RAXXX | |
| 220 | | 5x9 | 20 | 2820 | 528 | SPD1TM221D09O00RAXXX | |
| | | 6.3x5 | 25 | 2800 | 528 | SPD1TM221E05O00RAXXX | |
| 270 | | 6.3x8 | 15 | 3160 | 528 | SPD1TM221E08O00RAXXX | |
| | | 6.3x8 | 20 | 3100 | 648 | SPD1TM271E08O00RAXXX | |
| 330 | | 6.3x8 | 20 | 3300 | 792 | SPD1TM331E08O00RAXXX | |
| | | 8x9 | 15 | 3400 | 792 | SPD1TM331F09O00RAXXX | |
| 390 | | 6.3x10 | 12 | 3500 | 792 | SPD1TM331E10O00RAXXX | |
| | | 6.3x8 | 20 | 3400 | 936 | SPD1TM391E08O00RAXXX | |
| 470 | | 5.5x9 | 20 | 3400 | 1128 | SPD1TM471B09O00RAXXX | |
| | | 6.3x8 | 20 | 3500 | 1128 | SPD1TM471E08O00RAXXX | |
| 560 | | 8x9 | 15 | 3550 | 1128 | SPD1TM471F09O00RAXXX | |
| | | 8x11 | 12 | 5650 | 1128 | SPD1TM471F11O00RAXXX | |
| 680 | | 6.3x10 | 13 | 3600 | 1344 | SPD1TM561E10O00RAXXX | |
| | | 8x9 | 15 | 3600 | 1344 | SPD1TM561F09O00RAXXX | |
| 820 | | 6.3x11 | 15 | 3800 | 1632 | SPD1TM681E11O00RAXXX | |
| | | 8x11 | 12 | 3900 | 1632 | SPD1TM681F11O00RAXXX | |
| 1000 | | 8x8 | 20 | 3300 | 1632 | SPD1TM681F08O00RAXXX | |
| | | 8x11 | 12 | 4000 | 1968 | SPD1TM821F11O00RAXXX | |
| 1200 | | 8x11 | 12 | 4200 | 2400 | SPD1TM102F11O00RAXXX | |
| | | 10x12 | 10 | 5300 | 2400 | SPD1TM102G12O00RAXXX | |
| 1500 | | 10x12 | 10 | 5450 | 2880 | SPD1TM122G12O00RAXXX | |
| | | 10x12 | 10 | 5500 | 3600 | SPD1TM152G12O00RAXXX | |
| 1800 | | 8x14 | 10 | 4800 | 3600 | SPD1TM152F14O00RAXXX | |
| | 10x13 | 10 | 5800 | 4320 | SPD1TM182G13O00RAXXX | | |
| 2200 | 10x15 | 10 | 6100 | 5000 | SPD1TM222G15O00RAXXX | | |
| | 10x18 | 10 | 6200 | 5000 | SPD1TM332G18O00RAXXX | | |
| 16 (18.4) | 100 | 5x7 | 18 | 2300 | 500 | SPD1CM101D07O00RAXXX | |
| | | 6.3x5 | 22 | 2200 | 500 | SPD1CM101E05O00RAXXX | |
| | 120 | 5x8 | 18 | 2400 | 500 | SPD1CM121D08O00RAXXX | |
| | | 5x8 | 18 | 2500 | 500 | SPD1CM151D08O00RAXXX | |
| | 180 | 6.3x5 | 27 | 2300 | 576 | SPD1CM181E05O00RAXXX | |
| | | 5x8 | 18 | 2500 | 576 | SPD1CM181D08O00RAXXX | |
| | 220 | 5x10 | 18 | 2700 | 704 | SPD1CM221D10O00RAXXX | |
| | | 6.3x5 | 25 | 2800 | 704 | SPD1CM221E05O00RAXXX | |
| | 270 | 6.3x8 | 18 | 2800 | 704 | SPD1CM221E08O00RAXXX | |
| | | 6.3x8 | 18 | 2900 | 864 | SPD1CM271E08O00RAXXX | |
| 330 | 6.3x7 | 18 | 3000 | 1056 | SPD1CM331E07O00RAXXX | | |

Conductive Polymer Radial Type

PD series

■ STANDARD RATINGS

| VDC (SV) | Cap (μF) | Size DxL (mm) | ESR (mΩ, 20°C, 100kHz) (max.) | Rated ripple current (mA rms/105°C, 100kHz) | Leakage Current (μA) (max.) | Part Number | |
|-----------|----------|---------------|-------------------------------|---|-----------------------------|----------------------|----------------------|
| 16 (18.4) | 470 | 5.5×10 | 18 | 3100 | 1504 | SPD1CM471B10O00RAXXX | |
| | | 8×9 | 11 | 3400 | 1504 | SPD1CM471F09O00RAXXX | |
| | 560 | 8×11 | 13 | 3300 | 1792 | SPD1CM561F11O00RAXXX | |
| | 680 | 8×11 | 13 | 3500 | 2176 | SPD1CM681F11O00RAXXX | |
| | 820 | 8×13 | 9 | 3600 | 2624 | SPD1CM821F13O00RAXXX | |
| | 1000 | 8×14 | 10 | 3700 | 3200 | SPD1CM102F14O00RAXXX | |
| | 1200 | 10×12 | 10 | 4400 | 3840 | SPD1CM122G12O00RAXXX | |
| | 1500 | 10×12 | 10 | 5000 | 4800 | SPD1CM152G12O00RAXXX | |
| 20 (23.0) | 33 | 5×8 | 40 | 1900 | 500 | SPD1DM330D08O00RAXXX | |
| | 39 | 5×8 | 40 | 1950 | 500 | SPD1DM390D08O00RAXXX | |
| | 47 | 5×8 | 40 | 2200 | 500 | SPD1DM470D08O00RAXXX | |
| | 56 | 5×9 | 40 | 2100 | 500 | SPD1DM560D09O00RAXXX | |
| | 68 | 6.3×8 | 30 | 2100 | 500 | SPD1DM680E08O00RAXXX | |
| | 82 | 6.3×8 | 30 | 2150 | 500 | SPD1DM820E08O00RAXXX | |
| | 100 | 6.3×8 | 30 | 2200 | 500 | SPD1DM101E08O00RAXXX | |
| | 120 | 6.3×8 | 30 | 2300 | 500 | SPD1DM121E08O00RAXXX | |
| | 150 | 6.3×10 | 20 | 2350 | 600 | SPD1DM151E10O00RAXXX | |
| | 180 | 8×9 | 30 | 2450 | 720 | SPD1DM181F09O00RAXXX | |
| | 220 | 8×11 | 20 | 2550 | 880 | SPD1DM221F11O00RAXXX | |
| | 270 | 8×11 | 20 | 2700 | 1080 | SPD1DM271F11O00RAXXX | |
| | | 330 | 8×11 | 20 | 2800 | 1320 | SPD1DM331F11O00RAXXX |
| | | | 6.3×11 | 20 | 2100 | 1320 | SPD1DM331E11O00RAXXX |
| | | | 10×12 | 20 | 2900 | 1880 | SPD1DM471G12O00RAXXX |
| | | | 8×16 | 20 | 3000 | 1880 | SPD1DM471F16O00RAXXX |
| | | 470 | 8×11 | 20 | 2400 | 1880 | SPD1DM471F11O00RAXXX |
| | | | 10×12 | 20 | 3100 | 1880 | SPD1DM471G12O00RAXXX |
| | | | 8×16 | 20 | 3200 | 1880 | SPD1DM471F16O00RAXXX |
| | | 680 | 10×15 | 20 | 3300 | 2720 | SPD1DM681G15O00RAXXX |
| | | 8×14 | 20 | 2700 | 2720 | SPD1DM681F14O00RAXXX | |
| | 820 | 10×18 | 20 | 3400 | 3280 | SPD1DM821G18O00RAXXX | |
| | 1000 | 10×18 | 20 | 3900 | 4000 | SPD1DM102G18O00RAXXX | |
| 25 (28.8) | 47 | 5×9 | 54 | 2000 | 500 | SPD1EM470D09O00RAXXX | |
| | 56 | 5×9 | 54 | 2100 | 500 | SPD1EM560D09O00RAXXX | |
| | 68 | 6.3×7 | 27 | 2200 | 500 | SPD1EM680E07O00RAXXX | |
| | 82 | 6.3×7 | 27 | 2200 | 500 | SPD1EM820E07O00RAXXX | |
| | 100 | 6.3×8 | 27 | 2600 | 500 | SPD1EM101E08O00RAXXX | |
| | 120 | 6.3×8 | 27 | 2600 | 600 | SPD1EM121E08O00RAXXX | |
| | 150 | 6.3×10 | 18 | 2900 | 750 | SPD1EM151E10O00RAXXX | |
| | 180 | 6.3×10 | 18 | 2900 | 900 | SPD1EM181E10O00RAXXX | |
| | 220 | 5.5×10 | 18 | 1900 | 1100 | SPD1EM221B10O00RAXXX | |
| | 270 | 8×11 | 18 | 3100 | 1350 | SPD1EM271F11O00RAXXX | |
| | 330 | 8×11 | 18 | 3200 | 1650 | SPD1EM331F11O00RAXXX | |
| | | 470 | 8×11 | 18 | 3100 | 2350 | SPD1EM471F11O00RAXXX |
| | | | 10×10 | 25 | 2300 | 2350 | SPD1EM471G10O00RAXXX |
| | | 560 | 10×12 | 18 | 4200 | 2800 | SPD1EM561G12O00RAXXX |
| | | 680 | 10×12 | 18 | 4300 | 3400 | SPD1EM681G12O00RAXXX |
| | | 8×14 | 18 | 3500 | 3400 | SPD1EM681F14O00RAXXX | |
| | 820 | 10×12 | 18 | 4300 | 4100 | SPD1EM821G12O00RAXXX | |
| | | 8×16 | 18 | 3700 | 4100 | SPD1EM821F16O00RAXXX | |
| | 1000 | 10×13 | 18 | 4400 | 5000 | SPD1EM102G13O00RAXXX | |
| 35 (40.3) | 47 | 6.3×7 | 45 | 2200 | 500 | SPD1VM470E07O00RAXXX | |
| | 56 | 6.3×7 | 45 | 2200 | 500 | SPD1VM560E07O00RAXXX | |
| | 68 | 6.3×7 | 45 | 2300 | 500 | SPD1VM680E07O00RAXXX | |
| | 82 | 6.3×7 | 45 | 2300 | 574 | SPD1VM820E07O00RAXXX | |
| | 100 | 6.3×8 | 45 | 2400 | 700 | SPD1VM101E08O00RAXXX | |
| | 120 | 6.3×9 | 45 | 2500 | 840 | SPD1VM121E09O00RAXXX | |
| | 150 | 6.3×10 | 36 | 2600 | 1050 | SPD1VM151E10O00RAXXX | |
| | | 220 | 8×11 | 36 | 2900 | 1540 | SPD1VM221F11O00RAXXX |
| | | | 6.3×11 | 36 | 2700 | 1540 | SPD1VM221E11O00RAXXX |
| | | 270 | 10×12 | 27 | 3100 | 1890 | SPD1VM271G12O00RAXXX |
| | | 330 | 10×12 | 27 | 3200 | 2310 | SPD1VM331G12O00RAXXX |
| | | 470 | 10×13 | 18 | 3300 | 3290 | SPD1VM471G13O00RAXXX |
| | | 680 | 10×16 | 18 | 3500 | 4760 | SPD1VM681G16O00RAXXX |

Specifications subject to change without notice.

PV series

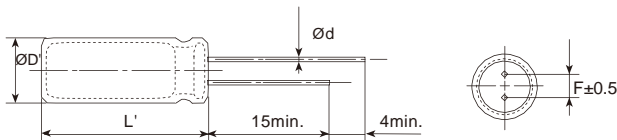
- Endurance: +125°C 2,000 hours
- High voltage
- Recommended Applications: System Board, Display Card, Small Charger, and intelligent TV
- RoHS Compliant and lead-free



SPECIFICATIONS

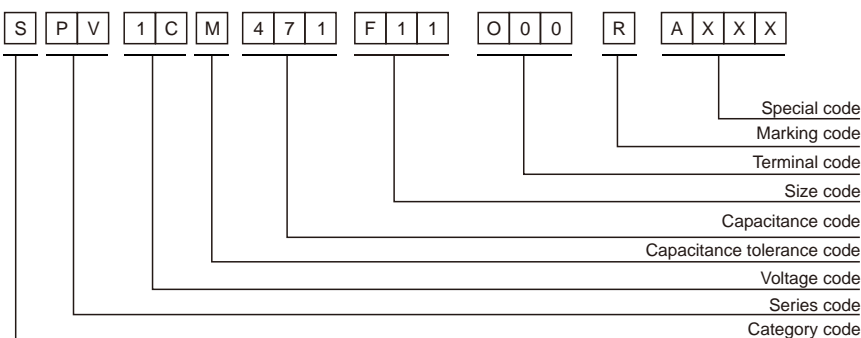
| Items | Characteristics | | | | | |
|--|--|-------------------------------------|----|----|----|------|
| Category Temperature Range | -55~+125°C | | | | | |
| Rated Working Voltage Range | 35~100 V _{dc} | | | | | |
| Nominal Capacitance Range | 4.7~1000μF | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | | | | |
| DC Leakage Current | I 0.2CV or 500μA, whichever is greater. Where, I:Max.leakage current (μA), C:Nominal capacitance (μF), V: Rated voltage (V) (at 20°C after 2 minutes) | | | | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 35 | 50 | 63 | 80 | 100 |
| | tan δ (max.) | 0.12 | | | | 0.15 |
| ESR(100kHz, 20°C) | Value in characteristics table | | | | | |
| Temperature Characteristic (Impedance Ratio at 100kHz) | Z(+125°C)/Z(+20°C) 1.25 Z(-55°C)/Z(+20°C) 1.25 | | | | | |
| Endurance | After applying rated voltage for 2,000 hours at 125°C, the capacitors shall meet the following requirements. | | | | | |
| | Appearance | No significant damage | | | | |
| | Capacitance Change | ±20% of the initial value | | | | |
| | D.F. (tan δ) | 150% of the initial specified value | | | | |
| | ESR | 150% of the initial specified value | | | | |
| Leakage Current | The initial specified value | | | | | |
| | Humidity Test | | | | | |
| After subjecting to 90%~95% RH for 2,000 hours at 60°C without voltage applied, the capacitors shall meet the specified values for the Endurance characteristics listed above. | | | | | | |
| Surge Test | After subjecting to 1,000 cycles each consisting of charge with the surge voltage specified at normal temperature for 30 seconds through a protective resistor and discharge for 5 minutes 30 seconds, the capacitors shall meet the following requirements. | | | | | |
| | Appearance | No significant damage | | | | |
| | Capacitance Change | ±20% of the initial value | | | | |
| | D.F. (tan δ) | 150% of the initial specified value | | | | |
| | ESR | 150% of the initial specified value | | | | |
| Leakage Current | The initial specified value | | | | | |

DIMENSIONS[mm]



| øD | 5 | 5.5 | 6.3 | 8 | 10 |
|-----|-------------|-----|----------|-----|-----|
| ød | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 |
| F | 2.0 | 2.5 | 2.5 | 3.5 | 5.0 |
| øD' | øD-0.1~+0.5 | | | | |
| L' | L+1.0max. | | L-0.5~+1 | | |

PART NUMBERING SYSTEM



PV series

■ STANDARD RATINGS

| VDC (SV) | Cap (μF) | Size DxL(mm) | ESR (mΩ, 20°C, 100kHz) (max.) | Rated ripple current (mA rms/125°C, 100kHz) | Leakage Current (μA)(max.) | Part Number | |
|-------------|----------|--------------|-------------------------------|---|----------------------------|----------------------|----------------------|
| 35 (40.3) | 4.7 | 5x8 | 90 | 500 | 500 | SPV1VM4R7D08O00RAXXX | |
| | 10 | 5x8 | 90 | 500 | 500 | SPV1VM100D08O00RAXXX | |
| | 15 | 5x8 | 90 | 500 | 500 | SPV1VM150D08O00RAXXX | |
| | 22 | 5x9 | 150 | 500 | 500 | SPV1VM220D09O00RAXXX | |
| | 33 | 5x9 | 75 | 600 | 500 | SPV1VM330D09O00RAXXX | |
| | 39 | 5x9 | 75 | 600 | 500 | SPV1VM390D09O00RAXXX | |
| | 47 | 6.3x7 | 75 | 600 | 500 | SPV1VM470E07O00RAXXX | |
| | 56 | 6.3x7 | 75 | 600 | 500 | SPV1VM560E07O00RAXXX | |
| | 68 | 6.3x7 | 75 | 600 | 500 | SPV1VM680E07O00RAXXX | |
| | 82 | 6.3x7 | 75 | 600 | 574 | SPV1VM820E07O00RAXXX | |
| | | 6.3x8 | 75 | 700 | 700 | SPV1VM101E08O00RAXXX | |
| | | 6.3x10 | 60 | 700 | 700 | SPV1VM101E10O00RAXXX | |
| | | 8x11 | 60 | 700 | 700 | SPV1VM101F11O00RAXXX | |
| | | 120 | 6.3x10 | 60 | 700 | 840 | SPV1VM121E10O00RAXXX |
| | | 150 | 6.3x10 | 60 | 700 | 1050 | SPV1VM151E10O00RAXXX |
| | | 220 | 8x11 | 60 | 800 | 1540 | SPV1VM221F11O00RAXXX |
| | | | 10x12 | 45 | 800 | 1540 | SPV1VM221G12O00RAXXX |
| | | 270 | 10x12 | 45 | 900 | 1890 | SPV1VM271G12O00RAXXX |
| | | 330 | 10x12 | 45 | 900 | 2310 | SPV1VM331G12O00RAXXX |
| | | 470 | 10x13 | 30 | 900 | 3290 | SPV1VM471G13O00RAXXX |
| | 560 | 10x14 | 30 | 900 | 3920 | SPV1VM561G14O00RAXXX | |
| | 680 | 10x16 | 30 | 1000 | 4760 | SPV1VM681G16O00RAXXX | |
| | 820 | 10x18 | 30 | 1000 | 5000 | SPV1VM821G18O00RAXXX | |
| | 1000 | 10x18 | 30 | 1100 | 5000 | SPV1VM102G18O00RAXXX | |
| 50 (57.5) | 4.7 | 5x8 | 90 | 400 | 500 | SPV1HM4R7D08O00RAXXX | |
| | 10 | 6.3x7 | 52 | 500 | 500 | SPV1HM100E07O00RAXXX | |
| | 15 | 5x8 | 105 | 500 | 500 | SPV1HM100D08O00RAXXX | |
| | 22 | 6.3x7 | 60 | 500 | 500 | SPV1HM220E07O00RAXXX | |
| | 33 | 6.3x7 | 60 | 600 | 500 | SPV1HM330E07O00RAXXX | |
| | 47 | 6.3x8 | 52 | 600 | 500 | SPV1HM470E08O00RAXXX | |
| | 56 | 6.3x8 | 52 | 600 | 560 | SPV1HM560E08O00RAXXX | |
| | 68 | 6.3x10 | 45 | 600 | 680 | SPV1HM680E10O00RAXXX | |
| | 100 | 8x11 | 45 | 600 | 1000 | SPV1HM101F11O00RAXXX | |
| | | 8x9 | 60 | 600 | 1000 | SPV1HM101F09O00RAXXX | |
| | | 150 | 10x12 | 45 | 700 | 1500 | SPV1HM151G12O00RAXXX |
| | | 220 | 10x12 | 45 | 800 | 2200 | SPV1HM221G12O00RAXXX |
| | | 270 | 10x13 | 30 | 800 | 2700 | SPV1HM271G13O00RAXXX |
| | | 330 | 10x15 | 30 | 800 | 3300 | SPV1HM331G15O00RAXXX |
| | | 440 | 10x18 | 30 | 900 | 4400 | SPV1HM441G18O00RAXXX |
| | 470 | 10x18 | 30 | 900 | 4700 | SPV1HM471G18O00RAXXX | |
| 63 (72.5) | 4.7 | 6.3x8 | 90 | 400 | 500 | SPV1JM4R7E08O00RAXXX | |
| | 6.8 | 6.3x8 | 90 | 400 | 500 | SPV1JM6R8E08O00RAXXX | |
| | 10 | 6.3x5 | 90 | 400 | 500 | SPV1JM100E05O00RAXXX | |
| | 33 | 6.3x8 | 45 | 500 | 500 | SPV1JM330E08O00RAXXX | |
| | 39 | 6.3x8 | 45 | 500 | 500 | SPV1JM390E08O00RAXXX | |
| | 68 | 8x11 | 45 | 600 | 857 | SPV1JM680F11O00RAXXX | |
| | 82 | 8x11 | 45 | 600 | 1033 | SPV1JM820F11O00RAXXX | |
| | 100 | 10x12 | 45 | 600 | 1260 | SPV1JM101G12O00RAXXX | |
| | 150 | 10x12 | 45 | 700 | 1890 | SPV1JM151G12O00RAXXX | |
| | 180 | 10x13 | 30 | 700 | 2268 | SPV1JM181G13O00RAXXX | |
| | 220 | 10x15 | 30 | 700 | 2772 | SPV1JM221G15O00RAXXX | |
| | 270 | 10x17 | 30 | 800 | 3402 | SPV1JM271G17O00RAXXX | |
| 330 | 10x18 | 30 | 800 | 4158 | SPV1JM331G18O00RAXXX | | |
| 80 (92.0) | 4.7 | 6.3x8 | 90 | 400 | 500 | SPV1BM4R7E08O00RAXXX | |
| | 6.8 | 6.3x8 | 90 | 400 | 500 | SPV1BM6R8E08O00RAXXX | |
| | 22 | 6.3x10 | 90 | 400 | 500 | SPV1BM220E10O00RAXXX | |
| | 33 | 8x11 | 52 | 500 | 528 | SPV1BM330F11O00RAXXX | |
| | 47 | 10x12 | 52 | 500 | 752 | SPV1BM470G12O00RAXXX | |
| | 68 | 10x12 | 52 | 500 | 1088 | SPV1BM680G12O00RAXXX | |
| 100 | 10x14 | 52 | 600 | 1600 | SPV1BM101G14O00RAXXX | | |
| 100 (115.0) | 4.7 | 6.3x8 | 180 | 400 | 500 | SPV1KM4R7E08O00RAXXX | |
| | 6.8 | 6.3x8 | 180 | 400 | 500 | SPV1KM6R8E08O00RAXXX | |
| | 10 | 6.3x10 | 75 | 400 | 500 | SPV1KM100E10O00RAXXX | |
| | | 8x11 | 75 | 400 | 500 | SPV1KM100F11O00RAXXX | |
| | 15 | 8x11 | 75 | 400 | 500 | SPV1KM150F11O00RAXXX | |
| | 22 | 10x12 | 52 | 400 | 500 | SPV1KM220G12O00RAXXX | |
| | 33 | 10x14 | 52 | 400 | 660 | SPV1KM330G14O00RAXXX | |
| 47 | 10x16 | 52 | 400 | 940 | SPV1KM470G16O00RAXXX | | |

Specifications subject to change without notice.

PH series

- Endurance: +105°C 2,000 hours
- High Capacitance
- Recommended Applications: Charger. Ripple current can be applied.
- RoHS Compliant and lead-free

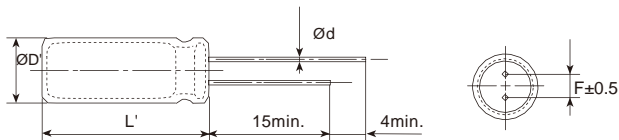


SPECIFICATIONS

| Items | Characteristics | | | | | | | |
|--|--|-------------------------------------|-----|-----|------|----|----|----|
| Category Temperature Range | -55~+105°C | | | | | | | |
| Rated Working Voltage Range | 6.3~25 V _{dc} | | | | | | | |
| Nominal Capacitance Range | 10~2200μF | | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C,120Hz) | | | | | | | |
| DC Leakage Current | I 0.2CV or 500μA, whichever is greater. Where, I:Max.leakage current (μA),C:Nominal capacitance (μF),V: Rated voltage (V) (at 20°C after 2 minutes) | | | | | | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 6.3 | 6.8 | 7.5 | 10 | 16 | 20 | 25 |
| | tan δ (max.) | 0.08 | | | 0.12 | | | |
| ESR(100kHz,20°C) | Value in characteristics table | | | | | | | |
| Temperature Characteristic (Impedance Ratio at 100kHz) | Z(+105°C)/Z(+20°C) 1.25 Z(-55°C)/Z(+20°C) 1.25 | | | | | | | |
| Endurance | After applying rated voltage for 2,000 hours at 105°C,the capacitors shall meet the following requirements. | | | | | | | |
| | Appearance | No significant damage | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | |
| | D.F. (tan δ) | 200% of the initial specified value | | | | | | |
| | ESR | 200% of the initial specified value | | | | | | |
| Leakage Current | The initial specified value | | | | | | | |
| Humidity Test | After subjecting to 90~95% RH for 2,000 hours at 60°C without voltage applied, the capacitors shall meet the requirement as surge test. | | | | | | | |
| Surge Test | After subjecting to 1,000 cycles each consisting of charge with the surge voltage specified at normal temperature for 30 seconds through a protective resistor and discharge for 5 minutes 30 seconds, the capacitors shall meet the following requirements. | | | | | | | |
| | Appearance | No significant damage | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | |
| | D.F. (tan δ) | 150% of the initial specified value | | | | | | |
| | ESR | 150% of the initial specified value | | | | | | |
| Leakage Current | The initial specified value | | | | | | | |

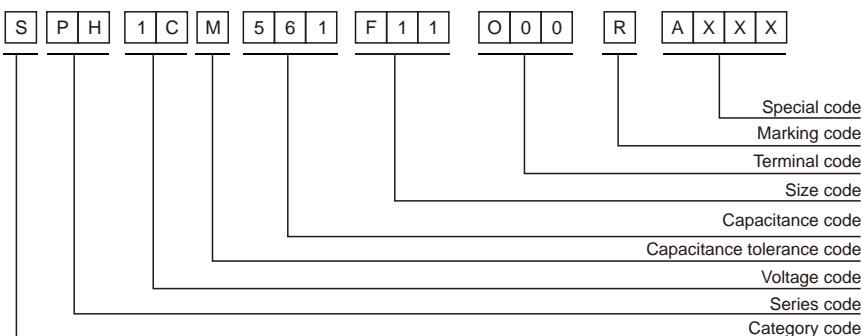
Conductive Polymer Radial Type

DIMENSIONS[mm]



| øD | 5 | 5.5 | 6.3 | 8 | 10 |
|-----|-------------|-----|-----|----------|-----|
| ød | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 |
| F | 2.0 | 2.5 | 2.5 | 3.5 | 5.0 |
| øD' | øD-0.1~+0.5 | | | | |
| L' | L+1.0max. | | | L-0.5~+1 | |

PART NUMBERING SYSTEM



PH series

■ STANDARD RATINGS

| VDC (SV) | Cap (μF) | Size DxL(mm) | ESR (mΩ, 20°C, 100kHz) (max.) | Rated ripple current (mA rms/105°C, 100kHz) | Leakage Current (μA)(max.) | Part Number |
|-----------|----------|--------------|-------------------------------|---|----------------------------|----------------------|
| 6.3 (7.2) | 220 | 5x7 | 16 | 4000 | 500 | SPH0JM221D07O00RAXXX |
| | 270 | 5x7 | 16 | 4300 | 500 | SPH0JM271D07O00RAXXX |
| | 330 | 5x8 | 16 | 4600 | 500 | SPH0JM331D08O00RAXXX |
| | | 6.3x5 | 20 | 3600 | 500 | SPH0JM331E05O00RAXXX |
| | 390 | 6.3x8 | 12 | 4600 | 500 | SPH0JM331E08O00RAXXX |
| | | 5x9 | 16 | 4700 | 500 | SPH0JM391D09O00RAXXX |
| | 470 | 5x10 | 16 | 4900 | 592 | SPH0JM471D10O00RAXXX |
| | | 5.5x9 | 16 | 4700 | 592 | SPH0JM471B09O00RAXXX |
| | | 6.3x7 | 16 | 4400 | 592 | SPH0JM471E07O00RAXXX |
| | | 6.3x8 | 12 | 5000 | 592 | SPH0JM471E08O00RAXXX |
| | 500 | 5x9 | 16 | 4700 | 630 | SPH0JM501D09O00RAXXX |
| | | 5.5x9 | 16 | 4900 | 706 | SPH0JM561B09O00RAXXX |
| | 560 | 6.3x8 | 16 | 5500 | 706 | SPH0JM561E08O00RAXXX |
| | | 6.3x9 | 16 | 5800 | 857 | SPH0JM681E09O00RAXXX |
| | 680 | 5.5x9 | 16 | 5500 | 857 | SPH0JM681B09O00RAXXX |
| | | 8x9 | 16 | 5200 | 857 | SPH0JM681F09O00RAXXX |
| | 820 | 6.3x9 | 16 | 5800 | 1033 | SPH0JM821E09O00RAXXX |
| | | 8x9 | 12 | 5400 | 1033 | SPH0JM821F09O00RAXXX |
| | 1000 | 6.3x10 | 8 | 5900 | 1260 | SPH0JM102E10O00RAXXX |
| | | 8x9 | 9 | 5500 | 1260 | SPH0JM102F09O00RAXXX |
| 8x11 | | 8 | 5900 | 1260 | SPH0JM102F11O00RAXXX | |
| 1200 | 8x11 | 8 | 6000 | 1512 | SPH0JM122F11O00RAXXX | |
| | 8x11 | 8 | 6200 | 1890 | SPH0JM152F11O00RAXXX | |
| 1500 | 10x12 | 8 | 6300 | 1890 | SPH0JM152G12O00RAXXX | |
| | 10x10 | 8 | 6300 | 2268 | SPH0JM182G10O00RAXXX | |
| 1800 | 8x14 | 8 | 6500 | 2772 | SPH0JM222F14O00RAXXX | |
| | 10x12 | 8 | 6600 | 2772 | SPH0JM222G12O00RAXXX | |
| 6.8 (7.8) | 220 | 5x7 | 18 | 3500 | 500 | SPH0CM221D07O00RAXXX |
| | 270 | 5x7 | 18 | 3800 | 500 | SPH0CM271D07O00RAXXX |
| | | 6.3x8 | 18 | 4100 | 500 | SPH0CM271E08O00RAXXX |
| | 330 | 5x8 | 18 | 4000 | 500 | SPH0CM331D08O00RAXXX |
| | | 6.3x5 | 23 | 3300 | 500 | SPH0CM331E05O00RAXXX |
| | 390 | 6.3x7 | 18 | 3600 | 500 | SPH0CM331E07O00RAXXX |
| | | 5x9 | 18 | 4100 | 530 | SPH0CM391D09O00RAXXX |
| | 470 | 5x9 | 18 | 4300 | 639 | SPH0CM471D09O00RAXXX |
| | | 6.3x7 | 18 | 3900 | 639 | SPH0CM471E07O00RAXXX |
| | 560 | 6.3x8 | 18 | 4700 | 762 | SPH0CM561E08O00RAXXX |
| | 680 | 6.3x9 | 18 | 5000 | 925 | SPH0CM681E09O00RAXXX |
| | 820 | 6.3x9 | 18 | 5100 | 1115 | SPH0CM821E09O00RAXXX |
| | 1000 | 6.3x11 | 11 | 5400 | 1360 | SPH0CM102E11O00RAXXX |
| 8x11 | | 9 | 5400 | 1360 | SPH0CM102F11O00RAXXX | |
| 7 (8.1) | 150 | 5x6 | 27 | 1600 | 500 | SPH0QM151D06O00RAXXX |
| | 220 | 5x7 | 18 | 3400 | 500 | SPH0QM221D07O00RAXXX |
| | 270 | 5x8 | 18 | 3600 | 500 | SPH0QM271D08O00RAXXX |
| | 330 | 5x9 | 18 | 3800 | 500 | SPH0QM331D09O00RAXXX |
| | 470 | 6.3x8 | 18 | 4000 | 658 | SPH0QM471E08O00RAXXX |
| | | 5.5x9 | 18 | 3800 | 658 | SPH0QM471B09O00RAXXX |
| | 560 | 6.3x8 | 18 | 4200 | 784 | SPH0QM561E08O00RAXXX |
| | 680 | 6.3x9 | 11 | 4400 | 952 | SPH0QM681E09O00RAXXX |
| | 820 | 6.3x10 | 11 | 4700 | 1148 | SPH0QM821E10O00RAXXX |
| 8x9 | | 11 | 4800 | 1148 | SPH0QM821F09O00RAXXX | |
| 7.5 (8.6) | 220 | 5x7 | 18 | 3300 | 500 | SPH0AM221D07O00RAXXX |
| | 270 | 5x8 | 18 | 3500 | 500 | SPH0AM271D08O00RAXXX |
| | 330 | 5x9 | 18 | 3700 | 500 | SPH0AM331D09O00RAXXX |
| | 390 | 5x9 | 18 | 3700 | 585 | SPH0AM391D09O00RAXXX |
| | | 6.3x7 | 23 | 3400 | 705 | SPH0AM471E07O00RAXXX |
| | 470 | 5.5x9 | 18 | 3700 | 705 | SPH0AM471B09O00RAXXX |
| | | 5x9 | 18 | 3700 | 705 | SPH0AM471B09O00RAXXX |
| | | 5.5x8 | 23 | 3300 | 705 | SPH0AM471B08O00RAXXX |
| | 500 | 5.5x9 | 18 | 3800 | 750 | SPH0AM501B09O00RAXXX |
| | | 6.3x8 | 18 | 4100 | 840 | SPH0AM561E08O00RAXXX |
| | 680 | 6.3x9 | 11 | 4300 | 1020 | SPH0AM681E09O00RAXXX |
| | 820 | 6.3x10 | 11 | 4600 | 1230 | SPH0AM821E10O00RAXXX |
| | | 8x9 | 11 | 4800 | 1230 | SPH0AM821F09O00RAXXX |
| | 1000 | 8x11 | 11 | 4900 | 1500 | SPH0AM102F11O00RAXXX |
| | | 6.3x11 | 11 | 4700 | 1500 | SPH0AM102E11O00RAXXX |
| | | 8x11 | 11 | 5000 | 1800 | SPH0AM122F11O00RAXXX |
| | 1200 | 6.8x11 | 11 | 4800 | 1800 | SPH0AM122Q11O00RAXXX |
| | | 8x11 | 11 | 5100 | 2250 | SPH0AM152F11O00RAXXX |
| | 1500 | 6.8x13 | 11 | 5000 | 2250 | SPH0AM152Q13O00RAXXX |
| | | 8x14 | 11 | 5400 | 2700 | SPH0AM182F14O00RAXXX |
| 2200 | 10x12 | 11 | 6000 | 3300 | SPH0AM222G12O00RAXXX | |
| 10 (11.5) | 47 | 5x7 | 28 | 2500 | 500 | SPH1AM470D07O00RAXXX |
| | 56 | 5x7 | 28 | 2500 | 500 | SPH1AM560D07O00RAXXX |
| | 68 | 5x7 | 28 | 2600 | 500 | SPH1AM680D07O00RAXXX |

PH series

■ STANDARD RATINGS

| VDC (SV) | Cap (µF) | Size DxL(mm) | ESR (mΩ, 20°C, 100kHz) (max.) | Rated ripple current (mArms/105°C, 100kHz) | Leakage Current (µA)(max.) | Part Number |
|-----------|-----------|--------------|-------------------------------|--|----------------------------|----------------------|
| 10 (11.5) | 82 | 5x7 | 28 | 2700 | 500 | SPH1AM820D07O00RAXXX |
| | 100 | 5x7 | 28 | 2700 | 500 | SPH1AM101D07O00RAXXX |
| | | 6.3x5 | 24 | 2600 | 500 | SPH1AM101E05O00RAXXX |
| | 150 | 5x7 | 16 | 2800 | 500 | SPH1AM151D07O00RAXXX |
| | 180 | 6.3x7 | 16 | 3200 | 500 | SPH1AM181E07O00RAXXX |
| | | 5x9 | 16 | 3200 | 500 | SPH1AM221D09O00RAXXX |
| | 220 | 6.3x5 | 20 | 3200 | 500 | SPH1AM221E05O00RAXXX |
| | | 6.3x8 | 12 | 3600 | 500 | SPH1AM221E08O00RAXXX |
| | 270 | 6.3x8 | 16 | 3500 | 540 | SPH1AM271E08O00RAXXX |
| | | 6.3x8 | 16 | 3700 | 660 | SPH1AM331E08O00RAXXX |
| | 330 | 8x9 | 12 | 3900 | 660 | SPH1AM331F09O00RAXXX |
| | | 6.3x10 | 9 | 4000 | 660 | SPH1AM331E10O00RAXXX |
| | 390 | 6.3x8 | 16 | 3900 | 780 | SPH1AM391E08O00RAXXX |
| | | 5.5x9 | 16 | 3900 | 940 | SPH1AM471B09O00RAXXX |
| | 470 | 6.3x8 | 16 | 3900 | 940 | SPH1AM471E08O00RAXXX |
| | | 8x9 | 12 | 4000 | 940 | SPH1AM471F09O00RAXXX |
| | 560 | 8x11 | 9 | 6400 | 940 | SPH1AM471F11O00RAXXX |
| | | 8x9 | 12 | 4100 | 1120 | SPH1AM561F09O00RAXXX |
| | 680 | 6.3x10 | 10 | 4100 | 1120 | SPH1AM561E10O00RAXXX |
| | | 8x11 | 9 | 4400 | 1360 | SPH1AM681F11O00RAXXX |
| | 820 | 8x8 | 16 | 3700 | 1360 | SPH1AM681F08O00RAXXX |
| | | 8x11 | 9 | 4600 | 1640 | SPH1AM821F11O00RAXXX |
| | 1000 | 8x11 | 9 | 4800 | 2000 | SPH1AM102F11O00RAXXX |
| | | 10x12 | 8 | 6000 | 2000 | SPH1AM102G12O00RAXXX |
| 1200 | 8x12 | 8 | 5100 | 2400 | SPH1AM122F12O00RAXXX | |
| | 10x12 | 8 | 6200 | 2400 | SPH1AM122G12O00RAXXX | |
| 1500 | 10x12 | 8 | 6300 | 3000 | SPH1AM152G12O00RAXXX | |
| | 8x14 | 8 | 5500 | 3000 | SPH1AM152F14O00RAXXX | |
| 1800 | 10x13 | 8 | 6600 | 3600 | SPH1AM182G13O00RAXXX | |
| 2200 | 10x15 | 8 | 7000 | 4400 | SPH1AM222G15O00RAXXX | |
| 12 (13.8) | 220 | 4x10 | 14 | 2200 | 528 | SPH1TM221C10O00RAXXX |
| | 330 | 5.5x9 | 18 | 3300 | 792 | SPH1TM331B09O00RAXXX |
| | | 6.3x8 | 18 | 3300 | 792 | SPH1TM331E08O00RAXXX |
| | 470 | 5x10 | 18 | 3300 | 792 | SPH1TM331D10O00RAXXX |
| | | 5.5x9 | 18 | 3400 | 1128 | SPH1TM471B09O00RAXXX |
| | 560 | 6.3x9 | 18 | 3600 | 1128 | SPH1TM471E09O00RAXXX |
| | | 6.3x10 | 14 | 3600 | 1344 | SPH1TM561E10O00RAXXX |
| | 680 | 6.3x11 | 14 | 3800 | 1632 | SPH1TM681E11O00RAXXX |
| | | 8x10 | 14 | 3900 | 1632 | SPH1TM681F10O00RAXXX |
| | 820 | 8x11 | 11 | 4000 | 1968 | SPH1TM821F11O00RAXXX |
| | 1000 | 8x12 | 11 | 4200 | 2400 | SPH1TM102F12O00RAXXX |
| | 1200 | 8x14 | 11 | 4600 | 2880 | SPH1TM122F14O00RAXXX |
| | 1500 | 8x16 | 11 | 5000 | 3600 | SPH1TM152F16O00RAXXX |
| | 16 (18.4) | 22 | 5x9 | 64 | 1800 | 500 |
| 47 | | 5x7 | 16 | 2300 | 500 | SPH1CM470D07O00RAXXX |
| 56 | | 5x7 | 16 | 2400 | 500 | SPH1CM560D07O00RAXXX |
| 68 | | 5x7 | 16 | 2400 | 500 | SPH1CM680D07O00RAXXX |
| 82 | | 5x8 | 16 | 2500 | 500 | SPH1CM820D08O00RAXXX |
| | | 5x7 | 16 | 2500 | 500 | SPH1CM101D07O00RAXXX |
| 100 | | 6.3x5 | 20 | 2400 | 500 | SPH1CM101E05O00RAXXX |
| | | 6.3x8 | 16 | 3200 | 500 | SPH1CM101E08O00RAXXX |
| 120 | | 5x8 | 16 | 2700 | 500 | SPH1CM121D08O00RAXXX |
| 150 | | 5x8 | 16 | 2700 | 500 | SPH1CM151D08O00RAXXX |
| | | 5x8 | 16 | 2800 | 576 | SPH1CM181D08O00RAXXX |
| 180 | | 6.3x7 | 12 | 2800 | 576 | SPH1CM181E07O00RAXXX |
| | | 5x10 | 16 | 2900 | 704 | SPH1CM221D10O00RAXXX |
| 220 | | 6.3x8 | 16 | 3100 | 704 | SPH1CM221E08O00RAXXX |
| | | 6.3x10 | 12 | 3300 | 704 | SPH1CM221E10O00RAXXX |
| 270 | | 5.5x9 | 16 | 3100 | 864 | SPH1CM271B09O00RAXXX |
| | | 6.3x8 | 16 | 3100 | 864 | SPH1CM271E08O00RAXXX |
| 330 | | 8x9 | 16 | 3300 | 864 | SPH1CM271F09O00RAXXX |
| | | 5.5x9 | 16 | 3300 | 1056 | SPH1CM331B09O00RAXXX |
| 470 | | 6.3x9 | 16 | 3300 | 1056 | SPH1CM331E09O00RAXXX |
| | | 6.3x10 | 12 | 3500 | 1056 | SPH1CM331E10O00RAXXX |
| 560 | | 6.3x11 | 12 | 3400 | 1504 | SPH1CM471E11O00RAXXX |
| | | 8x11 | 12 | 5200 | 1504 | SPH1CM471F11O00RAXXX |
| 680 | | 8x9 | 10 | 4700 | 1504 | SPH1CM471F09O00RAXXX |
| | | 8x11 | 12 | 3600 | 1792 | SPH1CM561F11O00RAXXX |
| 820 | | 8x13 | 12 | 3700 | 1792 | SPH1CM561F13O00RAXXX |
| | | 10x12 | 9 | 4000 | 1792 | SPH1CM561G12O00RAXXX |
| 1000 | | 8x11 | 12 | 3900 | 2176 | SPH1CM681F11O00RAXXX |
| | | 10x12 | 9 | 4100 | 2176 | SPH1CM681G12O00RAXXX |
| 1200 | | 8x13 | 8 | 4000 | 2624 | SPH1CM821F13O00RAXXX |
| | | 10x12 | 9 | 4300 | 2624 | SPH1CM821G12O00RAXXX |
| 1500 | | 10x12 | 9 | 4600 | 3200 | SPH1CM102G12O00RAXXX |
| | | 10x15 | 9 | 4900 | 3840 | SPH1CM122G15O00RAXXX |

Conductive Polymer Radial Type

PH series

■ STANDARD RATINGS

| VDC (SV) | Cap (µF) | Size DxL(mm) | ESR (mΩ, 20°C, 100kHz) (max.) | Rated ripple current (mArms/105°C, 100kHz) | Leakage Current (µA)(max.) | Part Number | |
|-----------|-----------|--------------|-------------------------------|--|----------------------------|----------------------|----------------------|
| 16 (18.4) | 1500 | 10x12 | 9 | 5500 | 4800 | SPH1CM152G12O00RAXXX | |
| | 1800 | 10x18 | 9 | 6300 | 4800 | SPH1CM152G18O00RAXXX | |
| | | 10x14 | 9 | 6200 | 5000 | SPH1CM182G14O00RAXXX | |
| | | 10x17 | 9 | 6600 | 5000 | SPH1CM222G17O00RAXXX | |
| | | 10x15 | 9 | 6300 | 5000 | SPH1CM222G15O00RAXXX | |
| 20 (23.0) | 33 | 5x8 | 36 | 2000 | 500 | SPH1DM330D08O00RAXXX | |
| | 39 | 5x8 | 36 | 2000 | 500 | SPH1DM390D08O00RAXXX | |
| | 47 | 5x8 | 36 | 2300 | 500 | SPH1DM470D08O00RAXXX | |
| | 56 | 5x9 | 36 | 2200 | 500 | SPH1DM560D09O00RAXXX | |
| | 68 | 6.3x8 | 27 | 2200 | 500 | SPH1DM680E08O00RAXXX | |
| | 82 | 6.3x8 | 27 | 2300 | 500 | SPH1DM820E08O00RAXXX | |
| | 100 | 6.3x8 | 27 | 2300 | 500 | SPH1DM101E08O00RAXXX | |
| | 120 | 6.3x8 | 27 | 2400 | 500 | SPH1DM121E08O00RAXXX | |
| | 150 | 6.3x10 | 18 | 2500 | 600 | SPH1DM151E10O00RAXXX | |
| | 180 | 8x9 | 27 | 2600 | 720 | SPH1DM181F09O00RAXXX | |
| | 220 | 8x11 | 18 | 2700 | 880 | SPH1DM221F11O00RAXXX | |
| | 270 | 8x11 | 18 | 2800 | 1080 | SPH1DM271F11O00RAXXX | |
| | 470 | 8x11 | 18 | 2900 | 1320 | SPH1DM331F11O00RAXXX | |
| | | 6.3x11 | 18 | 2200 | 1320 | SPH1DM331E11O00RAXXX | |
| | | 10x12 | 18 | 3000 | 1880 | SPH1DM471G12O00RAXXX | |
| | | 8x16 | 18 | 3200 | 1880 | SPH1DM471F16O00RAXXX | |
| | 560 | 8x11 | 18 | 2500 | 1880 | SPH1DM471F11O00RAXXX | |
| | | 10x12 | 18 | 3300 | 2240 | SPH1DM561G12O00RAXXX | |
| | | 8x16 | 18 | 3400 | 2240 | SPH1DM561F16O00RAXXX | |
| | 680 | 10x15 | 18 | 3500 | 2720 | SPH1DM681G15O00RAXXX | |
| | | 8x14 | 18 | 2800 | 2720 | SPH1DM681F14O00RAXXX | |
| | | 10x18 | 18 | 3600 | 3280 | SPH1DM821G18O00RAXXX | |
| | | 1000 | 10x18 | 18 | 4100 | 4000 | SPH1DM102G18O00RAXXX |
| | 25 (28.8) | 10 | 5x8 | 56 | 2000 | 500 | SPH1EM100D08O00RAXXX |
| | | 22 | 5x9 | 48 | 2000 | 500 | SPH1EM220D09O00RAXXX |
| | | 33 | 5x9 | 48 | 2100 | 500 | SPH1EM330D09O00RAXXX |
| | | 39 | 5x8 | 48 | 2100 | 500 | SPH1EM390D08O00RAXXX |
| 47 | | 5x9 | 48 | 2200 | 500 | SPH1EM470D09O00RAXXX | |
| 56 | | 5x9 | 48 | 2300 | 500 | SPH1EM560D09O00RAXXX | |
| 68 | | 6.3x7 | 24 | 2400 | 500 | SPH1EM680E07O00RAXXX | |
| 82 | | 6.3x7 | 24 | 2400 | 500 | SPH1EM820E07O00RAXXX | |
| | | 6.3x8 | 24 | 2800 | 500 | SPH1EM101E08O00RAXXX | |
| | | 6.3x10 | 16 | 3200 | 500 | SPH1EM101E10O00RAXXX | |
| | | 8x11 | 16 | 3400 | 500 | SPH1EM101F11O00RAXXX | |
| 120 | | 6.3x8 | 24 | 2800 | 600 | SPH1EM121E08O00RAXXX | |
| 150 | | 6.3x10 | 16 | 3200 | 750 | SPH1EM151E10O00RAXXX | |
| 180 | | 6.3x10 | 16 | 3200 | 900 | SPH1EM181E10O00RAXXX | |
| | | 8x9 | 24 | 2800 | 900 | SPH1EM181F09O00RAXXX | |
| | | 8x11 | 16 | 3400 | 1100 | SPH1EM221F11O00RAXXX | |
| | | 10x12 | 16 | 4000 | 1100 | SPH1EM221G12O00RAXXX | |
| 220 | | 5.5x10 | 16 | 2100 | 1100 | SPH1EM221B10O00RAXXX | |
| | | 8x11 | 16 | 3400 | 1350 | SPH1EM271F11O00RAXXX | |
| | | 8x11 | 16 | 3500 | 1650 | SPH1EM331F12O00RAXXX | |
| | | 10x12 | 16 | 4300 | 1650 | SPH1EM331G12O00RAXXX | |
| 330 | | 10x10 | 20 | 3200 | 1650 | SPH1EM331G10O00RAXXX | |
| | | 10x12 | 16 | 4600 | 2350 | SPH1EM471G12O00RAXXX | |
| | | 8x16 | 16 | 3900 | 2350 | SPH1EM471F16O00RAXXX | |
| | | 8x11 | 16 | 3400 | 2350 | SPH1EM471F11O00RAXXX | |
| 470 | | 10x10 | 20 | 3200 | 2350 | SPH1EM471G10O00RAXXX | |
| | | 10x12 | 16 | 4600 | 2800 | SPH1EM561G12O00RAXXX | |
| | | 8x12 | 16 | 3500 | 2800 | SPH1EM561F12O00RAXXX | |
| | | 10x15 | 16 | 4900 | 3400 | SPH1EM681G15O00RAXXX | |
| 680 | | 10x12 | 16 | 4700 | 3400 | SPH1EM681G12O00RAXXX | |
| | | 8x14 | 16 | 3900 | 3400 | SPH1EM681F14O00RAXXX | |
| | | 10x18 | 16 | 5100 | 4100 | SPH1EM821G18O00RAXXX | |
| | | 10x12 | 16 | 4700 | 4100 | SPH1EM821G12O00RAXXX | |
| 1000 | | 10x18 | 16 | 5100 | 5000 | SPH1EM102G18O00RAXXX | |

Specifications subject to change without notice.

PT series

- Endurance: +125°C 2,000 hours
- Long Life, High Temperature Resistance
- Recommended Applications: Lamps Power, LED Power, Service Equipment
- RoHS Compliant and lead-free



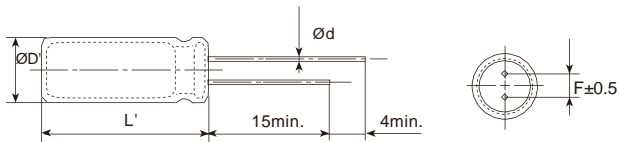
SPECIFICATIONS

| Items | Characteristics | | | | | | | |
|--|--|-------------------------------------|-----|-----|----|------|----|------------------|
| Category Temperature Range | -55~+125°C | | | | | | | |
| Rated Working Voltage Range | 6.3~25 V _{dc} | | | | | | | |
| Nominal Capacitance Range | 22~5600μF | | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | | | | | | |
| DC Leakage Current | I ≤ 0.2CV or 500μA, whichever is greater. Where, I: Max. leakage current (μA), C: Nominal capacitance (μF), V: Rated voltage (V) (at 20°C after 2 minutes) | | | | | | | |
| Dissipation Factor (tan δ) | Rated Voltage (V _{dc}) | 6.3 | 6.8 | 7.5 | 10 | 16 | 25 | |
| | tan δ (max.) | 0.08 | | | | 0.12 | | (at 20°C, 120Hz) |
| ESR(100kHz, 20°C) | Value in characteristics table | | | | | | | |
| Temperature Characteristic (Impedance Ratio at 100kHz) | Z(+125°C)/Z(+20°C) 1.25 Z(-55°C)/Z(+20°C) 1.25 | | | | | | | |
| Endurance | After applying rated voltage for 2,000 hours at 125°C, the capacitors shall meet the following requirements. | | | | | | | |
| | Appearance | No significant damage | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | |
| | D.F. (tan δ) | 200% of the initial specified value | | | | | | |
| | ESR | 200% of the initial specified value | | | | | | |
| Humidity Test | After subjecting to 90~95% RH for 2,000 hours at 60°C without voltage applied, the capacitors shall meet the requirement as surge test. | | | | | | | |
| | After subjecting to 1,000 cycles each consisting of charge with the surge voltage specified at normal temperature for 30 seconds through a protective resistor and discharge for 5 minutes 30 seconds, the capacitors shall meet the following requirements. | | | | | | | |
| | Appearance | No significant damage | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | |
| | D.F. (tan δ) | 150% of the initial specified value | | | | | | |
| Surge Test | ESR | 150% of the initial specified value | | | | | | |
| | Leakage Current | The initial specified value | | | | | | |

Conductive Polymer Radial Type

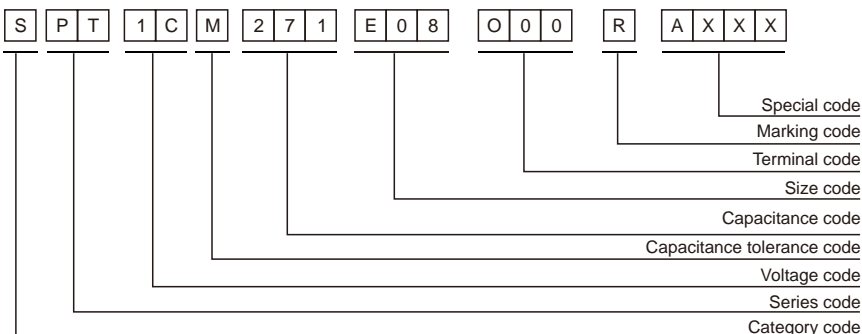
*Note: If any doubt arises, measure the leakage current after the following voltage treatment.
Voltage treatment: DC rated voltage is applied to the capacitors for 120 minutes at 105°C.

DIMENSIONS[mm]



| | | | | | |
|-----|-------------|-----|-----------|-----|-----|
| øD | 5 | 5.5 | 6.3 | 8 | 10 |
| ød | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 |
| F | 2.0 | 2.5 | 2.5 | 3.5 | 5.0 |
| øD' | øD-0.1~+0.5 | | | | |
| L' | L+1.0max. | | L-0.5~-+1 | | |

PART NUMBERING SYSTEM



PT series

■ STANDARD RATINGS

| VDC (SV) | Cap (μF) | Size DxL(mm) | ESR (mΩ, 20°C, 100kHz) (max.) | Rated ripple current (mArms/125°C, 100kHz) | Leakage Current (μA)(max.) | Part Number |
|-----------|----------|--------------|-------------------------------|--|----------------------------|----------------------|
| 6.3 (7.2) | 220 | 5x7 | 30 | 1000 | 500 | SPT0JM221D07O00RAXXX |
| | 270 | 5x7 | 30 | 1100 | 500 | SPT0JM271D07O00RAXXX |
| | 330 | 5x8 | 30 | 1200 | 500 | SPT0JM331D08O00RAXXX |
| | | 6.3x5 | 37 | 900 | 500 | SPT0JM331E05O00RAXXX |
| | 390 | 6.3x8 | 22 | 1200 | 500 | SPT0JM331E08O00RAXXX |
| | | 5x9 | 30 | 1200 | 500 | SPT0JM391D09O00RAXXX |
| | 470 | 5x10 | 30 | 1200 | 592 | SPT0JM471D10O00RAXXX |
| | | 5.5x9 | 30 | 1200 | 592 | SPT0JM471B09O00RAXXX |
| | | 6.3x7 | 30 | 1100 | 592 | SPT0JM471E07O00RAXXX |
| | | 6.3x8 | 22 | 1300 | 592 | SPT0JM471E08O00RAXXX |
| | 560 | 6.3x7 | 30 | 1200 | 706 | SPT0JM561E07O00RAXXX |
| | | 6.3x8 | 30 | 1400 | 706 | SPT0JM561E08O00RAXXX |
| | | 5.5x9 | 30 | 1200 | 706 | SPT0JM561B09O00RAXXX |
| | 680 | 6.3x9 | 30 | 1500 | 857 | SPT0JM681E09O00RAXXX |
| | | 5.5x9 | 30 | 1400 | 857 | SPT0JM681B09O00RAXXX |
| | | 8x9 | 30 | 1300 | 857 | SPT0JM681F09O00RAXXX |
| | 820 | 6.3x9 | 30 | 1500 | 1033 | SPT0JM821E09O00RAXXX |
| | | 8x9 | 22 | 1400 | 1033 | SPT0JM821F09O00RAXXX |
| | | 6.3x10 | 15 | 1500 | 1260 | SPT0JM102E10O00RAXXX |
| | 1000 | 8x9 | 18 | 1400 | 1260 | SPT0JM102F09O00RAXXX |
| 8x11 | | 15 | 1500 | 1260 | SPT0JM102F11O00RAXXX | |
| 1200 | 8x11 | 15 | 1500 | 1512 | SPT0JM122F11O00RAXXX | |
| 1500 | 8x11 | 15 | 1600 | 1890 | SPT0JM152F11O00RAXXX | |
| 1800 | 10x12 | 15 | 1600 | 1890 | SPT0JM152G12O00RAXXX | |
| 2200 | 10x10 | 15 | 1600 | 2268 | SPT0JM182G10O00RAXXX | |
| 3300 | 8x14 | 15 | 1700 | 2772 | SPT0JM222F14O00RAXXX | |
| | 10x12 | 15 | 1700 | 2772 | SPT0JM222G12O00RAXXX | |
| 4700 | 10x14 | 15 | 1700 | 4158 | SPT0JM332G14O00RAXXX | |
| 5600 | 10x17 | 15 | 1800 | 5000 | SPT0JM472G17O00RAXXX | |
| 5600 | 10x18 | 15 | 1800 | 5000 | SPT0JM562G18O00RAXXX | |
| 6.8 (7.8) | 220 | 5x7 | 28 | 900 | 500 | SPT0CM221D07O00RAXXX |
| | 270 | 5x7 | 28 | 1000 | 500 | SPT0CM271D07O00RAXXX |
| | 330 | 5x8 | 28 | 1100 | 500 | SPT0CM331D08O00RAXXX |
| | | 6.3x5 | 35 | 900 | 500 | SPT0CM331E05O00RAXXX |
| | 470 | 5x9 | 28 | 1200 | 639 | SPT0CM471D09O00RAXXX |
| | | 6.3x7 | 28 | 1100 | 639 | SPT0CM471E07O00RAXXX |
| | 560 | 6.3x8 | 28 | 1300 | 762 | SPT0CM561E08O00RAXXX |
| | 680 | 6.3x9 | 28 | 1400 | 925 | SPT0CM681E09O00RAXXX |
| | 820 | 6.3x9 | 28 | 1400 | 1115 | SPT0CM821E09O00RAXXX |
| | 1000 | 6.3x11 | 17 | 1500 | 1360 | SPT0CM102F11O00RAXXX |
| 8x11 | | 14 | 1500 | 1360 | SPT0CM102F11O00RAXXX | |
| 7 (8.1) | 220 | 5x7 | 28 | 900 | 500 | SPT0QM221D07O00RAXXX |
| | 270 | 5x8 | 28 | 1000 | 500 | SPT0QM271D08O00RAXXX |
| | 330 | 5x9 | 28 | 1000 | 500 | SPT0QM331D09O00RAXXX |
| | 470 | 6.3x7 | 28 | 1100 | 658 | SPT0QM471E07O00RAXXX |
| | | 5.5x9 | 28 | 1000 | 658 | SPT0QM471B09O00RAXXX |
| | 560 | 6.3x8 | 28 | 1200 | 784 | SPT0QM561E08O00RAXXX |
| | 680 | 6.3x9 | 17 | 1200 | 952 | SPT0QM681E09O00RAXXX |
| | 820 | 6.3x10 | 17 | 1300 | 1148 | SPT0QM821E10O00RAXXX |
| 820 | 8x9 | 17 | 1300 | 1148 | SPT0QM821F09O00RAXXX | |
| 7.5 (8.6) | 220 | 5x7 | 28 | 900 | 500 | SPT0AM221D07O00RAXXX |
| | 270 | 5x7 | 28 | 900 | 500 | SPT0AM271D07O00RAXXX |
| | 330 | 5x9 | 28 | 1000 | 500 | SPT0AM331D09O00RAXXX |
| | 390 | 5x9 | 28 | 1000 | 585 | SPT0AM391D09O00RAXXX |
| | 470 | 6.3x7 | 35 | 900 | 705 | SPT0AM471E07O00RAXXX |
| | | 5.5x9 | 28 | 1000 | 705 | SPT0AM471B09O00RAXXX |
| | 500 | 5.5x9 | 28 | 1000 | 750 | SPT0AM501B09O00RAXXX |
| | 560 | 6.3x8 | 28 | 1100 | 840 | SPT0AM561E08O00RAXXX |
| | 680 | 6.3x9 | 17 | 1200 | 1020 | SPT0AM681E09O00RAXXX |
| | 820 | 6.3x10 | 17 | 1300 | 1230 | SPT0AM821E10O00RAXXX |
| 8x9 | | 17 | 1300 | 1230 | SPT0AM821F09O00RAXXX | |
| 1200 | 8x11 | 17 | 1440 | 1800 | SPT0AM122F11O00RAXXX | |
| 10 (11.5) | 47 | 5x7 | 52 | 600 | 500 | SPT1AM470D07O00RAXXX |
| | 56 | 5x7 | 52 | 600 | 500 | SPT1AM560D07O00RAXXX |
| | 68 | 5x7 | 52 | 600 | 500 | SPT1AM680D07O00RAXXX |
| | 82 | 5x7 | 52 | 700 | 500 | SPT1AM820D07O00RAXXX |
| | 100 | 5x7 | 52 | 700 | 500 | SPT1AM101D07O00RAXXX |
| | 120 | 5x7 | 30 | 700 | 500 | SPT1AM121D07O00RAXXX |
| | 150 | 5x7 | 30 | 700 | 500 | SPT1AM151D07O00RAXXX |
| | 180 | 5x8 | 30 | 800 | 500 | SPT1AM181D08O00RAXXX |
| | 220 | 5x9 | 30 | 800 | 500 | SPT1AM221D09O00RAXXX |
| | | 6.3x8 | 22 | 900 | 500 | SPT1AM221E08O00RAXXX |
| | 270 | 6.3x8 | 30 | 900 | 540 | SPT1AM271E08O00RAXXX |
| | | 6.3x8 | 30 | 900 | 660 | SPT1AM331E08O00RAXXX |
| | 330 | 8x9 | 22 | 1000 | 660 | SPT1AM331F09O00RAXXX |
| | 390 | 6.3x8 | 30 | 1000 | 780 | SPT1AM391E08O00RAXXX |

PT series

■ STANDARD RATINGS

| VDC (SV) | Cap (μF) | Size DxL(mm) | ESR (mΩ, 20°C, 100kHz) (max.) | Rated ripple current (mA rms/125°C, 100kHz) | Leakage Current (μA)(max.) | Part Number |
|-----------|----------|--------------|-------------------------------|---|----------------------------|----------------------|
| 10 (11.5) | 470 | 5.5x9 | 30 | 1000 | 940 | SPT1AM471B09000RAXXX |
| | | 6.3x8 | 30 | 1000 | 940 | SPT1AM471E08000RAXXX |
| | | 8x9 | 22 | 1000 | 940 | SPT1AM471F09000RAXXX |
| | | 8x11 | 18 | 1600 | 940 | SPT1AM471F11000RAXXX |
| | 560 | 6.3x10 | 19 | 1000 | 1120 | SPT1AM561E10000RAXXX |
| | | 8x9 | 22 | 1000 | 1120 | SPT1AM561F09000RAXXX |
| | | 8x11 | 18 | 1100 | 1360 | SPT1AM681F11000RAXXX |
| | | 8x11 | 18 | 1200 | 1640 | SPT1AM821F11000RAXXX |
| | 1000 | 8x11 | 18 | 1200 | 2000 | SPT1AM102F11000RAXXX |
| | | 10x12 | 15 | 1500 | 2000 | SPT1AM102G12000RAXXX |
| | | 8x12 | 15 | 1300 | 2400 | SPT1AM122F12000RAXXX |
| | | 10x12 | 15 | 1600 | 2400 | SPT1AM122G12000RAXXX |
| | 1500 | 10x12 | 15 | 1600 | 3000 | SPT1AM152G12000RAXXX |
| | | 10x13 | 15 | 1700 | 3600 | SPT1AM182G13000RAXXX |
| 10x15 | | 15 | 1800 | 4400 | SPT1AM222G15000RAXXX | |
| 10x18 | | 15 | 1800 | 5000 | SPT1AM332G18000RAXXX | |
| 12 (13.8) | 330 | 5.5x9 | 28 | 900 | 792 | SPT1TM331B09000RAXXX |
| | | 5.5x9 | 28 | 900 | 1128 | SPT1TM471B09000RAXXX |
| | 470 | 6.3x9 | 28 | 1000 | 1128 | SPT1TM471E09000RAXXX |
| | | 6.3x10 | 21 | 1000 | 1344 | SPT1TM561E10000RAXXX |
| | 680 | 6.3x11 | 21 | 1100 | 1632 | SPT1TM681E11000RAXXX |
| | | 8x11 | 17 | 1100 | 1968 | SPT1TM821F11000RAXXX |
| | 1000 | 8x12 | 17 | 1200 | 2400 | SPT1TM102F12000RAXXX |
| | | 8x14 | 17 | 1300 | 2880 | SPT1TM122F14000RAXXX |
| 1500 | 8x16 | 17 | 1400 | 3600 | SPT1TM152F16000RAXXX | |
| | 47 | 5x7 | 30 | 600 | 500 | SPT1CM470D07000RAXXX |
| 56 | | 5x7 | 30 | 600 | 500 | SPT1CM560D07000RAXXX |
| | 68 | 5x7 | 30 | 600 | 500 | SPT1CM680D07000RAXXX |
| 82 | | 5x8 | 30 | 600 | 500 | SPT1CM820D08000RAXXX |
| | 100 | 5x7 | 30 | 600 | 500 | SPT1CM101D07000RAXXX |
| 6.3x5 | | 37 | 600 | 500 | SPT1CM101E05000RAXXX | |
| 6.3x8 | | 30 | 800 | 500 | SPT1CM101E08000RAXXX | |
| 5x8 | | 30 | 700 | 500 | SPT1CM121D08000RAXXX | |
| 120 | 5x8 | 30 | 700 | 500 | SPT1CM151D08000RAXXX | |
| | 5x8 | 30 | 700 | 500 | SPT1CM181D08000RAXXX | |
| 150 | 5x8 | 30 | 700 | 576 | SPT1CM181E07000RAXXX | |
| | 6.3x7 | 24 | 700 | 576 | SPT1CM221D10000RAXXX | |
| | 5x10 | 30 | 700 | 704 | SPT1CM221E08000RAXXX | |
| | 6.3x8 | 30 | 800 | 704 | SPT1CM221E10000RAXXX | |
| 180 | 6.3x10 | 22 | 800 | 704 | SPT1CM221E10000RAXXX | |
| | 5.5x9 | 30 | 800 | 864 | SPT1CM271B09000RAXXX | |
| | 6.3x8 | 30 | 800 | 864 | SPT1CM271E08000RAXXX | |
| | 8x9 | 30 | 800 | 864 | SPT1CM271F09000RAXXX | |
| 220 | 5.5x9 | 30 | 800 | 1056 | SPT1CM331B09000RAXXX | |
| | 6.3x9 | 30 | 800 | 1056 | SPT1CM331E09000RAXXX | |
| | 6.3x10 | 30 | 900 | 1056 | SPT1CM331E10000RAXXX | |
| | 6.3x11 | 22 | 900 | 1504 | SPT1CM471E11000RAXXX | |
| 270 | 8x11 | 22 | 1300 | 1504 | SPT1CM471F11000RAXXX | |
| | 8x9 | 19 | 1200 | 1504 | SPT1CM471F09000RAXXX | |
| | 8x11 | 22 | 900 | 1792 | SPT1CM561F11000RAXXX | |
| | 8x13 | 22 | 900 | 1792 | SPT1CM561F13000RAXXX | |
| 330 | 10x12 | 18 | 1000 | 1792 | SPT1CM561G12000RAXXX | |
| | 8x11 | 22 | 1000 | 2176 | SPT1CM681F11000RAXXX | |
| | 10x12 | 18 | 1000 | 2176 | SPT1CM681G12000RAXXX | |
| | 8x13 | 16 | 1000 | 2624 | SPT1CM821F13000RAXXX | |
| 370 | 10x12 | 18 | 1100 | 2624 | SPT1CM821G12000RAXXX | |
| | 10x12 | 18 | 1200 | 3200 | SPT1CM102G12000RAXXX | |
| | 8x14 | 18 | 1200 | 3200 | SPT1CM102F14000RAXXX | |
| | 10x18 | 18 | 1600 | 4800 | SPT1CM152G18000RAXXX | |
| 470 | 10x14 | 18 | 1600 | 5000 | SPT1CM182G14000RAXXX | |
| | 10x18 | 18 | 1700 | 5000 | SPT1CM222G18000RAXXX | |
| | 82 | 6.3x8 | 42 | 1290 | 500 | SPT1DM820E08000RAXXX |
| | 120 | 6.3x8 | 42 | 700 | 500 | SPT1DM121E08000RAXXX |
| 20 (23.0) | 150 | 6.3x10 | 28 | 700 | 600 | SPT1DM151E10000RAXXX |
| | | 8x11 | 28 | 700 | 880 | SPT1DM221F11000RAXXX |
| | 220 | 8x11 | 28 | 800 | 1080 | SPT1DM271F11000RAXXX |
| | | 10x12 | 28 | 800 | 1880 | SPT1DM471G12000RAXXX |
| | 270 | 8x11 | 28 | 700 | 1880 | SPT1DM471F11000RAXXX |
| | | 10x12 | 28 | 900 | 2240 | SPT1DM561G12000RAXXX |
| | 560 | 10x15 | 28 | 900 | 2720 | SPT1DM681G15000RAXXX |
| | | 10x18 | 28 | 1000 | 3280 | SPT1DM821G18000RAXXX |
| | 820 | 10x18 | 28 | 1100 | 4000 | SPT1DM102G18000RAXXX |
| | | 22 | 5x9 | 90 | 500 | 500 |
| 25 (28.8) | 33 | 5x9 | 90 | 500 | 500 | SPT1EM330D09000RAXXX |
| | 39 | 5x8 | 90 | 500 | 500 | SPT1EM390D08000RAXXX |
| | 47 | 5x9 | 90 | 500 | 500 | SPT1EM470D09000RAXXX |
| | 56 | 5x9 | 90 | 600 | 500 | SPT1EM560D09000RAXXX |

Conductive Polymer Radial Type

PT series

■ STANDARD RATINGS

| VDC (SV) | Cap (μF) | Size DxL(mm) | ESR (mΩ, 20°C, 100kHz) (max.) | Rated ripple current (mA rms/125°C, 100kHz) | Leakage Current (μA)(max.) | Part Number |
|-----------|----------|--------------|-------------------------------|---|----------------------------|----------------------|
| 25 (28.8) | 68 | 6.3x7 | 45 | 600 | 500 | SPT1EM680E07O00RAXXX |
| | 82 | 6.3x7 | 45 | 600 | 500 | SPT1EM820E07O00RAXXX |
| | 100 | 6.3x8 | 45 | 700 | 500 | SPT1EM101E08O00RAXXX |
| | | 6.3x10 | 30 | 800 | 500 | SPT1EM101E10O00RAXXX |
| | 120 | 8x11 | 30 | 900 | 500 | SPT1EM101F11O00RAXXX |
| | | 6.3x8 | 45 | 700 | 600 | SPT1EM121E08O00RAXXX |
| | 150 | 6.3x10 | 30 | 800 | 750 | SPT1EM151E10O00RAXXX |
| | 180 | 6.3x10 | 30 | 800 | 900 | SPT1EM181F10O00RAXXX |
| | | 8x9 | 45 | 700 | 1100 | SPT1EM181F09O00RAXXX |
| | 220 | 8x11 | 30 | 900 | 1100 | SPT1EM221F11O00RAXXX |
| | | 10x12 | 30 | 1000 | 1350 | SPT1EM221G12O00RAXXX |
| | 270 | 8x11 | 30 | 900 | 1650 | SPT1EM271F11O00RAXXX |
| | | 8x11 | 30 | 900 | 1650 | SPT1EM331F11O00RAXXX |
| | 330 | 10x12 | 30 | 1100 | 1650 | SPT1EM331G12O00RAXXX |
| | | 10x10 | 37 | 800 | 2350 | SPT1EM331G10O00RAXXX |
| | 470 | 10x12 | 30 | 1200 | 2350 | SPT1EM471G12O00RAXXX |
| | | 8x16 | 30 | 1000 | 2350 | SPT1EM471F16O00RAXXX |
| | 560 | 10x12 | 30 | 1200 | 2800 | SPT1EM561G12O00RAXXX |
| 680 | 10x15 | 30 | 1200 | 3400 | SPT1EM681G15O00RAXXX | |
| | 10x12 | 30 | 1200 | 3400 | SPT1EM681G12O00RAXXX | |
| 820 | 10x18 | 30 | 1200 | 4100 | SPT1EM821G18O00RAXXX | |
| 1000 | 10x18 | 30 | 1300 | 5000 | SPT1EM102G18O00RAXXX | |

Specifications subject to change without notice.

PK series

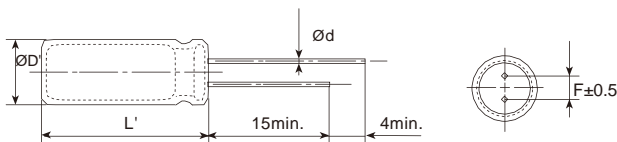
- Endurance: +135°C 1,000 hours
- High Temperature Resistance
- Recommended Applications: Large LED lamp power supply
- RoHS Compliant and lead-free



SPECIFICATIONS

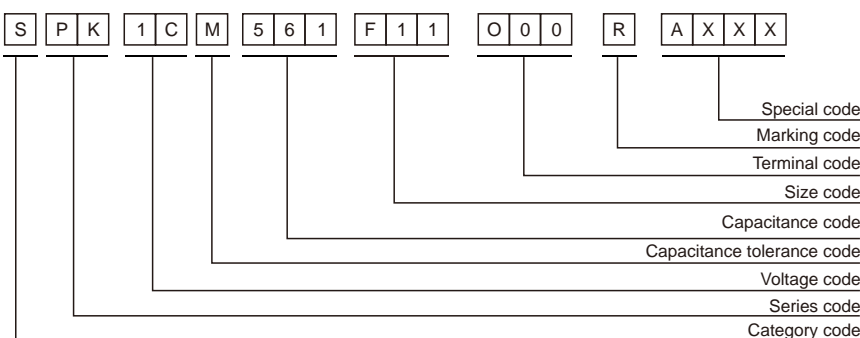
| Items | Characteristics | | | | | | | |
|--|--|-------------------------------------|-----|-----|------|----|----|----|
| Category Temperature Range | -55~+135°C | | | | | | | |
| Rated Working Voltage Range | 6.3~25 V _{dc} | | | | | | | |
| Nominal Capacitance Range | 100~1500μF | | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C,120Hz) | | | | | | | |
| DC Leakage Current | I 0.2CV or 500μA, whichever is greater. Where, I:Max.leakage current (μA),C:Nominal capacitance (μF),V: Rated voltage (V) (at 20°C after 2 minutes) | | | | | | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 6.3 | 6.8 | 7.5 | 10 | 16 | 20 | 25 |
| | tan δ (max.) | 0.08 | | | 0.12 | | | |
| ESR(100kHz,20°C) | Value in characteristics table | | | | | | | |
| Temperature Characteristic (Impedance Ratio at 100kHz) | Z(+135°C)/Z(+20°C) 1.25 Z(-55°C)/Z(+20°C) 1.25 | | | | | | | |
| Endurance | After applying rated voltage for 1,000 hours at 135°C, the capacitors shall meet the following requirements. | | | | | | | |
| | Appearance | No significant damage | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | |
| | D.F. (tan δ) | 150% of the initial specified value | | | | | | |
| | ESR | 150% of the initial specified value | | | | | | |
| Leakage Current | The initial specified value | | | | | | | |
| Humidity Test | After subjecting to 90~95% RH for 1,000 hours at 60°C without voltage applied,the capacitors shall meet the specified values for the Endurance characteristics listed above. | | | | | | | |
| Surge Test | After subjecting to 1,000 cycles each consisting of charge with the surge voltage specified at normal temperature for 30 seconds through a protective resistor and discharge for 5 minutes 30 seconds, the capacitors shall meet the following requirements. | | | | | | | |
| | Appearance | No significant damage | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | |
| | D.F. (tan δ) | 150% of the initial specified value | | | | | | |
| | ESR | 150% of the initial specified value | | | | | | |
| Leakage Current | The initial specified value | | | | | | | |

DIMENSIONS[mm]



| ØD | 5 | 5.5 | 6.3 | 8 | 10 |
|-----|-------------|-----|-----|----------|-----|
| Ød | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 |
| F | 2.0 | 2.5 | 2.5 | 3.5 | 5.0 |
| ØD' | ØD-0.1~+0.5 | | | | |
| L' | L+1.0max. | | | L-0.5~+1 | |

PART NUMBERING SYSTEM



Conductive Polymer Radial Type

PK series

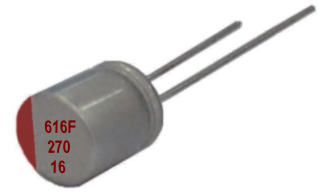
■ STANDARD RATINGS

| VDC (SV) | Cap (μF) | Size DxL(mm) | ESR (mΩ, 20°C, 100kHz) (max.) | Rated ripple current (mA rms/135°C, 100kHz) | Leakage Current (μA)(max.) | Part Number |
|-----------|----------|--------------|-------------------------------|---|----------------------------|----------------------|
| 6.3 (7.2) | 330 | 6.3x8 | 22 | 400 | 500 | SPK0JM331E08O00RAXXX |
| | 470 | 6.3x8 | 22 | 400 | 592 | SPK0JM471E08O00RAXXX |
| | 560 | 6.3x8 | 30 | 400 | 706 | SPK0JM561E08O00RAXXX |
| | 680 | 8x9 | 30 | 400 | 857 | SPK0JM681F09O00RAXXX |
| | 820 | 8x11 | 15 | 500 | 1033 | SPK0JM821F11O00RAXXX |
| | 1000 | 8x11 | 15 | 500 | 1260 | SPK0JM102F11O00RAXXX |
| | 1200 | 8x11 | 15 | 500 | 1512 | SPK0JM122F11O00RAXXX |
| | 1500 | 10x12 | 15 | 500 | 1890 | SPK0JM152G12O00RAXXX |
| 6.8 (7.8) | 220 | 6.3x8 | 30 | 300 | 500 | SPK0CM221E08O00RAXXX |
| | 270 | 6.3x8 | 30 | 400 | 500 | SPK0CM271E08O00RAXXX |
| | 330 | 6.3x7 | 30 | 300 | 500 | SPK0CM331E07O00RAXXX |
| | 470 | 6.3x7 | 30 | 300 | 639 | SPK0CM471E07O00RAXXX |
| | 560 | 6.3x8 | 30 | 400 | 762 | SPK0CM561E08O00RAXXX |
| | 1000 | 8x11 | 20 | 500 | 1360 | SPK0CM102F11O00RAXXX |
| 7 (8.1) | 470 | 6.3x7 | 30 | 300 | 658 | SPK0QM471E07O00RAXXX |
| | 560 | 6.3x8 | 30 | 400 | 784 | SPK0QM561E08O00RAXXX |
| 7.5 (8.6) | 330 | 6.3x7 | 30 | 300 | 500 | SPK0AM331E07O00RAXXX |
| | 470 | 6.3x7 | 40 | 300 | 705 | SPK0AM471E07O00RAXXX |
| | 560 | 8x9 | 30 | 400 | 840 | SPK0AM561F09O00RAXXX |
| | 680 | 8x9 | 30 | 400 | 1020 | SPK0AM681F09O00RAXXX |
| | 1000 | 8x11 | 20 | 400 | 1500 | SPK0AM102F11O00RAXXX |
| 10 (11.5) | 180 | 6.3x7 | 30 | 200 | 500 | SPK1AM181E07O00RAXXX |
| | 220 | 6.3x8 | 22 | 300 | 500 | SPK1AM221E08O00RAXXX |
| | 270 | 6.3x8 | 30 | 300 | 540 | SPK1AM271E08O00RAXXX |
| | 330 | 6.3x10 | 18 | 300 | 660 | SPK1AM331E10O00RAXXX |
| | 470 | 8x11 | 18 | 500 | 940 | SPK1AM471F11O00RAXXX |
| | 680 | 8x11 | 18 | 300 | 1360 | SPK1AM681F11O00RAXXX |
| | 1000 | 10x12 | 15 | 500 | 2000 | SPK1AM102G12O00RAXXX |
| | 1200 | 10x12 | 15 | 500 | 2400 | SPK1AM122G12O00RAXXX |
| 16 (18.4) | 100 | 6.3x8 | 30 | 200 | 500 | SPK1CM101E08O00RAXXX |
| | 470 | 8x11 | 22 | 400 | 1504 | SPK1CM471F11O00RAXXX |
| | 560 | 10x12 | 18 | 300 | 1792 | SPK1CM561G12O00RAXXX |
| | 680 | 10x12 | 18 | 300 | 2176 | SPK1CM681G12O00RAXXX |
| 20 (23.0) | 180 | 10x12 | 30 | 300 | 720 | SPK1DM181G12O00RAXXX |
| | 270 | 8x11 | 30 | 300 | 1080 | SPK1DM271F11O00RAXXX |
| 25(28.8) | 270 | 8x11 | 30 | 300 | 1350 | SPK1EM271F11O00RAXXX |

Specifications subject to change without notice.

PF series

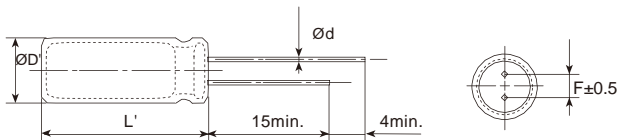
- Endurance: +105°C 3,000~5,000 hours
- Long life time
- Recommended Applications: System Board, Display Card, Small Charger and intelligent TV
- RoHS Compliant and lead-free



SPECIFICATIONS

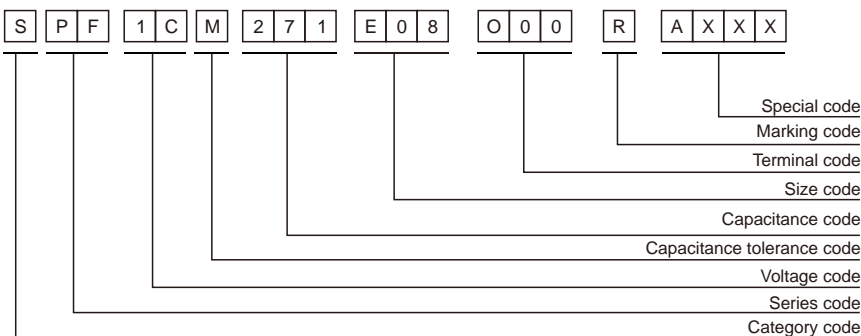
| Items | Characteristics | | | | | | | | | |
|--|--|-------------------------------------|-----|-----|------|----|----|------|-----|------------------|
| Category Temperature Range | -55~+105°C | | | | | | | | | |
| Rated Working Voltage Range | 6.3~100 V _{dc} | | | | | | | | | |
| Nominal Capacitance Range | 4.7~5600μF | | | | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | | | | | | | | |
| DC Leakage Current | I 0.2CV or 500μA, whichever is greater. Where, I:Max.leakage current (μA), C:Nominal capacitance (μF), V: Rated voltage (V) (at 20°C after 2 minutes) | | | | | | | | | |
| DissipationFactor (tan) | Rated Voltage(V _{dc}) | 6.3 | 6.8 | 7.5 | 10 | 16 | 63 | 80 | 100 | |
| | tan (max.) | 0.08 | | | 0.12 | | | 0.15 | | (at 20°C, 120Hz) |
| ESR(100kHz,20°C) | Value in characteristics table | | | | | | | | | |
| Temperature Characteristic (Impedance Ratio at 100kHz) | Z(+105°C)/Z(+20°C) 1.25 Z(-55°C)/Z(+20°C) 1.25 | | | | | | | | | |
| Endurance | After applying rated voltage for 3,000 to 5,000 hours at 105°C, the capacitors shall meet the following requirements. | | | | | | | | | |
| | Appearance | No significant damage | | | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | | | |
| | D.F. (tan) | 150% of the initial specified value | | | | | | | | |
| | ESR | 150% of the initial specified value | | | | | | | | |
| | Leakage Current | The initial specified value | | | | | | | | |
| Humidity Test | After subjecting to 90~95%RH for 2,000 hours at 60°C without voltage applied, the capacitors shall meet the specified values for the Endurance characteristics listed above. | | | | | | | | | |
| Surge Test | After subjecting to 1,000 cycles each consisting of charge with the surge voltage specified at normal temperature for 30 seconds through a protective resistor and discharge for 5 minutes 30 seconds, the capacitors shall meet the following requirements. | | | | | | | | | |
| | Appearance | No significant damage | | | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | | | |
| | D.F. (tan) | 150% of the initial specified value | | | | | | | | |
| | ESR | 150% of the initial specified value | | | | | | | | |
| | Leakage Current | The initial specified value | | | | | | | | |

DIMENSIONS[mm]



| | | | | | |
|-----|-------------|-----|-----|-----------|-----|
| ∅D | 5 | 5.5 | 6.3 | 8 | 10 |
| ∅d | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 |
| F | 2.0 | 2.5 | 2.5 | 3.5 | 5.0 |
| ∅D' | ∅D-0.1~+0.5 | | | | |
| L' | L+1.0max. | | | L-0.5~-+1 | |

PART NUMBERING SYSTEM



PF series

■ STANDARD RATINGS

| VDC (SV) | Cap (μF) | Size DxL(mm) | ESR (mΩ, 20°C, 100kHz) (max.) | Rated ripple current (mA rms/105°C, 100kHz) | Leakage Current (μA)(max.) | Part Number |
|-----------|----------|--------------|-------------------------------|---|----------------------------|----------------------|
| 6.3 (7.2) | 220 | 5x7 | 22 | 3100 | 500 | SPF0JM221D07O00RAXXX |
| | 270 | 5x7 | 22 | 3400 | 500 | SPF0JM271D07O00RAXXX |
| | 330 | 5x8 | 22 | 3600 | 500 | SPF0JM331D08O00RAXXX |
| | | 6.3x5 | 27 | 2800 | 500 | SPF0JM331E05O00RAXXX |
| | 390 | 6.3x8 | 16 | 3600 | 500 | SPF0JM331E08O00RAXXX |
| | | 5x9 | 22 | 3600 | 500 | SPF0JM391D09O00RAXXX |
| | 470 | 5x10 | 22 | 3800 | 592 | SPF0JM471D10O00RAXXX |
| | | 5.5x9 | 22 | 3600 | 592 | SPF0JM471B09O00RAXXX |
| | | 6.3x7 | 22 | 3500 | 592 | SPF0JM471E07O00RAXXX |
| | | 6.3x8 | 16 | 3900 | 592 | SPF0JM471E08O00RAXXX |
| | 560 | 6.3x7 | 22 | 3700 | 706 | SPF0JM561E07O00RAXXX |
| | | 6.3x8 | 22 | 4300 | 706 | SPF0JM561E08O00RAXXX |
| | | 5.5x9 | 22 | 3800 | 706 | SPF0JM561B09O00RAXXX |
| | 680 | 6.3x9 | 22 | 4500 | 857 | SPF0JM681E09O00RAXXX |
| | | 5.5x9 | 22 | 4300 | 857 | SPF0JM681B09O00RAXXX |
| | | 8x9 | 22 | 4100 | 857 | SPF0JM681F09O00RAXXX |
| | 820 | 6.3x9 | 22 | 4500 | 1033 | SPF0JM821E09O00RAXXX |
| | | 8x9 | 16 | 4200 | 1033 | SPF0JM821F09O00RAXXX |
| | | 6.3x10 | 11 | 4600 | 1260 | SPF0JM102E10O00RAXXX |
| | 1000 | 8x9 | 13 | 4300 | 1260 | SPF0JM102F09O00RAXXX |
| 8x11 | | 11 | 4600 | 1260 | SPF0JM102F11O00RAXXX | |
| 1200 | 8x11 | 11 | 4700 | 1512 | SPF0JM122F11O00RAXXX | |
| 1500 | 8x11 | 11 | 4800 | 1890 | SPF0JM152F11O00RAXXX | |
| | 10x12 | 11 | 4900 | 1890 | SPF0JM152G12O00RAXXX | |
| 1800 | 10x10 | 11 | 5000 | 2268 | SPF0JM182G10O00RAXXX | |
| 2200 | 8x14 | 11 | 5100 | 2772 | SPF0JM222F14O00RAXXX | |
| | 10x12 | 11 | 5200 | 2772 | SPF0JM222G12O00RAXXX | |
| 3300 | 10x14 | 11 | 5300 | 4158 | SPF0JM332G14O00RAXXX | |
| 4700 | 10x17 | 11 | 5400 | 5000 | SPF0JM472G17O00RAXXX | |
| 5600 | 10x18 | 11 | 5600 | 5000 | SPF0JM562G18O00RAXXX | |
| 6.8 (7.8) | 220 | 5x7 | 22 | 2970 | 500 | SPF0CM221D07O00RAXXX |
| | 270 | 5x7 | 22 | 3240 | 500 | SPF0CM271D07O00RAXXX |
| | 330 | 5x8 | 22 | 3420 | 500 | SPF0CM331D08O00RAXXX |
| | 390 | 5x9 | 22 | 3510 | 530 | SPF0CM391D09O00RAXXX |
| | 470 | 5x9 | 22 | 3690 | 639 | SPF0CM471D09O00RAXXX |
| | | 6.3x7 | 22 | 3330 | 639 | SPF0CM471E07O00RAXXX |
| | 560 | 6.3x8 | 22 | 4050 | 762 | SPF0CM561E08O00RAXXX |
| | 680 | 6.3x9 | 22 | 4320 | 925 | SPF0CM681E09O00RAXXX |
| | 820 | 6.3x9 | 22 | 4410 | 1115 | SPF0CM821E09O00RAXXX |
| | 1000 | 6.3x11 | 13 | 4590 | 1360 | SPF0CM102E11O00RAXXX |
| | 8x11 | 11 | 4635 | 1360 | SPF0CM102F11O00RAXXX | |
| 7 (8.1) | 220 | 5x7 | 22 | 2880 | 500 | SPF0QM221D07O00RAXXX |
| | 270 | 5x8 | 22 | 3060 | 500 | SPF0QM271D08O00RAXXX |
| | 330 | 5x9 | 22 | 3240 | 500 | SPF0QM331D09O00RAXXX |
| | 470 | 6.3x8 | 22 | 3420 | 658 | SPF0QM471E08O00RAXXX |
| | | 5.5x9 | 22 | 3240 | 658 | SPF0QM471B09O00RAXXX |
| | 560 | 6.3x8 | 22 | 3600 | 784 | SPF0QM561E08O00RAXXX |
| | 680 | 6.3x9 | 13 | 3780 | 952 | SPF0QM681E09O00RAXXX |
| | 820 | 6.3x10 | 13 | 4050 | 1148 | SPF0QM821E10O00RAXXX |
| | 8x9 | 13 | 4140 | 1148 | SPF0QM821F09O00RAXXX | |
| 7.5 (8.6) | 220 | 5x7 | 22 | 2790 | 500 | SPF0AM221D07O00RAXXX |
| | 270 | 5x8 | 22 | 2970 | 500 | SPF0AM271D08O00RAXXX |
| | 330 | 5x9 | 22 | 3150 | 500 | SPF0AM331D09O00RAXXX |
| | 470 | 6.3x7 | 28 | 2880 | 705 | SPF0AM471E07O00RAXXX |
| | | 5.5x9 | 22 | 3195 | 705 | SPF0AM471B09O00RAXXX |
| | 500 | 5.5x9 | 22 | 3240 | 750 | SPF0AM501B09O00RAXXX |
| | 560 | 6.3x8 | 22 | 3510 | 840 | SPF0AM561E08O00RAXXX |
| | 680 | 6.3x9 | 13 | 3690 | 1020 | SPF0AM681E09O00RAXXX |
| | 820 | 6.3x10 | 13 | 3960 | 1230 | SPF0AM821E10O00RAXXX |
| | | 8x9 | 13 | 4095 | 1230 | SPF0AM821F09O00RAXXX |
| 1200 | 8x11 | 13 | 4320 | 1800 | SPF0AM122F11O00RAXXX | |
| 10 (11.5) | 47 | 5x7 | 38 | 1900 | 500 | SPF1AM470D07O00RAXXX |
| | 56 | 5x7 | 38 | 2000 | 500 | SPF1AM560D07O00RAXXX |
| | 68 | 5x7 | 38 | 2000 | 500 | SPF1AM680D07O00RAXXX |
| | 82 | 5x7 | 38 | 2100 | 500 | SPF1AM820D07O00RAXXX |
| | 100 | 5x7 | 38 | 2100 | 500 | SPF1AM101D07O00RAXXX |
| | 120 | 5x7 | 22 | 2200 | 500 | SPF1AM121D07O00RAXXX |
| | 150 | 5x7 | 22 | 2200 | 500 | SPF1AM151D07O00RAXXX |
| | 220 | 5x9 | 22 | 2500 | 500 | SPF1AM221D09O00RAXXX |
| | | 6.3x8 | 16 | 2800 | 500 | SPF1AM221E08O00RAXXX |
| | 270 | 6.3x8 | 22 | 2700 | 540 | SPF1AM271E08O00RAXXX |
| | 330 | 6.3x8 | 22 | 2900 | 660 | SPF1AM331E08O00RAXXX |
| | 390 | 8x9 | 16 | 3000 | 660 | SPF1AM331F09O00RAXXX |
| | | 6.3x8 | 22 | 3000 | 780 | SPF1AM391E08O00RAXXX |

PF series

■ STANDARD RATINGS

| VDC (SV) | Cap (μF) | Size DxL(mm) | ESR (mΩ, 20°C, 100kHz) (max.) | Rated ripple current (mArms/105°C, 100kHz) | Leakage Current (μA)(max.) | Part Number | |
|-----------|-----------|--------------|-------------------------------|--|----------------------------|----------------------|----------------------|
| 10 (11.5) | 470 | 5.5x9 | 22 | 3000 | 940 | SPF1AM471B09000RAXXX | |
| | | 6.3x8 | 22 | 3100 | 940 | SPF1AM471E08000RAXXX | |
| | | 8x9 | 16 | 3100 | 940 | SPF1AM471F09000RAXXX | |
| | | 8x11 | 13 | 5000 | 940 | SPF1AM471F11000RAXXX | |
| | 560 | 6.3x10 | 14 | 3200 | 1120 | SPF1AM561E10000RAXXX | |
| | | 8x9 | 16 | 3200 | 1120 | SPF1AM561F09000RAXXX | |
| | 680 | 8x11 | 13 | 3500 | 1360 | SPF1AM681F11000RAXXX | |
| | | 8x11 | 13 | 3600 | 1640 | SPF1AM821F11000RAXXX | |
| | 820 | 8x11 | 13 | 3700 | 2000 | SPF1AM102F11000RAXXX | |
| | | 10x12 | 11 | 4700 | 2000 | SPF1AM102G12000RAXXX | |
| | 1200 | 8x12 | 11 | 4000 | 2400 | SPF1AM122F12000RAXXX | |
| | | 10x12 | 11 | 4900 | 2400 | SPF1AM122G12000RAXXX | |
| | 1500 | 10x12 | 11 | 4900 | 3000 | SPF1AM152G12000RAXXX | |
| | | 1800 | 10x13 | 11 | 5200 | 3600 | SPF1AM182G13000RAXXX |
| | 2200 | 10x15 | 11 | 5400 | 4400 | SPF1AM222G15000RAXXX | |
| 3300 | | 10x18 | 11 | 5500 | 5000 | SPF1AM332G18000RAXXX | |
| 12 (13.8) | 330 | 5.5x9 | 22 | 2790 | 792 | SPF1TM331B09000RAXXX | |
| | | 5.5x9 | 22 | 2880 | 1128 | SPF1TM471B09000RAXXX | |
| | 470 | 6.3x9 | 22 | 3105 | 1128 | SPF1TM471E09000RAXXX | |
| | | 6.3x10 | 17 | 3060 | 1128 | SPF1TM471E10000RAXXX | |
| | 680 | 6.3x11 | 17 | 3240 | 1632 | SPF1TM681E11000RAXXX | |
| | | 8x10 | 17 | 3330 | 1632 | SPF1TM681F10000RAXXX | |
| | 820 | 8x11 | 13 | 3420 | 1968 | SPF1TM821F11000RAXXX | |
| | | 1000 | 8x12 | 13 | 3600 | 2400 | SPF1TM102F12000RAXXX |
| | 1200 | 8x14 | 13 | 3960 | 2880 | SPF1TM122F14000RAXXX | |
| | | 1500 | 8x16 | 13 | 4320 | 3600 | SPF1TM152F16000RAXXX |
| 16 (18.4) | 47 | 5x7 | 22 | 1800 | 500 | SPF1CM470D07000RAXXX | |
| | | 5x7 | 22 | 1800 | 500 | SPF1CM560D07000RAXXX | |
| | 68 | 5x7 | 22 | 1900 | 500 | SPF1CM680D07000RAXXX | |
| | | 5x8 | 22 | 1900 | 500 | SPF1CM820D08000RAXXX | |
| | 100 | 5x7 | 22 | 2000 | 500 | SPF1CM101D07000RAXXX | |
| | | 6.3x5 | 27 | 1800 | 500 | SPF1CM101E05000RAXXX | |
| | 120 | 5x8 | 22 | 2100 | 500 | SPF1CM121D08000RAXXX | |
| | | 5x8 | 22 | 2100 | 500 | SPF1CM151D08000RAXXX | |
| | 150 | 5x8 | 22 | 2200 | 576 | SPF1CM181D08000RAXXX | |
| | | 6.3x7 | 17 | 2200 | 576 | SPF1CM181E07000RAXXX | |
| | 220 | 5x10 | 22 | 2300 | 704 | SPF1CM221D10000RAXXX | |
| | | 6.3x8 | 22 | 2400 | 704 | SPF1CM221E08000RAXXX | |
| | 270 | 6.3x10 | 16 | 2600 | 704 | SPF1CM221E10000RAXXX | |
| | | 5.5x9 | 22 | 2400 | 864 | SPF1CM271B09000RAXXX | |
| | 330 | 6.3x8 | 22 | 2500 | 864 | SPF1CM271E08000RAXXX | |
| | | 8x9 | 22 | 2600 | 864 | SPF1CM271F09000RAXXX | |
| | 470 | 5.5x9 | 22 | 2600 | 1056 | SPF1CM331B09000RAXXX | |
| | | 6.3x9 | 22 | 2600 | 1056 | SPF1CM331E09000RAXXX | |
| | 560 | 6.3x10 | 16 | 2700 | 1056 | SPF1CM331E10000RAXXX | |
| | | 6.3x11 | 16 | 2800 | 1504 | SPF1CM471E11000RAXXX | |
| | 680 | 8x11 | 16 | 4100 | 1504 | SPF1CM471F11000RAXXX | |
| | | 8x11 | 16 | 2800 | 1792 | SPF1CM561F11000RAXXX | |
| | 820 | 8x13 | 16 | 2800 | 1792 | SPF1CM561F13000RAXXX | |
| | | 10x12 | 13 | 3000 | 2176 | SPF1CM681F11000RAXXX | |
| | 1000 | 8x13 | 12 | 3100 | 2624 | SPF1CM821F13000RAXXX | |
| | | 10x12 | 13 | 3400 | 2624 | SPF1CM821G12000RAXXX | |
| | 1200 | 10x12 | 13 | 3600 | 3200 | SPF1CM102G12000RAXXX | |
| | | 8x14 | 13 | 3200 | 3200 | SPF1CM102F14000RAXXX | |
| | 1500 | 10x15 | 13 | 3800 | 3840 | SPF1CM122G15000RAXXX | |
| | | 10x12 | 13 | 3700 | 3840 | SPF1CM122G12000RAXXX | |
| | 1800 | 10x18 | 13 | 4900 | 4800 | SPF1CM152G18000RAXXX | |
| | | 10x14 | 13 | 4800 | 5000 | SPF1CM182G14000RAXXX | |
| | 2200 | 10x17 | 13 | 5200 | 5000 | SPF1CM222G17000RAXXX | |
| | | 10x15 | 13 | 4900 | 5000 | SPF1CM222G15000RAXXX | |
| | 20 (23.0) | 33 | 5x8 | 44 | 1710 | 500 | SPF1DM330D08000RAXXX |
| | | | 5x8 | 44 | 1755 | 500 | SPF1DM390D08000RAXXX |
| | | 47 | 5x8 | 44 | 1980 | 500 | SPF1DM470D08000RAXXX |
| | | | 5x9 | 44 | 1890 | 500 | SPF1DM560D09000RAXXX |
| | | 68 | 6.3x8 | 33 | 1890 | 500 | SPF1DM680E08000RAXXX |
| | | | 6.3x8 | 33 | 1935 | 500 | SPF1DM820E08000RAXXX |
| 82 | | 6.3x8 | 33 | 1980 | 500 | SPF1DM101E08000RAXXX | |
| | | 6.3x8 | 33 | 1980 | 500 | SPF1DM101E08000RAXXX | |
| 120 | | 6.3x8 | 33 | 2070 | 500 | SPF1DM121E08000RAXXX | |
| | | 6.3x10 | 22 | 2115 | 600 | SPF1DM151E10000RAXXX | |
| 150 | | 8x9 | 33 | 2205 | 880 | SPF1DM221F09000RAXXX | |
| | | 8x11 | 22 | 2295 | 880 | SPF1DM221F11000RAXXX | |
| 270 | | 8x11 | 22 | 2430 | 1080 | SPF1DM271F11000RAXXX | |
| | | 8x11 | 22 | 2520 | 1320 | SPF1DM331F11000RAXXX | |

Conductive Polymer Radial Type

PF series

■ STANDARD RATINGS

| VDC (SV) | Cap (μF) | Size DxL(mm) | ESR (mΩ, 20°C, 100kHz) (max.) | Rated ripple current (mArms/105°C, 100kHz) | Leakage Current (μA)(max.) | Part Number | |
|-----------|-----------|--------------|-------------------------------|--|----------------------------|----------------------|----------------------|
| 20 (23.0) | 470 | 10x12 | 22 | 2610 | 1880 | SPF1DM471G12O00RAXXX | |
| | | 10x13 | 22 | 2790 | 1880 | SPF1DM471G13O00RAXXX | |
| | 680 | 10x15 | 22 | 2970 | 2720 | SPF1DM681G15O00RAXXX | |
| | | 10x12 | 22 | 2700 | 2720 | SPF1DM681G12O00RAXXX | |
| | 820 | 10x18 | 22 | 3060 | 3280 | SPF1DM821G18O00RAXXX | |
| 25 (28.8) | 1000 | 10x18 | 22 | 3510 | 4000 | SPF1DM102G18O00RAXXX | |
| | 33 | 5x9 | 66 | 1600 | 500 | SPF1EM330D09O00RAXXX | |
| | | 39 | 5x8 | 66 | 1700 | 500 | SPF1EM390D08O00RAXXX |
| | 47 | 5x9 | 66 | 1700 | 500 | SPF1EM470D09O00RAXXX | |
| | 56 | 5x9 | 66 | 1800 | 500 | SPF1EM560D09O00RAXXX | |
| | 82 | 6.3x7 | 33 | 1900 | 500 | SPF1EM820E07O00RAXXX | |
| | | 6.3x8 | 33 | 2200 | 500 | SPF1EM101E08O00RAXXX | |
| | 100 | 6.3x10 | 22 | 2500 | 500 | SPF1EM101E10O00RAXXX | |
| | | 8x11 | 22 | 2700 | 500 | SPF1EM101F11O00RAXXX | |
| | 120 | 6.3x8 | 33 | 2200 | 600 | SPF1EM121E08O00RAXXX | |
| | | 6.3x10 | 22 | 2500 | 750 | SPF1EM151E10O00RAXXX | |
| | 150 | 6.3x10 | 22 | 2500 | 900 | SPF1EM181F09O00RAXXX | |
| | 180 | 8x9 | 33 | 2200 | 1100 | SPF1EM221F11O00RAXXX | |
| | 220 | 8x11 | 22 | 2700 | 1350 | SPF1EM271F11O00RAXXX | |
| | 270 | 8x11 | 22 | 2700 | 1650 | SPF1EM331F11O00RAXXX | |
| | 330 | 10x12 | 22 | 2500 | 1650 | SPF1EM331G12O00RAXXX | |
| | | 10x12 | 22 | 3600 | 2350 | SPF1EM471G12O00RAXXX | |
| | 470 | 8x11 | 22 | 2700 | 2350 | SPF1EM471F11O00RAXXX | |
| | | 10x15 | 22 | 3800 | 3400 | SPF1EM681G15O00RAXXX | |
| | 680 | 10x18 | 22 | 4000 | 4100 | SPF1EM821G18O00RAXXX | |
| | | 8x16 | 22 | 3200 | 4100 | SPF1EM821F16O00RAXXX | |
| | 820 | 10x18 | 22 | 4000 | 5000 | SPF1EM102G18O00RAXXX | |
| | 35 (40.3) | 4.7 | 5x8 | 66 | 1500 | 500 | SPF1VM47D08O00RAXXX |
| | | 10 | 5x8 | 66 | 1600 | 500 | SPF1VM100D08O00RAXXX |
| | | 15 | 5x8 | 66 | 1600 | 500 | SPF1VM150D08O00RAXXX |
| 22 | | 5x9 | 110 | 1700 | 500 | SPF1VM220D09O00RAXXX | |
| 33 | | 5x9 | 55 | 1800 | 500 | SPF1VM330D09O00RAXXX | |
| 39 | | 5x9 | 55 | 1800 | 500 | SPF1VM390D09O00RAXXX | |
| 47 | | 6.3x7 | 55 | 1800 | 500 | SPF1VM470E07O00RAXXX | |
| 56 | | 6.3x7 | 55 | 1900 | 500 | SPF1VM560E07O00RAXXX | |
| 68 | | 6.3x7 | 55 | 1900 | 500 | SPF1VM680E07O00RAXXX | |
| 82 | | 6.3x7 | 55 | 2000 | 574 | SPF1VM820E07O00RAXXX | |
| | | 6.3x8 | 55 | 2100 | 700 | SPF1VM101E08O00RAXXX | |
| 100 | | 6.3x10 | 44 | 2100 | 700 | SPF1VM101E10O00RAXXX | |
| | | 8x11 | 44 | 2300 | 700 | SPF1VM101F11O00RAXXX | |
| 120 | | 6.3x10 | 44 | 2200 | 840 | SPF1VM121E10O00RAXXX | |
| 150 | | 6.3x10 | 44 | 2200 | 1050 | SPF1VM151E10O00RAXXX | |
| 220 | | 8x11 | 44 | 2500 | 1540 | SPF1VM221F11O00RAXXX | |
| 270 | | 10x12 | 33 | 2600 | 1540 | SPF1VM221G12O00RAXXX | |
| 270 | | 10x12 | 33 | 2700 | 1890 | SPF1VM271G12O00RAXXX | |
| 330 | | 10x12 | 33 | 2700 | 2310 | SPF1VM331G12O00RAXXX | |
| 470 | | 10x13 | 22 | 2800 | 3290 | SPF1VM471G13O00RAXXX | |
| 680 | | 10x16 | 22 | 3000 | 4760 | SPF1VM681G16O00RAXXX | |
| 820 | | 10x18 | 22 | 3100 | 5000 | SPF1VM821G18O00RAXXX | |
| 1000 | | 10x18 | 22 | 3300 | 5000 | SPF1VM102G18O00RAXXX | |
| 50 (57.5) | | 4.7 | 5x8 | 66 | 1300 | 500 | SPF1HM47D08O00RAXXX |
| | | 10 | 6.3x7 | 38 | 1600 | 500 | SPF1HM100E07O00RAXXX |
| | 15 | 5x8 | 77 | 1400 | 500 | SPF1HM100D08O00RAXXX | |
| | 22 | 6.3x7 | 44 | 1400 | 500 | SPF1HM150D08O00RAXXX | |
| | 33 | 6.3x7 | 44 | 1700 | 500 | SPF1HM220E07O00RAXXX | |
| | 47 | 6.3x8 | 38 | 1800 | 500 | SPF1HM330E07O00RAXXX | |
| | 56 | 6.3x8 | 38 | 1800 | 500 | SPF1HM470E08O00RAXXX | |
| | 68 | 6.3x8 | 38 | 1900 | 560 | SPF1HM560E08O00RAXXX | |
| | 82 | 6.3x10 | 33 | 1900 | 680 | SPF1HM680E10O00RAXXX | |
| | | 8x11 | 33 | 2000 | 1000 | SPF1HM101F11O00RAXXX | |
| | 100 | 8x11 | 33 | 2100 | 1200 | SPF1HM121F11O00RAXXX | |
| | 120 | 10x12 | 33 | 2200 | 1500 | SPF1HM151G12O00RAXXX | |
| | 150 | 10x12 | 33 | 2200 | 1500 | SPF1HM221G12O00RAXXX | |
| | 220 | 10x12 | 33 | 2400 | 2200 | SPF1HM221G12O00RAXXX | |
| | 270 | 10x13 | 22 | 2600 | 2700 | SPF1HM271G13O00RAXXX | |
| | 330 | 10x15 | 22 | 2700 | 3300 | SPF1HM331G15O00RAXXX | |
| | 440 | 10x18 | 22 | 2700 | 4400 | SPF1HM441G18O00RAXXX | |
| | 470 | 10x18 | 22 | 2800 | 4700 | SPF1HM471G18O00RAXXX | |
| | 63 (72.5) | 4.7 | 6.3x8 | 66 | 1400 | 500 | SPF1JM47E08O00RAXXX |
| | | 6.8 | 6.3x8 | 66 | 1400 | 500 | SPF1JM68E08O00RAXXX |
| | | 10 | 6.3x5 | 66 | 1400 | 500 | SPF1JM100E05O00RAXXX |
| | | 33 | 6.3x8 | 33 | 1500 | 500 | SPF1JM330E08O00RAXXX |
| | | 39 | 6.3x8 | 33 | 1500 | 500 | SPF1JM390E08O00RAXXX |

PF series

■ STANDARD RATINGS

| VDC (SV) | Cap (µF) | Size DxL(mm) | ESR (mΩ, 20°C, 100kHz) (max.) | Rated ripple current (mA _{rms} /105°C, 100kHz) | Leakage Current (µA)(max.) | Part Number |
|-------------|----------|--------------|-------------------------------|---|----------------------------|----------------------|
| 63 (72.5) | 47 | 6.3x9 | 33 | 1700 | 592 | SPF1JM470E09O00RAXXX |
| | 56 | 8x9 | 33 | 1600 | 706 | SPF1JM560F09O00RAXXX |
| | 68 | 8x11 | 33 | 1800 | 857 | SPF1JM680F11O00RAXXX |
| | 82 | 8x11 | 33 | 1800 | 1033 | SPF1JM820F11O00RAXXX |
| | 100 | 10x12 | 33 | 1900 | 1260 | SPF1JM101G12O00RAXXX |
| | 150 | 10x12 | 33 | 2200 | 1890 | SPF1JM151G12O00RAXXX |
| | 220 | 10x15 | 22 | 2300 | 2772 | SPF1JM221G15O00RAXXX |
| | 270 | 10x17 | 22 | 2500 | 3402 | SPF1JM271G17O00RAXXX |
| 80 (92.0) | 330 | 10x18 | 22 | 2600 | 4158 | SPF1JM331G18O00RAXXX |
| | 4.7 | 6.3x8 | 66 | 1300 | 500 | SPF1BM4R7E08O00RAXXX |
| | 6.8 | 6.3x8 | 66 | 1300 | 500 | SPF1BM6R8E08O00RAXXX |
| | 22 | 6.3x10 | 66 | 1400 | 500 | SPF1BM220E10O00RAXXX |
| | 33 | 8x11 | 38 | 1500 | 528 | SPF1BM330F11O00RAXXX |
| | 47 | 10x12 | 38 | 1600 | 752 | SPF1BM470G12O00RAXXX |
| | 68 | 10x12 | 38 | 1700 | 1088 | SPF1BM680G12O00RAXXX |
| | 100 | 10x14 | 38 | 1800 | 1600 | SPF1BM101G14O00RAXXX |
| 100 (115.0) | 4.7 | 6.3x8 | 132 | 1200 | 500 | SPF1KM4R7E08O00RAXXX |
| | 6.8 | 6.3x8 | 132 | 1300 | 500 | SPF1KM6R8E08O00RAXXX |
| | 10 | 6.3x10 | 55 | 1300 | 500 | SPF1KM100E10O00RAXXX |
| | | 8x11 | 55 | 1300 | 500 | SPF1KM100F11O00RAXXX |
| | 15 | 8x11 | 55 | 1300 | 500 | SPF1KM150F11O00RAXXX |
| | 22 | 10x12 | 38 | 1400 | 500 | SPF1KM220G12O00RAXXX |
| | 33 | 10x14 | 38 | 1400 | 660 | SPF1KM330G14O00RAXXX |
| | 47 | 10x16 | 38 | 1600 | 940 | SPF1KM470G16O00RAXXX |

Conductive Polymer Radial Type

Specifications subject to change without notice.

PU series

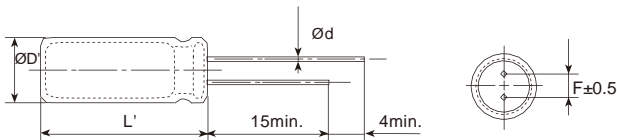
- Endurance: +105°C 2,000 hours
- Ultra-Low ESR
- Recommended Applications: High Order Main Board, Display Card
- RoHS Compliant and lead-free



SPECIFICATIONS

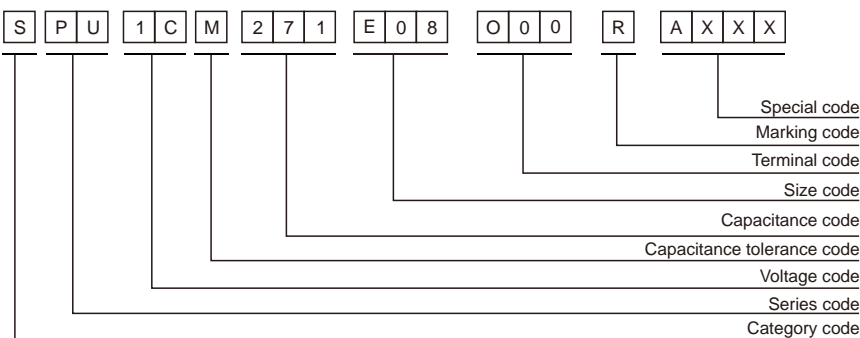
| Items | Characteristics | | | | | | | |
|--|---|-------------------------------------|-----|-----|------|----|----|----|
| Category Temperature Range | -55~+105°C | | | | | | | |
| Rated Working Voltage Range | 6.3~25 V _{dc} | | | | | | | |
| Nominal Capacitance Range | 39~5600μF | | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C,120Hz) | | | | | | | |
| DC Leakage Current | I ≤ 0.2CV or 500μA, whichever is greater. Where, I:Max.leakage current (μA),C:Nominal capacitance (μF),V: Rated voltage (V) (at 20°C after 2 minutes) | | | | | | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 6.3 | 6.8 | 7.5 | 10 | 16 | 20 | 25 |
| | tan δ (max.) | 0.08 | | | 0.12 | | | |
| ESR(100kHz,20°C) | Value in characteristics table | | | | | | | |
| Temperature Characteristic (Impedance Ratio at 100kHz) | Z(+105°C)/Z(+20°C) 1.25 Z(-55°C)/Z(+20°C) 1.25 | | | | | | | |
| Endurance | After applying rated voltage for 2,000 hours at 105°C, the capacitors shall meet the following requirements. | | | | | | | |
| | Appearance | No significant damage | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | |
| | D.F. (tan δ) | 150% of the initial specified value | | | | | | |
| | ESR | 150% of the initial specified value | | | | | | |
| Leakage Current | The initial specified value | | | | | | | |
| Humidity Test | After subjected to 90~95% RH for 2,000 hours at 60°C without voltage applied,the capacitors shall meet the specified values for the Endurance characteristics listed above. | | | | | | | |
| Surge Test | After subjected to 1,000 cycles each consisting of charge with the surge voltage specified at normal temperature for 30 seconds through a protective resistor and discharge for 5 minutes 30 seconds, the capacitors shall meet the following requirements. | | | | | | | |
| | Appearance | No significant damage | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | |
| | D.F. (tan δ) | 150% of the initial specified value | | | | | | |
| | ESR | 150% of the initial specified value | | | | | | |
| Leakage Current | The initial specified value | | | | | | | |

DIMENSIONS[mm]



| | | | | | |
|-----|-------------|-----|-----|----------|-----|
| ∅D | 5 | 5.5 | 6.3 | 8 | 10 |
| ∅d | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 |
| F | 2.0 | 2.5 | 2.5 | 3.5 | 5.0 |
| ∅D' | ∅D-0.1~+0.5 | | | | |
| L' | L+1.0max. | | | L-0.5~+1 | |

PART NUMBERING SYSTEM



PU series

■ STANDARD RATINGS

| VDC (SV) | Cap (μF) | Size DxL(mm) | ESR (mΩ, 20°C, 100kHz) (max.) | Rated ripple current (mA rms/105°C, 100kHz) | Leakage Current (μA)(max.) | Part Number |
|-----------|----------|--------------|-------------------------------|---|----------------------------|----------------------|
| 6.3 (7.2) | 220 | 5x7 | 14 | 3800 | 500 | SPU0JM221D07000RAXXX |
| | 270 | 5x7 | 14 | 4100 | 500 | SPU0JM271D07000RAXXX |
| | 330 | 5x8 | 14 | 4400 | 500 | SPU0JM331D08000RAXXX |
| | | 6.3x5 | 17 | 3400 | 500 | SPU0JM331E05000RAXXX |
| | 390 | 6.3x8 | 10 | 4400 | 500 | SPU0JM331E08000RAXXX |
| | | 5x9 | 14 | 4500 | 500 | SPU0JM391D09000RAXXX |
| | 470 | 5x10 | 14 | 4700 | 592 | SPU0JM471D10000RAXXX |
| | | 5.5x9 | 14 | 4500 | 592 | SPU0JM471B09000RAXXX |
| | | 6.3x7 | 14 | 4200 | 592 | SPU0JM471E07000RAXXX |
| | | 6.3x8 | 10 | 4800 | 592 | SPU0JM471E08000RAXXX |
| | 560 | 6.3x7 | 14 | 4600 | 706 | SPU0JM561E07000RAXXX |
| | | 6.3x8 | 8 | 5200 | 706 | SPU0JM561E08000RAXXX |
| | | 5.5x9 | 14 | 4700 | 706 | SPU0JM561B09000RAXXX |
| | 680 | 6.3x9 | 14 | 5500 | 857 | SPU0JM681E09000RAXXX |
| | | 5.5x9 | 14 | 5200 | 857 | SPU0JM681B09000RAXXX |
| | 820 | 8x9 | 14 | 5000 | 857 | SPU0JM681F09000RAXXX |
| | | 6.3x9 | 14 | 5500 | 1033 | SPU0JM821E09000RAXXX |
| | 1000 | 8x9 | 10 | 5100 | 1033 | SPU0JM821F09000RAXXX |
| | | 6.3x10 | 8 | 5600 | 1260 | SPU0JM102E10000RAXXX |
| | | 8x9 | 8 | 5200 | 1260 | SPU0JM102F09000RAXXX |
| 8x11 | | 8 | 5700 | 1260 | SPU0JM102F11000RAXXX | |
| 1200 | 8x11 | 8 | 5800 | 1512 | SPU0JM122F11000RAXXX | |
| 1500 | 8x11 | 8 | 5900 | 1890 | SPU0JM152F11000RAXXX | |
| 1800 | 10x12 | 8 | 6000 | 1890 | SPU0JM152G12000RAXXX | |
| 2200 | 10x10 | 8 | 6100 | 2268 | SPU0JM182G10000RAXXX | |
| 3300 | 8x14 | 8 | 6200 | 2772 | SPU0JM222F14000RAXXX | |
| 4700 | 10x12 | 8 | 6300 | 2772 | SPU0JM222G12000RAXXX | |
| 5600 | 10x14 | 8 | 6400 | 4158 | SPU0JM332G14000RAXXX | |
| 7000 | 10x17 | 8 | 6700 | 5000 | SPU0JM472G17000RAXXX | |
| 9000 | 10x18 | 8 | 6900 | 5000 | SPU0JM562G18000RAXXX | |
| 6.8 (7.8) | 220 | 5x7 | 15 | 3630 | 500 | SPU0CM221D07000RAXXX |
| | 270 | 5x7 | 15 | 3960 | 500 | SPU0CM271D07000RAXXX |
| | 330 | 5x8 | 15 | 4180 | 500 | SPU0CM331D08000RAXXX |
| | | 6.3x5 | 20 | 3410 | 500 | SPU0CM331E05000RAXXX |
| | 390 | 5x9 | 15 | 4290 | 530 | SPU0CM391D09000RAXXX |
| | 470 | 5x9 | 15 | 4510 | 639 | SPU0CM471D09000RAXXX |
| | | 6.3x7 | 15 | 4070 | 639 | SPU0CM471E07000RAXXX |
| | 560 | 6.3x8 | 15 | 4950 | 762 | SPU0CM561E08000RAXXX |
| | 680 | 6.3x9 | 15 | 5280 | 925 | SPU0CM681E09000RAXXX |
| | 820 | 6.3x9 | 15 | 5390 | 1115 | SPU0CM821E09000RAXXX |
| 1000 | 6.3x11 | 10 | 5610 | 1360 | SPU0CM102E11000RAXXX | |
| | 8x11 | 8 | 5665 | 1360 | SPU0CM102F11000RAXXX | |
| 7 (8.1) | 220 | 5x7 | 18 | 3520 | 500 | SPU0QM221D07000RAXXX |
| | 270 | 5x8 | 18 | 3740 | 500 | SPU0QM271D08000RAXXX |
| | 330 | 5x9 | 18 | 3960 | 500 | SPU0QM331D09000RAXXX |
| | 470 | 6.3x8 | 18 | 4180 | 658 | SPU0QM471E08000RAXXX |
| | | 5.5x9 | 18 | 3960 | 658 | SPU0QM471B09000RAXXX |
| | 560 | 6.3x8 | 18 | 4400 | 784 | SPU0QM561E08000RAXXX |
| | 680 | 6.3x9 | 11 | 4620 | 952 | SPU0QM681E09000RAXXX |
| | 820 | 6.3x10 | 11 | 4950 | 1148 | SPU0QM821E10000RAXXX |
| | 8x9 | 11 | 5060 | 1148 | SPU0QM821F09000RAXXX | |
| 7.5 (8.6) | 220 | 5x7 | 18 | 3410 | 500 | SPU0AM221D07000RAXXX |
| | 270 | 5x8 | 18 | 3630 | 500 | SPU0AM271D08000RAXXX |
| | 330 | 5x9 | 18 | 3850 | 500 | SPU0AM331D09000RAXXX |
| | 390 | 5x9 | 18 | 3850 | 585 | SPU0AM391D09000RAXXX |
| | 470 | 6.3x7 | 23 | 3520 | 705 | SPU0AM471E07000RAXXX |
| | | 5.5x9 | 18 | 3905 | 705 | SPU0AM471B09000RAXXX |
| | 500 | 5.5x9 | 18 | 3960 | 750 | SPU0AM501B09000RAXXX |
| | 560 | 6.3x8 | 18 | 4290 | 840 | SPU0AM561E08000RAXXX |
| | 680 | 6.3x9 | 11 | 4510 | 1020 | SPU0AM681E09000RAXXX |
| | 820 | 6.3x10 | 11 | 4840 | 1230 | SPU0AM821E10000RAXXX |
| | | 8x9 | 11 | 5005 | 1230 | SPU0AM821F09000RAXXX |
| | 1200 | 8x11 | 11 | 5280 | 1800 | SPU0AM122F11000RAXXX |
| 10 (11.5) | 47 | 5x7 | 24 | 2400 | 500 | SPU1AM470D07000RAXXX |
| | 56 | 5x7 | 24 | 2400 | 500 | SPU1AM560D07000RAXXX |
| | 68 | 5x7 | 24 | 2500 | 500 | SPU1AM680D07000RAXXX |
| | 82 | 5x7 | 24 | 2500 | 500 | SPU1AM820D07000RAXXX |
| | 100 | 5x7 | 24 | 2600 | 500 | SPU1AM101D07000RAXXX |
| | 120 | 5x7 | 14 | 2600 | 500 | SPU1AM121D07000RAXXX |
| | 150 | 5x7 | 14 | 2700 | 500 | SPU1AM151D07000RAXXX |
| | 220 | 5x9 | 14 | 3100 | 500 | SPU1AM221D09000RAXXX |
| | 6.3x8 | 10 | 3400 | 500 | SPU1AM221E08000RAXXX | |

Conductive Polymer Radial Type

PU series

■ STANDARD RATINGS

| VDC (SV) | Cap (μF) | Size DxL(mm) | ESR (mΩ, 20°C, 100kHz)(max.) | Rated ripple current (mA rms/105°C, 100kHz) | Leakage Current (μA)(max.) | Part Number |
|--------------|----------|--------------|------------------------------|---|----------------------------|----------------------|
| 10 (11.5) | 270 | 6.3x8 | 14 | 3400 | 540 | SPU1AM271E08O00RAXXX |
| | 330 | 6.3x8 | 14 | 3600 | 660 | SPU1AM331E08O00RAXXX |
| | | 8x9 | 10 | 3700 | 660 | SPU1AM331F09O00RAXXX |
| | 390 | 6.3x10 | 8 | 3800 | 660 | SPU1AM331E10O00RAXXX |
| | | 6.3x8 | 14 | 3700 | 780 | SPU1AM391E08O00RAXXX |
| | 470 | 5.5x9 | 14 | 3700 | 940 | SPU1AM471B09O00RAXXX |
| | | 6.3x8 | 14 | 3800 | 940 | SPU1AM471E08O00RAXXX |
| | | 8x9 | 10 | 3900 | 940 | SPU1AM471F09O00RAXXX |
| | | 8x11 | 8 | 6200 | 940 | SPU1AM471F11O00RAXXX |
| | | 6.3x10 | 9 | 3900 | 1120 | SPU1AM561E10O00RAXXX |
| | | 8x9 | 10 | 3900 | 1120 | SPU1AM561F09O00RAXXX |
| | 680 | 8x11 | 8 | 4200 | 1360 | SPU1AM681F11O00RAXXX |
| | 820 | 8x11 | 8 | 4400 | 1640 | SPU1AM821F11O00RAXXX |
| | 1000 | 8x11 | 8 | 4600 | 2000 | SPU1AM102F11O00RAXXX |
| | | 10x12 | 8 | 5800 | 2000 | SPU1AM102G12O00RAXXX |
| | 1200 | 8x12 | 8 | 4900 | 2400 | SPU1AM122F12O00RAXXX |
| | | 10x12 | 8 | 5900 | 2400 | SPU1AM122G12O00RAXXX |
| | 1500 | 10x12 | 8 | 6000 | 3000 | SPU1AM152G12O00RAXXX |
| 1800 | 10x13 | 8 | 6300 | 3600 | SPU1AM182G13O00RAXXX | |
| 2200 | 10x15 | 8 | 6700 | 4400 | SPU1AM222G15O00RAXXX | |
| 3300 | 10x18 | 8 | 6800 | 5000 | SPU1AM332G18O00RAXXX | |
| 12 (13.8) | 330 | 5.5x9 | 18 | 3410 | 792 | SPU1TM331B09O00RAXXX |
| | 470 | 5.5x9 | 18 | 3520 | 1128 | SPU1TM471B09O00RAXXX |
| | | 6.3x9 | 18 | 3795 | 1128 | SPU1TM471E09O00RAXXX |
| | 560 | 6.3x10 | 14 | 3740 | 1344 | SPU1TM561E10O00RAXXX |
| | 680 | 6.3x11 | 14 | 3960 | 1632 | SPU1TM681E11O00RAXXX |
| | | 8x10 | 14 | 4070 | 1632 | SPU1TM681F11O00RAXXX |
| | 820 | 8x11 | 11 | 4180 | 1968 | SPU1TM821F11O00RAXXX |
| | 1000 | 8x12 | 11 | 4400 | 2400 | SPU1TM102F12O00RAXXX |
| 1200 | 8x14 | 11 | 4840 | 2880 | SPU1TM122F14O00RAXXX | |
| | 8x16 | 11 | 5280 | 3600 | SPU1TM152F16O00RAXXX | |
| 16 (18.4) | 47 | 5x7 | 14 | 2200 | 500 | SPU1CM470D07O00RAXXX |
| | 56 | 5x7 | 14 | 2300 | 500 | SPU1CM560D07O00RAXXX |
| | 68 | 5x7 | 14 | 2300 | 500 | SPU1CM680D07O00RAXXX |
| | 82 | 5x8 | 14 | 2400 | 500 | SPU1CM820D08O00RAXXX |
| | 100 | 5x7 | 14 | 2400 | 500 | SPU1CM101D07O00RAXXX |
| | | 6.3x5 | 17 | 2300 | 500 | SPU1CM101E05O00RAXXX |
| | 120 | 6.3x8 | 14 | 3000 | 500 | SPU1CM101E08O00RAXXX |
| | | 5x8 | 14 | 2500 | 500 | SPU1CM121D08O00RAXXX |
| | 150 | 5x8 | 14 | 2600 | 500 | SPU1CM151D08O00RAXXX |
| | 180 | 5x8 | 14 | 2600 | 576 | SPU1CM181D08O00RAXXX |
| | | 6.3x7 | 11 | 2700 | 576 | SPU1CM181E07O00RAXXX |
| | 220 | 5x10 | 14 | 2800 | 704 | SPU1CM221D10O00RAXXX |
| | | 6.3x8 | 14 | 2900 | 704 | SPU1CM221E08O00RAXXX |
| | 270 | 6.3x10 | 10 | 3100 | 704 | SPU1CM221E10O00RAXXX |
| | | 5.5x9 | 14 | 3000 | 864 | SPU1CM271B09O00RAXXX |
| | | 6.3x8 | 14 | 3000 | 864 | SPU1CM271E08O00RAXXX |
| | | 8x9 | 14 | 3100 | 864 | SPU1CM271F09O00RAXXX |
| | | 5.5x9 | 14 | 3100 | 1056 | SPU1CM331B09O00RAXXX |
| | | 6.3x9 | 14 | 3100 | 1056 | SPU1CM331E09O00RAXXX |
| | 330 | 6.3x10 | 10 | 3400 | 1056 | SPU1CM331E10O00RAXXX |
| | | 6.3x11 | 10 | 3500 | 1504 | SPU1CM471E11O00RAXXX |
| | 470 | 8x11 | 10 | 5000 | 1504 | SPU1CM471F11O00RAXXX |
| | | 8x11 | 10 | 3500 | 1792 | SPU1CM561F11O00RAXXX |
| | 560 | 8x13 | 10 | 3600 | 1792 | SPU1CM561F13O00RAXXX |
| | | 10x12 | 8 | 3800 | 1792 | SPU1CM561G12O00RAXXX |
| | 680 | 8x11 | 10 | 3700 | 2176 | SPU1CM681F11O00RAXXX |
| | | 10x12 | 8 | 3900 | 2176 | SPU1CM681G12O00RAXXX |
| | 820 | 8x13 | 8 | 3800 | 2624 | SPU1CM821F13O00RAXXX |
| | | 10x12 | 8 | 4100 | 2624 | SPU1CM821G12O00RAXXX |
| | 1000 | 10x12 | 8 | 4400 | 3200 | SPU1CM102G12O00RAXXX |
| | | 8x14 | 8 | 3900 | 3200 | SPU1CM102F14O00RAXXX |
| | 1200 | 10x15 | 8 | 4700 | 3840 | SPU1CM122G15O00RAXXX |
| 1500 | 10x18 | 8 | 6000 | 4800 | SPU1CM152G18O00RAXXX | |
| 1800 | 10x15 | 9 | 5900 | 5000 | SPU1CM182G15O00RAXXX | |
| 2200 | 10x18 | 8 | 6300 | 5000 | SPU1CM222G18O00RAXXX | |
| 20 (23.0) | 39 | 5x8 | 36 | 2145 | 500 | SPU1DM390D08O00RAXXX |
| | 47 | 5x8 | 36 | 2420 | 500 | SPU1DM470D08O00RAXXX |
| | 56 | 5x9 | 36 | 2310 | 500 | SPU1DM560D09O00RAXXX |
| | 68 | 6.3x8 | 27 | 2310 | 500 | SPU1DM680E08O00RAXXX |
| | 82 | 6.3x8 | 27 | 2365 | 500 | SPU1DM820E08O00RAXXX |

PU series

■ STANDARD RATINGS

| VDC (SV) | Cap (µF) | Size DxL(mm) | ESR (mΩ, 20°C, 100kHz) (max.) | Rated ripple current (mA rms/105°C, 100kHz) | Leakage Current (µA)(max.) | Part Number |
|-----------|----------|--------------|-------------------------------|---|----------------------------|----------------------|
| 20 (23.0) | 100 | 6.3x8 | 27 | 2420 | 500 | SPU1DM101E08O00RAXXX |
| | 120 | 6.3x8 | 27 | 2530 | 500 | SPU1DM121E08O00RAXXX |
| | 150 | 6.3x10 | 18 | 2585 | 600 | SPU1DM151E10O00RAXXX |
| | 180 | 8x9 | 27 | 2695 | 720 | SPU1DM181F09O00RAXXX |
| | 220 | 8x11 | 15 | 4100 | 880 | SPU1DM221F11O00RAXXX |
| | 270 | 8x11 | 15 | 3500 | 1080 | SPU1DM271F11O00RAXXX |
| | 330 | 8x11 | 15 | 3600 | 1320 | SPU1DM331F11O00RAXXX |
| | 470 | 10x12 | 15 | 3700 | 1880 | SPU1DM471G12O00RAXXX |
| | 560 | 10x13 | 15 | 3800 | 2240 | SPU1DM561G13O00RAXXX |
| | 680 | 10x15 | 15 | 3900 | 2720 | SPU1DM681G15O00RAXXX |
| | 820 | 10x18 | 15 | 4000 | 3280 | SPU1DM821G18O00RAXXX |
| | 1000 | 10x18 | 15 | 4300 | 4000 | SPU1DM102G18O00RAXXX |
| 25 (28.8) | 39 | 5x8 | 42 | 2000 | 500 | SPU1EM390D08O00RAXXX |
| | 47 | 5x9 | 42 | 2100 | 500 | SPU1EM470D09O00RAXXX |
| | 56 | 5x9 | 42 | 2200 | 500 | SPU1EM560D09O00RAXXX |
| | 68 | 6.3x7 | 21 | 2300 | 500 | SPU1EM680E07O00RAXXX |
| | 82 | 6.3x7 | 21 | 2300 | 500 | SPU1EM820E07O00RAXXX |
| | 100 | 6.3x8 | 21 | 2700 | 500 | SPU1EM101E08O00RAXXX |
| | | 6.3x10 | 14 | 3000 | 500 | SPU1EM101E10O00RAXXX |
| | 120 | 8x11 | 14 | 3300 | 500 | SPU1EM101F11O00RAXXX |
| | | 6.3x8 | 21 | 2700 | 600 | SPU1EM121E08O00RAXXX |
| | 150 | 6.3x10 | 14 | 3000 | 750 | SPU1EM151E10O00RAXXX |
| | 180 | 8x9 | 21 | 2700 | 900 | SPU1EM181F09O00RAXXX |
| | 220 | 8x11 | 14 | 3300 | 1100 | SPU1EM221F11O00RAXXX |
| | | 10x12 | 14 | 3800 | 1100 | SPU1EM221G12O00RAXXX |
| | 270 | 8x11 | 14 | 3300 | 1350 | SPU1EM271F11O00RAXXX |
| | | 8x11 | 14 | 3400 | 1650 | SPU1EM331F11O00RAXXX |
| | 330 | 10x12 | 14 | 4100 | 1650 | SPU1EM331G12O00RAXXX |
| | | 10x12 | 14 | 4400 | 2350 | SPU1EM471G12O00RAXXX |
| | 470 | 8x16 | 14 | 3700 | 2350 | SPU1EM471F16O00RAXXX |
| | | 10x12 | 14 | 4400 | 2800 | SPU1EM561G12O00RAXXX |
| | 560 | 10x12 | 14 | 4400 | 2800 | SPU1EM561G12O00RAXXX |
| | 680 | 10x15 | 14 | 4700 | 3400 | SPU1EM681G15O00RAXXX |
| | 820 | 10x18 | 14 | 4900 | 4100 | SPU1EM821G18O00RAXXX |
| | 1000 | 10x18 | 14 | 4900 | 5000 | SPU1EM102G18O00RAXXX |

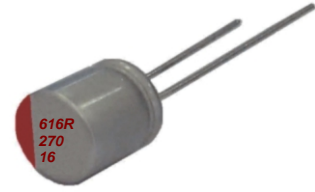
Conductive Polymer Radial Type

Specifications subject to change without notice.

PR series

- Endurance: +105°C 5,000 hours
- Low ESR, ripple current resistant
- Recommended Applications: Adaptor
- **RoHS Compliant and lead-free**

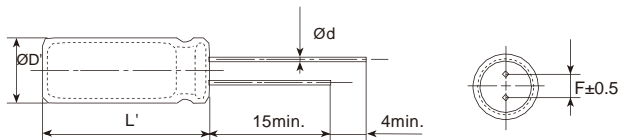
New



SPECIFICATIONS

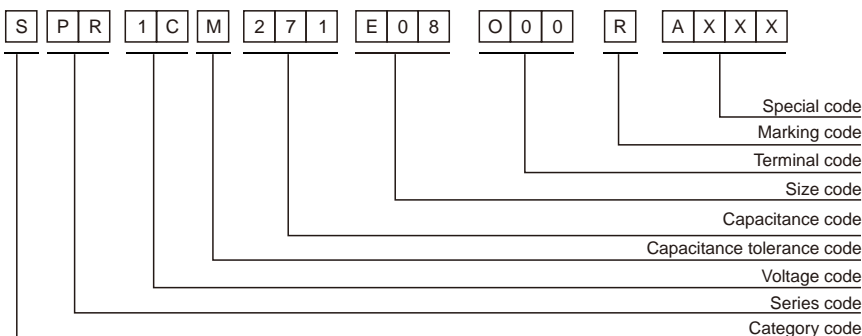
| Items | Characteristics | | | | | | |
|--|--|-------------------------------------|-----|------|----|---|----|
| Category Temperature Range | -55~+105°C | | | | | | |
| Rated Working Voltage Range | 2.5~35 V _{dc} | | | | | | |
| Nominal Capacitance Range | 47~1500μF | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | | | | | |
| DC Leakage Current | LC=0.2CV or 500μA, whichever is greater. Where, I:Max.leakage current (μA), C:Nominal capacitance (μF), V: Rated voltage (V) (at 20°C after 2 minutes) | | | | | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 2.5 | 6.3 | 10 | 16 | 25 | 35 |
| | tan δ (max.) | 0.08 | | 0.12 | | (at 20°C, 120Hz) | |
| ESR(100kHz,20°C) | Value in characteristics table | | | | | | |
| Temperature Characteristic (Impedance Ratio at 100kHz) | Z(+105°C)/Z(+20°C) 1.25 Z(-55°C)/Z(+20°C) 1.25 | | | | | | |
| Endurance | After applying rated voltage with rated ripple current for 5,000 hours at 105°C, the capacitors shall meet the following requirements. | | | | | | |
| | Appearance | No significant damage | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | |
| | D.F. (tan δ) | 150% of the initial specified value | | | | | |
| | ESR | 150% of the initial specified value | | | | | |
| | Leakage Current | The initial specified value | | | | | |
| Humidity Test | After subjecting to 90%~95% RH for 2,000 hours at 60°C without voltage applied, the capacitors shall meet the requirement as in surge test. | | | | | | |
| Surge Test | After subjecting to 1,000 cycles each consisting of charge with the surge voltage specified at normal temperature for 30 seconds through a protective resistor and discharge for 5 minutes 30 seconds, the capacitors shall meet the following requirements. | | | | | | |
| | Appearance | No significant damage | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | |
| | D.F. (tan δ) | 150% of the initial specified value | | | | | |
| | ESR | 150% of the initial specified value | | | | | |
| | Leakage Current | The initial specified value | | | | | |

DIMENSIONS[mm]



| | | | | | |
|-----|-------------|--------|-------------|----------|-----|
| ØD | 5 | 5.5 | 6.3 | 8 | 10 |
| Ød | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 |
| F | 2.0 | 2.5 | 2.5 | 3.5 | 5.0 |
| ØD' | ØD-0.1~+0.5 | ØD±0.3 | ØD-0.1~+0.5 | | |
| L' | L+1.0max. | | | L-0.5~+1 | |

PART NUMBERING SYSTEM



PR series

■ STANDARD RATINGS

| VDC (SV) | Cap (μF) | Size DxL(mm) | ESR (mΩ, 20°C, 100kHz) (max.) | Rated ripple current (mA rms/105°C, 100kHz) | Leakage Current (μA)(max.) | Part Number |
|--------------|----------|--------------|-------------------------------|---|----------------------------|----------------------|
| 2.5 (2.9) | 560 | 6.3x8 | 12 | 2000 | 500 | SPR0EM561E08000RAXXX |
| | 680 | 6.3x8 | 12 | 2000 | 500 | SPR0EM681E08000RAXXX |
| | 820 | 6.3x9 | 12 | 2000 | 500 | SPR0EM821E09000RAXXX |
| | 1200 | 8x9 | 14 | 2100 | 600 | SPR0EM122F09000RAXXX |
| 6.3 (7.2) | 330 | 6.3x8 | 12 | 1900 | 500 | SPR0JM331E08000RAXXX |
| | 470 | 6.3x8 | 12 | 1900 | 592 | SPR0JM471E08000RAXXX |
| | | 8x9 | 14 | 2100 | 592 | SPR0JM471F09000RAXXX |
| | 560 | 6.3x8 | 12 | 1900 | 706 | SPR0JM561E08000RAXXX |
| | 680 | 8x11 | 12 | 2200 | 857 | SPR0JM681F11000RAXXX |
| | 820 | 8x11 | 12 | 2200 | 1033 | SPR0JM821F11000RAXXX |
| | 1000 | 8x11 | 12 | 2300 | 1260 | SPR0JM102F11000RAXXX |
| | 1200 | 8x11 | 12 | 2300 | 1512 | SPR0JM122F11000RAXXX |
| 1500 | 10x12 | 12 | 2500 | 1890 | SPR0JM152G12000RAXXX | |
| 10 (11.5) | 220 | 6.3x8 | 12 | 1700 | 500 | SPR1AM221E08000RAXXX |
| | 270 | 6.3x8 | 12 | 1700 | 540 | SPR1AM271E08000RAXXX |
| | 330 | 6.3x10 | 12 | 1800 | 660 | SPR1AM331E10000RAXXX |
| | 470 | 8x11 | 12 | 2000 | 940 | SPR1AM471F11000RAXXX |
| | 560 | 8x11 | 12 | 2000 | 1120 | SPR1AM561F11000RAXXX |
| | 680 | 8x11 | 12 | 2100 | 1360 | SPR1AM681F11000RAXXX |
| | 820 | 8x11 | 12 | 2100 | 1640 | SPR1AM821F11000RAXXX |
| | 1000 | 10x12 | 12 | 2200 | 2000 | SPR1AM102G12000RAXXX |
| | 1200 | 10x12 | 12 | 2200 | 2400 | SPR1AM122G12000RAXXX |
| 1500 | 10x12 | 12 | 2400 | 3000 | SPR1AM152G12000RAXXX | |
| 16 (18.4) | 100 | 6.3x8 | 17 | 1500 | 500 | SPR1CM101E08000RAXXX |
| | 180 | 6.3x8 | 17 | 1500 | 576 | SPR1CM181E08000RAXXX |
| | 220 | 6.3x10 | 17 | 1600 | 704 | SPR1CM221E10000RAXXX |
| | 270 | 8x11 | 14 | 1700 | 864 | SPR1CM271F11000RAXXX |
| | 330 | 6.3x10 | 14 | 1600 | 1056 | SPR1CM331E10000RAXXX |
| | 470 | 8x11 | 14 | 1700 | 1504 | SPR1CM471F11000RAXXX |
| | 560 | 10x12 | 14 | 2000 | 1792 | SPR1CM561G12000RAXXX |
| | 680 | 10x12 | 14 | 2000 | 2176 | SPR1CM681G12000RAXXX |
| | 820 | 10x12 | 14 | 2100 | 2624 | SPR1CM821G12000RAXXX |
| 1000 | 10x12 | 14 | 2100 | 3200 | SPR1CM102G12000RAXXX | |
| 25 (28.8) | 68 | 6.3x7 | 24 | 1300 | 500 | SPR1EM680E07000RAXXX |
| | 82 | 6.3x7 | 24 | 1300 | 500 | SPR1EM820E07000RAXXX |
| | | 6.3x8 | 24 | 1300 | 500 | SPR1EM101E08000RAXXX |
| | 100 | 8x11 | 22 | 1500 | 500 | SPR1EM101F11000RAXXX |
| | 120 | 6.3x10 | 22 | 1400 | 600 | SPR1EM121E10000RAXXX |
| | 180 | 8x9 | 24 | 1300 | 900 | SPR1EM181F09000RAXXX |
| | 220 | 8x11 | 22 | 1500 | 1100 | SPR1EM221F11000RAXXX |
| | | 10x12 | 22 | 1700 | 1100 | SPR1EM221G12000RAXXX |
| | 270 | 8x11 | 22 | 1500 | 1350 | SPR1EM271F11000RAXXX |
| | 330 | 10x12 | 22 | 1700 | 1650 | SPR1EM331G12000RAXXX |
| | 470 | 8x16 | 22 | 1700 | 2350 | SPR1EM471F16000RAXXX |
| | | 10x12 | 22 | 1800 | 2350 | SPR1EM471G12000RAXXX |
| 560 | 10x12 | 22 | 1800 | 2800 | SPR1EM561G12000RAXXX | |
| 35 (40.3) | 47 | 6.3x7 | 52 | 1100 | 500 | SPR1VM470E07000RAXXX |
| | 56 | 6.3x7 | 52 | 1100 | 500 | SPR1VM560E07000RAXXX |
| | 68 | 6.3x7 | 52 | 1100 | 500 | SPR1VM680E07000RAXXX |
| | 82 | 6.3x7 | 52 | 1100 | 574 | SPR1VM820E07000RAXXX |
| | 100 | 6.3x10 | 42 | 1200 | 700 | SPR1VM101E10000RAXXX |
| | 150 | 10x12 | 32 | 1400 | 1050 | SPR1VM151G12000RAXXX |
| | | 8x11 | 32 | 1300 | 1540 | SPR1VM221F11000RAXXX |
| | 220 | 10x12 | 32 | 1400 | 1540 | SPR1VM221G12000RAXXX |
| | 270 | 10x12 | 32 | 1400 | 1890 | SPR1VM271G12000RAXXX |
| | 330 | 10x12 | 32 | 1400 | 2310 | SPR1VM331G12000RAXXX |

Conductive Polymer Radial Type

RZ series

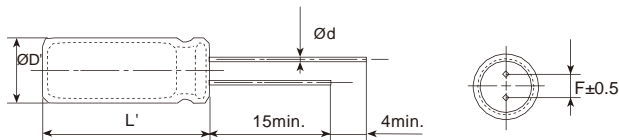
- Endurance: +105°C 2,000 hours
- Low ESR, ripple current resistant
- Recommended Applications: Adaptor
- **RoHS Compliant and lead-free**



SPECIFICATIONS

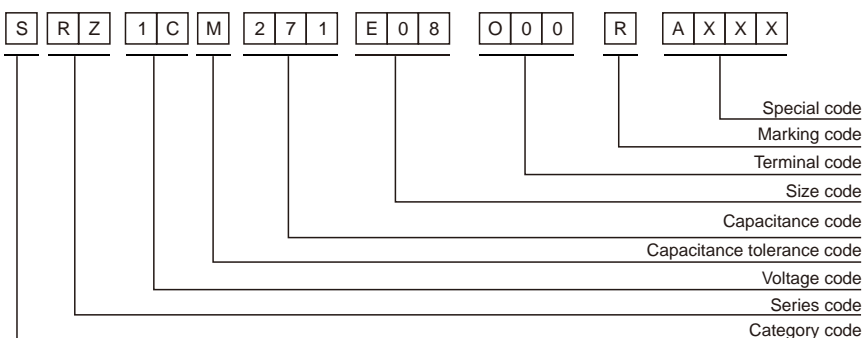
| Items | Characteristics | | | | | | |
|--|--|-------------------------------------|-----|------|----|----|----|
| Category Temperature Range | -55~+105°C | | | | | | |
| Rated Working Voltage Range | 2.5~35 V _{dc} | | | | | | |
| Nominal Capacitance Range | 47~1500μF | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | | | | | |
| DC Leakage Current | LC=0.2CV or 500μA, whichever is greater. Where, I:Max.leakage current (μA), C:Nominal capacitance (μF), V: Rated voltage (V) (at 20°C after 2 minutes) | | | | | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 2.5 | 6.3 | 10 | 16 | 25 | 35 |
| | tan δ (max.) | 0.08 | | 0.12 | | | |
| ESR(100kHz, 20°C) | Value in characteristics table | | | | | | |
| Temperature Characteristic (Impedance Ratio at 100kHz) | Z(+105°C)/Z(+20°C) 1.25 Z(-55°C)/Z(+20°C) 1.25 | | | | | | |
| Endurance | After applying rated voltage with rated ripple current for 2,000 hours at 105°C, the capacitors shall meet the following requirements. | | | | | | |
| | Appearance | No significant damage | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | |
| | D.F. (tan δ) | 150% of the initial specified value | | | | | |
| | ESR | 150% of the initial specified value | | | | | |
| Leakage Current | The initial specified value | | | | | | |
| | | | | | | | |
| Humidity Test | After subjecting to 90%~95% RH for 2,000 hours at 60°C without voltage applied, the capacitors shall meet the requirement as in surge test. | | | | | | |
| Surge Test | After subjecting to 1,000 cycles each consisting of charge with the surge voltage specified at normal temperature for 30 seconds through a protective resistor and discharge for 5 minutes 30 seconds, the capacitors shall meet the following requirements. | | | | | | |
| | Appearance | No significant damage | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | |
| | D.F. (tan δ) | 150% of the initial specified value | | | | | |
| | ESR | 150% of the initial specified value | | | | | |
| Leakage Current | The initial specified value | | | | | | |
| | | | | | | | |

DIMENSIONS[mm]



| | | | | | |
|-----|-------------|--------|-------------|----------|-----|
| ØD | 5 | 5.5 | 6.3 | 8 | 10 |
| Ød | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 |
| F | 2.0 | 2.5 | 2.5 | 3.5 | 5.0 |
| ØD' | ØD-0.1~+0.5 | ØD±0.3 | ØD-0.1~+0.5 | | |
| L' | L+1.0max. | | | L-0.5~+1 | |

PART NUMBERING SYSTEM



RZ series

■ STANDARD RATINGS

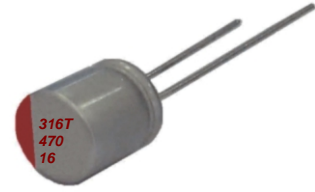
| VDC (SV) | Cap (μF) | Size DxL(mm) | ESR (mΩ, 20°C, 100kHz) (max.) | Rated ripple current (mA rms/105°C, 100kHz) | Leakage Current (μA)(max.) | Part Number |
|-----------|----------|--------------|-------------------------------|---|----------------------------|----------------------|
| 2.5 (2.9) | 560 | 6.3x8 | 10 | 3000 | 500 | SRZ0EM561E08O00RAXXX |
| | 680 | 6.3x8 | 10 | 3000 | 500 | SRZ0EM681E08O00RAXXX |
| | 820 | 6.3x9 | 10 | 3000 | 500 | SRZ0EM821E09O00RAXXX |
| | 1200 | 8x9 | 12 | 3200 | 600 | SRZ0EM122F09O00RAXXX |
| 6.3 (7.2) | 330 | 6.3x8 | 10 | 2800 | 500 | SRZ0JM331E08O00RAXXX |
| | 470 | 6.3x8 | 10 | 2800 | 592 | SRZ0JM471E08O00RAXXX |
| | | 8x9 | 12 | 3200 | 592 | SRZ0JM471F09O00RAXXX |
| | 560 | 6.3x8 | 10 | 2800 | 706 | SRZ0JM561E08O00RAXXX |
| | 680 | 8x11 | 10 | 3400 | 857 | SRZ0JM681F11O00RAXXX |
| | 820 | 8x11 | 10 | 3400 | 1033 | SRZ0JM821F11O00RAXXX |
| | 1000 | 8x11 | 10 | 3600 | 1260 | SRZ0JM102F11O00RAXXX |
| | 1200 | 8x11 | 10 | 3600 | 1512 | SRZ0JM122F11O00RAXXX |
| 1500 | 10x12 | 10 | 4000 | 1890 | SRZ0JM152G12O00RAXXX | |
| 10 (11.5) | 220 | 6.3x8 | 10 | 2400 | 500 | SRZ1AM221E08O00RAXXX |
| | 270 | 6.3x8 | 10 | 2400 | 540 | SRZ1AM271E08O00RAXXX |
| | 330 | 6.3x10 | 10 | 2600 | 660 | SRZ1AM331E10O00RAXXX |
| | 470 | 8x11 | 10 | 3000 | 940 | SRZ1AM471F11O00RAXXX |
| | 560 | 8x11 | 10 | 3000 | 1120 | SRZ1AM561F11O00RAXXX |
| | 680 | 8x11 | 10 | 3200 | 1360 | SRZ1AM681F11O00RAXXX |
| | 820 | 8x11 | 10 | 3200 | 1640 | SRZ1AM821F11O00RAXXX |
| | 1000 | 10x12 | 10 | 3400 | 2000 | SRZ1AM102G12O00RAXXX |
| | 1200 | 10x12 | 10 | 3400 | 2400 | SRZ1AM122G12O00RAXXX |
| | 1500 | 10x12 | 10 | 3800 | 3000 | SRZ1AM152G12O00RAXXX |
| 16 (18.4) | 100 | 6.3x8 | 15 | 2000 | 500 | SRZ1CM101E08O00RAXXX |
| | 180 | 6.3x8 | 15 | 2000 | 576 | SRZ1CM181E08O00RAXXX |
| | 220 | 6.3x10 | 15 | 2200 | 704 | SRZ1CM221E10O00RAXXX |
| | 270 | 8x11 | 12 | 2400 | 864 | SRZ1CM271F11O00RAXXX |
| | 330 | 6.3x10 | 12 | 2200 | 1056 | SRZ1CM331E10O00RAXXX |
| | 470 | 8x11 | 12 | 2400 | 1504 | SRZ1CM471F11O00RAXXX |
| | 560 | 10x12 | 12 | 3000 | 1792 | SRZ1CM561G12O00RAXXX |
| | 680 | 10x12 | 12 | 3000 | 2176 | SRZ1CM681G12O00RAXXX |
| | 820 | 10x12 | 12 | 3200 | 2624 | SRZ1CM821G12O00RAXXX |
| | 1000 | 10x12 | 12 | 3200 | 3200 | SRZ1CM102G12O00RAXXX |
| 25 (28.8) | 68 | 6.3x7 | 22 | 1600 | 500 | SRZ1EM680E07O00RAXXX |
| | 82 | 6.3x7 | 22 | 1600 | 500 | SRZ1EM820E07O00RAXXX |
| | | 6.3x8 | 22 | 1600 | 500 | SRZ1EM101E08O00RAXXX |
| | 100 | 8x11 | 20 | 2000 | 500 | SRZ1EM101F11O00RAXXX |
| | 120 | 6.3x10 | 20 | 1800 | 600 | SRZ1EM121E10O00RAXXX |
| | 180 | 8x9 | 22 | 1600 | 900 | SRZ1EM181F09O00RAXXX |
| | 220 | 8x11 | 20 | 2000 | 1100 | SRZ1EM221F11O00RAXXX |
| | | 10x12 | 20 | 2400 | 1100 | SRZ1EM221G12O00RAXXX |
| | 270 | 8x11 | 20 | 2000 | 1350 | SRZ1EM271F11O00RAXXX |
| | 330 | 10x12 | 20 | 2400 | 1650 | SRZ1EM331G12O00RAXXX |
| | 470 | 8x16 | 20 | 2400 | 2350 | SRZ1EM471F16O00RAXXX |
| | 560 | 10x12 | 20 | 2600 | 2350 | SRZ1EM471G12O00RAXXX |
| | 10x12 | 20 | 2600 | 2800 | SRZ1EM561G12O00RAXXX | |
| 35 (40.3) | 47 | 6.3x7 | 50 | 1200 | 500 | SRZ1VM470E07O00RAXXX |
| | 56 | 6.3x7 | 50 | 1200 | 500 | SRZ1VM560E07O00RAXXX |
| | 68 | 6.3x7 | 50 | 1200 | 500 | SRZ1VM680E07O00RAXXX |
| | 82 | 6.3x7 | 50 | 1200 | 574 | SRZ1VM820E07O00RAXXX |
| | 100 | 6.3x10 | 40 | 1400 | 700 | SRZ1VM101E10O00RAXXX |
| | 150 | 10x12 | 30 | 1800 | 1050 | SRZ1VM151G12O00RAXXX |
| | | 8x11 | 30 | 1600 | 1540 | SRZ1VM221F11O00RAXXX |
| | 220 | 10x12 | 30 | 1800 | 1540 | SRZ1VM221G12O00RAXXX |
| | 270 | 10x12 | 30 | 1800 | 1890 | SRZ1VM271G12O00RAXXX |
| | 330 | 10x12 | 30 | 1800 | 2310 | SRZ1VM331G12O00RAXXX |

Conductive Polymer Radial Type

RT series

- Endurance: +125°C 2,000 hours
- Low ESR, ripple current resistant
- Recommended Applications: Adaptor
- **RoHS Compliant and lead-free**

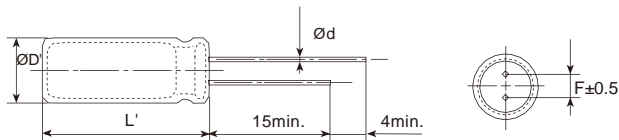
New



SPECIFICATIONS

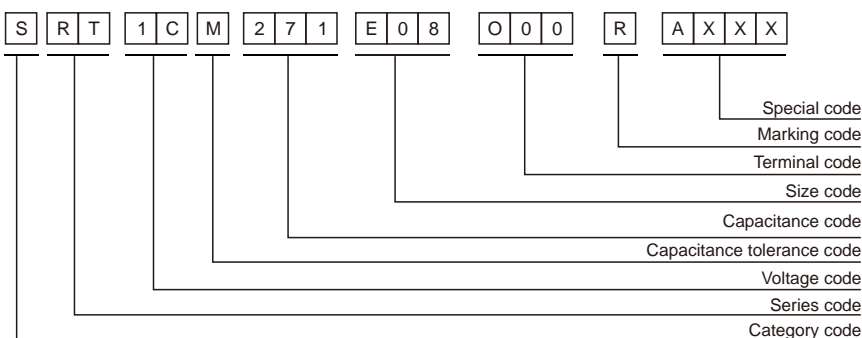
| Items | Characteristics | | | | | | |
|---|--|-------------------------------------|-----|------|----|------------------|----|
| Category Temperature Range | -55~+125°C | | | | | | |
| Rated Working Voltage Range | 2.5~35 V _{dc} | | | | | | |
| Nominal Capacitance Range | 47~1500μF | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | | | | | |
| DC Leakage Current | LC=0.2CV or 500μA, whichever is greater. Where, I:Max.leakage current (μA),C:Nominal capacitance (μF),V: Rated voltage (V) (at 20°C after 2 minutes) | | | | | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 2.5 | 6.3 | 10 | 16 | 25 | 35 |
| | tan δ (max.) | 0.08 | | 0.12 | | (at 20°C, 120Hz) | |
| ESR(100kHz, 20°C) | Value in characteristics table | | | | | | |
| Temperature Characteristic (Impedance Ratio at 100kHz) | Z(+125°C)/Z(+20°C) 1.25 Z(-55°C)/Z(+20°C) 1.25 | | | | | | |
| Endurance | After applying rated voltage with rated ripple current for 2,000 hours at 125°C, the capacitors shall meet the following requirements. | | | | | | |
| | Appearance | No significant damage | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | |
| | D.F. (tan δ) | 150% of the initial specified value | | | | | |
| | ESR | 150% of the initial specified value | | | | | |
| Leakage Current | The initial specified value | | | | | | |
| | Humidity Test | | | | | | |
| After subjecting to 90%~95% RH for 2,000 hours at 60°C without voltage applied, the capacitors shall meet the requirement as in surge test. | | | | | | | |
| Surge Test | After subjecting to 1,000 cycles each consisting of charge with the surge voltage specified at normal temperature for 30 seconds through a protective resistor and discharge for 5 minutes 30 seconds, the capacitors shall meet the following requirements. | | | | | | |
| | Appearance | No significant damage | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | |
| | D.F. (tan δ) | 150% of the initial specified value | | | | | |
| | ESR | 150% of the initial specified value | | | | | |
| Leakage Current | The initial specified value | | | | | | |

DIMENSIONS[mm]



| | | | | | |
|-----|-------------|-----|--------|----------|-----|
| ØD | 5 | 5.5 | 6.3 | 8 | 10 |
| Ød | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 |
| F | 2.0 | 2.5 | 2.5 | 3.5 | 5.0 |
| ØD' | ØD-0.1~+0.5 | | ØD±0.3 | | |
| L' | L+1.0max. | | | L-0.5~+1 | |

PART NUMBERING SYSTEM



RT series

■ STANDARD RATINGS

| VDC (SV) | Cap (μF) | Size DxL(mm) | ESR (mΩ, 20°C, 100kHz) (max.) | Rated ripple current (mA rms/125°C, 100kHz) | Leakage Current (μA)(max.) | Part Number |
|-----------|----------|--------------|-------------------------------|---|----------------------------|----------------------|
| 2.5 (2.9) | 560 | 6.3x8 | 15 | 1200 | 500 | SRT0EM561E08O00RAXXX |
| | 680 | 6.3x8 | 15 | 1200 | 500 | SRT0EM681E08O00RAXXX |
| | 820 | 6.3x9 | 15 | 1200 | 500 | SRT0EM821E09O00RAXXX |
| | 1200 | 8x9 | 17 | 1300 | 600 | SRT0EM122F09O00RAXXX |
| 6.3 (7.2) | 330 | 6.3x8 | 15 | 1100 | 500 | SRT0JM331E08O00RAXXX |
| | 470 | 6.3x8 | 15 | 1100 | 592 | SRT0JM471E08O00RAXXX |
| | | 8x9 | 17 | 1300 | 592 | SRT0JM471F09O00RAXXX |
| | 560 | 6.3x8 | 15 | 1100 | 706 | SRT0JM561E08O00RAXXX |
| | 680 | 8x11 | 15 | 1400 | 857 | SRT0JM681F11O00RAXXX |
| | 820 | 8x11 | 15 | 1400 | 1033 | SRT0JM821F11O00RAXXX |
| | 1000 | 8x11 | 15 | 1500 | 1260 | SRT0JM102F11O00RAXXX |
| | 1200 | 8x11 | 15 | 1500 | 1512 | SRT0JM122F11O00RAXXX |
| 1500 | 10x12 | 15 | 1700 | 1890 | SRT0JM152G12O00RAXXX | |
| 10 (11.5) | 220 | 6.3x8 | 15 | 900 | 500 | SRT1AM221E08O00RAXXX |
| | 270 | 6.3x8 | 15 | 900 | 540 | SRT1AM271E08O00RAXXX |
| | 330 | 6.3x10 | 15 | 1000 | 660 | SRT1AM331E10O00RAXXX |
| | 470 | 8x11 | 15 | 1200 | 940 | SRT1AM471F11O00RAXXX |
| | 560 | 8x11 | 15 | 1200 | 1120 | SRT1AM561F11O00RAXXX |
| | 680 | 8x11 | 15 | 1300 | 1360 | SRT1AM681F11O00RAXXX |
| | 820 | 8x11 | 15 | 1300 | 1640 | SRT1AM821F11O00RAXXX |
| | 1000 | 10x12 | 15 | 1400 | 2000 | SRT1AM102G12O00RAXXX |
| | 1200 | 10x12 | 15 | 1400 | 2400 | SRT1AM122G12O00RAXXX |
| | 1500 | 10x12 | 15 | 1600 | 3000 | SRT1AM152G12O00RAXXX |
| 16 (18.4) | 100 | 6.3x8 | 20 | 800 | 500 | SRT1CM101E08O00RAXXX |
| | 180 | 6.3x8 | 20 | 800 | 576 | SRT1CM181E08O00RAXXX |
| | 220 | 6.3x10 | 20 | 890 | 704 | SRT1CM221E10O00RAXXX |
| | 270 | 8x11 | 17 | 900 | 864 | SRT1CM271F11O00RAXXX |
| | 330 | 6.3x10 | 17 | 800 | 1056 | SRT1CM331E10O00RAXXX |
| | 470 | 8x11 | 17 | 900 | 1504 | SRT1CM471F11O00RAXXX |
| | 560 | 10x12 | 17 | 1200 | 1792 | SRT1CM561G12O00RAXXX |
| | 680 | 10x12 | 17 | 1200 | 2176 | SRT1CM681G12O00RAXXX |
| | 820 | 10x12 | 17 | 1300 | 2624 | SRT1CM821G12O00RAXXX |
| | 1000 | 10x12 | 17 | 1300 | 3200 | SRT1CM102G12O00RAXXX |
| 25 (28.8) | 68 | 6.3x7 | 27 | 600 | 500 | SRT1EM680E07O00RAXXX |
| | 82 | 6.3x7 | 27 | 600 | 500 | SRT1EM820E07O00RAXXX |
| | 100 | 6.3x8 | 27 | 600 | 500 | SRT1EM101E08O00RAXXX |
| | | 8x11 | 25 | 800 | 500 | SRT1EM101F11O00RAXXX |
| | 120 | 6.3x10 | 25 | 700 | 600 | SRT1EM121E10O00RAXXX |
| | 180 | 8x9 | 27 | 600 | 900 | SRT1EM181F09O00RAXXX |
| | 220 | 8x11 | 25 | 800 | 1100 | SRT1EM221F11O00RAXXX |
| | | 10x12 | 25 | 900 | 1100 | SRT1EM221G12O00RAXXX |
| | 270 | 8x11 | 25 | 800 | 1350 | SRT1EM271F11O00RAXXX |
| | 330 | 10x12 | 25 | 900 | 1650 | SRT1EM331G12O00RAXXX |
| | 470 | 8x16 | 25 | 900 | 2350 | SRT1EM471F16O00RAXXX |
| | 560 | 10x12 | 25 | 1000 | 2350 | SRT1EM471G12O00RAXXX |
| | 10x12 | 25 | 1000 | 2800 | SRT1EM561G12O00RAXXX | |
| 35 (40.3) | 47 | 6.3x7 | 55 | 400 | 500 | SRT1VM470E07O00RAXXX |
| | 56 | 6.3x7 | 55 | 400 | 500 | SRT1VM560E07O00RAXXX |
| | 68 | 6.3x7 | 55 | 400 | 500 | SRT1VM680E07O00RAXXX |
| | 82 | 6.3x7 | 55 | 400 | 574 | SRT1VM820E07O00RAXXX |
| | 100 | 6.3x10 | 45 | 500 | 700 | SRT1VM101E10O00RAXXX |
| | 150 | 10x12 | 35 | 700 | 1050 | SRT1VM151G12O00RAXXX |
| | 220 | 8x11 | 35 | 600 | 1540 | SRT1VM221F11O00RAXXX |
| | | 10x12 | 35 | 700 | 1540 | SRT1VM221G12O00RAXXX |
| | 270 | 10x12 | 35 | 700 | 1890 | SRT1VM271G12O00RAXXX |
| | 330 | 10x12 | 35 | 700 | 2310 | SRT1VM331G12O00RAXXX |

Conductive Polymer Radial Type

VZ series

- Endurance: +105°C 2,000 hours
- Standard substance
- Recommended Applications: Display Card & System Board
- **RoHS Compliant and lead-free**

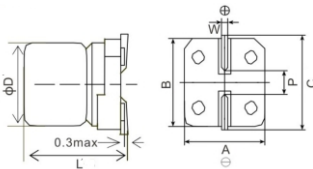


SPECIFICATIONS

| Items | Characteristics | | | | | | | | |
|--|--|-------------------------------------|-----|----|----------------------|----|----|----|----|
| Category Temperature Range | -55~+105°C | | | | | | | | |
| Rated Working Voltage Range | 2.5~100 V _{dc} | | | | | | | | |
| Nominal Capacitance Range | 22~2200μF | | | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C,120Hz) | | | | | | | | |
| DC Leakage Current | I 0.2CV or 500μA, whichever is greater. Where, I:Max.leakage current (μA),C:Nominal capacitance (μF),V: Rated voltage (V) (at 20°C after 2 minutes) | | | | | | | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 2.5 | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 |
| | tan δ (max.) | 0.08 | | | 0.12 (at 20°C,120Hz) | | | | |
| ESR(100kHz,20°C) | Value in characteristics table | | | | | | | | |
| Temperature Characteristic (Impedance Ratio at 100kHz) | Z(+105°C)/Z(+20°C) 1.25 Z(-55°C)/Z(+20°C) 1.25 | | | | | | | | |
| Endurance | After applying rated voltage for 2,000 hours at 105°C, the capacitors shall meet the following requirements. | | | | | | | | |
| | Appearance | No significant damage | | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | | |
| | D.F. (tan δ) | 150% of the initial specified value | | | | | | | |
| | ESR | 150% of the initial specified value | | | | | | | |
| Leakage Current | The initial specified value | | | | | | | | |
| Humidity Test | After subjecting to 90~95% RH for 2,000 hours at 60°C without voltage applied, the capacitors shall meet the specified values for the Endurance characteristics listed above. | | | | | | | | |
| Surge Test | After subjecting to 1,000 cycles each consisting of charge with the surge voltage specified at normal temperature for 30 seconds through a protective resistor and discharge for 5 minutes 30 seconds, the capacitors shall meet the following requirements. | | | | | | | | |
| | Appearance | No significant damage | | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | | |
| | D.F. (tan δ) | 150% of the initial specified value | | | | | | | |
| | ESR | 150% of the initial specified value | | | | | | | |
| Leakage Current | The initial specified value | | | | | | | | |

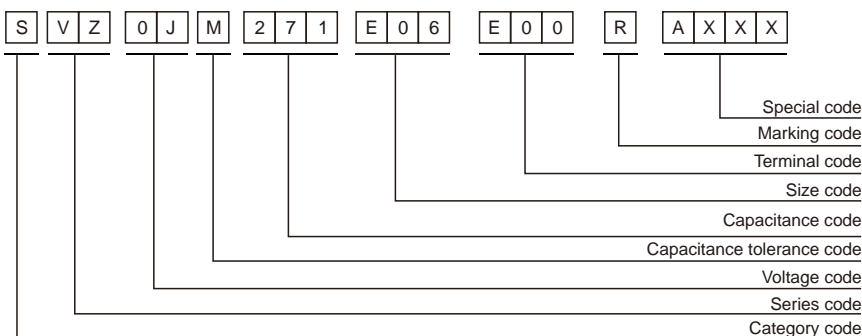
*Note: If any doubt arises, measure the leakage current after the following voltage treatment.
Voltage treatment: DC rated voltage is applied to the capacitors for 120 minutes at 105°C.

DIMENSIONS[mm]



| D | 6.3 | 8 | 10 |
|-------|-------------|-------------|-------------|
| P±0.2 | 1.9 | 3.1 | 4.5 |
| A±0.2 | 6.6 | 8.3 | 10.3 |
| B±0.2 | 6.6 | 8.3 | 10.3 |
| C±0.2 | 7.2 | 9.0 | 11.0 |
| W | 0.5~0.8 | 0.7~1.1 | 0.7~1.1 |
| ØD' | ØD-0.1~+0.5 | ØD-0.1~+0.5 | ØD-0.1~+0.5 |
| L' | L±0.5 | L±0.3 | L±0.3 |

PART NUMBERING SYSTEM



VZ series

■ STANDARD RATINGS

| VDC (SV) | Cap (μF) | Size DxL(mm) | ESR (mΩ, 20°C, 100kHz) (max.) | Rated ripple current (mArms/105°C, 100kHz) | Leakage Current (μA)(max.) | Part Number |
|-----------|-----------|--------------|-------------------------------|--|----------------------------|----------------------|
| 2.5 (2.9) | 330 | 6.3x6 | 20 | 2700 | 500 | SVZ0EM331E06E00RAXXX |
| | 390 | 6.3x6 | 20 | 2800 | 500 | SVZ0EM391E06E00RAXXX |
| | 470 | 6.3x6 | 20 | 2900 | 500 | SVZ0EM471E06E00RAXXX |
| | 560 | 6.3x6 | 20 | 3000 | 500 | SVZ0EM561E06E00RAXXX |
| | 680 | 6.3x9 | 15 | 4300 | 500 | SVZ0EM681E09E00RAXXX |
| 6.3 (7.2) | 220 | 6.3x6 | 20 | 2800 | 500 | SVZ0JM221E06E00RAXXX |
| | 270 | 6.3x6 | 20 | 3000 | 500 | SVZ0JM271E06E00RAXXX |
| | 330 | 6.3x6 | 20 | 2100 | 500 | SVZ0JM331E06E00RAXXX |
| | 470 | 6.3x9 | 15 | 3500 | 592 | SVZ0JM471E09E00RAXXX |
| | 560 | 6.3x9 | 15 | 3700 | 706 | SVZ0JM561E09E00RAXXX |
| | 1000 | 8x11.5 | 15 | 4300 | 1260 | SVZ0JM102FBRE00RAXXX |
| | 1500 | 8x11.5 | 15 | 4400 | 1890 | SVZ0JM152FBRE00RAXXX |
| 10 (11.5) | 2200 | 10x12.5 | 15 | 5600 | 2772 | SVZ0JM222GCRE00RAXXX |
| | 120 | 6.3x6 | 30 | 2700 | 500 | SVZ1AM121E06E00RAXXX |
| | 220 | 6.3x6 | 30 | 2700 | 500 | SVZ1AM221E06E00RAXXX |
| | 330 | 6.3x9 | 20 | 3000 | 500 | SVZ1AM221E09E00RAXXX |
| | 330 | 6.3x9 | 20 | 3100 | 660 | SVZ1AM331E09E00RAXXX |
| | 470 | 6.3x9 | 30 | 3400 | 940 | SVZ1AM471E09E00RAXXX |
| | 560 | 8x9.5 | 22 | 3400 | 940 | SVZ1AM471F9RE00RAXXX |
| | 560 | 8x11.5 | 20 | 3600 | 1120 | SVZ1AM561FBRE00RAXXX |
| | 1000 | 10x12.5 | 20 | 5000 | 1120 | SVZ1AM561GCRE00RAXXX |
| | 1000 | 8x11.5 | 15 | 4200 | 2000 | SVZ1AM102FBRE00RAXXX |
| 16 (18.4) | 1500 | 10x12.5 | 15 | 4400 | 2000 | SVZ1AM102GCRE00RAXXX |
| | 1500 | 10x12.5 | 15 | 4400 | 3000 | SVZ1AM152GCRE00RAXXX |
| | 47 | 6.3x6 | 40 | 1700 | 500 | SVZ1CM470E06E00RAXXX |
| | 68 | 6.3x6 | 40 | 2000 | 500 | SVZ1CM680E06E00RAXXX |
| | 100 | 6.3x6 | 30 | 2400 | 500 | SVZ1CM101E06E00RAXXX |
| | 150 | 6.3x6 | 30 | 2400 | 500 | SVZ1CM151E06E00RAXXX |
| | 150 | 6.3x9 | 25 | 2600 | 500 | SVZ1CM151E09E00RAXXX |
| | 180 | 6.3x6 | 60 | 2500 | 576 | SVZ1CM181E06E00RAXXX |
| | 180 | 6.3x9 | 25 | 2700 | 576 | SVZ1CM181F09E00RAXXX |
| | 220 | 6.3x9 | 25 | 2500 | 704 | SVZ1CM221E09E00RAXXX |
| | 270 | 6.3x9 | 25 | 2600 | 864 | SVZ1CM271E09E00RAXXX |
| | 270 | 8x9.5 | 25 | 2800 | 864 | SVZ1CM271F9RE00RAXXX |
| | 330 | 6.3x9 | 25 | 2600 | 1056 | SVZ1CM331E09E00RAXXX |
| | 330 | 8x11.5 | 20 | 4000 | 1056 | SVZ1CM331FBRE00RAXXX |
| | 560 | 10x12.5 | 20 | 5000 | 1056 | SVZ1CM331GCRE00RAXXX |
| 25 (28.8) | 680 | 8x11.5 | 20 | 3500 | 1792 | SVZ1CM561FBRE00RAXXX |
| | 1000 | 10x12.5 | 20 | 4000 | 2176 | SVZ1CM681GCRE00RAXXX |
| | 1000 | 10x12.5 | 20 | 4100 | 3200 | SVZ1CM102GCRE00RAXXX |
| | 22 | 6.3x6 | 80 | 1600 | 500 | SVZ1EM220E06E00RAXXX |
| | 27 | 6.3x6 | 50 | 1100 | 500 | SVZ1EM270E06E00RAXXX |
| | 47 | 6.3x6 | 50 | 1800 | 500 | SVZ1EM470E06E00RAXXX |
| | 47 | 6.3x9 | 35 | 2000 | 500 | SVZ1EM470E09E00RAXXX |
| | 56 | 6.3x6 | 50 | 1800 | 500 | SVZ1EM560E06E00RAXXX |
| | 68 | 6.3x6 | 50 | 1800 | 500 | SVZ1EM680E06E00RAXXX |
| | 100 | 6.3x9 | 30 | 2400 | 500 | SVZ1EM101E09E00RAXXX |
| | 100 | 6.3x6 | 50 | 2100 | 500 | SVZ1EM101E06E00RAXXX |
| | 150 | 6.3x9 | 30 | 2500 | 750 | SVZ1EM151E09E00RAXXX |
| | 220 | 6.3x9 | 30 | 2500 | 1100 | SVZ1EM221E09E00RAXXX |
| | 220 | 8x11.5 | 30 | 2600 | 1100 | SVZ1EM221FBRE00RAXXX |
| | 330 | 10x12.5 | 22 | 2800 | 1650 | SVZ1EM331GCRE00RAXXX |
| | 330 | 8x11.5 | 30 | 2700 | 500 | SVZ1EM331FBRE00RAXXX |
| | 470 | 8x11.5 | 30 | 2800 | 2350 | SVZ1EM471FBRE00RAXXX |
| | 560 | 10x12.5 | 22 | 3100 | 2350 | SVZ1EM471GCRE00RAXXX |
| 680 | 10x12.5 | 22 | 3300 | 2800 | SVZ1EM561GCRE00RAXXX | |
| 35 (40.3) | 680 | 10x12.5 | 22 | 3300 | 3400 | SVZ1EM681GCRE00RAXXX |
| | 22 | 6.3x6 | 60 | 1100 | 500 | SVZ1VM220E06E00RAXXX |
| | 27 | 6.3x6 | 60 | 1100 | 500 | SVZ1VM270E06E00RAXXX |
| | 33 | 6.3x6 | 60 | 1100 | 500 | SVZ1VM330E06E00RAXXX |
| | 47 | 6.3x9 | 50 | 1500 | 500 | SVZ1VM470E09E00RAXXX |
| | 47 | 6.3x6 | 45 | 1100 | 500 | SVZ1VM470E06E00RAXXX |
| | 68 | 6.3x6 | 45 | 1100 | 500 | SVZ1VM680E06E00RAXXX |
| | 68 | 6.3x9 | 40 | 1800 | 500 | SVZ1VM680E09E00RAXXX |
| | 100 | 6.3x9 | 40 | 2100 | 700 | SVZ1VM101E09E00RAXXX |
| | 100 | 8x9.5 | 40 | 2800 | 700 | SVZ1VM101F9RE00RAXXX |
| | 150 | 8x11.5 | 30 | 3000 | 700 | SVZ1VM101FBRE00RAXXX |
| | 220 | 8x11.5 | 30 | 3000 | 1050 | SVZ1VM151FBRE00RAXXX |
| | 220 | 8x11.5 | 30 | 2400 | 1540 | SVZ1VM221FBRE00RAXXX |
| | 270 | 8x11.5 | 30 | 2500 | 1890 | SVZ1VM271FBRE00RAXXX |
| | 330 | 10x12.5 | 30 | 2700 | 1890 | SVZ1VM271GCRE00RAXXX |
| | 330 | 10x12.5 | 30 | 2700 | 2310 | SVZ1VM331GCRE00RAXXX |
| | 470 | 10x12.5 | 30 | 3000 | 3290 | SVZ1VM471GCRE00RAXXX |
| | 50 (57.5) | 22 | 6.3x6 | 80 | 800 | 500 |
| 33 | | 6.3x6 | 80 | 850 | 500 | SVZ1HM330E06E00RAXXX |
| 47 | | 6.3x9 | 60 | 1400 | 500 | SVZ1HM470E09E00RAXXX |
| 68 | | 8x11.5 | 30 | 2000 | 680 | SVZ1HM680FBRE00RAXXX |
| 82 | | 10x12.5 | 30 | 2000 | 820 | SVZ1HM820GCRE00RAXXX |
| 100 | | 8x11.5 | 30 | 2000 | 820 | SVZ1HM820FBRE00RAXXX |
| 100 | | 8x11.5 | 30 | 2000 | 1000 | SVZ1HM101FBRE00RAXXX |
| 120 | | 10x12.5 | 30 | 2100 | 1000 | SVZ1HM101GCRE00RAXXX |
| 150 | | 8x11.5 | 30 | 2000 | 1200 | SVZ1HM121FBRE00RAXXX |
| 150 | | 10x12.5 | 30 | 2100 | 1500 | SVZ1HM151GCRE00RAXXX |
| 220 | | 10x12.5 | 30 | 2300 | 2200 | SVZ1HM221GCRE00RAXXX |

Conductive Polymer SMD Type

VZ series

■ STANDARD RATINGS

| VDC (SV) | Cap (μF) | Size DxL(mm) | ESR (mΩ, 20°C, 100kHz) (max.) | Rated ripple current (mA rms/105°C, 100kHz) | Leakage Current (μA)(max.) | Part Number |
|-------------|----------|--------------|-------------------------------|---|----------------------------|----------------------|
| 63 (72.5) | 22 | 6.3x6 | 80 | 450 | 500 | SVZ1JM220E06E00RAXXX |
| | 33 | 6.3x9 | 60 | 500 | 500 | SVZ1JM330E09E00RAXXX |
| | 47 | 8x9.5 | 60 | 1000 | 592 | SVZ1JM470F9RE00RAXXX |
| | 56 | 8x11.5 | 40 | 1400 | 706 | SVZ1JM560FBRE00RAXXX |
| | 100 | 10x12.5 | 40 | 1600 | 1260 | SVZ1JM101GCRE00RAXXX |
| 80 (92.0) | 27 | 8x11.5 | 50 | 600 | 500 | SVZ1BM270FBRE00RAXXX |
| | 47 | 10x12.5 | 50 | 900 | 752 | SVZ1BM470GCRE00RAXXX |
| | 68 | 10x12.5 | 50 | 900 | 1088 | SVZ1BM680GCRE00RAXXX |
| 100 (115.0) | 22 | 8x11.5 | 50 | 600 | 500 | SVZ1KM220FBRE00RAXXX |
| | 47 | 10x12.5 | 50 | 900 | 940 | SVZ1KM470GCRE00RAXXX |

Specifications subject to change without notice.

VS series

- Endurance: +105°C 2,000 hours
- Low ESR
- Recommended Applications: High order main board, server
- RoHS Compliant and lead-free

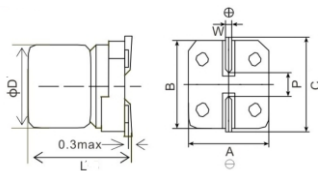


SPECIFICATIONS

| Items | Characteristics | | | | | |
|--|--|-------------------------------------|-----|----|------|----|
| Category Temperature Range | -55~+105°C | | | | | |
| Rated Working Voltage Range | 2.5~25 V _{dc} | | | | | |
| Nominal Capacitance Range | 27~2200μF | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | | | | |
| DC Leakage Current | I ≤ 0.2CV or 500μA, whichever is greater. Where, I:Max.leakage current (μA),C:Nominal capacitance (μF),V: Rated voltage (V) (at 20°C after 2 minutes) | | | | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 2.5 | 6.3 | 10 | 16 | 25 |
| | tan δ (max.) | 0.08 | | | 0.12 | |
| ESR(100kHz,20°C) | Value in characteristics table (at 20°C, 120Hz) | | | | | |
| Temperature Characteristic (Impedance Ratio at 100kHz) | Z(+105°C)/Z(+20°C) 1.25 Z(-55°C)/Z(+20°C) 1.25 | | | | | |
| Endurance | After applying rated voltage for 2,000 hours at 105°C, the capacitors shall meet the following requirements. | | | | | |
| | Appearance | No significant damage | | | | |
| | Capacitance Change | ±20% of the initial value | | | | |
| | D.F. (tan δ) | 150% of the initial specified value | | | | |
| | ESR | 150% of the initial specified value | | | | |
| Leakage Current | The initial specified value | | | | | |
| | | | | | | |
| Humidity Test | After subjecting to 90~95% RH for 2,000 hours at 60°C without voltage applied, the capacitors shall meet the specified values for the Endurance characteristics listed above. | | | | | |
| Surge Test | After subjecting to 1,000 cycles each consisting of charge with the surge voltage specified at normal temperature for 30 seconds through a protective resistor and discharge for 5 minutes 30 seconds, the capacitors shall meet the following requirements. | | | | | |
| | Appearance | No significant damage | | | | |
| | Capacitance Change | ±20% of the initial value | | | | |
| | D.F. (tan δ) | 150% of the initial specified value | | | | |
| | ESR | 150% of the initial specified value | | | | |
| Leakage Current | The initial specified value | | | | | |
| | | | | | | |

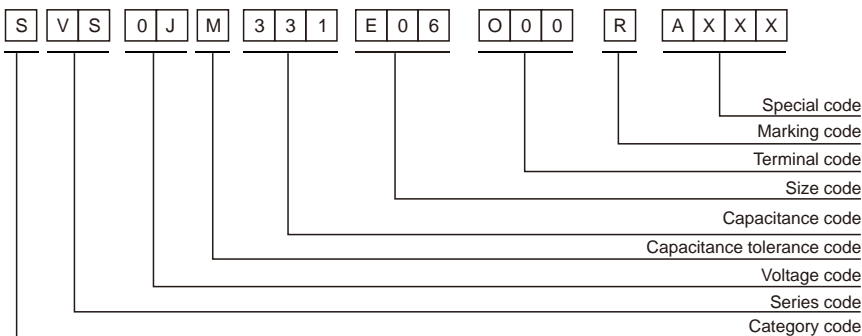
*Note: If any doubt arises, measure the leakage current after the following voltage treatment.
Voltage treatment: DC rated voltage is applied to the capacitors for 120 minutes at 105°C.

DIMENSIONS[mm]



| D | 6.3 | 8 | 10 |
|-------|-------------|-------------|-------------|
| P±0.2 | 1.9 | 3.1 | 4.5 |
| A±0.2 | 6.6 | 8.3 | 10.3 |
| B±0.2 | 6.6 | 8.3 | 10.3 |
| C±0.2 | 7.2 | 9.0 | 11.0 |
| W | 0.5~0.8 | 0.7~1.1 | 0.7~1.1 |
| ØD' | ØD-0.1~+0.5 | ØD-0.1~+0.5 | ØD-0.1~+0.5 |
| L' | L±0.5 | L±0.3 | L±0.3 |

PART NUMBERING SYSTEM



VS series

■ STANDARD RATINGS

| VDC (SV) | Cap (μF) | Size DxD(mm) | ESR (mΩ, 20°C, 100kHz) (max.) | Rated ripple current (mArms/105°C, 100kHz) | Leakage Current (μA)(max.) | Part Number |
|-----------|----------|--------------|-------------------------------|--|----------------------------|----------------------|
| 2.5 (2.9) | 330 | 6.3x6 | 18 | 2800 | 500 | SVS0EM331E06E00RAXXX |
| | 390 | 6.3x6 | 18 | 2900 | 500 | SVS0EM391E06E00RAXXX |
| | 470 | 6.3x6 | 18 | 4000 | 500 | SVS0EM471E06E00RAXXX |
| | 560 | 6.3x6 | 18 | 4000 | 500 | SVS0EM561E06E00RAXXX |
| | 680 | 6.3x9 | 13 | 4500 | 500 | SVS0EM681E09E00RAXXX |
| 6.3 (7.2) | 220 | 6.3x6 | 18 | 2900 | 500 | SVS0JM221E06E00RAXXX |
| | 270 | 6.3x6 | 18 | 3100 | 500 | SVS0JM271E06E00RAXXX |
| | 330 | 6.3x6 | 18 | 3200 | 500 | SVS0JM331E06E00RAXXX |
| | 470 | 6.3x9 | 13 | 3600 | 592 | SVS0JM471E09E00RAXXX |
| | 560 | 6.3x9 | 13 | 3800 | 706 | SVS0JM561E09E00RAXXX |
| | 1000 | 8x11.5 | 13 | 4500 | 1260 | SVS0JM102FBRE00RAXXX |
| | 1500 | 8x11.5 | 13 | 4600 | 1890 | SVS0JM152FBRE00RAXXX |
| 2200 | 10x12.5 | 13 | 5800 | 2772 | SVS0JM222GCRE00RAXXX | |
| 10 (11.5) | 68 | 6.3x6 | 45 | 2800 | 500 | SVS1AM680E06E00RAXXX |
| | 120 | 6.3x6 | 27 | 2800 | 500 | SVS1AM121E06E00RAXXX |
| | 220 | 6.3x6 | 27 | 2800 | 500 | SVS1AM221E06E00RAXXX |
| | | 6.3x9 | 18 | 3100 | 500 | SVS1AM221E09E00RAXXX |
| | 330 | 6.3x9 | 18 | 3200 | 660 | SVS1AM331E09E00RAXXX |
| | | 6.3x9 | 27 | 3500 | 940 | SVS1AM471E09E00RAXXX |
| | 560 | 8x11.5 | 18 | 3700 | 1120 | SVS1AM561FBRE00RAXXX |
| | | 10x12.5 | 18 | 5200 | 1120 | SVS1AM561GCRE00RAXXX |
| | 1000 | 8x11.5 | 13 | 4400 | 2000 | SVS1AM102FBRE00RAXXX |
| | | 10x12.5 | 13 | 4600 | 2000 | SVS1AM102GCRE00RAXXX |
| | 1500 | 10x12.5 | 13 | 4600 | 3000 | SVS1AM152GCRE00RAXXX |
| 16 (18.4) | 47 | 6.3x6 | 36 | 1700 | 500 | SVS1CM470E06E00RAXXX |
| | 68 | 6.3x6 | 36 | 2100 | 500 | SVS1CM680E06E00RAXXX |
| | 100 | 6.3x6 | 27 | 2500 | 500 | SVS1CM101E06E00RAXXX |
| | 150 | 6.3x6 | 27 | 2500 | 500 | SVS1CM151F06E00RAXXX |
| | | 6.3x9 | 22 | 2700 | 500 | SVS1CM151F09E00RAXXX |
| | 180 | 6.3x6 | 54 | 2600 | 576 | SVS1CM181E06E00RAXXX |
| | | 6.3x9 | 22 | 2800 | 576 | SVS1CM181E09E00RAXXX |
| | 220 | 6.3x9 | 22 | 2600 | 704 | SVS1CM221E09E00RAXXX |
| | | 6.3x9 | 22 | 2700 | 864 | SVS1CM271E09E00RAXXX |
| | 270 | 8x9.5 | 22 | 2900 | 864 | SVS1CM271F9E00RAXXX |
| | | 6.3x9 | 22 | 2700 | 1056 | SVS1CM331E09E00RAXXX |
| | 330 | 8x11.5 | 18 | 4200 | 1056 | SVS1CM331FBRE00RAXXX |
| | | 10x12.5 | 18 | 5200 | 1056 | SVS1CM331GCRE00RAXXX |
| | 560 | 8x11.5 | 18 | 3600 | 1792 | SVS1CM561FBRE00RAXXX |
| | 680 | 10x12.5 | 18 | 4200 | 2176 | SVS1CM681GCRE00RAXXX |
| | 1000 | 10x12.5 | 18 | 4300 | 3200 | SVS1EM102GCRE00RAXXX |
| 25 (28.8) | 27 | 6.3x6 | 45 | 1100 | 500 | SVS1EM270E06E00RAXXX |
| | 47 | 6.3x6 | 45 | 1800 | 500 | SVS1EM470E06E00RAXXX |
| | | 6.3x9 | 31 | 2100 | 500 | SVS1EM470E09E00RAXXX |
| | 56 | 6.3x6 | 45 | 1800 | 500 | SVS1EM560E06E00RAXXX |
| | 68 | 6.3x6 | 45 | 1800 | 500 | SVS1EM680E06E00RAXXX |
| | | 6.3x9 | 27 | 2500 | 500 | SVS1EM101E09E00RAXXX |
| | 100 | 6.3x6 | 45 | 2200 | 500 | SVS1EM101E06E00RAXXX |
| | | 6.3x9 | 27 | 2600 | 750 | SVS1EM151E09E00RAXXX |
| | 220 | 6.3x9 | 27 | 2600 | 1100 | SVS1EM221E09E00RAXXX |
| | | 8x11.5 | 27 | 2700 | 1100 | SVS1EM221FBRE00RAXXX |
| | 330 | 10x12.5 | 19 | 2900 | 1650 | SVS1EM331GCRE00RAXXX |
| | | 8x11.5 | 27 | 2800 | 1650 | SVS1EM331FBRE00RAXXX |
| | 470 | 8x11.5 | 27 | 2900 | 2350 | SVS1EM471FBRE00RAXXX |
| | | 10x12.5 | 19 | 3200 | 2350 | SVS1EM471GCRE00RAXXX |
| | 560 | 10x12.5 | 19 | 3400 | 2800 | SVS1EM561GCRE00RAXXX |
| | 680 | 10x12.5 | 19 | 3400 | 3400 | SVS1EM681GCRE00RAXXX |

Specifications subject to change without notice.

VD series

- Endurance: +105°C 2,000 hours
- High voltage
- Recommended Applications: Lamps and small LED power supply
- RoHS Compliant and lead-free

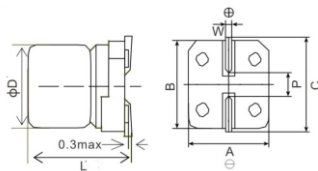


SPECIFICATIONS

| Items | Characteristics | | | |
|--|--|-------------------------------------|----|----|
| Category Temperature Range | -55~+105°C | | | |
| Rated Working Voltage Range | 35~63 V _{dc} | | | |
| Nominal Capacitance Range | 22~470μF | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C,120Hz) | | | |
| DC Leakage Current | I ≤ 0.2CV or 500μA, whichever is greater. Where, I:Max.leakage current (μA),C:Nominal capacitance (μF),V: Rated voltage (V) (at 20°C after 2 minutes) | | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 35 | 50 | 63 |
| | tan δ (max.) | 0.12 (at 20°C,120Hz) | | |
| ESR(100kHz,20°C) | Value in characteristics table | | | |
| Temperature Characteristic (Impedance Ratio at 100kHz) | Z(+105°C)/Z(+20°C) 1.25 Z(-55°C)/Z(+20°C) 1.25 | | | |
| Endurance | After applying rated voltage for 2,000 hours at 105°C, the capacitors shall meet the following requirements. | | | |
| | Appearance | No significant damage | | |
| | Capacitance Change | ±20% of the initial value | | |
| | D.F. (tan δ) | 150% of the initial specified value | | |
| | ESR | 150% of the initial specified value | | |
| Leakage Current | The initial specified value | | | |
| | | | | |
| Humidity Test | After subjecting to 90~95% RH for 2,000 hours at 60°C without voltage applied, the capacitors shall meet the specified values for the Endurance characteristics listed above. | | | |
| Surge Test | After subjecting to 1,000 cycles each consisting of charge with the surge voltage specified at normal temperature for 30 seconds through a protective resistor and discharge for 5 minutes 30 seconds, the capacitors shall meet the following requirements. | | | |
| | Appearance | No significant damage | | |
| | Capacitance Change | ±20% of the initial value | | |
| | D.F. (tan δ) | 150% of the initial specified value | | |
| | ESR | 150% of the initial specified value | | |
| | Leakage Current | The initial specified value | | |

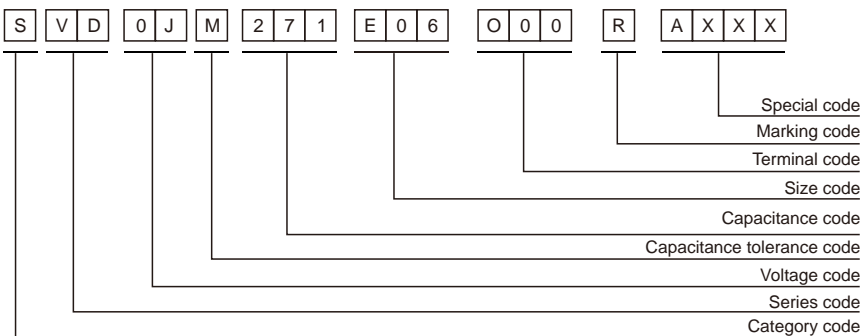
*Note: If any doubt arises, measure the leakage current after the following voltage treatment.
Voltage treatment: DC rated voltage is applied to the capacitors for 120 minutes at 105°C.

DIMENSIONS[mm]



| D | 6.3 | 8 | 10 |
|-------|-------------|-------------|-------------|
| P±0.2 | 1.9 | 3.1 | 4.5 |
| A±0.2 | 6.6 | 8.3 | 10.3 |
| B±0.2 | 6.6 | 8.3 | 10.3 |
| C±0.2 | 7.2 | 9.0 | 11.0 |
| W | 0.5~0.8 | 0.7~1.1 | 0.7~1.1 |
| ØD' | ØD-0.1~+0.5 | ØD-0.1~+0.5 | ØD-0.1~+0.5 |
| L' | L±0.5 | L±0.3 | L±0.3 |

PART NUMBERING SYSTEM



VD series

■ STANDARD RATINGS

| VDC (SV) | Cap (μF) | Size D×L(mm) | ESR (mΩ, 20°C, 100kHz) (max.) | Rated ripple current (mArms/105°C, 100kHz) | Leakage Current (μA)(max.) | Part Number |
|--------------|----------|--------------|-------------------------------|--|----------------------------|----------------------|
| 35 (40.3) | 22 | 6.3×6 | 54 | 1100 | 500 | SVD1VM220E06E00RAXXX |
| | 27 | 6.3×6 | 54 | 1100 | 500 | SVD1VM270E06E00RAXXX |
| | 33 | 6.3×6 | 54 | 1100 | 500 | SVD1VM330E06E00RAXXX |
| | 47 | 6.3×9 | 45 | 1500 | 500 | SVD1VM470E09E00RAXXX |
| | | 6.3×6 | 40 | 1100 | 500 | SVD1VM470E06E00RAXXX |
| | 68 | 6.3×6 | 40 | 1100 | 500 | SVD1VM680E06E00RAXXX |
| | | 6.3×9 | 36 | 1800 | 500 | SVD1VM680E09E00RAXXX |
| | 100 | 6.3×9 | 36 | 2200 | 700 | SVD1VM101E09E00RAXXX |
| | | 8×9.5 | 36 | 2900 | 700 | SVD1VM101F9RE00RAXXX |
| | 150 | 8×11.5 | 27 | 3100 | 700 | SVD1VM101FBRE00RAXXX |
| | | 8×11.5 | 27 | 3100 | 1050 | SVD1VM151FBRE00RAXXX |
| | 220 | 8×11.5 | 27 | 2500 | 1540 | SVD1VM221FBRE00RAXXX |
| | 270 | 8×11.5 | 27 | 2600 | 1890 | SVD1VM271FBRE00RAXXX |
| | | 10×12.5 | 27 | 2800 | 1890 | SVD1VM271GCRE00RAXXX |
| 330 | 10×12.5 | 27 | 2800 | 2310 | SVD1VM331GCRE00RAXXX | |
| 470 | 10×12.5 | 27 | 3100 | 3290 | SVD1VM471GCRE00RAXXX | |
| 50 (57.5) | 22 | 6.3×6 | 72 | 840 | 500 | SVD1HM220E06E00RAXXX |
| | 33 | 6.3×6 | 72 | 890 | 500 | SVD1HM330E06E00RAXXX |
| | 47 | 6.3×9 | 54 | 1400 | 500 | SVD1HM470E09E00RAXXX |
| | 68 | 8×11.5 | 27 | 2100 | 680 | SVD1HM680FBRE00RAXXX |
| | 82 | 10×12.5 | 27 | 2100 | 820 | SVD1HM820GCRE00RAXXX |
| | | 8×11.5 | 27 | 2100 | 820 | SVD1HM820FBRE00RAXXX |
| | 100 | 8×9.5 | 54 | 1500 | 1000 | SVD1HM101F9RE00RAXXX |
| | | 8×11.5 | 27 | 2100 | 1000 | SVD1HM101FBRE00RAXXX |
| | 120 | 10×12.5 | 27 | 2200 | 1000 | SVD1HM101GCRE00RAXXX |
| | | 8×11.5 | 27 | 2100 | 1200 | SVD1HM121FBRE00RAXXX |
| | 150 | 10×12.5 | 27 | 2200 | 1500 | SVD1HM151GCRE00RAXXX |
| | 220 | 10×12.5 | 27 | 2400 | 2200 | SVD1HM221GCRE00RAXXX |
| 63 (72.5) | 22 | 6.3×6 | 72 | 520 | 500 | SVD1JM220E06E00RAXXX |
| | 33 | 6.3×9 | 54 | 520 | 500 | SVD1JM330E09E00RAXXX |
| | 47 | 8×9.5 | 54 | 1000 | 592 | SVD1JM470F9RE00RAXXX |
| | 56 | 8×11.5 | 36 | 1000 | 706 | SVD1JM560FBRE00RAXXX |
| | 100 | 10×12.5 | 36 | 1600 | 1260 | SVD1JM101GCRE00RAXXX |

Specifications subject to change without notice.

VT series

- Endurance: +125°C 2,000 hours
- High Temperature Resistance
- Recommended Applications: Lamps Power, LED Power, Service Equipment
- RoHS Compliant and lead-free

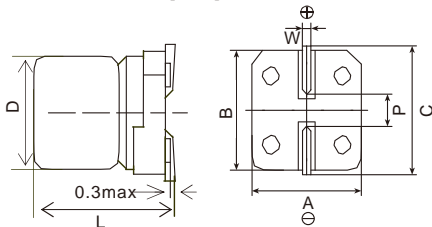


SPECIFICATIONS

| Items | Characteristics | |
|--|--|-------------------------------------|
| Category Temperature Range | -55~+125°C | |
| Rated Working Voltage Range | 2.5~63 V _{dc} | |
| Nominal Capacitance Range | 22~2200μF | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | |
| DC Leakage Current | LC=0.2CV when LC 500, LC=500 (at 20°C after 2 minutes) Where, I:Max.leakage current(μA), C:Nominal capacitance(μF), V:Rated voltage(V) | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 2.5 6.3 10 16 25 35 50 63 |
| | tan δ (max.) | 0.08 0.12 (at 20°C, 120Hz) |
| ESR(100kHz, 20°C) | Value in characteristics table | |
| Temperature Characteristic (Impedance Ratio at 100kHz) | Z(+125°C)/Z(+20°C) 1.25 Z(-55°C)/Z(+20°C) 1.25 | |
| Endurance | After applying rated voltage for 2,000 hours at 125°C, the capacitors shall meet the following requirements. | |
| | Appearance | No significant damage |
| | Capacitance Change | ±20% of the initial value |
| | D.F. (tan δ) | 150% of the initial specified value |
| | ESR | 150% of the initial specified value |
| Leakage Current | The initial specified value | |
| Humidity Test | After subjecting to 90%~95% RH for 2,000 hours at 60°C without voltage applied, the capacitors shall meet the specified values for the endurance characteristics listed above. | |
| Surge Test | After subjecting to 1,000 cycles each consisting of charge with the surge voltage specified at normal temperature for 30 seconds through a protective resistor and discharge for 5 minutes 30 seconds, the capacitors shall meet the following requirements. | |
| | Appearance | No significant damage |
| | Capacitance Change | ±20% of the initial value |
| | D.F. (tan δ) | 150% of the initial specified value |
| | ESR | 150% of the initial specified value |
| Leakage Current | The initial specified value | |

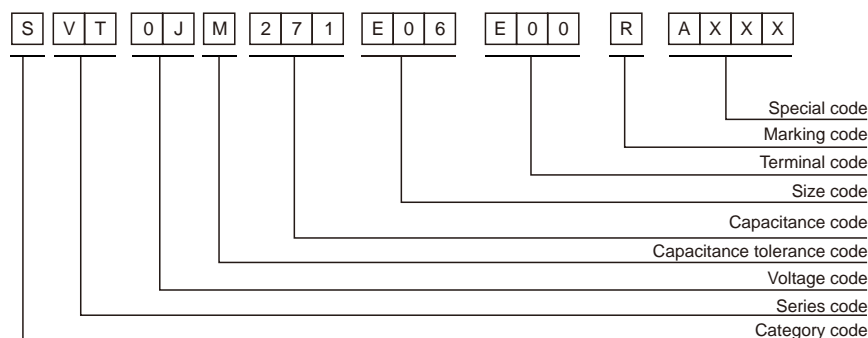
*Note: If any doubt arises, measure the leakage current after the following voltage treatment.
Voltage treatment: DC rated voltage is applied to the capacitors for 120 minutes at 105°C.

DIMENSIONS[mm]



| Size Code | 6.3 | 8 | 10 |
|-----------|--------------|---------|---------|
| P±0.2 | 1.9 | 3.1 | 4.5 |
| A±0.2 | 6.6 | 8.3 | 10.3 |
| B±0.2 | 6.6 | 8.3 | 10.3 |
| C±0.2 | 7.2 | 9.0 | 11.0 |
| W | 0.5~0.8 | 0.7~1.1 | 0.7~1.1 |
| ØD' | ØD -0.1~+0.5 | | |
| L' | L±0.5 | L±0.3 | |

PART NUMBERING SYSTEM



Conductive Polymer SMD Type

VT series

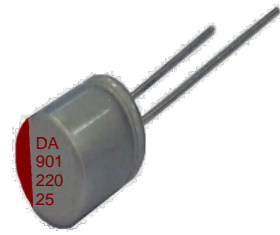
■ STANDARD RATINGS

| VDC (SV) | Cap (μF) | Size DxL(mm) | ESR (mΩ, 20°C, 100kHz) (max.) | Rated ripple current (mArms/125°C, 100kHz) | Leakage Current (μA)(max.) | Part Number |
|--------------|----------|--------------|-------------------------------|--|----------------------------|----------------------|
| 2.5 (2.9) | 220 | 6.3x4.5 | 30 | 800 | 500 | SVT0EM221E4RE00RAXXX |
| | 330 | 6.3x4.5 | 27 | 100 | 500 | SVT0EM331E4RE00RAXXX |
| | 390 | 6.3x6 | 30 | 800 | 500 | SVT0EM331E06E00RAXXX |
| | 470 | 6.3x6 | 30 | 800 | 500 | SVT0EM391E06E00RAXXX |
| | 560 | 6.3x6 | 30 | 800 | 500 | SVT0EM471E06E00RAXXX |
| | 680 | 6.3x9 | 22 | 900 | 500 | SVT0EM561E06E00RAXXX |
| 6.3 (7.2) | 220 | 6.3x4.5 | 30 | 800 | 500 | SVT0JM221E4RE00RAXXX |
| | 330 | 6.3x6 | 30 | 800 | 500 | SVT0JM221E06E00RAXXX |
| | 270 | 6.3x6 | 30 | 900 | 500 | SVT0JM271E06E00RAXXX |
| | 330 | 6.3x6 | 30 | 900 | 500 | SVT0JM331E06E00RAXXX |
| | 470 | 6.3x9 | 22 | 1000 | 592 | SVT0JM471E09E00RAXXX |
| | 560 | 6.3x9 | 22 | 1100 | 706 | SVT0JM561E09E00RAXXX |
| | 1000 | 8x11.5 | 22 | 1200 | 1260 | SVT0JM102FBRE00RAXXX |
| | 1500 | 8x11.5 | 22 | 1300 | 1890 | SVT0JM152FBRE00RAXXX |
| 10 (11.5) | 2200 | 10x12.5 | 22 | 1600 | 2772 | SVT0JM222GCRE00RAXXX |
| | 120 | 6.3x6 | 45 | 800 | 500 | SVT1AM121E06E00RAXXX |
| | 220 | 6.3x6 | 45 | 800 | 500 | SVT1AM221E06E00RAXXX |
| | 330 | 6.3x9 | 30 | 900 | 500 | SVT1AM221E09E00RAXXX |
| | 560 | 6.3x9 | 30 | 900 | 660 | SVT1AM331E09E00RAXXX |
| | 560 | 8x11.5 | 30 | 1000 | 1120 | SVT1AM561FBRE00RAXXX |
| | 1000 | 10x12.5 | 30 | 1500 | 1120 | SVT1AM561GCRE00RAXXX |
| | 1500 | 8x11.5 | 22 | 1200 | 2000 | SVT1AM102FBRE00RAXXX |
| 16 (18.4) | 1000 | 10x12.5 | 22 | 1300 | 2000 | SVT1AM102GCRE00RAXXX |
| | 1500 | 10x12.5 | 22 | 1300 | 3000 | SVT1AM152GCRE00RAXXX |
| | 47 | 6.3x6 | 60 | 500 | 500 | SVT1CM470E06E00RAXXX |
| | 68 | 6.3x6 | 60 | 600 | 500 | SVT1CM680E06E00RAXXX |
| | 100 | 6.3x6 | 45 | 700 | 500 | SVT1CM101E06E00RAXXX |
| | 150 | 6.3x6 | 45 | 700 | 500 | SVT1CM151E06E00RAXXX |
| | 180 | 6.3x9 | 37 | 700 | 500 | SVT1CM151E09E00RAXXX |
| | 180 | 6.3x6 | 90 | 700 | 576 | SVT1CM181E06E00RAXXX |
| | 220 | 6.3x9 | 37 | 800 | 576 | SVT1CM181E09E00RAXXX |
| | 270 | 6.3x9 | 37 | 700 | 704 | SVT1CM221E09E00RAXXX |
| 25 (28.8) | 560 | 8x11.5 | 30 | 1000 | 1792 | SVT1CM561FBRE00RAXXX |
| | 680 | 10x12.5 | 30 | 1200 | 2176 | SVT1CM681GCRE00RAXXX |
| | 1000 | 10x12.5 | 30 | 1200 | 3200 | SVT1CM102GCRE00RAXXX |
| | 27 | 6.3x6 | 75 | 300 | 500 | SVT1EM270E06E00RAXXX |
| | 47 | 6.3x6 | 75 | 500 | 500 | SVT1EM470E06E00RAXXX |
| | 56 | 6.3x9 | 52 | 600 | 500 | SVT1EM470E09E00RAXXX |
| | 68 | 6.3x6 | 75 | 500 | 500 | SVT1EM560E06E00RAXXX |
| | 100 | 6.3x4.5 | 90 | 300 | 500 | SVT1EM680E4RE00RAXXX |
| | 150 | 6.3x6 | 75 | 600 | 500 | SVT1EM101E06E00RAXXX |
| | 220 | 6.3x9 | 45 | 700 | 500 | SVT1EM101E09E00RAXXX |
| 35 (40.3) | 150 | 6.3x9 | 45 | 700 | 750 | SVT1EM151E09E00RAXXX |
| | 220 | 8x11.5 | 45 | 700 | 1100 | SVT1EM221FBRE00RAXXX |
| | 330 | 8x11.5 | 45 | 800 | 1650 | SVT1EM331FBRE00RAXXX |
| | 330 | 10x12.5 | 45 | 800 | 1650 | SVT1EM331GCRE00RAXXX |
| | 470 | 10x12.5 | 33 | 900 | 2350 | SVT1EM471GCRE00RAXXX |
| | 22 | 6.3x6 | 90 | 300 | 500 | SVT1VM220E06E00RAXXX |
| | 27 | 6.3x6 | 90 | 300 | 500 | SVT1VM270E06E00RAXXX |
| | 33 | 6.3x6 | 90 | 300 | 500 | SVT1VM330E06E00RAXXX |
| | 47 | 6.3x6 | 67 | 300 | 500 | SVT1VM470E06E00RAXXX |
| | 68 | 6.3x9 | 75 | 400 | 500 | SVT1VM470E09E00RAXXX |
| 50 (57.5) | 68 | 6.3x9 | 60 | 500 | 500 | SVT1VM680E09E00RAXXX |
| | 100 | 6.3x9 | 60 | 600 | 700 | SVT1VM101E09E00RAXXX |
| | 150 | 8x11.5 | 45 | 900 | 700 | SVT1VM101FBRE00RAXXX |
| | 150 | 8x11.5 | 45 | 900 | 1050 | SVT1VM151FBRE00RAXXX |
| | 220 | 8x11.5 | 45 | 700 | 1540 | SVT1VM221FBRE00RAXXX |
| | 270 | 8x11.5 | 45 | 700 | 1890 | SVT1VM271FBRE00RAXXX |
| | 330 | 10x12.5 | 45 | 800 | 1890 | SVT1VM271GCRE00RAXXX |
| | 330 | 10x12.5 | 45 | 800 | 2310 | SVT1VM331GCRE00RAXXX |
| | 470 | 10x12.5 | 45 | 900 | 3290 | SVT1VM471GCRE00RAXXX |
| | 22 | 6.3x6 | 120 | 240 | 500 | SVT1HM220E06E00RAXXX |
| 63 (72.5) | 33 | 6.3x6 | 120 | 250 | 500 | SVT1HM330E06E00RAXXX |
| | 47 | 6.3x9 | 90 | 400 | 500 | SVT1HM470E09E00RAXXX |
| | 82 | 10x12.5 | 45 | 600 | 820 | SVT1HM820GCRE00RAXXX |
| | 100 | 8x11.5 | 45 | 600 | 1000 | SVT1HM101FBRE00RAXXX |
| | 120 | 8x11.5 | 45 | 600 | 1200 | SVT1HM121FBRE00RAXXX |
| | 220 | 10x12.5 | 45 | 600 | 2200 | SVT1HM221GCRE00RAXXX |
| 22 | 6.3x6 | 120 | 130 | 500 | SVT1JM220E06E00RAXXX | |
| 33 | 6.3x9 | 90 | 150 | 500 | SVT1JM330E09E00RAXXX | |
| 56 | 8x11.5 | 60 | 400 | 706 | SVT1JM560FBRE00RAXXX | |
| 100 | 10x12.5 | 60 | 400 | 1260 | SVT1JM101GCRE00RAXXX | |

DA series

- Endurance: +125°C 4,000 hours
- Low ESR, high voltage resistant
- RoHS Compliant

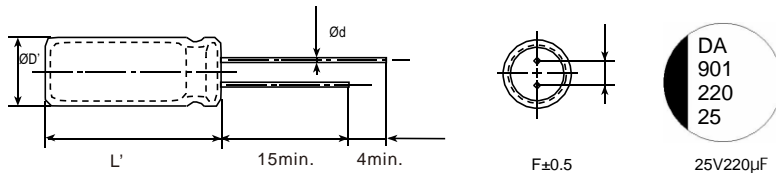
New



SPECIFICATIONS

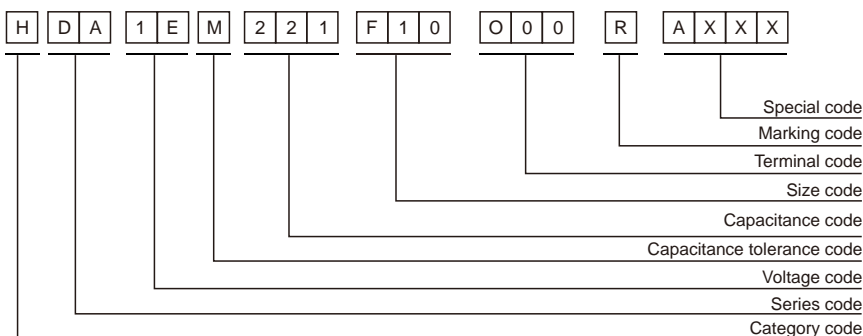
| Items | Characteristics | | | | | | |
|--|--|-------------------------------------|----|----|----|----|------------------|
| Category Temperature Range | -55~+125°C | | | | | | |
| Rated Working Voltage Range | 25~80 V _{dc} | | | | | | |
| Nominal Capacitance Range | 15~470μF | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | | | | | |
| DC Leakage Current | LC=0.01CV or 3(μA), whichever is greater. (at 20°C after 2 minutes) | | | | | | |
| | Where, L:Max.leakage current (μA), C:Nominal capacitance (μF), V: Rated voltage (V) | | | | | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 25 | 35 | 50 | 63 | 80 | (at 20°C, 120Hz) |
| | tan δ (max.) | 0.12 | | | | | |
| ESR(100kHz, 20°C) | Value in standard ratings | | | | | | |
| Temperature Characteristic (Impedance Ratio at 100kHz) | Z(+125°C)/Z(+20°C) 1.5 | | | | | | |
| | Z(-55°C)/Z(+20°C) 2.0 | | | | | | |
| Endurance | After applying rated voltage with rated ripple current for 4,000 hours at 125°C, the capacitors shall meet the following requirements | | | | | | |
| | Appearance | No significant damage | | | | | |
| | Capacitance Change | ±30% of the initial value | | | | | |
| | D.F. (tan δ) | 200% of the initial specified value | | | | | |
| | ESR | 200% of the initial specified value | | | | | |
| | Leakage Current | The initial specified value | | | | | |
| High Temperature Storage (No-Load) | The requirements for the Endurance characteristics listed above shall be satisfied when the capacitors are restored to normal temperature after storing them for 2,000 hours under no-load at 125°C±2°C. | | | | | | |
| Humidity Resistance (On-Load) | After applying rated voltage for 2,000 hours at 85°C±2°C and 85~90%RH, the capacitors shall meet the following requirements. | | | | | | |
| | Appearance | No significant damage | | | | | |
| | Capacitance Change | ±30% of the initial value | | | | | |
| | D.F. (tan δ) | 200% of the initial specified value | | | | | |
| | ESR | 200% of the initial specified value | | | | | |
| | Leakage Current | The initial specified value | | | | | |

DIMENSIONS[mm]



| | | | |
|-----|-----------------|-----------|-----|
| ØD | 6.3 | 8 | 10 |
| Ød | 0.5 | 0.6 | 0.6 |
| F | 2.5 | 3.5 | 5.0 |
| ØD' | ØD-0.1~+0.5max. | | |
| L' | L +1.0max. | L -0.5~+1 | |

PART NUMBERING SYSTEM



DA series

STANDARD RATINGS

| VDC (SV) | Cap (μF) | Size D×L(mm) | ESR (mΩ, 20°C, 100kHz) (max.) | Rated ripple current (mA _{rms} /125°C, 100kHz) | Leakage Current (μA)(max.) | Part Number |
|--------------|----------|--------------|-------------------------------|---|----------------------------|----------------------|
| 25 (28.8) | 100 | 6.3×7 | 35 | 1200 | 25 | HDA1EM101E07O00RAXXX |
| | 220 | 8×10 | 27 | 1400 | 55 | HDA1EM221F10O00RAXXX |
| | 330 | 10×10 | 25 | 1800 | 82.5 | HDA1EM331G10O00RAXXX |
| | 470 | 10×10 | 20 | 2000 | 117.5 | HDA1EM471G10O00RAXXX |
| 35 (40.3) | 47 | 6.3×7 | 40 | 1100 | 16.5 | HDA1VM470E07O00RAXXX |
| | 68 | 6.3×8 | 40 | 1200 | 23.8 | HDA1VM680E08O00RAXXX |
| | 120 | 8×10 | 35 | 1400 | 42 | HDA1VM121F10O00RAXXX |
| | 220 | 10×10 | 30 | 1800 | 77 | HDA1VM221G10O00RAXXX |
| 50 (57.5) | 22 | 6.3×8 | 90 | 900 | 11 | HDA1HM220E08O00RAXXX |
| | 47 | 8×10 | 35 | 1100 | 23.5 | HDA1HM470F10O00RAXXX |
| | 100 | 10×10 | 35 | 1400 | 50 | HDA1HM101G10O00RAXXX |
| 63 (72.5) | 15 | 6.3×8 | 100 | 800 | 9.5 | HDA1JM150E08O00RAXXX |
| | 33 | 8×10 | 50 | 1000 | 20.8 | HDA1JM330F10O00RAXXX |
| | 56 | 10×10 | 40 | 1200 | 35.3 | HDA1JM560G10O00RAXXX |
| 80 (92.0) | 47 | 8×12 | 40 | 1000 | 37.6 | HDA1BM470F12O00RAXXX |

Frequency Coefficient of Rated Ripple Current

| Frequency(Hz) | 120 | 1k | 10k | 100k |
|---------------|------|------|------|------|
| Coefficient | 0.05 | 0.30 | 0.70 | 1.00 |

SA series

- Endurance: +125°C 4,000 hours
- Low ESR, high ripple current resistant
- RoHS Compliant

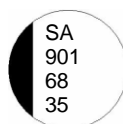
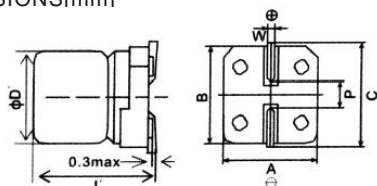


SPECIFICATIONS

| Items | Characteristics | | | | | | |
|--|--|-------------------------------------|----|----|----|----|------------------|
| Category Temperature Range | -55~+125°C | | | | | | |
| Rated Working Voltage Range | 25~80 V _{dc} | | | | | | |
| Nominal Capacitance Range | 15~470μF | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | | | | | |
| DC Leakage Current | LC=0.01CV or 3(μA), whichever is greater. (at 20°C after 2 minutes) | | | | | | |
| | Where, I:Max.leakage current (μA),C:Nominal capacitance (μF),V: Rated voltage (V) | | | | | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 25 | 35 | 50 | 63 | 80 | (at 20°C, 120Hz) |
| | tan δ (max.) | 0.12 | | | | | |
| ESR(100kHz,20°C) | Value in standard ratings | | | | | | |
| Temperature Characteristic (Impedance Ratio at 100kHz) | Z(+125°C)/Z(+20°C) 1.5 Z(-55°C)/Z(+20°C) 2.0 | | | | | | |
| Endurance | After applying rated voltage with rated ripple current for 4,000 hours at 125°C, the capacitors shall meet the following requirements | | | | | | |
| | Appearance | No significant damage | | | | | |
| | Capacitance Change | ±30% of the initial value | | | | | |
| | D.F. (tan δ) | 200% of the initial specified value | | | | | |
| | ESR | 200% of the initial specified value | | | | | |
| | Leakage Current | The initial specified value | | | | | |
| High Temperature Storage (No-Load) | The requirements for the Endurance characteristics listed above shall be satisfied when the capacitors are restored to normal temperature after storing them for 2,000 hours under no-load at 125°C±2°C. | | | | | | |
| Humidity Resistance (On-Load) | After applying rated voltage for 2,000 hours at 85°C±2°C and 85~90%RH, the capacitors shall meet the following requirements. | | | | | | |
| | Appearance | No significant damage | | | | | |
| | Capacitance Change | ±30% of the initial value | | | | | |
| | D.F. (tan δ) | 200% of the initial specified value | | | | | |
| | ESR | 200% of the initial specified value | | | | | |
| | Leakage Current | The initial specified value | | | | | |

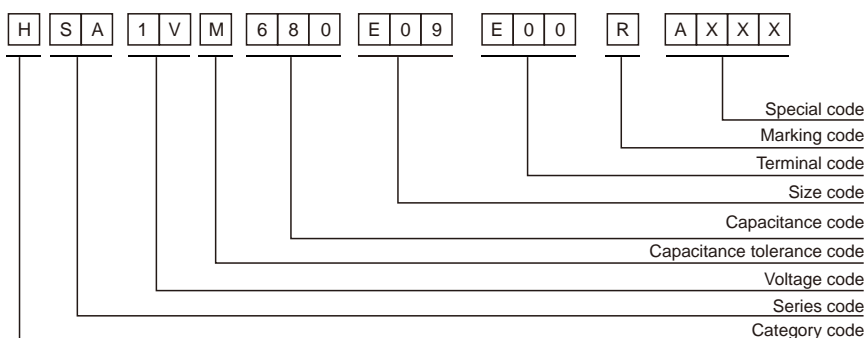
Conductive Polymer Hybrid Type

DIMENSIONS[mm]



| Size Code | 6.3 | 8 | 10 |
|-----------|-------------|---------|---------|
| P±0.2 | 1.9 | 3.1 | 4.5 |
| A±0.2 | 6.6 | 8.3 | 10.3 |
| B±0.2 | 6.6 | 8.3 | 10.3 |
| C±0.2 | 7.2 | 9.0 | 11.0 |
| W | 0.5~0.8 | 0.7~1.1 | 0.7~1.1 |
| ØD' | ØD-0.1~+0.5 | | |
| L' | L±0.3 | L±0.5 | |

PART NUMBERING SYSTEM



SA series

STANDARD RATINGS

| VDC (SV) | Cap (μF) | Size D×L(mm) | ESR (mΩ, 20°C, 100kHz) (max.) | Rated ripple current (mA _{rms} /125°C, 100kHz) | Leakage Current (μA)(max.) | Part Number |
|--------------|----------|--------------|-------------------------------|---|----------------------------|----------------------|
| 25 (28.8) | 100 | 6.3× 8 | 35 | 1200 | 25 | HSA1EM101E08E00RAXXX |
| | 220 | 8× 10.5 | 27 | 1400 | 55 | HSA1EM221FARE00RAXXX |
| | 330 | 10× 10.5 | 25 | 1800 | 82.5 | HSA1EM331GARE00RAXXX |
| | 470 | 10× 10.5 | 20 | 2000 | 117.5 | HSA1EM471GARE00RAXXX |
| 35 (40.3) | 47 | 6.3× 8 | 40 | 1100 | 16.5 | HSA1VM470E08E00RAXXX |
| | 68 | 6.3× 9 | 40 | 1200 | 23.8 | HSA1VM680E09E00RAXXX |
| | 120 | 8× 10.5 | 35 | 1400 | 42 | HSA1VM121FARE00RAXXX |
| | 220 | 10× 10.5 | 30 | 1800 | 77 | HSA1VM221GARE00RAXXX |
| 50 (57.5) | 22 | 6.3× 8 | 90 | 900 | 11 | HSA1HM220E08E00RAXXX |
| | 47 | 8× 10.5 | 35 | 1100 | 23.5 | HSA1HM470FARE00RAXXX |
| | 100 | 10× 10.5 | 35 | 1400 | 50 | HSA1HM101GARE00RAXXX |
| 63 (72.5) | 15 | 6.3× 9 | 100 | 800 | 9.5 | HSA1JM150E09E00RAXXX |
| | 33 | 8× 10.5 | 50 | 1000 | 20.8 | HSA1JM330FARE00RAXXX |
| | 56 | 10× 10.5 | 40 | 1200 | 35.3 | HSA1JM560GARE00RAXXX |
| 80 (92.0) | 47 | 8× 12.5 | 40 | 1000 | 37.6 | HSA1BM470FCRE00RAXXX |

Frequency Coefficient of Rated Ripple Current

| | | | | |
|---------------|------|------|------|------|
| Frequency(Hz) | 120 | 1k | 10k | 100k |
| Coefficient | 0.05 | 0.30 | 0.70 | 1.00 |

MK series

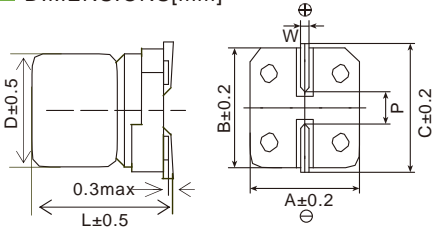
- Endurance: +105°C 2,000 ~ 3,000 hours
- Designed for surface mounting on high density PC board
- RoHS Compliant



SPECIFICATIONS

| Items | Characteristics | |
|---|--|--|
| Category Temperature Range | -40~+105°C(6.3 ~450 V _{dc}) | |
| Rated Voltage Range | 6.3~450 V _{dc} | |
| Capacitance Tolerance | ±20%(M) (at 20°C,120Hz) | |
| Leakage Current | 6.3~100 V _{dc} | 160~450 V _{dc} |
| | I 0.01CV or 3μA, whichever is greater. (2 minutes) I 0.04CV+100μA (1 minute) | |
| Where, I:Max.leakage current (μA),C:Nominal capacitance (μF),V: Rated voltage (V) (at 20°C) | | |
| Dissipation Factor (tan) | Rated Voltage(V _{dc}) | 6.3 10 16 25 35 50 63 80 100 160~250 400~450 |
| | tan (max.) | D80~E80 0.30 0.24 0.20 0.16 0.14 0.12 0.12 0.12 0.12 0.15 0.20 EB0~WM5 0.40 0.30 0.26 0.16 0.14 0.12 0.12 0.12 0.12 0.15 0.20 (at 20°C,120Hz) |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) | 6.3 10 16 25 35 50 63 80 100 160~250 400~450 |
| | Z(-25°C)/Z(+20°C) | 4 3 2 2 2 2 2 2 2 6 6 |
| | Z(-40°C)/Z(+20°C) | 10 8 6 4 3 3 3 3 3 10 18 (at 120Hz) |
| Endurance | The specifications listed below shall be met when the capacitors are restored to 20°C after rated voltage is applied for a specified period of time at 105°C. | |
| | Load Life | 2,000 hours(160~450V _{dc} 3,000 hours) |
| | Capacitance Change | ±20% of the initial value |
| | Dissipation Factor (tan) | 200% of the initial specified value |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after leaving them under no load at 105°C for 1,000 hours (6.3~100V _{dc} : 500 hours). | |
| | Capacitance Change | ±20% of the initial value |
| | Dissipation Factor (tan) | 200% of the initial specified value |
| | Leakage Current | 200% of the initial specified value |

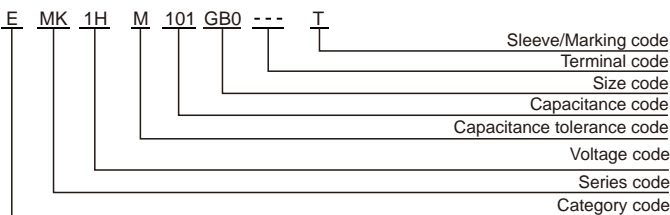
DIMENSIONS[mm]



| Size code | D | L | A | B | C | W | P |
|-----------|------|------|------|------|------|---------|-----|
| D80 | 5 | 7.7 | 5.3 | 5.3 | 5.9 | 0.5~0.8 | 1.4 |
| E80 | 6.3 | 7.7 | 6.6 | 6.6 | 7.2 | 0.5~0.8 | 1.9 |
| E83 | 6.3 | 8.0 | 6.6 | 6.6 | 7.2 | 0.5~0.8 | 1.9 |
| EB0 | 6.3 | 10.5 | 6.6 | 6.6 | 7.2 | 0.5~0.8 | 1.9 |
| FB0 | 8 | 10.5 | 8.3 | 8.3 | 9.0 | 0.7~1.1 | 3.1 |
| FD0 | 8 | 12.5 | 8.3 | 8.3 | 9.0 | 0.7~1.1 | 3.1 |
| FE0 | 8 | 13.5 | 8.3 | 8.3 | 9.0 | 0.7~1.1 | 3.1 |
| FG0 | 8 | 15.5 | 8.3 | 8.3 | 9.0 | 0.7~1.1 | 3.1 |
| G80 | 10 | 7.7 | 10.3 | 10.3 | 11.0 | 0.7~1.1 | 4.5 |
| GB0 | 10 | 10.5 | 10.3 | 10.3 | 11.0 | 0.7~1.1 | 4.5 |
| GD0 | 10 | 12.5 | 10.3 | 10.3 | 11.0 | 0.7~1.1 | 4.5 |
| GE0 | 10 | 13.5 | 10.3 | 10.3 | 11.0 | 0.7~1.1 | 4.5 |
| GH0 | 10 | 16.5 | 10.3 | 10.3 | 11.0 | 0.7~1.1 | 4.5 |
| WE0 | 12.5 | 13.5 | 13.0 | 13.0 | 13.7 | 1.0~1.3 | 4.5 |
| WG5 | 12.5 | 16.0 | 13.0 | 13.0 | 13.7 | 1.0~1.3 | 4.5 |
| WM5 | 12.5 | 21.0 | 13.0 | 13.0 | 13.7 | 1.0~1.3 | 4.5 |

Note: Tolerance shall be L+1.3(max.) for G80.

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| Rated voltage(V _{dc}) \ Freq.(Hz) | 120 | 1k | 10k | 100k |
|---|------|------|------|------|
| 6.3~450 | 0.50 | 0.80 | 0.90 | 1.00 |

MK series

■ STANDARD RATINGS (Rated ripple current:mArms/105°C 100kHz)

| WV (Vdc) | Cap (μF) | Size code | Rated ripple current | Part Number |
|----------|----------|-----------|----------------------|------------------|
| 6.3(0J) | 100 | D80 | 105 | EMK0JM101D80D00T |
| | 220 | E83 | 160 | EMK0JM221E83D00T |
| | 330 | FB0 | 340 | EMK0JM331FB0D00T |
| | 1000 | GB0 | 860 | EMK0JM102GB0D00T |
| 10(1A) | 33 | D80 | 105 | EMK1AM330D80D00T |
| | 100 | E83 | 175 | EMK1AM101E83D00T |
| | 220 | E83 | 180 | EMK1AM221E83D00T |
| | 330 | FB0 | 340 | EMK1AM331FB0D00T |
| | 470 | FB0 | 360 | EMK1AM471FB0D00T |
| 16(1C) | 820 | GB0 | 860 | EMK1AM821GB0D00T |
| | 47 | D80 | 105 | EMK1CM470D80D00T |
| | 100 | E83 | 175 | EMK1CM101E83D00T |
| | 150 | E83 | 190 | EMK1CM151E83D00T |
| | 220 | FB0 | 500 | EMK1CM221FB0D00T |
| | 330 | FB0 | 545 | EMK1CM331FB0D00T |
| 25(1E) | 470 | GB0 | 800 | EMK1CM471GB0D00T |
| | 33 | D80 | 105 | EMK1EM330D80D00T |
| | 47 | E83 | 180 | EMK1EM470E83D00T |
| | 100 | E83 | 205 | EMK1EM101E83D00T |
| | 220 | FB0 | 550 | EMK1EM221FB0D00T |
| 35(1V) | 330 | GB0 | 780 | EMK1EM331GB0D00T |
| | 470 | GD0 | 875 | EMK1EM471GD0D00T |
| | 10 | D80 | 105 | EMK1VM100D80D00T |
| | 22 | D80 | 110 | EMK1VM220D80D00T |
| | 47 | E83 | 210 | EMK1VM470E83D00T |
| | 100 | FB0 | 575 | EMK1VM101FB0D00T |
| 50(1H) | 220 | GB0 | 835 | EMK1VM221GB0D00T |
| | 330 | GD0 | 900 | EMK1VM331GD0D00T |
| | 10 | D80 | 90 | EMK1HM100D80D00T |
| | 22 | E83 | 175 | EMK1HM220E83D00T |
| | 33 | E83 | 180 | EMK1HM330E83D00T |
| | 47 | FB0 | 540 | EMK1HM470FB0D00T |
| 63(1J) | 100 | GB0 | 700 | EMK1HM101GB0D00T |
| | 220 | WE0 | 900 | EMK1HM221WE0D00T |
| | 330 | WG5 | 1180 | EMK1HM331WG5D00T |
| | 10 | D80 | 85 | EMK1JM100D80D00T |
| | 22 | E83 | 150 | EMK1JM220E83D00T |
| | 33 | FB0 | 375 | EMK1JM330FB0D00T |
| 80(1B) | 47 | FB0 | 450 | EMK1JM470FB0D00T |
| | 100 | GB0 | 575 | EMK1JM101GB0D00T |
| | 220 | WE0 | 890 | EMK1JM221WE0D00T |
| | 10 | E80 | 140 | EMK1BM100E80D00T |
| | 22 | FB0 | 375 | EMK1BM220FB0D00T |
| | 33 | FB0 | 450 | EMK1BM330FB0D00T |
| 100(1K) | 47 | GB0 | 575 | EMK1BM470GB0D00T |
| | 100 | GD0 | 600 | EMK1BM101GD0D00T |
| | 150 | WE0 | 800 | EMK1BM151WE0D00T |
| | 220 | WG5 | 960 | EMK1BM221WG5D00T |
| | 4.7 | D80 | 70 | EMK1KM4R7D80D00T |
| 100(1K) | 10 | E83 | 135 | EMK1KM100E83D00T |
| | 22 | FB0 | 345 | EMK1KM220FB0D00T |
| | 33 | GB0 | 560 | EMK1KM330GB0D00T |
| | 47 | GB0 | 575 | EMK1KM470GB0D00T |
| 100 | WE0 | 680 | EMK1KM101WE0D00T | |

| WV (Vdc) | Cap (μF) | Size code | Rated ripple current | Part Number |
|----------|----------|-----------|----------------------|-------------------|
| 160(2C) | 10 | G80 | 81 | EMK2CM100G80D00T |
| | | GB0 | 90 | EMK2CM100GB0D00T |
| | | F00 | 136 | EMK2CM150F00D00T |
| | | G00 | 170 | EMK2CM220G00D00T |
| | | GE0 | 215 | EMK2CM330GE0D00T |
| | | GHO | 380 | EMK2CM470GHO0D00T |
| | | WM5 | 630 | EMK2CM680WM5D00T |
| 200(2D) | 100 | WM5 | 700 | EMK2CM101WM5D00T |
| | | G80 | 110 | EMK2DM100G80D00T |
| | | GB0 | 130 | EMK2DM100GB0D00T |
| | | FE0 | 170 | EMK2DM150FE0D00T |
| | | GE0 | 200 | EMK2DM220GE0D00T |
| | | GHO | 260 | EMK2DM330GHO0D00T |
| 250(2E) | 47 | WM5 | 440 | EMK2DM470WM5D00T |
| | | WM5 | 640 | EMK2DM680WM5D00T |
| | | E80 | 52 | EMK2EM2R2E80D00T |
| | | E80 | 68 | EMK2EM3R3E80D00T |
| | | F80 | 96 | EMK2EM4R7F80D00T |
| 400(2G) | 10 | F00 | 166 | EMK2EM100F00D00T |
| | | GHO | 300 | EMK2EM220GHO0D00T |
| | | WM5 | 420 | EMK2EM330WM5D00T |
| | | WM5 | 460 | EMK2EM470WM5D00T |
| | | E80 | 28 | EMK2GM010E80D00T |
| | | E80 | 36 | EMK2GM1R5E80D00T |
| | | E80 | 44 | EMK2GM2R2E80D00T |
| 450(2W) | 4.7 | F80 | 64 | EMK2GM3R3F80D00T |
| | | F80 | 78 | EMK2GM4R7F80D00T |
| | | F00 | 96 | EMK2GM5R6F00D00T |
| | | FE0 | 108 | EMK2GM6R8FE0D00T |
| | | FG0 | 130 | EMK2GM8R2FG0D00T |
| | | GE0 | 140 | EMK2GM100GE0D00T |
| | | GHO | 174 | EMK2GM150GHO0D00T |
| | | WM5 | 235 | EMK2GM220WM5D00T |
| 450(2W) | 22 | GB0 | 50 | EMK2WM2R2GB0D00T |
| | | GB0 | 72 | EMK2WM3R3GB0D00T |
| | | GE0 | 90 | EMK2WM4R7GE0D00T |
| | | GHO | 136 | EMK2WM100GHO0D00T |
| | | WM5 | 180 | EMK2WM150WM5D00T |
| 22 | WM5 | 218 | EMK2WM220WM5D00T | |

MF series

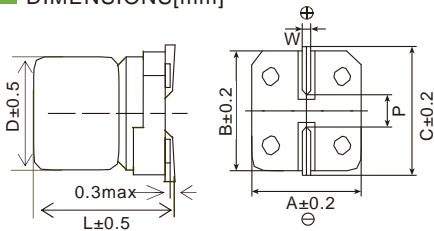
- Endurance: +105°C 6,000 hours
- Designed for surface mounting on high density PC board
- RoHS Compliant



SPECIFICATIONS

| Items | Characteristics | |
|---|---|---|
| Category Temperature Range | -40~+105°C(6.3 ~450 V _{dc}) | |
| Rated Voltage Range | 6.3~450 V _{dc} | |
| Capacitance Tolerance | ±20%(M) | |
| Leakage Current | 6.3~100 V _{dc} | 160~450 V _{dc} |
| | I 0.03CV or 4μA, whichever is greater. (2 minutes) I 0.04CV+100μA (1 minute) | |
| Where, I:Max.leakage current (μA),C:Nominal capacitance (μF),V: Rated voltage (V) (at 20°C) | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 6.3 10 16 25 35 50 63 80 100 160~250 400~450 |
| | tan δ (max.) | 0.32 0.28 0.26 0.16 0.14 0.14 0.12 0.12 0.10 0.20 0.24 (at 20°C,120Hz) |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) | 6.3 10 16 25 35 50 63 80 100 160~250 400~450 |
| | Z(-25°C)/Z(+20°C) | 4 3 2 2 2 2 2 2 2 6 6 |
| | Z(-40°C)/Z(+20°C) | 10 8 6 4 3 3 3 3 3 10 18 (at 120Hz) |
| Endurance | The specifications listed below shall be met when the capacitors are restored to 20°C after rated voltage is applied for 6,000 hours at 105°C. | |
| | Rated Voltage(V _{dc}) | 6.3~100 160~450 |
| | Capacitance Change | ±30% of the initial value ±20% of the initial value |
| | Dissipation Factor (tan δ) | 300% of the initial specified value 200% of the initial specified value |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after leaving them under no load at 105°C for 1,000 hours. | |
| | Rated Voltage(V _{dc}) | 6.3~100 160~450 |
| | Capacitance Change | ±30% of the initial value ±20% of the initial value |
| | Dissipation Factor (tan δ) | 300% of the initial specified value 200% of the initial specified value |
| | Leakage Current | 200% of the initial specified value 200% of the initial specified value |

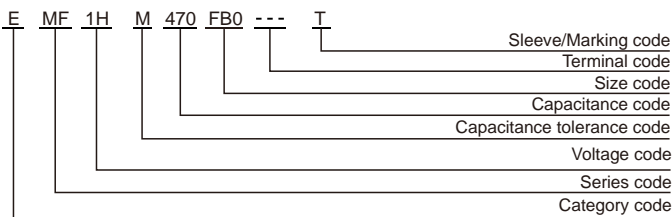
DIMENSIONS[mm]



| Size code | D | L | A | B | C | W | P |
|-----------|------|------|------|------|------|---------|-----|
| D80 | 5 | 7.7 | 5.5 | 5.3 | 5.9 | 0.5~0.8 | 1.4 |
| E80 | 6.3 | 7.7 | 6.6 | 6.6 | 7.2 | 0.5~0.8 | 1.9 |
| E83 | 6.3 | 8.0 | 6.6 | 6.6 | 7.2 | 0.5~0.8 | 1.9 |
| EB0 | 6.3 | 10.5 | 6.6 | 6.6 | 7.2 | 0.5~0.8 | 1.9 |
| FB0 | 8 | 10.5 | 8.3 | 8.3 | 9.0 | 0.7~1.1 | 3.1 |
| FD0 | 8 | 12.5 | 8.3 | 8.3 | 9.0 | 0.7~1.1 | 3.1 |
| FE0 | 8 | 13.5 | 8.3 | 8.3 | 9.0 | 0.7~1.1 | 3.1 |
| FG0 | 8 | 15.5 | 8.3 | 8.3 | 9.0 | 0.7~1.1 | 3.1 |
| G80 | 10 | 7.7 | 10.3 | 10.3 | 11.0 | 0.7~1.1 | 4.5 |
| GB0 | 10 | 10.5 | 10.3 | 10.3 | 11.0 | 0.7~1.1 | 4.5 |
| GD0 | 10 | 12.5 | 10.3 | 10.3 | 11.0 | 0.7~1.1 | 4.5 |
| GE0 | 10 | 13.5 | 10.3 | 10.3 | 11.0 | 0.7~1.1 | 4.5 |
| WG5 | 12.5 | 16.0 | 13.0 | 13.0 | 13.7 | 1.0~1.3 | 4.5 |
| WM5 | 12.5 | 21.0 | 13.0 | 13.0 | 13.7 | 1.0~1.3 | 4.5 |
| LH0 | 16 | 16.5 | 17.0 | 17.0 | 18.0 | 1.0~1.3 | 6.5 |
| LN0 | 16 | 21.5 | 17.0 | 17.0 | 18.0 | 1.0~1.3 | 6.5 |

Note: Tolerance shall be L+1.3(max.) for G80.

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| Rated voltage(V _{dc}) \ Freq.(Hz) | 120 | 1k | 10k | 100k |
|---|------|------|------|------|
| 6.3~450 | 0.50 | 0.80 | 0.90 | 1.00 |

Surface Mount Type

MF series

■ STANDARD RATINGS (Rated ripple current:mArms/105°C 100kHz)

| WV (Vdc) | Cap (µF) | Size code | Rated ripple current | Part Number |
|----------|----------|-----------|----------------------|------------------|
| 6.3(0J) | 47 | D80 | 90 | EMF0JM470D80D00T |
| | 100 | E83 | 145 | EMF0JM101E83D00T |
| | 220 | E83 | 180 | EMF0JM221E83D00T |
| | 330 | FB0 | 280 | EMF0JM331FB0D00T |
| | 470 | FB0 | 360 | EMF0JM471FB0D00T |
| 10(1A) | 33 | D80 | 71 | EMF1AM330D80D00T |
| | 150 | E83 | 105 | EMF1AM151E83D00T |
| | 220 | FB0 | 280 | EMF1AM221FB0D00T |
| | 330 | GB0 | 400 | EMF1AM331GB0D00T |
| 16(1C) | 470 | GB0 | 545 | EMF1AM471GB0D00T |
| | 47 | D80 | 90 | EMF1CM470D80D00T |
| | 100 | E83 | 145 | EMF1CM101E83D00T |
| | 220 | FB0 | 475 | EMF1CM221FB0D00T |
| | 330 | FD0 | 510 | EMF1CM331FD0D00T |
| 25(1E) | 470 | GB0 | 720 | EMF1CM471GB0D00T |
| | 33 | D80 | 90 | EMF1EM330D80D00T |
| | 47 | E83 | 165 | EMF1EM470E83D00T |
| | 100 | E83 | 175 | EMF1EM101E83D00T |
| | 220 | FB0 | 535 | EMF1EM221FB0D00T |
| 35(1V) | 330 | GB0 | 750 | EMF1EM331GB0D00T |
| | 10 | D80 | 90 | EMF1VM100D80D00T |
| | 22 | E83 | 145 | EMF1VM100E83D00T |
| | | D80 | 96 | EMF1VM220D80D00T |
| | E83 | 160 | EMF1VM220E83D00T | |
| | | 175 | EMF1VM330E83D00T | |
| | 47 | E80 | 190 | EMF1VM470E80D00T |
| 100 | FB0 | 560 | EMF1VM101FB0D00T | |
| 220 | GB0 | 800 | EMF1VM221GB0D00T | |
| 50(1H) | 10 | D80 | 86 | EMF1HM100D80D00T |
| | 22 | E83 | 145 | EMF1HM220E83D00T |
| | 47 | FB0 | 520 | EMF1HM470FB0D00T |
| | 100 | GB0 | 680 | EMF1HM101GB0D00T |
| | 220 | WE0 | 875 | EMF1HM221WE0D00T |
| | 330 | WG5 | 1020 | EMF1HM331WG5D00T |
| 63(1J) | 22 | E83 | 140 | EMF1JM220E83D00T |
| | 33 | FB0 | 320 | EMF1JM330FB0D00T |
| | 47 | FB0 | 380 | EMF1JM470FB0D00T |
| | 100 | GB0 | 530 | EMF1JM101GB0D00T |
| | 220 | WE0 | 840 | EMF1JM221WE0D00T |
| | 330 | LH0 | 1040 | EMF1JM331LH0D00T |
| | 470 | LNO | 1700 | EMF1JM471LNO00T |
| 80(1B) | 10 | E83 | 130 | EMF1BM100E83D00T |
| | 22 | FB0 | 360 | EMF1BM220FB0D00T |
| | 33 | FB0 | 410 | EMF1BM330FB0D00T |
| | 47 | GB0 | 490 | EMF1BM470GB0D00T |
| | 100 | GD0 | 530 | EMF1BM101GD0D00T |
| 220 | WG5 | 1020 | EMF1BM221WG5D00T | |
| 100(1K) | 10 | E83 | 290 | EMF1KM100E83D00T |
| | 22 | FB0 | 320 | EMF1KM220FB0D00T |
| | 33 | GB0 | 360 | EMF1KM330GB0D00T |
| | 47 | GB0 | 540 | EMF1KM470GB0D00T |
| | 100 | WE0 | 550 | EMF1KM101WE0D00T |
| 220 | LH0 | 1090 | EMF1KM221LH0D00T | |

| WV (Vdc) | Cap (µF) | Size code | Rated ripple current | Part Number |
|----------|----------|-----------|----------------------|------------------|
| 160(2C) | 10 | G80 | 155 | EMF2CM100G80D00T |
| | | GB0 | 176 | EMF2CM100GB0D00T |
| | 15 | FD0 | 204 | EMF2CM150FD0D00T |
| | | GD0 | 260 | EMF2CM220GD0D00T |
| | 33 | GE0 | 340 | EMF2CM330GE0D00T |
| | 47 | GH0 | 420 | EMF2CM470GH0D00T |
| | 68 | WM5 | 560 | EMF2CM680WM5D00T |
| | 100 | WM5 | 610 | EMF2CM101WM5D00T |
| | 200(2D) | 10 | G80 | 170 |
| GB0 | | | 185 | EMF2DM100GB0D00T |
| 15 | | FE0 | 210 | EMF2DM150FE0D00T |
| | | GE0 | 272 | EMF2DM220GE0D00T |
| 33 | | GH0 | 340 | EMF2DM330GH0D00T |
| | | WE0 | 340 | EMF2DM330WE0D00T |
| 47 | | WM5 | 480 | EMF2DM470WM5D00T |
| 68 | WM5 | 540 | EMF2DM680WM5D00T | |
| 250(2E) | 4.7 | FB0 | 90 | EMF2EM4R7FB0D00T |
| | 10 | FD0 | 150 | EMF2EM100FD0D00T |
| | 22 | GH0 | 312 | EMF2EM220GH0D00T |
| | 33 | WM5 | 440 | EMF2EM330WM5D00T |
| 400(2G) | 47 | WM5 | 510 | EMF2EM470WM5D00T |
| | 1 | E80 | 34 | EMF2GM010E80D00T |
| | | E80 | 44 | EMF2GM1R5E80D00T |
| | 1.5 | E80 | 44 | EMF2GM1R5E80D00T |
| | 2.2 | E80 | 48 | EMF2GM2R2E80D00T |
| | 3.3 | FB0 | 72 | EMF2GM3R3FB0D00T |
| | 4.7 | FD0 | 100 | EMF2GM4R7FD0D00T |
| | | GB0 | 100 | EMF2GM4R7GB0D00T |
| | 5.6 | FD0 | 108 | EMF2GM5R6FD0D00T |
| | | GB0 | 114 | EMF2GM5R6GB0D00T |
| 6.8 | GE0 | 140 | EMF2GM6R8GE0D00T | |
| 10 | GE0 | 194 | EMF2GM100GE0D00T | |
| 15 | GH0 | 235 | EMF2GM150GH0D00T | |
| 22 | WM5 | 350 | EMF2GM220WM5D00T | |
| 450(2W) | 2.2 | GB0 | 60 | EMF2WM2R2GB0D00T |
| | 3.3 | GB0 | 75 | EMF2WM3R3GB0D00T |
| | 4.7 | GE0 | 98 | EMF2WM4R7GE0D00T |
| | 10 | GH0 | 192 | EMF2WM100GH0D00T |
| | 15 | WM5 | 240 | EMF2WM150WM5D00T |
| 22 | WM5 | 320 | EMF2WM220WM5D00T | |

MA series

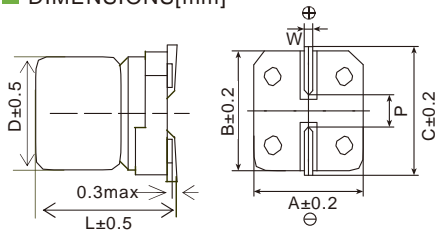
- Endurance: +105°C 10,000 hours
- Designed for surface mounting on high density PC board
- RoHS Compliant



SPECIFICATIONS

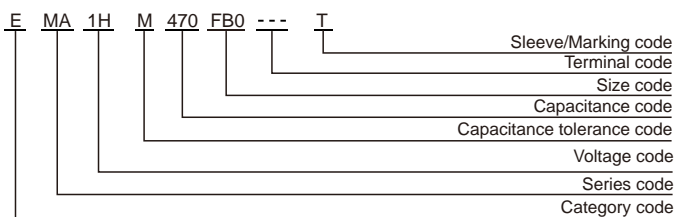
| Items | Characteristics | | | | | | | | | | |
|---|---|-------------------------------------|------|------|------|-------------------------------------|-------------------------------------|------|---------|---------|-----------------|
| Category Temperature Range | -40~+105°C(16~450 V _{dc}) | | | | | | | | | | |
| Rated Voltage Range | 16~450 V _{dc} | | | | | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C,120Hz) | | | | | | | | | | |
| Leakage Current | 16~100 V _{dc} | | | | | 160~450 V _{dc} | | | | | |
| | I 0.03CV or 4μA, whichever is greater. (2 minutes) | | | | | I 0.04CV+100μA (1 minute) | | | | | |
| Where, I:Max.leakage current (μA),C:Nominal capacitance (μF),V: Rated voltage (V) (at 20°C) | | | | | | | | | | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 16 | 25 | 35 | 50 | 63 | 80 | 100 | 160~250 | 400~450 | (at 20°C,120Hz) |
| | tan (max.) | 0.26 | 0.16 | 0.14 | 0.14 | 0.20 | 0.20 | 0.20 | 0.20 | 0.24 | |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) | 16 | 25 | 35 | 50 | 63 | 80 | 100 | 160~250 | 400~450 | (at 120Hz) |
| | Z(-25°C)/Z(+20°C) | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 6 | 6 | |
| | Z(-40°C)/Z(+20°C) | 6 | 4 | 3 | 3 | 3 | 3 | 3 | 10 | 18 | |
| Endurance | The specifications listed below shall be met when the capacitors are restored to 20°C after rated voltage is applied for 10,000 hours at 105°C. | | | | | | | | | | |
| | Rated Voltage(V _{dc}) | 16~100 | | | | | 160~450 | | | | |
| | Capacitance Change | ±30% of the initial value | | | | | ±20% of the initial value | | | | |
| | Dissipation Factor (tan δ) | 300% of the initial specified value | | | | | 200% of the initial specified value | | | | |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after leaving them under no load at 105°C for 1,000 hours. | | | | | | | | | | |
| | Rated Voltage(V _{dc}) | 16~100 | | | | | 160~450 | | | | |
| | Capacitance Change | ±30% of the initial value | | | | | ±20% of the initial value | | | | |
| | Dissipation Factor (tan δ) | 300% of the initial specified value | | | | | 200% of the initial specified value | | | | |
| Leakage Current | 300% of the initial specified value | | | | | 200% of the initial specified value | | | | | |

DIMENSIONS[mm]



| Size code | D | L | A | B | C | W | P |
|-----------|------|------|------|------|------|---------|-----|
| E80 | 6.3 | 7.7 | 6.6 | 6.6 | 7.2 | 0.5~0.8 | 1.9 |
| E83 | 6.3 | 8.0 | 6.6 | 6.6 | 7.2 | 0.5~0.8 | 1.9 |
| EB0 | 6.3 | 10.5 | 6.6 | 6.6 | 7.2 | 0.5~0.8 | 1.9 |
| FB0 | 8 | 10.5 | 8.3 | 8.3 | 9.0 | 0.7~1.1 | 3.1 |
| FD0 | 8 | 12.5 | 8.3 | 8.3 | 9.0 | 0.7~1.1 | 3.1 |
| FE0 | 8 | 13.5 | 8.3 | 8.3 | 9.0 | 0.7~1.1 | 3.1 |
| FG0 | 8 | 15.5 | 8.3 | 8.3 | 9.0 | 0.7~1.1 | 3.1 |
| GB0 | 10 | 10.5 | 10.3 | 10.3 | 11.0 | 0.7~1.1 | 4.5 |
| GD0 | 10 | 12.5 | 10.3 | 10.3 | 11.0 | 0.7~1.1 | 4.5 |
| GE0 | 10 | 13.5 | 10.3 | 10.3 | 11.0 | 0.7~1.1 | 4.5 |
| GH0 | 10 | 16.5 | 10.3 | 10.3 | 11.0 | 0.7~1.1 | 4.5 |
| WE0 | 12.5 | 13.5 | 13.0 | 13.0 | 13.7 | 1.0~1.3 | 4.5 |
| WG5 | 12.5 | 16.0 | 13.0 | 13.0 | 13.7 | 1.0~1.3 | 4.5 |
| WM5 | 12.5 | 21.0 | 13.0 | 13.0 | 13.7 | 1.0~1.3 | 4.5 |

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| Rated voltage(V _{dc}) | Freq.(Hz) | 120 | 1k | 10k | 100k |
|---------------------------------|-----------|------|------|------|------|
| 16~450 | | 0.50 | 0.80 | 0.90 | 1.00 |

Surface Mount Type

MA series

■ STANDARD RATINGS (Rated ripple current:mArms/105°C 100kHz)

| WV (Vdc) | Cap (μF) | Size code | Rated ripple current | Part Number |
|----------|----------|-----------|----------------------|------------------|
| 16(1C) | 47 | E83 | 125 | EMA1CM470E83D00T |
| | 100 | E83 | 245 | EMA1CM101E83D00T |
| | 220 | FB0 | 260 | EMA1CM221FB0D00T |
| | 330 | GB0 | 450 | EMA1CM331GB0D00T |
| | 470 | GD0 | 480 | EMA1CM471GD0D00T |
| | 680 | WE0 | 820 | EMA1CM681WE0D00T |
| | 1000 | WG5 | 860 | EMA1CM102WG5D00T |
| 25(1E) | 47 | E83 | 125 | EMA1EM470E83D00T |
| | 100 | FB0 | 245 | EMA1EM101FB0D00T |
| | 220 | GB0 | 440 | EMA1EM221GB0D00T |
| | 330 | GB0 | 460 | EMA1EM331GB0D00T |
| | 470 | WE0 | 820 | EMA1EM471WE0D00T |
| | 680 | WG5 | 860 | EMA1EM681WG0D00T |
| 35(1V) | 33 | E83 | 125 | EMA1VM330E83D00T |
| | 47 | E83 | 140 | EMA1VM470E83D00T |
| | 100 | FB0 | 245 | EMA1VM101FB0D00T |
| | 220 | GB0 | 440 | EMA1VM221GB0D00T |
| | 330 | WE0 | 820 | EMA1VM331WE0D00T |
| | 470 | WG5 | 860 | EMA1VM471WG5D00T |
| 50(1H) | 10 | E83 | 100 | EMA1HM100E83D00T |
| | 22 | E83 | 105 | EMA1HM220E83D00T |
| | 33 | E83 | 110 | EMA1HM330E83D00T |
| | 47 | FB0 | 260 | EMA1HM470FB0D00T |
| | 100 | GB0 | 400 | EMA1HM101GB0D00T |
| | 220 | WE0 | 800 | EMA1HM221WE0D00T |
| | 330 | WG5 | 845 | EMA1HM331WG5D00T |
| | 63(1J) | 22 | E83 | 95 |
| 33 | | FB0 | 180 | EMA1JM330FB0D00T |
| 47 | | FB0 | 210 | EMA1JM470FB0D00T |
| 100 | | GD0 | 420 | EMA1JM101GD0D00T |
| 220 | | WG5 | 820 | EMA1JM221WG5D00T |
| 80(1B) | 10 | FB0 | 165 | EMA1BM100FB0D00T |
| | 22 | FB0 | 180 | EMA1BM220FB0D00T |
| | 33 | GB0 | 305 | EMA1BM220GB0D00T |
| | 33 | FB0 | 190 | EMA1BM330FB0D00T |
| | 47 | GB0 | 350 | EMA1BM470GB0D00T |
| | 100 | WE0 | 760 | EMA1BM101WE0D00T |
| 100(1K) | 10 | E83 | 150 | EMA1KM100E83D00T |
| | 22 | FB0 | 165 | EMA1KM220FB0D00T |
| | 33 | GB0 | 280 | EMA1KM330GB0D00T |
| | 47 | GB0 | 320 | EMA1KM470GB0D00T |
| | 68 | GD0 | 350 | EMA1KM680GD0D00T |
| | 82 | WE0 | 530 | EMA1KM820WE0D00T |
| | 100 | WE0 | 555 | EMA1KM101WE0D00T |

| WV (Vdc) | Cap (μF) | Size code | Rated ripple current | Part Number |
|----------|----------|-----------|----------------------|------------------|
| 160(2C) | 10 | GB0 | 190 | EMA2CM100GB0D00T |
| | 15 | FD0 | 220 | EMA2CM150FD0D00T |
| | 22 | GD0 | 340 | EMA2CM220GD0D00T |
| | 33 | GE0 | 420 | EMA2CM330GE0D00T |
| | 47 | GH0 | 530 | EMA2CM470GH0D00T |
| | 68 | WM5 | 640 | EMA2CM680WM5D00T |
| | 100 | WM5 | 840 | EMA2CM101WM5D00T |
| | 200(2D) | 10 | FD0 | 180 |
| 15 | | GB0 | 198 | EMA2DM150GB0D00T |
| 22 | | GD0 | 240 | EMA2DM220GD0D00T |
| 33 | | GE0 | 350 | EMA2DM330GE0D00T |
| 47 | | GH0 | 440 | EMA2DM470GH0D00T |
| 68 | | WM5 | 576 | EMA2DM680WM5D00T |
| 100 | | WM5 | 670 | EMA2DM101WM5D00T |
| 250(2E) | 4.7 | FB0 | 120 | EMA2EM477FB0D00T |
| | 10 | FE0 | 180 | EMA2EM100FE0D00T |
| | 22 | GB0 | 200 | EMA2EM220GB0D00T |
| | 33 | GH0 | 360 | EMA2EM330GH0D00T |
| | 47 | WM5 | 435 | EMA2EM470WM5D00T |
| | 68 | WM5 | 600 | EMA2EM680WM5D00T |
| 400(2G) | 2.2 | FB0 | 60 | EMA2GM2R2FB0D00T |
| | 3.3 | FB0 | 76 | EMA2GM3R3FB0D00T |
| | 4.7 | FE0 | 124 | EMA2GM4R7FE0D00T |
| | 10 | GB0 | 124 | EMA2GM4R7GB0D00T |
| | 5.6 | GE0 | 160 | EMA2GM5R6GE0D00T |
| | 6.8 | GE0 | 176 | EMA2GM6R8GE0D00T |
| | 10 | GH0 | 250 | EMA2GM100GH0D00T |
| | 15 | WG5 | 300 | EMA2GM150WG5D00T |
| | 22 | WM5 | 380 | EMA2GM220WM5D00T |
| | 47 | WM5 | 576 | EMA2GM470WM5D00T |
| 450(2W) | 2.2 | GB0 | 70 | EMA2WM2R2GB0D00T |
| | 3.3 | GB0 | 80 | EMA2WM3R3GB0D00T |
| | 4.7 | GE0 | 130 | EMA2WM4R7GE0D00T |
| | 10 | GH0 | 265 | EMA2WM100GH0D00T |
| | 15 | WM5 | 310 | EMA2WM150WM5D00T |
| | 22 | WM5 | 390 | EMA2WM220WM5D00T |

MH series

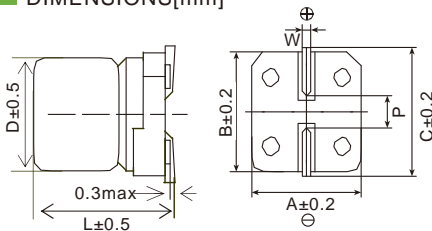
- Endurance: +130°C 1,000~5,000 hours
- Designed for surface mounting on high density PC board
- RoHS Compliant



SPECIFICATIONS

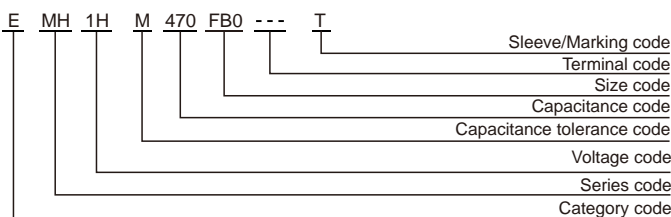
| Items | Characteristics | | | | | | | | | | | |
|--|--|---|------|------|------|--|------|------|------------------------------|---------|---------|----|
| Category Temperature Range | -40~+130°C(10~450 V _{dc}) | | | | | | | | | | | |
| Rated Voltage Range | 10~450 V _{dc} | | | | | | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | | | | | | | | | | |
| Leakage Current | 10~100 V _{dc} | | | | | 160~450 V _{dc} | | | | | | |
| | E80-GE0 I 0.01CV or 3μA, whichever is greater.(2 minutes) | | | | | WE0-MN0 I 0.03CV or 4μA, whichever is greater. (2 minutes) | | | I 0.04CV+100μA (1 minute) | | | |
| | Where, I:Max.leakage current (μA), C:Nominal capacitance (μF), V: Rated voltage (V) (at 20°C) | | | | | | | | | | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 10 | 16 | 25 | 35 | 50 | 63 | 80 | 100 | 160~250 | 400~450 | |
| | tan (max.) | 0.24 | 0.20 | 0.16 | 0.14 | 0.14 | 0.12 | 0.12 | 0.10 | 0.24 | 0.30 | |
| | When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20°C, 120Hz) | | | | | | | | | | | |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) | 10 | 16 | 25 | 35 | 50 | 63 | 80 | 100 | 160~250 | 400~450 | |
| | E80-GE0 | Z(-25°C)/Z(+20°C) | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 6 | 6 |
| | | Z(-40°C)/Z(+20°C) | 6 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 10 | 18 |
| | WE0-MN0 | Z(-25°C)/Z(+20°C) | 4 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 6 | 6 |
| Z(-40°C)/Z(+20°C) | | 8 | 6 | 4 | 3 | 3 | 3 | 3 | 3 | 10 | 18 | |
| Endurance | The specifications listed below shall be met when the capacitors are restored to 20°C after DC voltage is applied for a specified period of time at 130°C. | | | | | | | | | | | |
| | Load Life | E80-EB0(10~100V _{dc}): 1000 hours FB0-GH0(10~100V _{dc}): 2000 hours WE0-MN0(10~100V _{dc}): 5000 hours FB0-MN0(160~450V _{dc}): 3000 hours | | | | | | | | | | |
| | Capacitance Change | ±30% of the initial value | | | | | | | | | | |
| | Dissipation Factor (tan δ) | 300% of the initial specified value | | | | | | | | | | |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after leaving them under no load at 130°C for 1,000 hours (400~450V _{dc} : 500 hours). | | | | | | | | | | | |
| | Rated Voltage(V _{dc}) | 10~450 | | | | | | | | | | |
| | Capacitance Change | ±30% of the initial value | | | | | | | | | | |
| | Leakage Current | 500% of the initial specified value | | | | | | | | | | |

DIMENSIONS[mm]



| Size code | D | L | A | B | C | W | P |
|-----------|------|------|------|------|------|---------|-----|
| E80 | 6.3 | 7.7 | 6.6 | 6.6 | 7.2 | 0.5~0.8 | 1.9 |
| E83 | 6.3 | 8.0 | 6.6 | 6.6 | 7.2 | 0.5~0.8 | 1.9 |
| EB0 | 6.3 | 10.5 | 6.6 | 6.6 | 7.2 | 0.5~0.8 | 1.9 |
| FB0 | 8 | 10.5 | 8.3 | 8.3 | 9.0 | 0.7~1.1 | 3.1 |
| FD0 | 8 | 12.5 | 8.3 | 8.3 | 9.0 | 0.7~1.1 | 3.1 |
| GB0 | 10 | 10.5 | 10.3 | 10.3 | 11.0 | 0.7~1.1 | 4.5 |
| GD0 | 10 | 12.5 | 10.3 | 10.3 | 11.0 | 0.7~1.1 | 4.5 |
| GE0 | 10 | 13.5 | 10.3 | 10.3 | 11.0 | 0.7~1.1 | 4.5 |
| GH0 | 10 | 16.5 | 10.3 | 10.3 | 11.0 | 0.7~1.1 | 4.5 |
| WE0 | 12.5 | 13.5 | 13.0 | 13.0 | 13.7 | 1.0~1.3 | 4.5 |
| WG5 | 12.5 | 16.0 | 13.0 | 13.0 | 13.7 | 1.0~1.3 | 4.5 |
| WM5 | 12.5 | 21.0 | 13.0 | 13.0 | 13.7 | 1.0~1.3 | 4.5 |
| LH0 | 16 | 16.5 | 17.0 | 17.0 | 18.0 | 1.0~1.3 | 6.5 |
| LN0 | 16 | 21.5 | 17.0 | 17.0 | 18.0 | 1.0~1.3 | 6.5 |
| MH0 | 18 | 16.5 | 19.0 | 19.0 | 20.0 | 1.0~1.3 | 6.5 |
| MN0 | 18 | 21.5 | 19.0 | 19.0 | 20.0 | 1.0~1.3 | 6.5 |

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| Rated voltage (V _{dc}) | Cap.(μF) | Freq.(Hz) | | | |
|----------------------------------|----------------|-----------|------|------|------|
| | | 120 | 1k | 10k | 100k |
| 10~100 | Cap.<220 | 0.40 | 0.75 | 0.90 | 1.00 |
| | 220 Cap.<680 | 0.50 | 0.85 | 0.94 | 1.00 |
| | 680 Cap.<2200 | 0.60 | 0.87 | 0.95 | 1.00 |
| | 2200 Cap.<3300 | 0.75 | 0.90 | 0.95 | 1.00 |
| | Cap. 3300 | 0.85 | 0.95 | 0.98 | 1.00 |
| 160~450 | Cap. 33 | 0.55 | 0.83 | 0.97 | 1.00 |
| | Cap.>33 | 0.66 | 0.86 | 0.93 | 1.00 |

MH series

■ STANDARD RATINGS (Rated ripple current:mArms/130°C 100kHz)

| WV (Vdc) | Cap (μF) | Size code | Rated ripple current | Part Number |
|----------|----------|-----------|----------------------|------------------|
| 10(1A) | 100 | E83 | 110 | EMH1AM101E83D00T |
| | 220 | E83 | 110 | EMH1AM221E83D00T |
| | | FB0 | 220 | EMH1AM221FB0D00T |
| | 330 | FB0 | 220 | EMH1AM331FB0D00T |
| | | GB0 | 296 | EMH1AM331GB0D00T |
| | 470 | GB0 | 296 | EMH1AM471GB0D00T |
| | 1000 | WE0 | 750 | EMH1AM102WE0D00T |
| | 2200 | LH0 | 1000 | EMH1AM222LH0D00T |
| | 3300 | MH0 | 1200 | EMH1AM332MH0D00T |
| 4700 | MN0 | 1550 | EMH1AM472MN0D00T | |
| 16(1C) | 100 | E83 | 110 | EMH1CM101E83D00T |
| | 220 | FB0 | 220 | EMH1CM101FB0D00T |
| | | FB0 | 220 | EMH1CM221FB0D00T |
| | 330 | GB0 | 296 | EMH1CM331GB0D00T |
| | 470 | GD0 | 340 | EMH1CM471GD0D00T |
| | 680 | WE0 | 750 | EMH1CM681WE0D00T |
| | 1000 | WG5 | 800 | EMH1CM102WG5D00T |
| 1500 | LH0 | 1000 | EMH1CM152LH0D00T | |
| 25(1E) | 47 | E83 | 110 | EMH1EM470E83D00T |
| | 100 | E83 | 110 | EMH1EM101E83D00T |
| | | FB0 | 220 | EMH1EM101FB0D00T |
| | 220 | FB0 | 220 | EMH1EM221FB0D00T |
| | | GB0 | 296 | EMH1EM221GB0D00T |
| | 330 | GB0 | 296 | EMH1EM331GB0D00T |
| | 470 | WE0 | 750 | EMH1EM471WE0D00T |
| 680 | WG5 | 800 | EMH1EM681WG5D00T | |
| 1000 | LH0 | 1000 | EMH1EM102LH0D00T | |
| 35(1V) | 33 | E83 | 110 | EMH1VM330E83D00T |
| | 47 | E83 | 110 | EMH1VM470E83D00T |
| | 100 | FB0 | 220 | EMH1VM101FB0D00T |
| | 220 | GB0 | 296 | EMH1VM221GB0D00T |
| | 330 | WE0 | 750 | EMH1VM331WE0D00T |
| | 470 | WG5 | 900 | EMH1VM471WG5D00T |
| | 680 | LH0 | 1000 | EMH1VM681LH0D00T |
| | 1000 | MH0 | 1200 | EMH1VM102MH0D00T |
| 50(1H) | 10 | E83 | 83 | EMH1HM100E83D00T |
| | 22 | E83 | 83 | EMH1HM220E83D00T |
| | 33 | E83 | 83 | EMH1HM330E83D00T |
| | 47 | FB0 | 160 | EMH1HM470FB0D00T |
| | | GB0 | 247 | EMH1HM470GB0D00T |
| | 100 | GB0 | 247 | EMH1HM101GB0D00T |
| | | WE0 | 550 | EMH1HM101WE0D00T |
| | 220 | WE0 | 550 | EMH1HM221WE0D00T |
| | 330 | WG5 | 700 | EMH1HM331WG5D00T |
| | 470 | LH0 | 850 | EMH1HM471LH0D00T |
| 560 | MH0 | 920 | EMH1HM561MH0D00T | |
| 63(1J) | 22 | E83 | 65 | EMH1JM220E83D00T |
| | 33 | FB0 | 100 | EMH1JM330FB0D00T |
| | 47 | FB0 | 125 | EMH1JM470FB0D00T |
| | 100 | GD0 | 270 | EMH1JM101GD0D00T |
| | 220 | WG5 | 600 | EMH1JM221WG5D00T |
| | 330 | LH0 | 820 | EMH1JM331LH0D00T |
| | 470 | LN0 | 1100 | EMH1JM471LN0D00T |

| WV (Vdc) | Cap (μF) | Size code | Rated ripple current | Part Number |
|----------|----------|-----------|----------------------|------------------|
| 80(1B) | 10 | E83 | 95 | EMH1BM100E83D00T |
| | 22 | FB0 | 110 | EMH1BM220FB0D00T |
| | | GB0 | 215 | EMH1BM220GB0D00T |
| | 33 | FB0 | 130 | EMH1BM330FB0D00T |
| | 47 | GB0 | 245 | EMH1BM470GB0D00T |
| | 100 | WE0 | 475 | EMH1BM101WE0D00T |
| 100(1K) | 10 | E83 | 90 | EMH1KM100E83D00T |
| | 22 | FB0 | 105 | EMH1KM220FB0D00T |
| | 33 | GB0 | 200 | EMH1KM330GB0D00T |
| | 47 | GB0 | 230 | EMH1KM470GB0D00T |
| | 68 | GD0 | 275 | EMH1KM680GD0D00T |
| | 100 | WE0 | 405 | EMH1KM101WE0D00T |
| 160(2C) | 220 | LH0 | 650 | EMH1KM221LH0D00T |
| | 10 | GB0 | 72 | EMH2CM100GB0D00T |
| | 15 | FD0 | 90 | EMH2CM150FD0D00T |
| | 22 | GD0 | 150 | EMH2CM220GD0D00T |
| | 33 | GE0 | 165 | EMH2CM330GE0D00T |
| | 47 | GH0 | 195 | EMH2CM470GH0D00T |
| 200(2D) | 68 | WM5 | 234 | EMH2CM680WM5D00T |
| | 100 | WM5 | 300 | EMH2CM101WM5D00T |
| | 10 | FE0 | 90 | EMH2DM100FE0D00T |
| | 15 | GB0 | 90 | EMH2DM100GB0D00T |
| | | GD0 | 115 | EMH2DM150GD0D00T |
| | 22 | GH0 | 180 | EMH2DM220GH0D00T |
| 33 | WG5 | 200 | EMH2DM330WG5D00T | |
| 47 | WM5 | 240 | EMH2DM470WM5D00T | |
| 250(2E) | 4.7 | GB0 | 59 | EMH2EM470GB0D00T |
| | 10 | FE0 | 94 | EMH2EM100FE0D00T |
| | | GB0 | 94 | EMH2EM100GB0D00T |
| | 22 | GH0 | 190 | EMH2EM220GH0D00T |
| | 33 | WM5 | 210 | EMH2EM330WM5D00T |
| | 47 | WM5 | 256 | EMH2EM470WM5D00T |
| 400(2G) | 2.2 | FB0 | 30 | EMH2GM2R2FB0D00T |
| | 3.3 | FB0 | 40 | EMH2GM3R3FB0D00T |
| | 4.7 | FE0 | 65 | EMH2GM4R7FE0D00T |
| | | GB0 | 65 | EMH2GM4R7GB0D00T |
| | 5.6 | FE0 | 80 | EMH2GM5R6FE0D00T |
| | 6.8 | GE0 | 90 | EMH2GM6R8GE0D00T |
| 10 | GH0 | 102 | EMH2GM100GH0D00T | |
| 15 | WG5 | 130 | EMH2GM150WG5D00T | |
| 22 | WM5 | 204 | EMH2GM220WM5D00T | |
| 450(2W) | 2.2 | GB0 | 32 | EMH2WM2R2GB0D00T |
| | 3.3 | GD0 | 36 | EMH2WM3R3GD0D00T |
| | 4.7 | GE0 | 48 | EMH2WM4R7GE0D00T |
| | 10 | WG5 | 89 | EMH2WM100WG5D00T |
| | 15 | WM5 | 115 | EMH2WM150WM5D00T |

M5 series

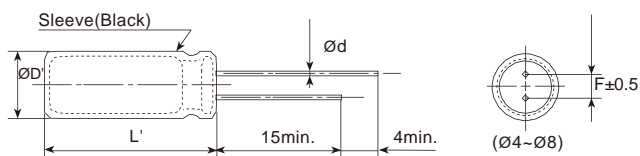
- Low profile with 5mm height
- Endurance: +85°C 1,000 hours
- RoHS Compliant



SPECIFICATIONS

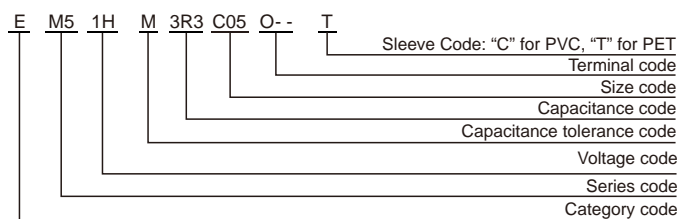
| Items | Characteristics | |
|--|---|--|
| Category Temperature Range | -40~+85°C | |
| Rated Voltage Range | 4~50 V _{dc} | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | |
| Leakage Current | I 0.01CV or 3μA, whichever is greater. Where, I:Max.leakage current (μA),C:Nominal capacitance (μF),V: Rated voltage (V) (at 20°C after 2 minutes) | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 4 6.3 10 16 25 35 50 |
| | tan δ (max.) | 4- 6.3 0.35 0.26 0.22 0.18 0.16 0.14 0.12 8 0.39 0.28 0.24 0.18 0.16 0.14 0.12 (at 20°C, 120Hz) |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) | 4 6.3 10 16 25 35 50 |
| | Z(-25°C)/Z(+20°C) | 6 4 3 2 |
| | Z(-40°C)/Z(+20°C) | 16 10 8 6 4 (at 120Hz) |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 1,000 hours at 85°C. | |
| | Capacitance Change | ±25% of the initial value |
| | D.F. (tan δ) | 200% of the initial specified value |
| | Leakage Current | The initial specified value |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 500 hours at 85°C without voltage applied. | |
| | Capacitance Change | ±20% of the initial value |
| | D.F. (tan δ) | 200% of the initial specified value |
| | Leakage Current | 200% of the initial specified value |

DIMENSIONS[mm]



| ØD | 4 | 5 | 6.3 | 8 |
|-----|------------|------|------|------|
| Ød | 0.45 | 0.45 | 0.45 | 0.45 |
| F | 1.5 | 2.0 | 2.5 | 3.5 |
| ØD' | ØD+0.5max. | | | |
| L' | L+1.5max. | | | |

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| WV(V _{dc}) | Freq.(Hz) | 50/60 | 120 | 1k | 10k-100k |
|----------------------|-----------|-------|------|------|----------|
| | 4 to 16 | | 0.80 | 1.00 | 1.10 |
| 25 to 35 | | 0.80 | 1.00 | 1.50 | 1.70 |
| 50 | | 0.80 | 1.00 | 1.60 | 1.90 |

The endurance of capacitors is shortened with internal heating produced by ripple current at the rate of halving the lifetime with every 5 °C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

M5 series

■ STANDARD RATINGS

| WV (V _{dc}) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (mA _{rms} /85°C,120Hz) | Part Number |
|-----------------------|----------|--------------|------|--|----------------|
| 4(0G) | 22 | 4x5 | 0.35 | 25 | EM50GM220C05OT |
| | 33 | 4x5 | 0.35 | 30 | EM50GM330C05OT |
| | 47 | 4x5 | 0.35 | 35 | EM50GM470C05OT |
| | 100 | 5x5 | 0.35 | 60 | EM50GM101D05OT |
| | 220 | 6.3x5 | 0.35 | 105 | EM50GM221E05OT |
| | 330 | 8x5 | 0.39 | 150 | EM50GM331F05OT |
| | 470 | 8x5 | 0.39 | 180 | EM50GM471F05OT |
| 6.3(0J) | 10 | 4x5 | 0.26 | 20 | EM50JM100C05OT |
| | 22 | 4x5 | 0.26 | 30 | EM50JM220C05OT |
| | 33 | 5x5 | 0.26 | 40 | EM50JM330D05OT |
| | 47 | 5x5 | 0.26 | 50 | EM50JM470D05OT |
| | 100 | 6.3x5 | 0.26 | 85 | EM50JM101E05OT |
| | 220 | 8x5 | 0.28 | 145 | EM50JM221F05OT |
| | 330 | 8x5 | 0.28 | 175 | EM50JM331F05OT |
| 10(1A) | 10 | 4x5 | 0.22 | 22 | EM51AM100C05OT |
| | 22 | 5x5 | 0.22 | 35 | EM51AM220D05OT |
| | 33 | 5x5 | 0.22 | 45 | EM51AM330D05OT |
| | 47 | 6.3x5 | 0.22 | 65 | EM51AM470E05OT |
| | 100 | 6.3x5 | 0.22 | 95 | EM51AM101E05OT |
| | 220 | 8x5 | 0.24 | 155 | EM51AM221F05OT |
| | 16(1C) | 4.7 | 4x5 | 0.18 | 17 |
| 10 | | 4x5 | 0.18 | 25 | EM51CM100C05OT |
| 22 | | 5x5 | 0.18 | 40 | EM51CM220D05OT |
| 33 | | 6.3x5 | 0.18 | 60 | EM51CM330E05OT |
| 47 | | 6.3x5 | 0.18 | 70 | EM51CM470E05OT |
| 100 | | 8x5 | 0.18 | 125 | EM51CM101F05OT |
| 25(1E) | | 3.3 | 4x5 | 0.16 | 15 |
| | 4.7 | 4x5 | 0.16 | 18 | EM51EM4R7C05OT |
| | 10 | 5x5 | 0.16 | 30 | EM51EM100D05OT |
| | 22 | 6.3x5 | 0.16 | 50 | EM51EM220E05OT |
| | 33 | 6.3x5 | 0.16 | 65 | EM51EM330E05OT |
| | 47 | 8x5 | 0.16 | 95 | EM51EM470F05OT |
| | 100 | 8x5 | 0.16 | 135 | EM51EM101F05OT |
| 35(1V) | 2.2 | 4x5 | 0.14 | 8.4 | EM51VM2R2C05OT |
| | 3.3 | 4x5 | 0.14 | 17 | EM51VM3R3C05OT |
| | 4.7 | 5x5 | 0.14 | 20 | EM51VM4R7D05OT |
| | 10 | 5x5 | 0.14 | 30 | EM51VM100D05OT |
| | 22 | 6.3x5 | 0.14 | 50 | EM51VM220E05OT |
| | 33 | 8x5 | 0.14 | 80 | EM51VM330F05OT |
| | 47 | 8x5 | 0.14 | 100 | EM51VM470F05OT |
| 50(1H) | 0.1 | 4x5 | 0.12 | 1 | EM51HMR10C05OT |
| | 0.22 | 4x5 | 0.12 | 2 | EM51HMR22C05OT |
| | 0.33 | 4x5 | 0.12 | 2.8 | EM51HMR33C05OT |
| | 0.47 | 4x5 | 0.12 | 4 | EM51HMR47C05OT |
| | 1 | 4x5 | 0.12 | 8.4 | EM51HM010C05OT |
| | 2.2 | 4x5 | 0.12 | 13 | EM51HM2R2C05OT |
| | 3.3 | 4x5 | 0.12 | 18 | EM51HM3R3C05OT |
| | 4.7 | 5x5 | 0.12 | 25 | EM51HM4R7D05OT |
| | 10 | 6.3x5 | 0.12 | 40 | EM51HM100E05OT |
| | 22 | 8x5 | 0.12 | 75 | EM51HM220F05OT |
| | 33 | 8x5 | 0.12 | 90 | EM51HM330F05OT |

H5 series

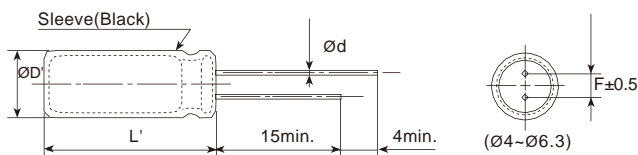
- Low profile with 5mm height
- Wide temperature range of -40 °C to +105°C
- Endurance +105°C 1,000 hours
- RoHS Compliant



SPECIFICATIONS

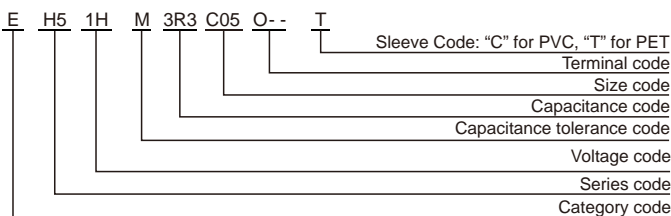
| Items | Characteristics | | | | | | | |
|--|--|-------------------------------------|------|------|------|------|------|------------------|
| Category Temperature Range | -40~+105°C | | | | | | | |
| Rated Voltage Range | 6.3~50 V _{dc} | | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | | | | | | |
| Leakage Current | I ≤ 0.01CV or 3μA, whichever is greater. Where, I: Max.leakage current (μA), C: Nominal capacitance (μF), V: Rated voltage (V) (at 20°C after 2 minutes) | | | | | | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 6.3 | 10 | 16 | 25 | 35 | 50 | (at 20°C, 120Hz) |
| | tan δ (max.) | 0.28 | 0.24 | 0.20 | 0.14 | 0.12 | 0.10 | |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) | 6.3 | 10 | 16 | 25 | 35 | 50 | (at 120Hz) |
| | Z(-25°C)/Z(+20°C) | 3 | | 2 | | | | |
| | Z(-40°C)/Z(+20°C) | 8 | 5 | 4 | 3 | | | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 1,000 hours at 105°C. | | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | |
| | D.F. (tan δ) | 200% of the initial specified value | | | | | | |
| | Leakage Current | The initial specified value | | | | | | |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 500 hours at 105°C without voltage applied. | | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | |
| | D.F. (tan δ) | 200% of the initial specified value | | | | | | |
| | Leakage Current | 200% of the initial specified value | | | | | | |

DIMENSIONS[mm]



| | | | |
|-----|------------|------|------|
| ØD | 4 | 5 | 6.3 |
| Ød | 0.45 | 0.45 | 0.45 |
| F | 1.5 | 2.0 | 2.5 |
| ØD' | ØD+0.5max. | | |
| L' | L+1.5max. | | |

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| WV(V _{dc}) | Freq.(Hz) | 50/60 | 120 | 1k | 10k-100k |
|----------------------|-----------|-------|------|------|----------|
| | 6.3 to 16 | | 0.80 | 1.00 | 1.30 |
| 25 to 35 | | 0.80 | 1.00 | 1.20 | 1.20 |
| 50 | | 0.80 | 1.00 | 1.15 | 1.20 |

The endurance of capacitors is shortened with internal heating produced by ripple current at the rate of halving the lifetime with every 5 °C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

H5 series

■ STANDARD RATINGS

| WV (V _{dc}) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (mA _{rms} /105°C,120Hz) | Part Number |
|-----------------------|----------|--------------|------|---|----------------|
| 6.3(0J) | 22 | 4x5 | 0.28 | 23 | EH50JM220C05OT |
| | 33 | 5x5 | 0.28 | 30 | EH50JM330D05OT |
| | 47 | 5x5 | 0.28 | 37 | EH50JM470D05OT |
| | 100 | 6.3x5 | 0.28 | 57 | EH50JM101E05OT |
| 10(1A) | 10 | 4x5 | 0.24 | 20 | EH51AM100C05OT |
| | 22 | 5x5 | 0.24 | 28 | EH51AM220D05OT |
| | 33 | 5x5 | 0.24 | 34 | EH51AM330D05OT |
| | 47 | 6.3x5 | 0.24 | 52 | EH51AM470E05OT |
| 16(1C) | 4.7 | 4x5 | 0.20 | 15 | EH51CM4R7C05OT |
| | 10 | 4x5 | 0.20 | 23 | EH51CM100C05OT |
| | 22 | 5x5 | 0.20 | 31 | EH51CM220D05OT |
| | 33 | 6.3x5 | 0.20 | 48 | EH51CM330E05OT |
| 25(1E) | 4.7 | 4x5 | 0.14 | 15 | EH51EM4R7C05OT |
| | 10 | 5x5 | 0.14 | 22 | EH51EM100D05OT |
| | 22 | 6.3x5 | 0.14 | 44 | EH51EM220E05OT |
| | 33 | 6.3x5 | 0.14 | 48 | EH51EM330E05OT |
| 35(1V) | 3.3 | 4x5 | 0.12 | 13 | EH51VM3R3C05OT |
| | 4.7 | 4x5 | 0.12 | 17 | EH51VM4R7C05OT |
| | 10 | 5x5 | 0.12 | 24 | EH51VM100D05OT |
| | 22 | 6.3x5 | 0.12 | 48 | EH51VM220E05OT |
| 50(1H) | 0.1 | 4x5 | 0.10 | 1 | EH51HMR10C05OT |
| | 0.22 | 4x5 | 0.10 | 2 | EH51HMR22C05OT |
| | 0.33 | 4x5 | 0.10 | 3 | EH51HMR33C05OT |
| | 0.47 | 4x5 | 0.10 | 4 | EH51HMR47C05OT |
| | 1 | 4x5 | 0.10 | 8 | EH51HM010C05OT |
| | 2.2 | 4x5 | 0.10 | 13 | EH51HM2R2C05OT |
| | 3.3 | 4x5 | 0.10 | 14 | EH51HM3R3C05OT |
| | 4.7 | 5x5 | 0.10 | 18 | EH51HM4R7D05OT |
| 10 | 6.3x5 | 0.10 | 28 | EH51HM100E05OT | |

M7 series

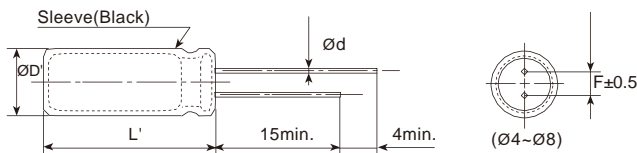
- Standard miniature series with 7mm height
- Endurance: +85°C 1,000 hours
- RoHS Compliant



SPECIFICATIONS

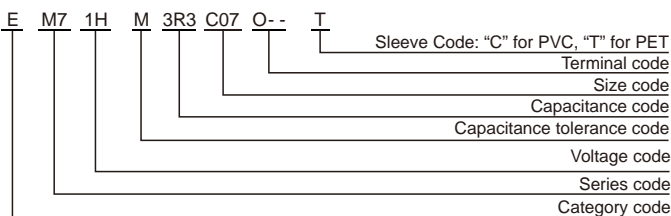
| Items | Characteristics | | | | | | | | | | |
|--|---|-------------------------------------|------|------|------|------|------|------|------|------|------------------|
| Category Temperature Range | -40~+85°C | | | | | | | | | | |
| Rated Voltage Range | 4~100 V _{dc} | | | | | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | | | | | | | | | |
| Leakage Current | I 0.01CV or 3μA, whichever is greater. Where, I:Max.leakage current (μA),C:Nominal capacitance (μF),V: Rated voltage (V) (at 20°C after 2 minutes) | | | | | | | | | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | (at 20°C, 120Hz) |
| | tan δ (max.) | 0.35 | 0.24 | 0.20 | 0.16 | 0.14 | 0.12 | 0.10 | 0.08 | 0.08 | |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | (at 120Hz) |
| | Z(-25°C)/Z(+20°C) | 6 | 4 | 3 | 2 | | | | | | |
| | Z(-40°C)/Z(+20°C) | 16 | 10 | 8 | 6 | 4 | | | | | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 1,000 hours at 85°C. | | | | | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | | | | |
| | D.F. (tan δ) | 200% of the initial specified value | | | | | | | | | |
| | Leakage Current | The initial specified value | | | | | | | | | |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 500 hours at 85°C without voltage applied. | | | | | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | | | | |
| | D.F. (tan δ) | 200% of the initial specified value | | | | | | | | | |
| | Leakage Current | 200% of the initial specified value | | | | | | | | | |

DIMENSIONS[mm]



| | | | | |
|-----|------------|------|-----|-----|
| øD | 4 | 5 | 6.3 | 8 |
| ød | 0.45 | 0.45 | 0.5 | 0.5 |
| F | 1.5 | 2.0 | 2.5 | 3.5 |
| øD' | øD+0.5max. | | | |
| L' | L+1.5max. | | | |

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| WV(V _{dc}) | Freq.(Hz) | 50/60 | 120 | 1k | 10k-100k |
|----------------------|-----------|-------|------|------|----------|
| | 4 to 16 | | 0.80 | 1.00 | 1.10 |
| 25 to 35 | | 0.80 | 1.00 | 1.50 | 1.70 |
| 50 | | 0.80 | 1.00 | 1.60 | 1.90 |

The endurance of capacitors is shortened with internal heating produced by ripple current at the rate of halving the lifetime with every 5 °C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

M7 series

■ STANDARD RATINGS

| WV (V _{dc}) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (mArms/85°C,120Hz) | Part Number |
|-----------------------|----------|--------------|------|---|----------------|
| 4(0G) | 33 | 4x7 | 0.35 | 35 | EM70GM330C07OT |
| | 47 | 4x7 | 0.35 | 40 | EM70GM470C07OT |
| | 100 | 5x7 | 0.35 | 70 | EM70GM101D07OT |
| | 220 | 6.3x7 | 0.35 | 120 | EM70GM221E07OT |
| | 330 | 8x7 | 0.35 | 170 | EM70GM331F07OT |
| 6.3(0J) | 22 | 4x7 | 0.24 | 35 | EM70JM220C07OT |
| | 33 | 4x7 | 0.24 | 40 | EM70JM330C07OT |
| | 47 | 4x7 | 0.24 | 50 | EM70JM470C07OT |
| | 100 | 5x7 | 0.24 | 80 | EM70JM101D07OT |
| | 220 | 6.3x7 | 0.24 | 140 | EM70JM221E07OT |
| | 330 | 8x7 | 0.24 | 205 | EM70JM331F07OT |
| 10(1A) | 22 | 4x7 | 0.20 | 35 | EM71AM220C07OT |
| | 33 | 4x7 | 0.20 | 45 | EM71AM330C07OT |
| | 47 | 5x7 | 0.20 | 60 | EM71AM470D07OT |
| | 100 | 6.3x7 | 0.20 | 108 | EM71AM101E07OT |
| | 220 | 8x7 | 0.20 | 185 | EM71AM221F07OT |
| 16(1C) | 10 | 4x7 | 0.16 | 35 | EM71CM100C07OT |
| | 22 | 4x7 | 0.16 | 40 | EM71CM220C07OT |
| | 33 | 5x7 | 0.16 | 55 | EM71CM330D07OT |
| | 47 | 5x7 | 0.16 | 70 | EM71CM470D07OT |
| | 100 | 6.3x7 | 0.16 | 120 | EM71CM101E07OT |
| | 220 | 8x7 | 0.16 | 205 | EM71CM221F07OT |
| 25(1E) | 3.3 | 4x7 | 0.14 | 15 | EM71EM3R3C07OT |
| | 4.7 | 4x7 | 0.14 | 20 | EM71EM4R7C07OT |
| | 10 | 4x7 | 0.14 | 30 | EM71EM100C07OT |
| | 22 | 5x7 | 0.14 | 50 | EM71EM220D07OT |
| | 33 | 6.3x7 | 0.14 | 70 | EM71EM330E07OT |
| | 47 | 6.3x7 | 0.14 | 85 | EM71EM470E07OT |
| | 100 | 8x7 | 0.14 | 145 | EM71EM101F07OT |
| 35(1V) | 3.3 | 4x7 | 0.12 | 15 | EM71VM3R3C07OT |
| | 4.7 | 4x7 | 0.12 | 20 | EM71VM4R7C07OT |
| | 10 | 4x7 | 0.12 | 30 | EM71VM100C07OT |
| | 22 | 5x7 | 0.12 | 55 | EM71VM220D07OT |
| | 33 | 6.3x7 | 0.12 | 75 | EM71VM330E07OT |
| | 47 | 8x7 | 0.12 | 110 | EM71VM470F07OT |
| 50(1H) | 0.1 | 4x7 | 0.10 | 4 | EM71HMR10C07OT |
| | 0.22 | 4x7 | 0.10 | 5 | EM71HMR22C07OT |
| | 0.33 | 4x7 | 0.10 | 7 | EM71HMR33C07OT |
| | 0.47 | 4x7 | 0.10 | 8 | EM71HMR47C07OT |
| | 1 | 4x7 | 0.10 | 10 | EM71HM010C07OT |
| | 2.2 | 4x7 | 0.10 | 15 | EM71HM2R2C07OT |
| | 3.3 | 4x7 | 0.10 | 20 | EM71HM3R3C07OT |
| | 4.7 | 4x7 | 0.10 | 24 | EM71HM4R7C07OT |
| | 10 | 5x7 | 0.10 | 40 | EM71HM100D07OT |
| | 22 | 6.3x7 | 0.10 | 70 | EM71HM220E07OT |
| 33 | 8x7 | 0.10 | 100 | EM71HM330F07OT | |
| 63(1J) | 0.1 | 4x7 | 0.08 | 4 | EM71JMR10C07OT |
| | 0.22 | 4x7 | 0.08 | 6 | EM71JMR22C07OT |
| | 0.33 | 4x7 | 0.08 | 7 | EM71JMR33C07OT |
| | 0.47 | 4x7 | 0.08 | 8 | EM71JMR47C07OT |
| | 1 | 4x7 | 0.08 | 10 | EM71JM010C07OT |
| | 2.2 | 4x7 | 0.08 | 15 | EM71JM2R2C07OT |
| | 3.3 | 4x7 | 0.08 | 23 | EM71JM3R3C07OT |
| | 4.7 | 5x7 | 0.08 | 30 | EM71JM4R7D07OT |
| | 10 | 6.3x7 | 0.08 | 50 | EM71JM100E07OT |
| 100(1K) | 1 | 4x7 | 0.08 | 12 | EM71KM010C07OT |
| | 2.2 | 5x7 | 0.08 | 20 | EM71KM2R2D07OT |
| | 3.3 | 6.3x7 | 0.08 | 30 | EM71KM3R3E07OT |
| | 4.7 | 6.3x7 | 0.08 | 35 | EM71KM4R7E07OT |

H7 series

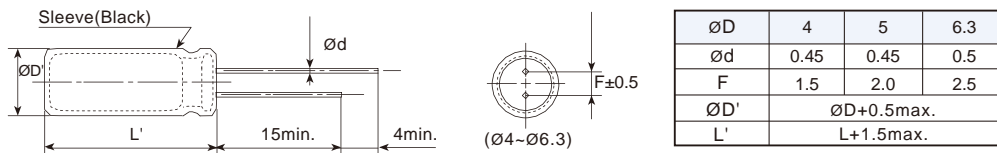
- Miniature series with 7mm height
- Endurance: +105°C 1,000 hours
- Wide temperature range of -40 °C to +105°C
- RoHS Compliant



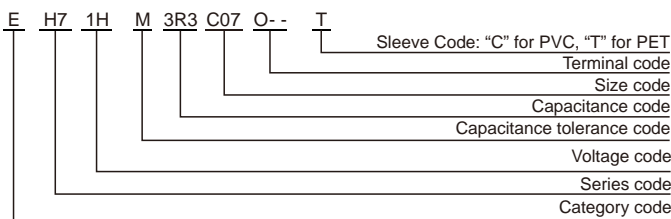
SPECIFICATIONS

| Items | Characteristics | | | | | | |
|--|--|-------------------------------------|------|------|------|------|------|
| Category Temperature Range | -40~+105°C | | | | | | |
| Rated Voltage Range | 6.3~50 V _{dc} | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | | | | | |
| Leakage Current | I 0.01CV or 3μA, whichever is greater. Where, I:Max.leakage current (μA),C:Nominal capacitance (μF),V: Rated voltage (V) (at 20°C after 2 minutes) | | | | | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 6.3 | 10 | 16 | 25 | 35 | 50 |
| | tan (max.) | 0.22 | 0.19 | 0.16 | 0.14 | 0.12 | 0.10 |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) | 6.3 | 10 | 16 | 25 | 35 | 50 |
| | Z(-25°C)/Z(+20°C) | 3 | | 2 | | | |
| | Z(-40°C)/Z(+20°C) | 8 | 5 | 4 | 3 | | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 1,000 hours at 105°C. | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | |
| | D.F. (tan δ) | 200% of the initial specified value | | | | | |
| | Leakage Current | The initial specified value | | | | | |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 500 hours at 105°C without voltage applied. | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | |
| | D.F. (tan δ) | 200% of the initial specified value | | | | | |
| | Leakage Current | 200% of the initial specified value | | | | | |

DIMENSIONS[mm]



PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| WV(V _{dc}) | Freq.(Hz) | | | |
|----------------------|-----------|------|------|----------|
| | 50/60 | 120 | 1k | 10k-100k |
| 6.3 to 16 | 0.94 | 1.00 | 1.28 | 1.39 |
| 25 to 35 | 0.76 | 1.00 | 1.27 | 1.59 |
| 50 | 0.90 | 1.00 | 1.40 | 2.00 |

The endurance of capacitors is shortened with internal heating produced by ripple current at the rate of halving the lifetime with every 5 °C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

H7 series

■ STANDARD RATINGS

| WV (V _{dc}) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (mA _{rms} /105°C,120Hz) | Part Number |
|-----------------------|----------|--------------|------|---|----------------|
| 6.3(0J) | 22 | 4x7 | 0.22 | 34 | EH70JM220C07OT |
| | 33 | 5x7 | 0.22 | 42 | EH70JM330D07OT |
| | 47 | 5x7 | 0.22 | 50 | EH70JM470D07OT |
| | 100 | 6.3x7 | 0.22 | 77 | EH70JM101E07OT |
| 10(1A) | 22 | 5x7 | 0.19 | 38 | EH71AM220D07OT |
| | 33 | 5x7 | 0.19 | 47 | EH71AM330D07OT |
| | 47 | 6.3x7 | 0.19 | 65 | EH71AM470E07OT |
| | 100 | 6.3x7 | 0.19 | 87 | EH71AM101E07OT |
| 16(1C) | 10 | 4x7 | 0.16 | 29 | EH71CM100C07OT |
| | 22 | 5x7 | 0.16 | 44 | EH71CM220D07OT |
| | 33 | 6.3x7 | 0.16 | 60 | EH71CM330E07OT |
| | 47 | 6.3x7 | 0.16 | 70 | EH71CM470E07OT |
| 25(1E) | 3.3 | 4x7 | 0.14 | 21 | EH71EM3R3C07OT |
| | 4.7 | 4x7 | 0.14 | 25 | EH71EM4R7C07OT |
| | 10 | 5x7 | 0.14 | 33 | EH71EM100D07OT |
| | 22 | 6.3x7 | 0.14 | 51 | EH71EM220E07OT |
| | 33 | 6.3x7 | 0.14 | 65 | EH71EM330E07OT |
| 35(1V) | 3.3 | 4x7 | 0.12 | 23 | EH71VM3R3C07OT |
| | 4.7 | 4x7 | 0.12 | 25 | EH71VM4R7C07OT |
| | 10 | 5x7 | 0.12 | 36 | EH71VM100D07OT |
| | 22 | 6.3x7 | 0.12 | 60 | EH71VM220E07OT |
| 50(1H) | 0.1 | 4x7 | 0.10 | 1.0 | EH71HMR10C07OT |
| | 0.22 | 4x7 | 0.10 | 2.3 | EH71HMR22C07OT |
| | 0.33 | 4x7 | 0.10 | 3.5 | EH71HMR33C07OT |
| | 0.47 | 4x7 | 0.10 | 5 | EH71HMR47C07OT |
| | 1 | 4x7 | 0.10 | 10 | EH71HM010C07OT |
| | 2.2 | 4x7 | 0.10 | 19 | EH71HM2R2C07OT |
| | 3.3 | 4x7 | 0.10 | 24 | EH71HM3R3C07OT |
| | 4.7 | 5x7 | 0.10 | 29 | EH71HM4R7D07OT |
| | 10 | 6.3x7 | 0.10 | 44 | EH71HM100E07OT |
| | 22 | 6.3x7 | 0.10 | 60 | EH71HM220E07OT |

L7 series

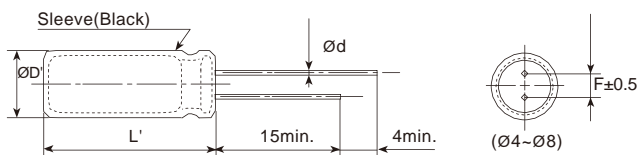
- Miniature series with 7mm height
- Endurance : +105 °C 2,000 hours
- Wide temperature range of -40°C to +105°C
- RoHS Compliant



SPECIFICATIONS

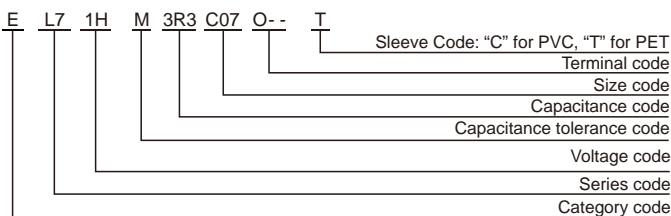
| Items | Characteristics | | | | | | | | |
|--|--|-------------------------------------|------|------|------|------|------|------|------------------|
| Category Temperature Range | -40~+105°C | | | | | | | | |
| Rated Voltage Range | 6.3~63 V _{dc} | | | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | | | | | | | |
| Leakage Current | I 0.01CV or 3μA, whichever is greater. Where, I:Max.leakage current (μA),C:Nominal capacitance (μF),V: Rated voltage (V) (at 20°C after 2 minutes) | | | | | | | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | (at 20°C, 120Hz) |
| | tan δ (max.) | 0.22 | 0.19 | 0.16 | 0.14 | 0.12 | 0.10 | 0.09 | |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | (at 120Hz) |
| | Z(-25°C)/Z(+20°C) | 4 | 3 | 2 | | | | | |
| | Z(-40°C)/Z(+20°C) | 8 | 6 | 4 | 3 | | | | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 2,000 hours at 105°C. | | | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | | |
| | D.F. (tan δ) | 200% of the initial specified value | | | | | | | |
| | Leakage Current | The initial specified value | | | | | | | |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 105°C without voltage applied. | | | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | | |
| | D.F. (tan δ) | 200% of the initial specified value | | | | | | | |
| | Leakage Current | 200% of the initial specified value | | | | | | | |

DIMENSIONS[mm]



| | | | | |
|-----|------------|------|-----|-----|
| øD | 4 | 5 | 6.3 | 8 |
| ød | 0.45 | 0.45 | 0.5 | 0.5 |
| F | 1.5 | 2.0 | 2.5 | 3.5 |
| øD' | øD+0.5max. | | | |
| L' | L+2max. | | | |

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| WV(V _{dc}) | Freq.(Hz) | 50/60 | 120 | 1k | 10k-100k |
|----------------------|-----------|-------|------|------|----------|
| | 6.3 to 16 | | 0.80 | 1.00 | 1.30 |
| 25 to 35 | | 0.80 | 1.00 | 1.20 | 1.20 |
| 50 | | 0.80 | 1.00 | 1.15 | 1.20 |

The endurance of capacitors is shortened with internal heating produced by ripple current at the rate of halving the lifetime with every 5 °C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

L7 series

■ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (mA _{rms} /105°C, 120Hz) | Part Number |
|----------|----------|--------------|------|--|----------------|
| 6.3(0J) | 22 | 4x7 | 0.22 | 28 | EL70JM220C07OT |
| | 33 | 4x7 | 0.22 | 32 | EL70JM330C07OT |
| | | 5x7 | 0.22 | 35 | EL70JM330D07OT |
| | 47 | 5x7 | 0.22 | 47 | EL70JM470D07OT |
| | 68 | 5x7 | 0.22 | 50 | EL70JM680D07OT |
| | 100 | 6.3x7 | 0.22 | 75 | EL70JM101E07OT |
| | 220 | 8x7 | 0.22 | 92 | EL70JM221F07OT |
| 10(1A) | 22 | 4x7 | 0.19 | 32 | EL71AM220C07OT |
| | 33 | 5x7 | 0.19 | 48 | EL71AM330D07OT |
| | 47 | 5x7 | 0.19 | 51 | EL71AM470D07OT |
| | 68 | 6.3x7 | 0.19 | 68 | EL71AM680E07OT |
| | 100 | 6.3x7 | 0.19 | 80 | EL71AM101E07OT |
| | | 8x7 | 0.19 | 95 | EL71AM101F07OT |
| 220 | 8x7 | 0.19 | 130 | EL71AM221F07OT | |
| 16(1C) | 10 | 4x7 | 0.16 | 28 | EL71CM100C07OT |
| | 22 | 4x7 | 0.16 | 35 | EL71CM220C07OT |
| | | 5x7 | 0.16 | 42 | EL71CM220D07OT |
| | 33 | 5x7 | 0.16 | 50 | EL71CM330D07OT |
| | 47 | 6.3x7 | 0.16 | 67 | EL71CM470E07OT |
| | 68 | 6.3x7 | 0.16 | 70 | EL71CM680E07OT |
| | | 8x7 | 0.16 | 78 | EL71CM680F07OT |
| | 100 | 8x7 | 0.16 | 110 | EL71CM101F07OT |
| 25(1E) | 4.7 | 4x7 | 0.14 | 17 | EL71EM4R7C07OT |
| | 6.8 | 4x7 | 0.14 | 19 | EL71EM6R8C07OT |
| | 10 | 4x7 | 0.14 | 28 | EL71EM100C07OT |
| | | 5x7 | 0.14 | 33 | EL71EM100D07OT |
| | 22 | 5x7 | 0.14 | 43 | EL71EM220D07OT |
| | | 6.3x7 | 0.14 | 45 | EL71EM220E07OT |
| | 33 | 6.3x7 | 0.14 | 62 | EL71EM330E07OT |
| | 47 | 8x7 | 0.14 | 75 | EL71EM470F07OT |
| | 68 | 8x7 | 0.14 | 80 | EL71EM680F07OT |
| | 100 | 8x7 | 0.14 | 115 | EL71EM101F07OT |

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (mA _{rms} /105°C, 120Hz) | Part Number |
|----------|----------|--------------|------|--|-----------------|
| 35(1V) | 4.7 | 4x7 | 0.12 | 22 | EL71VM4R7C07OT |
| | 6.8 | 4x7 | 0.12 | 24 | EL71VM6R8C07OT |
| | | 5x7 | 0.12 | 28 | EL71VM6R8D07OT |
| | 10 | 5x7 | 0.12 | 35 | EL71VM100D07OT |
| | 22 | 6.3x7 | 0.12 | 60 | EL71VM220E07OT |
| | 33 | 6.3x7 | 0.12 | 50 | EL71VM330E07OT |
| | | 8x7 | 0.12 | 68 | EL71VM330F07OT |
| | 47 | 8x7 | 0.12 | 80 | EL71VM470F07OT |
| 68 | 8x7 | 0.12 | 85 | EL71VM680F07OT | |
| 50(1H) | 0.1 | 4x7 | 0.10 | 1.5 | EL71HMR10C07OT |
| | 0.22 | 4x7 | 0.10 | 2.5 | EL71HMR22C07OT |
| | 0.33 | 4x7 | 0.10 | 3.5 | EL71HMR33C07OT |
| | 0.47 | 4x7 | 0.10 | 5 | EL71HMR47C07OT |
| | 0.68 | 4x7 | 0.10 | 7 | EL71HMR68C07OT |
| | 1 | 4x7 | 0.10 | 10 | EL71HMR100C07OT |
| | 2.2 | 4x7 | 0.10 | 20 | EL71HMR2R2C07OT |
| | 3.3 | 4x7 | 0.10 | 26 | EL71HMR3R3C07OT |
| | 4.7 | 4x7 | 0.10 | 27 | EL71HMR4R7C07OT |
| | | 5x7 | 0.10 | 29 | EL71HMR4R7D07OT |
| 10 | 6.3x7 | 0.10 | 38 | EL71HMR100E07OT | |
| 22 | 8x7 | 0.10 | 63 | EL71HMR220F07OT | |
| 33 | 8x7 | 0.10 | 78 | EL71HMR330F07OT | |
| 63(1J) | 0.1 | 4x7 | 0.09 | 1.5 | EL71JMR10C07OT |
| | 0.22 | 4x7 | 0.09 | 2.5 | EL71JMR22C07OT |
| | 0.33 | 4x7 | 0.09 | 3.5 | EL71JMR33C07OT |
| | 0.47 | 4x7 | 0.09 | 6 | EL71JMR47C07OT |
| | 1 | 4x7 | 0.09 | 12 | EL71JMR100C07OT |
| | 2.2 | 4x7 | 0.09 | 20 | EL71JMR2R2C07OT |
| | 3.3 | 5x7 | 0.09 | 28 | EL71JMR3R3D07OT |
| | 4.7 | 6.3x7 | 0.09 | 33 | EL71JMR4R7E07OT |
| | 10 | 6.3x7 | 0.09 | 40 | EL71JMR100E07OT |
| | 22 | 8x7 | 0.09 | 65 | EL71JMR220F07OT |

WK series

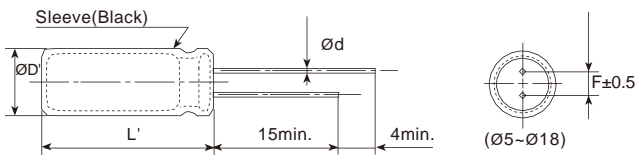
- Standard series for general purpose
- Endurance : +85 °C 2,000 hours
- RoHS Compliant



SPECIFICATIONS

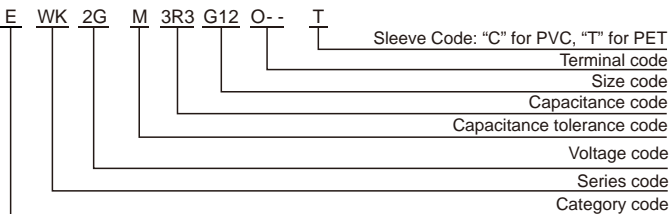
| Items | Characteristics | | | | | | | | | | | | | | |
|---|---|-------------------------------------|------|--|------|------|---|--|------|------|------|------|------|------|------|
| Category Temperature Range | -40~+85°C(6.3 to 100 V _{dc}) | | | | | | | -25~+85°C(160 to 450 V _{dc}) | | | | | | | |
| Rated Voltage Range | 6.3~450 V _{dc} | | | | | | | | | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | | | | | | | | | | | | | |
| Leakage Current | 6.3~100 V _{dc} I 0.01CV or 3μA, whichever is greater. | | | 160~450 V _{dc} I 0.03CV+10μA | | | Where, I: Max.leakage current (μA),C:Nominal capacitance (μF), V: Rated voltage (V) (at 20°C after 2 minutes) | | | | | | | | |
| Dissipation Factor (tan) | Rated Voltage(V _{dc}) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 450 |
| | tan (max.) | 0.24 | 0.20 | 0.16 | 0.14 | 0.12 | 0.10 | 0.09 | 0.08 | 0.20 | 0.20 | 0.20 | 0.24 | 0.24 | 0.24 |
| When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20°C, 120Hz) | | | | | | | | | | | | | | | |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 450 |
| | Z(-25°C)/Z(+20°C) | 5 | 4 | 3 | 2 | | | 3 | | | 6 | | | | |
| | Z(-40°C)/Z(+20°C) | 12 | 10 | 8 | 5 | 4 | 3 | | | - | | | - | | |
| (at 120Hz) | | | | | | | | | | | | | | | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 20°C after DC voltage plus the rated ripple current is applied for 2,000 hours at 85°C. | | | | | | | | | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | | | | | | | | |
| | D.F. (tan) | 200% of the initial specified value | | | | | | | | | | | | | |
| | Leakage Current | The initial specified value | | | | | | | | | | | | | |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 85°C without voltage applied. | | | | | | | | | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | | | | | | | | |
| | D.F. (tan) | 200% of the initial specified value | | | | | | | | | | | | | |
| | Leakage Current | 200% of the initial specified value | | | | | | | | | | | | | |

DIMENSIONS[mm]



| ØD | 5 | 6.3 | 8 | 10 | 12.5 | 16 | 18 |
|-----|------------|-----|-----|-----|------|-----|-----|
| Ød | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.8 | 0.8 |
| F | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 |
| ØD' | ØD+0.5max. | | | | | | |
| L' | L+2max. | | | | | | |

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| Cap.(μF) \ Freq.(Hz) | 50 | 120 | 300 | 1k | 10k | 100k |
|----------------------|------|------|------|------|------|------|
| Cap.<10 | 0.65 | 1.00 | 1.35 | 1.75 | 2.30 | 2.50 |
| 10 Cap.<100 | 0.75 | 1.00 | 1.25 | 1.50 | 1.75 | 1.80 |
| 100 Cap. 1000 | 0.80 | 1.00 | 1.15 | 1.30 | 1.40 | 1.50 |
| Cap.>1000 | 0.85 | 1.00 | 1.03 | 1.05 | 1.08 | 1.08 |

The endurance of capacitors is shortened with internal heating produced by ripple current at the rate of halving the lifetime with every 5 °C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

WK series

■ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Size D×L(mm) | tan | Rated ripple current (mA _{rms} /85°C, 120Hz) | Part Number |
|----------|----------|--------------|------|---|----------------|
| 6.3(0J) | 33 | 5×11 | 0.24 | 65 | EWK0JM330D11OT |
| | 47 | 5×11 | 0.24 | 80 | EWK0JM470D11OT |
| | 100 | 5×11 | 0.24 | 135 | EWK0JM101D11OT |
| | 220 | 5×12 | 0.24 | 220 | EWK0JM221D12OT |
| | 330 | 6.3×11 | 0.24 | 280 | EWK0JM331E11OT |
| | 470 | 6.3×12 | 0.24 | 360 | EWK0JM471E12OT |
| | 1000 | 8×12 | 0.24 | 590 | EWK0JM102F12OT |
| | 2200 | 10×20 | 0.26 | 1000 | EWK0JM222G20OT |
| | 3300 | 10×25 | 0.28 | 1200 | EWK0JM332G25OT |
| | 4700 | 12.5×20 | 0.30 | 1550 | EWK0JM472W20OT |
| | 6800 | 12.5×25 | 0.34 | 1920 | EWK0JM682W25OT |
| | 10000 | 16×25 | 0.42 | 2370 | EWK0JM103L25OT |
| | 15000 | 16×35 | 0.52 | 2880 | EWK0JM153L35OT |
| | 22000 | 18×40 | 0.66 | 3350 | EWK0JM223M40OT |
| 10(1A) | 22 | 5×11 | 0.20 | 60 | EWK1AM220D11OT |
| | 33 | 5×11 | 0.20 | 75 | EWK1AM330D11OT |
| | 47 | 5×11 | 0.20 | 95 | EWK1AM470D11OT |
| | 100 | 5×11 | 0.20 | 140 | EWK1AM101D11OT |
| | 220 | 5×12 | 0.20 | 240 | EWK1AM221D12OT |
| | 330 | 6.3×11 | 0.20 | 310 | EWK1AM331E11OT |
| | 470 | 6.3×12 | 0.20 | 400 | EWK1AM471E12OT |
| | 1000 | 10×12.5 | 0.20 | 660 | EWK1AM102G1BOT |
| | 2200 | 10×20 | 0.22 | 1090 | EWK1AM222G20OT |
| | 3300 | 12.5×20 | 0.24 | 1450 | EWK1AM332W20OT |
| | 4700 | 12.5×25 | 0.26 | 1800 | EWK1AM472W25OT |
| | 6800 | 16×25 | 0.30 | 2250 | EWK1AM682L25OT |
| | 10000 | 16×35 | 0.38 | 2710 | EWK1AM103L35OT |
| | 15000 | 18×35 | 0.48 | 3120 | EWK1AM153M35OT |
| 16(1C) | 10 | 5×11 | 0.16 | 50 | EWK1CM100D11OT |
| | 22 | 5×11 | 0.16 | 65 | EWK1CM220D11OT |
| | 33 | 5×11 | 0.16 | 80 | EWK1CM330D11OT |
| | 47 | 5×11 | 0.16 | 115 | EWK1CM470D11OT |
| | 100 | 5×11 | 0.16 | 175 | EWK1CM101D11OT |
| | 220 | 6.3×11 | 0.16 | 280 | EWK1CM221E11OT |
| | 330 | 8×11 | 0.16 | 380 | EWK1CM331F11OT |
| | 470 | 8×11 | 0.16 | 460 | EWK1CM471F11OT |
| | 1000 | 10×16 | 0.16 | 800 | EWK1CM102G16OT |
| | 2200 | 12.5×20 | 0.18 | 1320 | EWK1CM222W20OT |
| | 3300 | 12.5×25 | 0.20 | 1670 | EWK1CM332W25OT |
| | 4700 | 16×25 | 0.22 | 2120 | EWK1CM472L25OT |
| | 6800 | 16×30 | 0.26 | 2550 | EWK1CM682L30OT |
| | 25(1E) | 4.7 | 5×11 | 0.14 | 30 |
| 10 | | 5×11 | 0.14 | 45 | EWK1EM100D11OT |
| 22 | | 5×11 | 0.14 | 70 | EWK1EM220D11OT |
| 33 | | 5×11 | 0.14 | 98 | EWK1EM330D11OT |
| 47 | | 5×11 | 0.14 | 120 | EWK1EM470D11OT |
| 100 | | 6.3×11 | 0.14 | 190 | EWK1EM101E11OT |
| 220 | | 8×11 | 0.14 | 330 | EWK1EM221F11OT |
| 330 | | 8×12 | 0.14 | 440 | EWK1EM331F12OT |
| 470 | | 10×12.5 | 0.14 | 550 | EWK1EM471G1BOT |
| 1000 | | 10×20 | 0.14 | 970 | EWK1EM102G20OT |
| 2200 | | 12.5×25 | 0.16 | 1570 | EWK1EM222W25OT |
| 3300 | | 16×25 | 0.18 | 2000 | EWK1EM332L25OT |
| 4700 | | 16×30 | 0.20 | 2450 | EWK1EM472L30OT |

| WV (Vdc) | Cap (μF) | Size D×L(mm) | tan | Rated ripple current (mA _{rms} /85°C, 120Hz) | Part Number | |
|----------|----------|--------------|------|---|----------------|----------------|
| 35(1V) | 4.7 | 5×11 | 0.12 | 40 | EWK1VM4R7D11OT | |
| | 10 | 5×11 | 0.12 | 55 | EWK1VM100D11OT | |
| | 22 | 5×11 | 0.12 | 90 | EWK1VM220D11OT | |
| | 33 | 5×11 | 0.12 | 110 | EWK1VM330D11OT | |
| | 47 | 5×11 | 0.12 | 135 | EWK1VM470D11OT | |
| | 100 | 6.3×11 | 0.12 | 215 | EWK1VM101E11OT | |
| | 220 | 8×12 | 0.12 | 385 | EWK1VM221F12OT | |
| | 330 | 10×12.5 | 0.12 | 500 | EWK1VM331G1BOT | |
| | 470 | 10×16 | 0.12 | 680 | EWK1VM471G16OT | |
| | 1000 | 12.5×20 | 0.12 | 1180 | EWK1VM102W20OT | |
| | 2200 | 16×25 | 0.14 | 1810 | EWK1VM222L25OT | |
| | 3300 | 16×35 | 0.16 | 2300 | EWK1VM332L35OT | |
| | 4700 | 18×35 | 0.18 | 2750 | EWK1VM472M35OT | |
| | 50(1H) | 0.1 | 5×11 | 0.10 | 1.3 | EWK1HMR10D11OT |
| 0.22 | | 5×11 | 0.10 | 2.9 | EWK1HMR22D11OT | |
| 0.33 | | 5×11 | 0.10 | 4.3 | EWK1HMR33D11OT | |
| 0.47 | | 5×11 | 0.10 | 7.0 | EWK1HMR47D11OT | |
| 1 | | 5×11 | 0.10 | 17 | EWK1HM010D11OT | |
| 2.2 | | 5×11 | 0.10 | 28 | EWK1HM2R2D11OT | |
| 3.3 | | 5×11 | 0.10 | 35 | EWK1HM3R3D11OT | |
| 4.7 | | 5×11 | 0.10 | 41 | EWK1HM4R7D11OT | |
| 10 | | 5×11 | 0.10 | 60 | EWK1HM100D11OT | |
| 22 | | 5×11 | 0.10 | 95 | EWK1HM220D11OT | |
| 33 | | 6.3×11 | 0.10 | 130 | EWK1HM330E11OT | |
| 47 | | 6.3×11 | 0.10 | 160 | EWK1HM470E11OT | |
| 100 | | 8×11 | 0.10 | 270 | EWK1HM101F11OT | |
| 220 | | 10×16 | 0.10 | 435 | EWK1HM221G16OT | |
| 330 | 10×20 | 0.10 | 590 | EWK1HM331G20OT | | |
| 470 | 10×20 | 0.10 | 760 | EWK1HM471G20OT | | |
| 1000 | 12.5×25 | 0.10 | 1350 | EWK1HM102W25OT | | |
| 2200 | 16×35 | 0.12 | 2110 | EWK1HM222L35OT | | |
| 3300 | 18×35 | 0.14 | 2550 | EWK1HM332M35OT | | |
| 63(1J) | 4.7 | 5×11 | 0.09 | 45 | EWK1JM4R7D11OT | |
| | 10 | 5×11 | 0.09 | 70 | EWK1JM100D11OT | |
| | 22 | 6.3×11 | 0.09 | 110 | EWK1JM220E11OT | |
| | 33 | 6.3×11 | 0.09 | 140 | EWK1JM330E11OT | |
| | 47 | 6.3×12 | 0.09 | 190 | EWK1JM470E12OT | |
| | 100 | 10×12.5 | 0.09 | 300 | EWK1JM101G1BOT | |
| | 220 | 10×16 | 0.09 | 490 | EWK1JM221G16OT | |
| | 330 | 10×20 | 0.09 | 710 | EWK1JM331G20OT | |
| | 470 | 12.5×20 | 0.09 | 900 | EWK1JM471W20OT | |
| | 1000 | 16×25 | 0.09 | 1350 | EWK1JM102L25OT | |
| | 2200 | 18×35 | 0.11 | 2330 | EWK1JM222M35OT | |
| | 100(1K) | 0.1 | 5×11 | 0.08 | 2.1 | EWK1KMR10D11OT |
| | | 0.22 | 5×11 | 0.08 | 4.7 | EWK1KMR22D11OT |
| | | 0.33 | 5×11 | 0.08 | 7.0 | EWK1KMR33D11OT |
| 0.47 | | 5×11 | 0.08 | 10 | EWK1KMR47D11OT | |
| 1 | | 5×11 | 0.08 | 21 | EWK1KM010D11OT | |
| 2.2 | | 5×11 | 0.08 | 35 | EWK1KM2R2D11OT | |
| 3.3 | | 5×11 | 0.08 | 45 | EWK1KM3R3D11OT | |
| 4.7 | | 5×11 | 0.08 | 50 | EWK1KM4R7D11OT | |
| 10 | | 6.3×11 | 0.08 | 75 | EWK1KM100E11OT | |
| 22 | | 8×11 | 0.08 | 135 | EWK1KM220F11OT | |
| 33 | | 8×12 | 0.08 | 185 | EWK1KM330F12OT | |

WK series

■ STANDARD RATINGS

| WV (V _{dc}) | Cap (μF) | Size D×L(mm) | tan | Rated ripple current (mArms/85°C, 120Hz) | Part Number |
|-----------------------|----------|--------------|------|--|----------------|
| 100(1K) | 47 | 10x12.5 | 0.08 | 235 | EWK1KM470G1BOT |
| | 100 | 10x20 | 0.08 | 380 | EWK1KM101G20OT |
| | 220 | 12.5x 25 | 0.08 | 630 | EWK1KM221W25OT |
| | 330 | 12.5x 30 | 0.08 | 760 | EWK1KM331W30OT |
| | 470 | 16x30 | 0.08 | 1000 | EWK1KM471L30OT |
| 1000 | 18x40 | 0.08 | 1350 | EWK1KM102M40OT | |
| 160(2C) | 0.47 | 6.3x11 | 0.20 | 10 | EWK2CMR47E11OT |
| | 1 | 6.3x11 | 0.20 | 15 | EWK2CM010E11OT |
| | 2.2 | 6.3x11 | 0.20 | 30 | EWK2CM2R2E11OT |
| | 3.3 | 6.3x11 | 0.20 | 40 | EWK2CM3R3E11OT |
| | 4.7 | 6.3x11 | 0.20 | 48 | EWK2CM4R7E11OT |
| | 10 | 8x12 | 0.20 | 80 | EWK2CM100F12OT |
| | | 10x12 | 0.20 | 94 | EWK2CM100G12OT |
| | 22 | 10x12 | 0.20 | 130 | EWK2CM220G12OT |
| | | 10x16 | 0.20 | 150 | EWK2CM220G16OT |
| | 33 | 10x20 | 0.20 | 170 | EWK2CM220G20OT |
| | | 10x16 | 0.20 | 180 | EWK2CM330G16OT |
| | | 10x20 | 0.20 | 210 | EWK2CM330G20OT |
| | 47 | 10x20 | 0.20 | 240 | EWK2CM470G20OT |
| | | 12.5x20 | 0.20 | 280 | EWK2CM470W20OT |
| | 68 | 12.5x20 | 0.20 | 360 | EWK2CM680W20OT |
| | 100 | 12.5x25 | 0.20 | 470 | EWK2CM101W25OT |
| | 150 | 16x20 | 0.20 | 520 | EWK2CM151L20OT |
| | 180 | 16x25 | 0.20 | 600 | EWK2CM181L25OT |
| | 220 | 16x30 | 0.20 | 780 | EWK2CM221L30OT |
| | 270 | 18x30 | 0.20 | 860 | EWK2CM271M30OT |
| 330 | 18x35 | 0.20 | 1000 | EWK2CM331M35OT | |
| 390 | 18x35 | 0.20 | 1020 | EWK2CM391M35OT | |
| 470 | 18x40 | 0.20 | 1220 | EWK2CM471M40OT | |
| 200(2D) | 0.47 | 6.3x11 | 0.20 | 10 | EWK2DMR47E11OT |
| | 1 | 6.3x11 | 0.20 | 15 | EWK2DM010E11OT |
| | 2.2 | 6.3x11 | 0.20 | 34 | EWK2DM2R2E11OT |
| | 3.3 | 6.3x11 | 0.20 | 45 | EWK2DM3R3E11OT |
| | 4.7 | 6.3x11 | 0.20 | 55 | EWK2DM4R7E11OT |
| | 8x12 | 0.20 | 60 | EWK2DM4R7F12OT | |
| | | 10x12 | 0.20 | 100 | EWK2DM100G12OT |
| | 22 | 10x20 | 0.20 | 170 | EWK2DM220G20OT |
| | 33 | 10x20 | 0.20 | 205 | EWK2DM330G20OT |
| | 47 | 12.5x20 | 0.20 | 270 | EWK2DM470W20OT |
| | 68 | 12.5x25 | 0.20 | 370 | EWK2DM680W25OT |
| | 100 | 16x25 | 0.20 | 475 | EWK2DM101L25OT |
| | 150 | 16x25 | 0.20 | 550 | EWK2DM151L25OT |
| | 180 | 18x25 | 0.20 | 620 | EWK2DM181M25OT |
| | 220 | 18x35 | 0.20 | 810 | EWK2DM221M35OT |
| 270 | 18x35 | 0.20 | 870 | EWK2DM271M35OT | |
| 330 | 18x35 | 0.20 | 1000 | EWK2DM331M35OT | |
| | 18x40 | 0.20 | 1020 | EWK2DM331M40OT | |
| 250(2E) | 0.47 | 6.3x11 | 0.20 | 10 | EWK2EMR47E11OT |
| | 1 | 6.3x11 | 0.20 | 16 | EWK2EM010E11OT |
| | 2.2 | 6.3x11 | 0.20 | 34 | EWK2EM2R2E11OT |
| | 3.3 | 6.3x11 | 0.20 | 42 | EWK2EM3R3E11OT |
| | | 8x12 | 0.20 | 46 | EWK2EM3R3F12OT |
| | 4.7 | 6.3x11 | 0.20 | 50 | EWK2EM4R7E11OT |
| | | 8x12 | 0.20 | 55 | EWK2EM4R7F12OT |
| | 10 | 10x12 | 0.20 | 100 | EWK2EM100G12OT |
| | | 10x16 | 0.20 | 105 | EWK2EM100G16OT |
| | 22 | 10x20 | 0.20 | 170 | EWK2EM220G20OT |

| WV (V _{dc}) | Cap (μF) | Size D×L(mm) | tan | Rated ripple current (mArms/85°C, 120Hz) | Part Number |
|-----------------------|----------|--------------|------|--|----------------|
| 250(2E) | 33 | 10x20 | 0.20 | 200 | EWK2EM330G20OT |
| | | 12.5x20 | 0.20 | 230 | EWK2EM330W20OT |
| | 47 | 12.5x20 | 0.20 | 270 | EWK2EM470W20OT |
| | | 12.5x25 | 0.20 | 295 | EWK2EM470W25OT |
| | 68 | 16x25 | 0.20 | 382 | EWK2EM680L25OT |
| | 100 | 16x25 | 0.20 | 450 | EWK2EM101L25OT |
| | | 16x30 | 0.20 | 515 | EWK2EM101L30OT |
| | 120 | 16x30 | 0.20 | 530 | EWK2EM121L30OT |
| 150 | 16x30 | 0.20 | 570 | EWK2EM151L30OT | |
| 180 | 18x30 | 0.20 | 620 | EWK2EM181M30OT | |
| 350(2V) | 0.47 | 6.3x11 | 0.24 | 15 | EWK2VMR47E11OT |
| | 1 | 6.3x11 | 0.24 | 22 | EWK2VM010E11OT |
| | 2.2 | 8x12 | 0.24 | 38 | EWK2VM2R2F12OT |
| | 3.3 | 8x12 | 0.24 | 46 | EWK2VM3R3F12OT |
| | 4.7 | 10x12 | 0.24 | 65 | EWK2VM4R7G12OT |
| | 10 | 10x12 | 0.24 | 90 | EWK2VM100G12OT |
| | | 10x16 | 0.24 | 100 | EWK2VM100G16OT |
| | | 10x20 | 0.24 | 120 | EWK2VM100G20OT |
| | 22 | 12.5x20 | 0.24 | 185 | EWK2VM220W20OT |
| | 33 | 16x25 | 0.24 | 275 | EWK2VM330L25OT |
| | 47 | 16x25 | 0.24 | 325 | EWK2VM470L25OT |
| | 68 | 16x25 | 0.24 | 405 | EWK2VM680L25OT |
| | 100 | 18x30 | 0.24 | 530 | EWK2VM101M30OT |
| 400(2G) | 1 | 6.3x11 | 0.24 | 22 | EWK2GM010E11OT |
| | 2.2 | 8x12 | 0.24 | 38 | EWK2GM2R2F12OT |
| | 3.3 | 10x12 | 0.24 | 54 | EWK2GM3R3G12OT |
| | 4.7 | 10x12 | 0.24 | 60 | EWK2GM4R7G12OT |
| | | 10x16 | 0.24 | 75 | EWK2GM4R7G16OT |
| | 10 | 10x16 | 0.24 | 100 | EWK2GM100G16OT |
| | | 10x20 | 0.24 | 120 | EWK2GM100G20OT |
| | 22 | 12.5x25 | 0.24 | 205 | EWK2GM220W25OT |
| | 33 | 16x25 | 0.24 | 275 | EWK2GM330L25OT |
| | 47 | 16x25 | 0.24 | 325 | EWK2GM470L25OT |
| 56 | 16x30 | 0.24 | 385 | EWK2GM560L30OT | |
| 68 | 18x25 | 0.24 | 420 | EWK2GM680M25OT | |
| 82 | 18x30 | 0.24 | 475 | EWK2GM820M30OT | |
| 100 | 18x35 | 0.24 | 545 | EWK2GM101M35OT | |
| 450(2W) | 1 | 8x12 | 0.24 | 16 | EWK2WM010F12OT |
| | | 8x12 | 0.24 | 32 | EWK2WM2R2F12OT |
| | 2.2 | 10x12 | 0.24 | 35 | EWK2WM2R2G12OT |
| | | 10x12 | 0.24 | 40 | EWK2WM3R3G12OT |
| | 3.3 | 10x16 | 0.24 | 44 | EWK2WM3R3G16OT |
| | | 10x12 | 0.24 | 50 | EWK2WM4R7G12OT |
| | 4.7 | 10x16 | 0.24 | 58 | EWK2WM4R7G16OT |
| | | 10x20 | 0.24 | 65 | EWK2WM4R7G20OT |
| | 10 | 10x20 | 0.24 | 80 | EWK2WM100G20OT |
| | | 12.5x20 | 0.24 | 92 | EWK2WM100W20OT |
| | 22 | 12.5x25 | 0.24 | 150 | EWK2WM220W25OT |
| | | 16x25 | 0.24 | 165 | EWK2WM220L25OT |
| | 33 | 16x30 | 0.24 | 215 | EWK2WM330L30OT |
| | 47 | 16x30 | 0.24 | 260 | EWK2WM470L30OT |
| 16x35 | | 0.24 | 280 | EWK2WM470L35OT | |
| 68 | 18x30 | 0.24 | 370 | EWK2WM680M30OT | |
| 82 | 18x35 | 0.24 | 390 | EWK2WM820M35OT | |
| 100 | 18x40 | 0.24 | 420 | EWK2WM101M40OT | |

Radial Type

WH series

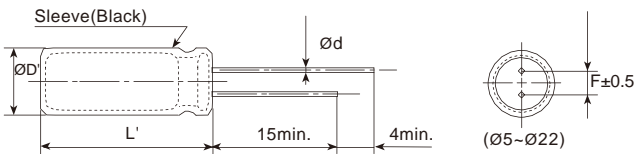
- Standard series for general purpose
- Wide temperature range from -40 °C to +105 °C
- Endurance: +105 °C 2,000 hours
- RoHS Compliant



SPECIFICATIONS

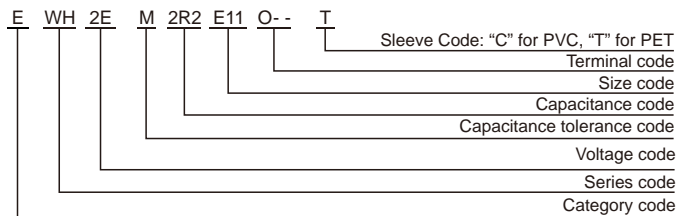
| Items | Characteristics | | | | | | | | | | | | |
|--|--|-------------------------------------|----------|------|----------------|------|--------------------------------------|------|------|---------|---------|------|---|
| Category Temperature Range | -40~+105 °C (6.3~400 V _{dc}) | | | | | | -25~+105°C(450~500 V _{dc}) | | | | | | |
| Rated Voltage Range | 6.3~500 V _{dc} | | | | | | | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | | | | | | | | | | | |
| Leakage Current | 6.3~100 V _{dc} | | | | | | 160~500 V _{dc} | | | | | | Where, I:Max. leakage current (μA), C:Nominal capacitance (μF), V: Rated voltage (V) (at 20°C) |
| | I 0.03CV or 4μA (at 1 minute) | | CV | | After 1 minute | | After 5 minutes | | | | | | |
| | I 0.01CV or 3μA (at 2 minutes) Whichever is greater | | CV 1,000 | | I 0.1CV+40μA | | I 0.03CV+15μA | | | | | | |
| Dissipation Factor (tan) | Rated Voltage(V _{dc}) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160~250 | 350~400 | 450 | 500 |
| | tan (max.) | 0.26 | 0.19 | 0.16 | 0.14 | 0.12 | 0.10 | 0.09 | 0.08 | 0.20 | 0.24 | 0.24 | 0.24 |
| | When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20°C, 120Hz) | | | | | | | | | | | | |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160~250 | 350~400 | 450 | 500 |
| | Z(-25°C)/Z(+20°C) | 5 | 4 | 3 | | 2 | | | | 3 | 6 | 6 | 8 |
| | Z(-40°C)/Z(+20°C) | 12 | 10 | 8 | 5 | 4 | | 3 | | 7 | 10 | - | - |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 20°C after DC voltage plus the rated ripple current is applied for 2,000 hours at 105°C. | | | | | | | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | | | | | | |
| | D.F. (tan) | 200% of the initial specified value | | | | | | | | | | | |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 105°C without voltage applied. | | | | | | | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | | | | | | |
| | D.F. (tan) | 200% of the initial specified value | | | | | | | | | | | |
| Leakage Current | The initial specified value | | | | | | | | | | | | |

DIMENSIONS[mm]



| | | | | | | | | | |
|-----|------------|-----|-----|-----|-----|------|-----|-----|------|
| ØD | 5 | 6.3 | 8 | | 10 | 12.5 | 16 | 18 | 22 |
| Ød | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 | 0.8 |
| F | 2.0 | 2.5 | 3.5 | | 5.0 | 5.0 | 7.5 | 7.5 | 10.0 |
| ØD' | ØD+0.5max. | | | | | | | | |
| L' | L+2max. | | | | | | | | |

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| | | | | | | |
|----------------------|------|------|------|------|------|------|
| Cap.(μF) \ Freq.(Hz) | 50 | 120 | 300 | 1k | 10k | 100k |
| Cap.<10 | 0.65 | 1.00 | 1.35 | 1.75 | 2.30 | 2.50 |
| 10 Cap.<100 | 0.75 | 1.00 | 1.25 | 1.50 | 1.75 | 1.80 |
| 100 Cap. 1000 | 0.80 | 1.00 | 1.15 | 1.30 | 1.40 | 1.50 |
| Cap.>1000 | 0.85 | 1.00 | 1.03 | 1.05 | 1.08 | 1.08 |

The endurance of capacitors is shortened with internal heating produced by ripple current at the rate of halving the lifetime with every 5 °C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

WH series

■ STANDARD RATINGS

| VV (Vdc) | Cap (µF) | Size DxL(mm) | tan | Rated ripple current (mArms/105°C, 120Hz) | Part Number |
|----------|----------|--------------|------|---|----------------|
| 6.3(0J) | 33 | 5x11 | 0.26 | 54 | EWH0JM330D11OT |
| | 47 | 5x11 | 0.26 | 64 | EWH0JM470D11OT |
| | 100 | 5x11 | 0.26 | 94 | EWH0JM101D11OT |
| | 220 | 5x11 | 0.26 | 140 | EWH0JM221D11OT |
| | 330 | 6.3x11 | 0.26 | 190 | EWH0JM331E11OT |
| | 470 | 6.3x11 | 0.26 | 230 | EWH0JM471E11OT |
| | 1000 | 8x12 | 0.26 | 380 | EWH0JM102F12OT |
| | 2200 | 10x20 | 0.28 | 710 | EWH0JM222G20OT |
| | 3300 | 10x20 | 0.30 | 840 | EWH0JM332G20OT |
| | 4700 | 12.5x20 | 0.32 | 1090 | EWH0JM472W20OT |
| | 6800 | 12.5x25 | 0.36 | 1350 | EWH0JM682W25OT |
| | 10000 | 16x25 | 0.44 | 1650 | EWH0JM103L25OT |
| | 15000 | 16x35 | 0.54 | 2010 | EWH0JM153L35OT |
| | 22000 | 18x40 | 0.68 | 2350 | EWH0JM223M40OT |
| | 22 | 5x11 | 0.19 | 46 | EWH1AM220D11OT |
| 33 | 5x11 | 0.19 | 57 | EWH1AM330D11OT | |
| 47 | 5x11 | 0.19 | 68 | EWH1AM470D11OT | |
| 100 | 5x11 | 0.19 | 100 | EWH1AM101D11OT | |
| 220 | 6.3x11 | 0.19 | 170 | EWH1AM221E11OT | |
| 330 | 6.3x11 | 0.19 | 200 | EWH1AM331E11OT | |
| 470 | 8x11 | 0.19 | 250 | EWH1AM471F11OT | |
| 1000 | 10x12.5 | 0.19 | 460 | EWH1AM102G1BOT | |
| 2200 | 10x20 | 0.21 | 760 | EWH1AM222G20OT | |
| 3300 | 12.5x20 | 0.23 | 1000 | EWH1AM332W20OT | |
| 4700 | 12.5x25 | 0.25 | 1260 | EWH1AM472W25OT | |
| 6800 | 16x25 | 0.29 | 1570 | EWH1AM682L25OT | |
| 10000 | 16x35 | 0.37 | 1890 | EWH1AM103L35OT | |
| 15000 | 18x35 | 0.47 | 2180 | EWH1AM153M35OT | |
| 10 | 5x11 | 0.16 | 34 | EWH1CM100D11OT | |
| 22 | 5x11 | 0.16 | 51 | EWH1CM220D11OT | |
| 33 | 5x11 | 0.16 | 63 | EWH1CM330D11OT | |
| 47 | 5x11 | 0.16 | 75 | EWH1CM470D11OT | |
| 100 | 5x11 | 0.16 | 110 | EWH1CM101D11OT | |
| 220 | 6.3x11 | 0.16 | 180 | EWH1CM221E11OT | |
| 330 | 8x11 | 0.16 | 260 | EWH1CM331F11OT | |
| 470 | 8x12 | 0.16 | 310 | EWH1CM471F12OT | |
| 1000 | 10x16 | 0.16 | 560 | EWH1CM102G1BOT | |
| 2200 | 12.5x20 | 0.18 | 920 | EWH1CM222W20OT | |
| 3300 | 12.5x25 | 0.20 | 1170 | EWH1CM332W25OT | |
| 4700 | 16x25 | 0.22 | 1480 | EWH1CM472L25OT | |
| 6800 | 16x30 | 0.26 | 1780 | EWH1CM682L30OT | |
| 10000 | 18x35 | 0.34 | 2060 | EWH1CM103M35OT | |
| 4.7 | 5x11 | 0.14 | 25 | EWH1EM4R7D11OT | |
| 10 | 5x11 | 0.14 | 36 | EWH1EM100D11OT | |
| 22 | 5x11 | 0.14 | 54 | EWH1EM220D11OT | |
| 33 | 5x11 | 0.14 | 67 | EWH1EM330D11OT | |
| 47 | 5x11 | 0.14 | 80 | EWH1EM470D11OT | |
| 100 | 6.3x11 | 0.14 | 130 | EWH1EM101E11OT | |
| 220 | 8x11 | 0.14 | 230 | EWH1EM221F11OT | |
| 330 | 8x12 | 0.14 | 310 | EWH1EM331F12OT | |
| 470 | 10x12.5 | 0.14 | 380 | EWH1EM471G1BOT | |
| 1000 | 10x20 | 0.14 | 680 | EWH1EM102G20OT | |
| 2200 | 12.5x25 | 0.16 | 1090 | EWH1EM222W25OT | |
| 3300 | 16x25 | 0.18 | 1400 | EWH1EM332L25OT | |
| 4700 | 16x30 | 0.20 | 1710 | EWH1EM472L30OT | |
| 6800 | 18x35 | 0.24 | 2040 | EWH1EM682M35OT | |

| VV (Vdc) | Cap (µF) | Size DxL(mm) | tan | Rated ripple current (mArms/105°C, 120Hz) | Part Number |
|----------|----------|--------------|------|---|----------------|
| 35(1V) | 4.7 | 5x11 | 0.12 | 28 | EWH1VM4R7D11OT |
| | 10 | 5x11 | 0.12 | 41 | EWH1VM100D11OT |
| | 22 | 5x11 | 0.12 | 61 | EWH1VM220D11OT |
| | 33 | 5x11 | 0.12 | 75 | EWH1VM330D11OT |
| | 47 | 5x11 | 0.12 | 90 | EWH1VM470D11OT |
| | 100 | 6.3x11 | 0.12 | 150 | EWH1VM101E11OT |
| | 220 | 8x12 | 0.12 | 270 | EWH1VM221F12OT |
| | 330 | 10x12.5 | 0.12 | 350 | EWH1VM331G1BOT |
| | 470 | 10x16 | 0.12 | 460 | EWH1VM471G16OT |
| | 1000 | 12.5x20 | 0.12 | 810 | EWH1VM102W20OT |
| | 2200 | 16x25 | 0.14 | 1260 | EWH1VM222L25OT |
| | 3300 | 16x35 | 0.16 | 1610 | EWH1VM332L35OT |
| | 4700 | 18x35 | 0.18 | 1910 | EWH1VM472M35OT |
| | 0.10 | 5x11 | 0.10 | 1.3 | EWH1HMR10D11OT |
| | 0.22 | 5x11 | 0.10 | 2.9 | EWH1HMR22D11OT |
| 0.33 | 5x11 | 0.10 | 4.3 | EWH1HMR33D11OT | |
| 0.47 | 5x11 | 0.10 | 6.2 | EWH1HMR47D11OT | |
| 1.0 | 5x11 | 0.10 | 13 | EWH1HM010D11OT | |
| 2.2 | 5x11 | 0.10 | 20 | EWH1HM2R2D11OT | |
| 3.3 | 5x11 | 0.10 | 25 | EWH1HM3R3D11OT | |
| 4.7 | 5x11 | 0.10 | 30 | EWH1HM4R7D11OT | |
| 10 | 5x11 | 0.10 | 40 | EWH1HM100D11OT | |
| 22 | 5x11 | 0.10 | 65 | EWH1HM220D11OT | |
| 33 | 6.3x11 | 0.10 | 90 | EWH1HM330E11OT | |
| 47 | 6.3x11 | 0.10 | 110 | EWH1HM470E11OT | |
| 100 | 8x11 | 0.10 | 180 | EWH1HM101F11OT | |
| 220 | 10x12.5 | 0.10 | 300 | EWH1HM221G1BOT | |
| 330 | 10x16 | 0.10 | 410 | EWH1HM331G16OT | |
| 470 | 10x20 | 0.10 | 530 | EWH1HM471G20OT | |
| 1000 | 12.5x25 | 0.10 | 950 | EWH1HM102W25OT | |
| 2200 | 16x35 | 0.12 | 1470 | EWH1HM222L35OT | |
| 3300 | 18x35 | 0.14 | 1770 | EWH1HM332M35OT | |
| 10 | 5x11 | 0.09 | 46 | EWH1JM100D11OT | |
| 22 | 5x11 | 0.09 | 71 | EWH1JM220D11OT | |
| 33 | 6.3x11 | 0.09 | 100 | EWH1JM330E11OT | |
| 47 | 6.3x11 | 0.09 | 120 | EWH1JM470E11OT | |
| 100 | 10x12.5 | 0.09 | 215 | EWH1JM101G1BOT | |
| 220 | 10x16 | 0.09 | 335 | EWH1JM221G16OT | |
| 330 | 10x20 | 0.09 | 510 | EWH1JM331G20OT | |
| 470 | 12.5x20 | 0.09 | 640 | EWH1JM471W20OT | |
| 1000 | 16x25 | 0.09 | 930 | EWH1JM102L25OT | |
| 0.10 | 5x11 | 0.08 | 1.5 | EWH1KMR10D11OT | |
| 0.22 | 5x11 | 0.08 | 3.4 | EWH1KMR22D11OT | |
| 0.33 | 5x11 | 0.08 | 5.0 | EWH1KMR33D11OT | |
| 0.47 | 5x11 | 0.08 | 7.1 | EWH1KMR47D11OT | |
| 1.0 | 5x11 | 0.08 | 15 | EWH1KM010D11OT | |
| 2.2 | 5x11 | 0.08 | 21 | EWH1KM2R2D11OT | |
| 3.3 | 5x11 | 0.08 | 29 | EWH1KM3R3D11OT | |
| 4.7 | 5x11 | 0.08 | 32 | EWH1KM4R7D11OT | |
| 10 | 6.3x11 | 0.08 | 54 | EWH1KM100E11OT | |
| 22 | 8x11 | 0.08 | 93 | EWH1KM220F11OT | |
| 33 | 8x12 | 0.08 | 130 | EWH1KM330F12OT | |
| 47 | 10x12.5 | 0.08 | 165 | EWH1KM470G1BOT | |
| 100 | 10x20 | 0.08 | 265 | EWH1KM101G20OT | |
| 220 | 12.5x25 | 0.08 | 440 | EWH1KM221W25OT | |

WH series

■ STANDARD RATINGS

| WV (Vdc) | Cap (µF) | Size DxDL(mm) | tan | Rated ripple current (mA _{rms} /105°C, 120Hz) | Part Number | |
|----------|----------|---------------|--------|--|----------------|----------------|
| 100(1K) | 330 | 16x25 | 0.08 | 540 | EW11KM331L25OT | |
| | 470 | 16x30 | 0.08 | 715 | EW11KM471L30OT | |
| | 1000 | 18x40 | 0.08 | 985 | EW11KM102M40OT | |
| 160(2C) | 3.3 | 6.3x11 | 0.20 | 32 | EW12CM3R3E11OT | |
| | 4.7 | 6.3x11 | 0.20 | 38 | EW12CM4R7E11OT | |
| | 10 | 8x12 | 0.20 | 65 | EW12CM100F12OT | |
| | | 10x12 | 0.20 | 76 | EW12CM100G12OT | |
| | | 10x12 | 0.20 | 98 | EW12CM220G12OT | |
| | 22 | 10x16 | 0.20 | 108 | EW12CM220G16OT | |
| | | 10x20 | 0.20 | 120 | EW12CM220G20OT | |
| | | 10x16 | 0.20 | 158 | EW12CM330G16OT | |
| | 33 | 10x20 | 0.20 | 165 | EW12CM330G20OT | |
| | | 10x20 | 0.20 | 182 | EW12CM470G20OT | |
| | | 12.5x20 | 0.20 | 205 | EW12CM470W20OT | |
| | 68 | 12.5x20 | 0.20 | 265 | EW12CM680W20OT | |
| | | 12.5x25 | 0.20 | 318 | EW12CM101W25OT | |
| | | 100 | 16x25 | 0.20 | 335 | EW12CM101L25OT |
| | 220 | 16x30 | 0.20 | 568 | EW12CM221L30OT | |
| 18x35 | | 0.20 | 710 | EW12CM331M35OT | | |
| 470 | 18x40 | 0.20 | 870 | EW12CM471M40OT | | |
| 200(2D) | 1 | 6.3x11 | 0.20 | 16 | EW12DM010E11OT | |
| | 2.2 | 6.3x11 | 0.20 | 22 | EW12DM2R2E11OT | |
| | 3.3 | 6.3x11 | 0.20 | 32 | EW12DM3R3E11OT | |
| | 4.7 | 8x12 | 0.20 | 48 | EW12DM4R7F12OT | |
| | | 8x12 | 0.20 | 78 | EW12DM100F12OT | |
| | 10 | 10x12 | 0.20 | 82 | EW12DM100G12OT | |
| | | 10x16 | 0.20 | 86 | EW12DM100G16OT | |
| | | 10x16 | 0.20 | 128 | EW12DM220G16OT | |
| | 22 | 10x20 | 0.20 | 132 | EW12DM220G20OT | |
| | | 10x20 | 0.20 | 185 | EW12DM330G20OT | |
| | 33 | 12.5x20 | 0.20 | 194 | EW12DM330W20OT | |
| | | 12.5x20 | 0.20 | 225 | EW12DM470W20OT | |
| | 68 | 12.5x25 | 0.20 | 308 | EW12DM680W25OT | |
| | 82 | 12.5x25 | 0.20 | 318 | EW12DM820W25OT | |
| | 100 | 16x25 | 0.20 | 345 | EW12DM101L25OT | |
| | 150 | 16x25 | 0.20 | 446 | EW12DM151L25OT | |
| | 180 | 16x30 | 0.20 | 560 | EW12DM181L30OT | |
| | 220 | 16x35 | 0.20 | 678 | EW12DM221L35OT | |
| | | 18x30 | 0.20 | 695 | EW12DM221M30OT | |
| | 330 | 18x35 | 0.20 | 755 | EW12DM331M35OT | |
| | 470 | 18x45 | 0.20 | 938 | EW12DM471M45OT | |
| | 250(2E) | 2.2 | 6.3x11 | 0.20 | 22 | EW12EM2R2E11OT |
| | | 3.3 | 6.3x11 | 0.20 | 32 | EW12EM3R3E11OT |
| | | | 8x12 | 0.20 | 34 | EW12EM3R3F12OT |
| | | 4.7 | 6.3x11 | 0.20 | 38 | EW12EM4R7E11OT |
| 8x12 | | | 0.20 | 48 | EW12EM4R7F12OT | |
| 10 | | 10x12 | 0.20 | 75 | EW12EM100G12OT | |
| | | 10x16 | 0.20 | 84 | EW12EM100G16OT | |
| 22 | | 10x20 | 0.20 | 128 | EW12EM220G20OT | |
| | | 12.5x20 | 0.20 | 145 | EW12EM220W20OT | |
| 33 | | 10x20 | 0.20 | 150 | EW12EM330G20OT | |
| | | 12.5x20 | 0.20 | 185 | EW12EM330W20OT | |
| | | 12.5x20 | 0.20 | 232 | EW12EM470W20OT | |
| 47 | | 12.5x25 | 0.20 | 245 | EW12EM470W25OT | |
| | | 16x25 | 0.20 | 370 | EW12EM101L25OT | |
| 100 | | 16x30 | 0.20 | 400 | EW12EM101L30OT | |
| | | 16x35 | 0.20 | 468 | EW12EM151L35OT | |
| 220 | | 18x35 | 0.20 | 660 | EW12EM221M35OT | |
| | | 18x40 | 0.20 | 702 | EW12EM221M40OT | |
| 330 | | 18x40 | 0.20 | 730 | EW12EM331M40OT | |

| WV (Vdc) | Cap (µF) | Size DxDL(mm) | tan | Rated ripple current (mA _{rms} /105°C, 120Hz) | Part Number |
|----------|----------|---------------|------|--|----------------|
| 350(2V) | 0.47 | 6.3x11 | 0.24 | 11 | EW12VMR47E11OT |
| | 1 | 6.3x11 | 0.24 | 16 | EW12VM010E11OT |
| | | 8x12 | 0.24 | 26 | EW12VM2R2F12OT |
| | 3.3 | 8x12 | 0.24 | 34 | EW12VM3R3F12OT |
| | | 10x12 | 0.24 | 38 | EW12VM3R3G12OT |
| | 4.7 | 8x12 | 0.24 | 48 | EW12VM4R7F12OT |
| | | 10x12 | 0.24 | 52 | EW12VM4R7G12OT |
| | 10 | 10x12 | 0.24 | 68 | EW12VM100G12OT |
| | | 10x16 | 0.24 | 82 | EW12VM100G16OT |
| | | 10x20 | 0.24 | 88 | EW12VM100G20OT |
| | 22 | 12.5x20 | 0.24 | 154 | EW12VM220W20OT |
| | | 12.5x20 | 0.24 | 184 | EW12VM330W20OT |
| | 33 | 16x20 | 0.24 | 198 | EW12VM330L20OT |
| | | 16x25 | 0.24 | 250 | EW12VM470L25OT |
| | 68 | 16x25 | 0.24 | 336 | EW12VM680L25OT |
| 100 | 18x30 | 0.24 | 398 | EW12VM101M30OT | |
| 400(2G) | 1 | 6.3x11 | 0.24 | 16 | EW12GM010E11OT |
| | 2.2 | 6.3x11 | 0.24 | 30 | EW12GM2R2E11OT |
| | | 8x12 | 0.24 | 34 | EW12GM2R2F12OT |
| | 3.3 | 8x12 | 0.24 | 35 | EW12GM3R3F12OT |
| | | 10x12 | 0.24 | 38 | EW12GM3R3G12OT |
| | 4.7 | 8x12 | 0.24 | 48 | EW12GM4R7F12OT |
| | | 10x12 | 0.24 | 52 | EW12GM4R7G12OT |
| | 10 | 10x16 | 0.24 | 98 | EW12GM100G16OT |
| | | 10x20 | 0.24 | 115 | EW12GM100G20OT |
| | 22 | 12.5x25 | 0.24 | 192 | EW12GM220W25OT |
| | | 16x20 | 0.24 | 258 | EW12GM330L20OT |
| | 47 | 16x25 | 0.24 | 305 | EW12GM470L25OT |
| | | 16x30 | 0.24 | 465 | EW12GM680L30OT |
| | 68 | 18x25 | 0.24 | 445 | EW12GM680M25OT |
| | | 18x25 | 0.24 | 474 | EW12GM820M25OT |
| 100 | 16x40 | 0.24 | 544 | EW12GM101L40OT | |
| | 18x30 | 0.24 | 532 | EW12GM101M30OT | |
| 120 | 18x35 | 0.24 | 588 | EW12GM121M35OT | |
| 150 | 18x40 | 0.24 | 668 | EW12GM151M40OT | |
| 450(2W) | 0.47 | 8x12 | 0.24 | 11 | EW12WMR47F12OT |
| | 1 | 8x12 | 0.24 | 18 | EW12WM010F12OT |
| | | 8x12 | 0.24 | 25 | EW12WM2R2F12OT |
| | 2.2 | 10x12 | 0.24 | 32 | EW12WM2R2G12OT |
| | | 10x12 | 0.24 | 36 | EW12WM3R3G12OT |
| | 3.3 | 10x16 | 0.24 | 40 | EW12WM3R3G16OT |
| | | 10x20 | 0.24 | 55 | EW12WM4R7G20OT |
| | 10 | 10x20 | 0.24 | 90 | EW12WM100G20OT |
| | | 12.5x20 | 0.24 | 100 | EW12WM100W20OT |
| | 22 | 12.5x25 | 0.24 | 168 | EW12WM220W25OT |
| | | 16x20 | 0.24 | 185 | EW12WM220L20OT |
| | 33 | 16x25 | 0.24 | 215 | EW12WM330L25OT |
| | | 16x30 | 0.24 | 344 | EW12WM470L30OT |
| | 68 | 18x30 | 0.24 | 455 | EW12WM680M30OT |
| | | 18x30 | 0.24 | 472 | EW12WM820M30OT |
| 100 | 18x35 | 0.24 | 530 | EW12WM101M35OT | |
| | 18x40 | 0.24 | 582 | EW12WM121M40OT | |
| 150 | 18x50 | 0.24 | 700 | EW12WM151M50OT | |
| 500(2H) | 4.7 | 10x20 | 0.24 | 60 | EW12HM4R7G20OT |
| | 10 | 12.5x20 | 0.24 | 115 | EW12HM100W20OT |
| | | 12.5x25 | 0.24 | 140 | EW12HM150W25OT |
| | 22 | 16x25 | 0.24 | 185 | EW12HM220L25OT |
| | | 18x25 | 0.24 | 215 | EW12HM330M25OT |
| | 47 | 18x35 | 0.24 | 345 | EW12HM470M35OT |
| | | 18x40 | 0.24 | 455 | EW12HM680M40OT |
| | 82 | 18x50 | 0.24 | 520 | EW12HM820M50OT |
| | | 22x40 | 0.24 | 550 | EW12HM101O40OT |
| | 120 | 22x46 | 0.24 | 580 | EW12HM121O46OT |

HP series

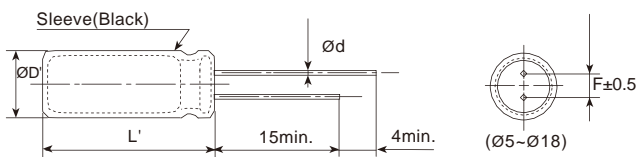
- Standard bi-polarized series
- Endurance: +105°C 1,000 hours
- RoHS Compliant



SPECIFICATIONS

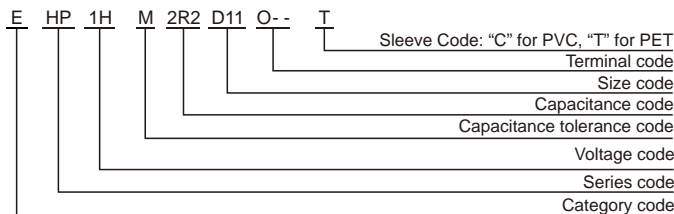
| Items | Characteristics | | | | | | | | | |
|--|---|-------------------------------------|------|------|------|------|------|------|------|--|
| Category Temperature Range | -40~+105°C | | | | | | | | | |
| Rated Voltage Range | 6.3~100 V _{dc} | | | | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | | | | | | | | |
| Leakage Current | I 0.06CV or 10μA, whichever is greater. (at 20°C after 2 minutes) I 0.03CV or 3μA, whichever is greater. (at 20°C after 5 minutes) Where, I: Max. leakage current (μA), C: Nominal capacitance (μF), V: Rated voltage (V) | | | | | | | | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | |
| | tan δ (max.) | 0.24 | 0.24 | 0.20 | 0.20 | 0.16 | 0.14 | 0.12 | 0.10 | |
| | When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20°C, 120Hz) | | | | | | | | | |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | |
| | Z(-25°C)/Z(+20°C) | 4 | 3 | 2 | | | | | | |
| | Z(-40°C)/Z(+20°C) | 10 | 8 | 6 | 4 | 3 | | | | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 1,000 hours at 105°C with the polarity inverted every 250 hours. | | | | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | | | |
| | D.F. (tan δ) | 150% of the initial specified value | | | | | | | | |
| | Leakage Current | The initial specified value | | | | | | | | |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 500 hours at 105°C without voltage applied. | | | | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | | | |
| | D.F. (tan δ) | 150% of the initial specified value | | | | | | | | |
| | Leakage Current | 200% of the initial specified value | | | | | | | | |

DIMENSIONS[mm]



| | | | | | | | |
|-----|------------|-----|-----|-----|------|-----|-----|
| øD | 5 | 6.3 | 8 | 10 | 12.5 | 16 | 18 |
| ød | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.8 | 0.8 |
| F | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 |
| øD' | øD+0.5max. | | | | | | |
| L' | L+2max. | | | | | | |

PART NUMBERING SYSTEM



HP series

■ STANDARD RATINGS

| WV (V _{dc}) | Cap (μF) | Size D×L(mm) | tan | Rated ripple current (mA _{rms} /105°C, 120Hz) | Part Number |
|-----------------------|----------|--------------|------|--|-----------------|
| 6.3(0J) | 33 | 5×11 | 0.24 | 45 | EHP0JM330D11OT |
| | 47 | 5×11 | 0.24 | 54 | EHP0JM470D11OT |
| | 100 | 6.3×11 | 0.24 | 90 | EHP0JM101E11OT |
| | 220 | 8×11 | 0.24 | 150 | EHP0JM221F11OT |
| | 330 | 8×11 | 0.24 | 185 | EHP0JM331F11OT |
| | 470 | 10×12.5 | 0.24 | 260 | EHP0JM471G1BOT |
| | 1000 | 10×20 | 0.24 | 460 | EHP0JM102G20OT |
| | 2200 | 12.5×25 | 0.26 | 820 | EHP0JM222W25OT |
| | 3300 | 16×25 | 0.28 | 1110 | EHP0JM332L25OT |
| | 4700 | 16×30 | 0.30 | 1430 | EHP0JM472L30OT |
| 6800 | 18×35 | 0.34 | 1830 | EHP0JM682M35OT | |
| 10(1A) | 22 | 5×11 | 0.24 | 37 | EHP1AM220D11OT |
| | 33 | 5×11 | 0.24 | 45 | EHP1AM330D11OT |
| | 47 | 5×11 | 0.24 | 54 | EHP1AM470D11OT |
| | 100 | 6.3×11 | 0.24 | 90 | EHP1AM101E11OT |
| | 220 | 8×11 | 0.24 | 150 | EHP1AM221F11OT |
| | 330 | 10×16 | 0.24 | 240 | EHP1AM331G16OT |
| | 470 | 10×16 | 0.24 | 290 | EHP1AM471G16OT |
| | 1000 | 12.5×20 | 0.24 | 510 | EHP1AM102W20OT |
| | 2200 | 16×25 | 0.26 | 910 | EHP1AM222L25OT |
| | 3300 | 16×30 | 0.28 | 1200 | EHP1AM332L30OT |
| 4700 | 18×35 | 0.30 | 1520 | EHP1AM472M35OT | |
| 16(1C) | 10 | 5×11 | 0.20 | 27 | EHP1CM100D11OT |
| | 22 | 5×11 | 0.20 | 40 | EHP1CM220D11OT |
| | 33 | 5×11 | 0.20 | 49 | EHP1CM330D11OT |
| | 47 | 6.3×11 | 0.20 | 67 | EHP1CM470E11OT |
| | 100 | 8×11 | 0.20 | 110 | EHP1CM101F11OT |
| | 220 | 10×12.5 | 0.20 | 195 | EHP1CM221G1BOT |
| | 330 | 10×16 | 0.20 | 265 | EHP1CM331G16OT |
| | 470 | 10×20 | 0.20 | 345 | EHP1CM471G20OT |
| | 1000 | 12.5×25 | 0.20 | 605 | EHP1CM102W25OT |
| | 2200 | 16×30 | 0.22 | 1070 | EHP1CM222L30OT |
| 3300 | 18×35 | 0.24 | 1400 | EHP1CM332M35OT | |
| 25(1E) | 10 | 5×11 | 0.20 | 27 | EHP1EM100D11OT |
| | 22 | 5×11 | 0.20 | 46 | EHP1EM220D11OT |
| | 33 | 6.3×11 | 0.20 | 56 | EHP1EM330E11OT |
| | 47 | 6.3×11 | 0.20 | 67 | EHP1EM470E11OT |
| | 100 | 8×11 | 0.20 | 110 | EHP1EM101F11OT |
| | 220 | 10×16 | 0.20 | 215 | EHP1EM221G16OT |
| | 330 | 12.5×20 | 0.20 | 320 | EHP1EM331W20OT |
| | 470 | 12.5×20 | 0.20 | 380 | EHP1EM471W20OT |
| | 1000 | 16×25 | 0.20 | 670 | EHP1EM102L25OT |
| | 2200 | 18×35 | 0.22 | 1140 | EHP1EM222M35OT |
| 35(1V) | 4.7 | 5×11 | 0.16 | 21 | EHP1VM47R7D11OT |
| | 10 | 5×11 | 0.16 | 30 | EHP1VM100D11OT |
| | 22 | 6.3×11 | 0.16 | 51 | EHP1VM220E11OT |
| | 33 | 8×11 | 0.16 | 72 | EHP1VM330F11OT |
| | 47 | 8×11 | 0.16 | 86 | EHP1VM470F11OT |
| | 100 | 10×16 | 0.16 | 160 | EHP1VM101G16OT |

| WV (V _{dc}) | Cap (μF) | Size D×L(mm) | tan | Rated ripple current (mA _{rms} /105°C, 120Hz) | Part Number |
|-----------------------|----------|--------------|------|--|----------------|
| 35(1V) | 220 | 12.5×20 | 0.16 | 290 | EHP1VM221W20OT |
| | 330 | 12.5×20 | 0.16 | 350 | EHP1VM331W20OT |
| | 470 | 12.5×25 | 0.16 | 465 | EHP1VM471W25OT |
| | 1000 | 16×30 | 0.16 | 805 | EHP1VM102L30OT |
| | 0.47 | 5×11 | 0.14 | 7.0 | EHP1HMR47D11OT |
| 50(1H) | 1.0 | 5×11 | 0.14 | 10 | EHP1HM010D11OT |
| | 2.2 | 5×11 | 0.14 | 15 | EHP1HM2R2D11OT |
| | 3.3 | 5×11 | 0.14 | 18 | EHP1HM3R3D11OT |
| | 4.7 | 5×11 | 0.14 | 22 | EHP1HM4R7D11OT |
| | 10 | 6.3×11 | 0.14 | 37 | EHP1HM100E11OT |
| | 22 | 8×11 | 0.14 | 63 | EHP1HM220F11OT |
| | 33 | 8×11 | 0.14 | 77 | EHP1HM330F11OT |
| | 47 | 10×12.5 | 0.14 | 105 | EHP1HM470G1BOT |
| | 100 | 10×20 | 0.14 | 190 | EHP1HM101G20OT |
| | 220 | 12.5×25 | 0.14 | 340 | EHP1HM221W25OT |
| 63(1J) | 330 | 16×25 | 0.14 | 460 | EHP1HM331L25OT |
| | 470 | 16×30 | 0.14 | 590 | EHP1HM471L30OT |
| | 3.3 | 5×11 | 0.12 | 20 | EHP1JM3R3D11OT |
| | 4.7 | 6.3×11 | 0.12 | 24 | EHP1JM4R7E11OT |
| | 10 | 6.3×11 | 0.12 | 40 | EHP1JM100E11OT |
| | 22 | 8×11 | 0.12 | 68 | EHP1JM220F11OT |
| | 33 | 10×12.5 | 0.12 | 98 | EHP1JM330G1BOT |
| | 47 | 10×16 | 0.12 | 130 | EHP1JM470G16OT |
| | 100 | 12.5×20 | 0.12 | 225 | EHP1JM101W20OT |
| | 220 | 16×25 | 0.12 | 405 | EHP1JM221L25OT |
| 80(1B) | 330 | 16×30 | 0.12 | 535 | EHP1JM331L30OT |
| | 470 | 18×35 | 0.12 | 680 | EHP1JM471M35OT |
| | 2.2 | 5×11 | 0.12 | 16 | EHP1BM2R2D11OT |
| | 3.3 | 6.3×11 | 0.12 | 23 | EHP1BM3R3E11OT |
| | 4.7 | 6.3×11 | 0.12 | 27 | EHP1BM4R7E11OT |
| | 10 | 8×11 | 0.12 | 46 | EHP1BM100F11OT |
| | 22 | 10×16 | 0.12 | 89 | EHP1BM220G16OT |
| | 33 | 10×16 | 0.12 | 105 | EHP1BM330G16OT |
| | 47 | 10×20 | 0.12 | 140 | EHP1BM470G20OT |
| | 100 | 12.5×25 | 0.12 | 245 | EHP1BM101W25OT |
| 100(1K) | 220 | 16×30 | 0.12 | 435 | EHP1BM221L30OT |
| | 330 | 18×35 | 0.12 | 570 | EHP1BM331M35OT |
| | 0.47 | 5×11 | 0.10 | 8.0 | EHP1KMR47D11OT |
| | 1.0 | 5×11 | 0.10 | 12 | EHP1KM010D11OT |
| | 2.2 | 6.3×11 | 0.10 | 20 | EHP1KM2R2E11OT |
| | 3.3 | 6.3×11 | 0.10 | 25 | EHP1KM3R3E11OT |
| | 4.7 | 6.3×11 | 0.10 | 30 | EHP1KM4R7E11OT |
| | 10 | 8×11 | 0.10 | 50 | EHP1KM100F11OT |
| | 22 | 10×16 | 0.10 | 97 | EHP1KM220G16OT |
| | 33 | 12.5×20 | 0.10 | 140 | EHP1KM330W20OT |
| 35(1V) | 47 | 12.5×20 | 0.10 | 170 | EHP1KM470W20OT |
| | 100 | 16×25 | 0.10 | 300 | EHP1KM101L25OT |
| | 220 | 18×35 | 0.10 | 510 | EHP1KM221M35OT |

CD11GC series

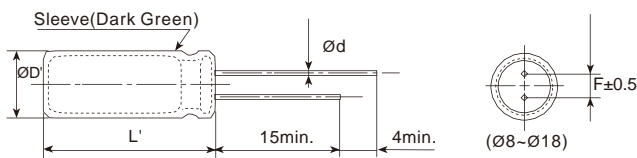


- Endurance: +130°C 4,000~5,000 hours +105°C 15,000~20,000 hours
- Withstand high temperature, extremely long life
- Suitable for output circuit and input circuit of LED driving power, electronic ballast and electronic energy saving lamp.
- **RoHS Compliant**

SPECIFICATIONS

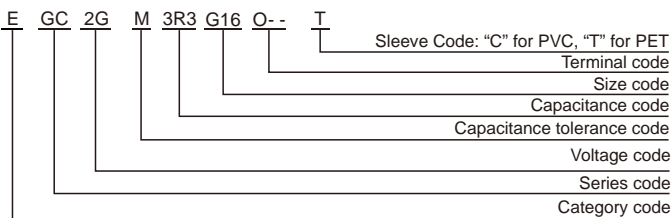
| Items | Characteristics | | | | | | | | |
|--|--|-------------------------------------|------|--|------|------|-------------|---------------------------|-------------------------|
| Category Temperature Range | -40~+130°C(160~450 V _{dc}) | | | | | | | | |
| Rated Voltage Range | 160~450 V _{dc} | | | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C,120Hz) | | | | | | | | |
| Leakage Current | 160~400 V _{dc} | 450 V _{dc} | | Where, I: Max.leakage current (μA),C:Nominal capacitance (μF), V: Rated voltage (V) | | | | (at 20°C after 2 minutes) | |
| | I 0.02CV+10μA | I 0.03CV+10μA | | | | | | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 160 | 200 | 250 | 350 | 400 | 450 | (at 20°C,120Hz) | |
| | tan δ (max.) | 0.15 | 0.15 | 0.15 | 0.20 | 0.20 | 0.20 | | |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) | 160 | 200 | 250 | 350 | 400 | 450 | (at 120Hz) | |
| | Z(-25°C)/Z(+20°C) | 3 | 3 | 3 | 5 | 5 | 6 | | |
| | Z(-40°C)/Z(+20°C) | 6 | 6 | 6 | 6 | 6 | 9 | | |
| Endurance | The specifications listed below shall be met when the capacitors are restored to 20°C after DC voltage plus rated ripple current is applied for a specified period of time at 130°C or 105°C, the peak voltage shall not exceed the rated voltage. | | | | | | | | |
| | Capacitance Change | ±30% of the initial value | | | | | Height (mm) | 130°C Load life (hours) | 105°C Load life (hours) |
| | D.F. (tan δ) | 300% of the initial specified value | | | | | L 10 | 4,000 | 15,000 |
| | Leakage Current | The initial specified value | | | | | L>10 | 5,000 | 20,000 |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after leaving them under no load at 105°C for 1,000 hours. | | | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | | |
| | D.F. (tan δ) | 200% of the initial specified value | | | | | | | |
| | Leakage Current | 200% of the initial specified value | | | | | | | |

DIMENSIONS[mm]



| | | | | | |
|-----|------------|-----|------|-----|-----|
| ØD | 8 | 10 | 12.5 | 16 | 18 |
| Ød | 0.5 | 0.6 | 0.6 | 0.8 | 0.8 |
| F | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 |
| ØD' | ØD+0.5max. | | | | |
| L' | L+2max. | | | | |

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| | | | | | |
|---------------------------------|-----------|------|------|------|------|
| | Freq.(Hz) | 120 | 1k | 10k | 100k |
| Rated voltage(V _{dc}) | | | | | |
| 160~450 | | 0.50 | 0.80 | 0.90 | 1.00 |

CD11GC series

■ STANDARD RATINGS (Rated ripple current:mArms/130°C 100kHz)

| WV (Vdc) | Cap (μF) | Size DxL(mm) | Rated ripple current | Part Number |
|----------|----------|--------------|----------------------|----------------|
| 160(2C) | 3.3 | 8x12 | 70 | EGC2CM3R3F12OT |
| | 4.7 | 8x12 | 77 | EGC2CM4R7F12OT |
| | | 8x16 | 82 | EGC2CM5R6F16OT |
| | 5.6 | 10x9 | 80 | EGC2CM5R6G09OT |
| | 6.8 | 8x16 | 88 | EGC2CM6R8F16OT |
| | | 10x9 | 145 | EGC2CM8R2G09OT |
| | 8.2 | 10x16 | 183 | EGC2CM8R2G16OT |
| | | 10x9 | 190 | EGC2CM100G09OT |
| | 10 | 10x16 | 223 | EGC2CM100G16OT |
| | | 15 | 10x16 | 300 |
| | 22 | 10x20 | 400 | EGC2CM220G20OT |
| | 33 | 12.5x20 | 480 | EGC2CM330W20OT |
| | 47 | 12.5x25 | 590 | EGC2CM470W25OT |
| | 68 | 16x25 | 750 | EGC2CM680L25OT |
| | 82 | 16x25 | 825 | EGC2CM820L25OT |
| | | 16x25 | 960 | EGC2CM101L25OT |
| | 100 | 18x20 | 960 | EGC2CM101M20OT |
| | | 18x30 | 1050 | EGC2CM151M30OT |
| 220 | 18x35 | 1500 | EGC2CM221M35OT | |
| 200(2D) | 2.8 | 8x12 | 64 | EGC2DM2R8F12OT |
| | 3.3 | 8x12 | 73 | EGC2DM3R3F12OT |
| | | 8x16 | 126 | EGC2DM4R7F16OT |
| | 4.7 | 10x9 | 100 | EGC2DM4R7G09OT |
| | | 10x12 | 126 | EGC2DM4R7G12OT |
| | 5.6 | 8x16 | 148 | EGC2DM5R6F16OT |
| | | 10x9 | 120 | EGC2DM5R6G09OT |
| | 6.8 | 8x16 | 160 | EGC2DM6R8F16OT |
| | | 10x9 | 145 | EGC2DM6R8G09OT |
| | 8.2 | 10x16 | 200 | EGC2DM6R8G16OT |
| | | 10x9 | 165 | EGC2DM8R2G09OT |
| | 10 | 10x16 | 203 | EGC2DM8R2G16OT |
| | | 10x9 | 215 | EGC2DM100G09OT |
| | 10 | 10x16 | 230 | EGC2DM100G16OT |
| | | 10x20 | 245 | EGC2DM100G20OT |
| | 15 | 10x20 | 327 | EGC2DM150G20OT |
| | 22 | 12.5x20 | 430 | EGC2DM220W20OT |
| | 33 | 12.5x20 | 500 | EGC2DM330W20OT |
| | 47 | 12.5x25 | 650 | EGC2DM470W25OT |
| | | 16x20 | 650 | EGC2DM470L20OT |
| | 68 | 16x25 | 750 | EGC2DM680L25OT |
| | 82 | 16x30 | 900 | EGC2DM820L30OT |
| | | 18x25 | 900 | EGC2DM820M25OT |
| | 100 | 16x30 | 1100 | EGC2DM101L30OT |
| 18x25 | | 1100 | EGC2DM101M25OT | |
| 150 | 18x35 | 1350 | EGC2DM151M35OT | |
| 250(2E) | 2.2 | 8x12 | 64 | EGC2EM2R2F12OT |
| | 2.8 | 8x12 | 72 | EGC2EM2R8F12OT |
| | 3.3 | 8x12 | 80 | EGC2EM3R3F12OT |
| | 4.7 | 8x16 | 133 | EGC2EM4R7F16OT |
| | | 10x9 | 120 | EGC2EM5R6G09OT |
| | 5.6 | 10x16 | 150 | EGC2EM5R6G16OT |
| | | 10x16 | 169 | EGC2EM6R8G16OT |
| | 6.8 | 10x9 | 165 | EGC2EM8R2G09OT |
| | | 10x16 | 203 | EGC2EM8R2G16OT |
| | 10 | 10x16 | 238 | EGC2EM100G16OT |
| | | 10x20 | 250 | EGC2EM100G20OT |
| | 15 | 10x20 | 327 | EGC2EM150G20OT |
| | 22 | 12.5x20 | 430 | EGC2EM220W20OT |
| | 33 | 12.5x25 | 530 | EGC2EM330W25OT |
| | | 16x20 | 530 | EGC2EM330L20OT |
| | 47 | 16x25 | 690 | EGC2EM470L25OT |
| | | 18x20 | 690 | EGC2EM470M20OT |
| | 68 | 16x30 | 780 | EGC2EM680L30OT |
| | | 18x25 | 780 | EGC2EM680M25OT |
| | 82 | 18x25 | 900 | EGC2EM820M25OT |
| | 100 | 18x30 | 970 | EGC2EM101M30OT |

| WV (Vdc) | Cap (μF) | Size DxL(mm) | Rated ripple current | Part Number |
|----------|----------|--------------|----------------------|----------------|
| 350(2V) | 1 | 8x12 | 49 | EGC2VM010F12OT |
| | 1.5 | 8x16 | 73 | EGC2VM1R5F16OT |
| | | 8x16 | 75 | EGC2VM1R8F16OT |
| | 1.8 | 10x9 | 65 | EGC2VM1R8G09OT |
| | | 10x9 | 75 | EGC2VM2R2G09OT |
| | 2.2 | 10x16 | 90 | EGC2VM2R2G16OT |
| | | 10x16 | 95 | EGC2VM2R8G16OT |
| | 3.3 | 10x16 | 100 | EGC2VM3R3G16OT |
| | 4.7 | 10x20 | 142 | EGC2VM4R7G20OT |
| | 5.6 | 10x20 | 152 | EGC2VM5R6G20OT |
| | | 12.5x20 | 165 | EGC2VM5R6W20OT |
| | 6.8 | 10x20 | 190 | EGC2VM6R8G20OT |
| | | 12.5x20 | 200 | EGC2VM6R8W20OT |
| | 8.2 | 12.5x20 | 205 | EGC2VM8R2W20OT |
| | | 12.5x20 | 250 | EGC2VM100W20OT |
| | 10 | 12.5x25 | 270 | EGC2VM100W25OT |
| | | 12.5x25 | 335 | EGC2VM150W25OT |
| | 15 | 16x20 | 335 | EGC2VM150L20OT |
| 16x25 | | 450 | EGC2VM220L25OT | |
| 33 | 16x30 | 535 | EGC2VM330L30OT | |
| | 16x35 | 555 | EGC2VM330L35OT | |
| 47 | 18x30 | 700 | EGC2VM470M30OT | |
| | 18x35 | 750 | EGC2VM470M35OT | |
| 68 | 18x40 | 900 | EGC2VM680M40OT | |
| 400(2G) | 1 | 8x12 | 54 | EGC2GM010F12OT |
| | 1.5 | 8x16 | 60 | EGC2GM010F16OT |
| | | 8x16 | 73 | EGC2GM1R5F16OT |
| | 1.8 | 8x16 | 75 | EGC2GM1R8F16OT |
| | | 10x9 | 65 | EGC2GM1R8G09OT |
| | 2.2 | 10x9 | 76 | EGC2GM2R2G09OT |
| | | 10x16 | 92 | EGC2GM2R2G16OT |
| | 2.8 | 10x16 | 100 | EGC2GM2R8G16OT |
| | | 10x16 | 105 | EGC2GM3R3G16OT |
| | 3.3 | 10x20 | 120 | EGC2GM3R3G20OT |
| | | 10x20 | 142 | EGC2GM4R7G20OT |
| | 4.7 | 12.5x20 | 150 | EGC2GM4R7W20OT |
| | | 12.5x20 | 165 | EGC2GM5R6W20OT |
| | 6.8 | 12.5x20 | 225 | EGC2GM6R8W20OT |
| | | 12.5x20 | 230 | EGC2GM8R2W20OT |
| | 10 | 12.5x25 | 280 | EGC2GM100W25OT |
| | | 12.5x25 | 335 | EGC2GM150W25OT |
| | 15 | 16x20 | 335 | EGC2GM150L20OT |
| | | 16x25 | 480 | EGC2GM220L25OT |
| | 22 | 16x30 | 500 | EGC2GM220L30OT |
| | | 18x30 | 635 | EGC2GM330M30OT |
| | 47 | 18x35 | 750 | EGC2GM470M35OT |
| | | 18x40 | 900 | EGC2GM680M40OT |
| | 100 | 18x50 | 1030 | EGC2GM101M50OT |
| 450(2W) | 1.5 | 8x16 | 70 | EGC2WM1R5F16OT |
| | 1.8 | 8x16 | 74 | EGC2WM1R8F16OT |
| | | 10x16 | 77 | EGC2WM2R2G16OT |
| | 2.8 | 10x16 | 80 | EGC2WM2R8G16OT |
| | | 10x16 | 88 | EGC2WM3R3G16OT |
| | 3.3 | 10x20 | 92 | EGC2WM3R3G20OT |
| | | 10x20 | 104 | EGC2WM4R7G20OT |
| | 5.6 | 12.5x20 | 144 | EGC2WM5R6W20OT |
| | | 12.5x20 | 175 | EGC2WM6R8W20OT |
| | 8.2 | 12.5x20 | 183 | EGC2WM8R2W20OT |
| | | 12.5x20 | 225 | EGC2WM100W20OT |
| | 15 | 12.5x25 | 294 | EGC2WM150W25OT |
| | | 16x25 | 395 | EGC2WM220L25OT |
| | 22 | 16x30 | 420 | EGC2WM220L30OT |
| | | 18x30 | 500 | EGC2WM330M30OT |
| | 47 | 18x35 | 615 | EGC2WM470M35OT |
| | | 18x40 | 710 | EGC2WM680M40OT |
| | 100 | 18x50 | 840 | EGC2WM101M50OT |

CD11GES series

- Endurance: +130°C 3,000 hours +105°C 12,000 hours
- Withstand high temperature 130°C, miniaturized and long life
- Suitable for output circuit and input circuit of LED driving power, electronic ballast and electronic energy saving lamp.
- **RoHS Compliant**

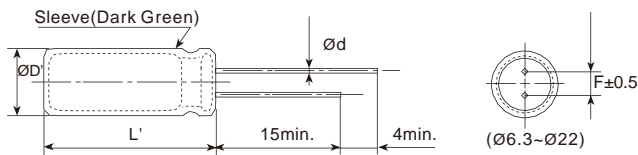
Miniaturized



SPECIFICATIONS

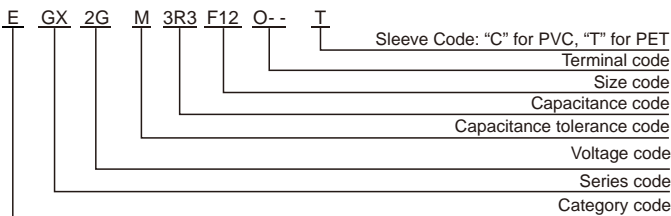
| Items | Characteristics | | | | | | | |
|--|--|-------------------------------------|------|------|--|------|------|------|
| Category Temperature Range | -40~+130°C(160~ 450 V _{dc}) | | | | -40~+105°C(500 V _{dc}) | | | |
| Rated Voltage Range | 160~500 V _{dc} | | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C,120Hz) | | | | | | | |
| Leakage Current | 160~400 V _{dc} | 450~500 V _{dc} | | | Where, I: Max.leakage current (μA),C:Nominal capacitance (μF), V: Rated voltage (V) | | | |
| | I 0.02CV+10μA | I 0.03CV+10μA | | | (at 20°C after 2 minutes) | | | |
| Dissipation Factor (tan) | Rated Voltage(V _{dc}) | 160 | 200 | 250 | 350 | 400 | 450 | 500 |
| | tan (max.) | 0.15 | 0.15 | 0.15 | 0.20 | 0.20 | 0.20 | 0.24 |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) | 160 | 200 | 250 | 350 | 400 | 450 | 500 |
| | Z(-25°C)/Z(+20°C) | 3 | 3 | 3 | 5 | 5 | 6 | 6 |
| | Z(-40°C)/Z(+20°C) | 6 | 6 | 6 | 6 | 6 | 9 | 15 |
| Endurance | The specifications listed below shall be met when the capacitors are restored to 20°C after DC voltage is applied for 3,000 hours (VV:160~450V) at 130°C or after DC voltage with the rated ripple current is applied for 12,000 hours at 105°C (500V: 10,000 hours), the peak voltage shall not exceed the rated voltage. | | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | |
| | D.F. (tan) | 200% of the initial specified value | | | | | | |
| | Leakage Current | The initial specified value | | | | | | |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after leaving them under no load at 105°C for 1,000 hours. | | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | |
| | D.F. (tan) | 200% of the initial specified value | | | | | | |
| | Leakage Current | 200% of the initial specified value | | | | | | |

DIMENSIONS[mm]



| | | | | | | | |
|-----|------------|-----|-----|------|-----|-----|-----|
| ØD | 6.3 | 8 | 10 | 12.5 | 16 | 18 | 22 |
| Ød | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 |
| F | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 | 10 |
| ØD' | ØD+0.5max. | | | | | | |
| L' | L+2max. | | | | | | |

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| Cap.(μF) | Freq.(Hz) | | | |
|----------|-----------|------|------|------|
| | 120 | 1k | 10k | 100k |
| Cap.<33 | 0.40 | 0.70 | 0.90 | 1.00 |
| Cap. 33 | 0.50 | 0.80 | 0.90 | 1.00 |

Radial Type

CD11GES series

■ STANDARD RATINGS (Rated ripple current:mArms/105°C 100kHz)

| WV (Vdc) | Cap (μF) | Size DxL(mm) | Rated ripple current | Part Number |
|----------|----------|--------------|----------------------|----------------|
| 160(2C) | 1 | 6.3x9 | 40 | EGX2CM010E09OT |
| | 1.5 | 6.3x9 | 45 | EGX2CM1R5E09OT |
| | 1.8 | 6.3x9 | 50 | EGX2CM1R8E09OT |
| | 2.2 | 6.3x9 | 56 | EGX2CM2R2E09OT |
| | 2.8 | 6.3x9 | 70 | EGX2CM2R8E09OT |
| | 3.3 | 6.3x9 | 85 | EGX2CM3R3E09OT |
| | 4.7 | 6.3x12 | 96 | EGX2CM4R7E12OT |
| | 5.6 | 6.3x12 | 102 | EGX2CM5R6E12OT |
| | | 8x9 | 102 | EGX2CM5R6F09OT |
| | 6.8 | 6.3x12 | 109 | EGX2CM6R8E12OT |
| | | 8x9 | 109 | EGX2CM6R8F09OT |
| | 8.2 | 8x9 | 160 | EGX2CM8R2F09OT |
| | | 8x12 | 172 | EGX2CM8R2F12OT |
| | 10 | 8x9 | 220 | EGX2CM100F09OT |
| | | 8x12 | 255 | EGX2CM100F12OT |
| | 15 | 8x9 | 280 | EGX2CM150F09OT |
| | | 8x12 | 300 | EGX2CM150F12OT |
| | 22 | 8x12 | 400 | EGX2CM220F12OT |
| | | 10x12 | 440 | EGX2CM220G12OT |
| | 33 | 10x16 | 580 | EGX2CM330G16OT |
| 47 | 10x16 | 680 | EGX2CM470G16OT | |
| 68 | 12.5x20 | 1180 | EGX2CM680W20OT | |
| 100 | 12.5x20 | 1350 | EGX2CM101W20OT | |
| 150 | 16x20 | 1790 | EGX2CM151L20OT | |
| 220 | 16x25 | 2130 | EGX2CM221L25OT | |
| 200(2D) | 1 | 6.3x9 | 55 | EGX2DM010E09OT |
| | 1.5 | 6.3x9 | 62 | EGX2DM1R5E09OT |
| | 1.8 | 6.3x9 | 66 | EGX2DM1R8E09OT |
| | 2.2 | 6.3x9 | 72 | EGX2DM2R2E09OT |
| | | 6.3x12 | 81 | EGX2DM2R2E12OT |
| | 2.8 | 6.3x9 | 84 | EGX2DM2R8E09OT |
| | | 6.3x12 | 95 | EGX2DM2R8E12OT |
| | 3.3 | 6.3x12 | 112 | EGX2DM3R3E12OT |
| | 4.7 | 8x9 | 144 | EGX2DM4R7F09OT |
| | | 8x12 | 160 | EGX2DM4R7F12OT |
| | 5.6 | 8x9 | 170 | EGX2DM5R6F09OT |
| | | 8x12 | 190 | EGX2DM5R6F12OT |
| | 6.8 | 8x9 | 190 | EGX2DM6R8F09OT |
| | | 8x12 | 200 | EGX2DM6R8F12OT |
| | 8.2 | 8x12 | 279 | EGX2DM8R2F12OT |
| | 10 | 8x12 | 260 | EGX2DM100F12OT |
| | 15 | 10x12 | 330 | EGX2DM150G12OT |
| | 22 | 10x16 | 500 | EGX2DM220G16OT |
| | 33 | 10x20 | 650 | EGX2DM330G20OT |
| | 47 | 12.5x20 | 980 | EGX2DM470W20OT |
| 12.5x25 | | 1300 | EGX2DM680W25OT | |
| 68 | 16x20 | 1300 | EGX2DM680L20OT | |
| 82 | 16x20 | 1380 | EGX2DM820L20OT | |
| | 16x20 | 1420 | EGX2DM101L20OT | |
| 100 | 16x25 | 1494 | EGX2DM101L25OT | |
| | 16x25 | 1890 | EGX2DM151L25OT | |
| 150 | 16x30 | 1989 | EGX2DM151L30OT | |

| WV (Vdc) | Cap (μF) | Size DxL(mm) | Rated ripple current | Part Number |
|----------|----------|--------------|----------------------|----------------|
| 250(2E) | 1 | 6.3x9 | 55 | EGX2EM010E09OT |
| | 1.5 | 6.3x9 | 62 | EGX2EM1R5E09OT |
| | 1.8 | 6.3x9 | 66 | EGX2EM1R8E09OT |
| | 2.2 | 6.3x9 | 74 | EGX2EM2R2E09OT |
| | | 6.3x12 | 81 | EGX2EM2R2E12OT |
| | 2.8 | 6.3x12 | 95 | EGX2EM2R8E12OT |
| | | 6.3x12 | 112 | EGX2EM3R3E12OT |
| | 4.7 | 6.3x12 | 142 | EGX2EM4R7E12OT |
| | | 8x12 | 160 | EGX2EM4R7F12OT |
| | 5.6 | 8x12 | 190 | EGX2EM5R6F12OT |
| | 6.8 | 8x12 | 200 | EGX2EM6R8F12OT |
| | 8.2 | 8x12 | 240 | EGX2EM8R2F12OT |
| | | 8x12 | 295 | EGX2EM100F12OT |
| | 10 | 8x16 | 305 | EGX2EM100F16OT |
| | | 8x16 | 400 | EGX2EM150F16OT |
| 15 | 10x12 | 360 | EGX2EM150G12OT | |
| | 10x16 | 500 | EGX2EM220G16OT | |
| 22 | 10x20 | 550 | EGX2EM220G20OT | |
| | 12.5x16 | 760 | EGX2EM330W16OT | |
| 33 | 12.5x20 | 800 | EGX2EM330W20OT | |
| | 12.5x20 | 980 | EGX2EM470W20OT | |
| 56 | 12.5x25 | 1080 | EGX2EM560W25OT | |
| 68 | 16x20 | 1270 | EGX2EM680L20OT | |
| | 16x25 | 1368 | EGX2EM680L25OT | |
| 82 | 16x25 | 1500 | EGX2EM820L25OT | |
| | 12.5x30 | 1500 | EGX2EM820W30OT | |
| 100 | 16x25 | 1580 | EGX2EM101L25OT | |
| 150 | 18x25 | 1800 | EGX2EM151M25OT | |
| 350(2V) | 1 | 6.3x9 | 56 | EGX2VM010E09OT |
| | 1.5 | 6.3x12 | 64 | EGX2VM010E12OT |
| | | 8x9 | 71 | EGX2VM1R5F09OT |
| | 1.8 | 8x12 | 75 | EGX2VM1R5F12OT |
| | | 8x9 | 80 | EGX2VM1R8F09OT |
| | 2.2 | 8x12 | 85 | EGX2VM1R8F12OT |
| | | 8x9 | 90 | EGX2VM2R2F09OT |
| | 2.8 | 8x12 | 95 | EGX2VM2R2F12OT |
| | | 8x9 | 95 | EGX2VM2R8F09OT |
| | 3.3 | 8x12 | 100 | EGX2VM2R8F12OT |
| | | 8x9 | 110 | EGX2VM3R3F09OT |
| | 4.7 | 8x12 | 118 | EGX2VM3R3F12OT |
| | | 8x12 | 150 | EGX2VM4R7F12OT |
| | 5.6 | 8x16 | 170 | EGX2VM4R7F16OT |
| | | 8x12 | 180 | EGX2VM5R6F12OT |
| 6.8 | 8x16 | 200 | EGX2VM5R6F16OT | |
| | 8x16 | 225 | EGX2VM6R8F16OT | |
| 8.2 | 10x12 | 225 | EGX2VM6R8G12OT | |
| | 10x16 | 288 | EGX2VM8R2G16OT | |
| 10 | 8x20 | 320 | EGX2VM100F20OT | |
| | 10x16 | 330 | EGX2VM100G16OT | |
| 15 | 10x20 | 450 | EGX2VM150G20OT | |
| | 12.5x20 | 650 | EGX2VM220W20OT | |
| 22 | 12.5x20 | 855 | EGX2VM330W20OT | |
| | 16x20 | 900 | EGX2VM330L20OT | |
| 33 | 16x20 | 900 | EGX2VM330L20OT | |
| | 16x20 | 1080 | EGX2VM470L20OT | |
| 47 | 18x20 | 1368 | EGX2VM680M20OT | |
| | 18x25 | 1470 | EGX2VM680M25OT | |
| 68 | 18x25 | 1530 | EGX2VM820M25OT | |
| | 18x25 | 1700 | EGX2VM101M30OT | |

CD11GES series

■ STANDARD RATINGS (Rated ripple current:mArms/105°C 100kHz)

| WV (Vdc) | Cap (µF) | Size DxL(mm) | Rated ripple current | Part Number |
|----------|----------|--------------|----------------------|----------------|
| 400(2G) | 1 | 6.3x9 | 60 | EGX2GM010E09OT |
| | | 6.3x12 | 65 | EGX2GM010E12OT |
| | 1.5 | 6.3x12 | 82 | EGX2GM1R5E12OT |
| | | 8x9 | 82 | EGX2GM1R5F09OT |
| | 1.8 | 8x9 | 90 | EGX2GM1R8F09OT |
| | | 8x12 | 95 | EGX2GM1R8F12OT |
| | 2.2 | 8x9 | 95 | EGX2GM2R2F09OT |
| | | 8x12 | 100 | EGX2GM2R2F12OT |
| | 2.8 | 8x9 | 117 | EGX2GM2R8F09OT |
| | | 8x12 | 130 | EGX2GM2R8F12OT |
| | 3.3 | 8x9 | 131 | EGX2GM3R3F09OT |
| | | 8x12 | 140 | EGX2GM3R3F12OT |
| | 4.7 | 8x12 | 160 | EGX2GM4R7F12OT |
| | | 10x12 | 170 | EGX2GM4R7G12OT |
| | 5.6 | 8x12 | 190 | EGX2GM5R6F12OT |
| | | 10x12 | 202 | EGX2GM5R6G12OT |
| | 6.8 | 8x16 | 240 | EGX2GM6R8F16OT |
| | | 10x16 | 265 | EGX2GM6R8G16OT |
| | 8.2 | 10x16 | 288 | EGX2GM8R2G16OT |
| | | 10x16 | 310 | EGX2GM100G16OT |
| | 10 | 10x20 | 350 | EGX2GM100G20OT |
| | | 15 | 12.5x20 | 550 |
| | 22 | 12.5x20 | 680 | EGX2GM220W20OT |
| | | 12.5x25 | 760 | EGX2GM220W25OT |
| | | 16x20 | 760 | EGX2GM220L20OT |
| | 33 | 16x20 | 900 | EGX2GM330L20OT |
| | | 16x25 | 1125 | EGX2GM330L25OT |
| | 47 | 16x25 | 1140 | EGX2GM470L25OT |
| | | 16x30 | 1180 | EGX2GM470L30OT |
| | 56 | 18x25 | 1476 | EGX2GM560M25OT |
| | 68 | 18x30 | 1547 | EGX2GM680M30OT |
| | 100 | 18x35 | 1610 | EGX2GM101M35OT |

| WV (Vdc) | Cap (µF) | Size DxL(mm) | Rated ripple current | Part Number |
|----------|----------|--------------|----------------------|----------------|
| 450(2W) | 1 | 6.3x12 | 80 | EGX2WM010E12OT |
| | 1.5 | 8x12 | 88 | EGX2WM1R5F12OT |
| | 1.8 | 8x12 | 90 | EGX2WM1R8F12OT |
| | 2.2 | 8x12 | 93 | EGX2WM2R2F12OT |
| | 2.8 | 8x16 | 119 | EGX2WM2R8F16OT |
| | 3.3 | 8x16 | 128 | EGX2WM3R3F16OT |
| | 4.7 | 10x16 | 180 | EGX2WM4R7G16OT |
| | 5.6 | 10x16 | 227 | EGX2WM5R6G16OT |
| | | 10x20 | 250 | EGX2WM5R6G20OT |
| | 6.8 | 10x16 | 250 | EGX2WM6R8G16OT |
| | | 10x20 | 265 | EGX2WM6R8G20OT |
| | 8.2 | 10x20 | 280 | EGX2WM8R2G20OT |
| | 10 | 10x20 | 300 | EGX2WM100G20OT |
| | 15 | 12.5x20 | 450 | EGX2WM150W20OT |
| | 22 | 12.5x25 | 600 | EGX2WM220W25OT |
| | 33 | 16x20 | 730 | EGX2WM220L20OT |
| | | 16x25 | 980 | EGX2WM330L25OT |
| | 47 | 16x35 | 1080 | EGX2WM470L35OT |
| | | 18x25 | 1200 | EGX2WM470M25OT |
| | 56 | 18x30 | 1429 | EGX2WM560M30OT |
| 68 | 18x35 | 1500 | EGX2WM680M35OT | |
| 100 | 18x45 | 1666 | EGX2WM101M45OT | |
| 500(2H) | 10 | 12.5x20 | 320 | EGX2HM100W20OT |
| | | 12.5x25 | 336 | EGX2HM100W25OT |
| | 15 | 12.5x25 | 440 | EGX2HM150W25OT |
| | | 16x20 | 440 | EGX2HM150L20OT |
| | 22 | 12.5x35 | 560 | EGX2HM220W35OT |
| | | 16x25 | 560 | EGX2HM220L25OT |
| | 33 | 18x25 | 700 | EGX2HM330M25OT |
| | 47 | 18x30 | 880 | EGX2HM470M30OT |
| | 68 | 22x35 | 1100 | EGX2HM680O35OT |
| | 82 | 22x35 | 1255 | EGX2HM820O35OT |
| 100 | 22x35 | 1500 | EGX2HM101O35OT | |

CD11GK series

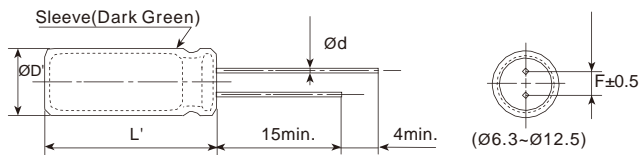
- Endurance: +105 °C 12,000~20,000 hours
- Extremely miniaturized, high ripple current
- Suitable for output circuit and input circuit of LED driving power.
- **RoHS Compliant**



SPECIFICATIONS

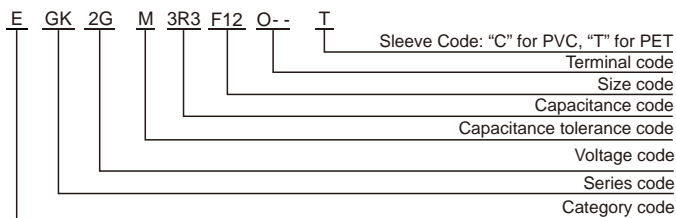
| Items | Characteristics | | | | | | | |
|--|--|-------------------------------------|------|---|------|------|-----------------------|---------------------------|
| Category Temperature Range | -40~+105°C(160~ 450 V _{dc}) | | | | | | | |
| Rated Voltage Range | 160~450 V _{dc} | | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | | | | | | |
| Leakage Current | 160~400 V _{dc} | 450 V _{dc} | | Where, I: Max.leakage current (µA), C:Nominal capacitance (µF), V: Rated voltage (V) | | | | (at 20°C after 2 minutes) |
| | I 0.03CV+15µA | I 0.03CV+25µA | | | | | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 160 | 200 | 250 | 350 | 400 | 450 | (at 20°C, 120Hz) |
| | tan δ (max.) | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) | 160 | 200 | 250 | 350 | 400 | 450 | (at 120Hz) |
| | Z(-25°C)/Z(+20°C) | 3 | 3 | 3 | 5 | 5 | 8 | |
| | Z(-40°C)/Z(+20°C) | 8 | 8 | 8 | 8 | 8 | 12 | |
| Endurance | The specifications listed below shall be met when the capacitors are restored to 20 °C after DC voltage plus rated ripple current is applied for a specified period of time at 105°C, the peak voltage shall not exceed the rated voltage. | | | | | | | |
| | Capacitance Change | ±30% of the initial value | | | | | Size(mm) | Load life (hours) |
| | D.F. (tan δ) | 300% of the initial specified value | | | | | 6.3×9 6.3×12 8×9 10×9 | 12,000 |
| | Leakage Current | The initial specified value | | | | | 8×12 8×16 8×20 10×12 | 15,000 |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after leaving them under no load at 105°C for 1,000 hours. | | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | 10×16 | 20,000 |
| | D.F. (tan δ) | 200% of the initial specified value | | | | | | |
| | Leakage Current | 200% of the initial specified value | | | | | | |

DIMENSIONS[mm]



| | | | | |
|-----|------------|-----|-----|------|
| ØD | 6.3 | 8 | 10 | 12.5 |
| Ød | 0.5 | 0.5 | 0.6 | 0.6 |
| F | 2.5 | 3.5 | 5.0 | 5.0 |
| ØD' | ØD+0.5max. | | | |
| L' | L+2max. | | | |

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| Freq.(Hz) | 120 | 1k | 10k | 100k |
|---------------------------------|------|------|------|------|
| Rated voltage(V _{dc}) | 0.50 | 0.80 | 0.90 | 1.00 |

CD11GK series

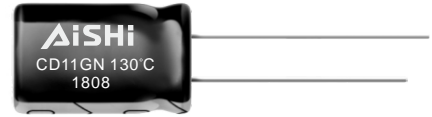
■ STANDARD RATINGS (Rated ripple current:mArms/105°C 100kHz)

| WV (Vdc) | Cap (μF) | Size DxL (mm) | Rated ripple current | Part Number |
|----------|----------|---------------|----------------------|----------------|
| 160(2C) | 1 | 6.3x9 | 50 | EGK2CM010E09OT |
| | 1.5 | 6.3x9 | 62 | EGK2CM1R5E09OT |
| | 1.8 | 6.3x9 | 72 | EGK2CM1R8E09OT |
| | 2.2 | 6.3x9 | 76 | EGK2CM2R2E09OT |
| | 2.8 | 6.3x12 | 80 | EGK2CM2R8E12OT |
| | 3.3 | 6.3x12 | 92 | EGK2CM3R3E12OT |
| | 4.7 | 6.3x12 | 104 | EGK2CM4R7E12OT |
| | 5.6 | 6.3x12 | 110 | EGK2CM5R6E12OT |
| | 6.8 | 6.3x12 | 124 | EGK2CM6R8E12OT |
| | 8.2 | 8x9 | 135 | EGK2CM8R2F09OT |
| | 10 | 8x9 | 150 | EGK2CM100F09OT |
| | 15 | 8x12 | 190 | EGK2CM150F12OT |
| | | 10x9 | 210 | EGK2CM150G09OT |
| | | 10x12 | 250 | EGK2CM220G12OT |
| | | 33 | 10x16 | 412 |
| 47 | 10x20 | 525 | EGK2CM470G20OT | |
| 200(2D) | 1 | 6.3x9 | 52 | EGK2DM010E09OT |
| | 1.5 | 6.3x9 | 60 | EGK2DM1R5E09OT |
| | 1.8 | 6.3x9 | 64 | EGK2DM1R8E09OT |
| | 2.2 | 6.3x12 | 72 | EGK2DM2R2E12OT |
| | 2.8 | 6.3x12 | 84 | EGK2DM2R8E12OT |
| | 3.3 | 6.3x12 | 88 | EGK2DM3R3E12OT |
| | 4.7 | 6.3x12 | 102 | EGK2DM4R7E12OT |
| | 5.6 | 8x9 | 116 | EGK2DM5R6F09OT |
| | 6.8 | 8x9 | 128 | EGK2DM6R8F09OT |
| | 8.2 | 8x9 | 144 | EGK2DM8R2F09OT |
| | 10 | 8x12 | 160 | EGK2DM100F12OT |
| | 12 | 10x9 | 180 | EGK2DM120G09OT |
| | 15 | 8x16 | 240 | EGK2DM150F16OT |
| | | 10x12 | 280 | EGK2DM150G12OT |
| | | 22 | 10x16 | 340 |
| 33 | | 10x20 | 550 | EGK2DM330G20OT |
| 47 | 12.5x20 | 750 | EGK2DM470W20OT | |
| 250(2E) | 1 | 6.3x9 | 52 | EGK2EM010E09OT |
| | 1.5 | 6.3x9 | 60 | EGK2EM1R5E09OT |
| | 1.8 | 6.3x12 | 64 | EGK2EM1R8E12OT |
| | 2.2 | 6.3x12 | 72 | EGK2EM2R2E12OT |
| | 2.8 | 6.3x12 | 88 | EGK2EM2R8E12OT |
| | 3.3 | 6.3x12 | 92 | EGK2EM3R3E12OT |
| | 4.7 | 6.3x12 | 120 | EGK2EM4R7E12OT |
| | | 8x9 | 125 | EGK2EM4R7F09OT |
| | 5.6 | 8x9 | 132 | EGK2EM5R6F09OT |
| | 6.8 | 8x9 | 160 | EGK2EM6R8F09OT |
| | 8.2 | 8x9 | 172 | EGK2EM8R2F09OT |
| | 10 | 8x12 | 200 | EGK2EM100F12OT |
| | 15 | 10x12 | 270 | EGK2EM150G12OT |
| | 22 | 10x16 | 370 | EGK2EM220G16OT |
| | 33 | 10x20 | 562 | EGK2EM330G20OT |
| 47 | 12.5x20 | 788 | EGK2EM470W20OT | |

| WV (Vdc) | Cap (μF) | Size DxL (mm) | Rated ripple current | Part Number |
|----------|----------|---------------|----------------------|----------------|
| 350(2V) | 1 | 6.3x9 | 56 | EGK2VM010E09OT |
| | 1.5 | 6.3x12 | 66 | EGK2VM1R5E12OT |
| | 1.8 | 6.3x12 | 72 | EGK2VM1R8E12OT |
| | 2.2 | 8x9 | 80 | EGK2VM2R2F09OT |
| | | 8x12 | 85 | EGK2VM2R2F12OT |
| | 2.8 | 8x12 | 92 | EGK2VM2R8F12OT |
| | 3.3 | 8x12 | 100 | EGK2VM3R3F12OT |
| | | 10x9 | 120 | EGK2VM3R3G09OT |
| | 4.7 | 8x12 | 128 | EGK2VM4R7F12OT |
| | 5.6 | 8x16 | 136 | EGK2VM5R6F16OT |
| | 6.8 | 10x12 | 168 | EGK2VM6R8G12OT |
| | 8.2 | 10x16 | 180 | EGK2VM8R2G16OT |
| | 10 | 10x16 | 210 | EGK2VM100G16OT |
| | 15 | 10x20 | 290 | EGK2VM150G20OT |
| | 400(2G) | 1 | 6.3x12 | 54 |
| 1.2 | | 8x9 | 60 | EGK2GM1R2F09OT |
| 1.5 | | 8x9 | 66 | EGK2GM1R5F09OT |
| 1.8 | | 8x9 | 72 | EGK2GM1R8F09OT |
| 2.2 | | 8x9 | 76 | EGK2GM2R2F09OT |
| | | 8x12 | 82 | EGK2GM2R2F12OT |
| 2.8 | | 8x12 | 88 | EGK2GM2R8F12OT |
| 3.3 | | 8x12 | 100 | EGK2GM3R3F12OT |
| | | 10x9 | 110 | EGK2GM3R3G09OT |
| 4.7 | | 10x12 | 126 | EGK2GM4R7G12OT |
| 5.6 | | 8x20 | 156 | EGK2GM5R6F20OT |
| | | 10x12 | 158 | EGK2GM5R6G12OT |
| 6.8 | | 8x20 | 170 | EGK2GM6R8F20OT |
| | | 10x16 | 180 | EGK2GM6R8G16OT |
| 8.2 | | 10x16 | 190 | EGK2GM8R2G16OT |
| 10 | 10x16 | 224 | EGK2GM100G16OT | |
| 15 | 12.5x20 | 300 | EGK2GM150W20OT | |
| 450(2W) | 1 | 6.3x12 | 54 | EGK2WM010E12OT |
| | 1.5 | 8x12 | 70 | EGK2WM1R5F12OT |
| | 1.8 | 8x12 | 80 | EGK2WM1R8F12OT |
| | 2.2 | 8x12 | 88 | EGK2WM2R2F12OT |
| | 2.8 | 8x16 | 100 | EGK2WM2R8F16OT |
| | 3.3 | 8x16 | 110 | EGK2WM3R3F16OT |
| | 4.7 | 10x12 | 140 | EGK2WM4R7G12OT |
| | 5.6 | 10x16 | 180 | EGK2WM5R6G16OT |
| | 6.8 | 10x16 | 200 | EGK2WM6R8G16OT |
| | 8.2 | 10x20 | 238 | EGK2WM8R2G20OT |
| 10 | 10x20 | 284 | EGK2WM100G20OT | |

CD11GN series

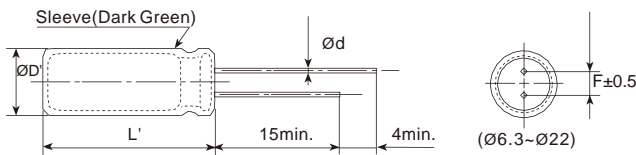
- Endurance: +130°C 1,000~2,000 hours; +105°C 8,000~12,000 hours
- Withstand high temperature, miniaturized, long life
- Suitable for output circuit and input circuit of LED driving power.
- **RoHS Compliant**



SPECIFICATIONS

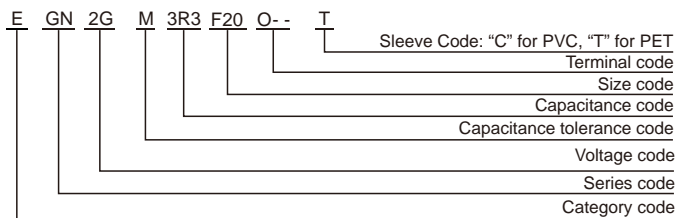
| Items | Characteristics | | | | | | | |
|--|--|-------------------------------------|------|--|----------------------------------|-------------------------|-------------------------|-------|
| Category Temperature Range | -40~+130°C(160~ 450 V _{dc}) | | | | -40~+105°C(500 V _{dc}) | | | |
| Rated Voltage Range | 160~500 V _{dc} | | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | | | | | | |
| Leakage Current | 160~400 V _{dc} | 450~500 V _{dc} | | Where, I: Max.leakage current (μA), C: Nominal capacitance (μF), V: Rated voltage (V) | | | | |
| | I 0.02CV+10μA | I 0.03CV+10μA | | (at 20°C after 2 minutes) | | | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 160 | 200 | 250 | 350 | 400 | 450 | 500 |
| | tan δ (max.) | 0.15 | 0.15 | 0.15 | 0.20 | 0.20 | 0.20 | 0.24 |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) | 160 | 200 | 250 | 350 | 400 | 450 | 500 |
| | Z(-25°C)/Z(+20°C) | 3 | 3 | 3 | 5 | 5 | 6 | 6 |
| | Z(-40°C)/Z(+20°C) | 6 | 6 | 6 | 6 | 6 | 9 | 15 |
| Endurance | The specifications listed below shall be met when the capacitors are restored to 20°C after DC voltage plus rated ripple current is applied for a specified period of time at 130°C or 105°C, the peak voltage shall not exceed the rated voltage. | | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | Case Dia. (mm) | 130°C Load life (hours) | 105°C Load life (hours) | |
| | D.F. (tan δ) | 200% of the initial specified value | | | ØD=6.3 ØD 8 | 160~450WV | 160~450WV | 500WV |
| | Leakage Current | The initial specified value | | | | 1,000 | 8,000 | - |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after leaving them under no load at 105°C for 1,000 hours. | | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | |
| | D.F. (tan δ) | 200% of the initial specified value | | | | | | |
| | Leakage Current | 200% of the initial specified value | | | | | | |

DIMENSIONS[mm]



| | | | | | | | |
|-----|------------|-----|-----|------|-----|-----|-----|
| ØD | 6.3 | 8 | 10 | 12.5 | 16 | 18 | 22 |
| Ød | 0.5 | 0.5 | 0.6 | 0.6 | 0.8 | 0.8 | 0.8 |
| F | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 | 10 |
| ØD' | ØD+0.5max. | | | | | | |
| L' | L+2max. | | | | | | |

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| Cap.(μF) | Freq.(Hz) | | | |
|----------|-----------|------|------|------|
| | 120 | 1k | 10k | 100k |
| Cap.<33 | 0.40 | 0.70 | 0.90 | 1.00 |
| Cap. 33 | 0.50 | 0.80 | 0.90 | 1.00 |

CD11GN series

■ STANDARD RATINGS (Rated ripple current: mArms/105°C 100kHz or mArms/130°C 100kHz)

| WV (Vdc) | Cap (µF) | Size D×L(mm) | Rated ripple current (105°C) | Rated ripple current (130°C) | Part Number |
|----------|----------|--------------|------------------------------|------------------------------|----------------|
| 160 (2C) | 1 | 6.3×7 | 40 | 26 | EGN2CM010E07OT |
| | | 6.3×9 | 45 | 30 | EGN2CM010E09OT |
| | 1.5 | 6.3×7 | 46 | 31 | EGN2CM1R5E07OT |
| | | 6.3×9 | 50 | 34 | EGN2CM1R5E09OT |
| | 1.8 | 6.3×7 | 53 | 35 | EGN2CM1R8E07OT |
| | | 6.3×9 | 58 | 38 | EGN2CM1R8E09OT |
| | 2.2 | 6.3×7 | 58 | 38 | EGN2CM2R2E07OT |
| | | 6.3×9 | 64 | 42 | EGN2CM2R2E09OT |
| | 2.8 | 6.3×7 | 61 | 40 | EGN2CM2R8E07OT |
| | | 6.3×9 | 68 | 45 | EGN2CM2R8E09OT |
| | 3.3 | 6.3×9 | 72 | 47 | EGN2CM3R3E09OT |
| | 4.7 | 6.3×9 | 76 | 49 | EGN2CM4R7E09OT |
| | | 8×9 | 82 | 54 | EGN2CM4R7F09OT |
| | 5.6 | 8×9 | 88 | 58 | EGN2CM5R6F09OT |
| | 6.8 | 8×9 | 100 | 65 | EGN2CM6R8F09OT |
| | | 8×9 | 170 | 110 | EGN2CM100F09OT |
| | 10 | 8×12 | 190 | 124 | EGN2CM100F12OT |
| | | 8×9 | 230 | 150 | EGN2CM150F09OT |
| | 15 | 8×12 | 255 | 165 | EGN2CM150F12OT |
| | | 8×12 | 340 | 221 | EGN2CM220F12OT |
| | 22 | 10×12 | 420 | 273 | EGN2CM220G12OT |
| 10×16 | | 520 | 340 | EGN2CM330G16OT | |
| 47 | 10×16 | 570 | 371 | EGN2CM470G16OT | |
| | 10×20 | 595 | 387 | EGN2CM470G20OT | |
| 68 | 10×20 | 680 | 442 | EGN2CM680G20OT | |
| | 12.5×16 | 680 | 442 | EGN2CM680W16OT | |
| 100 | 12.5×20 | 1100 | 715 | EGN2CM101W20OT | |
| | 12.5×25 | 1120 | 728 | EGN2CM101W25OT | |
| 150 | 12.5×25 | 1200 | 780 | EGN2CM151W25OT | |
| | 16×20 | 1200 | 780 | EGN2CM151L20OT | |
| 220 | 16×25 | 1400 | 910 | EGN2CM221L25OT | |
| 330 | 18×30 | 1655 | 1075 | EGN2CM331M30OT | |
| 200 (2D) | 1 | 6.3×7 | 46 | 31 | EGN2DM010E07OT |
| | | 6.3×9 | 52 | 40 | EGN2DM010E09OT |
| | 1.5 | 6.3×7 | 52 | 40 | EGN2DM1R5E07OT |
| | | 6.3×9 | 56 | 42 | EGN2DM1R5E09OT |
| | 1.8 | 6.3×7 | 56 | 40 | EGN2DM1R8E07OT |
| | | 6.3×9 | 60 | 45 | EGN2DM1R8E09OT |
| | 2.2 | 6.3×9 | 68 | 50 | EGN2DM2R2E09OT |
| | | 6.3×12 | 74 | 55 | EGN2DM2R2E12OT |
| | 2.8 | 6.3×9 | 74 | 55 | EGN2DM2R8E09OT |
| | | 6.3×12 | 80 | 60 | EGN2DM2R8E12OT |
| | 3.3 | 6.3×9 | 86 | 65 | EGN2DM3R3E09OT |
| | | 6.3×12 | 96 | 72 | EGN2DM3R3E12OT |
| | 4.7 | 6.3×12 | 128 | 102 | EGN2DM4R7E12OT |
| | | 8×9 | 135 | 107 | EGN2DM4R7F09OT |
| | 5.6 | 8×12 | 154 | 122 | EGN2DM4R7F12OT |
| | | 8×9 | 150 | 120 | EGN2DM5R6F09OT |
| | 6.8 | 8×12 | 165 | 132 | EGN2DM5R6F12OT |
| | | 8×9 | 158 | 125 | EGN2DM6R8F09OT |
| | 8.2 | 8×12 | 175 | 140 | EGN2DM6R8F12OT |
| | | 8×9 | 180 | 144 | EGN2DM8R2F09OT |
| | 10 | 8×12 | 195 | 150 | EGN2DM8R2F12OT |
| 8×9 | | 210 | 158 | EGN2DM100F09OT | |
| 15 | 8×12 | 240 | 168 | EGN2DM100F12OT | |
| | 8×12 | 325 | 228 | EGN2DM150F12OT | |
| 22 | 8×16 | 338 | 235 | EGN2DM150F16OT | |
| | 8×20 | 382 | 248 | EGN2DM220F20OT | |
| 22 | 10×16 | 446 | 290 | EGN2DM220G16OT | |
| | 10×20 | 492 | 320 | EGN2DM220G20OT | |

| WV (Vdc) | Cap (µF) | Size D×L(mm) | Rated ripple current (105°C) | Rated ripple current (130°C) | Part Number | |
|----------|----------|--------------|------------------------------|------------------------------|----------------|----------------|
| 200 (2D) | 33 | 10×20 | 570 | 370 | EGN2DM330G20OT | |
| | | 12.5×16 | 570 | 370 | EGN2DM330W16OT | |
| | | 12.5×20 | 600 | 390 | EGN2DM330W20OT | |
| | 47 | 12.5×16 | 600 | 390 | EGN2DM470W16OT | |
| | | 12.5×20 | 628 | 408 | EGN2DM470W20OT | |
| | | 12.5×25 | 660 | 430 | EGN2DM470W25OT | |
| | 68 | 12.5×25 | 760 | 494 | EGN2DM680W25OT | |
| | | 16×20 | 800 | 520 | EGN2DM680L20OT | |
| | | 82 | 16×20 | 880 | 572 | EGN2DM820L20OT |
| | 100 | 12.5×30 | 1010 | 657 | EGN2DM101W30OT | |
| | | 16×25 | 1060 | 690 | EGN2DM101L25OT | |
| | 150 | 12.5×40 | 1120 | 728 | EGN2DM151W40OT | |
| | | 16×30 | 1220 | 793 | EGN2DM151L30OT | |
| | 250 (2E) | 1 | 6.3×7 | 46 | 31 | EGN2EM010E07OT |
| | | | 6.3×9 | 52 | 40 | EGN2EM010E09OT |
| 1.5 | | 6.3×7 | 52 | 40 | EGN2EM1R5E07OT | |
| | | 6.3×9 | 56 | 42 | EGN2EM1R5E09OT | |
| 1.8 | | 6.3×7 | 56 | 40 | EGN2EM1R8E07OT | |
| | | 6.3×9 | 60 | 45 | EGN2EM1R8E09OT | |
| 2.2 | | 6.3×9 | 68 | 50 | EGN2EM2R2E09OT | |
| | | 6.3×12 | 74 | 55 | EGN2EM2R2E12OT | |
| 2.8 | | 6.3×9 | 74 | 55 | EGN2EM2R8E09OT | |
| | | 6.3×12 | 84 | 62 | EGN2EM2R8E12OT | |
| 3.3 | | 6.3×9 | 86 | 65 | EGN2EM3R3E09OT | |
| | | 6.3×12 | 100 | 74 | EGN2EM3R3E12OT | |
| 4.7 | | 8×9 | 120 | 95 | EGN2EM4R7F09OT | |
| | | 8×12 | 154 | 122 | EGN2EM4R7F12OT | |
| 5.6 | | 8×9 | 150 | 120 | EGN2EM5R6F09OT | |
| | 8×12 | 165 | 132 | EGN2EM5R6F12OT | | |
| 6.8 | 8×9 | 158 | 125 | EGN2EM6R8F09OT | | |
| | 8×12 | 216 | 162 | EGN2EM6R8F12OT | | |
| 8.2 | 8×12 | 245 | 180 | EGN2EM8R2F12OT | | |
| | 8×16 | 274 | 192 | EGN2EM8R2F16OT | | |
| 10 | 10×9 | 235 | 172 | EGN2EM8R2G09OT | | |
| | 8×12 | 265 | 185 | EGN2EM100F12OT | | |
| 15 | 8×16 | 294 | 205 | EGN2EM100F16OT | | |
| | 8×16 | 340 | 221 | EGN2EM150F16OT | | |
| 22 | 8×20 | 378 | 245 | EGN2EM150F20OT | | |
| | 10×16 | 462 | 300 | EGN2EM220G16OT | | |
| 33 | 12.5×16 | 550 | 358 | EGN2EM330W16OT | | |
| | 12.5×20 | 610 | 398 | EGN2EM330W20OT | | |
| 47 | 12.5×16 | 610 | 398 | EGN2EM470W16OT | | |
| | 12.5×20 | 648 | 420 | EGN2EM470W20OT | | |
| 68 | 12.5×25 | 805 | 523 | EGN2EM680W25OT | | |
| | 16×20 | 830 | 540 | EGN2EM680L20OT | | |
| 100 | 12.5×35 | 966 | 628 | EGN2EM101W35OT | | |
| | 16×25 | 1030 | 668 | EGN2EM101L25OT | | |
| 150 | 12.5×50 | 1288 | 838 | EGN2EM151W50OT | | |
| | 16×35 | 1400 | 910 | EGN2EM151L35OT | | |
| | | 18×25 | 1330 | 865 | EGN2EM151M25OT | |

Radial Type

CD11GN series

■ STANDARD RATINGS (Rated ripple current: mA rms/105°C 100kHz or mA rms/130°C 100kHz)

| WV (Vdc) | Cap (μF) | Size D×L(mm) | Rated ripple current (105°C) | Rated ripple current (130°C) | Part Number |
|----------|----------|--------------|------------------------------|------------------------------|----------------|
| 350 (2V) | 1 | 6.3x9 | 52 | 40 | EGN2VM010E09OT |
| | 1.5 | 6.3x12 | 65 | 50 | EGN2VM1R5E12OT |
| | | 8x9 | 68 | 52 | EGN2VM1R5F09OT |
| | 1.8 | 6.3x12 | 70 | 54 | EGN2VM1R8E12OT |
| | | 8x9 | 74 | 57 | EGN2VM1R8F09OT |
| | 2.2 | 6.3x12 | 78 | 60 | EGN2VM2R2E12OT |
| | | 8x9 | 82 | 63 | EGN2VM2R2F09OT |
| | 2.8 | 8x9 | 86 | 65 | EGN2VM2R8F09OT |
| | | 8x12 | 90 | 68 | EGN2VM2R8F12OT |
| | 3.3 | 8x9 | 95 | 71 | EGN2VM3R3F09OT |
| | | 8x12 | 100 | 75 | EGN2VM3R3F12OT |
| | 4.7 | 8x12 | 135 | 108 | EGN2VM4R7F12OT |
| | 5.6 | 8x12 | 140 | 109 | EGN2VM5R6F12OT |
| | | 8x16 | 160 | 125 | EGN2VM5R6F16OT |
| | 6.8 | 8x16 | 170 | 123 | EGN2VM6R8F16OT |
| | | 8x20 | 195 | 142 | EGN2VM6R8F20OT |
| | 8.2 | 8x20 | 250 | 164 | EGN2VM8R2F20OT |
| | 10 | 10x16 | 275 | 178 | EGN2VM100G16OT |
| | | 10x20 | 300 | 195 | EGN2VM100G20OT |
| | 15 | 10x20 | 380 | 247 | EGN2VM150G20OT |
| 22 | 12.5x20 | 476 | 309 | EGN2VM220W20OT | |
| 33 | 16x20 | 600 | 390 | EGN2VM330L20OT | |
| 47 | 16x20 | 740 | 480 | EGN2VM470L20OT | |
| 68 | 18x25 | 880 | 572 | EGN2VM680M25OT | |
| 100 | 18x30 | 1160 | 754 | EGN2VM101M30OT | |
| 400 (2G) | 1 | 6.3x9 | 62 | 55 | EGN2GM010E09OT |
| | | 6.3x12 | 66 | 60 | EGN2GM010E12OT |
| | 1.2 | 6.3x12 | 68 | 62 | EGN2GM1R2E12OT |
| | | 8x9 | 75 | 68 | EGN2GM1R5F09OT |
| | 1.5 | 8x12 | 86 | 75 | EGN2GM1R5F12OT |
| | | 8x9 | 80 | 70 | EGN2GM1R8F09OT |
| | 1.8 | 8x12 | 90 | 78 | EGN2GM1R8F12OT |
| | | 6.3x12 | 87 | 72 | EGN2GM2R2E12OT |
| | 2.2 | 8x12 | 92 | 80 | EGN2GM2R2F12OT |
| | | 8x12 | 108 | 85 | EGN2GM2R8F12OT |
| | 2.8 | 8x16 | 120 | 96 | EGN2GM2R8F16OT |
| | | 8x12 | 120 | 96 | EGN2GM3R3F12OT |
| | 3.3 | 8x16 | 128 | 102 | EGN2GM3R3F16OT |
| | | 8x12 | 148 | 110 | EGN2GM4R7F12OT |
| | 4.7 | 8x16 | 158 | 120 | EGN2GM4R7F16OT |
| | | 8x12 | 153 | 116 | EGN2GM5R6F12OT |
| | 5.6 | 10x12 | 162 | 122 | EGN2GM5R6G12OT |
| | | 10x16 | 180 | 135 | EGN2GM5R6G16OT |
| | 6.8 | 8x20 | 202 | 142 | EGN2GM6R8F20OT |
| | | 10x16 | 210 | 148 | EGN2GM6R8G16OT |
| | 8.2 | 10x16 | 252 | 164 | EGN2GM8R2G16OT |
| | | 10x20 | 266 | 174 | EGN2GM8R2G20OT |
| | 10 | 10x16 | 288 | 187 | EGN2GM100G16OT |
| | | 10x20 | 304 | 198 | EGN2GM100G20OT |
| | 15 | 8x40 | 340 | 220 | EGN2GM150F40OT |
| | | 12.5x16 | 360 | 234 | EGN2GM150W16OT |
| | 22 | 12.5x20 | 400 | 260 | EGN2GM150W20OT |
| | | 8x50 | 476 | 310 | EGN2GM220F50OT |
| | 33 | 12.5x20 | 490 | 318 | EGN2GM220W20OT |
| | | 12.5x25 | 532 | 346 | EGN2GM220W25OT |
| | 47 | 10x45 | 627 | 408 | EGN2GM330G45OT |
| | | 16x20 | 560 | 364 | EGN2GM330L20OT |

| WV (Vdc) | Cap (μF) | Size D×L(mm) | Rated ripple current (105°C) | Rated ripple current (130°C) | Part Number |
|----------|----------|--------------|------------------------------|------------------------------|----------------|
| 400 (2G) | 47 | 12.5x40 | 660 | 429 | EGN2GM470W40OT |
| | | 16x25 | 700 | 455 | EGN2GM470L25OT |
| | 68 | 12.5x55 | 870 | 566 | EGN2GM680W55OT |
| | | 18x25 | 835 | 543 | EGN2GM680M25OT |
| | | 18x35 | 1090 | 708 | EGN2GM101M35OT |
| 450 (2W) | 1 | 8x9 | 64 | 56 | EGN2WM010F09OT |
| | | 8x12 | 68 | 62 | EGN2WM010F12OT |
| | 1.5 | 8x12 | 84 | 74 | EGN2WM1R5F12OT |
| | | 10x9 | 90 | 76 | EGN2WM1R5G09OT |
| | 1.8 | 8x12 | 90 | 76 | EGN2WM1R8F12OT |
| | | 10x9 | 95 | 80 | EGN2WM1R8G09OT |
| | 2.2 | 8x16 | 92 | 78 | EGN2WM2R2F16OT |
| | 2.8 | 8x16 | 120 | 96 | EGN2WM2R8F16OT |
| | 3.3 | 8x16 | 125 | 100 | EGN2WM3R3F16OT |
| | 500 (2H) | 4.7 | 8x20 | 168 | 125 |
| 10x12 | | | 150 | 110 | EGN2WM4R7G12OT |
| 5.6 | | 10x16 | 180 | 135 | EGN2WM5R6G16OT |
| 6.8 | | 10x16 | 200 | 132 | EGN2WM6R8G16OT |
| | | 10x20 | 220 | 154 | EGN2WM6R8G20OT |
| 8.2 | | 10x16 | 235 | 153 | EGN2WM8R2G16OT |
| | | 10x20 | 266 | 174 | EGN2WM8R2G20OT |
| 10 | | 10x25 | 304 | 198 | EGN2WM100G25OT |
| | | 12.5x16 | 290 | 188 | EGN2WM100W16OT |
| 15 | | 8x45 | 400 | 260 | EGN2WM150F45OT |
| | 12.5x20 | 400 | 260 | EGN2WM150W20OT | |
| 500 (2H) | 22 | 10x40 | 500 | 325 | EGN2WM220G40OT |
| | | 16x20 | 500 | 325 | EGN2WM220L20OT |
| | 33 | 10x50 | 615 | 400 | EGN2WM330G50OT |
| | | 16x25 | 665 | 432 | EGN2WM330L25OT |
| | 47 | 12.5x45 | 720 | 468 | EGN2WM470W45OT |
| 500 (2H) | 68 | 16x35 | 818 | 532 | EGN2WM470L35OT |
| | | 18x30 | 900 | 585 | EGN2WM680M30OT |
| | 100 | 18x35 | 1110 | 722 | EGN2WM101M35OT |
| | | 18x40 | 1180 | 768 | EGN2WM101M40OT |
| | 10 | 12.5x20 | 288 | / | EGN2HM100W20OT |
| 15 | 12.5x25 | 302 | / | EGN2HM100W25OT | |
| | 12.5x25 | 396 | / | EGN2HM150W25OT | |
| 22 | 16x20 | 396 | / | EGN2HM150L20OT | |
| | 12.5x35 | 504 | / | EGN2HM220W35OT | |
| 33 | 16x25 | 504 | / | EGN2HM220L25OT | |
| | 18x25 | 630 | / | EGN2HM330M25OT | |
| 47 | 18x30 | 792 | / | EGN2HM470M30OT | |
| 68 | 22x35 | 1100 | / | EGN2HM680O35OT | |
| 82 | 22x35 | 1200 | / | EGN2HM820O35OT | |
| 100 | 22x35 | 1480 | / | EGN2HM101O35OT | |

CD11GZ series

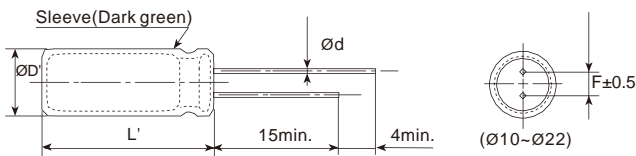
- Endurance: +105°C 12,000 hours
- Suitable for outdoor lighting; long life
- RoHS Compliant



SPECIFICATIONS

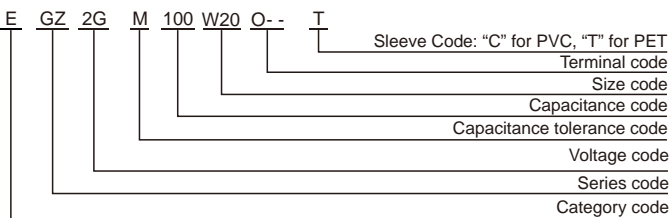
| Items | Characteristics | | | | | | |
|--|---|-------------------------------------|------|---|------|------|------------------|
| Category Temperature Range | -40~+105°C (250~ 500 V _{dc}) | | | | | | |
| Rated Voltage Range | 250~500 V _{dc} | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | | | | | |
| Leakage Current | 250~400 V _{dc} | 450~500 V _{dc} | | Where, I: Max.leakage current (μA), C:Nominal capacitance (μF), V: Rated voltage (V) | | | |
| | I 0.02CV+10μA | I 0.03CV+10μA | | (at 20°C after 2 minutes) | | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 250 | 350 | 400 | 450 | 500 | (at 20°C, 120Hz) |
| | tan δ (max.) | 0.15 | 0.20 | 0.20 | 0.20 | 0.24 | |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) | 250 | 350 | 400 | 450 | 500 | (at 120Hz) |
| | Z(-25°C)/Z(+20°C) | 3 | 3 | 3 | 3 | 3 | |
| | Z(-40°C)/Z(+20°C) | 4 | 4 | 4 | 4 | 4 | |
| Endurance | The specifications listed below shall be met when the capacitors are restored to 20°C after DC voltage plus rated ripple current is applied for 12,000 hours at 105°C (WV: 500V for 10,000 hours), the peak voltage shall not exceed the rated voltage. | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | |
| | D.F. (tan δ) | 200% of the initial specified value | | | | | |
| | Leakage Current | The initial specified value | | | | | |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after leaving them under no load at 105°C for 1,000 hours. | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | |
| | D.F. (tan δ) | 200% of the initial specified value | | | | | |
| | Leakage Current | 200% of the initial specified value | | | | | |

DIMENSIONS[mm]



| | | | | | |
|-----|------------|------|-----|-----|-----|
| ØD | 10 | 12.5 | 16 | 18 | 22 |
| Ød | 0.6 | 0.6 | 0.8 | 0.8 | 0.8 |
| F | 5.0 | 5.0 | 7.5 | 7.5 | 10 |
| ØD' | ØD+0.5max. | | | | |
| L' | L+2max. | | | | |

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| Cap.(μF) \ Freq.(Hz) | 120 | 1k | 10k | 100k |
|----------------------|------|------|------|------|
| Cap.<33 | 0.40 | 0.70 | 0.90 | 1.00 |
| Cap. 33 | 0.50 | 0.80 | 0.90 | 1.00 |

CD11GZ series

■ STANDARD RATINGS (Rated ripple current: mA rms/105°C 100kHz)

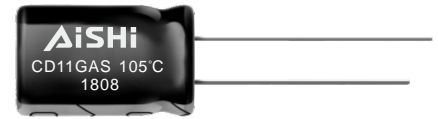
| WV (Vdc) | Cap (μF) | Size DxL (mm) | Rated ripple current | Part Number |
|----------|----------|---------------|----------------------|----------------|
| 250(2E) | 10 | 10x16 | 320 | EGZ2EM100G16OT |
| | 15 | 10x20 | 420 | EGZ2EM150G20OT |
| | 22 | 12.5x16 | 550 | EGZ2EM220W16OT |
| | 33 | 12.5x20 | 800 | EGZ2EM330W20OT |
| | 47 | 12.5x25 | 980 | EGZ2EM470W25OT |
| | 68 | 16x25 | 1368 | EGZ2EM680L25OT |
| | 82 | 16x25 | 1500 | EGZ2EM820L25OT |
| | 100 | 16x30 | 1610 | EGZ2EM101L30OT |
| | 150 | 18x35 | 2000 | EGZ2EM151M35OT |
| 350(2V) | 10 | 10x20 | 350 | EGZ2VM100G20OT |
| | 15 | 12.5x20 | 450 | EGZ2VM150W20OT |
| | 22 | 12.5x20 | 650 | EGZ2VM220W20OT |
| | 33 | 16x20 | 900 | EGZ2VM330L20OT |
| | 47 | 16x25 | 1080 | EGZ2VM470L25OT |
| | 68 | 18x25 | 1470 | EGZ2VM680M25OT |
| | 82 | 18x30 | 1530 | EGZ2VM820M30OT |
| | 100 | 18x35 | 1700 | EGZ2VM101M35OT |
| | 150 | 18x45 | 1860 | EGZ2VM151M45OT |
| 400(2G) | 10 | 12.5x20 | 350 | EGZ2GM100W20OT |
| | 15 | 12.5x25 | 550 | EGZ2GM150W25OT |
| | 22 | 16x20 | 760 | EGZ2GM220L20OT |
| | 33 | 16x30 | 1125 | EGZ2GM330L30OT |
| | 47 | 18x30 | 1180 | EGZ2GM470M30OT |
| | 68 | 18x30 | 1547 | EGZ2GM680M30OT |
| | 82 | 18x35 | 1620 | EGZ2GM820M35OT |
| | 100 | 18x40 | 1718 | EGZ2GM101M40OT |
| | 120 | 22x35 | 1820 | EGZ2GM121O35OT |
| | 150 | 22x40 | 1880 | EGZ2GM151O40OT |

| WV (Vdc) | Cap (μF) | Size DxL (mm) | Rated ripple current | Part Number |
|----------|----------|---------------|----------------------|----------------|
| 450(2W) | 10 | 12.5x20 | 330 | EGZ2WM100W20OT |
| | 15 | 12.5x25 | 450 | EGZ2WM150W25OT |
| | 22 | 16x20 | 730 | EGZ2WM220L20OT |
| | 33 | 16x30 | 980 | EGZ2WM330L30OT |
| | 47 | 18x30 | 1200 | EGZ2WM470M30OT |
| | 68 | 18x35 | 1500 | EGZ2WM680M35OT |
| | 82 | 18x35 | 1560 | EGZ2WM820M35OT |
| | 100 | 18x45 | 1666 | EGZ2WM101M45OT |
| | 120 | 22x40 | 1780 | EGZ2WM121O40OT |
| | 150 | 22x46 | 1820 | EGZ2WM151O46OT |
| 500(2H) | 10 | 12.5x20 | 320 | EGZ2HM100W20OT |
| | 15 | 12.5x25 | 440 | EGZ2HM150W25OT |
| | 22 | 16x25 | 560 | EGZ2HM220L25OT |
| | 33 | 18x25 | 700 | EGZ2HM330M25OT |
| | 47 | 18x30 | 880 | EGZ2HM470M30OT |
| | 68 | 22x35 | 1350 | EGZ2HM680O35OT |
| | 82 | 22x35 | 1420 | EGZ2HM820O35OT |
| | 100 | 22x35 | 1460 | EGZ2HM101O35OT |
| | 120 | 22x40 | 1560 | EGZ2HM121O40OT |
| | 150 | 22x46 | 1630 | EGZ2HM151O46OT |

CD11GAS series

- Miniaturized, long life
- Endurance: +105°C 8,000~10,000 hours
- RoHS Compliant

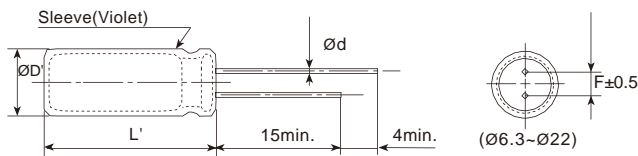
Upgrade



SPECIFICATIONS

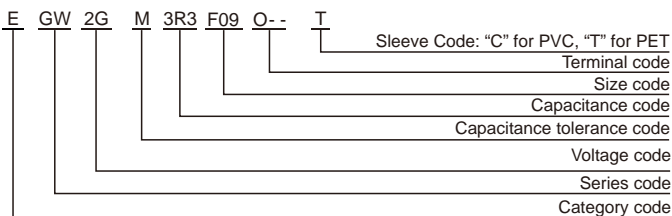
| Items | Characteristics | | | | | | | | | | |
|--|---|-------------------------------------|------|---|------|------|------|------|------|------|------------------|
| Category Temperature Range | -40~+105°C | | | | | | | | | | |
| Rated Voltage Range | 140~500 V _{dc} | | | | | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | | | | | | | | | |
| Leakage Current | 140~400 V _{dc} | 450~500 V _{dc} | | Where, I: Max.leakage current (μA), C:Nominal capacitance (μF), V: Rated voltage (V) (at 20°C after 2 minutes) | | | | | | | |
| | I 0.02CV+10μA | I 0.03CV+10μA | | | | | | | | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 140 | 160 | 200 | 250 | 315 | 350 | 400 | 450 | 500 | (at 20°C, 120Hz) |
| | tan δ (max.) | 0.15 | 0.15 | 0.15 | 0.15 | 0.20 | 0.20 | 0.20 | 0.20 | 0.24 | |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) | 140 | 160 | 200 | 250 | 315 | 350 | 400 | 450 | 500 | (at 120Hz) |
| | Z(-25°C)/Z(+20°C) | 3 | 3 | 3 | 3 | 5 | 5 | 5 | 6 | 6 | |
| | Z(-40°C)/Z(+20°C) | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 9 | 15 | |
| Endurance | The specifications listed below shall be met when the capacitors are restored to 20°C after DC voltage plus the rated ripple current is applied for 10,000 hours at 105°C (WV:500V for 8,000 hours), the peak voltage shall not exceed the rated voltage. | | | | | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | | | | |
| | D.F. (tan δ) | 200% of the initial specified value | | | | | | | | | |
| | Leakage Current | The initial specified value | | | | | | | | | |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after leaving them under no load at 105°C for 1,000 hours. | | | | | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | | | | |
| | D.F. (tan δ) | 200% of the initial specified value | | | | | | | | | |
| | Leakage Current | 200% of the initial specified value | | | | | | | | | |

DIMENSIONS[mm]



| | | | | | | | |
|-----|------------|-----|-----|------|-----|-----|-----|
| ØD | 6.3 | 8 | 10 | 12.5 | 16 | 18 | 22 |
| Ød | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 |
| F | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 | 10 |
| ØD' | ØD+0.5max. | | | | | | |
| L' | L+2max. | | | | | | |

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| | | | | |
|---------------------------------|------|------|------|------|
| Freq.(Hz) | 120 | 1k | 10k | 100k |
| Rated voltage(V _{dc}) | 0.50 | 0.80 | 0.90 | 1.00 |

CD11GAS series

■ STANDARD RATINGS (Rated ripple current: mA rms/105°C 100kHz)

| VV (Vdc) | Cap (µF) | Size D×L (mm) | Rated ripple current | Part Number |
|----------|----------|---------------|----------------------|----------------|
| 140(2A) | 10 | 6.3×12 | 115 | EGW2AM100E12OT |
| | 15 | 6.3×12 | 145 | EGW2AM150E12OT |
| | 22 | 8×12 | 270 | EGW2AM220F12OT |
| | 33 | 10×12 | 380 | EGW2AM330G12OT |
| | 47 | 8×20 | 480 | EGW2AM470F20OT |
| | 68 | 10×20 | 570 | EGW2AM680G20OT |
| | 100 | 12.5×16 | 710 | EGW2AM101W16OT |
| | 150 | 12.5×25 | 980 | EGW2AM151W25OT |
| 220 | 16×20 | 1320 | EGW2AM221L20OT | |
| 160(2C) | 1 | 6.3×7 | 36 | EGW2CM010E07OT |
| | | 6.3×9 | 40 | EGW2CM010E09OT |
| | 1.5 | 6.3×7 | 40 | EGW2CM1R5E07OT |
| | | 6.3×9 | 45 | EGW2CM1R5E09OT |
| | 1.8 | 6.3×7 | 45 | EGW2CM1R8E07OT |
| | | 6.3×9 | 50 | EGW2CM1R8E09OT |
| | 2.2 | 6.3×7 | 50 | EGW2CM2R2E07OT |
| | | 6.3×9 | 55 | EGW2CM2R2E09OT |
| | 2.8 | 6.3×9 | 70 | EGW2CM2R8E09OT |
| | | 6.3×12 | 78 | EGW2CM2R8E12OT |
| | 3.3 | 6.3×9 | 85 | EGW2CM3R3E09OT |
| | | 6.3×12 | 92 | EGW2CM3R3E12OT |
| | 4.7 | 6.3×9 | 92 | EGW2CM4R7E09OT |
| | | 6.3×12 | 97 | EGW2CM4R7E12OT |
| | 5.6 | 6.3×9 | 96 | EGW2CM5R6E09OT |
| | | 6.3×12 | 100 | EGW2CM5R6E12OT |
| | 6.8 | 6.3×9 | 100 | EGW2CM6R8E09OT |
| | | 6.3×12 | 107 | EGW2CM6R8E12OT |
| | | 8×9 | 107 | EGW2CM6R8F09OT |
| | | 6.3×12 | 150 | EGW2CM8R2E12OT |
| | 8.2 | 8×9 | 150 | EGW2CM8R2F09OT |
| | | 8×9 | 190 | EGW2CM100F09OT |
| | 10 | 8×12 | 240 | EGW2CM100F12OT |
| | | 8×9 | 270 | EGW2CM150F09OT |
| | 15 | 8×12 | 290 | EGW2CM150F12OT |
| | | 8×12 | 390 | EGW2CM220F12OT |
| | 22 | 10×12 | 430 | EGW2CM220G12OT |
| | | 10×16 | 520 | EGW2CM330G16OT |
| | 47 | 10×16 | 680 | EGW2CM470G16OT |
| | | 10×20 | 800 | EGW2CM560G20OT |
| | 68 | 10×20 | 950 | EGW2CM680G20OT |
| | | 12.5×16 | 1060 | EGW2CM680W16OT |
| | 82 | 12.5×20 | 1260 | EGW2CM820W20OT |
| | | 12.5×20 | 1350 | EGW2CM101W20OT |
| | 100 | 12.5×25 | 1750 | EGW2CM151W25OT |
| | | 16×20 | 1790 | EGW2CM151L20OT |
| | 220 | 16×25 | 2130 | EGW2CM221L25OT |
| | | 18×30 | 2520 | EGW2CM331M30OT |
| | 470 | 18×35 | 2880 | EGW2CM471M35OT |
| | | 200(2D) | 1 | 6.3×7 |
| 6.3×9 | 50 | | | EGW2DM010E09OT |
| 1.2 | 6.3×7 | | 50 | EGW2DM1R2E07OT |
| | 6.3×9 | | 55 | EGW2DM1R2E09OT |
| 1.5 | 6.3×7 | | 55 | EGW2DM1R5E07OT |
| | 6.3×9 | | 60 | EGW2DM1R5E09OT |
| 1.8 | 6.3×7 | | 60 | EGW2DM1R8E07OT |
| | 6.3×9 | | 66 | EGW2DM1R8E09OT |
| 2.2 | 6.3×9 | | 72 | EGW2DM2R2E09OT |
| | 6.3×12 | | 81 | EGW2DM2R2E12OT |
| 2.8 | 6.3×9 | | 81 | EGW2DM2R8E09OT |
| | 6.3×12 | | 88 | EGW2DM2R8E12OT |
| 3.3 | 6.3×9 | | 105 | EGW2DM3R3E09OT |
| | 6.3×12 | | 112 | EGW2DM3R3E12OT |
| 4.7 | 6.3×12 | | 115 | EGW2DM4R7E12OT |
| | 8×9 | | 117 | EGW2DM4R7F09OT |
| | 8×12 | | 120 | EGW2DM4R7F12OT |
| | 8×12 | | 120 | EGW2DM4R7F12OT |

| VV (Vdc) | Cap (µF) | Size D×L (mm) | Rated ripple current | Part Number |
|----------|----------|---------------|----------------------|----------------|
| 200(2D) | 5.6 | 8×9 | 120 | EGW2DM5R6F09OT |
| | | 8×12 | 126 | EGW2DM5R6F12OT |
| | 6.8 | 8×9 | 126 | EGW2DM6R8F09OT |
| | | 8×12 | 132 | EGW2DM6R8F12OT |
| | 8.2 | 8×9 | 180 | EGW2DM8R2F09OT |
| | | 8×12 | 200 | EGW2DM8R2F12OT |
| | 10 | 8×9 | 190 | EGW2DM100F09OT |
| | | 8×12 | 230 | EGW2DM100F12OT |
| | 15 | 8×16 | 310 | EGW2DM150F16OT |
| | | 10×12 | 310 | EGW2DM150G12OT |
| | 22 | 10×16 | 475 | EGW2DM220G16OT |
| | | 10×20 | 650 | EGW2DM330G20OT |
| | 33 | 12.5×16 | 650 | EGW2DM330W16OT |
| | | 12.5×16 | 880 | EGW2DM470W16OT |
| | 47 | 12.5×20 | 980 | EGW2DM470W20OT |
| | | 12.5×25 | 1300 | EGW2DM680W25OT |
| 82 | 16×20 | 1380 | EGW2DM820L20OT | |
| | 16×20 | 1420 | EGW2DM101L20OT | |
| 100 | 16×25 | 1494 | EGW2DM101L25OT | |
| | 16×25 | 1680 | EGW2DM151L25OT | |
| 150 | 16×30 | 1989 | EGW2DM151L30OT | |
| | 18×30 | 2150 | EGW2DM221M30OT | |
| 330 | 18×35 | 2250 | EGW2DM331M35OT | |
| | 250(2E) | 1 | 6.3×7 | 45 |
| 6.3×9 | | | 50 | EGW2EM010E09OT |
| 1.2 | | 6.3×7 | 50 | EGW2EM1R2E07OT |
| | | 6.3×9 | 55 | EGW2EM1R2E09OT |
| 1.5 | | 6.3×7 | 55 | EGW2EM1R5E07OT |
| | | 6.3×9 | 60 | EGW2EM1R5E09OT |
| 1.8 | | 6.3×7 | 61 | EGW2EM1R8E07OT |
| | | 6.3×9 | 70 | EGW2EM1R8E09OT |
| 2.2 | | 6.3×9 | 72 | EGW2EM2R2E09OT |
| | | 6.3×12 | 81 | EGW2EM2R2E12OT |
| 2.8 | | 6.3×9 | 81 | EGW2EM2R8E09OT |
| | | 6.3×12 | 88 | EGW2EM2R8E12OT |
| 3.3 | | 6.3×9 | 102 | EGW2EM3R3E09OT |
| | | 6.3×12 | 112 | EGW2EM3R3E12OT |
| 4.7 | | 6.3×9 | 112 | EGW2EM4R7E09OT |
| | | 6.3×12 | 115 | EGW2EM4R7E12OT |
| | | 8×9 | 115 | EGW2EM4R7F09OT |
| | | 8×12 | 120 | EGW2EM4R7F12OT |
| 5.6 | | 8×9 | 120 | EGW2EM5R6F09OT |
| | | 8×12 | 126 | EGW2EM5R6F12OT |
| 6.8 | 8×9 | 145 | EGW2EM6R8F09OT | |
| | 8×12 | 150 | EGW2EM6R8F12OT | |
| 8.2 | 8×12 | 200 | EGW2EM8R2F12OT | |
| | 8×16 | 260 | EGW2EM8R2F16OT | |
| 10 | 8×12 | 220 | EGW2EM100F12OT | |
| | 8×16 | 275 | EGW2EM100F16OT | |
| 15 | 8×16 | 350 | EGW2EM150F16OT | |
| | 10×12 | 360 | EGW2EM150G12OT | |
| 22 | 10×16 | 480 | EGW2EM220G16OT | |
| | 10×20 | 500 | EGW2EM220G20OT | |
| 33 | 10×20 | 600 | EGW2EM330G20OT | |
| | 12.5×16 | 600 | EGW2EM330W16OT | |
| 47 | 12.5×20 | 660 | EGW2EM330W20OT | |
| | 12.5×16 | 880 | EGW2EM470W16OT | |
| 68 | 12.5×20 | 980 | EGW2EM470W20OT | |
| | 12.5×25 | 1180 | EGW2EM680W25OT | |
| 82 | 16×20 | 1250 | EGW2EM680L20OT | |
| | 16×20 | 1320 | EGW2EM820L20OT | |
| 100 | 16×20 | 1360 | EGW2EM101L20OT | |
| | 16×25 | 1420 | EGW2EM101L25OT | |

CD11GAS series

■ STANDARD RATINGS (Rated ripple current: mA rms/105°C 100kHz)

| WV (Vdc) | Cap (μF) | Size D×L(mm) | Rated ripple current | Part Number |
|----------|----------|--------------|----------------------|----------------|
| 250(2E) | 150 | 16×30 | 1820 | EGW2EM151L30OT |
| | | 18×25 | 1820 | EGW2EM151M25OT |
| | 220 | 18×30 | 2150 | EGW2EM221M30OT |
| | 330 | 18×40 | 2310 | EGW2EM331M40OT |
| 315(2F) | 2.2 | 6.3×9 | 82 | EGW2FM2R2E09OT |
| | 3.3 | 6.3×12 | 100 | EGW2FM3R3E12OT |
| | 4.7 | 8×9 | 120 | EGW2FM4R7F09OT |
| | 5.6 | 8×12 | 142 | EGW2FM5R6F12OT |
| | 6.8 | 8×12 | 162 | EGW2FM6R8F12OT |
| | 8.2 | 8×12 | 194 | EGW2FM8R2F12OT |
| | 10 | 10×12 | 230 | EGW2FM100G12OT |
| | 15 | 10×16 | 340 | EGW2FM150G16OT |
| | 22 | 10×20 | 460 | EGW2FM220G20OT |
| | 33 | 12.5×20 | 600 | EGW2FM330W20OT |
| | 47 | 12.5×25 | 680 | EGW2FM470W25OT |
| 350(2V) | 1 | 6.3×9 | 55 | EGW2VM010E09OT |
| | | 6.3×12 | 60 | EGW2VM010E12OT |
| | 1.2 | 6.3×9 | 60 | EGW2VM1R2E09OT |
| | 1.5 | 6.3×9 | 65 | EGW2VM1R5E09OT |
| | | 6.3×12 | 70 | EGW2VM1R5E12OT |
| | 1.8 | 6.3×9 | 72 | EGW2VM1R8E09OT |
| | | 6.3×12 | 80 | EGW2VM1R8E12OT |
| | 2.2 | 6.3×9 | 82 | EGW2VM2R2E09OT |
| | | 6.3×12 | 86 | EGW2VM2R2E12OT |
| | 2.8 | 8×9 | 88 | EGW2VM2R8F09OT |
| | | 8×12 | 95 | EGW2VM2R8F12OT |
| | 3.3 | 8×9 | 100 | EGW2VM3R3F09OT |
| | | 8×12 | 108 | EGW2VM3R3F12OT |
| | 4.7 | 8×9 | 114 | EGW2VM4R7F09OT |
| | | 8×12 | 120 | EGW2VM4R7F12OT |
| | 5.6 | 8×12 | 150 | EGW2VM5R6F12OT |
| | | 8×16 | 162 | EGW2VM5R6F16OT |
| | 6.8 | 8×12 | 172 | EGW2VM6R8F12OT |
| | | 8×16 | 190 | EGW2VM6R8F16OT |
| | 8.2 | 8×16 | 215 | EGW2VM8R2F16OT |
| | | 10×12 | 215 | EGW2VM8R2G12OT |
| | 10 | 8×20 | 260 | EGW2VM100F20OT |
| | | 10×12 | 230 | EGW2VM100G12OT |
| | 15 | 10×16 | 340 | EGW2VM150G16OT |
| | | 10×20 | 460 | EGW2VM220G20OT |
| | 22 | 10×20 | 460 | EGW2VM220G20OT |
| | | 12.5×20 | 600 | EGW2VM330W20OT |
| | 33 | 16×20 | 650 | EGW2VM330L20OT |
| | | 16×20 | 700 | EGW2VM470L20OT |
| | 68 | 16×25 | 780 | EGW2VM680L25OT |
| | | 18×20 | 780 | EGW2VM680M20OT |
| | 82 | 16×30 | 1000 | EGW2VM820L30OT |
| | | 18×25 | 1000 | EGW2VM820M25OT |
| 100 | 18×25 | 1120 | EGW2VM101M25OT | |
| | 18×30 | 1210 | EGW2VM101M30OT | |
| 400(2G) | 1 | 6.3×7 | 61 | EGW2GM010E07OT |
| | | 6.3×9 | 65 | EGW2GM010E09OT |
| | 1.2 | 6.3×9 | 68 | EGW2GM1R2E09OT |
| | | 6.3×9 | 70 | EGW2GM1R5E09OT |
| | 1.5 | 6.3×12 | 74 | EGW2GM1R5E12OT |
| | | 8×9 | 72 | EGW2GM1R5F09OT |
| | 1.8 | 6.3×9 | 72 | EGW2GM1R8E09OT |
| | | 6.3×12 | 80 | EGW2GM1R8E12OT |
| | 2.2 | 8×9 | 76 | EGW2GM1R8F09OT |
| | | 6.3×9 | 76 | EGW2GM2R2E09OT |
| | | 6.3×12 | 85 | EGW2GM2R2E12OT |
| | | 8×9 | 85 | EGW2GM2R2F09OT |
| | | 8×12 | 90 | EGW2GM2R2F12OT |

| WV (Vdc) | Cap (μF) | Size D×L(mm) | Rated ripple current | Part Number |
|----------|----------|--------------|----------------------|----------------|
| 400(2G) | 2.8 | 6.3×12 | 90 | EGW2GM2R8E12OT |
| | | 8×9 | 90 | EGW2GM2R8F09OT |
| | | 8×12 | 94 | EGW2GM2R8F12OT |
| | 3.3 | 6.3×12 | 90 | EGW2GM3R3E12OT |
| | | 8×9 | 100 | EGW2GM3R3F09OT |
| | | 8×12 | 102 | EGW2GM3R3F12OT |
| | 4.7 | 8×10 | 110 | EGW2GM4R7F10OT |
| | | 8×12 | 120 | EGW2GM4R7F12OT |
| | | 10×9 | 120 | EGW2GM4R7G09OT |
| | | 10×12 | 128 | EGW2GM4R7G12OT |
| | 5.6 | 8×12 | 145 | EGW2GM5R6F12OT |
| | | 10×12 | 156 | EGW2GM5R6G12OT |
| | 6.8 | 8×12 | 172 | EGW2GM6R8F12OT |
| | | 8×16 | 206 | EGW2GM6R8F16OT |
| | | 10×12 | 206 | EGW2GM6R8G12OT |
| | 8.2 | 10×12 | 220 | EGW2GM8R2G12OT |
| | | 10×16 | 232 | EGW2GM8R2G16OT |
| | 10 | 10×16 | 253 | EGW2GM100G16OT |
| | | 10×20 | 275 | EGW2GM100G20OT |
| 12 | 10×16 | 270 | EGW2GM120G16OT | |
| | 10×20 | 280 | EGW2GM120G20OT | |
| 15 | 10×20 | 324 | EGW2GM150G20OT | |
| | 12.5×16 | 324 | EGW2GM150W16OT | |
| 22 | 12.5×20 | 480 | EGW2GM220W20OT | |
| | 12.5×25 | 500 | EGW2GM220W25OT | |
| 33 | 12.5×25 | 550 | EGW2GM330W25OT | |
| | 16×20 | 585 | EGW2GM330L20OT | |
| 47 | 16×20 | 650 | EGW2GM470L20OT | |
| | 16×25 | 730 | EGW2GM470L25OT | |
| 56 | 16×30 | 770 | EGW2GM560L30OT | |
| | 16×30 | 810 | EGW2GM680L30OT | |
| 68 | 18×25 | 830 | EGW2GM680M25OT | |
| | 18×30 | 980 | EGW2GM820M30OT | |
| 100 | 18×30 | 1025 | EGW2GM101M30OT | |
| | 18×40 | 1340 | EGW2GM151M40OT | |
| 180 | 18×45 | 1470 | EGW2GM181M45OT | |
| | 1 | 6.3×9 | 76 | EGW2WM010E09OT |
| | | 6.3×12 | 77 | EGW2WM010E12OT |
| 1.2 | 8×9 | 80 | EGW2WM1R2F09OT | |
| | 8×9 | 82 | EGW2WM1R5F09OT | |
| 1.5 | 8×12 | 85 | EGW2WM1R5F12OT | |
| | 8×9 | 85 | EGW2WM1R8F09OT | |
| 1.8 | 8×12 | 88 | EGW2WM1R8F12OT | |
| | 10×9 | 90 | EGW2WM1R8G09OT | |
| 2.2 | 8×9 | 86 | EGW2WM2R2F09OT | |
| | 8×12 | 92 | EGW2WM2R2F12OT | |
| 2.8 | 10×9 | 92 | EGW2WM2R2G09OT | |
| | 8×12 | 95 | EGW2WM2R8F12OT | |
| 3.3 | 10×9 | 95 | EGW2WM2R8G09OT | |
| | 8×12 | 94 | EGW2WM3R3F12OT | |
| 3.9 | 10×9 | 98 | EGW2WM3R3G09OT | |
| | 8×12 | 110 | EGW2WM3R9F12OT | |
| 4.7 | 10×9 | 115 | EGW2WM3R9G09OT | |
| | 8×12 | 115 | EGW2WM4R7F12OT | |
| 5.6 | 10×12 | 123 | EGW2WM4R7G12OT | |
| | 10×16 | 130 | EGW2WM4R7G16OT | |
| 6.8 | 10×12 | 142 | EGW2WM5R6G12OT | |
| | 10×16 | 167 | EGW2WM5R6G16OT | |
| 8.2 | 10×12 | 175 | EGW2WM6R8G12OT | |
| | 10×16 | 195 | EGW2WM6R8G16OT | |
| 10 | 10×16 | 220 | EGW2WM8R2G16OT | |
| | 10×20 | 230 | EGW2WM8R2G20OT | |
| 10 | 10×16 | 255 | EGW2WM100G16OT | |
| | 10×20 | 300 | EGW2WM100G20OT | |

Radial Type

CD11GAS series

■ STANDARD RATINGS (Rated ripple current: mA rms/105°C 100kHz)

| WV (Vdc) | Cap (μF) | Size D×L(mm) | Rated ripple current | Part Number |
|----------|----------|--------------|----------------------|----------------|
| 450(2W) | 15 | 12.5×16 | 365 | EGW2WM150W16OT |
| | | 12.5×20 | 410 | EGW2WM150W20OT |
| | | 12.5×20 | 480 | EGW2WM220W20OT |
| | 22 | 12.5×25 | 530 | EGW2WM220W25OT |
| | | 16×20 | 530 | EGW2WM220L20OT |
| | 33 | 16×20 | 600 | EGW2WM330L20OT |
| | | 16×25 | 720 | EGW2WM470L25OT |
| | 47 | 16×30 | 800 | EGW2WM470L30OT |
| | | 16×30 | 990 | EGW2WM560L30OT |
| | 56 | 18×25 | 1000 | EGW2WM560M25OT |
| | | 18×25 | 1150 | EGW2WM680M25OT |
| | 68 | 18×30 | 1230 | EGW2WM680M30OT |
| | | 18×30 | 1320 | EGW2WM820M30OT |
| 100 | 18×35 | 1370 | EGW2WM101M35OT | |
| 150 | 18×45 | 1700 | EGW2WM151M45OT | |
| 500(2H) | 10 | 12.5×20 | 288 | EGW2HM100W20OT |
| | | 12.5×25 | 302 | EGW2HM100W25OT |
| | 15 | 12.5×25 | 396 | EGW2HM150W25OT |
| | | 16×20 | 396 | EGW2HM150L20OT |
| | 22 | 12.5×35 | 504 | EGW2HM220W35OT |
| | | 16×25 | 504 | EGW2HM220L25OT |
| | 33 | 18×25 | 630 | EGW2HM330M25OT |
| | | 18×30 | 792 | EGW2HM470M30OT |
| | 56 | 18×30 | 860 | EGW2HM560M30OT |
| | | 18×35 | 1000 | EGW2HM680M35OT |
| | 68 | 22×35 | 1070 | EGW2HM680O35OT |
| | | 22×35 | 1220 | EGW2HM820O35OT |
| | 100 | 22×35 | 1420 | EGW2HM101O35OT |

CD11GD series

- Endurance: +105 °C 8,000 hours
- Miniaturized and high stability
- RoHS Compliant

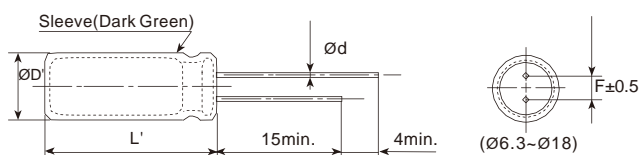
Upgrade



SPECIFICATIONS

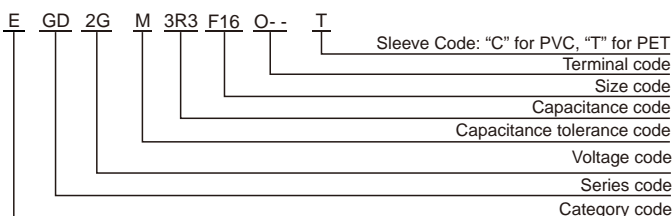
| Items | Characteristics | | | | | | | | | |
|--|---|-------------------------------------|---------------------------|------|--|------|------|------|------|------------------|
| Category Temperature Range | -40~+105°C | | | | | | | | | |
| Rated Voltage Range | 140~450 V _{dc} | | | | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | | | | | | | | |
| Leakage Current | 140~400 V _{dc} | 450V _{dc} | | | Where, I: Max.leakage current (μA), C:Nominal capacitance (μF), V: Rated voltage (V) | | | | | |
| | I 0.02CV+10μA | I 0.03CV+10μA | (at 20°C after 2 minutes) | | | | | | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 140 | 160 | 200 | 250 | 315 | 350 | 400 | 450 | (at 20°C, 120Hz) |
| | tan (max.) | 0.15 | 0.15 | 0.15 | 0.15 | 0.20 | 0.20 | 0.20 | 0.20 | |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) | 140 | 160 | 200 | 250 | 315 | 350 | 400 | 450 | (at 120Hz) |
| | Z(-25°C)/Z(+20°C) | 3 | 3 | 3 | 3 | 5 | 5 | 5 | 6 | |
| | Z(-40°C)/Z(+20°C) | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 9 | |
| Endurance | The specifications listed below shall be met when the capacitors are restored to 20 °C after DC voltage plus rated ripple current is applied for 8,000 hours at 105°C, the peak voltage shall not exceed the rated voltage. | | | | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | | | |
| | D.F. (tan δ) | 200% of the initial specified value | | | | | | | | |
| | Leakage Current | The initial specified value | | | | | | | | |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after leaving them under no load at 105°C for 1,000 hours. | | | | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | | | |
| | D.F. (tan δ) | 200% of the initial specified value | | | | | | | | |
| | Leakage Current | 200% of the initial specified value | | | | | | | | |

DIMENSIONS[mm]



| | | | | | | | |
|-----|------------|-----|-----|------|-----|-----|-----|
| ØD | 6.3 | 8 | 10 | 12.5 | 13 | 16 | 18 |
| Ød | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 |
| F | 2.5 | 3.5 | 5.0 | 5.0 | 5.0 | 7.5 | 7.5 |
| ØD' | ØD+0.5max. | | | | | | |
| L' | L+2max. | | | | | | |

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| | | | | | |
|---------------------------------|-----------|------|------|------|------|
| | Freq.(Hz) | 120 | 1k | 10k | 100k |
| Rated voltage(V _{dc}) | | 0.50 | 0.80 | 0.90 | 1.00 |
| | 140~450 | | | | |

Radial Type

CD11GD series

■ STANDARD RATINGS (Rated ripple current: mA rms/105°C 100kHz)

| WV (Vdc) | Cap (µF) | Size D×L (mm) | Rated ripple current | Part Number |
|----------|----------|---------------|----------------------|----------------|
| 140(2A) | 10 | 6.3×12 | 100 | EGD2AM100E12OT |
| | 15 | 6.3×12 | 125 | EGD2AM150E12OT |
| | 22 | 8×12 | 250 | EGD2AM220F12OT |
| | 33 | 10×12 | 365 | EGD2AM330G12OT |
| | 47 | 8×20 | 430 | EGD2AM470F20OT |
| | 68 | 10×20 | 520 | EGD2AM680G20OT |
| | 100 | 12.5×16 | 650 | EGD2AM101W16OT |
| | 150 | 12.5×25 | 750 | EGD2AM151W25OT |
| 220 | 16×20 | 850 | EGD2AM221L20OT | |
| 160(2C) | 1 | 6.3×7 | 34 | EGD2CM010E07OT |
| | | 6.3×9 | 36 | EGD2CM010E09OT |
| | 1.5 | 6.3×7 | 38 | EGD2CM1R5E07OT |
| | | 6.3×9 | 45 | EGD2CM1R5E09OT |
| | 1.8 | 6.3×7 | 49 | EGD2CM1R8E07OT |
| | | 6.3×9 | 50 | EGD2CM1R8E09OT |
| | 2.2 | 6.3×7 | 53 | EGD2CM2R2E07OT |
| | | 6.3×9 | 56 | EGD2CM2R2E09OT |
| | 2.8 | 6.3×7 | 57 | EGD2CM2R8E07OT |
| | | 6.3×9 | 60 | EGD2CM2R8E09OT |
| | 3.3 | 6.3×7 | 61 | EGD2CM3R3E07OT |
| | | 6.3×9 | 65 | EGD2CM3R3E09OT |
| | 3.9 | 6.3×7 | 65 | EGD2CM3R9E07OT |
| | | 6.3×9 | 68 | EGD2CM3R9E09OT |
| | 4.7 | 6.3×7 | 66 | EGD2CM4R7E07OT |
| | | 6.3×9 | 70 | EGD2CM4R7E09OT |
| | 5.6 | 6.3×12 | 72 | EGD2CM4R7E12OT |
| | | 6.3×9 | 72 | EGD2CM5R6E09OT |
| | 6.8 | 6.3×12 | 74 | EGD2CM5R6E12OT |
| | | 6.3×9 | 80 | EGD2CM6R8E09OT |
| | 8.2 | 6.3×12 | 84 | EGD2CM6R8E12OT |
| | | 6.3×12 | 120 | EGD2CM8R2E12OT |
| | 8 | 8×9 | 135 | EGD2CM8R2F09OT |
| | | 6.3×12 | 145 | EGD2CM100E12OT |
| | 10 | 8×9 | 165 | EGD2CM100F09OT |
| | | 8×12 | 206 | EGD2CM100F12OT |
| | 12 | 8×9 | 180 | EGD2CM120F09OT |
| | | 8×9 | 192 | EGD2CM150F09OT |
| | 15 | 8×12 | 213 | EGD2CM150F12OT |
| | | 8×12 | 267 | EGD2CM220F12OT |
| | 22 | 8×16 | 330 | EGD2CM220F16OT |
| | | 10×12 | 330 | EGD2CM220G12OT |
| | 33 | 10×12 | 400 | EGD2CM330G12OT |
| 10×16 | | 425 | EGD2CM330G16OT | |
| 47 | 10×16 | 455 | EGD2CM470G16OT | |
| | 10×20 | 500 | EGD2CM470G20OT | |
| 56 | 10×20 | 530 | EGD2CM560G20OT | |
| | 10×20 | 550 | EGD2CM680G20OT | |
| 68 | 12.5×16 | 565 | EGD2CM680W16OT | |
| | 12.5×20 | 640 | EGD2CM820W20OT | |
| 82 | 12.5×20 | 640 | EGD2CM820W20OT | |
| | 12.5×20 | 700 | EGD2CM101W20OT | |
| 100 | 12.5×25 | 722 | EGD2CM101W25OT | |
| | 12.5×25 | 755 | EGD2CM151W25OT | |
| 150 | 16×20 | 760 | EGD2CM151L20OT | |
| | 16×25 | 900 | EGD2CM221L25OT | |
| 220 | 16×25 | 900 | EGD2CM221L25OT | |
| | 18×30 | 1100 | EGD2CM331M30OT | |
| 200(2D) | 1 | 6.3×7 | 35 | EGD2DM010E07OT |
| | | 6.3×9 | 38 | EGD2DM010E09OT |
| | 1.2 | 6.3×7 | 38 | EGD2DM1R2E07OT |
| | | 6.3×9 | 42 | EGD2DM1R2E09OT |
| | 1.5 | 6.3×7 | 49 | EGD2DM1R5E07OT |
| | | 6.3×9 | 50 | EGD2DM1R5E09OT |
| | 1.8 | 6.3×7 | 50 | EGD2DM1R8E07OT |
| | | 6.3×9 | 54 | EGD2DM1R8E09OT |

| WV (Vdc) | Cap (µF) | Size D×L (mm) | Rated ripple current | Part Number |
|----------|----------|---------------|----------------------|----------------|
| 200(2D) | 2.2 | 6.3×7 | 55 | EGD2DM2R2E07OT |
| | | 6.3×9 | 60 | EGD2DM2R2E09OT |
| | 2.8 | 6.3×7 | 61 | EGD2DM2R8E07OT |
| | | 6.3×9 | 68 | EGD2DM2R8E09OT |
| | 3.3 | 6.3×7 | 65 | EGD2DM3R3E07OT |
| | | 6.3×9 | 72 | EGD2DM3R3E09OT |
| | 4.7 | 6.3×9 | 76 | EGD2DM4R7E09OT |
| | | 6.3×12 | 85 | EGD2DM4R7E12OT |
| | 5.6 | 6.3×12 | 90 | EGD2DM5R6E12OT |
| | | 8×9 | 92 | EGD2DM5R6F09OT |
| | 6.8 | 6.3×12 | 94 | EGD2DM6R8E12OT |
| | | 8×9 | 98 | EGD2DM6R8F09OT |
| | 8.2 | 8×12 | 110 | EGD2DM6R8F12OT |
| | | 8×9 | 145 | EGD2DM8R2F09OT |
| | 10 | 8×12 | 155 | EGD2DM8R2F12OT |
| | | 8×9 | 165 | EGD2DM100F09OT |
| | 15 | 8×12 | 180 | EGD2DM100F12OT |
| | | 8×12 | 200 | EGD2DM150F12OT |
| | 22 | 8×16 | 225 | EGD2DM150F16OT |
| | | 8×16 | 320 | EGD2DM220F16OT |
| | 33 | 10×12 | 320 | EGD2DM220G12OT |
| | | 10×16 | 380 | EGD2DM220G16OT |
| 47 | 10×16 | 425 | EGD2DM330G16OT | |
| | 10×20 | 450 | EGD2DM330G20OT | |
| 68 | 12.5×13 | 430 | EGD2DM330W13OT | |
| | 10×20 | 520 | EGD2DM470G20OT | |
| 82 | 12.5×16 | 520 | EGD2DM470W16OT | |
| | 12.5×20 | 600 | EGD2DM680W20OT | |
| 100 | 12.5×25 | 665 | EGD2DM680W25OT | |
| | 12.5×20 | 670 | EGD2DM820W20OT | |
| 150 | 12.5×25 | 700 | EGD2DM101W25OT | |
| | 16×20 | 700 | EGD2DM101L20OT | |
| 150 | 16×25 | 820 | EGD2DM151L25OT | |
| | 16×30 | 895 | EGD2DM151L30OT | |
| 250(2E) | 1 | 6.3×7 | 36 | EGD2EM010E07OT |
| | | 6.3×9 | 40 | EGD2EM010E09OT |
| | 1.2 | 6.3×7 | 41 | EGD2EM1R2E07OT |
| | | 6.3×9 | 46 | EGD2EM1R2E09OT |
| | 1.5 | 6.3×7 | 51 | EGD2EM1R5E07OT |
| | | 6.3×9 | 54 | EGD2EM1R5E09OT |
| | 1.8 | 6.3×7 | 54 | EGD2EM1R8E07OT |
| | | 6.3×9 | 58 | EGD2EM1R8E09OT |
| | 2.2 | 6.3×7 | 55 | EGD2EM2R2E07OT |
| | | 6.3×9 | 62 | EGD2EM2R2E09OT |
| | 2.8 | 6.3×7 | 63 | EGD2EM2R8E07OT |
| | | 6.3×9 | 70 | EGD2EM2R8E09OT |
| | 3.3 | 6.3×9 | 75 | EGD2EM3R3E09OT |
| | | 6.3×12 | 80 | EGD2EM3R3E12OT |
| | 4.7 | 6.3×12 | 92 | EGD2EM4R7E12OT |
| | | 8×9 | 92 | EGD2EM4R7F09OT |
| | 5.6 | 8×12 | 102 | EGD2EM4R7F12OT |
| | | 8×9 | 95 | EGD2EM5R6F09OT |
| | 6.8 | 8×12 | 105 | EGD2EM5R6F12OT |
| | | 8×9 | 105 | EGD2EM6R8F09OT |
| | 8.2 | 8×12 | 109 | EGD2EM6R8F12OT |
| | | 8×9 | 120 | EGD2EM8R2F09OT |
| 10 | 8×12 | 132 | EGD2EM8R2F12OT | |
| | 8×10 | 187 | EGD2EM100F10OT | |
| 15 | 8×12 | 200 | EGD2EM100F12OT | |
| | 10×9 | 175 | EGD2EM100G09OT | |
| 15 | 8×16 | 225 | EGD2EM150F16OT | |
| | 10×12 | 225 | EGD2EM150G12OT | |

CD11GD series

■ STANDARD RATINGS (Rated ripple current: mA rms/105°C 100kHz)

| WV (Vdc) | Cap (μF) | Size D×L(mm) | Rated ripple current | Part Number |
|----------|----------|--------------|----------------------|----------------|
| 250(2E) | 22 | 8×16 | 350 | EGD2EM220F16OT |
| | | 10×16 | 380 | EGD2EM220G16OT |
| | | 10×20 | 430 | EGD2EM330G20OT |
| | 33 | 12.5×16 | 450 | EGD2EM330W16OT |
| | | 12.5×16 | 520 | EGD2EM470W16OT |
| | 47 | 12.5×20 | 580 | EGD2EM470W20OT |
| | | 12.5×25 | 660 | EGD2EM680W25OT |
| | 68 | 16×20 | 660 | EGD2EM680L20OT |
| | | 16×20 | 720 | EGD2EM820L20OT |
| | 82 | 16×25 | 760 | EGD2EM820L25OT |
| | | 16×20 | 765 | EGD2EM101L20OT |
| | 100 | 16×25 | 790 | EGD2EM101L25OT |
| | | 16×30 | 885 | EGD2EM151L30OT |
| | 150 | 18×25 | 885 | EGD2EM151M25OT |
| 315(2F) | | 2.2 | 6.3×9 | 66 |
| | 3.3 | 6.3×9 | 74 | EGD2FM3R3E09OT |
| | 4.7 | 6.3×12 | 90 | EGD2FM4R7E12OT |
| | 5.6 | 8×9 | 95 | EGD2FM5R6F09OT |
| | 6.8 | 8×9 | 102 | EGD2FM6R8F09OT |
| | 8.2 | 8×12 | 120 | EGD2FM8R2F12OT |
| | 10 | 10×12 | 205 | EGD2FM100G12OT |
| | 15 | 10×16 | 260 | EGD2FM150G16OT |
| | 22 | 10×20 | 370 | EGD2FM220G20OT |
| | 33 | 12.5×20 | 450 | EGD2FM330W20OT |
| 47 | 12.5×20 | 580 | EGD2FM470W20OT | |
| 350(2V) | 1 | 6.3×7 | 40 | EGD2VM010E07OT |
| | | 6.3×9 | 45 | EGD2VM010E09OT |
| | 1.2 | 6.3×7 | 55 | EGD2VM1R2E07OT |
| | | 6.3×9 | 50 | EGD2VM1R2E09OT |
| | 1.5 | 6.3×9 | 55 | EGD2VM1R5E09OT |
| | | 6.3×12 | 60 | EGD2VM1R5E12OT |
| | 1.8 | 6.3×9 | 60 | EGD2VM1R8E09OT |
| | | 6.3×12 | 64 | EGD2VM1R8E12OT |
| | 2.2 | 6.3×9 | 66 | EGD2VM2R2E09OT |
| | | 6.3×12 | 70 | EGD2VM2R2E12OT |
| | 2.8 | 8×9 | 72 | EGD2VM2R2F09OT |
| | | 8×9 | 76 | EGD2VM2R8F09OT |
| | 2.8 | 8×12 | 80 | EGD2VM2R8F12OT |
| | | 6.3×12 | 77 | EGD2VM3R3E12OT |
| | 3.3 | 8×9 | 78 | EGD2VM3R3F09OT |
| | | 8×12 | 82 | EGD2VM3R3F12OT |
| | 4.7 | 8×9 | 90 | EGD2VM4R7F09OT |
| | | 8×12 | 102 | EGD2VM4R7F12OT |
| | 5.6 | 8×12 | 110 | EGD2VM5R6F12OT |
| | | 10×9 | 110 | EGD2VM5R6G09OT |
| | 6.8 | 8×12 | 120 | EGD2VM6R8F12OT |
| | | 10×9 | 120 | EGD2VM6R8G09OT |
| | 8.2 | 8×16 | 140 | EGD2VM8R2F16OT |
| | | 10×12 | 140 | EGD2VM8R2G12OT |
| | 10 | 8×20 | 226 | EGD2VM100F20OT |
| | | 10×12 | 205 | EGD2VM100G12OT |
| | 15 | 10×16 | 260 | EGD2VM150G16OT |
| | | 10×20 | 285 | EGD2VM150G20OT |
| | 22 | 10×20 | 370 | EGD2VM220G20OT |
| | | 12.5×16 | 370 | EGD2VM220W16OT |
| 33 | 12.5×20 | 450 | EGD2VM330W20OT | |
| | 12.5×25 | 480 | EGD2VM330W25OT | |
| 47 | 16×20 | 600 | EGD2VM470L20OT | |
| | 16×25 | 720 | EGD2VM680L25OT | |
| 68 | 18×20 | 720 | EGD2VM680M20OT | |
| | 16×30 | 770 | EGD2VM820L30OT | |
| 82 | 18×25 | 770 | EGD2VM820M25OT | |
| | 16×30 | 850 | EGD2VM101L30OT | |
| 100 | 18×25 | 850 | EGD2VM101M25OT | |

| WV (Vdc) | Cap (μF) | Size D×L(mm) | Rated ripple current | Part Number |
|----------|----------|--------------|----------------------|----------------|
| 400(2G) | 1 | 6.3×7 | 50 | EGD2GM010E07OT |
| | | 6.3×9 | 55 | EGD2GM010E09OT |
| | 1.2 | 6.3×9 | 59 | EGD2GM1R2E09OT |
| | | 6.3×12 | 63 | EGD2GM1R2E12OT |
| | 1.5 | 6.3×9 | 65 | EGD2GM1R5E09OT |
| | | 6.3×12 | 68 | EGD2GM1R5E12OT |
| | 1.8 | 6.3×9 | 68 | EGD2GM1R8E09OT |
| | | 6.3×12 | 71 | EGD2GM1R8E12OT |
| | 2.2 | 6.3×9 | 68 | EGD2GM2R2E09OT |
| | | 6.3×12 | 72 | EGD2GM2R2E12OT |
| | | 8×9 | 75 | EGD2GM2R2F09OT |
| | | 8×12 | 78 | EGD2GM2R2F12OT |
| | 2.8 | 6.3×12 | 74 | EGD2GM2R8E12OT |
| | | 8×9 | 78 | EGD2GM2R8F09OT |
| | | 8×12 | 81 | EGD2GM2R8F12OT |
| | | 8×7 | 78 | EGD2GM3R3F07OT |
| | 3.3 | 8×9 | 85 | EGD2GM3R3F09OT |
| | | 8×12 | 91 | EGD2GM3R3F12OT |
| | 4.7 | 8×9 | 90 | EGD2GM4R7F09OT |
| | | 8×12 | 104 | EGD2GM4R7F12OT |
| | 5.6 | 8×12 | 114 | EGD2GM5R6F12OT |
| | | 10×12 | 124 | EGD2GM5R6G12OT |
| | 6.8 | 8×12 | 125 | EGD2GM6R8F12OT |
| | | 10×12 | 140 | EGD2GM6R8G12OT |
| | 8.2 | 10×12 | 185 | EGD2GM8R2G12OT |
| | | 10×16 | 218 | EGD2GM8R2G16OT |
| | 10 | 10×12 | 220 | EGD2GM100G12OT |
| | | 10×16 | 230 | EGD2GM100G16OT |
| 15 | 10×20 | 255 | EGD2GM150G20OT | |
| | 12.5×16 | 270 | EGD2GM150W16OT | |
| 22 | 12.5×16 | 370 | EGD2GM220W16OT | |
| | 12.5×20 | 400 | EGD2GM220W20OT | |
| 33 | 12.5×25 | 520 | EGD2GM330W25OT | |
| | 13×20 | 465 | EGD2GM330K20OT | |
| 47 | 16×20 | 520 | EGD2GM330L20OT | |
| | 12.5×30 | 565 | EGD2GM470W30OT | |
| 47 | 16×20 | 565 | EGD2GM470L20OT | |
| | 16×25 | 590 | EGD2GM470L25OT | |
| 68 | 16×30 | 680 | EGD2GM680L30OT | |
| | 18×25 | 700 | EGD2GM680M25OT | |
| 82 | 18×25 | 770 | EGD2GM820M25OT | |
| | 100 | 18×30 | 900 | EGD2GM101M30OT |
| 150 | 18×40 | 1250 | EGD2GM151M40OT | |
| | 450(2W) | 1 | 6.3×9 | 55 |
| 6.3×12 | | | 58 | EGD2WM010E12OT |
| 1.2 | | 6.3×9 | 60 | EGD2WM1R2E09OT |
| | | 8×9 | 65 | EGD2WM1R5F09OT |
| 1.5 | | 8×12 | 70 | EGD2WM1R5F12OT |
| | | 8×9 | 68 | EGD2WM1R8F09OT |
| 1.8 | | 8×12 | 72 | EGD2WM1R8F12OT |
| | | 8×9 | 72 | EGD2WM2R2F09OT |
| 2.2 | | 8×12 | 74 | EGD2WM2R2F12OT |
| | | 8×9 | 75 | EGD2WM2R8F09OT |
| 2.8 | | 8×12 | 77 | EGD2WM2R8F12OT |
| | | 8×12 | 80 | EGD2WM3R3F12OT |
| 3.3 | | 8×16 | 86 | EGD2WM3R3F16OT |
| | | 10×9 | 80 | EGD2WM3R3G09OT |
| 4.7 | | 8×12 | 84 | EGD2WM4R7F12OT |
| | | 8×16 | 92 | EGD2WM4R7F16OT |
| 5.6 | | 10×12 | 94 | EGD2WM4R7G12OT |
| | | 10×12 | 102 | EGD2WM5R6G12OT |
| 6.8 | | 10×16 | 115 | EGD2WM5R6G16OT |
| | | 10×12 | 130 | EGD2WM6R8G12OT |
| 6.8 | | 10×16 | 142 | EGD2WM6R8G16OT |

Radial Type

CD11GD series

■ STANDARD RATINGS (Rated ripple current: mA rms/105°C 100kHz)

| WV (Vdc) | Cap (μF) | Size D×L(mm) | Rated ripple current | Part Number |
|----------|----------|--------------|----------------------|----------------|
| 450(2W) | 8.2 | 10×16 | 185 | EGD2WM8R2G16OT |
| | | 10×20 | 209 | EGD2WM8R2G20OT |
| | 10 | 10×16 | 218 | EGD2WM100G16OT |
| | | 10×20 | 225 | EGD2WM100G20OT |
| | 15 | 12.5×16 | 300 | EGD2WM150W16OT |
| | | 12.5×20 | 332 | EGD2WM150W20OT |
| | 22 | 12.5×20 | 385 | EGD2WM220W20OT |
| | | 12.5×25 | 427 | EGD2WM220W25OT |
| | 33 | 10×45 | 510 | EGD2WM330G45OT |
| | | 12.5×30 | 495 | EGD2WM330W30OT |
| | | 16×20 | 495 | EGD2WM330L20OT |
| | 47 | 12.5×35 | 595 | EGD2WM470W35OT |
| | | 16×25 | 630 | EGD2WM470L25OT |
| | 68 | 18×25 | 740 | EGD2WM680M25OT |
| | 82 | 18×30 | 800 | EGD2WM820M30OT |
| | 100 | 18×35 | 890 | EGD2WM101M35OT |
| 150 | 18×45 | 1085 | EGD2WM151M45OT | |

CD11GHS series

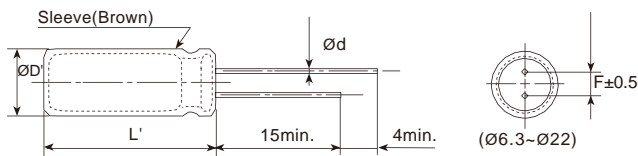
- Upgrade for CD11GH Series, longer life, better performance, cost-effective
- Endurance: +105°C 6,000 hours
- Suitable for electronic ballast and electronic energy saving lamp.
- RoHS Compliant



SPECIFICATIONS

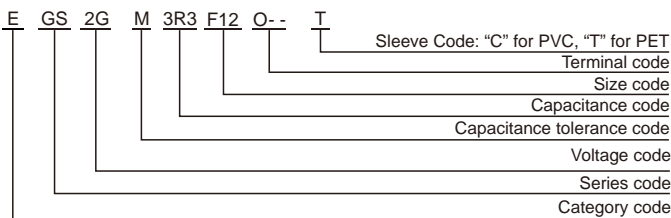
| Items | Characteristics | | | | | | | | | | |
|--|--|-------------------------------------|---------------------------|---|------|------|------|------|------|------|------------------|
| Category Temperature Range | -40~+105°C | | | | | | | | | | |
| Rated Voltage Range | 140~500 V _{dc} | | | | | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | | | | | | | | | |
| Leakage Current | 140~400 V _{dc} | 450~500 V _{dc} | | Where, I: Max.leakage current (μA), C:Nominal capacitance (μF), V: Rated voltage (V) | | | | | | | |
| | I 0.02CV+10μA | I 0.03CV+10μA | (at 20°C after 2 minutes) | | | | | | | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 140 | 160 | 200 | 250 | 315 | 350 | 400 | 450 | 500 | (at 20°C, 120Hz) |
| | tan (max.) | 0.15 | 0.15 | 0.15 | 0.15 | 0.20 | 0.20 | 0.20 | 0.20 | 0.24 | |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) | 140 | 160 | 200 | 250 | 315 | 350 | 400 | 450 | 500 | (at 120Hz) |
| | Z(+25°C)/Z(+20°C) | 3 | 3 | 3 | 3 | 5 | 5 | 5 | 6 | 6 | |
| | Z(-40°C)/Z(+20°C) | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 9 | |
| Endurance | The specifications listed below shall be met when the capacitors are restored to 20°C after DC voltage plus rated ripple current is applied for 6,000 hours at 105°C, the peak voltage shall not exceed the rated voltage. | | | | | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | | | | |
| | D.F. (tan δ) | 200% of the initial specified value | | | | | | | | | |
| | Leakage Current | The initial specified value | | | | | | | | | |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after leaving them under no load at 105°C for 1,000 hours. | | | | | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | | | | |
| | D.F. (tan δ) | 200% of the initial specified value | | | | | | | | | |
| | Leakage Current | 200% of the initial specified value | | | | | | | | | |

DIMENSIONS[mm]



| | | | | | | | | |
|-----|------------|-----|-----|------|-----|-----|-----|-----|
| ØD | 6.3 | 8 | 10 | 12.5 | 13 | 16 | 18 | 22 |
| Ød | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 | 0.8 |
| F | 2.5 | 3.5 | 5.0 | 5.0 | 5.0 | 7.5 | 7.5 | 10 |
| ØD' | ØD+0.5max. | | | | | | | |
| L' | L+2max. | | | | | | | |

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| | | | | | |
|---------------------------------|-----------|------|------|------|------|
| | Freq.(Hz) | 120 | 1k | 10k | 100k |
| Rated voltage(V _{dc}) | | 0.50 | 0.80 | 0.90 | 1.00 |
| 140~500 | | | | | |

CD11GHS series

■ STANDARD RATINGS (Rated ripple current: mA rms/105°C 100kHz)

| WV (Vdc) | Cap (μF) | Size D×L(mm) | Rated ripple current | Part Number |
|----------|----------|--------------|----------------------|----------------|
| 140(2A) | 10 | 6.3×12 | 100 | EGS2AM100E12OT |
| | 15 | 6.3×12 | 125 | EGS2AM150E12OT |
| | 22 | 8×12 | 250 | EGS2AM220F12OT |
| | 33 | 10×12 | 365 | EGS2AM330G12OT |
| | 47 | 8×20 | 430 | EGS2AM470F20OT |
| | 68 | 10×20 | 520 | EGS2AM680G20OT |
| | 100 | 12.5×16 | 650 | EGS2AM101W16OT |
| | 150 | 12.5×25 | 750 | EGS2AM151W25OT |
| 220 | 16×20 | 850 | EGS2AM221L20OT | |
| 160(2C) | 1 | 6.3×7 | 34 | EGS2CM010E07OT |
| | | 6.3×9 | 36 | EGS2CM010E09OT |
| | 1.5 | 6.3×7 | 38 | EGS2CM1R5E07OT |
| | | 6.3×9 | 45 | EGS2CM1R5E09OT |
| | 1.8 | 6.3×7 | 49 | EGS2CM1R8E07OT |
| | | 6.3×9 | 50 | EGS2CM1R8E09OT |
| | 2.2 | 6.3×7 | 53 | EGS2CM2R2E07OT |
| | | 6.3×9 | 56 | EGS2CM2R2E09OT |
| | 2.8 | 6.3×7 | 58 | EGS2CM2R8E07OT |
| | | 6.3×9 | 62 | EGS2CM2R8E09OT |
| | 3.3 | 6.3×7 | 62 | EGS2CM3R3E07OT |
| | | 6.3×9 | 67 | EGS2CM3R3E09OT |
| | 4.7 | 6.3×7 | 68 | EGS2CM4R7E07OT |
| | | 6.3×9 | 72 | EGS2CM4R7E09OT |
| | 5.6 | 6.3×9 | 75 | EGS2CM5R6E09OT |
| | | 6.3×12 | 79 | EGS2CM5R6E12OT |
| | 6.8 | 6.3×9 | 84 | EGS2CM6R8E09OT |
| | | 6.3×12 | 89 | EGS2CM6R8E12OT |
| | 8.2 | 6.3×12 | 120 | EGS2CM8R2E12OT |
| | | 8×9 | 135 | EGS2CM8R2F09OT |
| | 10 | 8×9 | 165 | EGS2CM100F09OT |
| | | 8×12 | 206 | EGS2CM100F12OT |
| | 15 | 8×9 | 215 | EGS2CM150F09OT |
| | | 8×12 | 230 | EGS2CM150F12OT |
| | 22 | 8×12 | 306 | EGS2CM220F12OT |
| | | 8×16 | 340 | EGS2CM220F16OT |
| | 33 | 10×12 | 400 | EGS2CM330G12OT |
| | | 10×16 | 425 | EGS2CM330G16OT |
| 47 | 10×16 | 460 | EGS2CM470G16OT | |
| | 10×20 | 500 | EGS2CM470G20OT | |
| 68 | 10×20 | 560 | EGS2CM680G20OT | |
| | 12.5×16 | 570 | EGS2CM680W16OT | |
| 82 | 12.5×20 | 665 | EGS2CM820W20OT | |
| | 12.5×20 | 720 | EGS2CM101W20OT | |
| 100 | 12.5×25 | 740 | EGS2CM101W25OT | |
| | 12.5×25 | 780 | EGS2CM151W25OT | |
| 150 | 16×20 | 780 | EGS2CM151L20OT | |
| | 16×25 | 980 | EGS2CM221L25OT | |
| 330 | 18×30 | 1145 | EGS2CM331M30OT | |
| 200(2D) | 1 | 6.3×7 | 35 | EGS2DM010E07OT |
| | | 6.3×9 | 38 | EGS2DM010E09OT |
| | 1.5 | 6.3×7 | 49 | EGS2DM1R5E07OT |
| | | 6.3×9 | 50 | EGS2DM1R5E09OT |
| | 1.8 | 6.3×7 | 50 | EGS2DM1R8E07OT |
| | | 6.3×9 | 54 | EGS2DM1R8E09OT |
| | 2.2 | 6.3×7 | 55 | EGS2DM2R2E07OT |
| | | 6.3×9 | 60 | EGS2DM2R2E09OT |
| | 2.8 | 6.3×7 | 61 | EGS2DM2R8E07OT |
| | | 6.3×9 | 68 | EGS2DM2R8E09OT |
| | 3.3 | 6.3×7 | 68 | EGS2DM3R3E07OT |
| | | 6.3×9 | 74 | EGS2DM3R3E09OT |
| | 4.7 | 6.3×9 | 82 | EGS2DM4R7E09OT |
| | | 6.3×12 | 90 | EGS2DM4R7E12OT |
| | 5.6 | 6.3×12 | 95 | EGS2DM5R6E12OT |
| | | 8×9 | 95 | EGS2DM5R6F09OT |

| WV (Vdc) | Cap (μF) | Size D×L(mm) | Rated ripple current | Part Number |
|----------|----------|--------------|----------------------|----------------|
| 200(2D) | 6.8 | 8×9 | 105 | EGS2DM6R8F09OT |
| | | 8×12 | 120 | EGS2DM6R8F12OT |
| | 8.2 | 8×9 | 150 | EGS2DM8R2F09OT |
| | | 8×12 | 160 | EGS2DM8R2F12OT |
| | 10 | 8×9 | 170 | EGS2DM100F09OT |
| | | 8×12 | 185 | EGS2DM100F12OT |
| | 15 | 8×12 | 225 | EGS2DM150F12OT |
| | | 8×16 | 250 | EGS2DM150F16OT |
| | 22 | 8×16 | 360 | EGS2DM220F16OT |
| | | 10×16 | 400 | EGS2DM220G16OT |
| | 33 | 10×16 | 425 | EGS2DM330G16OT |
| | | 10×20 | 450 | EGS2DM330G20OT |
| | 47 | 10×20 | 550 | EGS2DM470G20OT |
| | | 12.5×16 | 550 | EGS2DM470W16OT |
| | 68 | 12.5×20 | 635 | EGS2DM680W20OT |
| | | 12.5×25 | 700 | EGS2DM680W25OT |
| 82 | 12.5×20 | 705 | EGS2DM820W20OT | |
| | 12.5×25 | 735 | EGS2DM101W25OT | |
| 100 | 16×20 | 735 | EGS2DM101L20OT | |
| | 16×25 | 855 | EGS2DM151L25OT | |
| 150 | 16×30 | 920 | EGS2DM151L30OT | |
| | 1 | 6.3×7 | 36 | EGS2EM010E07OT |
| 6.3×9 | | 40 | EGS2EM010E09OT | |
| 1.5 | 6.3×7 | 51 | EGS2EM1R5E07OT | |
| | 6.3×9 | 54 | EGS2EM1R5E09OT | |
| 1.8 | 6.3×7 | 55 | EGS2EM1R8E07OT | |
| | 6.3×9 | 59 | EGS2EM1R8E09OT | |
| 2.2 | 6.3×7 | 64 | EGS2EM2R2E07OT | |
| | 6.3×9 | 71 | EGS2EM2R2E09OT | |
| 2.8 | 6.3×7 | 71 | EGS2EM2R8E07OT | |
| | 6.3×9 | 75 | EGS2EM2R8E09OT | |
| 3.3 | 6.3×9 | 78 | EGS2EM3R3E09OT | |
| | 6.3×12 | 83 | EGS2EM3R3E12OT | |
| 4.7 | 6.3×12 | 91 | EGS2EM4R7E12OT | |
| | 8×9 | 97 | EGS2EM4R7F09OT | |
| 5.6 | 8×12 | 102 | EGS2EM4R7F12OT | |
| | 8×9 | 95 | EGS2EM5R6F09OT | |
| 6.8 | 8×12 | 105 | EGS2EM5R6F12OT | |
| | 8×9 | 105 | EGS2EM6R8F09OT | |
| 8.2 | 8×12 | 109 | EGS2EM6R8F12OT | |
| | 8×9 | 120 | EGS2EM8R2F09OT | |
| 10 | 8×12 | 132 | EGS2EM8R2F12OT | |
| | 8×12 | 170 | EGS2EM100F12OT | |
| 15 | 8×16 | 210 | EGS2EM100F16OT | |
| | 8×16 | 295 | EGS2EM150F16OT | |
| 22 | 10×12 | 295 | EGS2EM150G12OT | |
| | 8×16 | 360 | EGS2EM220F16OT | |
| 33 | 10×16 | 400 | EGS2EM220G16OT | |
| | 10×20 | 480 | EGS2EM330G20OT | |
| 47 | 12.5×16 | 480 | EGS2EM330W16OT | |
| | 12.5×16 | 560 | EGS2EM470W16OT | |
| 68 | 12.5×20 | 627 | EGS2EM470W20OT | |
| | 12.5×25 | 675 | EGS2EM680W25OT | |
| 82 | 16×20 | 675 | EGS2EM680L20OT | |
| | 16×20 | 730 | EGS2EM820L20OT | |
| 100 | 16×25 | 760 | EGS2EM820L25OT | |
| | 16×20 | 780 | EGS2EM101L20OT | |
| 150 | 16×25 | 820 | EGS2EM101L25OT | |
| | 16×30 | 930 | EGS2EM151L30OT | |
| | 18×25 | 930 | EGS2EM151M25OT | |

CD11GHS series

■ STANDARD RATINGS(Rated ripple current: mA rms/105°C 100kHz)

| WV (Vdc) | Cap (μF) | Size D×L(mm) | Rated ripple current | Part Number | |
|----------|----------|--------------|----------------------|----------------|----------------|
| 315(2F) | 2.2 | 6.3×9 | 71 | EGS2FM2R2E09OT | |
| | 3.3 | 6.3×9 | 78 | EGS2FM3R3E09OT | |
| | 4.7 | 6.3×12 | 95 | EGS2FM4R7E12OT | |
| | 5.6 | 8×9 | 100 | EGS2FM5R6F09OT | |
| | 6.8 | 8×9 | 110 | EGS2FM6R8F09OT | |
| | 8.2 | 8×12 | 130 | EGS2FM8R2F12OT | |
| | 10 | 10×12 | 215 | EGS2FM100G12OT | |
| | 15 | 10×16 | 325 | EGS2FM150G16OT | |
| | 22 | 10×20 | 420 | EGS2FM220G20OT | |
| | 33 | 12.5×20 | 540 | EGS2FM330W20OT | |
| 47 | 12.5×20 | 630 | EGS2FM470W20OT | | |
| 350(2V) | 1 | 6.3×7 | 52 | EGS2VM010E07OT | |
| | | 6.3×9 | 58 | EGS2VM010E09OT | |
| | 1.5 | 6.3×7 | 62 | EGS2VM1R5E07OT | |
| | | 6.3×9 | 68 | EGS2VM1R5E09OT | |
| | 1.8 | 6.3×9 | 74 | EGS2VM1R8E09OT | |
| | | 6.3×12 | 80 | EGS2VM1R8E12OT | |
| | 2.2 | 6.3×9 | 85 | EGS2VM2R2E09OT | |
| | | 6.3×12 | 90 | EGS2VM2R2E12OT | |
| | 2.8 | 8×9 | 101 | EGS2VM2R8F09OT | |
| | | 8×12 | 106 | EGS2VM2R8F12OT | |
| | 3.3 | 8×9 | 106 | EGS2VM3R3F09OT | |
| | | 8×12 | 110 | EGS2VM3R3F12OT | |
| | 4.7 | 8×9 | 112 | EGS2VM4R7F09OT | |
| | | 8×12 | 120 | EGS2VM4R7F12OT | |
| | 5.6 | 8×12 | 130 | EGS2VM5R6F12OT | |
| | | 8×16 | 150 | EGS2VM5R6F16OT | |
| | 6.8 | 8×12 | 160 | EGS2VM6R8F12OT | |
| | | 8×16 | 170 | EGS2VM6R8F16OT | |
| | 8.2 | 8×16 | 190 | EGS2VM8R2F16OT | |
| | 10 | 8×20 | 230 | EGS2VM100F20OT | |
| | | 10×12 | 210 | EGS2VM100G12OT | |
| | | 10×16 | 280 | EGS2VM150G16OT | |
| | | 10×20 | 310 | EGS2VM150G20OT | |
| | | 22 | 10×20 | 385 | EGS2VM220G20OT |
| | | 33 | 12.5×16 | 400 | EGS2VM220W16OT |
| | | 33 | 12.5×20 | 515 | EGS2VM330W20OT |
| | | 47 | 12.5×25 | 535 | EGS2VM330W25OT |
| | | 68 | 16×20 | 650 | EGS2VM470L20OT |
| | | 68 | 16×25 | 760 | EGS2VM680L25OT |
| | 82 | 18×20 | 760 | EGS2VM680M20OT | |
| 16×30 | | 910 | EGS2VM820L30OT | | |
| 18×25 | | 910 | EGS2VM820M25OT | | |
| 16×30 | | 960 | EGS2VM101L30OT | | |
| 100 | 18×25 | 960 | EGS2VM101M25OT | | |
| | 18×25 | 960 | EGS2VM101M25OT | | |
| 400(2G) | 1 | 6.3×7 | 63 | EGS2GM010E07OT | |
| | | 6.3×9 | 70 | EGS2GM010E09OT | |
| | 1.5 | 6.3×9 | 72 | EGS2GM1R5E09OT | |
| | | 6.3×12 | 78 | EGS2GM1R5E12OT | |
| | 1.8 | 6.3×9 | 80 | EGS2GM1R8E09OT | |
| | | 6.3×12 | 85 | EGS2GM1R8E12OT | |
| | 2.2 | 6.3×9 | 85 | EGS2GM2R2E09OT | |
| | | 6.3×12 | 90 | EGS2GM2R2E12OT | |
| | 2.8 | 8×12 | 105 | EGS2GM2R2F12OT | |
| | | 8×9 | 105 | EGS2GM2R8F09OT | |
| | 3.3 | 8×12 | 110 | EGS2GM2R8F12OT | |
| | | 8×9 | 110 | EGS2GM3R3F09OT | |
| | 4.7 | 8×12 | 120 | EGS2GM3R3F12OT | |
| | | 8×9 | 125 | EGS2GM4R7F09OT | |
| | 5.6 | 8×12 | 140 | EGS2GM4R7F12OT | |
| | | 8×12 | 150 | EGS2GM5R6F12OT | |
| | 6.8 | 10×12 | 160 | EGS2GM5R6G12OT | |
| | | 8×12 | 165 | EGS2GM6R8F12OT | |
| | 6.8 | 10×12 | 180 | EGS2GM6R8G12OT | |

| WV (Vdc) | Cap (μF) | Size D×L(mm) | Rated ripple current | Part Number | |
|----------|----------|--------------|----------------------|----------------|----------------|
| 400(2G) | 8.2 | 10×12 | 200 | EGS2GM8R2G12OT | |
| | | 10×16 | 220 | EGS2GM8R2G16OT | |
| | | 10×12 | 230 | EGS2GM100G12OT | |
| | 10 | 10×16 | 252 | EGS2GM100G16OT | |
| | | 12 | 10×16 | 262 | EGS2GM120G16OT |
| | | 15 | 10×20 | 300 | EGS2GM150G20OT |
| | 22 | 12.5×16 | 370 | EGS2GM220W16OT | |
| | | 12.5×20 | 400 | EGS2GM220W20OT | |
| | | 12.5×25 | 520 | EGS2GM330W25OT | |
| | 33 | 13×20 | 465 | EGS2GM330L20OT | |
| | | 16×20 | 520 | EGS2GM330L20OT | |
| | | 16×20 | 580 | EGS2GM470L20OT | |
| | 56 | 16×25 | 650 | EGS2GM560L25OT | |
| | | 16×30 | 760 | EGS2GM680L30OT | |
| | | 18×25 | 760 | EGS2GM680M25OT | |
| 82 | 18×25 | 810 | EGS2GM820M25OT | | |
| | 18×30 | 920 | EGS2GM101M30OT | | |
| | 18×40 | 1280 | EGS2GM151M40OT | | |
| 450(2W) | 1 | 6.3×9 | 60 | EGS2WM010E09OT | |
| | | 6.3×12 | 65 | EGS2WM010E12OT | |
| | 1.5 | 8×9 | 70 | EGS2WM1R5F09OT | |
| | | 8×12 | 75 | EGS2WM1R5F12OT | |
| | 1.8 | 8×9 | 81 | EGS2WM1R8F09OT | |
| | | 8×12 | 90 | EGS2WM1R8F12OT | |
| | 2.2 | 8×9 | 93 | EGS2WM2R2F09OT | |
| | | 8×12 | 103 | EGS2WM2R2F12OT | |
| | 2.8 | 8×9 | 105 | EGS2WM2R8F09OT | |
| | | 8×12 | 115 | EGS2WM2R8F12OT | |
| | 3.3 | 8×12 | 116 | EGS2WM3R3F12OT | |
| | | 8×16 | 128 | EGS2WM3R3F16OT | |
| | 4.7 | 8×12 | 130 | EGS2WM4R7F12OT | |
| | | 8×16 | 140 | EGS2WM4R7F16OT | |
| | | 10×12 | 150 | EGS2WM5R6G12OT | |
| 5.6 | 10×16 | 162 | EGS2WM5R6G16OT | | |
| | 10×12 | 170 | EGS2WM6R8G12OT | | |
| | 10×16 | 180 | EGS2WM6R8G16OT | | |
| 8.2 | 10×16 | 210 | EGS2WM8R2G16OT | | |
| | 10×20 | 230 | EGS2WM8R2G20OT | | |
| | 10×16 | 235 | EGS2WM100G16OT | | |
| 10 | 10×20 | 250 | EGS2WM100G20OT | | |
| | 12.5×16 | 320 | EGS2WM150W16OT | | |
| | 12.5×20 | 350 | EGS2WM150W20OT | | |
| 22 | 12.5×20 | 425 | EGS2WM220W20OT | | |
| | 12.5×25 | 450 | EGS2WM220W25OT | | |
| | 16×20 | 510 | EGS2WM330L20OT | | |
| 47 | 16×25 | 640 | EGS2WM470L25OT | | |
| | 18×25 | 760 | EGS2WM680M25OT | | |
| | 18×30 | 860 | EGS2WM820M30OT | | |
| 100 | 18×35 | 920 | EGS2WM101M35OT | | |
| | 18×45 | 1100 | EGS2WM151M45OT | | |
| | 10 | 12.5×20 | 259 | EGS2HM100W20OT | |
| 500(2H) | 15 | 12.5×25 | 272 | EGS2HM100W25OT | |
| | | 12.5×25 | 356 | EGS2HM150W25OT | |
| | 22 | 16×20 | 356 | EGS2HM150L20OT | |
| | | 12.5×35 | 453 | EGS2HM220W35OT | |
| | 33 | 16×25 | 453 | EGS2HM220L25OT | |
| | | 18×25 | 567 | EGS2HM330M25OT | |
| | 47 | 18×30 | 713 | EGS2HM470M30OT | |
| | | 18×30 | 770 | EGS2HM560M30OT | |
| | 68 | 18×35 | 900 | EGS2HM680M35OT | |
| | | 22×35 | 1000 | EGS2HM680O35OT | |
| 82 | 22×35 | 1150 | EGS2HM820O35OT | | |
| | 22×35 | 1400 | EGS2HM101O35OT | | |

Radial Type

CD11GM series

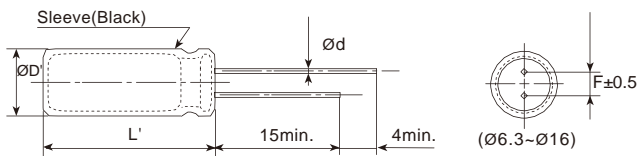
- Endurance: +105°C 3,000 hours
- Economical type, miniaturized
- RoHS Compliant



SPECIFICATIONS

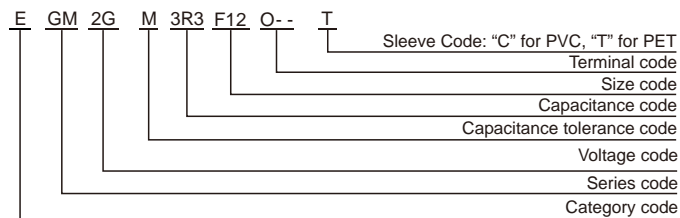
| Items | Characteristics | | | | | | |
|--|--|-------------------------------------|------|---|------|------|------------------|
| Category Temperature Range | -40~+105°C | | | | | | |
| Rated Voltage Range | 160~450 V _{dc} | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | | | | | |
| Leakage Current | 160~400 V _{dc} | 450 V _{dc} | | Where, I:Max.leakage current (μA), C:Nominal capacitance (μF), V: Rated voltage (V) (at 20°C after 2 minutes) | | | |
| | I 0.02CV+25μA | I 0.03CV+25μA | | | | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 160 | 200 | 250 | 400 | 450 | (at 20°C, 120Hz) |
| | tan (max.) | 0.15 | 0.15 | 0.15 | 0.20 | 0.20 | |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) | 160 | 200 | 250 | 400 | 450 | (at 120Hz) |
| | Z(-25°C)/Z(+20°C) | 3 | 3 | 3 | 5 | 6 | |
| | Z(-40°C)/Z(+20°C) | 6 | 6 | 6 | 6 | 9 | |
| Endurance | The specifications listed below shall be met when the capacitors are restored to 20°C after DC voltage plus rated ripple current is applied for 3,000 hours at 105°C, the peak voltage shall not exceed the rated voltage. | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | |
| | D.F. (tan δ) | 200% of the initial specified value | | | | | |
| | Leakage Current | The initial specified value | | | | | |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after leaving them under no load at 105°C for 1,000 hours. | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | |
| | D.F. (tan δ) | 200% of the initial specified value | | | | | |
| | Leakage Current | 500% of the initial specified value | | | | | |

DIMENSIONS[mm]



| | | | | | | |
|-----|------------|-----|-----|------|-----|-----|
| ØD | 6.3 | 8 | 10 | 12.5 | 13 | 16 |
| Ød | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.8 |
| F | 2.5 | 3.5 | 5.0 | 5.0 | 5.0 | 7.5 |
| ØD' | ØD+0.5max. | | | | | |
| L' | L+2max. | | | | | |

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| Rated voltage(V _{dc}) \ Freq.(Hz) | 120 | 1k | 10k | 100k |
|---|------|------|------|------|
| 160~450 | 0.50 | 0.80 | 0.90 | 1.00 |

CD11GM series

■ STANDARD RATINGS(Rated ripple current: mArms/105°C 100kHz)

| WV (Vdc) | Cap (μF) | Size DxL(mm) | Rated ripple current | Part Number |
|----------|----------|--------------|----------------------|----------------|
| 160(2C) | 4.7 | 6.3x7 | 52 | EGM2CM4R7E07OT |
| | 5.6 | 6.3x9 | 58 | EGM2CM5R6E09OT |
| | 6.8 | 6.3x12 | 70 | EGM2CM6R8E12OT |
| | 8.2 | 6.3x12 | 100 | EGM2CM8R2E12OT |
| | | | 135 | EGM2CM100E12OT |
| | | | 135 | EGM2CM100F09OT |
| | 10 | 8x9 | 145 | EGM2CM100F12OT |
| | | | 155 | EGM2CM150F09OT |
| | | | 162 | EGM2CM150F12OT |
| | 22 | 8x12 | 220 | EGM2CM220F12OT |
| | | | 260 | EGM2CM220G12OT |
| | | | 320 | EGM2CM330G16OT |
| | 33 | 10x16 | 365 | EGM2CM470G16OT |
| | | | 400 | EGM2CM470G20OT |
| | | | 450 | EGM2CM560G20OT |
| 68 | 10x20 | 500 | EGM2CM680G20OT | |
| | | 650 | EGM2CM101W20OT | |
| | | 52 | EGM2DM4R7E09OT | |
| 200(2D) | 5.6 | 6.3x12 | 62 | EGM2DM5R6E12OT |
| | 6.8 | 6.3x12 | 76 | EGM2DM6R8E12OT |
| | 8.2 | 8x9 | 90 | EGM2DM8R2F09OT |
| | | | 95 | EGM2DM8R2F12OT |
| | 10 | 8x9 | 130 | EGM2DM100F09OT |
| | | | 145 | EGM2DM100F12OT |
| | 15 | 8x12 | 170 | EGM2DM150F12OT |
| | | | 185 | EGM2DM150F16OT |
| | 22 | 8x16 | 255 | EGM2DM220F16OT |
| | 33 | 10x16 | 330 | EGM2DM330G16OT |
| | 47 | 10x20 | 420 | EGM2DM470G20OT |
| | 56 | 12.5x20 | 500 | EGM2DM560W20OT |

| WV (Vdc) | Cap (μF) | Size DxL(mm) | Rated ripple current | Part Number |
|----------|----------|--------------|----------------------|----------------|
| 250(2E) | 4.7 | 6.3x9 | 80 | EGM2EM4R7E09OT |
| | | 6.3x12 | 85 | EGM2EM4R7E12OT |
| | | 8x9 | 85 | EGM2EM4R7F09OT |
| | 6.8 | 8x9 | 92 | EGM2EM6R8F09OT |
| | | | 96 | EGM2EM6R8F12OT |
| | | | 96 | EGM2EM8R2F09OT |
| | 8.2 | 8x12 | 100 | EGM2EM8R2F12OT |
| | | | 150 | EGM2EM100F12OT |
| | 10 | 10x9 | 150 | EGM2EM100G09OT |
| | | | 195 | EGM2EM150F16OT |
| | 22 | 10x16 | 280 | EGM2EM220G16OT |
| | 33 | 10x20 | 360 | EGM2EM330G20OT |
| | | | 360 | EGM2EM330W16OT |
| | | | 430 | EGM2EM470W16OT |
| | 47 | 12.5x16 | 430 | EGM2EM470W16OT |
| 400(2G) | 1 | 6.3x9 | 35 | EGM2GM10E09OT |
| | | | 40 | EGM2GM1R5E09OT |
| | 1.8 | 6.3x12 | 49 | EGM2GM1R8E12OT |
| | | | 60 | EGM2GM2R2E12OT |
| | 2.2 | 8x9 | 60 | EGM2GM2R2F09OT |
| | | | 70 | EGM2GM3R3F09OT |
| | 3.3 | 8x12 | 75 | EGM2GM3R3F12OT |
| | | | 88 | EGM2GM4R7F09OT |
| | 4.7 | 8x12 | 95 | EGM2GM4R7F12OT |
| | | | 117 | EGM2GM6R8F12OT |
| | 6.8 | 8x16 | 130 | EGM2GM6R8F16OT |
| | | | 130 | EGM2GM6R8G12OT |
| | | | 170 | EGM2GM100F16OT |
| | 10 | 10x12 | 170 | EGM2GM100G12OT |
| | | | 195 | EGM2GM100G16OT |
| 230 | | | EGM2GM150G16OT | |
| 22 | 12.5x20 | 345 | EGM2GM220W20OT | |
| 33 | 13x20 | 445 | EGM2GM330K20OT | |
| 47 | 16x25 | 650 | EGM2GM470L25OT | |
| 450(2W) | 2.2 | 8x9 | 65 | EGM2WM2R2F09OT |
| | 3.3 | 8x12 | 85 | EGM2WM3R3F12OT |
| | 4.7 | 8x12 | 105 | EGM2WM4R7F12OT |
| | 6.8 | 10x12 | 140 | EGM2WM6R8G12OT |
| | 10 | 10x16 | 205 | EGM2WM100G16OT |
| | 15 | 10x20 | 265 | EGM2WM150G20OT |
| | 22 | 12.5x20 | 360 | EGM2WM220W20OT |
| | 33 | 16x20 | 500 | EGM2WM330L20OT |
| | 47 | 16x25 | 665 | EGM2WM470L25OT |

RR series

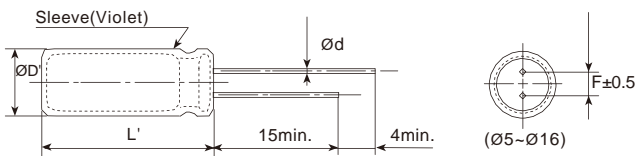
- High frequency, low impedance, high reliability
- Endurance: +105°C 2,000 hours
- Suitable for switching power, UPS, power sources, etc.
- **RoHS Compliant**



SPECIFICATIONS

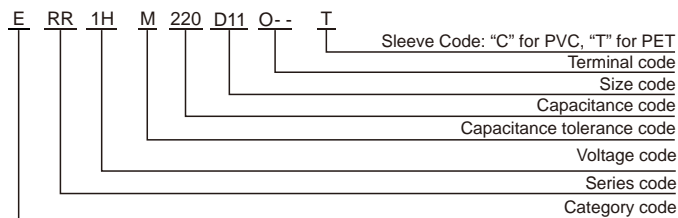
| Items | Characteristics | | | | | | |
|--|--|---|------|------|------|------|------------|
| Category Temperature Range | -40~+105°C | | | | | | |
| Rated Voltage Range | 6.3~50 V _{dc} | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | | | | | |
| Leakage Current | 1 0.01CV or 3μA, whichever is greater. Where, I: Max. leakage current (μA), C: Nominal capacitance (μF), V: Rated voltage (V) (at 20°C after 2 minutes) | | | | | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 6.3 | 10 | 16 | 25 | 35 | 50 |
| | tan δ (max.) | 0.22 | 0.18 | 0.14 | 0.12 | 0.10 | 0.08 |
| | When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20°C, 120Hz) | | | | | | |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) | 6.3 | 10 | 16 | 25 | 35 | 50 |
| | Z(-25°C)/Z(+20°C) | 2 | | | | | (at 120Hz) |
| Endurance | The specifications listed below shall be met when the capacitors are restored to 20°C after DC voltage plus rated ripple current is applied for 2,000 hours at 105 °C. | | | | | | |
| | Capacitance Change | ±20% of the initial value (6.3,10V: ±30%) | | | | | |
| | D.F. (tan δ) | 200% of the initial specified value | | | | | |
| | Leakage Current | The initial specified value | | | | | |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after leaving them under no load at 105°C for 1,000 hours. | | | | | | |
| | Capacitance Change | ±20% of the initial value (6.3,10V: ±30%) | | | | | |
| | D.F. (tan δ) | 200% of the initial specified value | | | | | |
| | Leakage Current | 200% of the initial specified value | | | | | |

DIMENSIONS[mm]



| | | | | | | |
|-----|------------|-----|-----|-----|------|-----|
| ∅D | 5 | 6.3 | 8 | 10 | 12.5 | 16 |
| ∅d | 0.45 | 0.5 | 0.5 | 0.5 | 0.6 | 0.8 |
| F | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 |
| ∅D' | ∅D+0.5max. | | | | | |
| L' | L+2max. | | | | | |

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| Cap.(μF) \ Freq.(Hz) | 120 | 1k | 10k | 100k |
|----------------------|------|------|------|------|
| Cap.<220 | 0.40 | 0.75 | 0.90 | 1.00 |
| 220 Cap.<680 | 0.50 | 0.85 | 0.94 | 1.00 |
| 680 Cap.<2200 | 0.60 | 0.87 | 0.95 | 1.00 |
| 2200 Cap.<4700 | 0.75 | 0.90 | 0.95 | 1.00 |
| Cap. 4700 | 0.85 | 0.95 | 0.98 | 1.00 |

RR series

■ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Impedance (max/20°C, 100kHz) | Rated ripple current (mA rms/105°C, 100kHz) | Part Number |
|----------|----------|--------------|---------|------------------------------|---|----------------|
| 6.3(OJ) | 150 | 5x11 | 0.22 | 0.3 | 250 | ERR0JM151D11OT |
| | | 6.3x7 | 0.22 | 0.3 | 250 | ERR0JM151E07OT |
| | 330 | 6.3x9 | 0.22 | 0.15 | 350 | ERR0JM331E09OT |
| | | 6.3x11 | 0.22 | 0.13 | 405 | ERR0JM331E11OT |
| | 560 | 8x9 | 0.22 | 0.12 | 605 | ERR0JM561F09OT |
| | | 8x12 | 0.22 | 0.072 | 760 | ERR0JM561F12OT |
| | 820 | 8x16 | 0.22 | 0.056 | 995 | ERR0JM821F16OT |
| | | 10x9 | 0.22 | 0.085 | 800 | ERR0JM821G09OT |
| | 1000 | 10x12.5 | 0.22 | 0.053 | 1030 | ERR0JM102G1BOT |
| | | 8x20 | 0.22 | 0.041 | 1250 | ERR0JM122F20OT |
| | 1200 | 10x16 | 0.22 | 0.038 | 1430 | ERR0JM122G16OT |
| | | 1500 | 10x20 | 0.22 | 0.023 | 1820 |
| | 2200 | 10x25 | 0.24 | 0.022 | 2150 | ERR0JM222G25OT |
| | | 3300 | 12.5x20 | 0.26 | 0.021 | 2360 |
| | 3900 | 12.5x25 | 0.26 | 0.018 | 2770 | ERR0JM392W25OT |
| | | 4700 | 12.5x30 | 0.28 | 0.016 | 3290 |
| | 5600 | 12.5x35 | 0.30 | 0.015 | 3400 | ERR0JM562W35OT |
| | | 6800 | 16x20 | 0.30 | 0.018 | 3140 |
| | 6800 | 16x25 | 0.32 | 0.016 | 3460 | ERR0JM682L25OT |
| | | 100 | 5x7 | 0.18 | 1.38 | 185 |
| 5x11 | 0.18 | | 0.3 | 250 | ERR1AM101D11OT | |
| | 220 | 6.3x7 | 0.18 | 0.35 | 405 | ERR1AM221E07OT |
| 6.3x11 | | 0.18 | 0.13 | 405 | ERR1AM221E11OT | |
| | 470 | 8x9 | 0.18 | 0.18 | 606 | ERR1AM471F09OT |
| 8x11 | | 0.18 | 0.072 | 760 | ERR1AM471F11OT | |
| | 8x16 | 0.18 | 0.056 | 995 | ERR1AM681F16OT | |
| 680 | | 10x9 | 0.18 | 0.085 | 760 | ERR1AM681G09OT |
| | 10x12.5 | 0.18 | 0.053 | 1030 | ERR1AM681G1BOT | |
| 1000 | | 8x20 | 0.18 | 0.041 | 1250 | ERR1AM102F20OT |
| | 10x16 | 0.18 | 0.038 | 1430 | ERR1AM102G16OT | |
| 1200 | | 10x20 | 0.18 | 0.023 | 1820 | ERR1AM122G20OT |
| | 1500 | 10x25 | 0.18 | 0.022 | 2150 | ERR1AM152G25OT |
| 2200 | | 12.5x20 | 0.20 | 0.021 | 2360 | ERR1AM222W20OT |
| | 3300 | 12.5x25 | 0.22 | 0.018 | 2770 | ERR1AM332W25OT |
| 3900 | | 12.5x30 | 0.22 | 0.016 | 3290 | ERR1AM392W30OT |
| | 16x20 | 0.22 | 0.018 | 3140 | ERR1AM392L20OT | |
| 4700 | | 12.5x35 | 0.24 | 0.015 | 3400 | ERR1AM472W35OT |
| | 5600 | 16x25 | 0.26 | 0.016 | 3460 | ERR1AM562L25OT |
| 10(1A) | | 56 | 5x7 | 0.14 | 0.7 | 180 |
| | 5x11 | | 0.14 | 0.3 | 250 | ERR1CM560D11OT |
| | 120 | 6.3x7 | 0.14 | 0.4 | 300 | ERR1CM121E07OT |
| | | 6.3x11 | 0.14 | 0.13 | 405 | ERR1CM121E11OT |
| | 330 | 8x7 | 0.14 | 0.14 | 510 | ERR1CM331F07OT |
| | | 8x12 | 0.14 | 0.072 | 760 | ERR1CM331F12OT |
| | 470 | 8x16 | 0.14 | 0.056 | 795 | ERR1CM471F16OT |
| | | 10x12.5 | 0.14 | 0.053 | 1030 | ERR1CM471G1BOT |
| | 680 | 8x20 | 0.14 | 0.041 | 1250 | ERR1CM681F20OT |
| | | 10x16 | 0.14 | 0.038 | 1430 | ERR1CM681G16OT |
| | 1000 | 10x20 | 0.14 | 0.023 | 1820 | ERR1CM102G20OT |
| | | 1200 | 10x25 | 0.14 | 0.022 | 2150 |
| | 1500 | 12.5x20 | 0.14 | 0.021 | 2360 | ERR1CM152W20OT |
| | | 2200 | 12.5x25 | 0.16 | 0.018 | 2770 |
| | 2700 | 12.5x30 | 0.16 | 0.016 | 3290 | ERR1CM272W30OT |
| | | 16x20 | 0.16 | 0.018 | 3140 | ERR1CM272L20OT |
| | 3300 | 12.5x35 | 0.18 | 0.015 | 3400 | ERR1CM332W35OT |
| | | 3900 | 16x25 | 0.18 | 0.016 | 3460 |

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Impedance (max/20°C, 100kHz) | Rated ripple current (mA rms/105°C, 100kHz) | Part Number | |
|----------|----------|--------------|---------|------------------------------|---|----------------|----------------|
| 25(1E) | 47 | 5x11 | 0.12 | 0.3 | 250 | ERR1EM470D11OT | |
| | | 6.3x7 | 0.12 | 1.1 | 200 | ERR1EM470E07OT | |
| | 100 | 6.3x11 | 0.12 | 0.13 | 405 | ERR1EM101E11OT | |
| | | 8x7 | 0.12 | 0.3 | 430 | ERR1EM101F07OT | |
| | 220 | 8x9 | 0.12 | 0.1 | 600 | ERR1EM221F09OT | |
| | | 8x12 | 0.12 | 0.072 | 760 | ERR1EM221F12OT | |
| | 330 | 8x16 | 0.12 | 0.056 | 995 | ERR1EM331F16OT | |
| | | 470 | 8x20 | 0.12 | 0.041 | 1250 | ERR1EM471F20OT |
| | 680 | 10x12.5 | 0.12 | 0.053 | 1030 | ERR1EM681G1BOT | |
| | | 820 | 10x16 | 0.12 | 0.038 | 1430 | ERR1EM821G16OT |
| | 1000 | 10x20 | 0.12 | 0.023 | 1820 | ERR1EM102G20OT | |
| | | 1500 | 10x25 | 0.12 | 0.022 | 2150 | ERR1EM152G25OT |
| | 1800 | 12.5x20 | 0.12 | 0.021 | 2360 | ERR1EM182W20OT | |
| | | 12.5x30 | 0.12 | 0.016 | 3290 | ERR1EM182W30OT | |
| | 2200 | 16x20 | 0.12 | 0.018 | 3140 | ERR1EM182L20OT | |
| | | 12.5x25 | 0.14 | 0.018 | 2770 | ERR1EM222W25OT | |
| | 2700 | 12.5x35 | 0.14 | 0.015 | 3400 | ERR1EM222W35OT | |
| | | 16x25 | 0.14 | 0.016 | 3460 | ERR1EM272L25OT | |
| | 35(1V) | 33 | 5x7 | 0.10 | 1.15 | 160 | ERR1VM330D07OT |
| | | | 5x11 | 0.10 | 0.3 | 250 | ERR1VM330D11OT |
| 56 | | 6.3x11 | 0.10 | 0.13 | 405 | ERR1VM560E11OT | |
| | | 8x7 | 0.10 | 0.39 | 405 | ERR1VM560F07OT | |
| 150 | | 8x9 | 0.10 | 0.17 | 600 | ERR1VM151F09OT | |
| | | 8x12 | 0.10 | 0.072 | 760 | ERR1VM151F12OT | |
| 220 | | 8x16 | 0.10 | 0.056 | 995 | ERR1VM221F16OT | |
| | | 10x12.5 | 0.10 | 0.053 | 1030 | ERR1VM221G1BOT | |
| 270 | | 8x20 | 0.10 | 0.041 | 1250 | ERR1VM271F20OT | |
| | | 330 | 10x16 | 0.10 | 0.038 | 1430 | ERR1VM331G16OT |
| 470 | | 10x20 | 0.10 | 0.023 | 1820 | ERR1VM471G20OT | |
| | | 560 | 10x25 | 0.10 | 0.022 | 2150 | ERR1VM561G25OT |
| 680 | | 12.5x20 | 0.10 | 0.021 | 2360 | ERR1VM681W20OT | |
| | | 1000 | 12.5x25 | 0.10 | 0.018 | 2770 | ERR1VM102W25OT |
| 1200 | | 12.5x30 | 0.10 | 0.016 | 3290 | ERR1VM122W30OT | |
| | | 16x20 | 0.10 | 0.018 | 3140 | ERR1VM122L20OT | |
| 1500 | | 12.5x35 | 0.10 | 0.015 | 3400 | ERR1VM152W35OT | |
| | | 1800 | 16x25 | 0.10 | 0.016 | 3460 | ERR1VM182L25OT |
| 50(1H) | | 22 | 5x11 | 0.08 | 0.34 | 238 | ERR1HM220D11OT |
| | | | 6.3x7 | 0.08 | 0.52 | 200 | ERR1HM220E07OT |
| | 56 | 6.3x12 | 0.08 | 0.14 | 385 | ERR1HM560E12OT | |
| | | 8x7 | 0.08 | 0.36 | 320 | ERR1HM560F07OT | |
| | 100 | 8x9 | 0.08 | 0.2 | 580 | ERR1HM101F09OT | |
| | | 8x12 | 0.08 | 0.074 | 724 | ERR1HM101F12OT | |
| | 120 | 8x16 | 0.08 | 0.061 | 950 | ERR1HM121F16OT | |
| | | 150 | 10x12.5 | 0.08 | 0.061 | 979 | ERR1HM151G1BOT |
| | 180 | 8x20 | 0.08 | 0.046 | 1190 | ERR1HM181F20OT | |
| | | 220 | 10x16 | 0.08 | 0.042 | 1370 | ERR1HM221G16OT |
| | 270 | 10x20 | 0.08 | 0.03 | 1580 | ERR1HM271G20OT | |
| | | 330 | 10x25 | 0.08 | 0.028 | 1870 | ERR1HM331G25OT |
| | 470 | 12.5x20 | 0.08 | 0.027 | 2050 | ERR1HM471W20OT | |
| | | 560 | 12.5x25 | 0.08 | 0.023 | 2410 | ERR1HM561W25OT |
| | 680 | 12.5x30 | 0.08 | 0.021 | 2860 | ERR1HM681W30OT | |
| | | 820 | 12.5x35 | 0.08 | 0.019 | 2960 | ERR1HM821W35OT |
| | 1000 | 16x20 | 0.08 | 0.023 | 2730 | ERR1HM821L20OT | |
| | | 16x25 | 0.08 | 0.021 | 3010 | ERR1HM102L25OT | |

Radial Type

RE series

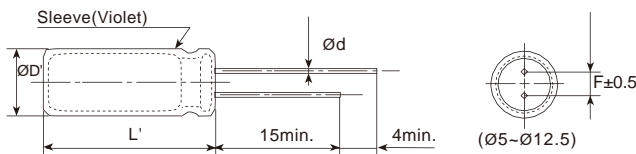
- Low impedance and high frequency.
- Endurance: +105°C 2,000–4,000 hours
- Suitable for switching power, UPS, power sources, etc.
- RoHS Compliant



SPECIFICATIONS

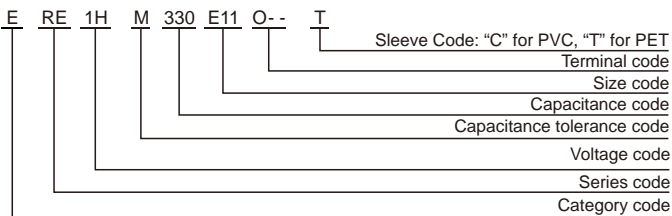
| Items | Characteristics | | | | | | | | |
|--|---|---------------|-------------------|--------|-------|---------|-------|---------|-------|
| Category Temperature Range | -40~+105°C | | | | | | | | |
| Rated Voltage Range | 6.3~100 V _{dc} | | | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C,120Hz) | | | | | | | | |
| Leakage Current | I 0.01CV or 3μA, whichever is greater. Where, I:Max.leakage current (μA),C:Nominal capacitance (μF),V: Rated voltage (V) (at 20°C after 2 minutes) | | | | | | | | |
| Dissipation Factor (tan) | Rated Voltage(V _{dc}) 6.3 10 16 25 35 50 63 100 | | | | | | | | |
| | tan (max.) 0.22 0.19 0.16 0.14 0.12 0.10 0.09 0.08 | | | | | | | | |
| When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20°C,120Hz) | | | | | | | | | |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) 6.3 10 16 25 35 50 63 100 | | | | | | | | |
| | Z(-25°C)/Z(+20°C) 4 3 2 | | | | | | | | |
| | Z(-40°C)/Z(+20°C) 8 6 4 3 (at 120Hz) | | | | | | | | |
| Endurance | The following specifications listed below shall be met when the capacitors are restored to 20°C after DC voltage plus rated ripple current is applied for a specified period of time at 105 °C. | | | | | | | | |
| | Capacitance Change ±25% of the initial value | | | | | | | | |
| | D.F. (tan) 200% of the initial specified value | | | | | | | | |
| | Leakage Current The initial specified value | | | | | | | | |
| <table border="1"> <thead> <tr> <th>Case Dia.(mm)</th> <th>Load life (hours)</th> </tr> </thead> <tbody> <tr> <td>ØD 6.3</td> <td>2,000</td> </tr> <tr> <td>ØD=8&10</td> <td>3,000</td> </tr> <tr> <td>ØD 12.5</td> <td>4,000</td> </tr> </tbody> </table> | | Case Dia.(mm) | Load life (hours) | ØD 6.3 | 2,000 | ØD=8&10 | 3,000 | ØD 12.5 | 4,000 |
| Case Dia.(mm) | Load life (hours) | | | | | | | | |
| ØD 6.3 | 2,000 | | | | | | | | |
| ØD=8&10 | 3,000 | | | | | | | | |
| ØD 12.5 | 4,000 | | | | | | | | |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after leaving them under no load at 105°C for 1,000 hours. | | | | | | | | |
| | Capacitance Change ±25% of the initial value | | | | | | | | |
| | D.F. (tan) 200% of the initial specified value | | | | | | | | |
| | Leakage Current 200% of the initial specified value | | | | | | | | |

DIMENSIONS[mm]



| ØD | 5 | 6.3 | 8 | 10 | 12.5 |
|-----|------------|-----|-----|-----|------|
| Ød | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 |
| F | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 |
| ØD' | ØD+0.5max. | | | | |
| L' | L+2max. | | | | |

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| Freq.(Hz) | 120 | 1k | 10k | 100k |
|----------------|------|------|------|------|
| Cap.<220 | 0.40 | 0.75 | 0.90 | 1.00 |
| 220 Cap.<680 | 0.50 | 0.85 | 0.94 | 1.00 |
| 680 Cap.<2200 | 0.60 | 0.87 | 0.95 | 1.00 |
| 2200 Cap.<4700 | 0.75 | 0.90 | 0.95 | 1.00 |
| Cap. 4700 | 0.85 | 0.95 | 0.98 | 1.00 |

The endurance of capacitors is shortened with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

RE series

■ STANDARD RATINGS

| WV (Vdc) | Cap (µF) | Size DxDL(mm) | tan | Impedance (max/20°C, 100kHz) | Rated ripple current (mArms/105°C, 100kHz) | Part Number |
|----------|----------|---------------|--------|------------------------------|--|----------------|
| 6.3(0J) | 180 | 6.3x11 | 0.22 | 0.25 | 340 | ERE0JM181E11OT |
| | | 8x9 | 0.22 | 0.33 | 300 | ERE0JM181F09OT |
| | 220 | 6.3x11 | 0.22 | 0.25 | 340 | ERE0JM221E11OT |
| | | 8x9 | 0.22 | 0.33 | 300 | ERE0JM221F09OT |
| | 270 | 6.3x11 | 0.22 | 0.25 | 340 | ERE0JM271E11OT |
| | | 8x9 | 0.22 | 0.33 | 300 | ERE0JM271F09OT |
| | 330 | 8x11 | 0.22 | 0.13 | 650 | ERE0JM331F11OT |
| | | 10x9 | 0.22 | 0.17 | 580 | ERE0JM331G09OT |
| | 470 | 8x11 | 0.22 | 0.13 | 650 | ERE0JM471F11OT |
| | | 10x9 | 0.22 | 0.17 | 580 | ERE0JM471G09OT |
| | 560 | 8x11 | 0.22 | 0.13 | 650 | ERE0JM561F11OT |
| | | 10x9 | 0.22 | 0.17 | 580 | ERE0JM561G09OT |
| | 680 | 8x11 | 0.22 | 0.13 | 650 | ERE0JM681F11OT |
| | | 10x9 | 0.22 | 0.17 | 580 | ERE0JM681G09OT |
| | 820 | 10x12 | 0.22 | 0.08 | 870 | ERE0JM821G12OT |
| | | 10x9 | 0.22 | 0.17 | 580 | ERE0JM102G09OT |
| | 1000 | 10x12 | 0.22 | 0.08 | 870 | ERE0JM102G12OT |
| | | 10x12 | 0.22 | 0.08 | 870 | ERE0JM122G12OT |
| | 1200 | 8x20 | 0.22 | 0.068 | 1050 | ERE0JM152F20OT |
| | | 10x16 | 0.22 | 0.060 | 1210 | ERE0JM152G16OT |
| 1800 | 10x20 | 0.22 | 0.045 | 1400 | ERE0JM182G20OT | |
| | 10x20 | 0.24 | 0.045 | 1400 | ERE0JM222G20OT | |
| 2200 | 10x25 | 0.24 | 0.042 | 1650 | ERE0JM272G25OT | |
| | 12.5x20 | 0.24 | 0.035 | 1900 | ERE0JM272W20OT | |
| 3300 | 10x25 | 0.24 | 0.042 | 1650 | ERE0JM332G25OT | |
| | 12.5x20 | 0.26 | 0.035 | 1900 | ERE0JM332W20OT | |
| 3900 | 12.5x20 | 0.26 | 0.035 | 1900 | ERE0JM392W20OT | |
| | 12.5x25 | 0.28 | 0.030 | 2130 | ERE0JM472W25OT | |
| 10(1A) | 150 | 6.3x11 | 0.19 | 0.25 | 340 | ERE1AM151E11OT |
| | | 8x9 | 0.19 | 0.33 | 300 | ERE1AM151F09OT |
| | 180 | 6.3x11 | 0.19 | 0.25 | 340 | ERE1AM181E11OT |
| | | 8x9 | 0.19 | 0.33 | 300 | ERE1AM181F09OT |
| | 220 | 6.3x11 | 0.19 | 0.25 | 340 | ERE1AM221E11OT |
| | | 8x9 | 0.19 | 0.33 | 300 | ERE1AM221F09OT |
| | 270 | 8x9 | 0.19 | 0.33 | 300 | ERE1AM271F09OT |
| | | 10x9 | 0.19 | 0.17 | 580 | ERE1AM271G09OT |
| | 330 | 10x9 | 0.19 | 0.17 | 580 | ERE1AM331G09OT |
| | | 10x9 | 0.19 | 0.17 | 580 | ERE1AM471G09OT |
| | 560 | 10x9 | 0.19 | 0.17 | 580 | ERE1AM561G09OT |
| | | 680 | 10x9 | 0.19 | 0.17 | 580 |
| | 820 | 10x12 | 0.19 | 0.08 | 870 | ERE1AM821G12OT |
| | | 8x16 | 0.19 | 0.087 | 850 | ERE1AM102F16OT |
| | 1000 | 10x16 | 0.19 | 0.060 | 1210 | ERE1AM102G16OT |
| | | 1200 | 10x20 | 0.19 | 0.045 | 1400 |
| | 1500 | 10x20 | 0.19 | 0.045 | 1400 | ERE1AM152G20OT |
| | | 1800 | 10x20 | 0.19 | 0.045 | 1400 |
| | 2200 | 10x20 | 0.21 | 0.045 | 1400 | ERE1AM222G20OT |
| | | 10x25 | 0.21 | 0.042 | 1650 | ERE1AM272G25OT |
| 2700 | 12.5x20 | 0.21 | 0.035 | 1900 | ERE1AM272W20OT | |
| | 12.5x25 | 0.23 | 0.030 | 2130 | ERE1AM332W25OT | |
| 16(1C) | 100 | 8x9 | 0.16 | 0.33 | 300 | ERE1CM101F09OT |
| | | 8x9 | 0.16 | 0.33 | 300 | ERE1CM121F09OT |
| | 150 | 8x9 | 0.16 | 0.33 | 300 | ERE1CM151F09OT |
| | | 10x9 | 0.16 | 0.33 | 580 | ERE1CM151G09OT |
| | 180 | 8x9 | 0.16 | 0.33 | 300 | ERE1CM181F09OT |
| | | 10x9 | 0.16 | 0.33 | 580 | ERE1CM181G09OT |
| | 220 | 8x9 | 0.16 | 0.33 | 300 | ERE1CM221F09OT |
| | | 10x9 | 0.16 | 0.33 | 580 | ERE1CM221G09OT |
| | 270 | 10x9 | 0.16 | 0.17 | 580 | ERE1CM271G09OT |
| | | 330 | 10x9 | 0.16 | 0.17 | 580 |
| | 470 | 10x9 | 0.16 | 0.17 | 580 | ERE1CM471G09OT |
| | | 10x12 | 0.16 | 0.08 | 870 | ERE1CM471G12OT |
| | 560 | 10x12 | 0.16 | 0.08 | 870 | ERE1CM561G12OT |
| | | 8x16 | 0.16 | 0.087 | 850 | ERE1CM681F16OT |
| | 680 | 10x12 | 0.16 | 0.080 | 870 | ERE1CM681G12OT |
| | | 820 | 10x16 | 0.16 | 0.06 | 1210 |
| | 1000 | 10x16 | 0.16 | 0.06 | 1210 | ERE1CM102G16OT |
| | | 1200 | 10x20 | 0.16 | 0.045 | 1400 |
| | 1500 | 10x20 | 0.16 | 0.045 | 1400 | ERE1CM152G20OT |
| | | 1800 | 10x25 | 0.16 | 0.042 | 1650 |
| 2200 | 12.5x20 | 0.16 | 0.035 | 1900 | ERE1CM182W20OT | |
| | 12.5x20 | 0.18 | 0.035 | 1900 | ERE1CM222W20OT | |
| 2700 | 12.5x20 | 0.18 | 0.030 | 2130 | ERE1CM272W20OT | |
| | 25(1E) | 82 | 6.3x11 | 0.14 | 0.25 | 340 |
| 8x9 | | | 0.14 | 0.33 | 300 | ERE1EM820F09OT |
| 100 | | 6.3x11 | 0.14 | 0.25 | 340 | ERE1EM101E11OT |
| | | 8x9 | 0.14 | 0.33 | 300 | ERE1EM101F09OT |

| WV (Vdc) | Cap (µF) | Size DxDL(mm) | tan | Impedance (max/20°C, 100kHz) | Rated ripple current (mArms/105°C, 100kHz) | Part Number |
|----------|----------|---------------|--------|------------------------------|--|----------------|
| 25(1E) | 120 | 8x11 | 0.14 | 0.13 | 650 | ERE1EM121F11OT |
| | | 10x9 | 0.14 | 0.17 | 580 | ERE1EM121G09OT |
| | 150 | 8x11 | 0.14 | 0.13 | 650 | ERE1EM151F11OT |
| | | 10x9 | 0.14 | 0.17 | 580 | ERE1EM151G09OT |
| | 180 | 8x11 | 0.14 | 0.13 | 650 | ERE1EM181F11OT |
| | | 10x9 | 0.14 | 0.17 | 580 | ERE1EM181G09OT |
| | 220 | 8x11 | 0.14 | 0.13 | 650 | ERE1EM221F11OT |
| | | 10x9 | 0.14 | 0.17 | 580 | ERE1EM221G09OT |
| | 270 | 10x9 | 0.14 | 0.17 | 580 | ERE1EM271G09OT |
| | | 10x12 | 0.14 | 0.08 | 870 | ERE1EM271G12OT |
| | 330 | 10x9 | 0.14 | 0.17 | 580 | ERE1EM331G09OT |
| | | 10x12 | 0.14 | 0.08 | 870 | ERE1EM331G12OT |
| | 470 | 8x16 | 0.14 | 0.087 | 840 | ERE1EM471F16OT |
| | | 10x12 | 0.14 | 0.080 | 870 | ERE1EM471G12OT |
| | 560 | 10x16 | 0.14 | 0.060 | 1210 | ERE1EM561G16OT |
| | | 680 | 10x16 | 0.14 | 0.060 | 1210 |
| | 820 | 10x20 | 0.14 | 0.045 | 1400 | ERE1EM821G20OT |
| | | 1000 | 10x20 | 0.14 | 0.045 | 1400 |
| | 1200 | 10x20 | 0.14 | 0.045 | 1400 | ERE1EM122G20OT |
| | | 10x25 | 0.14 | 0.042 | 1650 | ERE1EM152G25OT |
| 1500 | 12.5x20 | 0.14 | 0.035 | 1900 | ERE1EM152W20OT | |
| | 1800 | 12.5x25 | 0.14 | 0.030 | 2130 | ERE1EM182W25OT |
| 2200 | 12.5x25 | 0.14 | 0.030 | 2130 | ERE1EM222W25OT | |
| | 35(1V) | 47 | 6.3x11 | 0.12 | 0.25 | 340 |
| 8x9 | | | 0.12 | 0.33 | 300 | ERE1VM470F09OT |
| 56 | | 6.3x11 | 0.12 | 0.25 | 340 | ERE1VM560E11OT |
| | | 8x9 | 0.12 | 0.33 | 300 | ERE1VM560F09OT |
| 68 | | 6.3x11 | 0.12 | 0.25 | 340 | ERE1VM680E11OT |
| | | 8x9 | 0.12 | 0.33 | 300 | ERE1VM680F09OT |
| 82 | | 8x11 | 0.12 | 0.13 | 650 | ERE1VM820F11OT |
| | | 10x9 | 0.12 | 0.17 | 580 | ERE1VM820G09OT |
| 100 | | 8x11 | 0.12 | 0.13 | 650 | ERE1VM101F11OT |
| | | 10x9 | 0.12 | 0.17 | 580 | ERE1VM101G09OT |
| 120 | | 8x11 | 0.12 | 0.13 | 650 | ERE1VM121F11OT |
| | | 10x9 | 0.12 | 0.17 | 580 | ERE1VM121G09OT |
| 150 | | 8x11 | 0.12 | 0.13 | 650 | ERE1VM151F11OT |
| | | 10x9 | 0.12 | 0.17 | 580 | ERE1VM151G09OT |
| 180 | | 10x12 | 0.12 | 0.08 | 870 | ERE1VM181G12OT |
| | | 8x11 | 0.12 | 0.13 | 650 | ERE1VM221F11OT |
| 220 | | 10x9 | 0.12 | 0.17 | 580 | ERE1VM221G09OT |
| | | 8x16 | 0.12 | 0.087 | 840 | ERE1VM221F16OT |
| 270 | | 10x12 | 0.12 | 0.080 | 870 | ERE1VM221G12OT |
| | | 10x16 | 0.12 | 0.060 | 1210 | ERE1VM271G16OT |
| 330 | 8x20 | 0.12 | 0.069 | 1050 | ERE1VM331F20OT | |
| | 10x12 | 0.12 | 0.080 | 870 | ERE1VM331G12OT | |
| 470 | 10x16 | 0.12 | 0.060 | 1210 | ERE1VM331G16OT | |
| | 10x16 | 0.12 | 0.060 | 1210 | ERE1VM471G16OT | |
| 560 | 10x20 | 0.12 | 0.045 | 1400 | ERE1VM561G20OT | |
| | 680 | 10x20 | 0.12 | 0.045 | 1400 | ERE1VM681G20OT |
| 820 | 10x25 | 0.12 | 0.042 | 1650 | ERE1VM821G25OT | |
| | 12.5x20 | 0.12 | 0.035 | 1900 | ERE1VM821W20OT | |
| 1000 | 12.5x20 | 0.12 | 0.035 | 1900 | ERE1VM102W20OT | |
| | 12.5x25 | 0.12 | 0.030 | 2130 | ERE1VM102W25OT | |
| 50(1H) | 33 | 6.3x11 | 0.10 | 0.30 | 295 | ERE1HM330E11OT |
| | | 8x9 | 0.10 | 0.40 | 260 | ERE1HM330F09OT |
| | 39 | 6.3x11 | 0.10 | 0.30 | 295 | ERE1HM390E11OT |
| | | 8x9 | 0.10 | 0.40 | 260 | ERE1HM390F09OT |
| | 47 | 6.3x11 | 0.10 | 0.30 | 295 | ERE1HM470E11OT |
| | | 8x9 | 0.10 | 0.40 | 260 | ERE1HM470F09OT |
| | 56 | 8x11 | 0.10 | 0.17 | 560 | ERE1HM560F11OT |
| | | 10x9 | 0.10 | 0.23 | 500 | ERE1HM560G09OT |
| | 68 | 8x11 | 0.10 | 0.17 | 560 | ERE1HM680F11OT |
| | | 10x9 | 0.10 | 0.23 | 500 | ERE1HM680G09OT |
| | 82 | 8x11 | 0.10 | 0.17 | 560 | ERE1HM820F11OT |
| | | 10x9 | 0.10 | 0.23 | 500 | ERE1HM820G09OT |
| | 100 | 10x12 | 0.10 | 0.12 | 760 | ERE1HM101G12OT |
| | | 8x16 | 0.10 | 0.12 | 730 | ERE1HM121F16OT |
| | 120 | 10x12 | 0.10 | 0.12 | 760 | ERE1HM121G12OT |
| | | 10x16 | 0.10 | 0.084 | 1050 | ERE1HM151G16OT |
| | 150 | 8x20 | 0.10 | 0.090 | 1050 | ERE1HM181F20OT |
| | | 10x16 | 0.10 | 0.084 | 1050 | ERE1HM181G16OT |
| | 180 | 10x16 | 0.10 | 0.084 | 1050 | ERE1HM221G16OT |
| | | 10x25 | 0.10 | 0.055 | 1440 | ERE1HM271G25OT |
| 220 | 12.5x20 | 0.10 | 0.045 | 1660 | ERE1HM331W20OT | |
| | 12.5x25 | 0.10 | 0.034 | 1950 | ERE1HM471W25OT | |
| 560 | 12.5x25 | 0.10 | 0.034 | 1950 | ERE1HM561W25OT | |

Radial Type

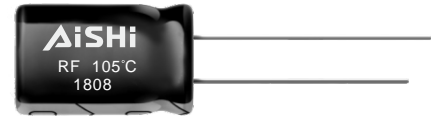
RE series

■ STANDARD RATINGS

| WV (V _{dc}) | Cap (μF) | Size D×L(mm) | tan | Impedance (max/20°C, 100kHz) | Rated ripple current (mArms/105°C, 100kHz) | Part Number |
|-----------------------|----------|--------------|-------|------------------------------|--|----------------|
| 63(1J) | 22 | 6.3×11 | 0.09 | 0.95 | 120 | ERE1JM220E11OT |
| | | 8×9 | 0.09 | 1.24 | 100 | ERE1JM220F09OT |
| | 27 | 6.3×11 | 0.09 | 0.95 | 120 | ERE1JM270E11OT |
| | | 8×9 | 0.09 | 1.24 | 100 | ERE1JM270F09OT |
| | 33 | 6.3×11 | 0.09 | 0.95 | 120 | ERE1JM330E11OT |
| | | 8×9 | 0.09 | 1.24 | 100 | ERE1JM330F09OT |
| | 39 | 8×11 | 0.09 | 0.51 | 235 | ERE1JM390F11OT |
| | | 10×9 | 0.09 | 0.67 | 210 | ERE1JM390G09OT |
| | 47 | 8×11 | 0.09 | 0.51 | 235 | ERE1JM470F11OT |
| | | 10×9 | 0.09 | 0.67 | 210 | ERE1JM470G09OT |
| | 56 | 8×11 | 0.09 | 0.51 | 235 | ERE1JM560F11OT |
| | | 10×9 | 0.09 | 0.67 | 210 | ERE1JM560G09OT |
| | 68 | 8×11 | 0.09 | 0.51 | 235 | ERE1JM680F11OT |
| | | 10×9 | 0.09 | 0.67 | 210 | ERE1JM680G09OT |
| | 82 | 10×12 | 0.09 | 0.34 | 315 | ERE1JM820G12OT |
| | | 8×16 | 0.09 | 0.35 | 300 | ERE1JM101F16OT |
| | 100 | 10×12 | 0.09 | 0.34 | 315 | ERE1JM101G12OT |
| | | 10×16 | 0.09 | 0.245 | 360 | ERE1JM121G16OT |
| | 150 | 8×20 | 0.09 | 0.265 | 360 | ERE1JM151F20OT |
| | 180 | 10×20 | 0.09 | 0.165 | 470 | ERE1JM181G20OT |
| 220 | 10×20 | 0.09 | 0.165 | 470 | ERE1JM221G20OT | |
| 270 | 12.5×20 | 0.09 | 0.125 | 700 | ERE1JM271W20OT | |
| 330 | 12.5×20 | 0.09 | 0.125 | 700 | ERE1JM331W20OT | |
| 390 | 12.5×25 | 0.09 | 0.095 | 930 | ERE1JM391W25OT | |
| 100(1K) | 15 | 6.3×11 | 0.08 | 0.95 | 120 | ERE1KM150E11OT |
| | | 8×9 | 0.08 | 1.24 | 100 | ERE1KM150F09OT |
| | 27 | 8×11 | 0.08 | 0.51 | 235 | ERE1KM270F11OT |
| | | 10×9 | 0.08 | 0.67 | 210 | ERE1KM270G09OT |
| | 39 | 8×16 | 0.08 | 0.36 | 300 | ERE1KM390F16OT |
| | 47 | 10×12 | 0.08 | 0.34 | 315 | ERE1KM470G12OT |
| | 56 | 8×20 | 0.08 | 0.265 | 360 | ERE1KM560F20OT |
| | 68 | 10×16 | 0.08 | 0.245 | 360 | ERE1KM680G16OT |
| | 82 | 10×20 | 0.08 | 0.165 | 470 | ERE1KM820G20OT |
| | 100 | 10×20 | 0.08 | 0.165 | 470 | ERE1KM101G20OT |
| | 120 | 12.5×20 | 0.08 | 0.125 | 700 | ERE1KM121W20OT |
| | 180 | 12.5×25 | 0.08 | 0.095 | 930 | ERE1KM181W25OT |
| | 220 | 12.5×25 | 0.08 | 0.095 | 930 | ERE1KM221W25OT |

RF series

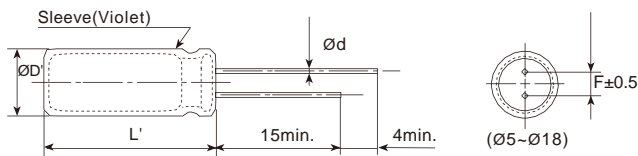
- Ultra-low impedance, high ripple current
- Endurance: +105°C 3,000~6,000 hours
- RoHS Compliant



SPECIFICATIONS

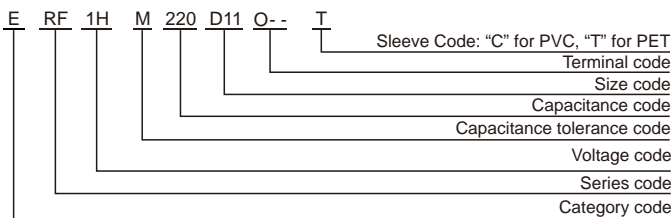
| Items | Characteristics | | | | | | | | | | |
|--|--|-----------|-------------------|--------|-------|------|-------|-------|-------|---------|-------|
| Category Temperature Range | -40~+105°C | | | | | | | | | | |
| Rated Voltage Range | 6.3~120 V _{dc} | | | | | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C,120Hz) | | | | | | | | | | |
| Leakage Current | I 0.01CV or 3μA, whichever is greater. Where, I:Max.leakage current (μA),C:Nominal capacitance (μF),V: Rated voltage (V) (at 20°C after 2 minutes) | | | | | | | | | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) 6.3 10 16 25 35 50 63 80 100 120 | | | | | | | | | | |
| | tan (max.) 0.15 0.14 0.12 0.10 0.10 0.08 0.08 0.08 0.08 0.12 | | | | | | | | | | |
| When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20°C,120Hz) | | | | | | | | | | | |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) 6.3 10 16 25 35 50 63 80 100 120 | | | | | | | | | | |
| | Z(-25°C)/Z(+20°C) 5 4 3 3 | | | | | | | | | | |
| | Z(-40°C)/Z(+20°C) 10 8 5 4 6 (at 120Hz) | | | | | | | | | | |
| Endurance | The following specifications shall be met when the capacitors are restored to 20°C after DC voltage plus rated ripple current is applied for a specified period of time at 105 °C. | | | | | | | | | | |
| | Capacitance Change ±25% of the initial value | | | | | | | | | | |
| | D.F. (tan δ) 200% of the initial specified value | | | | | | | | | | |
| | Leakage Current The initial specified value | | | | | | | | | | |
| <table border="1"> <thead> <tr> <th>Dia. (mm)</th> <th>Load life (hours)</th> </tr> </thead> <tbody> <tr> <td>ØD 6.3</td> <td>3,000</td> </tr> <tr> <td>ØD=8</td> <td>4,000</td> </tr> <tr> <td>ØD=10</td> <td>5,000</td> </tr> <tr> <td>ØD 12.5</td> <td>6,000</td> </tr> </tbody> </table> | | Dia. (mm) | Load life (hours) | ØD 6.3 | 3,000 | ØD=8 | 4,000 | ØD=10 | 5,000 | ØD 12.5 | 6,000 |
| Dia. (mm) | Load life (hours) | | | | | | | | | | |
| ØD 6.3 | 3,000 | | | | | | | | | | |
| ØD=8 | 4,000 | | | | | | | | | | |
| ØD=10 | 5,000 | | | | | | | | | | |
| ØD 12.5 | 6,000 | | | | | | | | | | |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after leaving them under no load at 105°C for 1,000 hours. | | | | | | | | | | |
| | Capacitance Change ±25% of the initial value | | | | | | | | | | |
| | D.F. (tan δ) 200% of the initial specified value | | | | | | | | | | |
| | Leakage Current 200% of the initial specified value | | | | | | | | | | |

DIMENSIONS[mm]



| ØD | 5 | 6.3 | 8 | 10 | 12.5 | 16 | 18 |
|-----|------------|-----|-----|-----|------|-----|-----|
| Ød | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.8 | 0.8 |
| F | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 |
| ØD' | ØD+0.5max. | | | | | | |
| L' | L+2max. | | | | | | |

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| Freq.(Hz) | 120 | 1k | 10k | 100k |
|----------------|------|------|------|------|
| Cap.<220 | 0.40 | 0.75 | 0.90 | 1.00 |
| 220 Cap.<680 | 0.50 | 0.85 | 0.94 | 1.00 |
| 680 Cap.<2200 | 0.60 | 0.87 | 0.95 | 1.00 |
| 2200 Cap.<4700 | 0.75 | 0.90 | 0.95 | 1.00 |
| Cap. 4700 | 0.85 | 0.95 | 0.98 | 1.00 |

RF series

■ STANDARD RATINGS

| WV (V _{dc}) | Cap (μF) | Size D×L(mm) | tan | Impedance (max/20°C, 100kHz) | Rated ripple current (mA _{RMS} /105°C, 100kHz) | Part Number | |
|-----------------------|----------|--------------|--------|------------------------------|---|----------------|----------------|
| 6.3(0J) | 150 | 5×11 | 0.15 | 0.29 | 300 | ERF0JM151D11OT | |
| | | 6.3×9 | 0.15 | 0.37 | 270 | ERF0JM151E09OT | |
| | 220 | 6.3×11 | 0.15 | 0.205 | 377 | ERF0JM221E11OT | |
| | | 8×9 | 0.15 | 0.26 | 337 | ERF0JM221F09OT | |
| | 330 | 6.3×11 | 0.15 | 0.12 | 455 | ERF0JM331E11OT | |
| | | 8×9 | 0.15 | 0.15 | 408 | ERF0JM331F09OT | |
| | 470 | 8×11 | 0.15 | 0.09 | 632 | ERF0JM471F11OT | |
| | | 10×9 | 0.15 | 0.12 | 565 | ERF0JM471G09OT | |
| | 820 | 8×16 | 0.15 | 0.055 | 1045 | ERF0JM821F16OT | |
| | 1000 | 8×16 | 0.15 | 0.052 | 1000 | ERF0JM102F16OT | |
| | 1200 | 8×20 | 0.15 | 0.04 | 1300 | ERF0JM122F20OT | |
| | | 10×16 | 0.15 | 0.037 | 1480 | ERF0JM122G16OT | |
| | 1500 | 10×20 | 0.15 | 0.022 | 1870 | ERF0JM152G20OT | |
| | 2200 | 10×20 | 0.17 | 0.021 | 2200 | ERF0JM222G20OT | |
| | 2700 | 10×25 | 0.17 | 0.02 | 2250 | ERF0JM272G25OT | |
| | 3300 | 12.5×20 | 0.19 | 0.02 | 2410 | ERF0JM332W20OT | |
| | 3900 | 12.5×25 | 0.19 | 0.017 | 2820 | ERF0JM392W25OT | |
| | 4700 | 12.5×30 | 0.21 | 0.015 | 3340 | ERF0JM472W30OT | |
| | 5600 | 12.5×35 | 0.23 | 0.014 | 3400 | ERF0JM562W35OT | |
| | | 16×20 | 0.23 | 0.017 | 3190 | ERF0JM562L20OT | |
| 6800 | 16×25 | 0.25 | 0.015 | 3510 | ERF0JM682L25OT | | |
| 10(1A) | 100 | 5×11 | 0.14 | 0.29 | 300 | ERF1AM101D11OT | |
| | | 6.3×9 | 0.14 | 0.37 | 270 | ERF1AM101E09OT | |
| | 220 | 6.3×11 | 0.14 | 0.12 | 455 | ERF1AM221E11OT | |
| | | 8×9 | 0.14 | 0.15 | 408 | ERF1AM221F09OT | |
| | 470 | 8×11 | 0.14 | 0.071 | 810 | ERF1AM471F11OT | |
| | | 10×9 | 0.14 | 0.092 | 720 | ERF1AM471G09OT | |
| | 680 | 8×16 | 0.14 | 0.055 | 1046 | ERF1AM681F16OT | |
| | | 10×12.5 | 0.14 | 0.052 | 1080 | ERF1AM681G1BOT | |
| | 1000 | 8×20 | 0.14 | 0.04 | 1300 | ERF1AM102F20OT | |
| | | 10×16 | 0.14 | 0.037 | 1480 | ERF1AM102G16OT | |
| | 1200 | 10×20 | 0.14 | 0.022 | 1870 | ERF1AM122G20OT | |
| | 1500 | 10×20 | 0.14 | 0.021 | 2220 | ERF1AM152G20OT | |
| | 2200 | 12.5×20 | 0.16 | 0.02 | 2410 | ERF1AM222W20OT | |
| | 3300 | 12.5×25 | 0.18 | 0.017 | 2820 | ERF1AM332W25OT | |
| | 3900 | 12.5×30 | 0.18 | 0.015 | 3340 | ERF1AM392W30OT | |
| | 4700 | 12.5×35 | 0.20 | 0.014 | 3450 | ERF1AM472W35OT | |
| | 5600 | 16×25 | 0.22 | 0.015 | 3510 | ERF1AM562L25OT | |
| | 16(1C) | 56 | 5×11 | 0.12 | 0.29 | 300 | ERF1CM560D11OT |
| | | | 6.3×9 | 0.12 | 0.37 | 270 | ERF1CM560E09OT |
| | | 120 | 6.3×11 | 0.12 | 0.12 | 455 | ERF1CM121E11OT |
| 8×9 | | | 0.12 | 0.15 | 408 | ERF1CM121F09OT | |
| 150 | | 6.3×11 | 0.12 | 0.096 | 632 | ERF1CM151E11OT | |
| | | 8×9 | 0.12 | 0.12 | 565 | ERF1CM151F09OT | |
| 220 | | 6.3×12 | 0.12 | 0.084 | 721 | ERF1CM221E12OT | |
| | | 8×9 | 0.12 | 0.1 | 650 | ERF1CM221F09OT | |
| 330 | | 8×11 | 0.12 | 0.071 | 810 | ERF1CM331F11OT | |
| | | 10×9 | 0.12 | 0.092 | 720 | ERF1CM331G09OT | |
| 470 | | 8×16 | 0.12 | 0.055 | 1045 | ERF1CM471F16OT | |
| | | 10×12.5 | 0.12 | 0.052 | 1080 | ERF1CM471G1BOT | |
| 680 | | 8×20 | 0.12 | 0.04 | 1300 | ERF1CM681F20OT | |
| | | 10×16 | 0.12 | 0.04 | 1480 | ERF1CM681G16OT | |
| 1000 | | 10×20 | 0.12 | 0.022 | 1870 | ERF1CM102G20OT | |
| 1200 | | 10×25 | 0.12 | 0.021 | 2200 | ERF1CM122G25OT | |
| 1500 | | 12.5×20 | 0.12 | 0.02 | 2410 | ERF1CM152W20OT | |
| 2200 | | 12.5×25 | 0.14 | 0.017 | 2820 | ERF1CM222W25OT | |
| 2700 | | 12.5×30 | 0.14 | 0.015 | 3340 | ERF1CM272W30OT | |
| | | 16×20 | 0.14 | 0.017 | 3190 | ERF1CM272L20OT | |
| 3300 | 12.5×35 | 0.16 | 0.014 | 3450 | ERF1CM332W35OT | | |
| | 16×25 | 0.16 | 0.016 | 3350 | ERF1CM332L25OT | | |
| 3900 | 16×25 | 0.16 | 0.015 | 3510 | ERF1CM392L25OT | | |

| WV (V _{dc}) | Cap (μF) | Size D×L(mm) | tan | Impedance (max/20°C, 100kHz) | Rated ripple current (mA _{RMS} /105°C, 100kHz) | Part Number |
|-----------------------|----------|--------------|------|------------------------------|---|----------------|
| 25(1E) | 47 | 5×11 | 0.10 | 0.29 | 300 | ERF1EM470D11OT |
| | | 6.3×9 | 0.10 | 0.37 | 270 | ERF1EM470E09OT |
| | 100 | 6.3×11 | 0.10 | 0.12 | 455 | ERF1EM101E11OT |
| | | 8×9 | 0.10 | 0.15 | 408 | ERF1EM101F09OT |
| | 220 | 8×11 | 0.10 | 0.071 | 810 | ERF1EM221F11OT |
| | | 10×9 | 0.10 | 0.092 | 720 | ERF1EM221G09OT |
| | 330 | 8×16 | 0.10 | 0.055 | 1045 | ERF1EM331F16OT |
| | | 10×12.5 | 0.10 | 0.052 | 1080 | ERF1EM331G1BOT |
| | 390 | 8×20 | 0.10 | 0.044 | 1236 | ERF1EM391F20OT |
| | 470 | 10×16 | 0.10 | 0.037 | 1480 | ERF1EM471G16OT |
| | 560 | 10×16 | 0.10 | 0.03 | 1675 | ERF1EM561G16OT |
| | 680 | 10×20 | 0.10 | 0.022 | 1870 | ERF1EM681G20OT |
| | 820 | 10×25 | 0.10 | 0.021 | 2200 | ERF1EM821G25OT |
| | 1000 | 12.5×20 | 0.10 | 0.019 | 2550 | ERF1EM102W20OT |
| | 1500 | 12.5×25 | 0.10 | 0.017 | 2820 | ERF1EM152W25OT |
| | 1800 | 12.5×30 | 0.10 | 0.015 | 3340 | ERF1EM182W30OT |
| | | 16×20 | 0.10 | 0.017 | 3190 | ERF1EM182L20OT |
| | 2200 | 12.5×35 | 0.12 | 0.014 | 3450 | ERF1EM222W35OT |
| | 2700 | 16×25 | 0.12 | 0.015 | 3510 | ERF1EM272L25OT |
| | 35(1V) | 33 | 5×11 | 0.10 | 0.29 | 300 |
| 6.3×9 | | | 0.10 | 0.37 | 270 | ERF1VM330E09OT |
| 56 | | 6.3×11 | 0.10 | 0.12 | 455 | ERF1VM560E11OT |
| | | 8×9 | 0.10 | 0.15 | 408 | ERF1VM560F09OT |
| 100 | | 8×11 | 0.10 | 0.095 | 632 | ERF1VM101F11OT |
| | | 10×9 | 0.10 | 0.12 | 565 | ERF1VM101G09OT |
| 150 | | 8×11 | 0.10 | 0.071 | 810 | ERF1VM151F11OT |
| | | 10×9 | 0.10 | 0.092 | 720 | ERF1VM151G09OT |
| 220 | | 8×16 | 0.10 | 0.055 | 1045 | ERF1VM221F16OT |
| | | 10×12.5 | 0.10 | 0.052 | 1080 | ERF1VM221G1BOT |
| 270 | | 8×20 | 0.10 | 0.04 | 1300 | ERF1VM271F20OT |
| 330 | | 10×16 | 0.10 | 0.037 | 1480 | ERF1VM331G16OT |
| 470 | | 10×20 | 0.10 | 0.022 | 1870 | ERF1VM471G20OT |
| 560 | | 10×25 | 0.10 | 0.021 | 2200 | ERF1VM561G25OT |
| 680 | | 12.5×20 | 0.10 | 0.02 | 2410 | ERF1VM681W20OT |
| 1000 | | 12.5×25 | 0.10 | 0.017 | 2820 | ERF1VM102W25OT |
| 1200 | | 12.5×30 | 0.10 | 0.015 | 3340 | ERF1VM122W30OT |
| | | 16×20 | 0.10 | 0.017 | 3190 | ERF1VM122L20OT |
| 1500 | | 12.5×35 | 0.10 | 0.014 | 3450 | ERF1VM152W35OT |
| 50(1H) | | 22 | 5×11 | 0.08 | 0.33 | 288 |
| | 6.3×9 | | 0.08 | 0.43 | 260 | ERF1HM220E09OT |
| | 56 | 6.3×11 | 0.08 | 0.13 | 435 | ERF1HM560E11OT |
| | | 8×9 | 0.08 | 0.17 | 390 | ERF1HM560F09OT |
| | 100 | 8×11 | 0.08 | 0.073 | 774 | ERF1HM101F11OT |
| | | 10×9 | 0.08 | 0.095 | 695 | ERF1HM101G09OT |
| | 120 | 8×16 | 0.08 | 0.06 | 1000 | ERF1HM121F16OT |
| | 150 | 10×12.5 | 0.08 | 0.06 | 1029 | ERF1HM151G1BOT |
| | 180 | 8×20 | 0.08 | 0.045 | 1240 | ERF1HM181F20OT |
| | 220 | 10×16 | 0.08 | 0.041 | 1420 | ERF1HM221G16OT |
| | 270 | 10×20 | 0.08 | 0.029 | 1630 | ERF1HM271G20OT |
| | 330 | 10×25 | 0.08 | 0.027 | 1920 | ERF1HM331G25OT |
| | 470 | 12.5×20 | 0.08 | 0.026 | 2100 | ERF1HM471W20OT |
| | 560 | 12.5×25 | 0.08 | 0.022 | 2460 | ERF1HM561W25OT |
| | 680 | 12.5×30 | 0.08 | 0.02 | 2910 | ERF1HM681W30OT |
| | 820 | 12.5×35 | 0.08 | 0.018 | 3010 | ERF1HM821W35OT |
| | | 16×20 | 0.08 | 0.022 | 2780 | ERF1HM821L20OT |
| | 1000 | 16×25 | 0.08 | 0.02 | 3060 | ERF1HM102L25OT |

RF series

■ STANDARD RATINGS

| WV (V _{dc}) | Cap (μF) | Size D×L(mm) | tan | Impedance (max/20°C, 100kHz) | Rated ripple current (mA _{rms} /105°C, 100kHz) | Part Number |
|-----------------------|----------|--------------|---------|------------------------------|---|----------------|
| 63(1J) | 15 | 5×11 | 0.08 | 0.88 | 165 | ERF1JM150D11OT |
| | | 6.3×9 | 0.08 | 1.14 | 148 | ERF1JM150E09OT |
| | 33 | 6.3×11 | 0.08 | 0.35 | 265 | ERF1JM330E11OT |
| | | 8×9 | 0.08 | 0.45 | 235 | ERF1JM330F09OT |
| | 56 | 8×11 | 0.08 | 0.22 | 500 | ERF1JM560F11OT |
| | | 10×9 | 0.08 | 0.28 | 450 | ERF1JM560G09OT |
| | 82 | 8×16 | 0.08 | 0.16 | 665 | ERF1JM820F16OT |
| | | 10×12.5 | 0.08 | 0.11 | 690 | ERF1JM820G1BOT |
| | 120 | 8×20 | 0.08 | 0.12 | 820 | ERF1JM121F20OT |
| | | 10×16 | 0.08 | 0.076 | 950 | ERF1JM121G16OT |
| | 180 | 10×20 | 0.08 | 0.056 | 1150 | ERF1JM181G20OT |
| | | 12.5×16 | 0.08 | 0.072 | 1150 | ERF1JM181W16OT |
| | 220 | 10×25 | 0.08 | 0.046 | 1350 | ERF1JM221G25OT |
| | 270 | 12.5×20 | 0.08 | 0.041 | 1500 | ERF1JM271W20OT |
| | 390 | 12.5×25 | 0.08 | 0.031 | 1900 | ERF1JM391W25OT |
| | | 470 | 12.5×30 | 0.08 | 0.028 | 2300 |
| | 16×20 | | 0.08 | 0.032 | 2000 | ERF1JM471L20OT |
| | 560 | 12.5×35 | 0.08 | 0.024 | 2500 | ERF1JM561W35OT |
| | | 12.5×40 | 0.08 | 0.021 | 2800 | ERF1JM681W40OT |
| | 680 | 16×25 | 0.08 | 0.025 | 2600 | ERF1JM681L25OT |
| | | 18×20 | 0.08 | 0.03 | 2500 | ERF1JM681M20OT |
| | 820 | 16×30 | 0.08 | 0.021 | 2850 | ERF1JM821L30OT |
| | | 18×25 | 0.08 | 0.024 | 2800 | ERF1JM821M25OT |
| | 1000 | 16×35 | 0.08 | 0.019 | 2900 | ERF1JM102L35OT |
| | 1200 | 16×40 | 0.08 | 0.018 | 3400 | ERF1JM122L40OT |
| | | 18×30 | 0.08 | 0.02 | 3300 | ERF1JM122M30OT |
| | 1500 | 18×35 | 0.08 | 0.018 | 3400 | ERF1JM152M35OT |
| | 1800 | 18×40 | 0.08 | 0.017 | 3500 | ERF1JM182M40OT |
| 80(1B) | 68 | 10×12.5 | 0.08 | 0.17 | 480 | ERF1BM680G1BOT |
| | 100 | 10×16 | 0.08 | 0.11 | 600 | ERF1BM101G16OT |
| | 120 | 10×20 | 0.08 | 0.084 | 800 | ERF1BM121G20OT |
| | | 10×25 | 0.08 | 0.069 | 900 | ERF1BM151G25OT |
| | 150 | 12.5×16 | 0.08 | 0.11 | 750 | ERF1BM151W16OT |
| | | 220 | 12.5×20 | 0.08 | 0.062 | 1100 |
| | 330 | | 12.5×25 | 0.08 | 0.047 | 1250 |
| | | 16×20 | 0.08 | 0.048 | 1350 | ERF1BM331L20OT |
| | 390 | 12.5×30 | 0.08 | 0.042 | 1500 | ERF1BM391W30OT |
| | | 12.5×35 | 0.08 | 0.036 | 1650 | ERF1BM471W35OT |
| | 470 | 16×25 | 0.08 | 0.038 | 1700 | ERF1BM471L25OT |
| | | 18×20 | 0.08 | 0.045 | 1500 | ERF1BM471M20OT |
| | 560 | 12.5×40 | 0.08 | 0.032 | 1800 | ERF1BM561W40OT |
| | 680 | 16×30 | 0.08 | 0.032 | 1850 | ERF1BM681L30OT |
| | | 18×25 | 0.08 | 0.036 | 1750 | ERF1BM681M25OT |
| | 820 | 16×35 | 0.08 | 0.029 | 2000 | ERF1BM821L35OT |
| | | 18×30 | 0.08 | 0.03 | 1900 | ERF1BM821M30OT |
| | 1000 | 16×40 | 0.08 | 0.027 | 2200 | ERF1BM102L40OT |
| | | 18×35 | 0.08 | 0.027 | 2200 | ERF1BM102M35OT |
| | 1200 | 18×40 | 0.08 | 0.026 | 2700 | ERF1BM122M40OT |

| WV (V _{dc}) | Cap (μF) | Size D×L(mm) | tan | Impedance (max/20°C, 100kHz) | Rated ripple current (mA _{rms} /105°C, 100kHz) | Part Number |
|-----------------------|----------|--------------|-------|------------------------------|---|----------------|
| 100(1K) | 6.8 | 5×11 | 0.08 | 1.4 | 125 | ERF1KM6R8D11OT |
| | | 6.3×9 | 0.08 | 1.8 | 110 | ERF1KM6R8E09OT |
| | 15 | 6.3×11 | 0.08 | 0.57 | 205 | ERF1KM150E11OT |
| | | 8×9 | 0.08 | 0.74 | 180 | ERF1KM150F09OT |
| | 27 | 8×12 | 0.08 | 0.36 | 355 | ERF1KM270F12OT |
| | | 10×9 | 0.08 | 0.47 | 320 | ERF1KM270G09OT |
| | 39 | 8×16 | 0.08 | 0.25 | 450 | ERF1KM390F16OT |
| | 47 | 10×12.5 | 0.08 | 0.17 | 480 | ERF1KM470G1BOT |
| | 56 | 8×20 | 0.08 | 0.19 | 565 | ERF1KM560F20OT |
| | 68 | 10×16 | 0.08 | 0.11 | 600 | ERF1KM680G16OT |
| | 82 | 10×20 | 0.08 | 0.084 | 800 | ERF1KM820G20OT |
| | 100 | 12.5×16 | 0.08 | 0.11 | 750 | ERF1KM101W16OT |
| | 120 | 10×25 | 0.08 | 0.069 | 900 | ERF1KM121G25OT |
| | 150 | 12.5×20 | 0.08 | 0.062 | 1100 | ERF1KM151W20OT |
| | 220 | 12.5×25 | 0.08 | 0.047 | 1250 | ERF1KM221W25OT |
| | | 16×20 | 0.08 | 0.048 | 1350 | ERF1KM221L20OT |
| | 270 | 12.5×30 | 0.08 | 0.042 | 1500 | ERF1KM271W30OT |
| | | 12.5×35 | 0.08 | 0.036 | 1650 | ERF1KM331W35OT |
| | 330 | 16×25 | 0.08 | 0.038 | 1700 | ERF1KM331L25OT |
| | | 18×20 | 0.08 | 0.045 | 1500 | ERF1KM331M20OT |
| | 390 | 12.5×40 | 0.08 | 0.032 | 1800 | ERF1KM391W40OT |
| | | 470 | 16×30 | 0.08 | 0.032 | 1850 |
| | 18×25 | | 0.08 | 0.036 | 1750 | ERF1KM471M25OT |
| | 560 | 16×35 | 0.08 | 0.029 | 2000 | ERF1KM561L35OT |
| | | 18×30 | 0.08 | 0.03 | 1900 | ERF1KM561M30OT |
| | 680 | 16×40 | 0.08 | 0.027 | 2200 | ERF1KM681L40OT |
| | | 18×35 | 0.08 | 0.027 | 2200 | ERF1KM681M35OT |
| | 820 | 18×40 | 0.08 | 0.026 | 2700 | ERF1KM821M40OT |
| 120(2B) | 10 | 6.3×11 | 0.12 | 5.5 | 80 | ERF2BM100E11OT |
| | 15 | 6.3×12 | 0.12 | 4.5 | 100 | ERF2BM150E12OT |
| | 18 | 8×9 | 0.12 | 4.0 | 120 | ERF2BM180F09OT |
| | 22 | 8×12 | 0.12 | 3.5 | 130 | ERF2BM220F12OT |
| | | 8×16 | 0.12 | 3.0 | 220 | ERF2BM330F16OT |
| | 33 | 10×12.5 | 0.12 | 3.0 | 220 | ERF2BM330G1BOT |
| | | 47 | 8×20 | 0.12 | 2.5 | 270 |
| | 10×16 | | 0.12 | 2.5 | 270 | ERF2BM470G16OT |
| | 56 | 10×16 | 0.12 | 2.2 | 285 | ERF2BM560G16OT |
| | 68 | 10×16 | 0.12 | 2.0 | 285 | ERF2BM680G16OT |
| | 82 | 10×20 | 0.12 | 1.8 | 300 | ERF2BM820G20OT |
| | 100 | 10×25 | 0.12 | 1.5 | 380 | ERF2BM101G25OT |
| | 120 | 12.5×20 | 0.12 | 1.3 | 520 | ERF2BM121W20OT |
| | 150 | 12.5×25 | 0.12 | 1.0 | 570 | ERF2BM151W25OT |
| | 220 | 13×30 | 0.12 | 0.75 | 700 | ERF2BM221K30OT |
| | | 16×20 | 0.12 | 0.75 | 700 | ERF2BM221L20OT |
| | 270 | 16×25 | 0.12 | 0.55 | 800 | ERF2BM271L25OT |
| | | 18×20 | 0.12 | 0.55 | 800 | ERF2BM271M20OT |
| | 330 | 16×30 | 0.12 | 0.42 | 860 | ERF2BM331L30OT |
| | | 18×25 | 0.12 | 0.42 | 860 | ERF2BM331M25OT |
| | 470 | 16×40 | 0.12 | 0.30 | 960 | ERF2BM471L40OT |
| | | 18×30 | 0.12 | 0.30 | 960 | ERF2BM471M30OT |

Radial Type

RS series

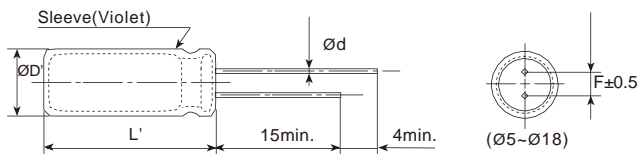
- High performance, high reliability
- Low impedance, high ripple current, long life
- Endurance +105°C 4,000~10,000 hours
- RoHS Compliant



SPECIFICATIONS

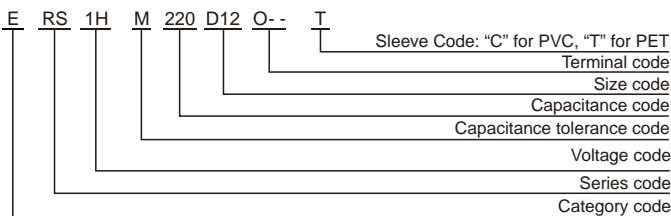
| Items | Characteristics | | | | | | | | | | |
|--|---|---|------|------|------|------|------|-----------|---------|-------------------|------|
| Category Temperature Range | -40~+105°C | | | | | | | | | | |
| Rated Voltage Range | 6.3~120 V _{dc} | | | | | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C,120Hz) | | | | | | | | | | |
| Leakage Current | I 0.01CV or 3μA, whichever is greater. Where, I:Max.leakage current (μA),C:Nominal capacitance (μF),V: Rated voltage (V) (at 20°C after 2 minutes) | | | | | | | | | | |
| Dissipation Factor (tan) | Rated Voltage(V _{dc}) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 80 | 100 | 120 |
| | tan (max.) | 0.22 | 0.19 | 0.16 | 0.14 | 0.12 | 0.10 | 0.09 | 0.08 | 0.08 | 0.12 |
| When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20°C,120Hz) | | | | | | | | | | | |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 80 | 100 | 120 |
| | Z(-25°C)/Z(+20°C) | 4 | 3 | | | | | 2 | | | 3 |
| | Z(-40°C)/Z(+20°C) | 8 | 6 | 4 | | | | 3 | | | 6 |
| (at 120Hz) | | | | | | | | | | | |
| Endurance | The specifications listed below shall be met when the capacitors are restored to 20°C after DC voltage plus rated ripple current is applied for a specified period of time at 105 °C. | | | | | | | | | | |
| | Capacitance Change | ±20% of the initial value (6.3,10V: ±30%) | | | | | | Dia. (mm) | | Load life (hours) | |
| | D.F. (tan) | 200% of the initial specified value | | | | | | ØD 6.3 | 6.3~10V | 16~120V | |
| | Leakage Current | The initial specified value | | | | | | ØD=8&10 | 4,000 | 5,000 | |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after leaving them under no load at 105°C for 1,000 hours. | | | | | | | | | | |
| | Capacitance Change | ±20% of the initial value (6.3,10V: ±30%) | | | | | | ØD 12.5 | 6,000 | 7,000 | |
| | D.F. (tan) | 200% of the initial specified value | | | | | | | 8,000 | 10,000 | |
| | Leakage Current | 200% of the initial specified value | | | | | | | | | |

DIMENSIONS[mm]



| ØD | 5 | 6.3 | 8 | 10 | 12.5 | 16 | 18 |
|-----|------------|-----|-----|-----|------|-----|-----|
| Ød | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.8 | 0.8 |
| F | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 |
| ØD' | ØD+0.5max. | | | | | | |
| L' | L+2max. | | | | | | |

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| Cap.(μF) \ Freq.(Hz) | 120 | 1k | 10k | 100k |
|----------------------|------|------|------|------|
| Cap.<220 | 0.40 | 0.75 | 0.90 | 1.00 |
| 220 Cap.<680 | 0.50 | 0.85 | 0.94 | 1.00 |
| 680 Cap.<2200 | 0.60 | 0.87 | 0.95 | 1.00 |
| 2200 Cap.<4700 | 0.75 | 0.90 | 0.95 | 1.00 |
| Cap. 4700 | 0.85 | 0.95 | 0.98 | 1.00 |

RS series

■ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Size DxDL(mm) | tan | Impedance (max/20°C, 100kHz) | Rated ripple current (mA _{RMS} /105°C, 100kHz) | Part Number |
|----------|----------|---------------|------|------------------------------|---|----------------|
| 6.3(0J) | 150 | 5x11 | 0.22 | 0.57 | 200 | ERS0JM151D11OT |
| | | 6.3x9 | 0.22 | 0.74 | 180 | ERS0JM151E09OT |
| | 330 | 6.3x11 | 0.22 | 0.21 | 350 | ERS0JM331E11OT |
| | | 8x9 | 0.22 | 0.27 | 310 | ERS0JM331F09OT |
| | 680 | 8x12 | 0.22 | 0.13 | 660 | ERS0JM681F12OT |
| | | 10x9 | 0.22 | 0.17 | 590 | ERS0JM681G09OT |
| | 820 | 10x12.5 | 0.22 | 0.08 | 870 | ERS0JM821G1BOT |
| | 1000 | 8x16 | 0.22 | 0.086 | 850 | ERS0JM102F16OT |
| | 1200 | 8x20 | 0.22 | 0.07 | 1050 | ERS0JM122F20OT |
| | | 10x16 | 0.22 | 0.06 | 1230 | ERS0JM122G16OT |
| | 1500 | 10x20 | 0.22 | 0.046 | 1400 | ERS0JM152G20OT |
| | 1800 | 12.5x16 | 0.22 | 0.049 | 1450 | ERS0JM182W16OT |
| | 2200 | 10x20 | 0.24 | 0.042 | 1650 | ERS0JM222G20OT |
| | 2700 | 10x30 | 0.24 | 0.03 | 1920 | ERS0JM272G30OT |
| | | 16x15 | 0.24 | 0.041 | 1950 | ERS0JM272L15OT |
| | 3300 | 12.5x20 | 0.26 | 0.035 | 1910 | ERS0JM332W20OT |
| | 3900 | 12.5x25 | 0.26 | 0.026 | 2230 | ERS0JM392W25OT |
| | 4700 | 12.5x30 | 0.28 | 0.024 | 2650 | ERS0JM472W30OT |
| | 5600 | 12.5x35 | 0.30 | 0.02 | 2880 | ERS0JM562W35OT |
| | | 16x20 | 0.30 | 0.027 | 2530 | ERS0JM562L20OT |
| | 6800 | 12.5x40 | 0.32 | 0.017 | 3350 | ERS0JM682W40OT |
| | | 16x25 | 0.32 | 0.02 | 2930 | ERS0JM682L25OT |
| | | 18x20 | 0.32 | 0.026 | 2860 | ERS0JM682M20OT |
| | 8200 | 16x30 | 0.36 | 0.017 | 3450 | ERS0JM822L30OT |
| | 10000 | 16x35 | 0.40 | 0.015 | 3610 | ERS0JM103L35OT |
| | | 18x25 | 0.40 | 0.019 | 3140 | ERS0JM103M25OT |
| | 12000 | 16x40 | 0.44 | 0.013 | 4100 | ERS0JM123L40OT |
| | | 18x30 | 0.44 | 0.015 | 4170 | ERS0JM123M30OT |
| | 15000 | 18x35 | 0.50 | 0.014 | 4220 | ERS0JM153M35OT |
| | 18000 | 18x40 | 0.56 | 0.012 | 4300 | ERS0JM183M40OT |
| 10(1A) | 100 | 5x11 | 0.19 | 0.57 | 200 | ERS1AM101D11OT |
| | | 6.3x9 | 0.19 | 0.74 | 180 | ERS1AM101E09OT |
| | 220 | 6.3x11 | 0.19 | 0.21 | 350 | ERS1AM221E11OT |
| | | 8x9 | 0.19 | 0.27 | 310 | ERS1AM221F09OT |
| | 470 | 8x12 | 0.19 | 0.13 | 660 | ERS1AM471F12OT |
| | | 10x9 | 0.19 | 0.17 | 590 | ERS1AM471G09OT |
| | 680 | 8x16 | 0.19 | 0.086 | 850 | ERS1AM681F16OT |
| | | 10x12.5 | 0.19 | 0.08 | 870 | ERS1AM681G1BOT |
| | 1000 | 8x20 | 0.19 | 0.069 | 1050 | ERS1AM102F20OT |
| | 1200 | 10x16 | 0.19 | 0.06 | 1230 | ERS1AM102G16OT |
| | 1500 | 10x20 | 0.19 | 0.046 | 1400 | ERS1AM122G20OT |
| | 2200 | 10x25 | 0.19 | 0.042 | 1650 | ERS1AM152G25OT |
| | | 12.5x16 | 0.19 | 0.049 | 1450 | ERS1AM152W16OT |
| | 3300 | 10x30 | 0.21 | 0.03 | 1920 | ERS1AM222G30OT |
| | | 16x15 | 0.21 | 0.041 | 1950 | ERS1AM222L15OT |
| | 3900 | 12.5x25 | 0.23 | 0.026 | 2230 | ERS1AM332W25OT |
| | | 12.5x30 | 0.23 | 0.024 | 2650 | ERS1AM392W30OT |
| | 4700 | 16x20 | 0.23 | 0.027 | 2530 | ERS1AM392L20OT |
| | | 12.5x35 | 0.25 | 0.02 | 2880 | ERS1AM472W35OT |
| | 5600 | 12.5x40 | 0.27 | 0.017 | 3350 | ERS1AM562W40OT |
| | | 16x25 | 0.27 | 0.021 | 2930 | ERS1AM562L25OT |
| | 6800 | 18x20 | 0.27 | 0.026 | 2860 | ERS1AM562M20OT |
| | | 16x30 | 0.29 | 0.017 | 3450 | ERS1AM682L30OT |
| | | 18x25 | 0.29 | 0.019 | 3140 | ERS1AM682M25OT |
| | 8200 | 16x35 | 0.33 | 0.015 | 3610 | ERS1AM822L35OT |
| | | 18x30 | 0.33 | 0.015 | 4170 | ERS1AM822M30OT |
| | 10000 | 16x40 | 0.37 | 0.013 | 4100 | ERS1AM103L40OT |
| | | 18x35 | 0.37 | 0.014 | 4220 | ERS1AM103M35OT |
| | 12000 | 18x40 | 0.41 | 0.012 | 4300 | ERS1AM123M40OT |

| WV (Vdc) | Cap (μF) | Size DxDL(mm) | tan | Impedance (max/20°C, 100kHz) | Rated ripple current (mA _{RMS} /105°C, 100kHz) | Part Number |
|----------|----------|---------------|------|------------------------------|---|----------------|
| 16(1C) | 56 | 5x11 | 0.16 | 0.57 | 200 | ERS1CM560D11OT |
| | | 6.3x9 | 0.16 | 0.74 | 180 | ERS1CM560E09OT |
| | 120 | 6.3x11 | 0.16 | 0.21 | 350 | ERS1CM121E11OT |
| | | 8x9 | 0.16 | 0.27 | 310 | ERS1CM121F09OT |
| | 330 | 8x12 | 0.16 | 0.13 | 660 | ERS1CM331F12OT |
| | | 10x9 | 0.16 | 0.17 | 590 | ERS1CM331G09OT |
| | 470 | 8x16 | 0.16 | 0.087 | 850 | ERS1CM471F16OT |
| | 680 | 10x12.5 | 0.16 | 0.08 | 870 | ERS1CM471G1BOT |
| | | 8x20 | 0.16 | 0.069 | 1050 | ERS1CM681F20OT |
| | 1000 | 10x16 | 0.16 | 0.06 | 1230 | ERS1CM681G16OT |
| | | 10x20 | 0.16 | 0.046 | 1400 | ERS1CM102G20OT |
| | 1200 | 12.5x16 | 0.16 | 0.049 | 1450 | ERS1CM102W16OT |
| | | 10x25 | 0.16 | 0.042 | 1650 | ERS1CM122G25OT |
| | 1500 | 10x30 | 0.16 | 0.031 | 1920 | ERS1CM152G30OT |
| | | 12.5x20 | 0.16 | 0.035 | 1910 | ERS1CM152W20OT |
| | 2200 | 16x15 | 0.16 | 0.041 | 1950 | ERS1CM152L15OT |
| | | 12.5x25 | 0.18 | 0.027 | 2230 | ERS1CM222W25OT |
| | 2700 | 12.5x30 | 0.18 | 0.024 | 2650 | ERS1CM272W30OT |
| | | 16x20 | 0.18 | 0.027 | 2530 | ERS1CM272L20OT |
| | 3300 | 12.5x35 | 0.20 | 0.02 | 2880 | ERS1CM332W35OT |
| | | 12.5x40 | 0.20 | 0.017 | 3350 | ERS1CM392W40OT |
| | | 16x25 | 0.20 | 0.021 | 2930 | ERS1CM392L25OT |
| | 3900 | 18x20 | 0.20 | 0.026 | 2860 | ERS1CM392M20OT |
| | | 16x30 | 0.22 | 0.017 | 3450 | ERS1CM472L30OT |
| | 4700 | 18x25 | 0.22 | 0.019 | 3140 | ERS1CM472M25OT |
| | | 16x35 | 0.24 | 0.015 | 3610 | ERS1CM562L35OT |
| | 5600 | 18x30 | 0.24 | 0.015 | 4170 | ERS1CM562M30OT |
| | | 16x40 | 0.26 | 0.013 | 4100 | ERS1CM682L40OT |
| | 8200 | 18x35 | 0.30 | 0.014 | 4220 | ERS1CM822M35OT |
| | 10000 | 18x40 | 0.34 | 0.012 | 4300 | ERS1CM103M40OT |
| 25(1E) | 47 | 5x11 | 0.14 | 0.57 | 200 | ERS1EM470D11OT |
| | | 6.3x9 | 0.14 | 0.74 | 180 | ERS1EM470E09OT |
| | 100 | 6.3x11 | 0.14 | 0.21 | 350 | ERS1EM101E11OT |
| | | 8x9 | 0.14 | 0.27 | 310 | ERS1EM101F09OT |
| | 220 | 8x12 | 0.14 | 0.13 | 660 | ERS1EM221F12OT |
| | | 10x9 | 0.14 | 0.17 | 590 | ERS1EM221G09OT |
| | 330 | 8x16 | 0.14 | 0.086 | 850 | ERS1EM331F16OT |
| | | 10x12.5 | 0.14 | 0.08 | 870 | ERS1EM331G1BOT |
| | 470 | 8x20 | 0.14 | 0.069 | 1050 | ERS1EM471F20OT |
| | 680 | 10x16 | 0.14 | 0.06 | 1230 | ERS1EM471G16OT |
| | | 10x20 | 0.14 | 0.046 | 1400 | ERS1EM681G20OT |
| | 820 | 12.5x16 | 0.14 | 0.049 | 1450 | ERS1EM681W16OT |
| | | 10x25 | 0.14 | 0.042 | 1650 | ERS1EM821G25OT |
| | 1000 | 10x30 | 0.14 | 0.03 | 1920 | ERS1EM102G30OT |
| | | 12.5x20 | 0.14 | 0.035 | 1910 | ERS1EM102W20OT |
| | 1500 | 16x15 | 0.14 | 0.041 | 1950 | ERS1EM102L15OT |
| | | 12.5x25 | 0.14 | 0.026 | 2230 | ERS1EM152W25OT |
| | 1800 | 12.5x30 | 0.14 | 0.024 | 2650 | ERS1EM182W30OT |
| | | 16x20 | 0.14 | 0.027 | 2530 | ERS1EM182L20OT |
| | 2200 | 12.5x35 | 0.16 | 0.02 | 2880 | ERS1EM222W35OT |
| | | 18x20 | 0.16 | 0.026 | 2860 | ERS1EM222M20OT |
| | 2700 | 12.5x40 | 0.16 | 0.017 | 3350 | ERS1EM272W40OT |
| | | 16x25 | 0.16 | 0.021 | 2930 | ERS1EM272L25OT |
| | 3300 | 16x30 | 0.18 | 0.017 | 3450 | ERS1EM332L30OT |
| | | 18x25 | 0.18 | 0.019 | 3140 | ERS1EM332M25OT |
| | 3900 | 16x35 | 0.18 | 0.015 | 3610 | ERS1EM392L35OT |
| | | 18x30 | 0.18 | 0.015 | 4170 | ERS1EM392M30OT |
| | 4700 | 16x40 | 0.20 | 0.013 | 4100 | ERS1EM472L40OT |
| | | 18x35 | 0.20 | 0.014 | 4220 | ERS1EM472M35OT |
| | 5600 | 18x40 | 0.22 | 0.012 | 4300 | ERS1EM562M40OT |

Radial Type

RS series

■ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Size DxDL(mm) | tan | Impedance (max/20°C, 100kHz) | Rated ripple current (mArms/105°C, 100kHz) | Part Number |
|----------|----------|---------------|-------|------------------------------|--|----------------|
| 35(1V) | 33 | 5x11 | 0.12 | 0.57 | 200 | ERS1VM330D11OT |
| | | 6.3x9 | 0.12 | 0.74 | 180 | ERS1VM330E09OT |
| | 56 | 6.3x11 | 0.12 | 0.21 | 350 | ERS1VM560E11OT |
| | | 8x9 | 0.12 | 0.27 | 310 | ERS1VM560F09OT |
| | 150 | 8x12 | 0.12 | 0.13 | 660 | ERS1VM151F12OT |
| | | 10x9 | 0.12 | 0.17 | 590 | ERS1VM151G09OT |
| | 220 | 8x16 | 0.12 | 0.086 | 850 | ERS1VM221F16OT |
| | | 10x12.5 | 0.12 | 0.08 | 870 | ERS1VM221G1BOT |
| | 270 | 8x20 | 0.12 | 0.069 | 1050 | ERS1VM271F20OT |
| | 330 | 10x16 | 0.12 | 0.06 | 1230 | ERS1VM331G16OT |
| | | 10x20 | 0.12 | 0.046 | 1400 | ERS1VM471G20OT |
| | 470 | 12.5x16 | 0.12 | 0.049 | 1450 | ERS1VM471W16OT |
| | | 10x25 | 0.12 | 0.042 | 1650 | ERS1VM561G25OT |
| | 560 | 10x30 | 0.12 | 0.03 | 1920 | ERS1VM681G30OT |
| | | 12.5x20 | 0.12 | 0.035 | 1910 | ERS1VM681W20OT |
| | 680 | 16x15 | 0.12 | 0.041 | 1950 | ERS1VM681L15OT |
| | | 12.5x25 | 0.12 | 0.026 | 2230 | ERS1VM102W25OT |
| | 1000 | 12.5x30 | 0.12 | 0.024 | 2650 | ERS1VM122W30OT |
| | | 16x20 | 0.12 | 0.028 | 2247 | ERS1VM122L20OT |
| | 1200 | 16x25 | 0.12 | 0.027 | 2530 | ERS1VM122L25OT |
| | | 12.5x35 | 0.12 | 0.02 | 2880 | ERS1VM152W35OT |
| | 1500 | 12.5x40 | 0.12 | 0.017 | 3350 | ERS1VM182W40OT |
| | | 16x25 | 0.12 | 0.021 | 2930 | ERS1VM182L25OT |
| | 1800 | 18x20 | 0.12 | 0.026 | 2860 | ERS1VM182M20OT |
| | | 16x30 | 0.14 | 0.017 | 3450 | ERS1VM222L30OT |
| | 2200 | 18x25 | 0.14 | 0.019 | 3140 | ERS1VM222M25OT |
| | | 16x35 | 0.14 | 0.015 | 3610 | ERS1VM272L35OT |
| | 2700 | 18x30 | 0.14 | 0.015 | 4170 | ERS1VM272M30OT |
| | | 16x40 | 0.16 | 0.012 | 4100 | ERS1VM332L40OT |
| | 3300 | 18x35 | 0.16 | 0.014 | 4220 | ERS1VM332M35OT |
| 3900 | | 18x40 | 0.16 | 0.011 | 4300 | ERS1VM392M40OT |
| 50(1H) | 22 | 5x12 | 0.10 | 0.68 | 190 | ERS1HM220D12OT |
| | | 6.3x9 | 0.10 | 0.89 | 170 | ERS1HM220E09OT |
| | 56 | 6.3x11 | 0.10 | 0.3 | 300 | ERS1HM560E11OT |
| | | 8x9 | 0.10 | 0.39 | 270 | ERS1HM560F09OT |
| | 100 | 8x12 | 0.10 | 0.17 | 560 | ERS1HM101F12OT |
| | | 10x9 | 0.10 | 0.22 | 500 | ERS1HM101G09OT |
| | 120 | 8x16 | 0.10 | 0.12 | 740 | ERS1HM121F16OT |
| | 150 | 10x12.5 | 0.10 | 0.12 | 760 | ERS1HM151G1BOT |
| | 180 | 8x20 | 0.10 | 0.09 | 910 | ERS1HM181F20OT |
| | 220 | 10x16 | 0.10 | 0.084 | 1050 | ERS1HM221G16OT |
| | 270 | 10x20 | 0.10 | 0.058 | 1230 | ERS1HM271G20OT |
| | | 12.5x16 | 0.10 | 0.061 | 1260 | ERS1HM271W16OT |
| | 330 | 10x25 | 0.10 | 0.055 | 1440 | ERS1HM331G25OT |
| | | 10x30 | 0.10 | 0.043 | 1700 | ERS1HM471G30OT |
| | 470 | 12.5x20 | 0.10 | 0.045 | 1660 | ERS1HM471W20OT |
| | | 16x15 | 0.10 | 0.055 | 1690 | ERS1HM471L15OT |
| | 560 | 12.5x25 | 0.10 | 0.034 | 1960 | ERS1HM561W25OT |
| | | 12.5x30 | 0.10 | 0.03 | 2310 | ERS1HM681W30OT |
| | 820 | 12.5x35 | 0.10 | 0.025 | 2510 | ERS1HM821W35OT |
| | | 16x20 | 0.10 | 0.034 | 2210 | ERS1HM821L20OT |
| | 1000 | 12.5x40 | 0.10 | 0.021 | 2920 | ERS1HM102W40OT |
| | | 16x25 | 0.10 | 0.025 | 2560 | ERS1HM102L25OT |
| | 1200 | 18x20 | 0.10 | 0.036 | 2490 | ERS1HM102M20OT |
| | | 16x30 | 0.10 | 0.021 | 3010 | ERS1HM122L30OT |
| | 1500 | 18x25 | 0.10 | 0.026 | 2740 | ERS1HM122M25OT |
| | | 16x35 | 0.10 | 0.019 | 3150 | ERS1HM152L35OT |
| | 1800 | 16x40 | 0.10 | 0.016 | 3710 | ERS1HM182L40OT |
| | | 18x30 | 0.10 | 0.021 | 3640 | ERS1HM182M30OT |
| | 2200 | 18x35 | 0.12 | 0.017 | 3680 | ERS1HM222M35OT |
| | | 2700 | 18x40 | 0.12 | 0.014 | 3800 |

| WV (Vdc) | Cap (μF) | Size DxDL(mm) | tan | Impedance (max/20°C, 100kHz) | Rated ripple current (mArms/105°C, 100kHz) | Part Number | |
|----------|----------|---------------|---------|------------------------------|--|----------------|----------------|
| 63(1J) | 15 | 5x11 | 0.09 | 0.88 | 165 | ERS1JM150D11OT | |
| | | 6.3x9 | 0.09 | 1.15 | 145 | ERS1JM150E09OT | |
| | 33 | 6.3x12 | 0.09 | 0.35 | 265 | ERS1JM330E12OT | |
| | | 8x9 | 0.09 | 0.46 | 235 | ERS1JM330F09OT | |
| | 56 | 8x12 | 0.09 | 0.22 | 500 | ERS1JM560F12OT | |
| | | 10x9 | 0.09 | 0.29 | 440 | ERS1JM560G09OT | |
| | 82 | 8x16 | 0.09 | 0.16 | 665 | ERS1JM820F16OT | |
| | | 10x12.5 | 0.09 | 0.11 | 690 | ERS1JM820G1BOT | |
| | 120 | 8x20 | 0.09 | 0.12 | 820 | ERS1JM121F20OT | |
| | | 10x16 | 0.09 | 0.076 | 950 | ERS1JM121G16OT | |
| | 180 | 10x20 | 0.09 | 0.056 | 1150 | ERS1JM181G20OT | |
| | | 12.5x16 | 0.09 | 0.072 | 1150 | ERS1JM181W16OT | |
| | 220 | 10x25 | 0.09 | 0.046 | 1350 | ERS1JM221G25OT | |
| | | 12.5x20 | 0.09 | 0.041 | 1500 | ERS1JM331W20OT | |
| | 330 | 12.5x25 | 0.09 | 0.031 | 1900 | ERS1JM391W25OT | |
| | | 12.5x30 | 0.09 | 0.028 | 2300 | ERS1JM471W30OT | |
| | 470 | 16x20 | 0.09 | 0.032 | 2000 | ERS1JM471L20OT | |
| | | 12.5x35 | 0.09 | 0.024 | 2500 | ERS1JM561W35OT | |
| | 560 | 12.5x40 | 0.09 | 0.021 | 2800 | ERS1JM681W40OT | |
| | | 16x25 | 0.09 | 0.025 | 2600 | ERS1JM681L25OT | |
| | 680 | 18x20 | 0.09 | 0.03 | 2500 | ERS1JM681M20OT | |
| | | 16x30 | 0.09 | 0.021 | 2850 | ERS1JM821L30OT | |
| | 820 | 18x25 | 0.09 | 0.024 | 2800 | ERS1JM821M25OT | |
| | | 1000 | 16x35 | 0.09 | 0.019 | 2900 | ERS1JM102L35OT |
| | 1200 | 16x40 | 0.09 | 0.018 | 3400 | ERS1JM122L40OT | |
| | | 18x30 | 0.09 | 0.02 | 3300 | ERS1JM122M30OT | |
| | 1500 | 18x35 | 0.09 | 0.018 | 3400 | ERS1JM152M35OT | |
| | | 1800 | 18x40 | 0.09 | 0.017 | 3500 | ERS1JM182M40OT |
| | 80(1B) | 68 | 10x12.5 | 0.08 | 0.17 | 480 | ERS1BM680G1BOT |
| | | | 100 | 10x16 | 0.08 | 0.11 | 600 |
| 120 | | 10x20 | 0.08 | 0.084 | 800 | ERS1BM121G20OT | |
| | | 10x25 | 0.08 | 0.069 | 900 | ERS1BM151G25OT | |
| 150 | | 12.5x16 | 0.08 | 0.11 | 750 | ERS1BM151W16OT | |
| | | 220 | 12.5x20 | 0.08 | 0.062 | 1100 | ERS1BM221W20OT |
| 330 | | 12.5x25 | 0.08 | 0.047 | 1250 | ERS1BM331W25OT | |
| | | 16x20 | 0.08 | 0.048 | 1350 | ERS1BM331L20OT | |
| 390 | | 12.5x30 | 0.08 | 0.042 | 1500 | ERS1BM391W30OT | |
| | | 12.5x35 | 0.08 | 0.036 | 1650 | ERS1BM471W35OT | |
| 470 | | 16x25 | 0.08 | 0.038 | 1700 | ERS1BM471L25OT | |
| | | 18x20 | 0.08 | 0.045 | 1500 | ERS1BM471M20OT | |
| 560 | | 12.5x40 | 0.08 | 0.032 | 1800 | ERS1BM561W40OT | |
| | | 16x30 | 0.08 | 0.032 | 1850 | ERS1BM681L30OT | |
| 680 | | 18x25 | 0.08 | 0.036 | 1750 | ERS1BM681M25OT | |
| | | 16x35 | 0.08 | 0.029 | 2000 | ERS1BM821L35OT | |
| 820 | | 18x30 | 0.08 | 0.03 | 1900 | ERS1BM821M30OT | |
| | | 1000 | 16x40 | 0.08 | 0.027 | 2200 | ERS1BM102L40OT |
| 1200 | | 18x35 | 0.08 | 0.027 | 2200 | ERS1BM102M35OT | |
| | | 18x40 | 0.08 | 0.026 | 2700 | ERS1BM122M40OT | |

RS series

■ STANDARD RATINGS

| WV (V _{dc}) | Cap (μF) | Size D×L(mm) | tan | Impedance (max/20°C, 100kHz) | Rated ripple current (mA _{rms} /105°C, 100kHz) | Part Number |
|-----------------------|----------|--------------|------|------------------------------|---|----------------|
| 100(1K) | 6.8 | 5×11 | 0.08 | 1.4 | 125 | ERS1KM6R8D11OT |
| | | 6.3×9 | 0.08 | 1.9 | 110 | ERS1KM6R8E09OT |
| | 15 | 6.3×12 | 0.08 | 0.57 | 205 | ERS1KM150E12OT |
| | | 8×9 | 0.08 | 0.75 | 180 | ERS1KM150F09OT |
| | 27 | 8×12 | 0.08 | 0.36 | 355 | ERS1KM270F12OT |
| | | 10×9 | 0.08 | 0.45 | 310 | ERS1KM270G09OT |
| | 39 | 8×16 | 0.08 | 0.25 | 450 | ERS1KM390F16OT |
| | 47 | 10×12.5 | 0.08 | 0.17 | 480 | ERS1KM470G1BOT |
| | 56 | 8×20 | 0.08 | 0.19 | 565 | ERS1KM560F20OT |
| | 68 | 10×16 | 0.08 | 0.11 | 600 | ERS1KM680G16OT |
| | 82 | 10×20 | 0.08 | 0.084 | 800 | ERS1KM820G20OT |
| | 100 | 12.5×16 | 0.08 | 0.11 | 750 | ERS1KM101W16OT |
| | 120 | 10×25 | 0.08 | 0.069 | 900 | ERS1KM121G25OT |
| | 150 | 12.5×20 | 0.08 | 0.062 | 1100 | ERS1KM151W20OT |
| | 220 | 12.5×25 | 0.08 | 0.047 | 1250 | ERS1KM221W25OT |
| | | 16×20 | 0.08 | 0.048 | 1350 | ERS1KM221L20OT |
| | 270 | 12.5×30 | 0.08 | 0.042 | 1500 | ERS1KM271W30OT |
| | | 12.5×35 | 0.08 | 0.036 | 1650 | ERS1KM271W35OT |
| | 330 | 16×25 | 0.08 | 0.038 | 1700 | ERS1KM331L25OT |
| | | 18×20 | 0.08 | 0.045 | 1500 | ERS1KM331M20OT |
| | 390 | 12.5×40 | 0.08 | 0.032 | 1800 | ERS1KM391W40OT |
| | 470 | 16×30 | 0.08 | 0.032 | 1850 | ERS1KM471L30OT |
| | | 18×25 | 0.08 | 0.036 | 1750 | ERS1KM471M25OT |
| | 560 | 16×35 | 0.08 | 0.029 | 2000 | ERS1KM561L35OT |
| | | 18×30 | 0.08 | 0.03 | 1900 | ERS1KM561M30OT |
| | 680 | 16×40 | 0.08 | 0.027 | 2200 | ERS1KM681L40OT |
| | | 18×35 | 0.08 | 0.027 | 2200 | ERS1KM681M35OT |
| | 820 | 18×40 | 0.08 | 0.026 | 2700 | ERS1KM821M40OT |
| 120(2B) | 10 | 6.3×11 | 0.12 | 6 | 85 | ERS2BM100E11OT |
| | 15 | 6.3×12 | 0.12 | 5 | 110 | ERS2BM150E12OT |
| | 18 | 8×9 | 0.12 | 4.5 | 125 | ERS2BM180F09OT |
| | 22 | 8×12 | 0.12 | 4 | 140 | ERS2BM220F12OT |
| | 33 | 8×16 | 0.12 | 3.5 | 245 | ERS2BM330F16OT |
| | | 10×12.5 | 0.12 | 3.5 | 245 | ERS2BM330G1BOT |
| | 47 | 8×20 | 0.12 | 2.8 | 300 | ERS2BM470F20OT |
| | | 10×16 | 0.12 | 2.8 | 315 | ERS2BM470G16OT |
| | 56 | 10×16 | 0.12 | 2.5 | 315 | ERS2BM560G16OT |
| | 68 | 10×16 | 0.12 | 2.2 | 315 | ERS2BM680G16OT |
| | 82 | 10×20 | 0.12 | 2 | 330 | ERS2BM820G20OT |
| | 100 | 10×25 | 0.12 | 1.7 | 410 | ERS2BM101G25OT |
| | 120 | 12.5×20 | 0.12 | 1.5 | 470 | ERS2BM121W20OT |
| | 150 | 12.5×25 | 0.12 | 1.0 | 620 | ERS2BM151W25OT |
| | 220 | 13×30 | 0.12 | 0.85 | 760 | ERS2BM221K30OT |
| | | 16×20 | 0.12 | 0.85 | 760 | ERS2BM221L20OT |
| | 270 | 16×25 | 0.12 | 0.6 | 860 | ERS2BM271L25OT |
| | | 18×20 | 0.12 | 0.6 | 860 | ERS2BM271M20OT |
| | 330 | 16×30 | 0.12 | 0.46 | 930 | ERS2BM331L30OT |
| | | 18×25 | 0.12 | 0.46 | 930 | ERS2BM331M25OT |
| | 470 | 16×40 | 0.12 | 0.33 | 1035 | ERS2BM471L40OT |
| | | 18×30 | 0.12 | 0.33 | 1035 | ERS2BM471M30OT |

RN series

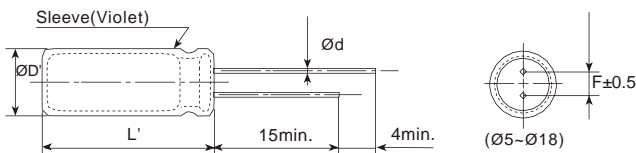
- Miniaturized, high performance, high reliability
- Low impedance, high ripple current, long life
- Endurance +105°C 5,000~10,000 hours
- RoHS Compliant



SPECIFICATIONS

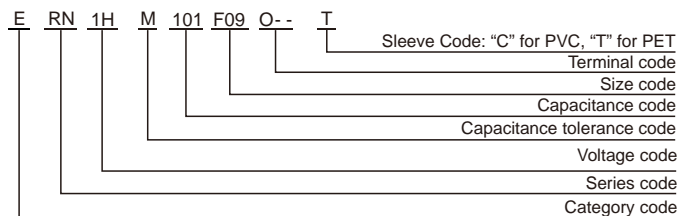
| Items | Characteristics | | | | | | | | |
|---|---|-------------------------------------|------|------|------|------|------|-----------|-------------------|
| Category Temperature Range | -40~+105°C | | | | | | | | |
| Rated Voltage Range | 25~120 V _{dc} | | | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | | | | | | | |
| Leakage Current | I ≤ 0.01 CV or 3μA, whichever is greater. Where, I: Max. leakage current (μA), C: Nominal capacitance (μF), V: Rated voltage (V) (at 20°C after 2 minutes) | | | | | | | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 25 | 35 | 50 | 63 | 80 | 100 | 120 | |
| | tan δ (max.) | 0.14 | 0.12 | 0.10 | 0.09 | 0.08 | 0.08 | 0.12 | |
| When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20°C, 120Hz) | | | | | | | | | |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) | 25 | 35 | 50 | 63 | 80 | 100 | 120 | |
| | Z(-25°C)/Z(+20°C) | | | | 2 | | 3 | | |
| | Z(-40°C)/Z(+20°C) | | | | 4 | | 6 | | |
| (at 120Hz) | | | | | | | | | |
| Endurance | The specifications listed below shall be met when the capacitors are restored to 20°C after DC voltage plus rated ripple current is applied for a specified period of time at 105 °C. | | | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | Dia. (mm) | Load life (hours) |
| | D.F. (tan δ) | 200% of the initial specified value | | | | | | ØD 6.3 | 5,000 |
| | Leakage Current | The initial specified value | | | | | | ØD=8&10 | 7,000 |
| ØD 12.5 10,000 | | | | | | | | | |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after leaving them under no load at 105°C for 1,000 hours. | | | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | | |
| | D.F. (tan δ) | 200% of the initial specified value | | | | | | | |
| | Leakage Current | 200% of the initial specified value | | | | | | | |

DIMENSIONS[mm]



| ØD | 5 | 6.3 | 8 | 10 | 12.5 | 16 | 18 |
|-----|------------|-----|-----|-----|------|-----|-----|
| Ød | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.8 |
| F | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 |
| ØD' | ØD+0.5max. | | | | | | |
| L' | L+2max. | | | | | | |

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| Cap.(μF) \ Freq.(Hz) | 120 | 1k | 10k | 100k |
|----------------------|------|------|------|------|
| Cap.<47 | 0.40 | 0.75 | 0.90 | 1.00 |
| 47 Cap.<330 | 0.50 | 0.85 | 0.94 | 1.00 |
| 330 Cap.<820 | 0.75 | 0.90 | 0.95 | 1.00 |
| Cap. 820 | 0.85 | 0.95 | 0.98 | 1.00 |

RN series

■ STANDARD RATINGS

| WV (V _{dc}) | Cap (μF) | Size DxL(mm) | tan | Impedance (max/20°C, 100kHz) | Rated ripple current (mA _{RMS} /105°C, 100kHz) | Part Number |
|-----------------------|----------|--------------|-------|------------------------------|---|----------------|
| 25(1E) | 10 | 5x9 | 0.14 | 3.5 | 80 | ERN1EM100D09OT |
| | 15 | 5x9 | 0.14 | 3.5 | 80 | ERN1EM150D09OT |
| | 22 | 5x9 | 0.14 | 3.5 | 80 | ERN1EM220D09OT |
| | 33 | 5x9 | 0.14 | 0.81 | 150 | ERN1EM330D09OT |
| | 47 | 5x9 | 0.14 | 0.65 | 180 | ERN1EM470D09OT |
| | 56 | 5x11 | 0.14 | 0.57 | 200 | ERN1EM560D11OT |
| | 68 | 5x11 | 0.14 | 0.57 | 200 | ERN1EM680D11OT |
| | | 6.3x9 | 0.14 | 0.74 | 180 | ERN1EM680E09OT |
| | 100 | 5x11 | 0.14 | 0.57 | 200 | ERN1EM101D11OT |
| | 120 | 6.3x9 | 0.14 | 0.74 | 180 | ERN1EM121E09OT |
| | 180 | 6.3x11 | 0.14 | 0.21 | 350 | ERN1EM181E11OT |
| | | 8x9 | 0.14 | 0.27 | 310 | ERN1EM181F09OT |
| | 220 | 6.3x11 | 0.14 | 0.21 | 350 | ERN1EM221E11OT |
| | | 8x9 | 0.14 | 0.27 | 310 | ERN1EM221F09OT |
| | 330 | 8x12 | 0.14 | 0.13 | 660 | ERN1EM331F12OT |
| | | 10x9 | 0.14 | 0.17 | 590 | ERN1EM331G09OT |
| | 390 | 8x14 | 0.14 | 0.15 | 885 | ERN1EM391F14OT |
| | 470 | 8x16 | 0.14 | 0.086 | 850 | ERN1EM471F16OT |
| | | 10x12.5 | 0.14 | 0.08 | 870 | ERN1EM471G1BOT |
| | 560 | 8x20 | 0.14 | 0.069 | 1050 | ERN1EM561F20OT |
| | | 10x12.5 | 0.14 | 0.08 | 870 | ERN1EM561G1BOT |
| | 680 | 8x20 | 0.14 | 0.069 | 1050 | ERN1EM681F20OT |
| | | 10x16 | 0.14 | 0.06 | 1230 | ERN1EM681G16OT |
| | 820 | 10x16 | 0.14 | 0.06 | 1230 | ERN1EM821G16OT |
| 1000 | 10x20 | 0.14 | 0.046 | 1400 | ERN1EM102G20OT | |
| 1200 | 10x25 | 0.14 | 0.042 | 1650 | ERN1EM122G25OT | |
| 1500 | 12.5x20 | 0.14 | 0.035 | 1910 | ERN1EM152W20OT | |
| 35(1V) | 10 | 5x9 | 0.12 | 3.5 | 80 | ERN1VM100D09OT |
| | 15 | 5x9 | 0.12 | 3.5 | 80 | ERN1VM150D09OT |
| | 22 | 5x9 | 0.12 | 3.5 | 80 | ERN1VM220D09OT |
| | 33 | 5x9 | 0.12 | 0.81 | 150 | ERN1VM330D09OT |
| | 47 | 5x11 | 0.12 | 0.57 | 200 | ERN1VM470D11OT |
| | 56 | 5x11 | 0.12 | 0.57 | 200 | ERN1VM560D11OT |
| | 68 | 6.3x9 | 0.12 | 0.74 | 180 | ERN1VM680E09OT |
| | | 6.3x11 | 0.12 | 0.21 | 350 | ERN1VM101E11OT |
| | 100 | 8x9 | 0.12 | 0.27 | 310 | ERN1VM101F09OT |
| | | 8x9 | 0.12 | 0.27 | 310 | ERN1VM121F09OT |
| | 180 | 8x12 | 0.12 | 0.13 | 660 | ERN1VM181F12OT |
| | | 10x9 | 0.12 | 0.17 | 590 | ERN1VM181G09OT |
| | 220 | 8x12 | 0.12 | 0.13 | 660 | ERN1VM221F12OT |
| | | 10x9 | 0.12 | 0.17 | 590 | ERN1VM221G09OT |
| | 330 | 8x16 | 0.12 | 0.086 | 850 | ERN1VM331F16OT |
| | | 10x12.5 | 0.12 | 0.08 | 870 | ERN1VM331G1BOT |
| | 390 | 8x20 | 0.12 | 0.069 | 1050 | ERN1VM391F20OT |
| | | 10x12.5 | 0.12 | 0.08 | 870 | ERN1VM391G1BOT |
| | 470 | 8x20 | 0.12 | 0.069 | 1050 | ERN1VM471F20OT |
| | | 10x16 | 0.12 | 0.06 | 1230 | ERN1VM471G16OT |
| | 560 | 10x16 | 0.12 | 0.06 | 1230 | ERN1VM561G16OT |
| | 680 | 10x20 | 0.12 | 0.046 | 1400 | ERN1VM681G20OT |
| | | 12.5x16 | 0.12 | 0.049 | 1450 | ERN1VM681W16OT |
| | 820 | 10x20 | 0.12 | 0.046 | 1400 | ERN1VM821G20OT |
| 12.5x16 | | 0.12 | 0.049 | 1450 | ERN1VM821W16OT | |
| 1000 | 12.5x20 | 0.12 | 0.035 | 1910 | ERN1VM102W20OT | |
| 1200 | 12.5x20 | 0.12 | 0.035 | 1910 | ERN1VM122W20OT | |

| WV (V _{dc}) | Cap (μF) | Size DxL(mm) | tan | Impedance (max/20°C, 100kHz) | Rated ripple current (mA _{RMS} /105°C, 100kHz) | Part Number |
|-----------------------|----------|--------------|-------|------------------------------|---|----------------|
| 50(1H) | 10 | 5x9 | 0.10 | 2.8 | 100 | ERN1HM100D09OT |
| | 15 | 5x9 | 0.10 | 2.8 | 100 | ERN1HM150D09OT |
| | 22 | 5x9 | 0.10 | 2.8 | 100 | ERN1HM220D09OT |
| | 33 | 5x11 | 0.10 | 0.68 | 190 | ERN1HM330D11OT |
| | 47 | 6.3x9 | 0.10 | 0.89 | 170 | ERN1HM470E09OT |
| | 56 | 6.3x11 | 0.10 | 0.3 | 300 | ERN1HM560E11OT |
| | | 8x9 | 0.10 | 0.39 | 270 | ERN1HM560F09OT |
| | 68 | 6.3x11 | 0.10 | 0.3 | 300 | ERN1HM680E11OT |
| | | 8x9 | 0.10 | 0.39 | 270 | ERN1HM680F09OT |
| | 100 | 8x9 | 0.10 | 0.39 | 270 | ERN1HM101F09OT |
| | 120 | 8x12 | 0.10 | 0.17 | 560 | ERN1HM121F12OT |
| | | 10x9 | 0.10 | 0.22 | 500 | ERN1HM121G09OT |
| | 150 | 8x12 | 0.10 | 0.17 | 560 | ERN1HM151F12OT |
| | | 10x9 | 0.10 | 0.22 | 500 | ERN1HM151G09OT |
| | 180 | 8x16 | 0.10 | 0.12 | 740 | ERN1HM181F16OT |
| | | 10x12.5 | 0.10 | 0.12 | 760 | ERN1HM181G1BOT |
| | 220 | 8x16 | 0.10 | 0.12 | 740 | ERN1HM221F16OT |
| | | 10x12.5 | 0.10 | 0.12 | 760 | ERN1HM221G1BOT |
| | 330 | 10x16 | 0.10 | 0.084 | 1050 | ERN1HM331G16OT |
| | 470 | 10x20 | 0.10 | 0.058 | 1230 | ERN1HM471G20OT |
| | 560 | 12.5x16 | 0.10 | 0.061 | 1260 | ERN1HM561W16OT |
| | 680 | 12.5x20 | 0.10 | 0.045 | 1660 | ERN1HM681W20OT |
| | 820 | 12.5x25 | 0.10 | 0.034 | 1960 | ERN1HM821W25OT |
| | 1000 | 12.5x30 | 0.10 | 0.03 | 2310 | ERN1HM102W30OT |
| 16x20 | | 0.10 | 0.034 | 2210 | ERN1HM102L20OT | |
| 63(1J) | 10 | 5x9 | 0.09 | 3 | 100 | ERN1JM100D09OT |
| | 15 | 5x9 | 0.09 | 3 | 100 | ERN1JM150D09OT |
| | 18 | 5x9 | 0.09 | 3 | 100 | ERN1JM180D09OT |
| | 22 | 5x11 | 0.09 | 2.2 | 125 | ERN1JM220D11OT |
| | 39 | 6.3x9 | 0.09 | 2.8 | 110 | ERN1JM390E09OT |
| | 47 | 6.3x11 | 0.09 | 0.85 | 200 | ERN1JM470E11OT |
| | | 8x9 | 0.09 | 1.1 | 175 | ERN1JM470F09OT |
| | 68 | 8x9 | 0.09 | 1.1 | 175 | ERN1JM680F09OT |
| | 82 | 8x12 | 0.09 | 0.56 | 300 | ERN1JM820F12OT |
| | 100 | 8x12 | 0.09 | 0.5 | 375 | ERN1JM101F12OT |
| | 150 | 8x16 | 0.09 | 0.32 | 500 | ERN1JM151F16OT |
| | 180 | 10x12.5 | 0.09 | 0.22 | 520 | ERN1JM181G1BOT |
| | | 10x16 | 0.09 | 0.18 | 650 | ERN1JM221G16OT |
| | 270 | 10x16 | 0.09 | 0.16 | 720 | ERN1JM271G16OT |
| | | 12.5x13 | 0.09 | 0.15 | 780 | ERN1JM271W13OT |
| | 330 | 10x20 | 0.09 | 0.12 | 860 | ERN1JM331G20OT |
| | 390 | 12.5x16 | 0.09 | 0.144 | 860 | ERN1JM391W16OT |
| | 470 | 12.5x20 | 0.09 | 0.082 | 1120 | ERN1JM471W20OT |
| | 560 | 12.5x25 | 0.09 | 0.062 | 1420 | ERN1JM561W25OT |
| | 680 | 12.5x30 | 0.09 | 0.056 | 1730 | ERN1JM681W30OT |
| | | 16x20 | 0.09 | 0.064 | 1500 | ERN1JM681L20OT |
| | 820 | 12.5x30 | 0.09 | 0.056 | 1730 | ERN1JM821W30OT |
| | | 16x20 | 0.09 | 0.064 | 1500 | ERN1JM821L20OT |

Radial Type

RN series

■ STANDARD RATINGS

| WV (V _{dc}) | Cap (μF) | Size D _x L _x (mm) | tan | Impedance (max/20°C, 100kHz) | Rated ripple current (mArms/105°C, 100kHz) | Part Number |
|-----------------------|----------|---|-------|------------------------------|--|----------------|
| 80(1B) | 27 | 6.3x11 | 0.08 | 0.9 | 180 | ERN1BM270E11OT |
| | | 8x9 | 0.08 | 1.2 | 160 | ERN1BM270F09OT |
| | 33 | 6.3x11 | 0.08 | 0.9 | 180 | ERN1BM330E11OT |
| | | 8x9 | 0.08 | 1.2 | 160 | ERN1BM330F09OT |
| | 39 | 8x9 | 0.08 | 1.2 | 160 | ERN1BM390F09OT |
| | 47 | 8x12 | 0.08 | 0.65 | 260 | ERN1BM470F12OT |
| | | 8x12 | 0.08 | 0.65 | 260 | ERN1BM560F12OT |
| | 56 | 10x9 | 0.08 | 0.85 | 220 | ERN1BM560G09OT |
| | | 8x12 | 0.08 | 0.65 | 260 | ERN1BM680F12OT |
| | 68 | 10x9 | 0.08 | 0.85 | 220 | ERN1BM680G09OT |
| | | 8x16 | 0.08 | 0.48 | 350 | ERN1BM820F16OT |
| | 82 | 10x12.5 | 0.08 | 0.34 | 380 | ERN1BM820G1BOT |
| | | 8x16 | 0.08 | 0.48 | 350 | ERN1BM101F16OT |
| | 100 | 10x12.5 | 0.08 | 0.34 | 380 | ERN1BM101G1BOT |
| | | 10x14 | 0.08 | 0.34 | 380 | ERN1BM151G14OT |
| | 180 | 10x16 | 0.08 | 0.22 | 480 | ERN1BM181G16OT |
| | 220 | 10x20 | 0.08 | 0.18 | 640 | ERN1BM221G20OT |
| | 330 | 12.5x16 | 0.08 | 0.22 | 600 | ERN1BM221W16OT |
| | | 12.5x20 | 0.08 | 0.13 | 880 | ERN1BM331W20OT |
| | 390 | 12.5x25 | 0.08 | 0.094 | 1000 | ERN1BM391W25OT |
| 13x25 | | 0.08 | 0.094 | 1000 | ERN1BM471K25OT | |
| 470 | 16x20 | 0.08 | 0.096 | 1080 | ERN1BM471L20OT | |
| | 12.5x30 | 0.08 | 0.084 | 1200 | ERN1BM561W30OT | |
| 560 | 16x25 | 0.08 | 0.076 | 1360 | ERN1BM561L25OT | |
| | 12.5x35 | 0.08 | 0.072 | 1320 | ERN1BM681W35OT | |
| 680 | 16x25 | 0.08 | 0.076 | 1360 | ERN1BM681L25OT | |
| | 2.7 | 5x9 | 0.08 | 4.5 | 80 | ERN1KM2R7D09OT |
| 3.3 | 5x9 | 0.08 | 3 | 80 | ERN1KM3R3D09OT | |
| | 4.7 | 5x9 | 0.08 | 3 | 80 | ERN1KM4R7D09OT |
| 5.6 | 5x11 | 0.08 | 3 | 80 | ERN1KM5R6D11OT | |
| 6.8 | 5x11 | 0.08 | 3 | 80 | ERN1KM6R8D11OT | |
| 10 | 5x11 | 0.08 | 3 | 80 | ERN1KM100D11OT | |
| 15 | 6.3x9 | 0.08 | 2 | 70 | ERN1KM150E09OT | |
| | 6.3x12 | 0.08 | 0.9 | 180 | ERN1KM220E12OT | |
| 22 | 8x9 | 0.08 | 1.2 | 160 | ERN1KM220F09OT | |
| | 8x9 | 0.08 | 1.2 | 160 | ERN1KM330F09OT | |
| 47 | 8x12 | 0.08 | 0.65 | 260 | ERN1KM470F12OT | |
| | 10x9 | 0.08 | 0.85 | 220 | ERN1KM470G09OT | |
| 56 | 8x16 | 0.08 | 0.48 | 350 | ERN1KM560F16OT | |
| | 10x12.5 | 0.08 | 0.34 | 380 | ERN1KM560G1BOT | |
| 68 | 8x20 | 0.08 | 0.36 | 430 | ERN1KM680F20OT | |
| | 8x20 | 0.08 | 0.36 | 430 | ERN1KM820F20OT | |
| 82 | 10x12.5 | 0.08 | 0.34 | 380 | ERN1KM820G1BOT | |
| | 10x16 | 0.08 | 0.22 | 480 | ERN1KM101G16OT | |
| 120 | 10x16 | 0.08 | 0.22 | 480 | ERN1KM121G16OT | |
| 150 | 10x20 | 0.08 | 0.18 | 640 | ERN1KM151G20OT | |
| | 12.5x16 | 0.08 | 0.22 | 600 | ERN1KM151W16OT | |
| 220 | 12.5x20 | 0.08 | 0.13 | 880 | ERN1KM221W20OT | |
| 270 | 12.5x25 | 0.08 | 0.094 | 1000 | ERN1KM271W25OT | |
| | 12.5x30 | 0.08 | 0.084 | 1200 | ERN1KM331W30OT | |
| 330 | 16x20 | 0.08 | 0.096 | 1080 | ERN1KM331L20OT | |
| | 12.5x35 | 0.08 | 0.072 | 1320 | ERN1KM391W35OT | |
| 390 | 16x25 | 0.08 | 0.076 | 1360 | ERN1KM391L25OT | |
| | 470 | 16x25 | 0.08 | 0.076 | 1360 | ERN1KM471L25OT |

| WV (V _{dc}) | Cap (μF) | Size D _x L _x (mm) | tan | Impedance (max/20°C, 100kHz) | Rated ripple current (mArms/105°C, 100kHz) | Part Number |
|-----------------------|----------|---|-------|------------------------------|--|----------------|
| 100(1K) | 470 | 18x20 | 0.08 | 0.096 | 1080 | ERN1KM471M20OT |
| | 560 | 16x30 | 0.08 | 0.064 | 1480 | ERN1KM561L30OT |
| | | 18x25 | 0.08 | 0.072 | 1400 | ERN1KM561M25OT |
| 120(2B) | 10 | 6.3x11 | 0.12 | 5.5 | 94 | ERN2BM100E11OT |
| | 15 | 6.3x12 | 0.12 | 4.5 | 120 | ERN2BM150E12OT |
| | 18 | 8x9 | 0.12 | 4.0 | 140 | ERN2BM180F09OT |
| | 22 | 8x12 | 0.12 | 3.5 | 154 | ERN2BM220F12OT |
| | | 8x16 | 0.12 | 3.0 | 266 | ERN2BM330F16OT |
| | 33 | 10x12.5 | 0.12 | 3.0 | 266 | ERN2BM330G1BOT |
| | | 8x20 | 0.12 | 2.5 | 320 | ERN2BM470F20OT |
| | 47 | 10x16 | 0.12 | 2.5 | 338 | ERN2BM470G16OT |
| | | 56 | 10x16 | 0.12 | 2.2 | 338 |
| | 68 | 10x16 | 0.12 | 2.0 | 338 | ERN2BM680G16OT |
| | 82 | 10x20 | 0.12 | 1.8 | 360 | ERN2BM820G20OT |
| | 100 | 10x25 | 0.12 | 1.5 | 450 | ERN2BM101G25OT |
| | 120 | 12.5x20 | 0.12 | 1.3 | 620 | ERN2BM121W20OT |
| | 150 | 12.5x25 | 0.12 | 1.0 | 675 | ERN2BM151W25OT |
| | 220 | 13x30 | 0.12 | 0.75 | 825 | ERN2BM221K30OT |
| | | 16x20 | 0.12 | 0.75 | 825 | ERN2BM221L20OT |
| | 270 | 16x25 | 0.12 | 0.55 | 938 | ERN2BM271L25OT |
| | | 18x20 | 0.12 | 0.55 | 938 | ERN2BM271M20OT |
| | 330 | 16x30 | 0.12 | 0.42 | 1013 | ERN2BM331L30OT |
| | | 18x25 | 0.12 | 0.42 | 1013 | ERN2BM331M25OT |
| 470 | 16x40 | 0.12 | 0.30 | 1125 | ERN2BM471L40OT | |
| | 18x30 | 0.12 | 0.30 | 1125 | ERN2BM471M30OT | |

RZ series

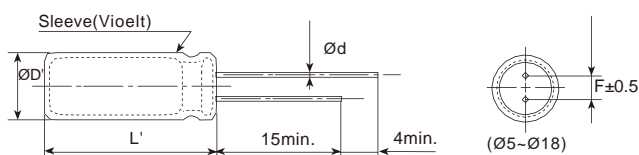
- Miniaturized, long life, low impedance
- High ripple current, high reliability
- Endurance: +105°C 6,000~10,000 hours
- RoHS Compliant



SPECIFICATIONS

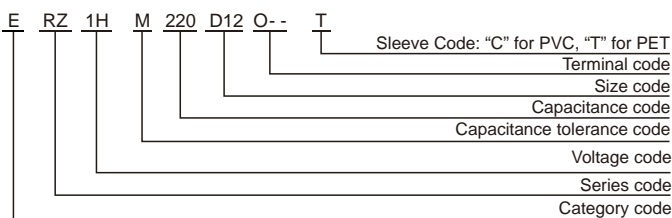
| Items | Characteristics |
|--|--|
| Category Temperature Range | -40~+105°C |
| Rated Voltage Range | 6.3~50 V _{dc} |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) |
| Leakage Current | I ≤ 0.01CV or 3μA, whichever is greater. Where, I: Max. leakage current (μA), C: Nominal capacitance (μF), V: Rated voltage (V) (at 20°C after 2 minutes) |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) 6.3 10 16 25 35 50 |
| | tan δ (max.) 0.22 0.19 0.16 0.14 0.12 0.10 |
| | When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20°C, 120Hz) |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) 6.3 10 16~50 |
| | Z(-25°C)/Z(+20°C) 2 |
| | Z(-40°C)/Z(+20°C) 6 4 3 (at 120Hz) |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 20°C after DC voltage plus the rated ripple current is applied for a specified period of time at 105 °C. |
| | Capacitance Change ±25% of the initial value (6.3, 10V: ±30%) |
| | D.F. (tan δ) 200% of the initial specified value |
| | Leakage Current The initial specified value |
| | Case Dia. (mm) Load life (hours) |
| | ØD 6.3 6,000 |
| | ØD=8 8,000 |
| | ØD 10 10,000 |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 105°C without voltage applied. |
| | Capacitance Change ±25% of the initial value (6.3, 10V: ±30%) |
| | D.F. (tan δ) 200% of the initial specified value |
| | Leakage Current 200% of the initial specified value |

DIMENSIONS[mm]



| ØD | 5 | 6.3 | 8 | 10 | 12.5 | 16 | 18 |
|-----|------------|-----|-----|-----|------|-----|-----|
| Ød | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.8 | 0.8 |
| F | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 |
| ØD' | ØD+0.5max. | | | | | | |
| L' | L+2max. | | | | | | |

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| Cap.(μF) \ Freq.(Hz) | 120 | 1k | 10k | 100k |
|----------------------|------|------|------|------|
| Cap.<220 | 0.40 | 0.75 | 0.90 | 1.00 |
| 220 Cap.<680 | 0.50 | 0.85 | 0.94 | 1.00 |
| 680 Cap.<2200 | 0.60 | 0.87 | 0.95 | 1.00 |
| 2200 Cap.<4700 | 0.75 | 0.90 | 0.95 | 1.00 |
| Cap. 4700 | 0.85 | 0.95 | 0.98 | 1.00 |

The endurance of capacitors is shortened with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

RZ series

■ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Size D×L(mm) | tan | Impedance (max/20°C, 100kHz) | Rated ripple current (mA _{RMS} /105°C, 100kHz) | Part Number |
|----------|----------|--------------|-------|------------------------------|---|----------------|
| 6.3(0J) | 220 | 5×12 | 0.22 | 0.22 | 345 | ERZ0JM221D12OT |
| | | 6.3×9 | 0.22 | 0.30 | 310 | ERZ0JM221E09OT |
| | 470 | 6.3×12 | 0.22 | 0.094 | 540 | ERZ0JM471E12OT |
| | | 8×9 | 0.22 | 0.120 | 485 | ERZ0JM471F09OT |
| | 820 | 8×12 | 0.22 | 0.056 | 945 | ERZ0JM821F12OT |
| | | 10×9 | 0.22 | 0.072 | 850 | ERZ0JM821G09OT |
| | 1200 | 8×16 | 0.22 | 0.045 | 1250 | ERZ0JM122F16OT |
| | | 10×12.5 | 0.22 | 0.039 | 1330 | ERZ0JM122G1BOT |
| | 1500 | 8×20 | 0.22 | 0.029 | 1500 | ERZ0JM152F20OT |
| | 1800 | 10×16 | 0.22 | 0.028 | 1760 | ERZ0JM182G16OT |
| | 2200 | 10×20 | 0.24 | 0.020 | 1960 | ERZ0JM222G20OT |
| | 2700 | 10×25 | 0.24 | 0.018 | 2250 | ERZ0JM272G25OT |
| | 3900 | 12.5×20 | 0.26 | 0.017 | 2480 | ERZ0JM392W20OT |
| | 4700 | 12.5×25 | 0.28 | 0.015 | 2900 | ERZ0JM472W25OT |
| | 5600 | 12.5×30 | 0.30 | 0.013 | 3450 | ERZ0JM562W30OT |
| | | 12.5×35 | 0.32 | 0.012 | 3570 | ERZ0JM682W35OT |
| | 6800 | 16×20 | 0.32 | 0.015 | 3250 | ERZ0JM682L20OT |
| | | 8200 | 16×25 | 0.36 | 0.013 | 3630 |
| | 10000 | 18×25 | 0.40 | 0.012 | 3650 | ERZ0JM103M25OT |
| | 10(1A) | 150 | 5×12 | 0.19 | 0.22 | 345 |
| 6.3×9 | | | 0.19 | 0.30 | 310 | ERZ1AM151E09OT |
| 330 | | 6.3×12 | 0.19 | 0.094 | 540 | ERZ1AM331E12OT |
| | | 8×9 | 0.19 | 0.120 | 485 | ERZ1AM331F09OT |
| 680 | | 8×11 | 0.19 | 0.056 | 945 | ERZ1AM681F11OT |
| | | 10×9 | 0.19 | 0.072 | 850 | ERZ1AM681G09OT |
| 1000 | | 8×16 | 0.19 | 0.045 | 1250 | ERZ1AM102F16OT |
| | | 10×12.5 | 0.19 | 0.039 | 1330 | ERZ1AM102G1BOT |
| 1500 | | 8×20 | 0.19 | 0.029 | 1500 | ERZ1AM152F20OT |
| | | 10×16 | 0.19 | 0.028 | 1760 | ERZ1AM152G16OT |
| 1800 | | 10×20 | 0.19 | 0.020 | 1960 | ERZ1AM182G20OT |
| 2200 | | 10×25 | 0.21 | 0.018 | 2250 | ERZ1AM222G25OT |
| 3300 | | 12.5×20 | 0.23 | 0.017 | 2480 | ERZ1AM332W20OT |
| 3900 | | 12.5×25 | 0.23 | 0.015 | 2900 | ERZ1AM392W25OT |
| 4700 | | 12.5×30 | 0.25 | 0.013 | 3450 | ERZ1AM472W30OT |
| | | 16×20 | 0.25 | 0.015 | 3250 | ERZ1AM472L20OT |
| 5600 | | 12.5×35 | 0.27 | 0.012 | 3570 | ERZ1AM562W35OT |
| 6800 | | 16×25 | 0.29 | 0.013 | 3630 | ERZ1AM682L25OT |
| 8200 | | 18×25 | 0.33 | 0.012 | 3650 | ERZ1AM822M25OT |
| 16(1C) | | 100 | 5×12 | 0.16 | 0.22 | 345 |
| | 6.3×9 | | 0.16 | 0.30 | 310 | ERZ1CM101E09OT |
| | 220 | 6.3×12 | 0.16 | 0.094 | 540 | ERZ1CM221E12OT |
| | | 8×9 | 0.16 | 0.120 | 485 | ERZ1CM221F09OT |
| | 470 | 8×12 | 0.16 | 0.056 | 945 | ERZ1CM471F12OT |
| | | 10×9 | 0.16 | 0.072 | 850 | ERZ1CM471G09OT |
| | 680 | 8×16 | 0.16 | 0.045 | 1250 | ERZ1CM681F16OT |
| | | 10×12.5 | 0.16 | 0.039 | 1330 | ERZ1CM681G1BOT |
| | 1000 | 8×20 | 0.16 | 0.029 | 1500 | ERZ1CM102F20OT |
| | | 10×16 | 0.16 | 0.028 | 1760 | ERZ1CM102G16OT |
| | 1500 | 10×20 | 0.16 | 0.020 | 1960 | ERZ1CM152G20OT |
| | 1800 | 10×25 | 0.16 | 0.018 | 2250 | ERZ1CM182G25OT |
| | 2200 | 12.5×20 | 0.18 | 0.017 | 2480 | ERZ1CM222W20OT |
| | 2700 | 12.5×25 | 0.18 | 0.015 | 2900 | ERZ1CM272W25OT |
| | 3300 | 12.5×30 | 0.20 | 0.013 | 3450 | ERZ1CM332W30OT |
| | | 16×20 | 0.20 | 0.015 | 3250 | ERZ1CM332L20OT |
| | 3900 | 12.5×35 | 0.20 | 0.012 | 3570 | ERZ1CM392W35OT |
| | 4700 | 16×25 | 0.22 | 0.013 | 3630 | ERZ1CM472L25OT |
| | 5600 | 18×25 | 0.24 | 0.012 | 3650 | ERZ1CM562M25OT |

| WV (Vdc) | Cap (μF) | Size D×L(mm) | tan | Impedance (max/20°C, 100kHz) | Rated ripple current (mA _{RMS} /105°C, 100kHz) | Part Number | |
|----------|----------|--------------|---------|------------------------------|---|----------------|----------------|
| 25(1E) | 68 | 5×12 | 0.14 | 0.22 | 345 | ERZ1EM680D12OT | |
| | | 6.3×9 | 0.14 | 0.30 | 310 | ERZ1EM680E09OT | |
| | 150 | 6.3×12 | 0.14 | 0.094 | 540 | ERZ1EM151E12OT | |
| | | 8×9 | 0.14 | 0.120 | 485 | ERZ1EM151F09OT | |
| | 330 | 8×12 | 0.14 | 0.056 | 945 | ERZ1EM331F12OT | |
| | | 10×9 | 0.14 | 0.072 | 850 | ERZ1EM331G09OT | |
| | 390 | 8×16 | 0.14 | 0.045 | 1250 | ERZ1EM391F16OT | |
| | | 470 | 10×12.5 | 0.14 | 0.039 | 1330 | ERZ1EM471G1BOT |
| | 560 | 8×20 | 0.14 | 0.029 | 1500 | ERZ1EM561F20OT | |
| | 680 | 10×16 | 0.14 | 0.028 | 1760 | ERZ1EM681G16OT | |
| | 820 | 10×20 | 0.14 | 0.020 | 1960 | ERZ1EM821G20OT | |
| | 1000 | 10×25 | 0.14 | 0.018 | 2250 | ERZ1EM102G25OT | |
| | | 1500 | 12.5×20 | 0.14 | 0.017 | 2480 | ERZ1EM152W20OT |
| | 1800 | 12.5×25 | 0.14 | 0.015 | 2900 | ERZ1EM182W25OT | |
| | | 12.5×30 | 0.16 | 0.013 | 3450 | ERZ1EM222W30OT | |
| | 2200 | 16×20 | 0.16 | 0.015 | 3250 | ERZ1EM222L20OT | |
| | | 2700 | 12.5×35 | 0.16 | 0.012 | 3570 | ERZ1EM272W35OT |
| | 3300 | 16×25 | 0.18 | 0.013 | 3630 | ERZ1EM332L25OT | |
| | 3900 | 18×25 | 0.18 | 0.012 | 3650 | ERZ1EM392M25OT | |
| | 35(1V) | 47 | 5×12 | 0.12 | 0.33 | 345 | ERZ1VM470D12OT |
| 6.3×9 | | | 0.12 | 0.30 | 310 | ERZ1VM470E09OT | |
| 100 | | 6.3×12 | 0.12 | 0.094 | 540 | ERZ1VM101E12OT | |
| | | 8×9 | 0.12 | 0.120 | 485 | ERZ1VM101F09OT | |
| 220 | | 8×16 | 0.12 | 0.056 | 945 | ERZ1VM221F16OT | |
| | | 270 | 8×20 | 0.12 | 0.045 | 1250 | ERZ1VM271F20OT |
| 330 | | 10×12.5 | 0.12 | 0.039 | 1330 | ERZ1VM331G1BOT | |
| | | 390 | 8×20 | 0.12 | 0.029 | 1500 | ERZ1VM391F20OT |
| 470 | | 10×16 | 0.12 | 0.028 | 1760 | ERZ1VM471G16OT | |
| | | 560 | 10×20 | 0.12 | 0.020 | 1960 | ERZ1VM561G20OT |
| 680 | | 10×25 | 0.12 | 0.018 | 2250 | ERZ1VM681G25OT | |
| 1000 | | 12.5×20 | 0.12 | 0.017 | 2480 | ERZ1VM102W20OT | |
| 1200 | | 12.5×25 | 0.12 | 0.015 | 2900 | ERZ1VM122W25OT | |
| | | 1500 | 12.5×30 | 0.12 | 0.013 | 3450 | ERZ1VM152W30OT |
| 1800 | | 16×20 | 0.12 | 0.015 | 3250 | ERZ1VM152L20OT | |
| | | 2200 | 12.5×35 | 0.12 | 0.012 | 3570 | ERZ1VM182W35OT |
| 2700 | | 16×25 | 0.14 | 0.013 | 3630 | ERZ1VM222L25OT | |
| | | 2700 | 18×25 | 0.14 | 0.012 | 3650 | ERZ1VM272M25OT |
| 50(1H) | | 22 | 5×12 | 0.10 | 0.34 | 238 | ERZ1HM220D12OT |
| | | | 6.3×9 | 0.10 | 0.44 | 214 | ERZ1HM220E09OT |
| | 56 | 6.3×12 | 0.10 | 0.14 | 385 | ERZ1HM560E12OT | |
| | | 8×9 | 0.10 | 0.18 | 345 | ERZ1HM560F09OT | |
| | 100 | 8×12 | 0.10 | 0.074 | 724 | ERZ1HM101F12OT | |
| | | 10×9 | 0.10 | 0.096 | 650 | ERZ1HM101G09OT | |
| | 120 | 8×16 | 0.10 | 0.061 | 950 | ERZ1HM121F16OT | |
| | | 150 | 10×12.5 | 0.10 | 0.061 | 979 | ERZ1HM151G1BOT |
| | 180 | 8×20 | 0.10 | 0.046 | 1190 | ERZ1HM181F20OT | |
| | 220 | 10×16 | 0.10 | 0.042 | 1370 | ERZ1HM221G16OT | |
| | | 270 | 10×20 | 0.10 | 0.030 | 1580 | ERZ1HM271G20OT |
| | 330 | 10×25 | 0.10 | 0.028 | 1870 | ERZ1HM331G25OT | |
| | | 470 | 12.5×20 | 0.10 | 0.027 | 2050 | ERZ1HM471W20OT |
| | 560 | 12.5×25 | 0.10 | 0.023 | 2410 | ERZ1HM561W25OT | |
| | | 680 | 12.5×30 | 0.10 | 0.021 | 2860 | ERZ1HM681W30OT |
| | 820 | 12.5×35 | 0.10 | 0.019 | 2960 | ERZ1HM821W35OT | |
| | | 16×20 | 0.10 | 0.023 | 2730 | ERZ1HM821L20OT | |
| | 1000 | 16×25 | 0.10 | 0.021 | 3010 | ERZ1HM102L25OT | |
| | 1500 | 18×25 | 0.10 | 0.019 | 3290 | ERZ1HM152M25OT | |

RJ series

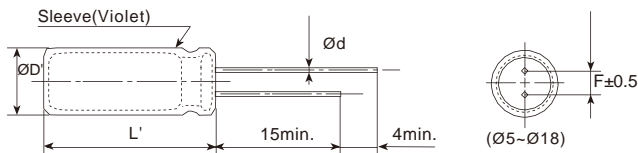
- Miniaturized
- Low impedance, high ripple current, long life
- Endurance: +105°C 8,000 ~12,000 hours
- RoHS Compliant



SPECIFICATIONS

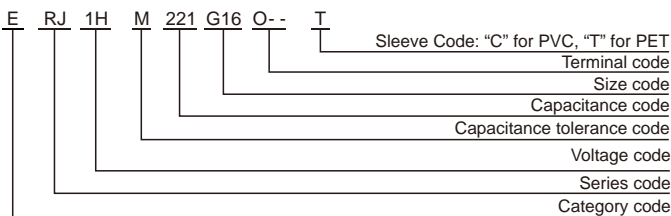
| Items | Characteristics | | | | | | | | | | |
|--|--|---------------------------------------|------|------|------|------|------|------|------|----------------|-------------------|
| Category Temperature Range | -40~+105°C | | | | | | | | | | |
| Rated Voltage Range | 10~120 V _{dc} | | | | | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | | | | | | | | | |
| Leakage Current | I ≤ 0.01CV or 3μA, whichever is greater. Where, I: Max. leakage current (μA), C: Nominal capacitance (μF), V: Rated voltage (V) (at 20°C after 2 minutes) | | | | | | | | | | |
| Dissipation Factor (tan δ) | Rated Voltage (V _{dc}) | 10 | 16 | 25 | 35 | 50 | 63 | 80 | 100 | 120 | |
| | tan δ (max.) | 0.19 | 0.16 | 0.14 | 0.12 | 0.10 | 0.09 | 0.09 | 0.08 | 0.12 | |
| | When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20°C, 120Hz) | | | | | | | | | | |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage (V _{dc}) | 10 | 16 | 25 | 35 | 50 | 63 | 80 | 100 | 120 | |
| | Z(-25°C)/Z(+20°C) | 2 | | | | 2 | | | | 3 | |
| | Z(-40°C)/Z(+20°C) | 4 | 3 | | | | 6 | | | | |
| Endurance | The specifications listed below shall be met when the capacitors are restored to 20°C after DC voltage plus rated ripple current is applied for a specified period of time at 105 °C, the peak voltage shall not exceed the rated voltage. | | | | | | | | | | |
| | Capacitance Change | ±25% of the initial value (10V: ±30%) | | | | | | | | Case Dia. (mm) | Load life (hours) |
| | D.F. (tan δ) | 200% of the initial specified value | | | | | | | | ∅D 6.3 | 10~120V 8,000 |
| | Leakage Current | The initial specified value | | | | | | | | ∅D=8&10 | 10,000 |
| | | | | | | | | | | ∅D 12.5 | 12,000 |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after leaving them under no load at 105°C for 1,000 hours. | | | | | | | | | | |
| | Capacitance Change | ±25% of the initial value (10V: ±30%) | | | | | | | | | |
| | D.F. (tan δ) | 200% of the initial specified value | | | | | | | | | |
| | Leakage Current | 200% of the initial specified value | | | | | | | | | |

DIMENSIONS [mm]



| ∅D | 5 | 6.3 | 8 | 10 | 12.5 | 16 | 18 |
|-----|------------|-----|-----|-----|------|-----|-----|
| ∅d | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.8 | 0.8 |
| F | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 |
| ∅D' | ∅D+0.5max. | | | | | | |
| L' | L+2max. | | | | | | |

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| Freq. (Hz) | 120 | 1k | 10k | 100k |
|-----------------|------|------|------|------|
| Cap. < 47 | 0.42 | 0.70 | 0.90 | 1.00 |
| 47 Cap. < 330 | 0.50 | 0.73 | 0.92 | 1.00 |
| 330 Cap. < 820 | 0.55 | 0.77 | 0.94 | 1.00 |
| 820 Cap. < 2200 | 0.60 | 0.80 | 0.96 | 1.00 |
| Cap. ≥ 2200 | 0.70 | 0.85 | 0.98 | 1.00 |

RJ series

■ STANDARD RATINGS

| WV (Vdc) | Cap (µF) | Size DxD(mm) | tan | Impedance (max/20°C, 100kHz) | Rated ripple current (mA _{RMS} /105°C, 100kHz) | Part Number |
|----------|----------|--------------|-------|------------------------------|---|----------------|
| 10(1A) | 150 | 5x11 | 0.19 | 0.4 | 450 | ERJ1AM151D11OT |
| | | 6.3x9 | 0.19 | 0.52 | 380 | ERJ1AM151E09OT |
| | 330 | 6.3x11 | 0.19 | 0.17 | 700 | ERJ1AM331E11OT |
| | | 8x9 | 0.19 | 0.22 | 590 | ERJ1AM332F09OT |
| | 560 | 8x12 | 0.19 | 0.075 | 1200 | ERJ1AM561F12OT |
| | | 10x9 | 0.19 | 0.097 | 1020 | ERJ1AM561G09OT |
| | 680 | 8x16 | 0.19 | 0.059 | 1600 | ERJ1AM681F16OT |
| | 820 | 10x12.5 | 0.19 | 0.053 | 1700 | ERJ1AM821G1BOT |
| | 1000 | 8x20 | 0.19 | 0.041 | 1960 | ERJ1AM102F20OT |
| | 1200 | 10x16 | 0.19 | 0.038 | 2000 | ERJ1AM122G16OT |
| | 1800 | 10x20 | 0.19 | 0.028 | 2500 | ERJ1AM182G20OT |
| | 2200 | 10x25 | 0.21 | 0.024 | 2900 | ERJ1AM222G25OT |
| | 2700 | 12.5x20 | 0.21 | 0.025 | 2600 | ERJ1AM272W20OT |
| | 3300 | 12.5x25 | 0.23 | 0.019 | 3200 | ERJ1AM332W25OT |
| | 4700 | 12.5x30 | 0.25 | 0.018 | 3660 | ERJ1AM472W30OT |
| 16x20 | | 0.25 | 0.021 | 3330 | ERJ1AM472L20OT | |
| 12.5x35 | | 0.27 | 0.016 | 4120 | ERJ1AM562W35OT | |
| 16x25 | | 0.27 | 0.017 | 3810 | ERJ1AM562L25OT | |
| 16(1C) | | 120 | 5x11 | 0.16 | 0.4 | 450 |
| | 6.3x9 | | 0.16 | 0.52 | 380 | ERJ1CM121E09OT |
| | 270 | 6.3x11 | 0.16 | 0.17 | 700 | ERJ1CM271E11OT |
| | | 8x9 | 0.16 | 0.22 | 590 | ERJ1CM271F09OT |
| | 470 | 8x12 | 0.16 | 0.075 | 1200 | ERJ1CM471F12OT |
| | | 10x9 | 0.16 | 0.097 | 1020 | ERJ1CM471G09OT |
| | 560 | 8x16 | 0.16 | 0.059 | 1600 | ERJ1CM561F16OT |
| | 680 | 10x12.5 | 0.16 | 0.053 | 1700 | ERJ1CM681G1BOT |
| | 820 | 8x20 | 0.16 | 0.041 | 1960 | ERJ1CM821F20OT |
| | 1000 | 10x16 | 0.16 | 0.038 | 2000 | ERJ1CM102G16OT |
| | 1500 | 10x20 | 0.16 | 0.028 | 2500 | ERJ1CM152G20OT |
| | 1800 | 10x25 | 0.16 | 0.024 | 2900 | ERJ1CM182G25OT |
| | 2200 | 12.5x20 | 0.18 | 0.025 | 2600 | ERJ1CM222W20OT |
| | 2700 | 12.5x25 | 0.18 | 0.019 | 3200 | ERJ1CM272W25OT |
| | 3300 | 12.5x30 | 0.20 | 0.018 | 3660 | ERJ1CM332W30OT |
| 16x20 | | 0.20 | 0.021 | 3330 | ERJ1CM332L20OT | |
| 12.5x35 | | 0.20 | 0.016 | 4120 | ERJ1CM392W35OT | |
| 16x25 | | 0.22 | 0.017 | 3810 | ERJ1CM472L25OT | |
| 25(1E) | | 68 | 5x11 | 0.14 | 0.4 | 450 |
| | 6.3x9 | | 0.14 | 0.52 | 380 | ERJ1EM680E09OT |
| | 150 | 6.3x11 | 0.14 | 0.17 | 700 | ERJ1EM151E11OT |
| | | 8x9 | 0.14 | 0.22 | 590 | ERJ1EM151F09OT |
| | 330 | 8x12 | 0.14 | 0.075 | 1200 | ERJ1EM331F12OT |
| | | 10x9 | 0.14 | 0.097 | 1020 | ERJ1EM331G09OT |
| | 390 | 8x16 | 0.14 | 0.059 | 1600 | ERJ1EM391F16OT |
| | 470 | 10x12.5 | 0.14 | 0.053 | 1700 | ERJ1EM471G1BOT |
| | 560 | 8x20 | 0.14 | 0.041 | 1960 | ERJ1EM561F20OT |
| | 680 | 10x16 | 0.14 | 0.038 | 2000 | ERJ1EM681G16OT |
| | 1000 | 10x20 | 0.14 | 0.028 | 2500 | ERJ1EM102G20OT |
| | 1200 | 10x25 | 0.14 | 0.024 | 2900 | ERJ1EM122G25OT |
| | 1500 | 12.5x20 | 0.14 | 0.025 | 2600 | ERJ1EM152W20OT |
| | 1800 | 12.5x25 | 0.14 | 0.019 | 3200 | ERJ1EM182W25OT |
| | 2200 | 12.5x30 | 0.16 | 0.018 | 3660 | ERJ1EM222W30OT |
| 16x20 | | 0.16 | 0.021 | 3330 | ERJ1EM222L20OT | |
| 12.5x35 | | 0.16 | 0.016 | 4120 | ERJ1EM272W35OT | |
| 16x25 | | 0.18 | 0.017 | 3810 | ERJ1EM332L25OT | |
| 35(1V) | | 47 | 5x11 | 0.12 | 0.4 | 450 |
| | 6.3x9 | | 0.12 | 0.52 | 380 | ERJ1VM470E09OT |
| | 100 | 6.3x11 | 0.12 | 0.17 | 700 | ERJ1VM101E11OT |
| | | 8x9 | 0.12 | 0.22 | 590 | ERJ1VM101F09OT |
| | 180 | 8x12 | 0.12 | 0.075 | 1200 | ERJ1VM181F12OT |
| | | 10x9 | 0.12 | 0.097 | 1020 | ERJ1VM181G09OT |
| | 220 | 8x16 | 0.12 | 0.059 | 1600 | ERJ1VM221F16OT |
| | 270 | 10x12.5 | 0.12 | 0.053 | 1700 | ERJ1VM271G1BOT |
| | 330 | 8x20 | 0.12 | 0.041 | 1960 | ERJ1VM331F20OT |
| | 390 | 10x16 | 0.12 | 0.038 | 2000 | ERJ1VM391G16OT |
| | 560 | 10x20 | 0.12 | 0.028 | 2500 | ERJ1VM561G20OT |
| | 680 | 10x25 | 0.12 | 0.024 | 2900 | ERJ1VM681G25OT |
| | 820 | 12.5x20 | 0.12 | 0.025 | 2600 | ERJ1VM821W20OT |
| | 1200 | 12.5x25 | 0.12 | 0.019 | 3200 | ERJ1VM122W25OT |

| WV (Vdc) | Cap (µF) | Size DxD(mm) | tan | Impedance (max/20°C, 100kHz) | Rated ripple current (mA _{RMS} /105°C, 100kHz) | Part Number | |
|----------|----------|--------------|---------|------------------------------|---|----------------|----------------|
| 35(1V) | 1500 | 12.5x30 | 0.12 | 0.018 | 3660 | ERJ1VM152W30OT | |
| | | 16x20 | 0.12 | 0.021 | 3330 | ERJ1VM152L20OT | |
| | 1800 | 12.5x35 | 0.12 | 0.016 | 4120 | ERJ1VM182W35OT | |
| | | 16x25 | 0.12 | 0.017 | 3810 | ERJ1VM182L25OT | |
| 50(1H) | 27 | 5x11 | 0.10 | 0.48 | 310 | ERJ1HM270D11OT | |
| | | 6.3x9 | 0.10 | 0.63 | 260 | ERJ1HM270E09OT | |
| | 56 | 6.3x11 | 0.10 | 0.22 | 500 | ERJ1HM560E11OT | |
| | | 8x9 | 0.10 | 0.29 | 425 | ERJ1HM560F09OT | |
| | 100 | 8x12 | 0.10 | 0.12 | 950 | ERJ1HM101F12OT | |
| | | 10x9 | 0.10 | 0.16 | 800 | ERJ1HM101G09OT | |
| | 120 | 8x16 | 0.10 | 0.082 | 1230 | ERJ1HM121F16OT | |
| | 150 | 10x12.5 | 0.10 | 0.073 | 1280 | ERJ1HM151G1BOT | |
| | 180 | 8x20 | 0.10 | 0.058 | 1580 | ERJ1HM181F20OT | |
| | 220 | 10x16 | 0.10 | 0.053 | 1650 | ERJ1HM221G16OT | |
| | 330 | 10x20 | 0.10 | 0.038 | 2060 | ERJ1HM331G20OT | |
| | 390 | 10x25 | 0.10 | 0.032 | 2420 | ERJ1HM391G25OT | |
| | 470 | 12.5x20 | 0.10 | 0.032 | 2300 | ERJ1HM471W20OT | |
| | 680 | 12.5x25 | 0.10 | 0.025 | 2800 | ERJ1HM681W25OT | |
| | | 12.5x30 | 0.10 | 0.023 | 3370 | ERJ1HM821W30OT | |
| 16x20 | | 0.10 | 0.026 | 3070 | ERJ1HM821L20OT | | |
| 12.5x35 | | 0.10 | 0.021 | 3810 | ERJ1HM102W35OT | | |
| 16x25 | | 0.10 | 0.022 | 3510 | ERJ1HM102L25OT | | |
| 63(1J) | 18 | 5x11 | 0.09 | 0.71 | 240 | ERJ1JM180D11OT | |
| | | 6.3x9 | 0.09 | 0.92 | 200 | ERJ1JM180E09OT | |
| | 47 | 6.3x11 | 0.09 | 0.28 | 420 | ERJ1JM470E11OT | |
| | | 8x9 | 0.09 | 0.36 | 350 | ERJ1JM470F09OT | |
| | 82 | 8x12 | 0.09 | 0.18 | 720 | ERJ1JM820F12OT | |
| | | 10x9 | 0.09 | 0.24 | 610 | ERJ1JM820G09OT | |
| | 100 | 8x16 | 0.09 | 0.13 | 990 | ERJ1JM101F16OT | |
| | 120 | 10x12.5 | 0.09 | 0.11 | 990 | ERJ1JM121G1BOT | |
| | 150 | 8x20 | 0.09 | 0.096 | 1200 | ERJ1JM151F20OT | |
| | 180 | 10x16 | 0.09 | 0.076 | 1200 | ERJ1JM181G16OT | |
| | 270 | 10x20 | 0.09 | 0.056 | 1570 | ERJ1JM271G20OT | |
| | | 12.5x16 | 0.09 | 0.072 | 1570 | ERJ1JM271W16OT | |
| | | 10x25 | 0.09 | 0.046 | 1990 | ERJ1JM331G25OT | |
| | | 12.5x20 | 0.09 | 0.041 | 1990 | ERJ1JM391W20OT | |
| | | 12.5x25 | 0.09 | 0.031 | 2460 | ERJ1JM471W25OT | |
| 560 | 12.5x30 | 0.09 | 0.028 | 2760 | ERJ1JM561W30OT | | |
| | 16x20 | 0.09 | 0.032 | 2380 | ERJ1JM561L20OT | | |
| | 12.5x35 | 0.09 | 0.024 | 3040 | ERJ1JM681W35OT | | |
| | 16x25 | 0.09 | 0.025 | 2890 | ERJ1JM821L25OT | | |
| | 80(1B) | 12 | 5x11 | 0.09 | 1.2 | 220 | ERJ1BM120D11OT |
| 6.3x9 | | | 0.09 | 1.6 | 180 | ERJ1BM120E09OT | |
| 27 | | 6.3x11 | 0.09 | 0.46 | 370 | ERJ1BM270E11OT | |
| | | 8x9 | 0.09 | 0.6 | 310 | ERJ1BM270F09OT | |
| 47 | | 8x12 | 0.09 | 0.29 | 620 | ERJ1BM470F12OT | |
| | | 10x9 | 0.09 | 0.38 | 520 | ERJ1BM470G09OT | |
| 56 | | 8x16 | 0.09 | 0.2 | 780 | ERJ1BM560F16OT | |
| 68 | | 10x12.5 | 0.09 | 0.17 | 780 | ERJ1BM680G1BOT | |
| 82 | | 8x20 | 0.09 | 0.16 | 1040 | ERJ1BM820F20OT | |
| 100 | | 10x16 | 0.09 | 0.11 | 1040 | ERJ1BM101G16OT | |
| 150 | | 10x20 | 0.09 | 0.084 | 1430 | ERJ1BM151G20OT | |
| | | 12.5x16 | 0.09 | 0.11 | 1430 | ERJ1BM151W16OT | |
| | | 180 | 10x25 | 0.09 | 0.069 | 1620 | ERJ1BM181G25OT |
| | | 220 | 12.5x20 | 0.09 | 0.062 | 1750 | ERJ1BM221W20OT |
| | | 270 | 12.5x25 | 0.09 | 0.047 | 2210 | ERJ1BM271W25OT |
| 330 | 12.5x30 | 0.09 | 0.042 | 2400 | ERJ1BM331W30OT | | |
| | 16x20 | 0.09 | 0.048 | 1950 | ERJ1BM331L20OT | | |
| | 12.5x35 | 0.09 | 0.036 | 2600 | ERJ1BM391W35OT | | |
| | 12.5x40 | 0.09 | 0.032 | 2860 | ERJ1BM471W40OT | | |
| | 16x25 | 0.09 | 0.038 | 2430 | ERJ1BM471L25OT | | |
| 560 | 18x20 | 0.09 | 0.045 | 2270 | ERJ1BM471M20OT | | |
| | 16x30 | 0.09 | 0.032 | 2640 | ERJ1BM561L30OT | | |
| | 16x35 | 0.09 | 0.029 | 2860 | ERJ1BM681L35OT | | |
| | 18x25 | 0.09 | 0.036 | 2500 | ERJ1BM681M25OT | | |
| | 16x40 | 0.09 | 0.027 | 3510 | ERJ1BM821L40OT | | |
| 820 | 18x30 | 0.09 | 0.03 | 2860 | ERJ1BM821M30OT | | |
| | 1000 | 18x35 | 0.09 | 0.027 | 3510 | ERJ1BM102M35OT | |
| | 1200 | 18x40 | 0.09 | 0.026 | 3860 | ERJ1BM122M40OT | |

RJ series

■ STANDARD RATINGS

| WV (V _{dc}) | Cap (μF) | Size DxL(mm) | tan | Impedance (max/20°C, 100kHz) | Rated ripple current (mA _{rms} /105°C, 100kHz) | Part Number |
|-----------------------|----------|--------------|------|------------------------------|---|----------------|
| 100(1K) | 8.2 | 5x11 | 0.08 | 1.2 | 220 | ERJ1KM8R2D11OT |
| | | 6.3x9 | 0.08 | 1.6 | 180 | ERJ1KM8R2E09OT |
| | 18 | 6.3x11 | 0.08 | 0.46 | 370 | ERJ1KM180E11OT |
| | | 8x9 | 0.08 | 0.6 | 310 | ERJ1KM180F09OT |
| | 33 | 8x12 | 0.08 | 0.29 | 620 | ERJ1KM330F12OT |
| | | 10x9 | 0.08 | 0.38 | 520 | ERJ1KM330G09OT |
| | 47 | 8x16 | 0.08 | 0.2 | 780 | ERJ1KM470F16OT |
| | 56 | 10x12.5 | 0.08 | 0.17 | 780 | ERJ1KM560G1BOT |
| | 68 | 8x20 | 0.08 | 0.16 | 1040 | ERJ1KM680F20OT |
| | 82 | 10x16 | 0.08 | 0.11 | 1040 | ERJ1KM820G16OT |
| | | 10x20 | 0.08 | 0.084 | 1430 | ERJ1KM101G20OT |
| | 100 | 12.5x16 | 0.08 | 0.11 | 1430 | ERJ1KM101W16OT |
| | 120 | 10x25 | 0.08 | 0.069 | 1620 | ERJ1KM121G25OT |
| | 150 | 12.5x20 | 0.08 | 0.062 | 1750 | ERJ1KM151W20OT |
| | 220 | 12.5x25 | 0.08 | 0.047 | 2210 | ERJ1KM221W25OT |
| | | 12.5x30 | 0.08 | 0.042 | 2400 | ERJ1KM271W30OT |
| | 270 | 16x20 | 0.08 | 0.048 | 1950 | ERJ1KM271L20OT |
| | | 12.5x35 | 0.08 | 0.036 | 2600 | ERJ1KM331W35OT |
| | 330 | 12.5x40 | 0.08 | 0.032 | 2860 | ERJ1KM391W40OT |
| | | 16x25 | 0.08 | 0.038 | 2430 | ERJ1KM391L25OT |
| | 390 | 18x20 | 0.08 | 0.045 | 2270 | ERJ1KM391M20OT |
| | | 16x30 | 0.08 | 0.032 | 2640 | ERJ1KM471L30OT |
| | 470 | 18x25 | 0.08 | 0.036 | 2500 | ERJ1KM471M25OT |
| | | 16x35 | 0.08 | 0.029 | 2860 | ERJ1KM561L35OT |
| | 560 | 18x30 | 0.08 | 0.03 | 2860 | ERJ1KM561M30OT |
| | | 16x40 | 0.08 | 0.027 | 3510 | ERJ1KM681L40OT |
| | 680 | 18x35 | 0.08 | 0.027 | 3510 | ERJ1KM681M35OT |
| | | 18x40 | 0.08 | 0.026 | 3860 | ERJ1KM821M40OT |
| 120(2B) | 10 | 6.3x11 | 0.12 | 4.6 | 110 | ERJ2BM100E11OT |
| | | 6.3x12 | 0.12 | 3.8 | 145 | ERJ2BM150E12OT |
| | 18 | 8x9 | 0.12 | 3.5 | 165 | ERJ2BM180F09OT |
| | 22 | 8x12 | 0.12 | 3.0 | 180 | ERJ2BM220F12OT |
| | | 8x16 | 0.12 | 2.5 | 320 | ERJ2BM330F16OT |
| | 33 | 10x12.5 | 0.12 | 2.5 | 320 | ERJ2BM330G1BOT |
| | | 8x20 | 0.12 | 2.2 | 385 | ERJ2BM470F20OT |
| | 47 | 10x16 | 0.12 | 2.0 | 400 | ERJ2BM470G16OT |
| | | 10x16 | 0.12 | 1.9 | 410 | ERJ2BM560G16OT |
| | 56 | 10x16 | 0.12 | 1.8 | 420 | ERJ2BM680G16OT |
| | 68 | 10x20 | 0.12 | 1.6 | 435 | ERJ2BM820G20OT |
| | 82 | 10x20 | 0.12 | 1.6 | 435 | ERJ2BM820G20OT |
| | | 10x25 | 0.12 | 1.3 | 540 | ERJ2BM101G25OT |
| | 100 | 10x25 | 0.12 | 1.3 | 540 | ERJ2BM101G25OT |
| | 120 | 12.5x20 | 0.12 | 1.1 | 750 | ERJ2BM121W20OT |
| | 150 | 12.5x25 | 0.12 | 0.85 | 810 | ERJ2BM151W25OT |
| | | 13x30 | 0.12 | 0.65 | 990 | ERJ2BM221K30OT |
| | 220 | 16x20 | 0.12 | 0.65 | 990 | ERJ2BM221L20OT |
| | | 16x25 | 0.12 | 0.47 | 1125 | ERJ2BM271L25OT |
| | 270 | 18x20 | 0.12 | 0.47 | 1125 | ERJ2BM271M20OT |
| | | 16x30 | 0.12 | 0.36 | 1215 | ERJ2BM331L30OT |
| | 330 | 18x25 | 0.12 | 0.36 | 1215 | ERJ2BM331M25OT |
| | | 16x40 | 0.12 | 0.26 | 1350 | ERJ2BM471L40OT |
| | 470 | 18x30 | 0.12 | 0.26 | 1350 | ERJ2BM471M30OT |

RH series

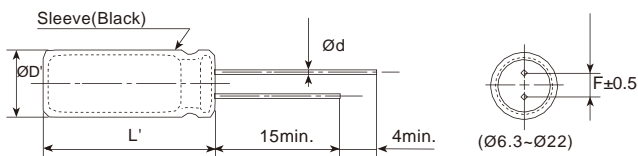
- High frequency, low impedance
- Endurance +105°C 2,000~3,000 hours
- RoHS Compliant



SPECIFICATIONS

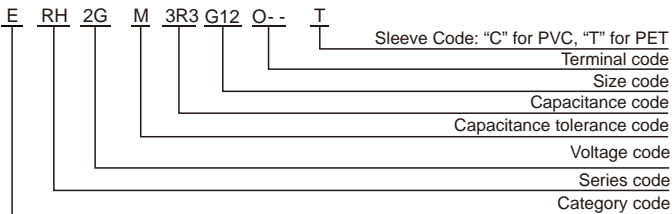
| Items | Characteristics | | | | | | | |
|--|---|-------------------------------------|------|----------------------------------|------|------|----------------|-------------------|
| Category Temperature Range | -40~+105°C(160~400 V _{dc}) | | | -25~+105°C(450 V _{dc}) | | | | |
| Rated Voltage Range | 160~450 V _{dc} | | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | | | | | | |
| Leakage Current | I ≤ 0.02CV or 10μA, whichever is greater. Where, I: Max. leakage current (μA), C: Nominal capacitance (μF), V: Rated voltage (V) (at 20°C after 2 minutes) | | | | | | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 160 | 200 | 250 | 350 | 400 | 450 | |
| | tan δ (max.) | 0.12 | 0.12 | 0.12 | 0.15 | 0.15 | 0.20 | |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) | 160 | 200 | 250 | 350 | 400 | 450 | |
| | Z(-25°C)/Z(+20°C) | 3 | 5 | | | 6 | | |
| | Z(-40°C)/Z(+20°C) | 4 | 7 | | | - | | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 20°C after DC voltage plus the rated ripple current is applied for a specified period of time at 105°C. | | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | Case Dia. (mm) | Load life (hours) |
| | D.F. (tan δ) | 200% of the initial specified value | | | | | ØD 8 | 2,000 |
| | Leakage Current | The initial specified value | | | | | ØD 10 | 3,000 |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 105°C without voltage applied. | | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | |
| | D.F. (tan δ) | 200% of the initial specified value | | | | | | |
| | Leakage Current | 200% of the initial specified value | | | | | | |

DIMENSIONS[mm]



| | | | | | | | |
|-----|------------|-----|-----|------|-----|-----|------|
| ØD | 6.3 | 8 | 10 | 12.5 | 16 | 18 | 22 |
| Ød | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 |
| F | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 | 10.0 |
| ØD' | ØD+0.5max. | | | | | | |
| L' | L+2max. | | | | | | |

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| Freq.(Hz) | 120 | 1k | 10k | 100k |
|---------------|------|------|------|------|
| Cap.<10 | 0.40 | 0.70 | 0.92 | 1.00 |
| 10 Cap.<100 | 0.56 | 0.83 | 0.95 | 1.00 |
| 100 Cap. 1000 | 0.67 | 0.87 | 0.96 | 1.00 |

The endurance of capacitors is shortened with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

RH series

■ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (mA _{RMS} /105°C, 100kHz) | Part Number |
|----------|----------|--------------|------|---|----------------|
| 160(2C) | 2.2 | 6.3x11 | 0.12 | 80 | ERH2CM2R2E11OT |
| | 3.3 | 6.3x11 | 0.12 | 103 | ERH2CM3R3E11OT |
| | 4.7 | 8x12 | 0.12 | 121 | ERH2CM4R7F12OT |
| | 10 | 10x12 | 0.12 | 150 | ERH2CM100G12OT |
| | 22 | 10x16 | 0.12 | 228 | ERH2CM220G16OT |
| | 33 | 10x20 | 0.12 | 293 | ERH2CM330G20OT |
| | 47 | 12.5x20 | 0.12 | 368 | ERH2CM470W20OT |
| | 100 | 12.5x25 | 0.12 | 587 | ERH2CM101W25OT |
| 220 | 16x30 | 0.12 | 883 | ERH2CM221L30OT | |
| 200(2D) | 1 | 5x11 | 0.12 | 50 | ERH2DM010D11OT |
| | 2.2 | 6.3x11 | 0.12 | 77 | ERH2DM2R2E11OT |
| | 3.3 | 6.3x11 | 0.12 | 103 | ERH2DM3R3E11OT |
| | 4.7 | 8x12 | 0.12 | 121 | ERH2DM4R7F12OT |
| | 10 | 10x12 | 0.12 | 152 | ERH2DM100G12OT |
| | 22 | 10x16 | 0.12 | 228 | ERH2DM220G16OT |
| | | 10x20 | 0.12 | 238 | ERH2DM220G20OT |
| | 33 | 10x20 | 0.12 | 319 | ERH2DM330G20OT |
| | | 12.5x20 | 0.12 | 365 | ERH2DM330W20OT |
| | 47 | 12.5x20 | 0.12 | 405 | ERH2DM470W20OT |
| | 56 | 12.5x25 | 0.12 | 476 | ERH2DM560W25OT |
| | 68 | 12.5x25 | 0.12 | 540 | ERH2DM680W25OT |
| | 82 | 10x30 | 0.12 | 574 | ERH2DM820G30OT |
| | 100 | 16x25 | 0.12 | 774 | ERH2DM101L25OT |
| | 120 | 16x25 | 0.12 | 801 | ERH2DM121L25OT |
| | 150 | 18x25 | 0.12 | 908 | ERH2DM151M25OT |
| 180 | 12.5x35 | 0.12 | 948 | ERH2DM181W35OT | |
| 220 | 18x30 | 0.12 | 1032 | ERH2DM221M30OT | |
| 250(2E) | 0.47 | 6.3x11 | 0.12 | 32 | ERH2EMR47E11OT |
| | 1 | 6.3x11 | 0.12 | 59 | ERH2EM010E11OT |
| | 2.2 | 6.3x11 | 0.12 | 77 | ERH2EM2R2E11OT |
| | 3.3 | 8x12 | 0.12 | 106 | ERH2EM3R3F12OT |
| | 4.7 | 8x12 | 0.12 | 124 | ERH2EM4R7F12OT |
| | 10 | 10x12 | 0.12 | 152 | ERH2EM100G12OT |
| | 22 | 10x20 | 0.12 | 244 | ERH2EM220G20OT |
| | 33 | 12.5x20 | 0.12 | 371 | ERH2EM330W20OT |
| | 47 | 12.5x25 | 0.12 | 423 | ERH2EM470W25OT |
| | 56 | 12.5x25 | 0.12 | 472 | ERH2EM560W25OT |
| | 82 | 16x25 | 0.12 | 637 | ERH2EM820L25OT |
| | 100 | 16x30 | 0.12 | 795 | ERH2EM101L30OT |
| 220 | 18x35 | 0.12 | 1085 | ERH2EM221M35OT | |
| 330 | 18x45 | 0.12 | 1182 | ERH2EM331M45OT | |
| 470 | 22x46 | 0.12 | 1290 | ERH2EM471O46OT | |
| 350(2V) | 0.47 | 6.3x11 | 0.15 | 32 | ERH2VMR47E11OT |
| | 1 | 6.3x11 | 0.15 | 59 | ERH2VM010E11OT |
| | 2.2 | 8x12 | 0.15 | 80 | ERH2VM2R2F12OT |
| | 3.3 | 8x12 | 0.15 | 109 | ERH2VM3R3F12OT |
| | | 10x12 | 0.15 | 118 | ERH2VM3R3G12OT |
| | 4.7 | 10x16 | 0.15 | 153 | ERH2VM4R7G16OT |
| | 10 | 10x16 | 0.15 | 179 | ERH2VM100G16OT |
| | 22 | 12.5x25 | 0.15 | 316 | ERH2VM220W25OT |
| | 33 | 16x25 | 0.15 | 365 | ERH2VM330L25OT |
| | 47 | 16x30 | 0.15 | 532 | ERH2VM470L30OT |

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (mA _{RMS} /105°C, 100kHz) | Part Number |
|----------|----------|--------------|------|---|----------------|
| 400(2G) | 1 | 8x12 | 0.15 | 59 | ERH2GM010F12OT |
| | 2.2 | 8x12 | 0.15 | 91 | ERH2GM2R2F12OT |
| | 3.3 | 8x12 | 0.15 | 125 | ERH2GM3R3F12OT |
| | | 10x12 | 0.15 | 133 | ERH2GM3R3G12OT |
| | 4.7 | 10x12 | 0.15 | 156 | ERH2GM4R7G12OT |
| | 10 | 10x16 | 0.15 | 184 | ERH2GM100G16OT |
| | | 10x20 | 0.15 | 211 | ERH2GM100G20OT |
| | 22 | 12.5x20 | 0.15 | 332 | ERH2GM220W20OT |
| | 27 | 10x30 | 0.15 | 426 | ERH2GM270G30OT |
| | 33 | 10x35 | 0.15 | 498 | ERH2GM330G35OT |
| | | 16x20 | 0.15 | 487 | ERH2GM330L20OT |
| | 39 | 10x40 | 0.15 | 543 | ERH2GM390G40OT |
| | 47 | 12.5x30 | 0.15 | 659 | ERH2GM470W30OT |
| | | 16x25 | 0.15 | 647 | ERH2GM470L25OT |
| | 56 | 10x45 | 0.15 | 725 | ERH2GM560G45OT |
| | | 12.5x35 | 0.15 | 720 | ERH2GM560W35OT |
| | 68 | 12.5x40 | 0.15 | 902 | ERH2GM680W40OT |
| | | 16x30 | 0.15 | 864 | ERH2GM680L30OT |
| | 82 | 12.5x40 | 0.15 | 941 | ERH2GM820W40OT |
| | | 18x30 | 0.15 | 924 | ERH2GM820M30OT |
| 100 | 12.5x50 | 0.15 | 956 | ERH2GM101W50OT | |
| | 18x30 | 0.15 | 935 | ERH2GM101M30OT | |
| 120 | 22x31 | 0.15 | 962 | ERH2GM121O31OT | |
| 150 | 12.5x60 | 0.15 | 1021 | ERH2GM151W60OT | |
| | 22x31 | 0.15 | 1010 | ERH2GM151O31OT | |
| 450(2W) | 1 | 8x12 | 0.20 | 59 | ERH2WM010F12OT |
| | 2.2 | 10x12 | 0.20 | 96 | ERH2WM2R2G12OT |
| | 3.3 | 10x16 | 0.20 | 136 | ERH2WM3R3G16OT |
| | 4.7 | 10x20 | 0.20 | 159 | ERH2WM4R7G20OT |
| | 10 | 12.5x20 | 0.20 | 169 | ERH2WM100W20OT |
| | 18 | 10x30 | 0.20 | 221 | ERH2WM180G30OT |
| | 22 | 16x20 | 0.20 | 338 | ERH2WM220L20OT |
| | 27 | 10x30 | 0.20 | 426 | ERH2WM270G30OT |
| | 33 | 10x35 | 0.20 | 509 | ERH2WM330G35OT |
| | | 16x25 | 0.20 | 504 | ERH2WM330L25OT |
| | 39 | 10x40 | 0.20 | 554 | ERH2WM390G40OT |
| | 47 | 10x45 | 0.20 | 703 | ERH2WM470G45OT |
| | | 12.5x30 | 0.20 | 698 | ERH2WM470W30OT |
| | 56 | 18x25 | 0.20 | 686 | ERH2WM470M25OT |
| | | 12.5x35 | 0.20 | 781 | ERH2WM560W35OT |
| | 68 | 18x25 | 0.20 | 769 | ERH2WM560M25OT |
| | | 12.5x40 | 0.20 | 830 | ERH2WM680W40OT |
| | 82 | 18x30 | 0.20 | 808 | ERH2WM680M30OT |
| | | 12.5x45 | 0.20 | 886 | ERH2WM820W45OT |
| | 100 | 18x30 | 0.20 | 853 | ERH2WM820M30OT |
| 18x35 | | 0.20 | 924 | ERH2WM101M35OT | |
| 120 | 18x40 | 0.20 | 1128 | ERH2WM121M40OT | |
| 150 | 22x40 | 0.20 | 1354 | ERH2WM151O40OT | |
| 220 | 22x46 | 0.20 | 1537 | ERH2WM221O46OT | |

Radial Type

HH series

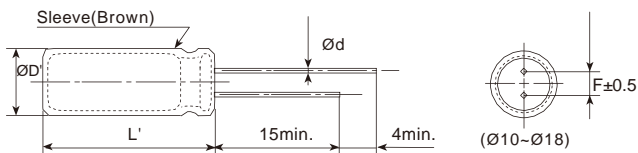
- High ripple current
- Endurance +105°C 2,000 hours
- RoHS Compliant



SPECIFICATIONS

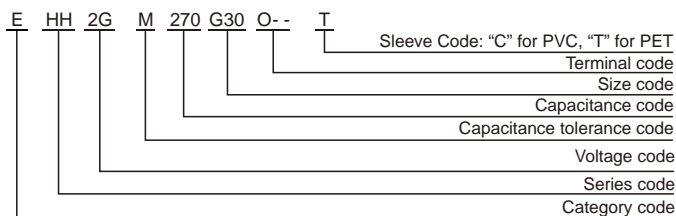
| Items | Characteristics | | | |
|--|--|-------------------------------------|--------------------------------------|------|
| Category Temperature Range | -40~+105°C(400 V _{dc}) | | -25~+105°C(420~450 V _{dc}) | |
| Rated Voltage Range | 400~450 V _{dc} | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C,120Hz) | | | |
| Leakage Current | | After 1 minute | After 5 minutes | |
| | CV 1000 | I 0.1CV+40μA | I 0.03CV+15μA | |
| | CV>1000 | I 0.04CV+100μA | I 0.02CV+25μA | |
| | Where, I:Max.leakage current (μA), C:Nominal capacitance (μF), V: Rated voltage (V) (at 20°C) | | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 400 | 420 | 450 |
| | tan δ (max.) | 0.15 | 0.20 | 0.20 |
| | (at 20°C,120Hz) | | | |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) | 400 | 420 | 450 |
| | Z(-25°C)/Z(+20°C) | 5 | 6 | 6 |
| | Z(-40°C)/Z(+20°C) | 6 | - | - |
| | (at 120Hz) | | | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 20°C after DC voltage plus the rated ripple current is applied for 2,000 hours at 105°C. | | | |
| | Capacitance Change | ±20% of the initial value | | |
| | D.F. (tan δ) | 200% of the initial specified value | | |
| | Leakage Current | The initial specified value | | |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 105°C without voltage applied. | | | |
| | Capacitance Change | ±20% of the initial value | | |
| | D.F. (tan δ) | 200% of the initial specified value | | |
| | Leakage Current | 200% of the initial specified value | | |

DIMENSIONS[mm]



| | | | | |
|-----|------------|------|-----|-----|
| ØD | 10 | 12.5 | 16 | 18 |
| Ød | 0.6 | 0.6 | 0.8 | 0.8 |
| F | 5.0 | 5.0 | 7.5 | 7.5 |
| ØD' | ØD+0.5max. | | | |
| L' | L+2max. | | | |

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| Freq.(Hz) | 120 | 1k | 10k | 100k |
|---------------|------|------|------|------|
| Cap.(μF) | | | | |
| 18 Cap.<100 | 1.00 | 1.50 | 1.75 | 1.80 |
| 100 Cap. 1000 | 1.00 | 1.30 | 1.40 | 1.50 |

The endurance of capacitors is shortened with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

HH series

■ STANDARD RATINGS

| WV (Vdc) | Cap (µF) | Size DxL(mm) | tan | Rated ripple current (mA _{RMS} /105°C, 120Hz) | Part Number |
|----------|----------|--------------|------|--|----------------|
| 400(2G) | 27 | 10x30 | 0.15 | 270 | EHH2GM270G30OT |
| | 33 | 10x30 | 0.15 | 335 | EHH2GM330G30OT |
| | 39 | 10x35 | 0.15 | 390 | EHH2GM390G35OT |
| | 47 | 10x40 | 0.15 | 445 | EHH2GM470G40OT |
| | | 12.5x30 | 0.15 | 430 | EHH2GM470W30OT |
| | 56 | 10x45 | 0.15 | 510 | EHH2GM560G45OT |
| | | 12.5x30 | 0.15 | 480 | EHH2GM560W30OT |
| | 68 | 10x55 | 0.15 | 560 | EHH2GM680G55OT |
| | | 12.5x35 | 0.15 | 520 | EHH2GM680W35OT |
| | | 12.5x40 | 0.15 | 535 | EHH2GM680W40OT |
| | 82 | 12.5x40 | 0.15 | 640 | EHH2GM820W40OT |
| | 100 | 12.5x45 | 0.15 | 730 | EHH2GM101W45OT |
| | | 16x30 | 0.15 | 715 | EHH2GM101L30OT |
| | 120 | 12.5x55 | 0.15 | 815 | EHH2GM121W55OT |
| | | 16x35 | 0.15 | 800 | EHH2GM121L35OT |
| | | 18x30 | 0.15 | 800 | EHH2GM121M30OT |
| 420(2T) | 27 | 10x30 | 0.20 | 270 | EHH2TM270G30OT |
| | 33 | 10x30 | 0.20 | 335 | EHH2TM330G30OT |
| | 39 | 10x35 | 0.20 | 390 | EHH2TM390G35OT |
| | 47 | 10x40 | 0.20 | 445 | EHH2TM470G40OT |
| | | 12.5x30 | 0.20 | 430 | EHH2TM470W30OT |
| | 56 | 10x50 | 0.20 | 520 | EHH2TM560G50OT |
| | | 12.5x30 | 0.20 | 485 | EHH2TM560W30OT |
| | 68 | 12.5x35 | 0.20 | 560 | EHH2TM680W35OT |
| | | 12.5x40 | 0.20 | 570 | EHH2TM680W40OT |
| | 82 | 12.5x40 | 0.20 | 640 | EHH2TM820W40OT |
| | 100 | 12.5x50 | 0.20 | 750 | EHH2TM101W50OT |
| | | 16x35 | 0.20 | 725 | EHH2TM101L35OT |
| | 120 | 12.5x60 | 0.20 | 825 | EHH2TM121W60OT |
| | | 16x35 | 0.20 | 810 | EHH2TM121L35OT |
| | | 18x30 | 0.20 | 810 | EHH2TM121M30OT |

| WV (Vdc) | Cap (µF) | Size DxL(mm) | tan | Rated ripple current (mA _{RMS} /105°C, 120Hz) | Part Number |
|----------|----------|--------------|------|--|----------------|
| 450(2W) | 22 | 10x30 | 0.20 | 195 | EHH2WM220G30OT |
| | 27 | 10x30 | 0.20 | 300 | EHH2WM270G30OT |
| | 33 | 10x35 | 0.20 | 350 | EHH2WM330G35OT |
| | | 12.5x30 | 0.20 | 340 | EHH2WM330W30OT |
| | 39 | 10x40 | 0.20 | 405 | EHH2WM390G40OT |
| | | 12.5x35 | 0.20 | 380 | EHH2WM390W35OT |
| | 47 | 10x45 | 0.20 | 460 | EHH2WM470G45OT |
| | | 12.5x30 | 0.20 | 440 | EHH2WM470W30OT |
| | 56 | 12.5x35 | 0.20 | 505 | EHH2WM560W35OT |
| | | 16x30 | 0.20 | 480 | EHH2WM560L30OT |
| | 68 | 12.5x40 | 0.20 | 530 | EHH2WM680W40OT |
| | | 18x30 | 0.20 | 500 | EHH2WM680M30OT |
| | 82 | 12.5x45 | 0.20 | 660 | EHH2WM820W45OT |
| | | 16x35 | 0.20 | 655 | EHH2WM820L35OT |
| | 100 | 12.5x55 | 0.20 | 760 | EHH2WM101W55OT |
| | | 16x35 | 0.20 | 740 | EHH2WM101L35OT |
| | 120 | 12.5x60 | 0.20 | 835 | EHH2WM121W60OT |
| | | 16x40 | 0.20 | 820 | EHH2WM121L40OT |
| 18x31 | | 0.20 | 815 | EHH2WM121M31OT | |

HS series

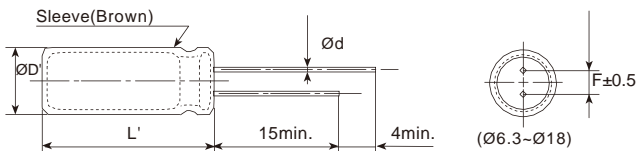
- High ripple current; For power supply applications
- Endurance: +105°C 3,000–5,000 hours
- RoHS Compliant



SPECIFICATIONS

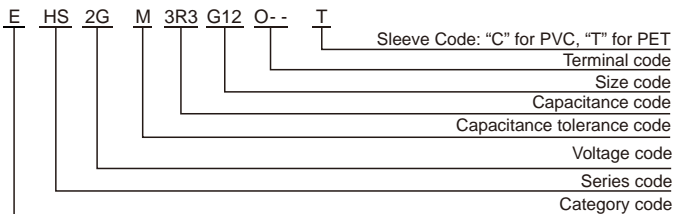
| Items | Characteristics | | | | | | | | | |
|--|--|--|----------------|-----------------|---------|---------------|-------------------|---------|--------------|-------------|
| Category Temperature Range | -40~+105°C(160~400V _{dc}) | -25~+105°C(450V _{dc}) | | | | | | | | |
| Rated Voltage Range | 160~450 V _{dc} | | | | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C,120Hz) | | | | | | | | | |
| Leakage Current | | Where, I: Max. leakage current (μA), C: Nominal capacitance (μF), V: Rated voltage (V) (at 20°C) | | | | | | | | |
| | <table border="1"> <tr> <td></td> <td>After 1 minute</td> <td>After 5 minutes</td> </tr> <tr> <td>CV 1000</td> <td> 0.1CV+40μA</td> <td> 0.03CV+15μA</td> </tr> <tr> <td>CV>1000</td> <td> 0.04CV+100μA</td> <td> 0.02CV+25μA</td> </tr> </table> | | After 1 minute | After 5 minutes | CV 1000 | 0.1CV+40μA | 0.03CV+15μA | CV>1000 | 0.04CV+100μA | 0.02CV+25μA |
| | After 1 minute | After 5 minutes | | | | | | | | |
| CV 1000 | 0.1CV+40μA | 0.03CV+15μA | | | | | | | | |
| CV>1000 | 0.04CV+100μA | 0.02CV+25μA | | | | | | | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 160 200 250 350 400 450 | | | | | | | | |
| | tan δ (max.) | 0.15 0.15 0.15 0.20 0.20 0.20 (at 20°C,120Hz) | | | | | | | | |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) | 160 200 250 350 400 450 | | | | | | | | |
| | Z(-25°C)/Z(+20°C) | 3 3 3 6 6 6 (at 120Hz) | | | | | | | | |
| | Z(-40°C)/Z(+20°C) | 8 8 8 10 10 - | | | | | | | | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 20°C after DC voltage plus the rated ripple current is applied for a specified period of time at 105°C. | | | | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | Case Dia.(mm) | Load life (hours) | | | |
| | D.F. (tan δ) | 200% of the initial specified value | | | | ØD 8 | 3,000 | | | |
| | Leakage Current | The initial specified value | | | | ØD 10 | 5,000 | | | |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 105°C without voltage applied. | | | | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | | | |
| | D.F. (tan δ) | 200% of the initial specified value | | | | | | | | |
| | Leakage Current | 200% of the initial specified value | | | | | | | | |

DIMENSIONS[mm]



| ØD | 6.3 | 8 | 10 | 12.5 | 16 | 18 |
|-----|------------|-----|-----|------|-----|-----|
| Ød | 0.5 | 0.5 | 0.6 | 0.6 | 0.8 | 0.8 |
| F | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 |
| ØD' | ØD+0.5max. | | | | | |
| L' | L+2max. | | | | | |

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| Cap.(μF) | Freq.(Hz) | | | |
|----------|-----------|------|------|------|
| | 120 | 1k | 10k | 100k |
| <100 | 1.0 | 1.75 | 2.25 | 2.50 |
| 100 | 1.0 | 1.67 | 2.05 | 2.25 |

The endurance of capacitors is shortened with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

HS series

■ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (mA _{RMS} /105°C, 120Hz) | Part Number |
|----------|----------|--------------|------|--|----------------|
| 160(2C) | 1 | 6.3x12 | 0.15 | 21 | EHS2CM010E12OT |
| | 2.2 | 6.3x12 | 0.15 | 32 | EHS2CM2R2E12OT |
| | 3.3 | 6.3x12 | 0.15 | 40 | EHS2CM3R3E12OT |
| | 4.7 | 6.3x12 | 0.15 | 47 | EHS2CM4R7E12OT |
| | 6.8 | 8x12 | 0.15 | 62 | EHS2CM6R8F12OT |
| | 10 | 8x12 | 0.15 | 75 | EHS2CM100F12OT |
| | 15 | 10x16 | 0.15 | 115 | EHS2CM150G16OT |
| | 22 | 10x20 | 0.15 | 140 | EHS2CM220G20OT |
| | 33 | 10x20 | 0.15 | 175 | EHS2CM330G20OT |
| | 47 | 12.5x20 | 0.15 | 240 | EHS2CM470W20OT |
| | 68 | 12.5x25 | 0.15 | 370 | EHS2CM680W25OT |
| | 100 | 16x25 | 0.15 | 430 | EHS2CM101L25OT |
| | 150 | 16x25 | 0.15 | 500 | EHS2CM151L25OT |
| | 220 | 16x30 | 0.15 | 815 | EHS2CM221L30OT |
| | 270 | 18x30 | 0.15 | 880 | EHS2CM271M30OT |
| 330 | 18x40 | 0.15 | 980 | EHS2CM331M40OT | |
| 200(2D) | 0.47 | 6.3x12 | 0.15 | 13 | EHS2DMR47E12OT |
| | 1 | 6.3x12 | 0.15 | 19 | EHS2DM010E12OT |
| | 2.2 | 6.3x12 | 0.15 | 32 | EHS2DM2R2E12OT |
| | 3.3 | 6.3x12 | 0.15 | 40 | EHS2DM3R3E12OT |
| | 4.7 | 8x12 | 0.15 | 47 | EHS2DM4R7F12OT |
| | 6.8 | 10x12 | 0.15 | 70 | EHS2DM6R8G12OT |
| | 10 | 10x12 | 0.15 | 80 | EHS2DM100G12OT |
| | 15 | 10x16 | 0.15 | 118 | EHS2DM150G16OT |
| | 22 | 10x20 | 0.15 | 140 | EHS2DM220G20OT |
| | 33 | 10x20 | 0.15 | 160 | EHS2DM330G20OT |
| | 47 | 12.5x20 | 0.15 | 250 | EHS2DM470W20OT |
| | 68 | 12.5x25 | 0.15 | 330 | EHS2DM680W25OT |
| | 100 | 16x25 | 0.15 | 440 | EHS2DM101L25OT |
| | 150 | 16x25 | 0.15 | 600 | EHS2DM151L25OT |
| | 220 | 18x30 | 0.15 | 680 | EHS2DM221M30OT |
| 270 | 18x40 | 0.15 | 1040 | EHS2DM271M40OT | |
| 250(2E) | 0.47 | 6.3x12 | 0.15 | 13 | EHS2EMR47E12OT |
| | 1 | 6.3x12 | 0.15 | 19 | EHS2EM010E12OT |
| | 2.2 | 6.3x12 | 0.15 | 37 | EHS2EM2R2E12OT |
| | 3.3 | 8x12 | 0.15 | 50 | EHS2EM3R3F12OT |
| | 4.7 | 8x12 | 0.15 | 58 | EHS2EM4R7F12OT |
| | 6.8 | 10x12 | 0.15 | 72 | EHS2EM6R8G12OT |
| | 10 | 10x16 | 0.15 | 100 | EHS2EM100G16OT |
| | 15 | 10x16 | 0.15 | 120 | EHS2EM150G16OT |
| | 22 | 10x20 | 0.15 | 168 | EHS2EM220G20OT |
| | 33 | 12.5x20 | 0.15 | 210 | EHS2EM330W20OT |
| | 47 | 12.5x25 | 0.15 | 320 | EHS2EM470W25OT |
| | 68 | 16x25 | 0.15 | 410 | EHS2EM680L25OT |
| | 100 | 16x30 | 0.15 | 530 | EHS2EM101L30OT |
| | 150 | 18x25 | 0.15 | 550 | EHS2EM151M25OT |
| | 220 | 18x35 | 0.15 | 710 | EHS2EM221M35OT |

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (mA _{RMS} /105°C, 120Hz) | Part Number | |
|----------|----------|--------------|------|--|----------------|----------------|
| 350(2V) | 0.47 | 6.3x12 | 0.20 | 20 | EHS2VMR47E12OT | |
| | 1 | 6.3x12 | 0.20 | 24 | EHS2VM010E12OT | |
| | 2.2 | 8x12 | 0.20 | 40 | EHS2VM2R2F12OT | |
| | 3.3 | 8x12 | 0.20 | 52 | EHS2VM3R3F12OT | |
| | 4.7 | 10x12 | 0.20 | 65 | EHS2VM4R7G12OT | |
| | 6.8 | 10x20 | 0.20 | 88 | EHS2VM6R8G20OT | |
| | 10 | 10x20 | 0.20 | 105 | EHS2VM100G20OT | |
| | 15 | 12.5x20 | 0.20 | 130 | EHS2VM150W20OT | |
| | 22 | 12.5x20 | 0.20 | 182 | EHS2VM220W20OT | |
| | 33 | 12.5x25 | 0.20 | 240 | EHS2VM330W25OT | |
| | 47 | 16x25 | 0.20 | 305 | EHS2VM470L25OT | |
| | 68 | 16x30 | 0.20 | 390 | EHS2VM680L30OT | |
| | 100 | 18x30 | 0.20 | 480 | EHS2VM101M30OT | |
| | 400(2G) | 1 | 8x12 | 0.20 | 25 | EHS2GM010F12OT |
| | | 2.2 | 8x12 | 0.20 | 40 | EHS2GM2R2F12OT |
| 3.3 | | 10x12 | 0.20 | 55 | EHS2GM3R3G12OT | |
| 4.7 | | 10x16 | 0.20 | 76 | EHS2GM4R7G16OT | |
| 6.8 | | 10x20 | 0.20 | 80 | EHS2GM6R8G20OT | |
| 10 | | 12.5x20 | 0.20 | 110 | EHS2GM100W20OT | |
| 15 | | 12.5x20 | 0.20 | 135 | EHS2GM150W20OT | |
| 22 | | 12.5x25 | 0.20 | 205 | EHS2GM220W25OT | |
| 33 | | 16x20 | 0.20 | 255 | EHS2GM330L20OT | |
| 47 | | 16x25 | 0.20 | 330 | EHS2GM470L25OT | |
| 68 | | 16x35 | 0.20 | 400 | EHS2GM680L35OT | |
| 82 | | 18x30 | 0.20 | 420 | EHS2GM820M30OT | |
| 100 | | 18x35 | 0.20 | 495 | EHS2GM101M35OT | |
| 120 | | 18x40 | 0.20 | 520 | EHS2GM121M40OT | |
| 450(2W) | | 1 | 8x12 | 0.20 | 35 | EHS2WM010F12OT |
| | 2.2 | 10x12 | 0.20 | 40 | EHS2WM2R2G12OT | |
| | 3.3 | 10x16 | 0.20 | 65 | EHS2WM3R3G16OT | |
| | 4.7 | 10x16 | 0.20 | 85 | EHS2WM4R7G16OT | |
| | 6.8 | 10x20 | 0.20 | 90 | EHS2WM6R8G20OT | |
| | 10 | 12.5x20 | 0.20 | 140 | EHS2WM100W20OT | |
| | 15 | 16x20 | 0.20 | 160 | EHS2WM150L20OT | |
| | 22 | 16x25 | 0.20 | 200 | EHS2WM220L25OT | |
| | 33 | 16x25 | 0.20 | 320 | EHS2WM330L25OT | |
| | 47 | 18x25 | 0.20 | 350 | EHS2WM470M25OT | |
| | 68 | 18x30 | 0.20 | 440 | EHS2WM680M30OT | |
| | 82 | 18x35 | 0.20 | 500 | EHS2WM820M35OT | |
| | 100 | 18x40 | 0.20 | 560 | EHS2WM101M40OT | |

Radial Type

HF series

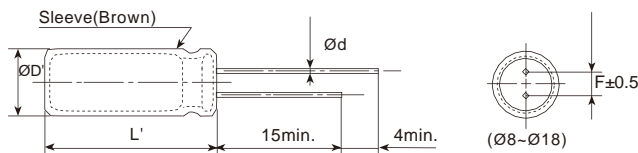
- Long life, high ripple current; For power supply applications
- Endurance: +105°C 5,000~10,000 hours
- RoHS Compliant



SPECIFICATIONS

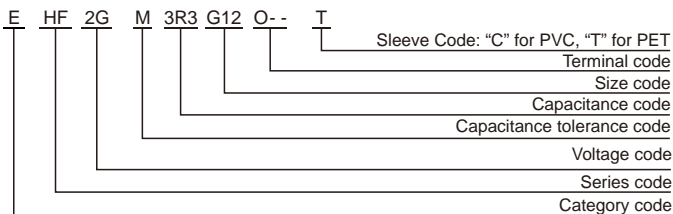
| Items | Characteristics | | | | | | | |
|--|---|-------------------------------------|-----------------|---------------------------------|------|----------|--|-------------------|
| Category Temperature Range | -40~+105°C(160~400V _{dc}) | | | -25~+105°C(450V _{dc}) | | | | |
| Rated Voltage Range | 160~450 V _{dc} | | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | | | | | | |
| Leakage Current | | After 1 minute | After 5 minutes | | | | Where, I: Max. leakage current (μA), C: Nominal capacitance (μF), V: Rated voltage (V) (at 20°C) | |
| | CV 1000 | I 0.1CV+40μA | I 0.03CV+15μA | | | | | |
| | CV>1000 | I 0.04CV+100μA | I 0.02CV+25μA | | | | | |
| Dissipation Factor (tan) | Rated Voltage(V _{dc}) | 160 | 200 | 250 | 350 | 400 | 450 | |
| | tan (max.) | 0.15 | 0.15 | 0.15 | 0.20 | 0.20 | 0.20 | |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) | 160 | 200 | 250 | 350 | 400 | 450 | |
| | Z(-25°C)/Z(+20°C) | 3 | 3 | 3 | 6 | 6 | 6 | |
| | Z(-40°C)/Z(+20°C) | 8 | 8 | 8 | 10 | 10 | - | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 20°C after DC voltage plus the rated ripple current is applied for a specified period of time at 105°C. | | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | Case Dia.(mm) | Load life (hours) |
| | D.F. (tan) | 200% of the initial specified value | | | | | ØD= 8 | 5,000 |
| | Leakage Current | The initial specified value | | | | | ØD= 10 | 8,000 |
| | | | | | | ØD= 12.5 | 10,000 | |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 105°C without voltage applied. | | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | |
| | D.F. (tan) | 200% of the initial specified value | | | | | | |
| | Leakage Current | 200% of the initial specified value | | | | | | |

DIMENSIONS[mm]



| ØD | 8 | 10 | 12.5 | 16 | 18 |
|-----|------------|-----|------|-----|-----|
| Ød | 0.5 | 0.6 | 0.6 | 0.8 | 0.8 |
| F | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 |
| ØD' | ØD+0.5max. | | | | |
| L' | L+2max. | | | | |

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| Cap.(μF) \ Freq.(Hz) | 120 | 1k | 10k | 100k |
|----------------------|-----|------|------|------|
| <100 | 1.0 | 1.75 | 2.25 | 2.50 |
| 100 | 1.0 | 1.67 | 2.05 | 2.25 |

The endurance of capacitors is shortened with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

HF series

■ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Size DxDL(mm) | tan | Rated ripple current (mArms/105°C, 120Hz) | Part Number |
|----------|----------|---------------|------|---|----------------|
| 160(2C) | 10 | 10x16 | 0.15 | 128 | EHF2CM100G16OT |
| | 12 | 10x16 | 0.15 | 145 | EHF2CM120G16OT |
| | 15 | 10x20 | 0.15 | 175 | EHF2CM150G20OT |
| | 22 | 10x20 | 0.15 | 205 | EHF2CM220G20OT |
| | 33 | 10x20 | 0.15 | 250 | EHF2CM330G20OT |
| | 39 | 10x20 | 0.15 | 275 | EHF2CM390G20OT |
| | 47 | 10x20 | 0.15 | 300 | EHF2CM470G20OT |
| | | 12.5x20 | 0.15 | 310 | EHF2CM470W20OT |
| | 56 | 12.5x20 | 0.15 | 350 | EHF2CM560W20OT |
| | 68 | 12.5x20 | 0.15 | 478 | EHF2CM680W20OT |
| | 82 | 12.5x20 | 0.15 | 510 | EHF2CM820W20OT |
| | | 16x20 | 0.15 | 525 | EHF2CM820L20OT |
| | 100 | 12.5x25 | 0.15 | 630 | EHF2CM101W25OT |
| | | 16x20 | 0.15 | 635 | EHF2CM101L20OT |
| | 150 | 16x20 | 0.15 | 770 | EHF2CM151L20OT |
| | | 16x25 | 0.15 | 790 | EHF2CM151L25OT |
| 220 | 16x25 | 0.15 | 1020 | EHF2CM221L25OT | |
| | 18x25 | 0.15 | 1045 | EHF2CM221M25OT | |
| 330 | 18x30 | 0.15 | 1402 | EHF2CM331M30OT | |
| 200(2D) | 10 | 10x16 | 0.15 | 126 | EHF2DM100G16OT |
| | 12 | 10x16 | 0.15 | 140 | EHF2DM120G16OT |
| | 15 | 10x20 | 0.15 | 170 | EHF2DM150G20OT |
| | 22 | 10x20 | 0.15 | 205 | EHF2DM220G20OT |
| | 33 | 10x20 | 0.15 | 255 | EHF2DM330G20OT |
| | | 12.5x20 | 0.15 | 265 | EHF2DM330W20OT |
| | 39 | 12.5x20 | 0.15 | 310 | EHF2DM390W20OT |
| | 47 | 12.5x20 | 0.15 | 392 | EHF2DM470W20OT |
| | 68 | 12.5x20 | 0.15 | 470 | EHF2DM680W20OT |
| | | 12.5x25 | 0.15 | 485 | EHF2DM680W25OT |
| | 82 | 16x20 | 0.15 | 554 | EHF2DM820L20OT |
| | 100 | 16x20 | 0.15 | 632 | EHF2DM101L20OT |
| | | 16x25 | 0.15 | 655 | EHF2DM101L25OT |
| | 150 | 16x25 | 0.15 | 840 | EHF2DM151L25OT |
| | | 16x30 | 0.15 | 865 | EHF2DM151L30OT |
| | 220 | 18x25 | 0.15 | 870 | EHF2DM151M25OT |
| 18x25 | | 0.15 | 1050 | EHF2DM221M25OT | |
| 330 | 18x30 | 0.15 | 1080 | EHF2DM221M30OT | |
| | 18x35 | 0.15 | 1430 | EHF2DM331M35OT | |
| 470 | 18x40 | 0.15 | 1460 | EHF2DM331M40OT | |
| 250(2E) | 4.7 | 8x12 | 0.15 | 70 | EHF2EM4R7F12OT |
| | 5.6 | 10x12 | 0.15 | 85 | EHF2EM5R6G12OT |
| | 6.8 | 10x12 | 0.15 | 110 | EHF2EM6R8G12OT |
| | 10 | 10x20 | 0.15 | 140 | EHF2EM100G20OT |
| | 22 | 10x20 | 0.15 | 205 | EHF2EM220G20OT |
| | 33 | 12.5x20 | 0.15 | 325 | EHF2EM330W20OT |
| | 39 | 12.5x20 | 0.15 | 345 | EHF2EM390W20OT |
| | 47 | 12.5x20 | 0.15 | 390 | EHF2EM470W20OT |
| | | 12.5x25 | 0.15 | 405 | EHF2EM470W25OT |
| | 68 | 16x20 | 0.15 | 528 | EHF2EM680L20OT |
| | | 16x20 | 0.15 | 550 | EHF2EM820L20OT |
| | 82 | 16x30 | 0.15 | 570 | EHF2EM820L30OT |
| | | 16x25 | 0.15 | 680 | EHF2EM101L25OT |
| | 100 | 18x25 | 0.15 | 700 | EHF2EM101M25OT |
| | | 18x25 | 0.15 | 866 | EHF2EM151M25OT |
| | 220 | 18x31 | 0.15 | 1130 | EHF2EM221M31OT |
| 18x40 | | 0.15 | 1160 | EHF2EM221M40OT | |

| WV (Vdc) | Cap (μF) | Size DxDL(mm) | tan | Rated ripple current (mArms/105°C, 120Hz) | Part Number |
|----------|----------|---------------|------|---|----------------|
| 350(2V) | 4.7 | 10x12 | 0.20 | 70 | EHF2VM4R7G12OT |
| | 5.6 | 10x12 | 0.20 | 90 | EHF2VM5R6G12OT |
| | 6.8 | 10x16 | 0.20 | 112 | EHF2VM6R8G16OT |
| | 10 | 10x20 | 0.20 | 140 | EHF2VM100G20OT |
| | 22 | 12.5x20 | 0.20 | 265 | EHF2VM220W20OT |
| | 33 | 16x20 | 0.20 | 364 | EHF2VM330L20OT |
| | 39 | 16x20 | 0.20 | 385 | EHF2VM390L20OT |
| | | 16x20 | 0.20 | 430 | EHF2VM470L20OT |
| | 47 | 16x25 | 0.20 | 445 | EHF2VM470L25OT |
| | | 16x25 | 0.20 | 560 | EHF2VM680L25OT |
| | 68 | 18x20 | 0.20 | 550 | EHF2VM680M20OT |
| | | 18x25 | 0.20 | 570 | EHF2VM680M25OT |
| | 82 | 18x25 | 0.20 | 618 | EHF2VM820M25OT |
| | 100 | 18x25 | 0.20 | 700 | EHF2VM101M25OT |
| | | 18x30 | 0.20 | 725 | EHF2VM101M30OT |
| | 120 | 18x30 | 0.20 | 836 | EHF2VM121M30OT |
| 150 | 18x35 | 0.20 | 970 | EHF2VM151M35OT | |
| 400(2G) | 1 | 8x12 | 0.20 | 30 | EHF2GM010F12OT |
| | 2.2 | 8x12 | 0.20 | 45 | EHF2GM2R2F12OT |
| | 3.3 | 10x12 | 0.20 | 80 | EHF2GM3R3G12OT |
| | 4.7 | 10x16 | 0.20 | 100 | EHF2GM4R7G16OT |
| | 6.8 | 10x16 | 0.20 | 112 | EHF2GM6R8G16OT |
| | 10 | 10x20 | 0.20 | 144 | EHF2GM100G20OT |
| | 15 | 12.5x20 | 0.20 | 222 | EHF2GM150W20OT |
| | 22 | 12.5x20 | 0.20 | 260 | EHF2GM220W20OT |
| | | 12.5x25 | 0.20 | 275 | EHF2GM220W25OT |
| | 33 | 16x20 | 0.20 | 368 | EHF2GM330L20OT |
| | 39 | 16x25 | 0.20 | 410 | EHF2GM390L25OT |
| | | 16x25 | 0.20 | 470 | EHF2GM470L25OT |
| | 47 | 18x20 | 0.20 | 455 | EHF2GM470M20OT |
| | | 16x30 | 0.20 | 480 | EHF2GM470L30OT |
| | 56 | 10x50 | 0.20 | 520 | EHF2GM560G50OT |
| | | 12.5x40 | 0.20 | 600 | EHF2GM680W40OT |
| 68 | 18x25 | 0.20 | 590 | EHF2GM680M25OT | |
| | 12.5x45 | 0.20 | 625 | EHF2GM820W45OT | |
| 82 | 18x25 | 0.20 | 610 | EHF2GM820M25OT | |
| | 18x30 | 0.20 | 630 | EHF2GM820M30OT | |
| 100 | 12.5x50 | 0.20 | 790 | EHF2GM101W50OT | |
| | 18x31 | 0.20 | 765 | EHF2GM101M31OT | |
| 120 | 18x35 | 0.20 | 785 | EHF2GM101M35OT | |
| | 18x35 | 0.20 | 870 | EHF2GM121M35OT | |
| 150 | 18x40 | 0.20 | 985 | EHF2GM151M40OT | |
| 450(2W) | 6.8 | 10x20 | 0.20 | 112 | EHF2WM6R8G20OT |
| | 10 | 12.5x20 | 0.20 | 185 | EHF2WM100W20OT |
| | 15 | 12.5x25 | 0.20 | 248 | EHF2WM150W25OT |
| | 22 | 16x20 | 0.20 | 295 | EHF2WM220L20OT |
| | 33 | 10x40 | 0.20 | 405 | EHF2WM330G40OT |
| | | 16x25 | 0.20 | 398 | EHF2WM330L25OT |
| | 39 | 18x20 | 0.20 | 385 | EHF2WM330M20OT |
| | | 10x45 | 0.20 | 425 | EHF2WM390G45OT |
| | 47 | 18x25 | 0.20 | 415 | EHF2WM390M25OT |
| | | 12.5x40 | 0.20 | 505 | EHF2WM470W40OT |
| | 56 | 18x25 | 0.20 | 496 | EHF2WM470M25OT |
| | | 12.5x40 | 0.20 | 550 | EHF2WM560W40OT |
| | 68 | 18x30 | 0.20 | 640 | EHF2WM680M30OT |
| | 82 | 12.5x50 | 0.20 | 730 | EHF2WM820W50OT |
| | | 18x35 | 0.20 | 720 | EHF2WM820M35OT |
| | 100 | 18x40 | 0.20 | 808 | EHF2WM101M40OT |

Radial Type

HL series

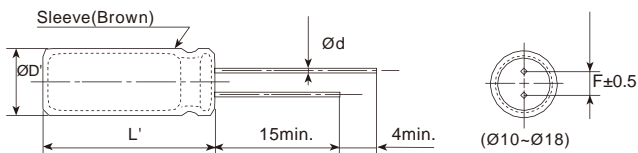
- Long life, downsized, high ripple current; For power supply applications
- Endurance: +105°C 8,000–12,000 hours
- RoHS Compliant



SPECIFICATIONS

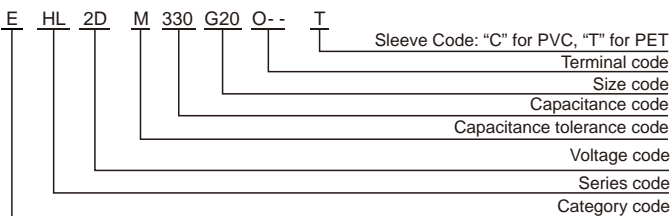
| Items | Characteristics | | | | | | | | | | |
|--|--|---|-----------------|-----------------|---------------|--|---------------|---------|----------------|---------------|--|
| Category Temperature Range | -40~+105°C(160~400V _{dc}) | -25~+105°C(450~500V _{dc}) | | | | | | | | | |
| Rated Voltage Range | 160~500 V _{dc} | | | | | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | | | | | | | | | |
| Leakage Current | <table border="1"> <tr> <td></td> <td>After 1 minute</td> <td>After 5 minutes</td> </tr> <tr> <td>CV 1000</td> <td>I 0.1CV+40μA</td> <td>I 0.03CV+15μA</td> </tr> <tr> <td>CV>1000</td> <td>I 0.04CV+100μA</td> <td>I 0.02CV+25μA</td> </tr> </table> | | After 1 minute | After 5 minutes | CV 1000 | I 0.1CV+40μA | I 0.03CV+15μA | CV>1000 | I 0.04CV+100μA | I 0.02CV+25μA | Where, I: Max. leakage current (μA), C: Nominal capacitance (μF), V: Rated voltage (V) (at 20°C) |
| | | After 1 minute | After 5 minutes | | | | | | | | |
| CV 1000 | I 0.1CV+40μA | I 0.03CV+15μA | | | | | | | | | |
| CV>1000 | I 0.04CV+100μA | I 0.02CV+25μA | | | | | | | | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 160 200 250 350 400 450 500 | | | | | | | | | |
| | tan (max.) | 0.18 0.18 0.18 0.24 0.24 0.24 0.24 (at 20°C, 120Hz) | | | | | | | | | |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) | 160 200 250 350 400 450 500 | | | | | | | | | |
| | Z(-25°C)/Z(+20°C) | 3 3 3 6 6 6 6 (at 120Hz) | | | | | | | | | |
| | Z(-40°C)/Z(+20°C) | 8 8 8 10 10 - - | | | | | | | | | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 20°C after DC voltage plus the rated ripple current is applied for a specified period of time at 105°C. | | | | | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | Rated Voltage | 160 to 450V _{dc} 500V _{dc} | | | | | |
| | D.F. (tan δ) | 200% of the initial specified value | | | Life time | L 20: 10,000 hours 10: 8,000 hours | | | | | |
| | Leakage Current | The initial specified value | | | | L>20: 12,000 hours 12.5: 10,000 hours | | | | | |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 105°C without voltage applied. | | | | | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | | | | |
| | D.F. (tan δ) | 200% of the initial specified value | | | | | | | | | |
| | Leakage Current | 200% of the initial specified value | | | | | | | | | |

DIMENSIONS[mm]



| | | | | |
|-----|------------|------|-----|-----|
| ØD | 10 | 12.5 | 16 | 18 |
| Ød | 0.6 | 0.6 | 0.8 | 0.8 |
| F | 5.0 | 5.0 | 7.5 | 7.5 |
| ØD' | ØD+0.5max. | | | |
| L' | L+2max. | | | |

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| | | | | |
|-----------|-----|------|------|------|
| Freq.(Hz) | 120 | 1k | 10k | 100k |
| Cap.(μF) | | | | |
| <100 | 1.0 | 1.75 | 2.25 | 2.50 |
| 100 | 1.0 | 1.67 | 2.05 | 2.25 |

The endurance of capacitors is shortened with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

HL series

■ STANDARD RATINGS

| WV (Vdc) | Cap (µF) | Size DxL(mm) | tan | Rated ripple current (mA _{RMS} /105°C, 120Hz) | Part Number |
|----------|----------|--------------|-------|--|----------------|
| 160(2C) | 33 | 10x16 | 0.18 | 210 | EHL2CM330G16OT |
| | 47 | 10x20 | 0.18 | 300 | EHL2CM470G20OT |
| | 56 | 10x20 | 0.18 | 318 | EHL2CM560G20OT |
| | 68 | 10x25 | 0.18 | 345 | EHL2CM680G25OT |
| | 82 | 10x25 | 0.18 | 416 | EHL2CM820G25OT |
| | | 10x30 | 0.18 | 448 | EHL2CM820G30OT |
| | 100 | 12.5x20 | 0.18 | 575 | EHL2CM101W20OT |
| | 120 | 10x35 | 0.18 | 572 | EHL2CM121G35OT |
| | | 10x40 | 0.18 | 668 | EHL2CM151G40OT |
| | 150 | 10x45 | 0.18 | 696 | EHL2CM151G45OT |
| | | 12.5x25 | 0.18 | 767 | EHL2CM151W25OT |
| | 180 | 10x50 | 0.18 | 788 | EHL2CM181G50OT |
| | | 12.5x30 | 0.18 | 885 | EHL2CM181W30OT |
| | | 16x20 | 0.18 | 858 | EHL2CM181L20OT |
| | 220 | 12.5x35 | 0.18 | 1044 | EHL2CM221W35OT |
| | | 16x25 | 0.18 | 1022 | EHL2CM221L25OT |
| | | 18x20 | 0.18 | 992 | EHL2CM221M20OT |
| | 270 | 12.5x40 | 0.18 | 1196 | EHL2CM271W40OT |
| | | 12.5x45 | 0.18 | 1230 | EHL2CM271W45OT |
| | 330 | 12.5x50 | 0.18 | 1404 | EHL2CM331W50OT |
| | | 16x30 | 0.18 | 1355 | EHL2CM331L30OT |
| | | 18x25 | 0.18 | 1292 | EHL2CM331M25OT |
| | 390 | 16x35 | 0.18 | 1505 | EHL2CM391L35OT |
| | | 16x40 | 0.18 | 1708 | EHL2CM471L40OT |
| | 470 | 16x45 | 0.18 | 1730 | EHL2CM471L45OT |
| | | 18x30 | 0.18 | 1665 | EHL2CM471M30OT |
| | | 18x35 | 0.18 | 1722 | EHL2CM471M35OT |
| | 560 | 16x50 | 0.18 | 1924 | EHL2CM561L50OT |
| | | 18x40 | 0.18 | 1910 | EHL2CM561M40OT |
| | 680 | 18x45 | 0.18 | 2135 | EHL2CM681M45OT |
| | | 18x50 | 0.18 | 2148 | EHL2CM681M50OT |
| | 200(2D) | 33 | 10x20 | 0.18 | 255 |
| 39 | | 10x20 | 0.18 | 268 | EHL2DM390G20OT |
| 47 | | 10x20 | 0.18 | 302 | EHL2DM470G20OT |
| 56 | | 10x25 | 0.18 | 346 | EHL2DM560G25OT |
| 68 | | 10x30 | 0.18 | 406 | EHL2DM680G30OT |
| 82 | | 12.5x20 | 0.18 | 522 | EHL2DM820W20OT |
| 100 | | 10x35 | 0.18 | 520 | EHL2DM101G35OT |
| | | 12.5x25 | 0.18 | 628 | EHL2DM101W25OT |
| 120 | | 10x40 | 0.18 | 595 | EHL2DM121G40OT |
| | | 10x45 | 0.18 | 624 | EHL2DM121G45OT |
| | | 12.5x30 | 0.18 | 728 | EHL2DM121W30OT |
| 150 | | 16x20 | 0.18 | 698 | EHL2DM121L20OT |
| | | 10x50 | 0.18 | 720 | EHL2DM151G50OT |
| 180 | | 12.5x35 | 0.18 | 862 | EHL2DM151W35OT |
| | | 16x25 | 0.18 | 928 | EHL2DM181L25OT |
| | | 18x20 | 0.18 | 895 | EHL2DM181M20OT |
| 220 | | 12.5x40 | 0.18 | 1078 | EHL2DM221W40OT |
| | | 12.5x45 | 0.18 | 1116 | EHL2DM221W45OT |
| 270 | | 18x25 | 0.18 | 1050 | EHL2DM221M25OT |
| | | 12.5x50 | 0.18 | 1268 | EHL2DM271W50OT |
| | | 16x30 | 0.18 | 1225 | EHL2DM271L30OT |
| 330 | | 16x35 | 0.18 | 1252 | EHL2DM271L35OT |
| | | 16x40 | 0.18 | 1428 | EHL2DM331L40OT |
| 390 | | 18x30 | 0.18 | 1402 | EHL2DM331M30OT |
| | | 16x45 | 0.18 | 1575 | EHL2DM391L45OT |
| 470 | | 18x35 | 0.18 | 1570 | EHL2DM391M35OT |
| | | 16x50 | 0.18 | 1762 | EHL2DM471L50OT |
| | | 18x40 | 0.18 | 1748 | EHL2DM471M40OT |
| 560 | | 18x45 | 0.18 | 1775 | EHL2DM471M45OT |
| | | 18x50 | 0.18 | 1952 | EHL2DM561M50OT |

| WV (Vdc) | Cap (µF) | Size DxL(mm) | tan | Rated ripple current (mA _{RMS} /105°C, 120Hz) | Part Number | |
|----------|----------|--------------|-------|--|----------------|----------------|
| 250(2E) | 27 | 10x20 | 0.18 | 205 | EHL2EM270G20OT | |
| | 33 | 10x20 | 0.18 | 242 | EHL2EM330G20OT | |
| | 47 | 10x25 | 0.18 | 316 | EHL2EM470G25OT | |
| | | 10x30 | 0.18 | 342 | EHL2EM470G30OT | |
| | 56 | 12.5x20 | 0.18 | 430 | EHL2EM560W20OT | |
| | 68 | 10x35 | 0.18 | 432 | EHL2EM680G35OT | |
| | | 10x40 | 0.18 | 495 | EHL2EM820G40OT | |
| | | 10x45 | 0.18 | 518 | EHL2EM820G45OT | |
| | 82 | 12.5x25 | 0.18 | 565 | EHL2EM820W25OT | |
| | | 12.5x30 | 0.18 | 575 | EHL2EM820W30OT | |
| | | 10x50 | 0.18 | 586 | EHL2EM101G50OT | |
| | 100 | 12.5x30 | 0.18 | 662 | EHL2EM101W30OT | |
| | | 16x20 | 0.18 | 638 | EHL2EM101L20OT | |
| | 120 | 12.5x35 | 0.18 | 770 | EHL2EM121W35OT | |
| | | 16x25 | 0.18 | 758 | EHL2EM121L25OT | |
| | | 18x20 | 0.18 | 732 | EHL2EM121M20OT | |
| | 150 | 12.5x40 | 0.18 | 892 | EHL2EM151W40OT | |
| | | 12.5x45 | 0.18 | 922 | EHL2EM151W45OT | |
| | 180 | 12.5x50 | 0.18 | 1040 | EHL2EM181W50OT | |
| | | 16x30 | 0.18 | 995 | EHL2EM181L30OT | |
| | | 18x25 | 0.18 | 955 | EHL2EM181M25OT | |
| | 220 | 16x35 | 0.18 | 1130 | EHL2EM221L35OT | |
| | | 18x30 | 0.18 | 1138 | EHL2EM221M30OT | |
| | 270 | 16x40 | 0.18 | 1290 | EHL2EM271L40OT | |
| | | 16x45 | 0.18 | 1315 | EHL2EM271L45OT | |
| | 330 | 18x35 | 0.18 | 1300 | EHL2EM271M35OT | |
| | | 16x50 | 0.18 | 1480 | EHL2EM331L50OT | |
| | | 18x40 | 0.18 | 1466 | EHL2EM331M40OT | |
| | 390 | 18x45 | 0.18 | 1488 | EHL2EM331M45OT | |
| | | 18x50 | 0.18 | 1630 | EHL2EM391M50OT | |
| | 350(2V) | 15 | 10x16 | 0.24 | 150 | EHL2VM150G16OT |
| | | 18 | 10x20 | 0.24 | 165 | EHL2VM180G20OT |
| 22 | | 10x20 | 0.24 | 200 | EHL2VM220G20OT | |
| 27 | | 10x25 | 0.24 | 242 | EHL2VM270G25OT | |
| | | 10x30 | 0.24 | 256 | EHL2VM270G30OT | |
| 33 | | 12.5x20 | 0.24 | 332 | EHL2VM330W20OT | |
| 39 | | 10x35 | 0.24 | 326 | EHL2VM390G35OT | |
| 47 | | 10x40 | 0.24 | 376 | EHL2VM470G40OT | |
| | | 12.5x25 | 0.24 | 425 | EHL2VM470W25OT | |
| 56 | | 10x45 | 0.24 | 426 | EHL2VM560G45OT | |
| | | 12.5x30 | 0.24 | 498 | EHL2VM560W30OT | |
| | | 16x20 | 0.24 | 476 | EHL2VM560L20OT | |
| 68 | | 10x50 | 0.24 | 486 | EHL2VM680G50OT | |
| | | 12.5x35 | 0.24 | 583 | EHL2VM680W35OT | |
| 82 | | 18x20 | 0.24 | 550 | EHL2VM680M20OT | |
| | | 12.5x40 | 0.24 | 658 | EHL2VM820W40OT | |
| | | 16x25 | 0.24 | 628 | EHL2VM820L25OT | |
| 100 | | 12.5x45 | 0.24 | 752 | EHL2VM101W45OT | |
| | | 12.5x50 | 0.24 | 772 | EHL2VM101W50OT | |
| | | 16x30 | 0.24 | 744 | EHL2VM101L30OT | |
| 120 | | 18x25 | 0.24 | 710 | EHL2VM101M25OT | |
| | | 16x35 | 0.24 | 832 | EHL2VM121L35OT | |
| 150 | | 16x40 | 0.24 | 964 | EHL2VM151L40OT | |
| | | 16x45 | 0.24 | 978 | EHL2VM151L45OT | |
| | | 18x30 | 0.24 | 944 | EHL2VM151M30OT | |
| 180 | | 16x50 | 0.24 | 1095 | EHL2VM181L50OT | |
| | | 18x35 | 0.24 | 1065 | EHL2VM181M35OT | |
| 220 | | 18x40 | 0.24 | 1086 | EHL2VM181M40OT | |
| | | 18x45 | 0.24 | 1215 | EHL2VM221M45OT | |
| | | 18x50 | 0.24 | 1222 | EHL2VM221M50OT | |

Radial Type

HL series

■ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (mA _{rms} /105°C, 120Hz) | Part Number |
|----------|----------|--------------|------|--|----------------|
| 400(2G) | 12 | 10x16 | 0.24 | 135 | EHL2GM120G16OT |
| | 15 | 10x20 | 0.24 | 155 | EHL2GM150G20OT |
| | 18 | 10x20 | 0.24 | 180 | EHL2GM180G20OT |
| | 22 | 10x25 | 0.24 | 216 | EHL2GM220G25OT |
| | 27 | 10x30 | 0.24 | 256 | EHL2GM270G30OT |
| | | 12.5x20 | 0.24 | 300 | EHL2GM270W20OT |
| | 33 | 10x35 | 0.24 | 300 | EHL2GM330G35OT |
| | 39 | 10x40 | 0.24 | 342 | EHL2GM390G40OT |
| | | 10x45 | 0.24 | 358 | EHL2GM390G45OT |
| | | 12.5x25 | 0.24 | 390 | EHL2GM390W25OT |
| | 47 | 12.5x30 | 0.24 | 456 | EHL2GM470W30OT |
| | | 16x20 | 0.24 | 438 | EHL2GM470L20OT |
| | 56 | 10x50 | 0.24 | 440 | EHL2GM560G50OT |
| | | 12.5x35 | 0.24 | 528 | EHL2GM560W35OT |
| | | 18x20 | 0.24 | 502 | EHL2GM560M20OT |
| | 68 | 12.5x40 | 0.24 | 600 | EHL2GM680W40OT |
| | | 16x25 | 0.24 | 572 | EHL2GM680L25OT |
| | 82 | 12.5x45 | 0.24 | 684 | EHL2GM820W45OT |
| | | 12.5x50 | 0.24 | 700 | EHL2GM820W50OT |
| | | 16x30 | 0.24 | 672 | EHL2GM820L30OT |
| | | 18x25 | 0.24 | 644 | EHL2GM820M25OT |
| | 100 | 16x35 | 0.24 | 760 | EHL2GM101L35OT |
| | 120 | 16x40 | 0.24 | 864 | EHL2GM101L40OT |
| | | 16x45 | 0.24 | 880 | EHL2GM121L45OT |
| | | 18x30 | 0.24 | 842 | EHL2GM121M30OT |
| | | 18x35 | 0.24 | 875 | EHL2GM121M35OT |
| | 150 | 16x50 | 0.24 | 1000 | EHL2GM151L50OT |
| | | 18x40 | 0.24 | 985 | EHL2GM151M40OT |
| | 180 | 18x45 | 0.24 | 1098 | EHL2GM181M45OT |
| | 220 | 18x50 | 0.24 | 1225 | EHL2GM221M50OT |

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (mA _{rms} /105°C, 120Hz) | Part Number |
|----------|----------|--------------|-------|--|----------------|
| 450(2W) | 10 | 10x16 | 0.24 | 120 | EHL2WM100G16OT |
| | 12 | 10x20 | 0.24 | 150 | EHL2WM120G20OT |
| | 15 | 10x25 | 0.24 | 186 | EHL2WM150G25OT |
| | 18 | 10x30 | 0.24 | 216 | EHL2WM180G30OT |
| | | 12.5x20 | 0.24 | 256 | EHL2WM180W20OT |
| | 22 | 10x35 | 0.24 | 252 | EHL2WM220G35OT |
| | 27 | 10x40 | 0.24 | 292 | EHL2WM270G40OT |
| | | 10x45 | 0.24 | 306 | EHL2WM270G45OT |
| | | 12.5x25 | 0.24 | 342 | EHL2WM270W25OT |
| | 33 | 12.5x30 | 0.24 | 400 | EHL2WM330W30OT |
| | | 16x20 | 0.24 | 386 | EHL2WM330L20OT |
| | 39 | 10x50 | 0.24 | 378 | EHL2WM390G50OT |
| | | 12.5x35 | 0.24 | 462 | EHL2WM390W35OT |
| | | 18x20 | 0.24 | 440 | EHL2WM390M20OT |
| | 47 | 12.5x40 | 0.24 | 528 | EHL2WM470W40OT |
| | | 16x25 | 0.24 | 500 | EHL2WM470L25OT |
| | 56 | 12.5x45 | 0.24 | 592 | EHL2WM560W45OT |
| | | 16x30 | 0.24 | 588 | EHL2WM560L30OT |
| | | 18x25 | 0.24 | 562 | EHL2WM560M25OT |
| | 68 | 12.5x50 | 0.24 | 672 | EHL2WM680W50OT |
| | | 16x35 | 0.24 | 664 | EHL2WM680L35OT |
| | 82 | 16x40 | 0.24 | 750 | EHL2WM820L40OT |
| | | 16x45 | 0.24 | 762 | EHL2WM820L45OT |
| | | 18x30 | 0.24 | 734 | EHL2WM820M30OT |
| | 100 | 16x50 | 0.24 | 858 | EHL2WM101L50OT |
| | | 18x35 | 0.24 | 836 | EHL2WM101M35OT |
| | 120 | 18x40 | 0.24 | 935 | EHL2WM121M40OT |
| | | 18x45 | 0.24 | 948 | EHL2WM121M45OT |
| | 150 | 18x50 | 0.24 | 1065 | EHL2WM151M50OT |
| | 500(2H) | 6.8 | 10x20 | 0.24 | 90 |
| 10 | | 10x30 | 0.24 | 130 | EHL2HM100G30OT |
| | | 12.5x20 | 0.24 | 125 | EHL2HM100W20OT |
| 12 | | 12.5x20 | 0.24 | 135 | EHL2HM120W20OT |
| 15 | | 10x35 | 0.24 | 170 | EHL2HM150G35OT |
| | | 12.5x25 | 0.24 | 170 | EHL2HM150W25OT |
| | | 16x20 | 0.24 | 165 | EHL2HM150L20OT |
| 18 | | 10x45 | 0.24 | 190 | EHL2HM180G45OT |
| | | 12.5x30 | 0.24 | 190 | EHL2HM180W30OT |
| 22 | | 10x50 | 0.24 | 230 | EHL2HM220G50OT |
| | | 12.5x35 | 0.24 | 225 | EHL2HM220W35OT |
| | | 16x20 | 0.24 | 220 | EHL2HM220L20OT |
| 33 | | 18x25 | 0.24 | 285 | EHL2HM330M25OT |
| 47 | | 18x30 | 0.24 | 400 | EHL2HM470M30OT |

RK series

- Endurance: +105°C 2,000 hours
- Especially designed for charger
- Miniaturized, high voltage
- RoHS Compliant

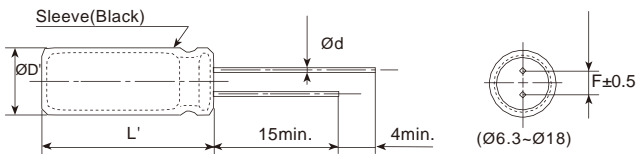
Upgrade



SPECIFICATIONS

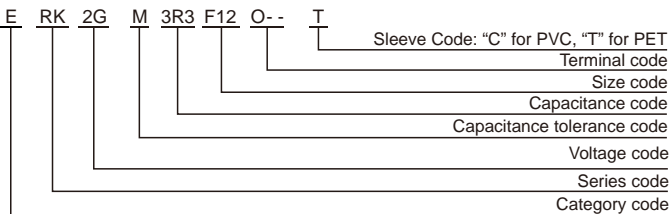
| Items | Characteristics | | | | | |
|--|--|-------------------------------------|--------------------------------------|---|-------------------------------------|------------------|
| Category Temperature Range | -40~+105°C(400 V _{dc}) | | -25~+105°C(450~550 V _{dc}) | | | |
| Rated Voltage Range | 400~550 V _{dc} | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | | | | |
| Leakage Current | 400~450 V _{dc} | 500~550 V _{dc} | | Where, I:Max.leakage current (μA), C:Nominal capacitance (μF), V: Rated voltage (V) (at 20°C after 2 minutes) | | |
| | I 0.02CV+10μA | I 0.03CV+10μA | | | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 400 | 450 | 500 | 550 | (at 20°C, 120Hz) |
| | tan δ (max.) | 0.15 | 0.20 | 0.24 | 0.24 | |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) | 400 | 450 | 500 | 550 | (at 120Hz) |
| | Z(-25°C)/Z(+20°C) | 3 | 5 | 6 | 15 | |
| | Z(-40°C)/Z(+20°C) | 6 | - | - | - | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 20°C after DC voltage plus the rated ripple current is applied for 2,000 hours at 105°C. | | | | | |
| | Rated voltage(V _{dc}) | 400~500 V _{dc} | | | 550 V _{dc} | |
| | Capacitance Change | ±20% of the initial value | | | ±30% of the initial value | |
| | D.F. (tan δ) | 200% of the initial specified value | | | 300% of the initial specified value | |
| | Leakage Current | The initial specified value | | | The initial specified value | |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 105°C without voltage applied. | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | |
| | D.F. (tan δ) | 200% of the initial specified value | | | | |
| | Leakage Current | 200% of the initial specified value | | | | |

DIMENSIONS[mm]



| ØD | 6.3 | 8 | 10 | 12.5 | 16 | 18 |
|-----|------------|-----|-----|------|-----|-----|
| Ød | 0.5 | 0.5 | 0.6 | 0.6 | 0.8 | 0.8 |
| F | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 |
| ØD' | ØD+0.5max. | | | | | |
| L' | L+2max. | | | | | |

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| Freq.(Hz) | 120 | 1k | 10k | 100k |
|----------------------|------|------|------|------|
| WV(V _{dc}) | 0.50 | 0.80 | 0.90 | 1.00 |

The endurance of capacitors is shortened with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

RK series

■ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (mA _{rms} /105°C, 100kHz) | Part Number |
|----------|----------|--------------|------|---|----------------|
| 400(2G) | 2.2 | 6.3x9 | 0.15 | 64 | ERK2GM2R2E09OT |
| | | 8x7 | 0.15 | 66 | ERK2GM2R2F07OT |
| | 3.3 | 6.3x11 | 0.15 | 74 | ERK2GM3R3E11OT |
| | | 8x9 | 0.15 | 76 | ERK2GM3R3F09OT |
| | | 8x11 | 0.15 | 80 | ERK2GM3R3F11OT |
| | 4.7 | 6.3x11 | 0.15 | 90 | ERK2GM4R7E11OT |
| | | 8x9 | 0.15 | 94 | ERK2GM4R7F09OT |
| | | 8x11 | 0.15 | 98 | ERK2GM4R7F11OT |
| | 6.8 | 8x11 | 0.15 | 126 | ERK2GM6R8F11OT |
| | | 10x9 | 0.15 | 132 | ERK2GM6R8G09OT |
| | 8.2 | 8x11 | 0.15 | 145 | ERK2GM8R2F11OT |
| | | 10x9 | 0.15 | 150 | ERK2GM8R2G09OT |
| | | 10x10 | 0.15 | 158 | ERK2GM8R2G10OT |
| | 10 | 8x12 | 0.15 | 165 | ERK2GM100F12OT |
| | | 8x14 | 0.15 | 180 | ERK2GM100F14OT |
| | | 10x9 | 0.15 | 172 | ERK2GM100G09OT |
| | 15 | 10x12 | 0.15 | 210 | ERK2GM150G12OT |
| | | 10x14 | 0.15 | 230 | ERK2GM150G14OT |
| | 22 | 10x16 | 0.15 | 250 | ERK2GM220G16OT |
| | | 12.5x16 | 0.15 | 300 | ERK2GM220W16OT |
| | 33 | 12.5x16 | 0.15 | 520 | ERK2GM330W16OT |
| | 47 | 12.5x22 | 0.15 | 650 | ERK2GM470W22OT |
| | | 16x16 | 0.15 | 670 | ERK2GM470L16OT |
| | 56 | 13x25 | 0.15 | 780 | ERK2GM560K25OT |
| 16x23 | | 0.15 | 880 | ERK2GM680L23OT | |
| 18x18 | | 0.15 | 880 | ERK2GM680M18OT | |
| 68 | 18x20 | 0.15 | 920 | ERK2GM680M20OT | |
| | 2.2 | 6.3x11 | 0.20 | 65 | ERK2WM2R2E11OT |
| | | 8x9 | 0.20 | 72 | ERK2WM2R2F09OT |
| 3.3 | 8x9 | 0.20 | 82 | ERK2WM3R3F09OT | |
| 4.7 | 8x11 | 0.20 | 100 | ERK2WM4R7F11OT | |
| | 10x9 | 0.20 | 110 | ERK2WM4R7G09OT | |
| 6.8 | 10x9 | 0.20 | 130 | ERK2WM6R8G09OT | |
| | 10x10 | 0.20 | 148 | ERK2WM6R8G10OT | |
| 8.2 | 10x10 | 0.20 | 190 | ERK2WM8R2G10OT | |
| | 10x12 | 0.20 | 210 | ERK2WM8R2G12OT | |

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (mA _{rms} /105°C, 100kHz) | Part Number |
|----------|----------|--------------|------|---|----------------|
| 450(2W) | 10 | 8x16 | 0.20 | 220 | ERK2WM100F16OT |
| | | 10x12 | 0.20 | 230 | ERK2WM100G12OT |
| | | 10x14 | 0.20 | 250 | ERK2WM100G14OT |
| | 15 | 10x16 | 0.20 | 230 | ERK2WM150G16OT |
| | | 12.5x16 | 0.20 | 250 | ERK2WM150W16OT |
| | 22 | 12.5x20 | 0.20 | 295 | ERK2WM220W20OT |
| | | 16x16 | 0.20 | 320 | ERK2WM220L16OT |
| | 33 | 12.5x22 | 0.20 | 495 | ERK2WM330W22OT |
| | | 16x16 | 0.20 | 495 | ERK2WM330L16OT |
| | | 16x20 | 0.20 | 550 | ERK2WM330L20OT |
| | 47 | 16x20 | 0.20 | 640 | ERK2WM470L20OT |
| | | 16x25 | 0.20 | 710 | ERK2WM470L25OT |
| | 68 | 18x20 | 0.20 | 870 | ERK2WM680M20OT |
| | | 18x25 | 0.20 | 970 | ERK2WM680M25OT |
| 500(2H) | 3.3 | 8x12 | 0.24 | 85 | ERK2HM3R3F12OT |
| | 4.7 | 8x12 | 0.24 | 110 | ERK2HM4R7F12OT |
| | | 10x9 | 0.24 | 110 | ERK2HM4R7G09OT |
| | 5.6 | 10x9 | 0.24 | 130 | ERK2HM5R6G09OT |
| | 6.8 | 10x10 | 0.24 | 150 | ERK2HM6R8G10OT |
| | 8.2 | 10x12 | 0.24 | 190 | ERK2HM8R2G12OT |
| | 10 | 10x16 | 0.24 | 225 | ERK2HM100G16OT |
| | 12 | 10x16 | 0.24 | 230 | ERK2HM120G16OT |
| 15 | 10x18 | 0.24 | 250 | ERK2HM150G18OT | |
| 22 | 12.5x20 | 0.24 | 280 | ERK2HM220W20OT | |
| 550(2J) | 3.3 | 8x12 | 0.24 | 85 | ERK2JM3R3F12OT |
| | 4.7 | 10x10 | 0.24 | 110 | ERK2JM4R7G10OT |
| | | 10x12 | 0.24 | 120 | ERK2JM4R7G12OT |
| | 5.6 | 10x12 | 0.24 | 130 | ERK2JM5R6G12OT |
| | 6.8 | 10x12 | 0.24 | 150 | ERK2JM6R8G12OT |
| | 8.2 | 10x14 | 0.24 | 190 | ERK2JM8R2G14OT |
| | 10 | 10x16 | 0.24 | 225 | ERK2JM100G16OT |
| | 12 | 10x20 | 0.24 | 235 | ERK2JM120G20OT |
| 15 | 12.5x20 | 0.24 | 250 | ERK2JM150W20OT | |
| 22 | 12.5x25 | 0.24 | 280 | ERK2JM220W25OT | |

RG series

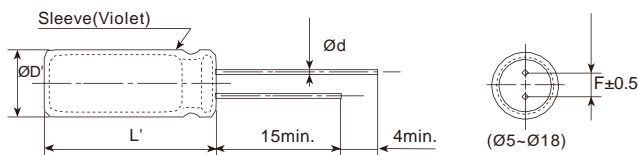
- “GBL” system, high reliability
- Low impedance and high ripple current
- Endurance +105°C 2,000 ~ 8,000 hours
- RoHS Compliant



SPECIFICATIONS

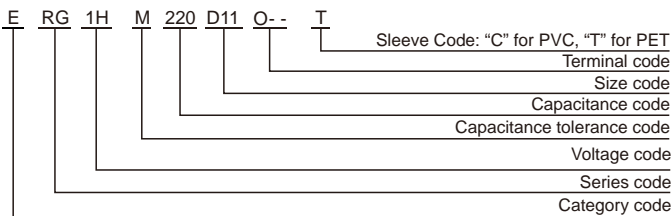
| Items | Characteristics |
|--|--|
| Category Temperature Range | -55~+105°C |
| Rated Voltage Range | 6.3~63 V _{dc} |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) |
| Leakage Current | I 0.01CV or 3μA, whichever is greater. Where, I:Max.leakage current (μA), C:Nominal capacitance (μF), V: Rated voltage (V) (at 20°C after 2 minutes) |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) 6.3 10 16 25 35 50 63 |
| | tan δ (max.) 0.22 0.19 0.16 0.14 0.12 0.10 0.08 |
| | When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20°C, 120Hz) |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) 6.3 10 16 25 35 50 63 |
| | Z(-25°C)/Z(+20°C) 4 3 2 |
| | Z(-55°C)/Z(+20°C) 8 6 4 3 (at 120Hz) |
| Endurance | The following specifications shall be met when the capacitors are restored to 20°C after DC voltage plus rated ripple current is applied for a specified period of time at 105°C, the peak voltage shall not exceed the rated voltage. |
| | Capacitance Change ±25% of the initial value |
| | D.F. (tan δ) 200% of the initial specified value |
| | Leakage Current The initial specified value |
| | Load life (hours) |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20 °C after leaving them under no load at 105°C for 1,000 hours. |
| | Capacitance Change ±25% of the initial value |
| | D.F. (tan δ) 200% of the initial specified value |
| | Leakage Current 200% of the initial specified value |
| | Load life (hours) |

DIMENSIONS[mm]



| ØD | 5 | 6.3 | 8 | 10 | 12.5 | 16 | 18 |
|-----|------------|-----|-----|-----|------|-----|-----|
| Ød | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.8 | 0.8 |
| F | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 |
| ØD' | ØD+0.5max. | | | | | | |
| L' | L+2max. | | | | | | |

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| Freq.(Hz) | 120 | 1k | 10k | 100k |
|----------------|------|------|------|------|
| Cap.<220 | 0.40 | 0.75 | 0.90 | 1.00 |
| 220 Cap.<680 | 0.50 | 0.85 | 0.94 | 1.00 |
| 680 Cap.<2200 | 0.60 | 0.87 | 0.95 | 1.00 |
| 2200 Cap.<4700 | 0.75 | 0.90 | 0.95 | 1.00 |
| Cap. 4700 | 0.85 | 0.95 | 0.98 | 1.00 |

The endurance of capacitors is shortened with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

RG series

■ STANDARD RATINGS

| WV (Vdc) | Cap (µF) | Size DxL(mm) | tan | Impedance (max/20°C, 100kHz) | Rated ripple current (mA _{RMS} /105°C, 100kHz) | Part Number |
|----------|----------|--------------|-------|------------------------------|---|----------------|
| 6.3(0J) | 100 | 5x11 | 0.22 | 0.65 | 155 | ERG0JM101D11OT |
| | 220 | 6.3x11 | 0.22 | 0.40 | 255 | ERG0JM221E11OT |
| | 330 | 6.3x11 | 0.22 | 0.25 | 290 | ERG0JM331E11OT |
| | 470 | 8x11 | 0.22 | 0.18 | 400 | ERG0JM471F11OT |
| | 560 | 8x11 | 0.22 | 0.17 | 460 | ERG0JM561F11OT |
| | 680 | 8x11 | 0.22 | 0.13 | 550 | ERG0JM681F11OT |
| | 820 | 8x16 | 0.22 | 0.095 | 730 | ERG0JM821F16OT |
| | 1000 | 8x16 | 0.22 | 0.09 | 730 | ERG0JM102F16OT |
| | 1200 | 8x20 | 0.22 | 0.08 | 810 | ERG0JM122F20OT |
| | 1500 | 10x20 | 0.22 | 0.052 | 1220 | ERG0JM152G20OT |
| | 2200 | 10x20 | 0.24 | 0.045 | 1440 | ERG0JM222G20OT |
| | 2700 | 10x30 | 0.24 | 0.037 | 1690 | ERG0JM272G30OT |
| | 3300 | 12.5x20 | 0.26 | 0.038 | 1660 | ERG0JM332W20OT |
| | 3900 | 12.5x25 | 0.26 | 0.03 | 1950 | ERG0JM392W25OT |
| | 4700 | 12.5x30 | 0.28 | 0.025 | 2310 | ERG0JM472W30OT |
| | 5600 | 12.5x35 | 0.30 | 0.022 | 2510 | ERG0JM562W35OT |
| | 6800 | 12.5x40 | 0.32 | 0.017 | 2870 | ERG0JM682W40OT |
| | 8200 | 16x30 | 0.36 | 0.019 | 3010 | ERG0JM822L30OT |
| 10000 | 16x35 | 0.40 | 0.017 | 3150 | ERG0JM103L35OT | |
| 10(1A) | 100 | 5x11 | 0.19 | 0.58 | 175 | ERG1AM101D11OT |
| | 220 | 6.3x11 | 0.19 | 0.25 | 290 | ERG1AM221E11OT |
| | 330 | 8x11 | 0.19 | 0.21 | 410 | ERG1AM331F11OT |
| | 470 | 8x11 | 0.19 | 0.13 | 555 | ERG1AM471F11OT |
| | 560 | 8x16 | 0.19 | 0.12 | 675 | ERG1AM561F16OT |
| | 680 | 8x16 | 0.19 | 0.09 | 730 | ERG1AM681F16OT |
| | 820 | 8x20 | 0.19 | 0.085 | 875 | ERG1AM821F20OT |
| | 1000 | 10x16 | 0.19 | 0.068 | 1050 | ERG1AM102G16OT |
| | 1200 | 10x20 | 0.19 | 0.052 | 1220 | ERG1AM122G20OT |
| | 1500 | 10x20 | 0.19 | 0.045 | 1440 | ERG1AM152G20OT |
| | 2200 | 12.5x20 | 0.21 | 0.038 | 1660 | ERG1AM222W20OT |
| | 2700 | 12.5x25 | 0.21 | 0.034 | 1945 | ERG1AM272W25OT |
| | 3300 | 12.5x25 | 0.23 | 0.03 | 1950 | ERG1AM332W25OT |
| | 3900 | 12.5x30 | 0.23 | 0.025 | 2310 | ERG1AM392W30OT |
| | 4700 | 12.5x35 | 0.25 | 0.022 | 2510 | ERG1AM472W35OT |
| | 5600 | 12.5x40 | 0.27 | 0.017 | 2870 | ERG1AM562W40OT |
| | 6800 | 16x30 | 0.29 | 0.019 | 3010 | ERG1AM682L30OT |
| | 8200 | 16x35 | 0.33 | 0.017 | 3150 | ERG1AM822L35OT |
| 10000 | 16x40 | 0.37 | 0.015 | 3710 | ERG1AM103L40OT | |
| 16(1C) | 47 | 5x11 | 0.16 | 0.80 | 120 | ERG1CM470D11OT |
| | 68 | 6.3x11 | 0.16 | 0.56 | 220 | ERG1CM680E11OT |
| | 100 | 6.3x11 | 0.16 | 0.52 | 255 | ERG1CM101E11OT |
| | 150 | 8x11 | 0.16 | 0.21 | 350 | ERG1CM151F11OT |
| | 220 | 8x11 | 0.16 | 0.20 | 405 | ERG1CM221F11OT |
| | 330 | 8x11 | 0.16 | 0.13 | 555 | ERG1CM331F11OT |
| | 470 | 8x16 | 0.16 | 0.09 | 730 | ERG1CM471F16OT |
| | 560 | 8x20 | 0.16 | 0.085 | 810 | ERG1CM561F20OT |
| | 680 | 8x20 | 0.16 | 0.069 | 1050 | ERG1CM681F20OT |
| | 820 | 10x20 | 0.16 | 0.058 | 1220 | ERG1CM821G20OT |
| | 1000 | 10x20 | 0.16 | 0.052 | 1220 | ERG1CM102G20OT |
| | 1200 | 10x25 | 0.16 | 0.045 | 1440 | ERG1CM122G25OT |
| | 1500 | 12.5x20 | 0.16 | 0.038 | 1660 | ERG1CM152W20OT |
| | 2200 | 12.5x25 | 0.18 | 0.03 | 1950 | ERG1CM222W25OT |
| | 2700 | 12.5x30 | 0.18 | 0.025 | 2310 | ERG1CM272W30OT |
| | 3300 | 12.5x35 | 0.20 | 0.022 | 2510 | ERG1CM332W35OT |
| | 3900 | 12.5x40 | 0.20 | 0.017 | 2870 | ERG1CM392W40OT |
| | 4700 | 16x30 | 0.22 | 0.019 | 3010 | ERG1CM472L30OT |
| 5600 | 16x35 | 0.24 | 0.017 | 3150 | ERG1CM562L35OT | |
| 6800 | 16x40 | 0.26 | 0.015 | 3710 | ERG1CM682L40OT | |
| 25(1E) | 47 | 5x11 | 0.14 | 0.58 | 175 | ERG1EM470D11OT |
| | 68 | 6.3x11 | 0.14 | 0.36 | 230 | ERG1EM680E11OT |
| | 100 | 6.3x11 | 0.14 | 0.35 | 290 | ERG1EM101E11OT |
| | 150 | 8x11 | 0.14 | 0.20 | 405 | ERG1EM151F11OT |
| | 220 | 8x12 | 0.14 | 0.19 | 555 | ERG1EM221F12OT |
| | 330 | 8x16 | 0.14 | 0.12 | 730 | ERG1EM331F16OT |
| | 470 | 10x16 | 0.14 | 0.08 | 1050 | ERG1EM471G16OT |
| | 560 | 10x20 | 0.14 | 0.058 | 1220 | ERG1EM561G20OT |
| | 680 | 10x20 | 0.14 | 0.052 | 1220 | ERG1EM681G20OT |
| | 820 | 10x25 | 0.14 | 0.045 | 1440 | ERG1EM821G25OT |
| | 1000 | 12.5x20 | 0.14 | 0.038 | 1660 | ERG1EM102W20OT |
| | 1200 | 12.5x25 | 0.14 | 0.034 | 1936 | ERG1EM122W25OT |
| | 1500 | 12.5x25 | 0.14 | 0.03 | 1950 | ERG1EM152W25OT |

| WV (Vdc) | Cap (µF) | Size DxL(mm) | tan | Impedance (max/20°C, 100kHz) | Rated ripple current (mA _{RMS} /105°C, 100kHz) | Part Number |
|----------|----------|--------------|-------|------------------------------|---|----------------|
| 25(1E) | 2200 | 12.5x35 | 0.16 | 0.022 | 2510 | ERG1EM222W35OT |
| | 2700 | 12.5x40 | 0.16 | 0.017 | 2870 | ERG1EM272W40OT |
| | 3300 | 16x30 | 0.18 | 0.019 | 3010 | ERG1EM332L30OT |
| | 3900 | 16x35 | 0.18 | 0.017 | 3150 | ERG1EM392L35OT |
| | 4700 | 16x40 | 0.20 | 0.015 | 3710 | ERG1EM472L40OT |
| | 35(1V) | 10 | 5x11 | 0.12 | 1.50 | 100 |
| 22 | | 5x11 | 0.12 | 0.75 | 160 | ERG1VM220D11OT |
| 33 | | 5x11 | 0.12 | 0.58 | 210 | ERG1VM330D11OT |
| 47 | | 6.3x11 | 0.12 | 0.49 | 215 | ERG1VM470E11OT |
| 68 | | 8x11 | 0.12 | 0.21 | 350 | ERG1VM680F11OT |
| 100 | | 8x11 | 0.12 | 0.20 | 405 | ERG1VM101F11OT |
| 150 | | 8x12 | 0.12 | 0.13 | 555 | ERG1VM151F12OT |
| 220 | | 8x16 | 0.12 | 0.09 | 730 | ERG1VM221F16OT |
| 330 | | 10x16 | 0.12 | 0.08 | 1050 | ERG1VM331G16OT |
| 470 | | 10x20 | 0.12 | 0.065 | 1220 | ERG1VM471G20OT |
| 560 | | 10x25 | 0.12 | 0.045 | 1440 | ERG1VM561G25OT |
| 680 | | 10x30 | 0.12 | 0.037 | 1690 | ERG1VM681G30OT |
| 820 | | 12.5x25 | 0.12 | 0.035 | 1938 | ERG1VM821W25OT |
| 1000 | | 12.5x25 | 0.12 | 0.03 | 1950 | ERG1VM102W25OT |
| 1200 | | 12.5x30 | 0.12 | 0.025 | 2310 | ERG1VM122W30OT |
| 1500 | | 12.5x35 | 0.12 | 0.022 | 2510 | ERG1VM152W35OT |
| 2200 | | 16x30 | 0.14 | 0.019 | 3010 | ERG1VM222L30OT |
| 2700 | | 16x35 | 0.14 | 0.017 | 3150 | ERG1VM272L35OT |
| 3300 | 16x40 | 0.16 | 0.015 | 3710 | ERG1VM332L40OT | |
| 3900 | 18x40 | 0.16 | 0.015 | 3800 | ERG1VM392M40OT | |
| 50(1H) | 10 | 5x11 | 0.10 | 2.0 | 105 | ERG1HM100D11OT |
| | 22 | 5x11 | 0.10 | 1.10 | 155 | ERG1HM220D11OT |
| | 33 | 6.3x11 | 0.10 | 0.48 | 215 | ERG1HM330E11OT |
| | 47 | 6.3x11 | 0.10 | 0.40 | 220 | ERG1HM470E11OT |
| | 68 | 8x11 | 0.10 | 0.35 | 355 | ERG1HM680F11OT |
| | 100 | 8x12 | 0.10 | 0.23 | 485 | ERG1HM101F12OT |
| | 150 | 8x16 | 0.10 | 0.16 | 635 | ERG1HM151F16OT |
| | 220 | 10x16 | 0.10 | 0.088 | 1050 | ERG1HM221G16OT |
| | 330 | 10x25 | 0.10 | 0.073 | 1250 | ERG1HM331G25OT |
| | 470 | 12.5x20 | 0.10 | 0.059 | 1480 | ERG1HM471W20OT |
| | 560 | 12.5x25 | 0.10 | 0.044 | 1840 | ERG1HM561W25OT |
| | 680 | 12.5x30 | 0.10 | 0.039 | 2220 | ERG1HM681W30OT |
| | 820 | 12.5x35 | 0.10 | 0.033 | 2290 | ERG1HM821W35OT |
| | 1000 | 16x25 | 0.10 | 0.034 | 2240 | ERG1HM102L25OT |
| | 1200 | 16x30 | 0.10 | 0.028 | 2700 | ERG1HM122L30OT |
| | 1500 | 16x35 | 0.10 | 0.025 | 2800 | ERG1HM152L35OT |
| | 2200 | 18x35 | 0.12 | 0.023 | 3100 | ERG1HM222M35OT |
| | 2700 | 18x40 | 0.12 | 0.02 | 3400 | ERG1HM272M40OT |
| 63(1J) | 12 | 5x11 | 0.08 | 1.9 | 145 | ERG1JM120D11OT |
| | 22 | 6.3x11 | 0.08 | 1.0 | 240 | ERG1JM220E11OT |
| | 39 | 6.3x14 | 0.08 | 0.61 | 330 | ERG1JM390E14OT |
| | 68 | 8x12 | 0.08 | 0.34 | 405 | ERG1JM680F12OT |
| | 100 | 8x16 | 0.08 | 0.27 | 535 | ERG1JM101F16OT |
| | 100 | 10x12.5 | 0.08 | 0.255 | 540 | ERG1JM101G1BOT |
| | 120 | 10x16 | 0.08 | 0.19 | 600 | ERG1JM121G16OT |
| | 150 | 8x20 | 0.08 | 0.21 | 690 | ERG1JM151F20OT |
| | 180 | 10x20 | 0.08 | 0.145 | 890 | ERG1JM181G20OT |
| | 220 | 10x25 | 0.08 | 0.13 | 1050 | ERG1JM221G25OT |
| | 330 | 10x30 | 0.08 | 0.09 | 1300 | ERG1JM331G30OT |
| | 330 | 12.5x20 | 0.08 | 0.085 | 1290 | ERG1JM331W20OT |
| | 390 | 12.5x25 | 0.08 | 0.07 | 1720 | ERG1JM391W25OT |
| | 470 | 12.5x30 | 0.08 | 0.055 | 2090 | ERG1JM471W30OT |
| | 470 | 16x20 | 0.08 | 0.059 | 1770 | ERG1JM471L20OT |
| | 680 | 12.5x35 | 0.08 | 0.047 | 2270 | ERG1JM681W35OT |
| | 680 | 16x25 | 0.08 | 0.05 | 2160 | ERG1JM681L25OT |
| | 680 | 18x20 | 0.08 | 0.055 | 2290 | ERG1JM681M20OT |
| 820 | 12.5x40 | 0.08 | 0.042 | 2560 | ERG1JM821W40OT | |
| 820 | 16x30 | 0.08 | 0.043 | 2670 | ERG1JM821L30OT | |
| 820 | 18x25 | 0.08 | 0.043 | 2590 | ERG1JM821M25OT | |
| 1000 | 16x35 | 0.08 | 0.036 | 2770 | ERG1JM102L35OT | |
| 1200 | 16x40 | 0.08 | 0.03 | 2850 | ERG1JM122L40OT | |
| 1200 | 18x30 | 0.08 | 0.032 | 2950 | ERG1JM122M30OT | |
| 1500 | 18x35 | 0.08 | 0.03 | 3100 | ERG1JM152M35OT | |
| 1800 | 18x40 | 0.08 | 0.025 | 3210 | ERG1JM182M40OT | |

RV series

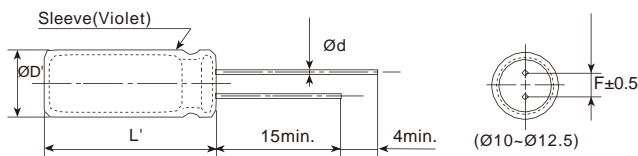
- High stability, high conductivity, high reliability
- Low impedance, small size
- Endurance +105°C 4,000~5,000 hours
- RoHS Compliant



SPECIFICATIONS

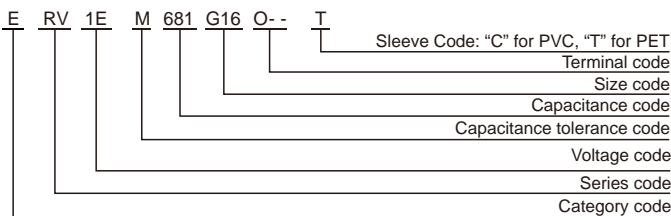
| Items | Characteristics | | | | | |
|--|--|---|------|------|------|------|
| Category Temperature Range | -55~+105°C | | | | | |
| Rated Voltage Range | 6.3~35 V _{dc} | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | | | | |
| Leakage Current | I ≤ 0.01CV or 3μA, whichever is greater. Where, I:Max.leakage current (μA),C:Nominal capacitance (μF),V: Rated voltage (V) (at 20°C after 2 minutes) | | | | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 6.3 | 10 | 16 | 25 | 35 |
| | tan δ (max.) | 0.22 | 0.19 | 0.16 | 0.14 | 0.12 |
| | When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20°C, 120Hz) | | | | | |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) | 6.3 | 10 | 16 | 25 | 35 |
| | Z(-55°C)/Z(+20°C) | 8 | 6 | 4 | 3 | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 20°C after DC voltage plus the rated ripple current is applied for a specified period of time (Ø10: 4,000h; Ø12.5: 5,000h) at 105°C. | | | | | |
| | Capacitance Change | ±20% of the initial value (6.3V, 10V: ±30%) | | | | |
| | D.F. (tan δ) | 200% of the initial specified value | | | | |
| | Leakage Current | The initial specified value | | | | |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 105°C without voltage applied. | | | | | |
| | Capacitance Change | ±20% of the initial value(6.3V, 10V: ±30%) | | | | |
| | D.F. (tan δ) | 200% of the initial specified value | | | | |
| | Leakage Current | 200% of the initial specified value | | | | |

DIMENSIONS[mm]



| | | |
|-----|------------|------|
| ØD | 10 | 12.5 |
| Ød | 0.6 | 0.6 |
| F | 5.0 | 5.0 |
| ØD' | ØD+0.5max. | |
| L' | L+2max. | |

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| Freq.(Hz) | 120 | 1k | 10k | 100k |
|----------------|------|------|------|------|
| Cap.<680 | 0.50 | 0.85 | 0.94 | 1.00 |
| 680 Cap.<2200 | 0.60 | 0.87 | 0.95 | 1.00 |
| 2200 Cap.<4700 | 0.75 | 0.90 | 0.95 | 1.00 |
| Cap. 4700 | 0.85 | 0.95 | 0.98 | 1.00 |

The endurance of capacitors is shortened with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

RV series

■ STANDARD RATINGS

| WV (V _{dc}) | Cap (μF) | Size DxL(mm) | tan | Impedance (max/20°C,100kHz) | Rated ripple current (mArms/105°C,100kHz) | Part Number |
|-----------------------|----------|--------------|------|-----------------------------|---|----------------|
| 6.3(0J) | 1500 | 10x12.5 | 0.22 | 0.063 | 960 | ERV0JM152G1BOT |
| | 1800 | 10x16 | 0.22 | 0.049 | 1240 | ERV0JM182G16OT |
| | 2700 | 10x20 | 0.24 | 0.035 | 1550 | ERV0JM272G20OT |
| | 3300 | 10x25 | 0.26 | 0.033 | 1740 | ERV0JM332G25OT |
| | 4700 | 12.5x20 | 0.28 | 0.029 | 1890 | ERV0JM472W20OT |
| | 6800 | 12.5x25 | 0.32 | 0.022 | 2350 | ERV0JM682W25OT |
| 10(1A) | 1000 | 10x12.5 | 0.19 | 0.063 | 960 | ERV1AM102G1BOT |
| | 1500 | 10x16 | 0.19 | 0.049 | 1240 | ERV1AM152G16OT |
| | 2200 | 10x20 | 0.21 | 0.035 | 1550 | ERV1AM222G20OT |
| | 2700 | 10x25 | 0.21 | 0.033 | 1740 | ERV1AM272G25OT |
| | 3300 | 12.5x20 | 0.23 | 0.029 | 1890 | ERV1AM332W20OT |
| | 4700 | 12.5x25 | 0.25 | 0.022 | 2350 | ERV1AM472W25OT |
| 16(1C) | 820 | 10x12.5 | 0.16 | 0.063 | 960 | ERV1CM821G1BOT |
| | 1000 | 10x16 | 0.16 | 0.049 | 1240 | ERV1CM102G16OT |
| | 1500 | 10x20 | 0.16 | 0.035 | 1550 | ERV1CM152G20OT |
| | 1800 | 10x25 | 0.16 | 0.033 | 1740 | ERV1CM182G25OT |
| | 2200 | 12.5x20 | 0.18 | 0.029 | 1890 | ERV1CM222W20OT |
| | 3300 | 12.5x25 | 0.20 | 0.022 | 2350 | ERV1CM332W25OT |
| 25(1E) | 470 | 10x12.5 | 0.14 | 0.063 | 960 | ERV1EM471G1BOT |
| | 680 | 10x16 | 0.14 | 0.049 | 1240 | ERV1EM681G16OT |
| | 1000 | 10x20 | 0.14 | 0.035 | 1550 | ERV1EM102G20OT |
| | 1200 | 10x25 | 0.14 | 0.033 | 1740 | ERV1EM122G25OT |
| | 1500 | 12.5x20 | 0.14 | 0.029 | 1890 | ERV1EM152W20OT |
| | 2200 | 12.5x25 | 0.16 | 0.022 | 2350 | ERV1EM222W25OT |
| 35(1V) | 330 | 10x12.5 | 0.12 | 0.063 | 960 | ERV1VM331G1BOT |
| | 470 | 10x16 | 0.12 | 0.049 | 1240 | ERV1VM471G16OT |
| | 680 | 10x20 | 0.12 | 0.035 | 1550 | ERV1VM681G20OT |
| | 820 | 10x25 | 0.12 | 0.033 | 1740 | ERV1VM821G25OT |
| | 1000 | 12.5x20 | 0.12 | 0.029 | 1890 | ERV1VM102W20OT |
| | 1500 | 12.5x25 | 0.12 | 0.022 | 2350 | ERV1VM152W25OT |

ML series

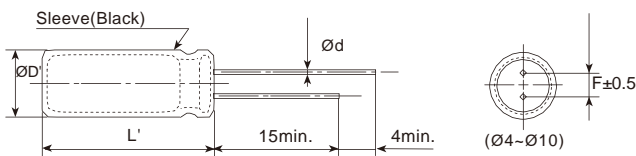
- Long life with 5mm to 9mm height.
- Endurance +105°C 3,000~5,000 hours
- RoHS Compliant



SPECIFICATIONS

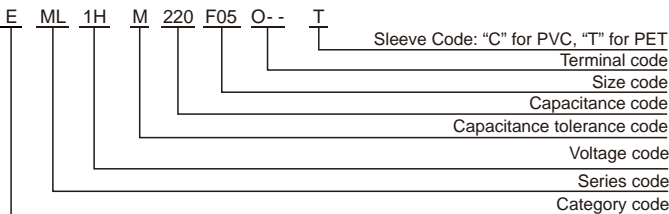
| Items | Characteristics |
|--|---|
| Category Temperature Range | -40~+105°C |
| Rated Voltage Range | 6.3~50 V _{dc} |
| Capacitance Tolerance | ±20%(M) (at 20°C,120Hz) |
| Leakage Current | I 0.01CV or 3μA, whichever is greater. Where, I:Max.leakage current (μA),C:Nominal capacitance (μF),V: Rated voltage (V) (at 20°C after 2 minutes) |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) 6.3 10 16 25 35 50 |
| | tan δ (max.) 0.40 0.35 0.30 0.25 0.20 0.20 |
| | When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20°C,120Hz) |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) 6.3 10 16 25 35 50 |
| | Z(-25°C)/Z(+20°C) 6 4 4 3 2 2 |
| | Z(-40°C)/Z(+20°C) 12 10 8 6 4 4 (at 120Hz) |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 20°C after DC voltage plus the rated ripple current is applied for a specified period of time at 105°C. |
| | Capacitance Change ±30% of the initial value |
| | D.F. (tan δ) 300% of the initial specified value |
| | Leakage Current The initial specified value |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 105°C without voltage applied. |
| | Capacitance Change ±30% of the initial value |
| | D.F. (tan δ) 300% of the initial specified value |
| | Leakage Current 200% of the initial specified value |

DIMENSIONS[mm]



| ØD | 4 | | 5 | | 6.3 | | 8 | | | 10×9 |
|-----|------------|-------|------|-----|------|-----|-----|-----|-----|------|
| | 6.3×5 | 6.3×7 | 8×5 | 8×7 | 8×9 | | | | | |
| Ød | 0.45 | 0.45 | 0.45 | 0.5 | 0.45 | 0.5 | 0.5 | 0.5 | 0.6 | |
| F | 1.5 | 2.0 | 2.5 | 2.5 | 3.5 | 3.5 | 3.5 | 5.0 | | |
| ØD' | ØD+0.5max. | | | | | | | | | |
| L' | L+2max. | | | | | | | | | |

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| Freq.(Hz) | 60(50) | 120 | 500 | 1k | 10k |
|-------------|--------|------|------|------|------|
| Cap.<2.2 | 0.50 | 1.00 | 1.20 | 1.30 | 1.50 |
| 2.2 Cap.<10 | 0.65 | 1.00 | 1.20 | 1.30 | 1.50 |
| 10 Cap.<100 | 0.80 | 1.00 | 1.20 | 1.30 | 1.50 |
| Cap. 100 | 0.80 | 1.00 | 1.10 | 1.15 | 1.20 |

The endurance of capacitors is shortened with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

ML series

■ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (mA _{rms} /105°C, 120Hz) | Part Number |
|----------|----------|--------------|------|--|----------------|
| 6.3(0J) | 27 | 4x5 | 0.40 | 25 | EML0JM270C05OT |
| | 47 | 4x7 | 0.40 | 47 | EML0JM470C07OT |
| | 56 | 5x5 | 0.40 | 50 | EML0JM560D05OT |
| | 82 | 5x7 | 0.40 | 75 | EML0JM820D07OT |
| | 120 | 6.3x5 | 0.40 | 80 | EML0JM121E05OT |
| | 180 | 6.3x7 | 0.40 | 110 | EML0JM181E07OT |
| | 220 | 8x5 | 0.40 | 125 | EML0JM221F05OT |
| | 270 | 8x7 | 0.40 | 165 | EML0JM271F07OT |
| | 470 | 8x7 | 0.40 | 190 | EML0JM471F07OT |
| | 560 | 8x9 | 0.40 | 230 | EML0JM561F09OT |
| 1000 | 10x9 | 0.40 | 480 | EML0JM102G09OT | |
| 10(1A) | 22 | 4x5 | 0.35 | 22 | EML1AM220C05OT |
| | 33 | 4x7 | 0.35 | 43 | EML1AM330C07OT |
| | 47 | 5x5 | 0.35 | 48 | EML1AM470D05OT |
| | 56 | 5x7 | 0.35 | 68 | EML1AM560D07OT |
| | 100 | 6.3x5 | 0.35 | 75 | EML1AM101E05OT |
| | 120 | 6.3x7 | 0.35 | 100 | EML1AM121E07OT |
| | 180 | 8x5 | 0.35 | 120 | EML1AM181F05OT |
| | 220 | 8x7 | 0.35 | 160 | EML1AM221F07OT |
| | 330 | 8x7 | 0.35 | 180 | EML1AM331F07OT |
| | 470 | 8x9 | 0.35 | 210 | EML1AM471F09OT |
| 680 | 10x9 | 0.35 | 470 | EML1AM681G09OT | |
| 16(1C) | 18 | 4x5 | 0.30 | 20 | EML1CM180C05OT |
| | 22 | 4x7 | 0.30 | 40 | EML1CM220C07OT |
| | 33 | 5x5 | 0.30 | 45 | EML1CM330D05OT |
| | 39 | 5x7 | 0.30 | 65 | EML1CM390D07OT |
| | 68 | 6.3x5 | 0.30 | 70 | EML1CM680E05OT |
| | 100 | 6.3x7 | 0.30 | 95 | EML1CM101E07OT |
| | 120 | 8x5 | 0.30 | 110 | EML1CM121F05OT |
| | 150 | 8x7 | 0.30 | 125 | EML1CM151F07OT |
| | 220 | 8x7 | 0.30 | 170 | EML1CM221F07OT |
| | 330 | 8x9 | 0.30 | 195 | EML1CM331F09OT |
| 470 | 10x9 | 0.30 | 460 | EML1CM471G09OT | |
| 25(1E) | 10 | 4x5 | 0.25 | 18 | EML1EM100C05OT |
| | 15 | 4x7 | 0.25 | 35 | EML1EM150C07OT |
| | 22 | 5x5 | 0.25 | 42 | EML1EM220D05OT |
| | 27 | 5x7 | 0.25 | 57 | EML1EM270D07OT |
| | 47 | 6.3x5 | 0.25 | 65 | EML1EM470E05OT |
| | 56 | 6.3x7 | 0.25 | 85 | EML1EM560E07OT |
| | 82 | 8x5 | 0.25 | 100 | EML1EM820F05OT |
| | 100 | 8x7 | 0.25 | 112 | EML1EM101F07OT |
| | 150 | 8x7 | 0.25 | 140 | EML1EM151F07OT |
| | 220 | 8x9 | 0.25 | 190 | EML1EM221F09OT |
| 330 | 10x9 | 0.25 | 450 | EML1EM331G09OT | |

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (mA _{rms} /105°C, 120Hz) | Part Number |
|----------|----------|--------------|------|--|----------------|
| 35(1V) | 6.8 | 4x5 | 0.20 | 17 | EML1VM6R8C05OT |
| | 10 | 4x7 | 0.20 | 28 | EML1VM100C07OT |
| | 12 | 5x5 | 0.20 | 34 | EML1VM120D05OT |
| | 18 | 5x7 | 0.20 | 48 | EML1VM180D07OT |
| | 27 | 6.3x5 | 0.20 | 58 | EML1VM270E05OT |
| | 39 | 6.3x7 | 0.20 | 76 | EML1VM390E07OT |
| | 47 | 8x5 | 0.20 | 80 | EML1VM470F05OT |
| | 56 | 8x7 | 0.20 | 105 | EML1VM560F07OT |
| | 100 | 8x7 | 0.20 | 125 | EML1VM101F07OT |
| | 150 | 8x9 | 0.20 | 180 | EML1VM151F09OT |
| | 220 | 10x9 | 0.20 | 360 | EML1VM221G09OT |
| | 50(1H) | 1 | 4x5 | 0.20 | 8 |
| 2.2 | | 4x5 | 0.20 | 11 | EML1HM2R2C05OT |
| 3.3 | | 4x5 | 0.20 | 14 | EML1HM3R3C05OT |
| 4.7 | | 4x7 | 0.20 | 23 | EML1HM4R7C07OT |
| 6.8 | | 5x5 | 0.20 | 25 | EML1HM6R8D05OT |
| 10 | | 5x7 | 0.20 | 30 | EML1HM100D07OT |
| 12 | | 6.3x5 | 0.20 | 37 | EML1HM120E05OT |
| 18 | | 6.3x7 | 0.20 | 50 | EML1HM180E07OT |
| 22 | | 8x5 | 0.20 | 62 | EML1HM220F05OT |
| 33 | | 8x7 | 0.20 | 75 | EML1HM330F07OT |
| 56 | | 8x7 | 0.20 | 115 | EML1HM560F07OT |
| 82 | | 8x9 | 0.20 | 160 | EML1HM820F09OT |
| 120 | | 10x9 | 0.20 | 315 | EML1HM121G09OT |

RM series

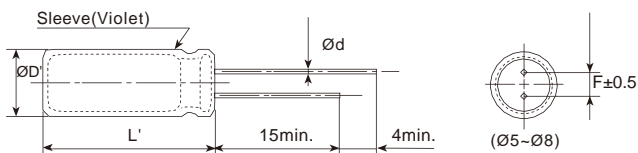
- Endurance +105°C 10,000 hours
- Miniaturized, long life
- RoHS Compliant



SPECIFICATIONS

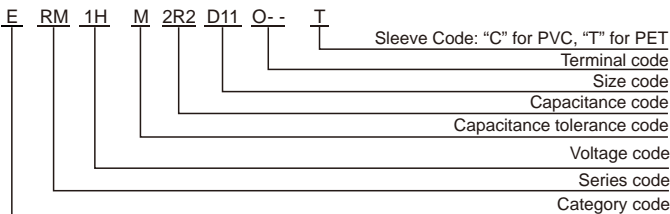
| Items | Characteristics | | | | | | | | |
|--|--|-------------------------------------|------|------|------|------|------|------|--|
| Category Temperature Range | -40~+105°C | | | | | | | | |
| Rated Voltage Range | 10~100 V _{dc} | | | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | | | | | | | |
| Leakage Current | I ≤ 0.01CV or 3μA, whichever is greater. Where, I: Max. leakage current (μA), C: Nominal capacitance (μF), V: Rated voltage (V) (at 20°C after 2 minutes) | | | | | | | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 10 | 16 | 25 | 35 | 50 | 63 | 100 | |
| | tan δ (max.) | 0.45 | 0.35 | 0.30 | 0.22 | 0.19 | 0.17 | 0.15 | |
| | When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20°C, 120Hz) | | | | | | | | |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) | 10 | 16 | 25 | 35 | 50 | 63 | 100 | |
| | Z(-25°C)/Z(+20°C) | 8 | 6 | 4 | 3 | | | | |
| | Z(-40°C)/Z(+20°C) | 13 | 10 | 8 | 7 | | | | |
| Endurance | The specifications listed below shall be met when the capacitors are restored to 20°C after DC voltage plus rated ripple current is applied for 10,000 hours at 105°C. | | | | | | | | |
| | Capacitance Change | ±25% of the initial value | | | | | | | |
| | D.F. (tan δ) | 300% of the initial specified value | | | | | | | |
| | Leakage Current | The initial specified value | | | | | | | |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after leaving them under no load at 105°C for 1,000 hours. | | | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | | |
| | D.F. (tan δ) | 200% of the initial specified value | | | | | | | |
| | Leakage Current | 200% of the initial specified value | | | | | | | |

DIMENSIONS[mm]



| | | | |
|-----|------------|-----|-----|
| ØD | 5 | 6.3 | 8 |
| Ød | 0.5 | 0.5 | 0.5 |
| F | 2.0 | 2.5 | 3.5 |
| ØD' | ØD+0.5max. | | |
| L' | L+1.5max. | | |

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| Freq.(Hz) | 120 | 1k | 10k | 100k |
|-------------|------|------|------|------|
| Cap. <22 | 0.42 | 0.60 | 0.80 | 1.00 |
| 22 Cap. <47 | 0.55 | 0.75 | 0.90 | 1.00 |
| Cap. 47 | 0.70 | 0.85 | 0.95 | 1.00 |

The endurance of capacitors is shortened with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

RM series

■ STANDARD RATINGS

| WV (V _{dc}) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (mA _{rms} /105°C,100kHz) | Part Number |
|-----------------------|----------|--------------|------|--|----------------|
| 10(1A) | 100 | 5x11 | 0.45 | 130 | ERM1AM101D11OT |
| | 220 | 6.3x11 | 0.45 | 210 | ERM1AM221E11OT |
| | 330 | 8x11 | 0.45 | 330 | ERM1AM331F11OT |
| 16(1C) | 47 | 5x11 | 0.35 | 130 | ERM1CM470D11OT |
| | 100 | 6.3x11 | 0.35 | 210 | ERM1CM101E11OT |
| | 220 | 8x11 | 0.35 | 330 | ERM1CM221F11OT |
| 25(1E) | 33 | 5x11 | 0.30 | 130 | ERM1EM330D11OT |
| | 47 | 5x11 | 0.30 | 130 | ERM1EM470D11OT |
| | 100 | 6.3x11 | 0.30 | 210 | ERM1EM101E11OT |
| 35(1V) | 33 | 5x11 | 0.22 | 130 | ERM1VM330D11OT |
| | 47 | 6.3x11 | 0.22 | 210 | ERM1VM470E11OT |
| | 100 | 8x11 | 0.22 | 330 | ERM1VM101F11OT |
| 50(1H) | 0.47 | 5x11 | 0.19 | 12 | ERM1HMR47D11OT |
| | 1 | 5x11 | 0.19 | 25 | ERM1HM010D11OT |
| | 2.2 | 5x11 | 0.19 | 35 | ERM1HM2R2D11OT |
| | 3.3 | 5x11 | 0.19 | 70 | ERM1HM3R3D11OT |
| | 4.7 | 5x11 | 0.19 | 80 | ERM1HM4R7D11OT |
| | 10 | 5x11 | 0.19 | 90 | ERM1HM100D11OT |
| | 22 | 5x12 | 0.19 | 110 | ERM1HM220D12OT |
| | 33 | 6.3x11 | 0.19 | 190 | ERM1HM330E11OT |
| | 47 | 6.3x11 | 0.19 | 190 | ERM1HM470E11OT |
| 100 | 8x12 | 0.19 | 270 | ERM1HM101F12OT | |
| 63(1J) | 10 | 5x11 | 0.17 | 80 | ERM1JM100D11OT |
| | 22 | 6.3x11 | 0.17 | 170 | ERM1JM220E11OT |
| | 33 | 6.3x12 | 0.17 | 170 | ERM1JM330E12OT |
| | 47 | 8x12 | 0.17 | 240 | ERM1JM470F12OT |
| 100(1K) | 0.47 | 5x11 | 0.15 | 20 | ERM1KMR47D11OT |
| | 1 | 5x11 | 0.15 | 40 | ERM1KM010D11OT |
| | 2.2 | 5x11 | 0.15 | 50 | ERM1KM2R2D11OT |
| | 3.3 | 5x11 | 0.15 | 60 | ERM1KM3R3D11OT |
| | 4.7 | 5x11 | 0.15 | 70 | ERM1KM4R7D11OT |
| | 10 | 6.3x12 | 0.15 | 150 | ERM1KM100E12OT |
| | 22 | 8x12 | 0.15 | 230 | ERM1KM220F12OT |

NB series

- High reliability, withstand high temperature
- Endurance +130°C 2,000~5,000 hours
- RoHS Compliant

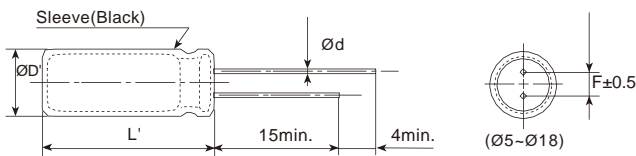
Upgrade



SPECIFICATIONS

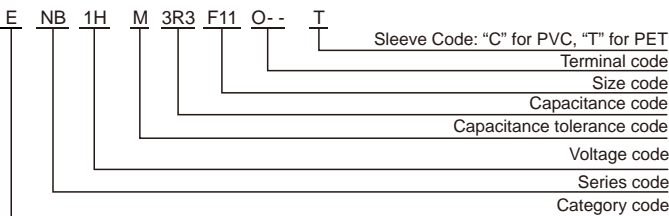
| Items | Characteristics | | | | | | | | | | | | | | | | | | | | |
|--|--|-------------------------------------|------|------|------|------|------|------|------|--|------------------|-----------|-------------------|----------|-------|------|-------|-------|-------|---------|-------|
| Category Temperature Range | -40~+130°C | | | | | | | | | | | | | | | | | | | | |
| Rated Voltage Range | 10~120 V _{dc} | | | | | | | | | | | | | | | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | | | | | | | | | | | | | | | | | | | |
| Leakage Current | I ≤ 0.01CV or 3μA, whichever is greater. Where, I:Max.leakage current (μA),C:Nominal capacitance (μF),V: Rated voltage (V) (at 20°C after 2 minutes) | | | | | | | | | | | | | | | | | | | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 10 | 16 | 25 | 35 | 50 | 63 | 80 | 100 | 120 | (at 20°C, 120Hz) | | | | | | | | | | |
| | tan δ (max.) | 0.24 | 0.20 | 0.18 | 0.16 | 0.14 | 0.12 | 0.12 | 0.10 | 0.12 | | | | | | | | | | | |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) | 10 | 16 | 25 | 35 | 50 | 63 | 80 | 100 | 120 | (at 120Hz) | | | | | | | | | | |
| | Z(-25°C)/Z(+20°C) | 3 | | | 2 | | | | 3 | | | | | | | | | | | | |
| | Z(-40°C)/Z(+20°C) | 6 | 4 | 3 | | | | 6 | | | | | | | | | | | | | |
| Endurance | The specifications listed below shall be met when the capacitors are restored to 20°C after DC voltage plus rated ripple current is applied for a specified period of time at 130°C. | | | | | | | | | | | | | | | | | | | | |
| | Capacitance Change | ±30% of the initial value | | | | | | | | <table border="1" style="font-size: small;"> <tr> <th>Dia. (mm)</th> <th>Load life (hours)</th> </tr> <tr> <td>ØD=5&6.3</td> <td>2,000</td> </tr> <tr> <td>ØD=8</td> <td>3,000</td> </tr> <tr> <td>ØD=10</td> <td>4,000</td> </tr> <tr> <td>ØD 12.5</td> <td>5,000</td> </tr> </table> | | Dia. (mm) | Load life (hours) | ØD=5&6.3 | 2,000 | ØD=8 | 3,000 | ØD=10 | 4,000 | ØD 12.5 | 5,000 |
| | Dia. (mm) | Load life (hours) | | | | | | | | | | | | | | | | | | | |
| | ØD=5&6.3 | 2,000 | | | | | | | | | | | | | | | | | | | |
| | ØD=8 | 3,000 | | | | | | | | | | | | | | | | | | | |
| ØD=10 | 4,000 | | | | | | | | | | | | | | | | | | | | |
| ØD 12.5 | 5,000 | | | | | | | | | | | | | | | | | | | | |
| D.F. (tan δ) | 300% of the initial specified value | | | | | | | | | | | | | | | | | | | | |
| Leakage Current | The initial specified value | | | | | | | | | | | | | | | | | | | | |
| | The following specifications shall be satisfied when the capacitors are restored to 20°C after leaving them under no load at 130°C for 1,000 hours. | | | | | | | | | | | | | | | | | | | | |
| Shelf Life | Capacitance Change | ±30% of the initial value | | | | | | | | | | | | | | | | | | | |
| | D.F. (tan δ) | 300% of the initial specified value | | | | | | | | | | | | | | | | | | | |
| | Leakage Current | 500% of the initial specified value | | | | | | | | | | | | | | | | | | | |

DIMENSIONS[mm]



| ØD | 5 | 6.3 | 8 | 10 | 12.5 | 16 | 18 |
|-----|------------|-----|-----|-----|------|-----|-----|
| Ød | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.8 | 0.8 |
| F | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 |
| ØD' | ØD+0.5max. | | | | | | |
| L' | L+2max. | | | | | | |

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| Cap.(μF) \ Freq.(Hz) | 50/60 | 120 | 1k | 10k | 100k |
|----------------------|-------|------|------|------|------|
| Cap.<10 | 0.35 | 0.42 | 0.60 | 0.80 | 1.00 |
| 10 Cap.<47 | 0.45 | 0.55 | 0.75 | 0.90 | 1.00 |
| 47 Cap.<470 | 0.60 | 0.70 | 0.85 | 0.95 | 1.00 |
| 470 Cap.<2200 | 0.65 | 0.75 | 0.90 | 0.98 | 1.00 |
| Cap. 2200 | 0.75 | 0.80 | 0.95 | 1.00 | 1.00 |

The endurance of capacitors is shortened with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

Radial Type

NB series

■ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Size DxL(mm) | Rated ripple current (mA rms/130°C, 100kHz) | Part Number |
|----------|----------|--------------|---|----------------|
| 10(1A) | 330 | 6.3x12 | 180 | ENB1AM331E12OT |
| | | 8x11 | 360 | ENB1AM331F11OT |
| | 470 | 8x12 | 360 | ENB1AM471F12OT |
| | | 10x13 | 620 | ENB1AM471G13OT |
| | 680 | 8x12 | 400 | ENB1AM681F12OT |
| | | 10x13 | 620 | ENB1AM681G13OT |
| | 1000 | 10x16 | 660 | ENB1AM102G16OT |
| | | 10x20 | 960 | ENB1AM102G20OT |
| | 2200 | 12.5x25 | 1430 | ENB1AM222W25OT |
| 3300 | 16x25 | 1900 | ENB1AM332L25OT | |
| 4700 | 16x30 | 2300 | ENB1AM472L30OT | |
| 16(1C) | 100 | 5x11 | 90 | ENB1CM101D11OT |
| | 220 | 6.3x11 | 125 | ENB1CM221E11OT |
| | 330 | 8x12 | 360 | ENB1CM331F12OT |
| | | 8x12 | 360 | ENB1CM471G12OT |
| | 470 | 10x13 | 620 | ENB1CM471G13OT |
| | | 10x20 | 960 | ENB1CM102G20OT |
| | 2200 | 10x25 | 980 | ENB1CM222G25OT |
| | | 12.5x25 | 1430 | ENB1CM222W25OT |
| | 3300 | 16x30 | 2300 | ENB1CM332L30OT |
| 4700 | 16x35 | 2550 | ENB1CM472L35OT | |
| 25(1E) | 220 | 8x12 | 360 | ENB1EM221F12OT |
| | | 8x12 | 360 | ENB1EM331F12OT |
| | 330 | 10x13 | 620 | ENB1EM331G13OT |
| | | 8x16 | 610 | ENB1EM471F16OT |
| | 470 | 10x16 | 800 | ENB1EM471G16OT |
| | | 10x20 | 960 | ENB1EM102G20OT |
| | 1000 | 12.5x20 | 1100 | ENB1EM102W20OT |
| 2200 | 16x30 | 2300 | ENB1EM222L30OT | |
| 3300 | 16x35 | 2550 | ENB1EM332L35OT | |
| 35(1V) | 100 | 6.3x12 | 210 | ENB1VM101E12OT |
| | | 8x11 | 360 | ENB1VM101F11OT |
| | 220 | 8x12 | 375 | ENB1VM221F12OT |
| | | 10x13 | 620 | ENB1VM221G13OT |
| | 330 | 8x16 | 550 | ENB1VM331F16OT |
| | | 10x16 | 800 | ENB1VM331G16OT |
| | 470 | 10x16 | 705 | ENB1VM471G16OT |
| | | 10x20 | 960 | ENB1VM471G20OT |
| | 1000 | 12.5x20 | 1180 | ENB1VM102W20OT |
| 2200 | 12.5x25 | 1430 | ENB1VM102W25OT | |
| 3300 | 16x35 | 2550 | ENB1VM222L35OT | |
| 3300 | 18x35 | 2800 | ENB1VM332M35OT | |
| 50(1H) | 1 | 5x11 | 26 | ENB1HM010D11OT |
| | | 5x11 | 35 | ENB1HM2R2D11OT |
| | 2.2 | 8x11 | 50 | ENB1HM2R2F11OT |
| | | 5x11 | 40 | ENB1HM3R3D11OT |
| | 3.3 | 8x11 | 70 | ENB1HM3R3F11OT |
| | | 5x11 | 42 | ENB1HM4R7D11OT |
| | 4.7 | 8x11 | 100 | ENB1HM4R7F11OT |
| | | 5x11 | 90 | ENB1HM100D11OT |
| | 10 | 8x11 | 200 | ENB1HM100F11OT |
| | | 5x12 | 110 | ENB1HM220D12OT |
| | 22 | 8x11 | 260 | ENB1HM220F11OT |
| | | 6.3x11 | 150 | ENB1HM330E11OT |
| | 33 | 8x11 | 300 | ENB1HM330F11OT |
| | | 6.3x11 | 180 | ENB1HM470E11OT |
| | 47 | 8x11 | 300 | ENB1HM470F11OT |
| | | 8x12 | 340 | ENB1HM101F12OT |
| | 100 | 10x13 | 520 | ENB1HM101G13OT |
| | | 8x16 | 520 | ENB1HM221F16OT |
| | 220 | 10x20 | 890 | ENB1HM221G20OT |
| | | 10x16 | 530 | ENB1HM331G16OT |
| | 330 | 12.5x20 | 1000 | ENB1HM331W20OT |
| 10x20 | | 950 | ENB1HM471G20OT | |

| WV (Vdc) | Cap (μF) | Size DxL(mm) | Rated ripple current (mA rms/130°C, 100kHz) | Part Number |
|----------|----------|--------------|---|----------------|
| 50(1H) | 470 | 12.5x25 | 1200 | ENB1HM471W25OT |
| | | 12.5x20 | 1060 | ENB1HM681W20OT |
| | 680 | 16x20 | 1250 | ENB1HM681L20OT |
| | | 12.5x25 | 1500 | ENB1HM102W25OT |
| | 1000 | 16x30 | 2180 | ENB1HM102L30OT |
| 2200 | 18x40 | 2800 | ENB1HM222M40OT | |
| 63(1J) | 33 | 6.3x12 | 150 | ENB1JM330E12OT |
| | | 8x11 | 250 | ENB1JM330F11OT |
| | 47 | 8x12 | 250 | ENB1JM470F12OT |
| | | 10x13 | 400 | ENB1JM470G13OT |
| | 100 | 8x12 | 340 | ENB1JM101F12OT |
| | | 10x16 | 450 | ENB1JM101G16OT |
| | 220 | 10x16 | 450 | ENB1JM221G16OT |
| | | 12.5x20 | 820 | ENB1JM221W20OT |
| | 330 | 12.5x20 | 850 | ENB1JM331W20OT |
| 12.5x25 | | 1000 | ENB1JM331W25OT | |
| 470 | 13x25 | 1000 | ENB1JM471K25OT | |
| | 16x25 | 1500 | ENB1JM471L25OT | |
| 1000 | 16x30 | 1850 | ENB1JM102L30OT | |
| 80(1B) | 4.7 | 5x11 | 26 | ENB1BM4R7D11OT |
| | 10 | 5x11 | 68 | ENB1BM100D11OT |
| | 22 | 6.3x11 | 105 | ENB1BM220E11OT |
| | 33 | 6.3x12 | 135 | ENB1BM330E12OT |
| | | 8x12 | 250 | ENB1BM330F12OT |
| | 100 | 8x16 | 400 | ENB1BM101F16OT |
| | 220 | 10x20 | 750 | ENB1BM221G20OT |
| | 330 | 12.5x20 | 850 | ENB1BM331W20OT |
| | 470 | 16x20 | 1200 | ENB1BM471L20OT |
| 100(1K) | 4.7 | 5x11 | 40 | ENB1KM4R7D11OT |
| | | 8x11 | 100 | ENB1KM4R7F11OT |
| | 10 | 6.3x11 | 130 | ENB1KM100E11OT |
| | | 8x11 | 200 | ENB1KM100F11OT |
| | 22 | 6.3x12 | 150 | ENB1KM220E12OT |
| | | 8x12 | 220 | ENB1KM220F12OT |
| | 33 | 8x12 | 220 | ENB1KM330F12OT |
| | | 10x13 | 260 | ENB1KM330G13OT |
| | 47 | 8x16 | 240 | ENB1KM470F16OT |
| | | 10x16 | 330 | ENB1KM470G16OT |
| 100 | 10x16 | 350 | ENB1KM101G16OT | |
| | 12.5x20 | 670 | ENB1KM101W20OT | |
| 220 | 13x20 | 720 | ENB1KM221K20OT | |
| | 16x25 | 1100 | ENB1KM221L25OT | |
| 330 | 16x25 | 1300 | ENB1KM331L25OT | |
| | 16x30 | 1300 | ENB1KM331L30OT | |
| 470 | 18x30 | 1600 | ENB1KM471M30OT | |
| 120(2B) | 22 | 8x12 | 115 | ENB2BM220F12OT |
| | | 8x16 | 200 | ENB2BM330F16OT |
| | 33 | 10x13 | 200 | ENB2BM330G13OT |
| | | 8x20 | 240 | ENB2BM470F20OT |
| | 47 | 10x16 | 240 | ENB2BM470G16OT |
| | | 10x16 | 255 | ENB2BM560G16OT |
| | 68 | 10x16 | 255 | ENB2BM680G16OT |
| | | 10x20 | 270 | ENB2BM820G20OT |
| | 100 | 10x25 | 340 | ENB2BM101G25OT |
| | | 12.5x20 | 465 | ENB2BM121W20OT |
| | 150 | 12.5x25 | 515 | ENB2BM151W25OT |
| | | 13x30 | 630 | ENB2BM221K30OT |
| | 220 | 16x20 | 630 | ENB2BM221L20OT |
| | | 16x25 | 720 | ENB2BM271L25OT |
| | 270 | 18x20 | 720 | ENB2BM271M20OT |
| | | 16x30 | 775 | ENB2BM331L30OT |
| | 330 | 18x25 | 775 | ENB2BM331M25OT |
| 16x40 | | 865 | ENB2BM471L40OT | |
| 470 | 18x30 | 865 | ENB2BM471M30OT | |

RD series

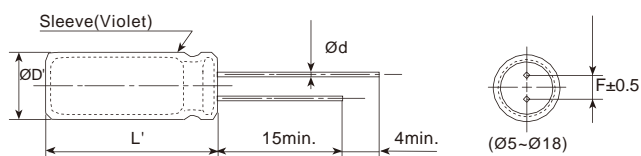
- Endurance +105°C 2,000~5,000 hours
- High frequency and low impedance; moisture content: under 40%
- RoHS Compliant



SPECIFICATIONS

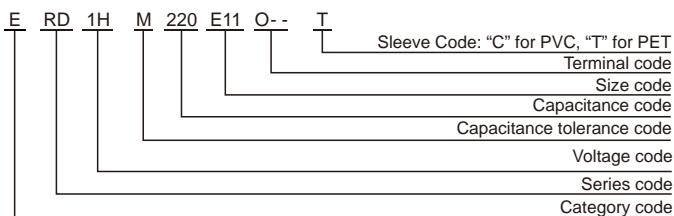
| Items | Characteristics | | | | | | | | |
|---|--|-----------|-------------------|--------|-------|------|-------|-------|-------|
| Category Temperature Range | -40~+105°C(6.3~100 V _{dc}) | | | | | | | | |
| Rated Voltage Range | 6.3~100 V _{dc} | | | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C,120Hz) | | | | | | | | |
| Leakage Current | I ≤ 0.01CV or 3μA, whichever is greater. Where, I:Max.leakage current (μA),C:Nominal capacitance (μF),V: Rated voltage (V) (at 20°C after 2 minutes) | | | | | | | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) 6.3 10 16 25 35 50 63 100 | | | | | | | | |
| | tan δ (max.) 0.22 0.19 0.16 0.14 0.12 0.10 0.09 0.08 | | | | | | | | |
| When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20°C,120Hz) | | | | | | | | | |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) 6.3 10 16 25 35 50 63 100 | | | | | | | | |
| | Z(-25°C)/Z(+20°C) 4 3 2 2 2 2 | | | | | | | | |
| | Z(-40°C)/Z(+20°C) 8 6 4 3 3 3 (at 120Hz) | | | | | | | | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 20°C after DC voltage plus the rated ripple current is applied for a specified period of time at 105 °C. | | | | | | | | |
| | Capacitance Change ±25% of the initial value | | | | | | | | |
| | D.F. (tan δ) 200% of the initial specified value | | | | | | | | |
| | Leakage Current The initial specified value | | | | | | | | |
| <table border="1"> <thead> <tr> <th>Dia. (mm)</th> <th>Load life (hours)</th> </tr> </thead> <tbody> <tr> <td>ØD 6.3</td> <td>2,000</td> </tr> <tr> <td>ØD=8</td> <td>3,000</td> </tr> <tr> <td>ØD 10</td> <td>5,000</td> </tr> </tbody> </table> | | Dia. (mm) | Load life (hours) | ØD 6.3 | 2,000 | ØD=8 | 3,000 | ØD 10 | 5,000 |
| Dia. (mm) | Load life (hours) | | | | | | | | |
| ØD 6.3 | 2,000 | | | | | | | | |
| ØD=8 | 3,000 | | | | | | | | |
| ØD 10 | 5,000 | | | | | | | | |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 105°C without voltage applied. | | | | | | | | |
| | Capacitance Change ±25% of the initial value | | | | | | | | |
| | D.F. (tan δ) 200% of the initial specified value | | | | | | | | |
| | Leakage Current 200% of the initial specified value | | | | | | | | |

DIMENSIONS[mm]



| ØD | 5 | 6.3 | 8 | 10 | 12.5 | 16 | 18 |
|-----|------------|-----|-----|-----|------|-----|-----|
| Ød | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.8 | 0.8 |
| F | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 |
| ØD' | ØD+0.5max. | | | | | | |
| L' | L+2max. | | | | | | |

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| Cap.(μF) \ Freq.(Hz) | 120 | 1k | 10k | 100k |
|----------------------|------|------|------|------|
| Cap.<220 | 0.40 | 0.75 | 0.90 | 1.00 |
| 220 Cap.<680 | 0.50 | 0.85 | 0.94 | 1.00 |
| 680 Cap.<2200 | 0.60 | 0.87 | 0.95 | 1.00 |
| 2200 Cap.<4700 | 0.75 | 0.90 | 0.95 | 1.00 |
| Cap. 4700 | 0.85 | 0.95 | 0.98 | 1.00 |

The endurance of capacitors is shortened with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

RD series

■ STANDARD RATINGS

| WV (V _{dc}) | Cap (μF) | Size D×L(mm) | tan | Impedance (max/20°C, 100kHz) | Rated ripple current (mArms/105°C, 100kHz) | Part Number |
|-----------------------|----------|--------------|-------|------------------------------|--|----------------|
| 6.3(0J) | 100 | 5×11 | 0.22 | 1.00 | 170 | ERD0JM101D11OT |
| | 120 | 5×11 | 0.22 | 0.92 | 175 | ERD0JM121D11OT |
| | 150 | 6.3×11 | 0.22 | 0.81 | 220 | ERD0JM151E11OT |
| | 180 | 6.3×11 | 0.22 | 0.76 | 210 | ERD0JM181E11OT |
| | 220 | 6.3×11 | 0.22 | 0.65 | 310 | ERD0JM221E11OT |
| | 270 | 6.3×11 | 0.22 | 0.54 | 320 | ERD0JM271E11OT |
| | 330 | 8×11 | 0.22 | 0.42 | 390 | ERD0JM331F11OT |
| | 470 | 8×11 | 0.22 | 0.25 | 450 | ERD0JM471F11OT |
| | 560 | 8×11 | 0.22 | 0.23 | 490 | ERD0JM561F11OT |
| | 680 | 8×11 | 0.22 | 0.21 | 520 | ERD0JM681F11OT |
| | 820 | 8×16 | 0.22 | 0.20 | 620 | ERD0JM821F16OT |
| | 1000 | 10×12.5 | 0.22 | 0.17 | 750 | ERD0JM102G1BOT |
| | 1200 | 10×16 | 0.22 | 0.16 | 860 | ERD0JM122G16OT |
| | 1500 | 10×16 | 0.22 | 0.14 | 1100 | ERD0JM152G16OT |
| | 1800 | 10×20 | 0.22 | 0.11 | 1250 | ERD0JM182G20OT |
| | 2200 | 10×25 | 0.24 | 0.095 | 1470 | ERD0JM222G25OT |
| | 2700 | 12.5×20 | 0.24 | 0.075 | 1500 | ERD0JM272W20OT |
| | 3300 | 12.5×20 | 0.26 | 0.036 | 1650 | ERD0JM332W20OT |
| | 4700 | 12.5×30 | 0.28 | 0.036 | 2100 | ERD0JM472W30OT |
| | 5600 | 12.5×30 | 0.30 | 0.034 | 2340 | ERD0JM562W30OT |
| 6800 | 16×25 | 0.32 | 0.032 | 2450 | ERD0JM682L25OT | |
| 8200 | 16×30 | 0.36 | 0.027 | 2650 | ERD0JM822L30OT | |
| 10000 | 16×35 | 0.40 | 0.024 | 2700 | ERD0JM103L35OT | |
| 15000 | 18×35 | 0.50 | 0.023 | 2950 | ERD0JM153M35OT | |
| 10(1A) | 22 | 5×11 | 0.19 | 2.70 | 98 | ERD1AM220D11OT |
| | 33 | 5×11 | 0.19 | 2.60 | 100 | ERD1AM330D11OT |
| | 47 | 5×11 | 0.19 | 1.34 | 150 | ERD1AM470D11OT |
| | 56 | 5×11 | 0.19 | 1.23 | 160 | ERD1AM560D11OT |
| | 68 | 5×11 | 0.19 | 1.05 | 170 | ERD1AM680D11OT |
| | 100 | 5×11 | 0.19 | 0.80 | 210 | ERD1AM101D11OT |
| | 120 | 6.3×11 | 0.19 | 0.75 | 250 | ERD1AM121E11OT |
| | 150 | 6.3×11 | 0.19 | 0.61 | 290 | ERD1AM151E11OT |
| | 180 | 6.3×11 | 0.19 | 0.46 | 320 | ERD1AM181E11OT |
| | 220 | 6.3×11 | 0.19 | 0.35 | 340 | ERD1AM221E11OT |
| | 270 | 8×11 | 0.19 | 0.30 | 400 | ERD1AM271F11OT |
| | 330 | 8×11 | 0.19 | 0.27 | 460 | ERD1AM331F11OT |
| | 470 | 8×11 | 0.19 | 0.25 | 580 | ERD1AM471F11OT |
| | 560 | 10×12.5 | 0.19 | 0.16 | 635 | ERD1AM561G1BOT |
| | 680 | 10×12.5 | 0.19 | 0.11 | 765 | ERD1AM681G1BOT |
| | 820 | 10×16 | 0.19 | 0.10 | 890 | ERD1AM821G16OT |
| | 1000 | 10×16 | 0.19 | 0.076 | 1040 | ERD1AM102G16OT |
| | 1200 | 10×16 | 0.19 | 0.067 | 1200 | ERD1AM122G16OT |
| | 1500 | 10×20 | 0.19 | 0.062 | 1400 | ERD1AM152G20OT |
| | 1800 | 10×25 | 0.19 | 0.058 | 1550 | ERD1AM182G25OT |
| 2200 | 12.5×20 | 0.21 | 0.041 | 1750 | ERD1AM222W20OT | |
| 2700 | 12.5×20 | 0.21 | 0.035 | 1900 | ERD1AM272W20OT | |
| 3300 | 12.5×25 | 0.23 | 0.031 | 2000 | ERD1AM332W25OT | |
| 4700 | 16×25 | 0.25 | 0.030 | 2100 | ERD1AM472L25OT | |
| 5600 | 16×25 | 0.27 | 0.028 | 2290 | ERD1AM562L25OT | |
| 6800 | 16×30 | 0.29 | 0.026 | 2650 | ERD1AM682L30OT | |
| 8200 | 16×35 | 0.33 | 0.026 | 2770 | ERD1AM822L35OT | |
| 10000 | 18×35 | 0.37 | 0.024 | 2580 | ERD1AM103M35OT | |
| 16(1C) | 10 | 5×11 | 0.16 | 4.7 | 74 | ERD1CM100D11OT |
| | 22 | 5×11 | 0.16 | 2.6 | 100 | ERD1CM220D11OT |
| | 33 | 5×11 | 0.16 | 2.0 | 114 | ERD1CM330D11OT |
| | 47 | 5×11 | 0.16 | 1.1 | 155 | ERD1CM470D11OT |

| WV (V _{dc}) | Cap (μF) | Size D×L(mm) | tan | Impedance (max/20°C, 100kHz) | Rated ripple current (mArms/105°C, 100kHz) | Part Number |
|-----------------------|----------|--------------|-------|------------------------------|--|----------------|
| 16(1C) | 56 | 5×11 | 0.16 | 0.82 | 180 | ERD1CM560D11OT |
| | 68 | 5×11 | 0.16 | 0.69 | 195 | ERD1CM680D11OT |
| | 100 | 6.3×11 | 0.16 | 0.50 | 265 | ERD1CM101E11OT |
| | 120 | 6.3×11 | 0.16 | 0.47 | 270 | ERD1CM121E11OT |
| | 150 | 6.3×11 | 0.16 | 0.41 | 290 | ERD1CM151E11OT |
| | 180 | 8×11 | 0.16 | 0.34 | 370 | ERD1CM181F11OT |
| | 220 | 8×11 | 0.16 | 0.25 | 480 | ERD1CM221F11OT |
| | 270 | 8×11 | 0.16 | 0.21 | 520 | ERD1CM271F11OT |
| | 330 | 8×12 | 0.16 | 0.156 | 290 | ERD1CM331F12OT |
| | 470 | 10×12.5 | 0.16 | 0.124 | 750 | ERD1CM471G1BOT |
| | 560 | 10×12.5 | 0.16 | 0.105 | 785 | ERD1CM561G1BOT |
| | 680 | 10×16 | 0.16 | 0.092 | 1100 | ERD1CM681G16OT |
| | 820 | 10×16 | 0.16 | 0.078 | 1140 | ERD1CM821G16OT |
| | 1000 | 10×20 | 0.16 | 0.065 | 1350 | ERD1CM102G20OT |
| | 1200 | 10×25 | 0.16 | 0.061 | 1500 | ERD1CM122G25OT |
| | 1500 | 12.5×20 | 0.16 | 0.060 | 1380 | ERD1CM152W20OT |
| | 1800 | 12.5×20 | 0.16 | 0.047 | 1800 | ERD1CM182W20OT |
| | 2200 | 12.5×25 | 0.18 | 0.038 | 2000 | ERD1CM222W25OT |
| | 2700 | 12.5×25 | 0.18 | 0.033 | 2450 | ERD1CM272W25OT |
| | 3300 | 16×25 | 0.20 | 0.030 | 2790 | ERD1CM332L25OT |
| 4700 | 16×30 | 0.22 | 0.026 | 2880 | ERD1CM472L30OT | |
| 5600 | 16×35 | 0.24 | 0.025 | 2990 | ERD1CM562L35OT | |
| 6800 | 18×35 | 0.26 | 0.024 | 3200 | ERD1CM682M35OT | |
| 8200 | 18×35 | 0.30 | 0.024 | 3320 | ERD1CM822M35OT | |
| 10000 | 18×40 | 0.34 | 0.024 | 3550 | ERD1CM103M40OT | |
| 25(1E) | 4.7 | 5×11 | 0.14 | 3.95 | 68 | ERD1EM4R7D11OT |
| | 5.6 | 5×11 | 0.14 | 3.25 | 75 | ERD1EM5R6D11OT |
| | 6.8 | 5×11 | 0.14 | 2.98 | 80 | ERD1EM6R8D11OT |
| | 10 | 5×11 | 0.14 | 2.56 | 85 | ERD1EM100D11OT |
| | 22 | 5×11 | 0.14 | 1.95 | 125 | ERD1EM220D11OT |
| | 33 | 5×11 | 0.14 | 1.42 | 155 | ERD1EM330D11OT |
| | 47 | 6.3×11 | 0.14 | 1.00 | 220 | ERD1EM470E11OT |
| | 56 | 6.3×11 | 0.14 | 0.79 | 250 | ERD1EM560E11OT |
| | 68 | 6.3×11 | 0.14 | 0.65 | 280 | ERD1EM680E11OT |
| | 100 | 6.3×11 | 0.14 | 0.35 | 370 | ERD1EM101E11OT |
| | 120 | 6.3×11 | 0.14 | 0.33 | 380 | ERD1EM121E11OT |
| | 150 | 8×11 | 0.14 | 0.31 | 410 | ERD1EM151F11OT |
| | 180 | 8×11 | 0.14 | 0.25 | 455 | ERD1EM181F11OT |
| | 220 | 8×11 | 0.14 | 0.15 | 550 | ERD1EM221F11OT |
| | 270 | 10×12.5 | 0.14 | 0.125 | 720 | ERD1EM271G1BOT |
| | 330 | 10×12.5 | 0.14 | 0.114 | 820 | ERD1EM331G1BOT |
| | 470 | 10×16 | 0.14 | 0.076 | 1200 | ERD1EM471G16OT |
| | 560 | 10×16 | 0.14 | 0.072 | 1250 | ERD1EM561G16OT |
| | 680 | 10×20 | 0.14 | 0.065 | 1320 | ERD1EM681G20OT |
| | 820 | 10×25 | 0.14 | 0.052 | 1530 | ERD1EM821G25OT |
| 1000 | 12.5×20 | 0.14 | 0.045 | 1650 | ERD1EM102W20OT | |
| 1200 | 12.5×25 | 0.14 | 0.041 | 1980 | ERD1EM122W25OT | |
| 1500 | 12.5×25 | 0.14 | 0.038 | 2210 | ERD1EM152W25OT | |
| 1800 | 16×25 | 0.14 | 0.032 | 2510 | ERD1EM182L25OT | |
| 2200 | 16×25 | 0.16 | 0.036 | 2650 | ERD1EM222L25OT | |
| 2700 | 16×25 | 0.16 | 0.031 | 2820 | ERD1EM272L25OT | |
| 3300 | 16×30 | 0.18 | 0.026 | 3240 | ERD1EM332L30OT | |
| 4700 | 16×35 | 0.20 | 0.024 | 3650 | ERD1EM472L35OT | |
| 5600 | 18×35 | 0.22 | 0.024 | 3720 | ERD1EM562M35OT | |
| 6800 | 18×40 | 0.24 | 0.024 | 3850 | ERD1EM682M40OT | |

RD series

■ STANDARD RATINGS

| WV (V _{dc}) | Cap (μF) | Size DxL(mm) | tan | Impedance (max/20°C, 100kHz) | Rated ripple current (mA _{RMS} /105°C, 100kHz) | Part Number |
|-----------------------|----------|--------------|-------|------------------------------|---|----------------|
| 35(1V) | 4.7 | 5x11 | 0.12 | 3.65 | 85 | ERD1VM4R7D11OT |
| | 5.6 | 5x11 | 0.12 | 3.09 | 92 | ERD1VM5R6D11OT |
| | 6.8 | 5x11 | 0.12 | 2.82 | 97 | ERD1VM6R8D11OT |
| | 10 | 5x11 | 0.12 | 2.37 | 105 | ERD1VM100D11OT |
| | 22 | 5x11 | 0.12 | 1.50 | 150 | ERD1VM220D11OT |
| | 33 | 5x11 | 0.12 | 1.21 | 180 | ERD1VM330D11OT |
| | 47 | 6.3x11 | 0.12 | 0.80 | 280 | ERD1VM470E11OT |
| | 56 | 6.3x11 | 0.12 | 0.64 | 310 | ERD1VM560E11OT |
| | 68 | 8x11 | 0.12 | 0.52 | 350 | ERD1VM680F11OT |
| | 100 | 8x11 | 0.12 | 0.25 | 450 | ERD1VM101F11OT |
| | 120 | 8x11 | 0.12 | 0.22 | 510 | ERD1VM121F11OT |
| | 150 | 8x12 | 0.12 | 0.191 | 540 | ERD1VM151F12OT |
| | 180 | 10x12.5 | 0.12 | 0.172 | 650 | ERD1VM181G1BOT |
| | 220 | 10x12.5 | 0.12 | 0.114 | 750 | ERD1VM221G1BOT |
| | 270 | 10x16 | 0.12 | 0.095 | 910 | ERD1VM271G16OT |
| | 330 | 10x16 | 0.12 | 0.079 | 1050 | ERD1VM331G16OT |
| | 470 | 10x20 | 0.12 | 0.065 | 1200 | ERD1VM471G20OT |
| | 560 | 10x25 | 0.12 | 0.061 | 1500 | ERD1VM561G25OT |
| | 680 | 12.5x20 | 0.12 | 0.056 | 1570 | ERD1VM681W20OT |
| | 820 | 12.5x20 | 0.12 | 0.048 | 1700 | ERD1VM821W20OT |
| 1000 | 12.5x25 | 0.12 | 0.042 | 1900 | ERD1VM102W25OT | |
| 1200 | 12.5x30 | 0.12 | 0.039 | 2130 | ERD1VM122W30OT | |
| 1500 | 16x25 | 0.12 | 0.036 | 2270 | ERD1VM152L25OT | |
| 1800 | 16x30 | 0.12 | 0.035 | 2700 | ERD1VM182L30OT | |
| 2200 | 16x30 | 0.14 | 0.034 | 2780 | ERD1VM222L30OT | |
| 2700 | 16x35 | 0.14 | 0.029 | 2850 | ERD1VM272L35OT | |
| 3300 | 18x35 | 0.16 | 0.026 | 3100 | ERD1VM332M35OT | |
| 4700 | 18x40 | 0.18 | 0.024 | 3500 | ERD1VM472M40OT | |
| 50(1H) | 0.47 | 5x11 | 0.10 | 5.40 | 25 | ERD1HMR47D11OT |
| | 1 | 5x11 | 0.10 | 4.00 | 40 | ERD1HM010D11OT |
| | 2.2 | 5x11 | 0.10 | 2.80 | 55 | ERD1HM2R2D11OT |
| | 3.3 | 5x11 | 0.10 | 2.20 | 60 | ERD1HM3R3D11OT |
| | 4.7 | 5x11 | 0.10 | 2.00 | 90 | ERD1HM4R7D11OT |
| | 5.6 | 5x11 | 0.10 | 1.93 | 105 | ERD1HM5R6D11OT |
| | 6.8 | 5x11 | 0.10 | 1.89 | 110 | ERD1HM6R8D11OT |
| | 10 | 5x11 | 0.10 | 1.82 | 120 | ERD1HM100D11OT |
| | 22 | 6.3x11 | 0.10 | 1.25 | 150 | ERD1HM220E11OT |
| | 33 | 6.3x11 | 0.10 | 0.80 | 250 | ERD1HM330E11OT |
| | 47 | 6.3x11 | 0.10 | 0.65 | 290 | ERD1HM470E11OT |
| | 56 | 8x11 | 0.10 | 0.49 | 310 | ERD1HM560F11OT |
| | 68 | 8x11 | 0.10 | 0.33 | 375 | ERD1HM680F11OT |
| | 100 | 10x12.5 | 0.10 | 0.17 | 480 | ERD1HM101G1BOT |
| | 120 | 10x12.5 | 0.10 | 0.156 | 530 | ERD1HM121G1BOT |
| | 150 | 10x12.5 | 0.10 | 0.132 | 590 | ERD1HM151G1BOT |
| | 180 | 10x16 | 0.10 | 0.114 | 860 | ERD1HM181G16OT |
| | 220 | 10x16 | 0.10 | 0.096 | 830 | ERD1HM221G16OT |
| | 270 | 10x20 | 0.10 | 0.078 | 960 | ERD1HM271G20OT |
| | 330 | 10x25 | 0.10 | 0.065 | 1150 | ERD1HM331G25OT |
| 470 | 12.5x20 | 0.10 | 0.055 | 1590 | ERD1HM471W20OT | |
| 560 | 12.5x20 | 0.10 | 0.050 | 1660 | ERD1HM561W20OT | |
| 680 | 12.5x25 | 0.10 | 0.044 | 1930 | ERD1HM681W25OT | |
| 820 | 12.5x30 | 0.10 | 0.039 | 2100 | ERD1HM821W30OT | |
| 1000 | 16x25 | 0.10 | 0.036 | 2300 | ERD1HM102L25OT | |
| 1200 | 16x30 | 0.10 | 0.036 | 2650 | ERD1HM122L30OT | |
| 1500 | 16x35 | 0.10 | 0.034 | 2750 | ERD1HM152L35OT | |
| 1800 | 16x35 | 0.10 | 0.034 | 2850 | ERD1HM182L35OT | |
| 2200 | 18x35 | 0.12 | 0.032 | 3040 | ERD1HM222M35OT | |
| 2700 | 18x40 | 0.14 | 0.027 | 3070 | ERD1HM272M40OT | |
| 3300 | 18x40 | 0.16 | 0.025 | 3100 | ERD1HM332M40OT | |

| WV (V _{dc}) | Cap (μF) | Size DxL(mm) | tan | Impedance (max/20°C, 100kHz) | Rated ripple current (mA _{RMS} /105°C, 100kHz) | Part Number |
|-----------------------|----------|--------------|-------|------------------------------|---|----------------|
| 63(1J) | 0.47 | 5x11 | 0.09 | 5.4 | 25 | ERD1JMR47D11OT |
| | 1 | 5x11 | 0.09 | 4.0 | 33 | ERD1JM010D11OT |
| | 2.2 | 5x11 | 0.09 | 2.8 | 45 | ERD1JM2R2D11OT |
| | 3.3 | 5x11 | 0.09 | 2.2 | 58 | ERD1JM3R3D11OT |
| | 4.7 | 5x11 | 0.09 | 2.0 | 65 | ERD1JM4R7D11OT |
| | 5.6 | 5x11 | 0.09 | 1.9 | 95 | ERD1JM5R6D11OT |
| | 6.8 | 5x11 | 0.09 | 1.82 | 100 | ERD1JM6R8D11OT |
| | 10 | 5x11 | 0.09 | 1.75 | 110 | ERD1JM100D11OT |
| | 22 | 6.3x11 | 0.09 | 0.80 | 240 | ERD1JM220E11OT |
| | 33 | 8x11 | 0.09 | 0.61 | 270 | ERD1JM330F11OT |
| | 47 | 8x12 | 0.09 | 0.56 | 300 | ERD1JM470F12OT |
| | 56 | 8x12 | 0.09 | 0.38 | 330 | ERD1JM560F12OT |
| | 68 | 10x12.5 | 0.09 | 0.21 | 480 | ERD1JM680G1BOT |
| | 100 | 10x16 | 0.09 | 0.14 | 610 | ERD1JM101G16OT |
| | 120 | 10x16 | 0.09 | 0.13 | 620 | ERD1JM121G16OT |
| | 150 | 10x16 | 0.09 | 0.11 | 700 | ERD1JM151G16OT |
| | 180 | 10x20 | 0.09 | 0.10 | 800 | ERD1JM181G20OT |
| | 220 | 10x20 | 0.09 | 0.08 | 1100 | ERD1JM221G20OT |
| | 270 | 12.5x20 | 0.09 | 0.065 | 1150 | ERD1JM271W20OT |
| | 330 | 12.5x20 | 0.09 | 0.055 | 1250 | ERD1JM331W20OT |
| 470 | 12.5x25 | 0.09 | 0.053 | 1620 | ERD1JM471W25OT | |
| 560 | 12.5x25 | 0.09 | 0.049 | 1630 | ERD1JM561W25OT | |
| 680 | 12.5x30 | 0.09 | 0.043 | 1950 | ERD1JM681W30OT | |
| 820 | 16x25 | 0.09 | 0.038 | 2150 | ERD1JM821L25OT | |
| 1000 | 16x30 | 0.09 | 0.034 | 2350 | ERD1JM102L30OT | |
| 1200 | 16x35 | 0.09 | 0.032 | 2550 | ERD1JM122L35OT | |
| 1500 | 18x35 | 0.09 | 0.031 | 2710 | ERD1JM152M35OT | |
| 1800 | 18x40 | 0.09 | 0.027 | 3000 | ERD1JM182M40OT | |
| 100(1K) | 0.47 | 5x11 | 0.08 | 5.9 | 20 | ERD1KMR47D11OT |
| | 1 | 5x11 | 0.08 | 4.4 | 30 | ERD1KM010D11OT |
| | 2.2 | 5x11 | 0.08 | 3.3 | 42 | ERD1KM2R2D11OT |
| | 3.3 | 5x11 | 0.08 | 2.8 | 55 | ERD1KM3R3D11OT |
| | 4.7 | 5x11 | 0.08 | 2.6 | 72 | ERD1KM4R7D11OT |
| | 5.6 | 5x11 | 0.08 | 2.33 | 100 | ERD1KM5R6D11OT |
| | 6.8 | 6.3x11 | 0.08 | 1.95 | 115 | ERD1KM6R8E11OT |
| | 10 | 6.3x11 | 0.08 | 1.77 | 130 | ERD1KM100E11OT |
| | 22 | 8x12 | 0.08 | 0.85 | 220 | ERD1KM220F12OT |
| | 33 | 10x12.5 | 0.08 | 0.69 | 320 | ERD1KM330G1BOT |
| | 47 | 10x12.5 | 0.08 | 0.58 | 370 | ERD1KM470G1BOT |
| | 56 | 10x16 | 0.08 | 0.42 | 440 | ERD1KM560G16OT |
| | 68 | 10x16 | 0.08 | 0.35 | 470 | ERD1KM680G16OT |
| | 100 | 10x25 | 0.08 | 0.30 | 560 | ERD1KM101G25OT |
| | 120 | 10x25 | 0.08 | 0.22 | 660 | ERD1KM121G25OT |
| | 150 | 12.5x20 | 0.08 | 0.174 | 780 | ERD1KM151W20OT |
| | 180 | 12.5x20 | 0.08 | 0.142 | 820 | ERD1KM181W20OT |
| | 220 | 12.5x25 | 0.08 | 0.130 | 880 | ERD1KM221W25OT |
| | 270 | 12.5x30 | 0.08 | 0.110 | 1120 | ERD1KM271W30OT |
| | 330 | 16x25 | 0.08 | 0.100 | 1440 | ERD1KM331L25OT |
| 470 | 16x30 | 0.08 | 0.090 | 1650 | ERD1KM471L30OT | |
| 560 | 16x35 | 0.08 | 0.085 | 1720 | ERD1KM561L35OT | |
| 680 | 18x35 | 0.08 | 0.080 | 1790 | ERD1KM681M35OT | |
| 820 | 18x35 | 0.08 | 0.071 | 1840 | ERD1KM821M35OT | |
| 1000 | 18x40 | 0.08 | 0.066 | 1930 | ERD1KM102M40OT | |

Radial Type

GH series

- Life time: +105°C 5,000~10,000 hours
- Especially designed for electronic ballast, intelligent instrument, etc.
- RoHS Compliant

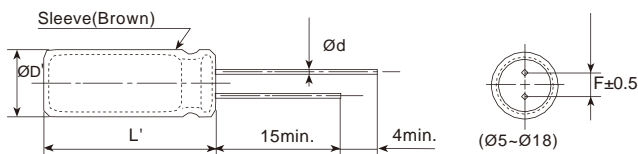
Upgrade



SPECIFICATIONS

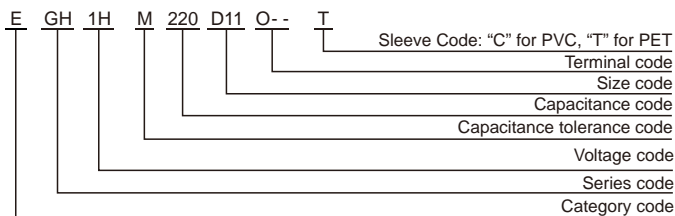
| Items | Characteristics | | | | | | | | | | | | | |
|---|---|---|------|------------------------|-----------------------------|------|------|------|------|---------|---|-------------------|-------|--|
| Category Temperature Range | -40~+105°C | | | | | | | | | | | | | |
| Rated Voltage Range | 6.3~450 V _{dc} | | | | | | | | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | | | | | | | | | | | | |
| Leakage Current | 6.3~100V _{dc} | | | 160~450V _{dc} | | | | | | | Where, I: Max.leakage current (μA), C: Nominal capacitance (μF), V: Rated voltage (V) | | | |
| | CV | After 2 minutes | | | I 0.01CV + 10μA (2 minutes) | | | | | | | | | |
| | CV 1,000 | I 0.01CV or 3μA Whichever is greater | | | | | | | | | | | | |
| | CV>1,000 | I 0.006CV+4μA | | | | | | | | | | (at 20°C) | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160~250 | 350~450 | | | |
| | tan (max.) | 0.30 | 0.24 | 0.20 | 0.18 | 0.16 | 0.14 | 0.12 | 0.10 | 0.15 | 0.20 | | | |
| When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20°C, 120Hz) | | | | | | | | | | | | | | |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200~250 | 350~450 | | |
| | Z(-25°C)/Z(+20°C) | 5 | 4 | 3 | | | 2 | | | 3 | 3 | 6 | | |
| | Z(-40°C)/Z(+20°C) | 7 | 5 | 5 | | | 4 | | | 4 | 7 | 7 | | |
| (at 120Hz) | | | | | | | | | | | | | | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 20°C after DC voltage plus the rated ripple current is applied for a specified period of time at 105°C. | | | | | | | | | | | | | |
| | Capacitance Change | ±20% of the initial value(6.3V,10V: ±30%) | | | | | | | | | Case Dia. (mm) | Load life (hours) | | |
| | D.F. (tan δ) | 200% of the initial specified value | | | | | | | | | ØD 6.3 | 5,000 | - | |
| | Leakage Current | The initial specified value | | | | | | | | | ØD=8&10 | 6,000 | 7,000 | |
| | | | | | | | | | | ØD 12.5 | 8,000 | 10,000 | | |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 105°C without voltage applied. | | | | | | | | | | | | | |
| | Capacitance Change | ±20% of the initial value(6.3V,10V: ±30%) | | | | | | | | | | | | |
| | D.F. (tan δ) | 200% of the initial specified value | | | | | | | | | | | | |
| | Leakage Current | 200% of the initial specified value | | | | | | | | | | | | |

DIMENSIONS[mm]



| ØD | 5 | 6.3 | 8 | 10 | 12.5 | 16 | 18 |
|-----|------------|-----|-----|-----|------|-----|-----|
| Ød | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 | 0.8 | 0.8 |
| F | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 |
| ØD' | ØD+0.5max. | | | | | | |
| L' | L+2max. | | | | | | |

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| Cap.(μF) \ Freq.(Hz) | 50/60 | 100/120 | 1k | 10k | 100k |
|----------------------|-------|---------|------|------|------|
| Cap. 330 | 0.35 | 0.50 | 0.75 | 0.85 | 1.00 |
| 330<Cap. 1500 | 0.45 | 0.65 | 0.85 | 0.90 | 1.00 |
| Cap.>1500 | 0.53 | 0.75 | 0.90 | 0.95 | 1.00 |

The endurance of capacitors is shortened with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

GH series

■ STANDARD RATINGS

| WV (Vdc) | Cap (µF) | Size DxDL(mm) | tan | Rated ripple current (mA _{RMS} /105°C, 100kHz) | Part Number |
|----------|----------|---------------|------|---|----------------|
| 6.3(0J) | 150 | 5x11 | 0.30 | 91 | EGH0JM151D11OT |
| | 330 | 6.3x11 | 0.30 | 151 | EGH0JM331E11OT |
| | 680 | 8x12 | 0.30 | 228 | EGH0JM681F12OT |
| | 820 | 10x12.5 | 0.30 | 256 | EGH0JM821G1BOT |
| | 1000 | 8x16 | 0.30 | 272 | EGH0JM102F16OT |
| | 1200 | 8x20 | 0.30 | 386 | EGH0JM122F20OT |
| | | 10x16 | 0.30 | 386 | EGH0JM122G16OT |
| | 1500 | 10x20 | 0.30 | 513 | EGH0JM152G20OT |
| | 1800 | 12.5x16 | 0.30 | 513 | EGH0JM182W16OT |
| | 2200 | 10x25 | 0.32 | 580 | EGH0JM222G25OT |
| | 2700 | 10x30 | 0.32 | 630 | EGH0JM272G30OT |
| | | 16x15 | 0.32 | 630 | EGH0JM272L15OT |
| | 3300 | 12.5x20 | 0.34 | 665 | EGH0JM332W20OT |
| | 3900 | 12.5x25 | 0.34 | 807 | EGH0JM392W25OT |
| | | 18x15 | 0.34 | 807 | EGH0JM392M15OT |
| | 4700 | 12.5x30 | 0.36 | 902 | EGH0JM472W30OT |
| | 5600 | 12.5x35 | 0.38 | 1034 | EGH0JM562W35OT |
| | | 16x20 | 0.38 | 1034 | EGH0JM562L20OT |
| | 6800 | 12.5x40 | 0.40 | 1190 | EGH0JM682W40OT |
| | | 16x25 | 0.40 | 1190 | EGH0JM682L25OT |
| 18x20 | | 0.40 | 1190 | EGH0JM682M20OT | |
| 8200 | 16x30 | 0.44 | 1400 | EGH0JM822L30OT | |
| 10000 | 16x35 | 0.48 | 1600 | EGH0JM103L35OT | |
| | 18x25 | 0.48 | 1600 | EGH0JM103M25OT | |
| 12000 | 16x40 | 0.52 | 1850 | EGH0JM123L40OT | |
| | 18x30 | 0.52 | 1850 | EGH0JM123M30OT | |
| 15000 | 18x35 | 0.58 | 1850 | EGH0JM153M35OT | |
| 18000 | 18x40 | 0.64 | 2000 | EGH0JM183M40OT | |
| 10(1A) | 100 | 5x11 | 0.24 | 91 | EGH1AM101D11OT |
| | 220 | 6.3x11 | 0.24 | 151 | EGH1AM221E11OT |
| | 470 | 8x12 | 0.24 | 228 | EGH1AM471F12OT |
| | 680 | 8x16 | 0.24 | 256 | EGH1AM681F16OT |
| | | 10x12.5 | 0.24 | 272 | EGH1AM681G1BOT |
| | 1000 | 8x20 | 0.24 | 400 | EGH1AM102F20OT |
| | | 10x16 | 0.24 | 430 | EGH1AM102G16OT |
| | 1200 | 10x20 | 0.24 | 513 | EGH1AM122G20OT |
| | 1500 | 10x25 | 0.24 | 580 | EGH1AM152G25OT |
| | | 12.5x16 | 0.24 | 580 | EGH1AM152W16OT |
| | 2200 | 10x30 | 0.26 | 630 | EGH1AM222G30OT |
| | | 12.5x20 | 0.26 | 681 | EGH1AM222W20OT |
| | | 16x15 | 0.26 | 681 | EGH1AM222L15OT |
| | 2700 | 18x15 | 0.26 | 807 | EGH1AM272M15OT |
| | 3300 | 12.5x25 | 0.28 | 807 | EGH1AM332W25OT |
| | 3900 | 12.5x30 | 0.28 | 902 | EGH1AM392W30OT |
| | | 16x20 | 0.28 | 902 | EGH1AM392L20OT |
| | 4700 | 16x25 | 0.30 | 1116 | EGH1AM472L25OT |
| | 5600 | 12.5x40 | 0.32 | 1190 | EGH1AM562W40OT |
| | | 16x25 | 0.32 | 1190 | EGH1AM562L25OT |
| 18x20 | | 0.32 | 1190 | EGH1AM562M20OT | |
| 6800 | 16x30 | 0.34 | 1400 | EGH1AM682L30OT | |
| | 18x25 | 0.34 | 1400 | EGH1AM682M25OT | |
| 8200 | 16x35 | 0.38 | 1600 | EGH1AM822L35OT | |
| | 18x30 | 0.38 | 1600 | EGH1AM822M30OT | |
| 10000 | 16x40 | 0.42 | 1850 | EGH1AM103L40OT | |
| | 18x35 | 0.42 | 1850 | EGH1AM103M35OT | |
| 12000 | 18x40 | 0.46 | 2000 | EGH1AM123M40OT | |

| WV (Vdc) | Cap (µF) | Size DxDL(mm) | tan | Rated ripple current (mA _{RMS} /105°C, 100kHz) | Part Number |
|----------|----------|---------------|------|---|----------------|
| 16(1C) | 56 | 5x11 | 0.20 | 100 | EGH1CM560D11OT |
| | 120 | 6.3x11 | 0.20 | 118 | EGH1CM121E11OT |
| | 330 | 8x12 | 0.20 | 205 | EGH1CM331F12OT |
| | 470 | 8x16 | 0.20 | 256 | EGH1CM471F16OT |
| | | 10x12.5 | 0.20 | 272 | EGH1CM471G1BOT |
| | 680 | 8x20 | 0.20 | 386 | EGH1CM681F20OT |
| | | 10x16 | 0.20 | 386 | EGH1CM681G16OT |
| | 1000 | 10x20 | 0.20 | 513 | EGH1CM102G20OT |
| | | 12.5x16 | 0.20 | 513 | EGH1CM102W16OT |
| | 1200 | 10x25 | 0.20 | 580 | EGH1CM122G25OT |
| | | 10x30 | 0.20 | 630 | EGH1CM152G30OT |
| | 1500 | 12.5x20 | 0.20 | 665 | EGH1CM152W20OT |
| | | 16x15 | 0.20 | 665 | EGH1CM152L15OT |
| | 2200 | 12.5x25 | 0.22 | 807 | EGH1CM222W25OT |
| | | 18x15 | 0.22 | 807 | EGH1CM222M15OT |
| | 2700 | 12.5x30 | 0.22 | 902 | EGH1CM272W30OT |
| | | 16x20 | 0.22 | 902 | EGH1CM272L20OT |
| | 3300 | 12.5x35 | 0.24 | 1034 | EGH1CM332W35OT |
| | | 12.5x40 | 0.24 | 1190 | EGH1CM392W40OT |
| | | 16x25 | 0.24 | 1190 | EGH1CM392L25OT |
| 3900 | 18x20 | 0.24 | 1190 | EGH1CM392M20OT | |
| | 16x30 | 0.26 | 1400 | EGH1CM472L30OT | |
| 4700 | 18x25 | 0.26 | 1400 | EGH1CM472M25OT | |
| | 16x35 | 0.28 | 1600 | EGH1CM562L35OT | |
| 5600 | 18x30 | 0.28 | 1600 | EGH1CM562M30OT | |
| | 6800 | 16x40 | 0.30 | 1850 | EGH1CM682L40OT |
| 8200 | 18x35 | 0.34 | 1850 | EGH1CM822M35OT | |
| 10000 | 18x40 | 0.38 | 2000 | EGH1CM103M40OT | |
| 25(1E) | 47 | 5x11 | 0.18 | 124 | EGH1EM470D11OT |
| | 100 | 6.3x11 | 0.18 | 138 | EGH1EM101E11OT |
| | 220 | 8x12 | 0.18 | 205 | EGH1EM221F12OT |
| | 330 | 8x16 | 0.18 | 225 | EGH1EM331F16OT |
| | | 10x12.5 | 0.18 | 245 | EGH1EM331G1BOT |
| | 470 | 8x20 | 0.18 | 320 | EGH1EM471F20OT |
| | | 10x16 | 0.18 | 340 | EGH1EM471G16OT |
| | 680 | 10x20 | 0.18 | 345 | EGH1EM681G20OT |
| | | 12.5x16 | 0.18 | 345 | EGH1EM681W16OT |
| | 820 | 10x25 | 0.18 | 450 | EGH1EM821G25OT |
| | | 10x30 | 0.18 | 540 | EGH1EM102G30OT |
| | 1000 | 12.5x20 | 0.18 | 540 | EGH1EM102W20OT |
| | | 16x15 | 0.18 | 540 | EGH1EM102L15OT |
| | | 18x15 | 0.18 | 560 | EGH1EM122M15OT |
| | 1500 | 12.5x25 | 0.18 | 665 | EGH1EM152W25OT |
| | 1800 | 12.5x30 | 0.18 | 790 | EGH1EM182W30OT |
| | | 16x20 | 0.18 | 800 | EGH1EM182L20OT |
| | 2200 | 12.5x35 | 0.20 | 860 | EGH1EM222W35OT |
| | | 18x20 | 0.20 | 880 | EGH1EM222M20OT |
| | 2700 | 12.5x40 | 0.20 | 960 | EGH1EM272W40OT |
| 16x25 | | 0.20 | 980 | EGH1EM272L25OT | |
| 3300 | 16x30 | 0.22 | 1190 | EGH1EM332L30OT | |
| | 18x25 | 0.22 | 1190 | EGH1EM332M25OT | |
| 3900 | 16x35 | 0.22 | 1400 | EGH1EM392L35OT | |
| | 18x30 | 0.22 | 1400 | EGH1EM392M30OT | |
| 4700 | 16x40 | 0.24 | 1600 | EGH1EM472L40OT | |
| | 18x35 | 0.24 | 1600 | EGH1EM472M35OT | |
| 5600 | 18x40 | 0.26 | 1850 | EGH1EM562M40OT | |

Radial Type

GH series

■ STANDARD RATINGS

| WV (Vdc) | Cap (µF) | Size DxL(mm) | tan | Rated ripple current (mA _{rms} /105°C, 100kHz) | Part Number |
|----------|----------|--------------|------|---|----------------|
| 35(1V) | 33 | 5x11 | 0.16 | 90 | EGH1VM330D11OT |
| | 56 | 6.3x11 | 0.16 | 110 | EGH1VM560E11OT |
| | 150 | 8x12 | 0.16 | 180 | EGH1VM151F12OT |
| | | 8x16 | 0.16 | 240 | EGH1VM221F16OT |
| | 220 | 10x12.5 | 0.16 | 252 | EGH1VM221G1BOT |
| | | 8x20 | 0.16 | 280 | EGH1VM271F20OT |
| | 330 | 10x16 | 0.16 | 312 | EGH1VM331G16OT |
| | | 10x20 | 0.16 | 386 | EGH1VM471G20OT |
| | 470 | 12.5x16 | 0.16 | 394 | EGH1VM471W16OT |
| | | 10x25 | 0.16 | 450 | EGH1VM561G25OT |
| | 680 | 10x30 | 0.16 | 496 | EGH1VM681G30OT |
| | | 12.5x20 | 0.16 | 520 | EGH1VM681W20OT |
| | | 16x15 | 0.16 | 520 | EGH1VM681L15OT |
| | 1000 | 12.5x25 | 0.16 | 810 | EGH1VM102W25OT |
| | | 18x15 | 0.16 | 810 | EGH1VM102M15OT |
| | 1200 | 12.5x30 | 0.16 | 860 | EGH1VM122W30OT |
| | | 16x25 | 0.16 | 880 | EGH1VM122L25OT |
| | 1500 | 12.5x35 | 0.16 | 880 | EGH1VM152W35OT |
| | | 12.5x40 | 0.16 | 960 | EGH1VM182W40OT |
| | 1800 | 16x20 | 0.16 | 900 | EGH1VM182L20OT |
| 18x20 | | 0.16 | 960 | EGH1VM182M20OT | |
| 2200 | 16x30 | 0.18 | 1190 | EGH1VM222L30OT | |
| | 18x25 | 0.18 | 1190 | EGH1VM222M25OT | |
| 2700 | 16x35 | 0.18 | 1400 | EGH1VM272L35OT | |
| | 18x30 | 0.18 | 1400 | EGH1VM272M30OT | |
| 3300 | 16x40 | 0.20 | 1600 | EGH1VM332L40OT | |
| | 18x35 | 0.20 | 1600 | EGH1VM332M35OT | |
| 3900 | 18x40 | 0.20 | 1850 | EGH1VM392M40OT | |
| 50(1H) | 22 | 5x11 | 0.14 | 84 | EGH1HM220D11OT |
| | 56 | 6.3x11 | 0.14 | 146 | EGH1HM560E11OT |
| | 100 | 8x12 | 0.14 | 152 | EGH1HM101F12OT |
| | 120 | 8x16 | 0.14 | 180 | EGH1HM121F16OT |
| | 150 | 10x12.5 | 0.14 | 215 | EGH1HM151G1BOT |
| | 180 | 8x20 | 0.14 | 246 | EGH1HM181F20OT |
| | 220 | 10x16 | 0.14 | 291 | EGH1HM221G16OT |
| | | 10x20 | 0.14 | 330 | EGH1HM271G20OT |
| | 270 | 12.5x16 | 0.14 | 330 | EGH1HM271W16OT |
| | | 10x25 | 0.14 | 386 | EGH1HM331G25OT |
| | 330 | 10x30 | 0.14 | 460 | EGH1HM471G30OT |
| | | 12.5x20 | 0.14 | 475 | EGH1HM471W20OT |
| | 470 | 16x15 | 0.14 | 475 | EGH1HM471L15OT |
| | | 12.5x25 | 0.14 | 520 | EGH1HM561W25OT |
| | 560 | 18x15 | 0.14 | 520 | EGH1HM561M15OT |
| | | 12.5x30 | 0.14 | 665 | EGH1HM681W30OT |
| | 680 | 12.5x35 | 0.14 | 800 | EGH1HM821W35OT |
| | | 16x20 | 0.14 | 800 | EGH1HM821L20OT |
| | 820 | 12.5x40 | 0.14 | 880 | EGH1HM102W40OT |
| | | 16x25 | 0.14 | 880 | EGH1HM102L25OT |
| | 1000 | 18x20 | 0.14 | 880 | EGH1HM102M20OT |
| | | 16x30 | 0.14 | 1190 | EGH1HM122L30OT |
| | 1200 | 18x25 | 0.14 | 1190 | EGH1HM122M25OT |
| | | 16x35 | 0.14 | 1400 | EGH1HM152L35OT |
| | 1800 | 16x40 | 0.14 | 1600 | EGH1HM182L40OT |
| | | 18x30 | 0.14 | 1600 | EGH1HM182M30OT |
| | 2200 | 18x35 | 0.16 | 1800 | EGH1HM222M35OT |
| 2700 | | 18x40 | 0.16 | 1850 | EGH1HM272M40OT |

| WV (Vdc) | Cap (µF) | Size DxL(mm) | tan | Rated ripple current (mA _{rms} /105°C, 100kHz) | Part Number |
|----------|----------|--------------|------|---|----------------|
| 63(1J) | 15 | 5x11 | 0.12 | 62 | EGH1JM150D11OT |
| | 33 | 6.3x11 | 0.12 | 126 | EGH1JM330E11OT |
| | 56 | 8x12 | 0.12 | 198 | EGH1JM560F12OT |
| | | 8x16 | 0.12 | 246 | EGH1JM820F16OT |
| | 82 | 10x12.5 | 0.12 | 252 | EGH1JM820G1BOT |
| | | 8x20 | 0.12 | 300 | EGH1JM121F20OT |
| | 120 | 10x16 | 0.12 | 310 | EGH1JM121G16OT |
| | | 10x20 | 0.12 | 386 | EGH1JM181G20OT |
| | 180 | 12.5x16 | 0.12 | 394 | EGH1JM181W16OT |
| | | 10x25 | 0.12 | 450 | EGH1JM221G25OT |
| | 220 | 12.5x20 | 0.12 | 520 | EGH1JM271W20OT |
| | | 12.5x25 | 0.12 | 665 | EGH1JM331W25OT |
| | 330 | 12.5x30 | 0.12 | 790 | EGH1JM471W30OT |
| | | 16x20 | 0.12 | 800 | EGH1JM471L20OT |
| | 560 | 12.5x35 | 0.12 | 860 | EGH1JM561W35OT |
| | | 16x25 | 0.12 | 880 | EGH1JM561L25OT |
| | 680 | 12.5x40 | 0.12 | 960 | EGH1JM681W40OT |
| | | 18x20 | 0.12 | 980 | EGH1JM681M20OT |
| | 820 | 16x30 | 0.12 | 1190 | EGH1JM821L30OT |
| | | 18x25 | 0.12 | 1190 | EGH1JM821M25OT |
| 1000 | 16x35 | 0.12 | 1400 | EGH1JM102L35OT | |
| | 18x30 | 0.12 | 1400 | EGH1JM102M30OT | |
| 1200 | 16x40 | 0.12 | 1600 | EGH1JM122L40OT | |
| | 18x35 | 0.12 | 1600 | EGH1JM122M35OT | |
| 1500 | 18x40 | 0.12 | 1850 | EGH1JM152M40OT | |
| 100(1K) | 6.8 | 5x11 | 0.10 | 62 | EGH1KM6R8D11OT |
| | 15 | 6.3x11 | 0.10 | 126 | EGH1KM150E11OT |
| | 27 | 8x12 | 0.10 | 198 | EGH1KM270F12OT |
| | 39 | 8x16 | 0.10 | 246 | EGH1KM390F16OT |
| | 47 | 10x12.5 | 0.10 | 252 | EGH1KM470G1BOT |
| | 56 | 8x20 | 0.10 | 300 | EGH1KM560F20OT |
| | | 10x16 | 0.10 | 330 | EGH1KM680G16OT |
| | 82 | 10x20 | 0.10 | 386 | EGH1KM820G20OT |
| | | 12.5x16 | 0.10 | 394 | EGH1KM820W16OT |
| | 100 | 10x25 | 0.10 | 450 | EGH1KM101G25OT |
| | 120 | 12.5x20 | 0.10 | 520 | EGH1KM121W20OT |
| | 180 | 12.5x25 | 0.10 | 665 | EGH1KM181W25OT |
| | | 16x20 | 0.10 | 800 | EGH1KM221L20OT |
| | 220 | 12.5x30 | 0.10 | 790 | EGH1KM221W30OT |
| | | 12.5x35 | 0.10 | 860 | EGH1KM271W35OT |
| | 270 | 16x25 | 0.10 | 880 | EGH1KM271L25OT |
| | | 18x20 | 0.10 | 980 | EGH1KM331M20OT |
| | 330 | 12.5x40 | 0.10 | 960 | EGH1KM331W40OT |
| | | 16x30 | 0.10 | 1190 | EGH1KM391L30OT |
| | 390 | 18x25 | 0.10 | 1190 | EGH1KM391M25OT |
| 16x35 | | 0.10 | 1400 | EGH1KM471L35OT | |
| 470 | 18x30 | 0.10 | 1400 | EGH1KM471M30OT | |
| | 16x40 | 0.10 | 1600 | EGH1KM561L40OT | |
| 680 | 18x35 | 0.10 | 1600 | EGH1KM681M35OT | |
| | 820 | 18x40 | 0.10 | 1850 | EGH1KM821M40OT |

GH series

■ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (mA _{rms} /105°C, 100kHz) | Part Number |
|----------|----------|--------------|------|---|-----------------|
| 160(2C) | 10 | 8x12 | 0.15 | 150 | EGH2CM100F12OTT |
| | 12 | 10x12 | 0.15 | 180 | EGH2CM120G12OTT |
| | 15 | 10x16 | 0.15 | 230 | EGH2CM150G16OTT |
| | 22 | 10x16 | 0.15 | 280 | EGH2CM220G16OTT |
| | 33 | 10x20 | 0.15 | 350 | EGH2CM330G20OTT |
| | 39 | 10x20 | 0.15 | 390 | EGH2CM390G20OTT |
| | 47 | 10x20 | 0.15 | 440 | EGH2CM470G20OTT |
| | | 12.5x20 | 0.15 | 480 | EGH2CM470W20OTT |
| | 56 | 12.5x20 | 0.15 | 600 | EGH2CM560W20OTT |
| | 68 | 12.5x20 | 0.15 | 740 | EGH2CM680W20OTT |
| | 82 | 12.5x20 | 0.15 | 780 | EGH2CM820W20OTT |
| | | 16x20 | 0.15 | 800 | EGH2CM820L20OTT |
| | 100 | 12.5x25 | 0.15 | 860 | EGH2CM101W25OTT |
| | | 16x20 | 0.15 | 860 | EGH2CM101L20OTT |
| | 150 | 16x20 | 0.15 | 1000 | EGH2CM151L20OTT |
| | | 16x25 | 0.15 | 1040 | EGH2CM151L25OTT |
| 220 | 16x25 | 0.15 | 1560 | EGH2CM221L25OTT | |
| | 18x25 | 0.15 | 1600 | EGH2CM221M25OTT | |
| 330 | 18x30 | 0.15 | 1880 | EGH2CM331M30OTT | |
| 200(2D) | 10 | 10x16 | 0.15 | 170 | EGH2DM100G16OTT |
| | 12 | 10x16 | 0.15 | 200 | EGH2DM120G16OTT |
| | 15 | 10x16 | 0.15 | 236 | EGH2DM150G16OTT |
| | 22 | 10x20 | 0.15 | 280 | EGH2DM220G20OTT |
| | 33 | 10x20 | 0.15 | 320 | EGH2DM330G20OTT |
| | | 12.5x20 | 0.15 | 340 | EGH2DM330W20OTT |
| | 39 | 12.5x20 | 0.15 | 400 | EGH2DM390W20OTT |
| | 47 | 12.5x20 | 0.15 | 500 | EGH2DM470W20OTT |
| | 68 | 12.5x20 | 0.15 | 620 | EGH2DM680W20OTT |
| | | 12.5x25 | 0.15 | 660 | EGH2DM680W25OTT |
| | 82 | 16x20 | 0.15 | 760 | EGH2DM820L20OTT |
| | | 16x20 | 0.15 | 840 | EGH2DM101L20OTT |
| | 100 | 16x25 | 0.15 | 880 | EGH2DM101L25OTT |
| | | 16x25 | 0.15 | 1160 | EGH2DM151L25OTT |
| | 150 | 16x30 | 0.15 | 1200 | EGH2DM151L30OTT |
| | | 18x25 | 0.15 | 1200 | EGH2DM151M25OTT |
| 220 | 18x25 | 0.15 | 1400 | EGH2DM221M25OTT | |
| | 18x30 | 0.15 | 1440 | EGH2DM221M30OTT | |
| 330 | 18x35 | 0.15 | 1800 | EGH2DM331M35OTT | |
| | 18x40 | 0.15 | 1840 | EGH2DM331M40OTT | |
| 250(2E) | 4.7 | 8x12 | 0.15 | 116 | EGH2EM4R7F12OTT |
| | 5.6 | 10x12 | 0.15 | 130 | EGH2EM5R6G12OTT |
| | 6.8 | 10x12 | 0.15 | 144 | EGH2EM6R8G12OTT |
| | 10 | 10x20 | 0.15 | 200 | EGH2EM100G20OTT |
| | 22 | 10x20 | 0.15 | 336 | EGH2EM220G20OTT |
| | 33 | 12.5x20 | 0.15 | 420 | EGH2EM330W20OTT |
| | 39 | 12.5x20 | 0.15 | 496 | EGH2EM390W20OTT |
| | 47 | 12.5x20 | 0.15 | 600 | EGH2EM470W20OTT |
| | | 12.5x25 | 0.15 | 640 | EGH2EM470W25OTT |
| | 68 | 16x20 | 0.15 | 800 | EGH2EM680L20OTT |
| | | 16x20 | 0.15 | 880 | EGH2EM820L20OTT |
| | 82 | 16x30 | 0.15 | 920 | EGH2EM820L30OTT |
| | | 16x25 | 0.15 | 1020 | EGH2EM101L25OTT |
| | 100 | 18x25 | 0.15 | 1060 | EGH2EM101M25OTT |
| | | 18x25 | 0.15 | 1200 | EGH2EM151M25OTT |
| | 220 | 18x31 | 0.15 | 1440 | EGH2EM221M31OTT |
| 18x40 | | 0.15 | 1480 | EGH2EM221M40OTT | |

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (mA _{rms} /105°C, 100kHz) | Part Number |
|----------|----------|--------------|-----------------|---|-----------------|
| 350(2V) | 4.7 | 8x12 | 0.20 | 110 | EGH2VM4R7F12OTT |
| | 5.6 | 10x12 | 0.20 | 130 | EGH2VM5R6G12OTT |
| | 6.8 | 10x12 | 0.20 | 160 | EGH2VM6R8G12OTT |
| | 10 | 10x16 | 0.20 | 200 | EGH2VM100G16OTT |
| | 22 | 12.5x20 | 0.20 | 364 | EGH2VM220W20OTT |
| | 33 | 16x20 | 0.20 | 480 | EGH2VM330L20OTT |
| | 39 | 16x20 | 0.20 | 530 | EGH2VM390L20OTT |
| | | 16x20 | 0.20 | 580 | EGH2VM470L20OTT |
| | 47 | 16x25 | 0.20 | 610 | EGH2VM470L25OTT |
| | | 16x25 | 0.20 | 740 | EGH2VM680L25OTT |
| | 68 | 18x20 | 0.20 | 740 | EGH2VM680M20OTT |
| | | 18x25 | 0.20 | 780 | EGH2VM680M25OTT |
| | 82 | 18x25 | 0.20 | 860 | EGH2VM820M25OTT |
| | | 18x25 | 0.20 | 960 | EGH2VM101M25OTT |
| | 100 | 18x30 | 0.20 | 1000 | EGH2VM101M30OTT |
| | | 18x30 | 0.20 | 1100 | EGH2VM121M30OTT |
| 150 | 18x35 | 0.20 | 1200 | EGH2VM151M35OTT | |
| 400(2G) | 1 | 8x12 | 0.20 | 50 | EGH2GM010F12OTT |
| | 2.2 | 8x12 | 0.20 | 70 | EGH2GM2R2F12OTT |
| | 3.3 | 10x12 | 0.20 | 110 | EGH2GM3R3G12OTT |
| | 4.7 | 10x12 | 0.20 | 130 | EGH2GM4R7G12OTT |
| | 6.8 | 10x12 | 0.20 | 150 | EGH2GM6R8G12OTT |
| | 10 | 10x16 | 0.20 | 200 | EGH2GM100G16OTT |
| | 15 | 12.5 x 20 | 0.20 | 270 | EGH2GM150W20OTT |
| | | 12.5x20 | 0.20 | 350 | EGH2GM220W20OTT |
| | 22 | 12.5x25 | 0.20 | 370 | EGH2GM220W25OTT |
| | | 16x20 | 0.20 | 510 | EGH2GM330L20OTT |
| | 39 | 16x25 | 0.20 | 580 | EGH2GM390L25OTT |
| | | 16x25 | 0.20 | 660 | EGH2GM470L25OTT |
| | 47 | 18x20 | 0.20 | 660 | EGH2GM470M20OTT |
| | | 16x30 | 0.20 | 700 | EGH2GM470L30OTT |
| | 56 | 10x50 | 0.20 | 780 | EGH2GM560G50OTT |
| | | 12.5x40 | 0.20 | 880 | EGH2GM680W40OTT |
| 68 | 18x25 | 0.20 | 880 | EGH2GM680M25OTT | |
| | 12.5x45 | 0.20 | 900 | EGH2GM820W45OTT | |
| 82 | 18x25 | 0.20 | 960 | EGH2GM820M25OTT | |
| | 18x30 | 0.20 | 1000 | EGH2GM820M30OTT | |
| 100 | 12.5x50 | 0.20 | 1100 | EGH2GM101W50OTT | |
| | 18x31 | 0.20 | 1100 | EGH2GM101M31OTT | |
| 18x35 | 0.20 | 1140 | EGH2GM101M35OTT | | |
| | 120 | 18x35 | 0.20 | 1260 | EGH2GM121M35OTT |
| 150 | 18x40 | 0.20 | 1400 | EGH2GM151M40OTT | |
| 450(2W) | 6.8 | 10x16 | 0.20 | 150 | EGH2WM6R8G16OTT |
| | 10 | 10x20 | 0.20 | 200 | EGH2WM100G20OTT |
| | 15 | 12.5x20 | 0.20 | 270 | EGH2WM150W20OTT |
| | 22 | 16x20 | 0.20 | 370 | EGH2WM220L20OTT |
| | | 10x40 | 0.20 | 510 | EGH2WM330G40OTT |
| | 33 | 16x25 | 0.20 | 520 | EGH2WM330L25OTT |
| | | 18x20 | 0.20 | 550 | EGH2WM330M20OTT |
| | 39 | 10x45 | 0.20 | 620 | EGH2WM390G45OTT |
| | | 18x25 | 0.20 | 620 | EGH2WM390M25OTT |
| | 47 | 12.5x40 | 0.20 | 700 | EGH2WM470W40OTT |
| | | 18x25 | 0.20 | 700 | EGH2WM470M25OTT |
| | 56 | 12.5x40 | 0.20 | 780 | EGH2WM560W40OTT |
| | 68 | 18x30 | 0.20 | 880 | EGH2WM680M30OTT |
| | 82 | 12.5x50 | 0.20 | 1000 | EGH2WM820W50OTT |
| | | 18x35 | 0.20 | 1000 | EGH2WM820M35OTT |
| | 100 | 18x40 | 0.20 | 1120 | EGH2WM101M40OTT |

Radial Type

LL series

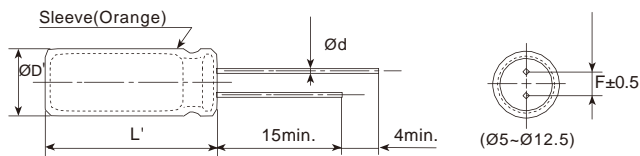
- Stable and extremely low leakage current characteristics
- Endurance: +105°C 2,000 hours
- Wide temperature range of -40°C~+105°C
- **RoHS Compliant**



SPECIFICATIONS

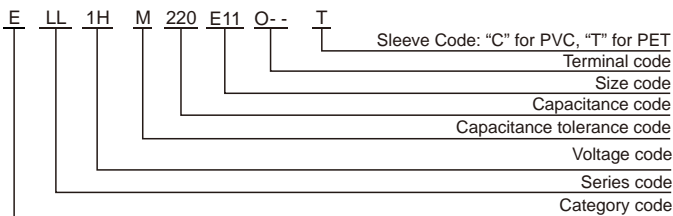
| Items | Characteristics |
|--|--|
| Category Temperature Range | -40~+105°C |
| Rated Voltage Range | 6.3~100 V _{dc} |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) |
| Leakage Current | 1 0.002CV or 0.4μA, whichever is greater. Where, I:Max.leakage current (μA), C:Nominal capacitance (μF), V: Rated voltage (V) (at 20°C after 2 minutes) |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) 6.3 10 16 25 35 50 63 100 |
| | tan δ (max.) 0.22 0.19 0.16 0.14 0.12 0.10 0.10 0.10 |
| | When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20°C, 120Hz) |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) 6.3 10 16 25 35 50 63 100 |
| | Z(-25°C)/Z(+20°C) 4 3 3 2 2 2 2 2 |
| | Z(-40°C)/Z(+20°C) 8 6 6 4 4 3 3 3 (at 120Hz) |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 20 °C after DC voltage plus the rated ripple current is applied for 2,000 hours at 105 °C. |
| | Capacitance Change ±20% of the initial value |
| | D.F. (tan δ) 200% of the initial specified value |
| | Leakage Current The initial specified value |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 500 hours at 105°C without voltage applied. |
| | Capacitance Change ±20% of the initial value |
| | D.F. (tan δ) 200% of the initial specified value |
| | Leakage Current 200% of the initial specified value |

DIMENSIONS[mm]



| | | | | | |
|-----|------------|-----|-----|-----|------|
| ØD | 5 | 6.3 | 8 | 10 | 12.5 |
| Ød | 0.5 | 0.5 | 0.5 | 0.6 | 0.6 |
| F | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 |
| ØD' | ØD+0.5max. | | | | |
| L' | L+2max. | | | | |

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| Freq.(Hz) Cap.(μF) | 50(60) | 120 | 1k | 10k | 100k |
|-----------------------|--------|------|------|------|------|
| Cap.<100 | 0.80 | 1.00 | 1.45 | 1.65 | 1.70 |
| 100 Cap.<1000 | 0.80 | 1.00 | 1.36 | 1.48 | 1.53 |
| Cap. 1000 | 0.85 | 1.00 | 1.25 | 1.35 | 1.38 |

The endurance of capacitors is shortened with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

LL series

■ STANDARD RATINGS

| WV (V _{dc}) | Cap (µF) | Size DxL(mm) | tan | Rated ripple current (mA _{rms} /105°C, 120Hz) | Part Number |
|-----------------------|----------|--------------|------|--|----------------|
| 6.3(0J) | 22 | 5x11 | 0.22 | 36 | ELL0JM220D11OT |
| | 33 | 5x11 | 0.22 | 44 | ELL0JM330D11OT |
| | 47 | 5x11 | 0.22 | 53 | ELL0JM470D11OT |
| | 100 | 5x11 | 0.22 | 74 | ELL0JM101D11OT |
| | 220 | 6.3x11 | 0.22 | 131 | ELL0JM221E11OT |
| | 330 | 6.3x11 | 0.22 | 161 | ELL0JM331E11OT |
| | 470 | 8x11 | 0.22 | 242 | ELL0JM471F11OT |
| | 1000 | 10x12 | 0.22 | 390 | ELL0JM102G12OT |
| | 2200 | 12.5x20 | 0.24 | 665 | ELL0JM222W20OT |
| 10(1A) | 22 | 5x11 | 0.19 | 50 | ELL1AM220D11OT |
| | 33 | 5x11 | 0.19 | 66 | ELL1AM330D11OT |
| | 47 | 5x11 | 0.19 | 75 | ELL1AM470D11OT |
| | 100 | 5x11 | 0.19 | 104 | ELL1AM101D11OT |
| | 220 | 8x11 | 0.19 | 193 | ELL1AM221F11OT |
| | 330 | 8x11 | 0.19 | 256 | ELL1AM331F11OT |
| | 470 | 8x11 | 0.19 | 319 | ELL1AM471F11OT |
| | 1000 | 10x16 | 0.19 | 605 | ELL1AM102G16OT |
| | 2200 | 12.5x20 | 0.21 | 860 | ELL1AM222W20OT |
| 16(1C) | 10 | 5x11 | 0.16 | 39 | ELL1CM100D11OT |
| | 22 | 5x11 | 0.16 | 62 | ELL1CM220D11OT |
| | 33 | 5x11 | 0.16 | 68 | ELL1CM330D11OT |
| | 47 | 5x11 | 0.16 | 105 | ELL1CM470D11OT |
| | 100 | 6.3x11 | 0.16 | 138 | ELL1CM101E11OT |
| | 220 | 8x11 | 0.16 | 220 | ELL1CM221F11OT |
| | 330 | 8x11 | 0.16 | 268 | ELL1CM331F11OT |
| | 470 | 10x12 | 0.16 | 407 | ELL1CM471G12OT |
| | 1000 | 10x20 | 0.16 | 704 | ELL1CM102G20OT |
| | 2200 | 12.5x25 | 0.18 | 890 | ELL1CM222W25OT |
| 25(1E) | 4.7 | 5x11 | 0.14 | 32 | ELL1EM4R7D11OT |
| | 10 | 5x11 | 0.14 | 43 | ELL1EM100D11OT |
| | 22 | 5x11 | 0.14 | 65 | ELL1EM220D11OT |
| | 33 | 5x11 | 0.14 | 76 | ELL1EM330D11OT |
| | 47 | 6.3x11 | 0.14 | 116 | ELL1EM470E11OT |
| | 100 | 8x11 | 0.14 | 149 | ELL1EM101F11OT |
| | 220 | 10x12 | 0.14 | 246 | ELL1EM221G12OT |
| | 330 | 10x12 | 0.14 | 352 | ELL1EM331G12OT |
| | 470 | 10x16 | 0.14 | 484 | ELL1EM471G16OT |
| | 1000 | 12.5x20 | 0.14 | 847 | ELL1EM102W20OT |
| 35(1V) | 4.7 | 5x11 | 0.12 | 33 | ELL1VM4R7D11OT |
| | 10 | 5x11 | 0.12 | 48 | ELL1VM100D11OT |
| | 22 | 6.3x11 | 0.12 | 71 | ELL1VM220E11OT |
| | 33 | 6.3x11 | 0.12 | 83 | ELL1VM330E11OT |
| | 47 | 6.3x11 | 0.12 | 125 | ELL1VM470E11OT |
| | 100 | 8x11 | 0.12 | 187 | ELL1VM101F11OT |
| | 220 | 10x12 | 0.12 | 330 | ELL1VM221G12OT |
| | 330 | 10x16 | 0.12 | 440 | ELL1VM331G16OT |
| | 470 | 12.5x20 | 0.12 | 590 | ELL1VM471W20OT |
| | 1000 | 12.5x25 | 0.12 | 1012 | ELL1VM102W25OT |

LL series

■ STANDARD RATINGS

| WV (V _{dc}) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (mA _{rms} /105°C, 120Hz) | Part Number |
|-----------------------|----------|--------------|------|--|----------------|
| 50(1H) | 0.47 | 5x11 | 0.10 | 12 | ELL1HMR47D11OT |
| | 1 | 5x11 | 0.10 | 17 | ELL1HM010D11OT |
| | 2.2 | 5x11 | 0.10 | 24 | ELL1HM2R2D11OT |
| | 3.3 | 5x11 | 0.10 | 29 | ELL1HM3R3D11OT |
| | 4.7 | 5x11 | 0.10 | 36 | ELL1HM4R7D11OT |
| | 10 | 5x11 | 0.10 | 52 | ELL1HM100D11OT |
| | 22 | 6.3x11 | 0.10 | 77 | ELL1HM220E11OT |
| | 33 | 6.3x11 | 0.10 | 99 | ELL1HM330E11OT |
| | 47 | 8x11 | 0.10 | 138 | ELL1HM470F11OT |
| | 100 | 10x12 | 0.10 | 217 | ELL1HM101G12OT |
| | 220 | 10x20 | 0.10 | 380 | ELL1HM221G20OT |
| | 330 | 12.5x20 | 0.10 | 506 | ELL1HM331W20OT |
| | 470 | 12.5x25 | 0.10 | 705 | ELL1HM471W25OT |
| 63(1J) | 0.47 | 5x11 | 0.10 | 12 | ELL1JMR47D11OT |
| | 1 | 5x11 | 0.10 | 17 | ELL1JM010D11OT |
| | 2.2 | 5x11 | 0.10 | 24 | ELL1JM2R2D11OT |
| | 3.3 | 5x11 | 0.10 | 32 | ELL1JM3R3D11OT |
| | 4.7 | 5x11 | 0.10 | 39 | ELL1JM4R7D11OT |
| | 10 | 6.3x11 | 0.10 | 58 | ELL1JM100E11OT |
| | 22 | 6.3x11 | 0.10 | 94 | ELL1JM220E11OT |
| | 33 | 8x11 | 0.10 | 110 | ELL1JM330F11OT |
| | 47 | 8x11 | 0.10 | 152 | ELL1JM470F11OT |
| | 100 | 10x16 | 0.10 | 260 | ELL1JM101G16OT |
| | 220 | 10x20 | 0.10 | 440 | ELL1JM221G20OT |
| | 330 | 12.5x20 | 0.10 | 594 | ELL1JM331W20OT |
| | 100(1K) | 0.47 | 5x11 | 0.10 | 12 |
| 1 | | 5x11 | 0.10 | 17 | ELL1KM010D11OT |
| 2.2 | | 5x11 | 0.10 | 24 | ELL1KM2R2D11OT |
| 3.3 | | 5x11 | 0.10 | 32 | ELL1KM3R3D11OT |
| 4.7 | | 6.3x11 | 0.10 | 39 | ELL1KM4R7E11OT |
| 10 | | 8x11 | 0.10 | 61 | ELL1KM100F11OT |
| 22 | | 8x11 | 0.10 | 106 | ELL1KM220F11OT |
| 33 | | 10x12 | 0.10 | 142 | ELL1KM330G12OT |
| 47 | | 10x16 | 0.10 | 184 | ELL1KM470G16OT |
| 100 | | 12.5x20 | 0.10 | 300 | ELL1KM101W20OT |
| 220 | | 12.5x30 | 0.10 | 533 | ELL1KM221W30OT |

BG series

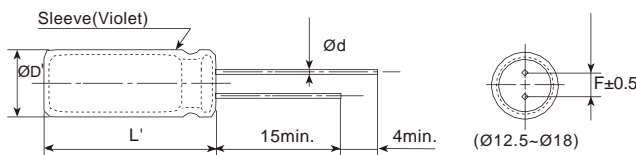
- SRS car assembly, high capacitance
- Low impedance, low temperature characteristics
- Endurance: +105°C 5,000 hours
- RoHS Compliant



SPECIFICATIONS

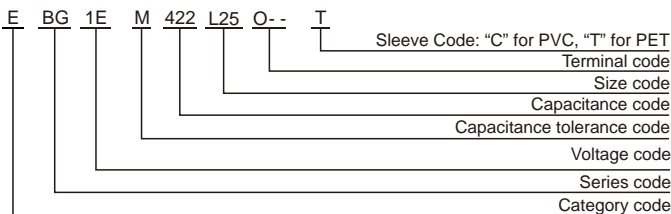
| Items | Characteristics | | |
|---|--|-------------------------------------|------|
| Category Temperature Range | -55~+105°C | | |
| Rated Voltage Range | 25 and 35 V _{dc} | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | |
| Leakage Current | I ≤ 0.01CV or 3μA, whichever is greater. Where, I: Max.leakage current (μA), C: Nominal capacitance (μF), V: Rated voltage (V) (at 20°C after 2 minutes) | | |
| Dissipation Factor (tan δ) | Rated Voltage (V _{dc}) | 25 | 35 |
| | tan δ (max.) | 0.20 | 0.16 |
| When nominal capacitance exceeds 1,000μF, add 0.02 to the value above for each 1,000μF increase. (at 20°C, 120Hz) | | | |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage (V _{dc}) | 25 | 35 |
| | Z(-55°C)/Z(+20°C) | 3 | 3 |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 5,000 hours at 105°C. | | |
| | Capacitance Change | ±20% of the initial value | |
| | D.F. (tan δ) | 200% of the initial specified value | |
| | Leakage Current | The initial specified value | |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 105°C without voltage applied. | | |
| | Capacitance Change | ±20% of the initial value | |
| | D.F. (tan δ) | 200% of the initial specified value | |
| | Leakage Current | 200% of the initial specified value | |

DIMENSIONS [mm]



| ØD | 12.5 | 14.5 | 16 | 18 |
|-----|------------|------|-----|-----|
| Ød | 0.6 | 0.8 | 0.8 | 0.8 |
| F | 5.0 | 7.5 | 7.5 | 7.5 |
| ØD' | ØD+0.5max. | | | |
| L' | L+2.0max. | | | |

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| Freq.(Hz) | 120 | 1k | 10k | 100k |
|----------------|------|------|------|------|
| Cap.<2100 | 0.60 | 0.87 | 0.95 | 1.00 |
| 2100 Cap.<4000 | 0.75 | 0.90 | 0.95 | 1.00 |
| Cap. 4000 | 0.85 | 0.95 | 0.98 | 1.00 |

The endurance of capacitors is shortened with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

BG series

■ STANDARD RATINGS

| WV (V _{dc}) | Cap (μF) | Size DxL(mm) | tan | Impedance (max/20°C,100kHz) | Rated ripple current (mArms/105°C,100kHz) | Part Number |
|-----------------------|----------|--------------|-------|-----------------------------|---|----------------|
| 25(1E) | 1700 | 12.5x20 | 0.20 | 0.057 | 1700 | EBG1EM172W20OT |
| | 2400 | 12.5x25 | 0.22 | 0.045 | 2000 | EBG1EM242W25OT |
| | | 14.5x20 | 0.22 | 0.051 | 2000 | EBG1EM242X20OT |
| | 2800 | 12.5x30 | 0.22 | 0.039 | 2300 | EBG1EM282W30OT |
| | 3000 | 16x20 | 0.24 | 0.044 | 2250 | EBG1EM302L20OT |
| | 3400 | 14.5x25 | 0.24 | 0.041 | 2400 | EBG1EM342X25OT |
| | 3500 | 12.5x35 | 0.24 | 0.033 | 2700 | EBG1EM352W35OT |
| | 4200 | 16x25 | 0.26 | 0.033 | 2600 | EBG1EM422L25OT |
| | | 18x20 | 0.26 | 0.042 | 2500 | EBG1EM422M20OT |
| | 4500 | 12.5x40 | 0.26 | 0.027 | 3100 | EBG1EM452W40OT |
| | 4600 | 14.5x30 | 0.26 | 0.032 | 2700 | EBG1EM462X30OT |
| | 5400 | 14.5x35 | 0.28 | 0.028 | 3100 | EBG1EM542X35OT |
| | 5600 | 16x30 | 0.28 | 0.026 | 3200 | EBG1EM562L30OT |
| | 6000 | 18x25 | 0.30 | 0.030 | 2800 | EBG1EM602M25OT |
| | 6400 | 14.5x40 | 0.30 | 0.025 | 3400 | EBG1EM642X40OT |
| | 6600 | 16x35 | 0.30 | 0.023 | 3500 | EBG1EM662L35OT |
| | 7800 | 16x40 | 0.32 | 0.021 | 3800 | EBG1EM782L40OT |
| | 7900 | 18x30 | 0.32 | 0.024 | 3500 | EBG1EM792M30OT |
| | 9200 | 18x35 | 0.36 | 0.022 | 3700 | EBG1EM922M35OT |
| 11000 | 18x40 | 0.38 | 0.020 | 4000 | EBG1EM113M40OT | |
| 35(1V) | 1000 | 12.5x20 | 0.16 | 0.057 | 1700 | EBG1VM102W20OT |
| | 1400 | 12.5x25 | 0.16 | 0.045 | 2000 | EBG1VM142W25OT |
| | | 14.5x20 | 0.16 | 0.051 | 2000 | EBG1VM142X20OT |
| | 1600 | 12.5x30 | 0.16 | 0.039 | 2300 | EBG1VM162W30OT |
| | 1800 | 16x20 | 0.16 | 0.044 | 2250 | EBG1VM182L20OT |
| | 2000 | 14.5x25 | 0.18 | 0.041 | 2400 | EBG1VM202X25OT |
| | 2100 | 12.5x35 | 0.18 | 0.033 | 2700 | EBG1VM212W35OT |
| | 2500 | 16x25 | 0.18 | 0.033 | 2600 | EBG1VM252L25OT |
| | | 18x20 | 0.18 | 0.042 | 2500 | EBG1VM252M20OT |
| | 2700 | 12.5x40 | 0.18 | 0.027 | 3100 | EBG1VM272W40OT |
| | 2800 | 14.5x30 | 0.18 | 0.032 | 2700 | EBG1VM282X30OT |
| | 3200 | 14.5x35 | 0.20 | 0.028 | 3100 | EBG1VM322X35OT |
| | 3400 | 16x30 | 0.20 | 0.026 | 3200 | EBG1VM342L30OT |
| | 3600 | 18x25 | 0.20 | 0.030 | 2800 | EBG1VM362M25OT |
| | 3800 | 14.5x40 | 0.20 | 0.025 | 3400 | EBG1VM382X40OT |
| | 4000 | 16x35 | 0.22 | 0.023 | 3500 | EBG1VM402L35OT |
| | 4700 | 16x40 | 0.22 | 0.021 | 3800 | EBG1VM472L40OT |
| | 4800 | 18x30 | 0.22 | 0.024 | 3500 | EBG1VM482M30OT |
| | 5600 | 18x35 | 0.24 | 0.022 | 3700 | EBG1VM562M35OT |
| 6700 | 18x40 | 0.24 | 0.020 | 4000 | EBG1VM672M40OT | |

BH series

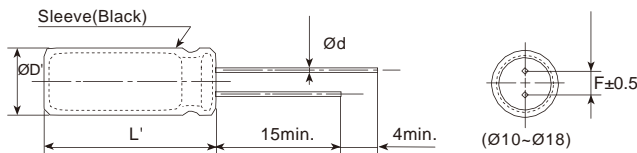
- Endurance: +130°C 3,000 hours
- High reliability, suited for automobile electronics
- Miniaturized, long life, low impedance
- RoHS Compliant



SPECIFICATIONS

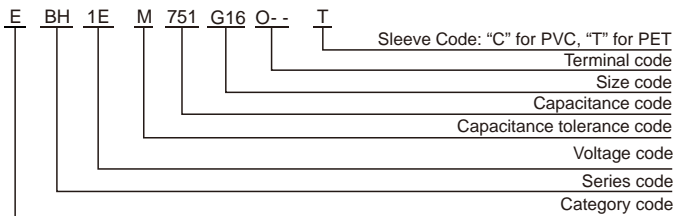
| Items | Characteristics | |
|---|--|---|
| Category Temperature Range | -40~+130°C | |
| Rated Voltage Range | 25~400 V _{dc} | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | |
| Leakage Current | 25~100 V _{dc} | 160~400 V _{dc} |
| | I 0.03CV or 4µA.(after 2 minutes) whichever is greater. | I 0.1CV+40µA. (after 1 minute) I 0.04CV+100µA. (after 1 minute) |
| Where, I: Max.leakage current (µA), C :nominal capacitance (µF), V : Rated voltage (V) (at 20°C) | | |
| Dissipation Factor (tan δ) | Rated Voltage (V _{dc}) | 25 35 50 63 80 100 160~250 350~400 |
| | tan (max.) | 0.14 0.12 0.10 0.10 0.08 0.08 0.15 0.20 |
| When nominal capacitance exceeds 1,000µF, add 0.02 to the value above for each 1,000µF increase. (at 20°C, 120Hz) | | |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage (V _{dc}) | 25 35 50 63 80 100 160~250 350~400 |
| | Z(-25°C)/Z(+20°C) | 2 2 2 2 2 2 3 6 |
| | Z(-40°C)/Z(+20°C) | 4 4 4 4 4 4 6 12 (at 120Hz) |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 20°C after DC voltage plus rated ripple current is applied for 3,000 hours at 130°C. | |
| | Rated Voltage (V _{dc}) | 25~100 160~400 |
| | Capacitance Change | ±30% of the initial value ±20% of the initial value |
| | D.F. (tan δ) | 300% of the initial specified value 200% of the initial specified value |
| | Leakage Current | The initial specified value The initial specified value |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 105°C without voltage applied. | |
| | Capacitance Change | ±20% of the initial value |
| | D.F. (tan δ) | 200% of the initial specified value |
| | Leakage Current | 200% of the initial specified value |

DIMENSIONS [mm]



| | | | | | |
|-----|------------|------|------|-----|-----|
| ØD | 10 | 12.5 | 14.5 | 16 | 18 |
| Ød | 0.6 | 0.6 | 0.8 | 0.8 | 0.8 |
| F | 5.0 | 5.0 | 7.5 | 7.5 | 7.5 |
| ØD' | ØD+0.5max. | | | | |
| L' | L+2max. | | | | |

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current
6.3 to 100 V_{dc}

| Cap.(µF) | 120 | 1k | 10k | 100k |
|---------------|------|------|------|------|
| 130 to 240 | 0.40 | 0.82 | 0.93 | 1.00 |
| 270 to 560 | 0.50 | 0.85 | 0.94 | 1.00 |
| 620 to 2000 | 0.60 | 0.87 | 0.95 | 1.00 |
| 2200 to 4300 | 0.75 | 0.90 | 0.95 | 1.00 |
| 4700 to 11000 | 0.85 | 0.95 | 0.98 | 1.00 |

160 to 400 V_{dc}

| Cap.(µF) | 50 | 120 | 300 | 1k | 10k | 100k |
|-----------|------|------|------|------|------|------|
| 12 to 33 | 0.15 | 0.30 | 0.45 | 0.65 | 0.95 | 1.00 |
| 36 to 270 | 0.25 | 0.35 | 0.50 | 0.70 | 0.96 | 1.00 |

The endurance of capacitors is shortened with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

BH series

■ STANDARD RATINGS

| WV (V _{dc}) | Cap (μF) | Size D _x L _x (mm) | tan | Impedance (max/20°C, 100kHz) | Rated ripple current (mArms/130°C, 100kHz) | Part Number |
|-----------------------|----------|---|-------|------------------------------|--|----------------|
| 25(1E) | 510 | 10x12.5 | 0.14 | 0.14 | 900 | EBH1EM511G1BOT |
| | 750 | 10x16 | 0.14 | 0.094 | 1300 | EBH1EM751G16OT |
| | 910 | 12.5x16 | 0.14 | 0.082 | 1220 | EBH1EM911W16OT |
| | 1200 | 10x20 | 0.14 | 0.073 | 1540 | EBH1EM122G20OT |
| | | 14.5x15 | 0.14 | 0.067 | 1320 | EBH1EM122X15OT |
| | 1500 | 10x25 | 0.14 | 0.042 | 1880 | EBH1EM152G25OT |
| | 1600 | 16x15 | 0.14 | 0.063 | 1430 | EBH1EM162L15OT |
| | 1800 | 12.5x20 | 0.14 | 0.038 | 1590 | EBH1EM182W20OT |
| | 2000 | 10x30 | 0.16 | 0.033 | 2150 | EBH1EM202G30OT |
| | 2200 | 14.5x20 | 0.16 | 0.030 | 1780 | EBH1EM222X20OT |
| | 2400 | 18x15 | 0.16 | 0.053 | 1630 | EBH1EM242M15OT |
| | 2700 | 12.5x25 | 0.16 | 0.030 | 2280 | EBH1EM272W25OT |
| | 3000 | 16x20 | 0.18 | 0.029 | 1890 | EBH1EM302L20OT |
| | 3300 | 12.5x30 | 0.18 | 0.025 | 2760 | EBH1EM332W30OT |
| | 3600 | 14.5x25 | 0.18 | 0.025 | 2760 | EBH1EM362X25OT |
| | | 12.5x35 | 0.20 | 0.022 | 3120 | EBH1EM432W35OT |
| | 4300 | 16x25 | 0.20 | 0.022 | 3030 | EBH1EM432L25OT |
| | | 18x20 | 0.20 | 0.028 | 1930 | EBH1EM432M20OT |
| | 4700 | 14.5x30 | 0.20 | 0.020 | 3090 | EBH1EM472X30OT |
| | 5100 | 12.5x40 | 0.22 | 0.019 | 3610 | EBH1EM512W40OT |
| | | 14.5x35 | 0.22 | 0.018 | 3430 | EBH1EM512X35OT |
| | | 16x30 | 0.22 | 0.018 | 3330 | EBH1EM512L30OT |
| 5600 | 18x25 | 0.24 | 0.020 | 3200 | EBH1EM562M25OT | |
| | 14.5x40 | 0.24 | 0.016 | 3820 | EBH1EM682X40OT | |
| 6800 | 16x35 | 0.24 | 0.016 | 3630 | EBH1EM682L35OT | |
| | 18x30 | 0.26 | 0.016 | 3480 | EBH1EM752M30OT | |
| 8200 | 16x40 | 0.28 | 0.015 | 3930 | EBH1EM822L40OT | |
| 9100 | 18x35 | 0.30 | 0.015 | 3750 | EBH1EM912M35OT | |
| 11000 | 18x40 | 0.32 | 0.014 | 4040 | EBH1EM113M40OT | |
| 35(1V) | 300 | 10x12.5 | 0.12 | 0.14 | 900 | EBH1VM301G1BOT |
| | 510 | 10x16 | 0.12 | 0.094 | 1300 | EBH1VM511G16OT |
| | 560 | 12.5x16 | 0.12 | 0.082 | 1220 | EBH1VM561W16OT |
| | 680 | 10x20 | 0.12 | 0.073 | 1540 | EBH1VM681G20OT |
| | 750 | 14.5x15 | 0.12 | 0.067 | 1320 | EBH1VM751X15OT |
| | 820 | 10x25 | 0.12 | 0.042 | 1880 | EBH1VM821G25OT |
| | 1100 | 12.5x20 | 0.12 | 0.038 | 1590 | EBH1VM112W20OT |
| | | 16x15 | 0.12 | 0.063 | 1430 | EBH1VM112L15OT |
| | 1200 | 10x30 | 0.12 | 0.033 | 2150 | EBH1VM122G30OT |
| | 1500 | 12.5x25 | 0.12 | 0.030 | 2280 | EBH1VM152W25OT |
| | | 14.5x20 | 0.12 | 0.030 | 1780 | EBH1VM152X20OT |
| | 2000 | 18x15 | 0.12 | 0.053 | 1630 | EBH1VM152M15OT |
| | | 12.5x30 | 0.14 | 0.025 | 2760 | EBH1VM202W30OT |
| | 2200 | 16x20 | 0.14 | 0.029 | 1890 | EBH1VM202L20OT |
| | | 14.5x25 | 0.14 | 0.025 | 2760 | EBH1VM222X25OT |
| | 2400 | 12.5x35 | 0.14 | 0.022 | 3120 | EBH1VM242W35OT |
| | | 16x25 | 0.14 | 0.022 | 3030 | EBH1VM242L25OT |
| | 2700 | 18x20 | 0.14 | 0.028 | 1930 | EBH1VM242M20OT |
| | | 12.5x40 | 0.14 | 0.019 | 3610 | EBH1VM272W40OT |
| | 3000 | 14.5x30 | 0.14 | 0.020 | 3090 | EBH1VM272X30OT |
| | | 14.5x35 | 0.16 | 0.018 | 3430 | EBH1VM302X35OT |
| | 3300 | 16x30 | 0.16 | 0.018 | 3330 | EBH1VM332L30OT |
| | | 18x25 | 0.16 | 0.020 | 3200 | EBH1VM332M25OT |
| | 3900 | 14.5x40 | 0.16 | 0.016 | 3820 | EBH1VM392X40OT |
| | 4300 | 16x35 | 0.18 | 0.016 | 3630 | EBH1VM432L35OT |
| | | 18x30 | 0.18 | 0.016 | 3480 | EBH1VM432M30OT |
| | 4700 | 16x40 | 0.18 | 0.015 | 3930 | EBH1VM472L40OT |
| | 5100 | 18x35 | 0.20 | 0.015 | 3750 | EBH1VM512M35OT |
| 6200 | 18x40 | 0.26 | 0.014 | 4040 | EBH1VM622M40OT | |

| WV (V _{dc}) | Cap (μF) | Size D _x L _x (mm) | tan | Impedance (max/20°C, 100kHz) | Rated ripple current (mArms/130°C, 100kHz) | Part Number |
|-----------------------|----------|---|-------|------------------------------|--|----------------|
| 50(1H) | 160 | 10x12.5 | 0.10 | 0.24 | 730 | EBH1HM161G1BOT |
| | 240 | 10x16 | 0.10 | 0.16 | 1080 | EBH1HM241G16OT |
| | 270 | 12.5x16 | 0.10 | 0.14 | 1020 | EBH1HM271W16OT |
| | 330 | 10x20 | 0.10 | 0.12 | 1290 | EBH1HM331G20OT |
| | 390 | 14.5x15 | 0.10 | 0.12 | 1090 | EBH1HM391X15OT |
| | 430 | 10x25 | 0.10 | 0.055 | 1740 | EBH1HM431G25OT |
| | 510 | 12.5x20 | 0.10 | 0.049 | 1410 | EBH1HM511W20OT |
| | 560 | 10x30 | 0.10 | 0.041 | 2020 | EBH1HM561G30OT |
| | | 16x15 | 0.10 | 0.11 | 1190 | EBH1HM561L15OT |
| | 680 | 14.5x20 | 0.10 | 0.038 | 1610 | EBH1HM681X20OT |
| | 750 | 12.5x25 | 0.10 | 0.038 | 2030 | EBH1HM751W25OT |
| | | 18x15 | 0.10 | 0.085 | 1370 | EBH1HM751M15OT |
| | 910 | 16x20 | 0.10 | 0.037 | 1740 | EBH1HM911L20OT |
| | 1000 | 12.5x30 | 0.10 | 0.031 | 2510 | EBH1HM102W30OT |
| | | 14.5x25 | 0.10 | 0.031 | 2480 | EBH1HM102X25OT |
| | 1200 | 12.5x35 | 0.10 | 0.027 | 2900 | EBH1HM122W35OT |
| | | 18x20 | 0.10 | 0.036 | 1830 | EBH1HM122M20OT |
| | 1300 | 14.5x30 | 0.10 | 0.026 | 2870 | EBH1HM132X30OT |
| | | 16x35 | 0.10 | 0.027 | 2690 | EBH1HM132L35OT |
| | 1500 | 12.5x40 | 0.10 | 0.023 | 3260 | EBH1HM152W40OT |
| | | 14.5x35 | 0.10 | 0.023 | 3160 | EBH1HM152X35OT |
| | 1600 | 16x30 | 0.10 | 0.023 | 3150 | EBH1HM162L30OT |
| | 1800 | 18x25 | 0.10 | 0.025 | 2900 | EBH1HM182M25OT |
| | 2000 | 14.5x40 | 0.12 | 0.020 | 3560 | EBH1HM202X40OT |
| | | 16x35 | 0.12 | 0.020 | 3470 | EBH1HM202L35OT |
| | 2200 | 18x30 | 0.12 | 0.021 | 3330 | EBH1HM222M30OT |
| | 2400 | 16x40 | 0.12 | 0.018 | 3800 | EBH1HM242L40OT |
| | 2700 | 18x35 | 0.12 | 0.019 | 3590 | EBH1HM272M35OT |
| 3300 | 18x40 | 0.14 | 0.017 | 3850 | EBH1HM332M40OT | |
| 63(1J) | 390 | 12.5x20 | 0.10 | 0.097 | 1310 | EBH1JM391W20OT |
| | 510 | 12.5x25 | 0.10 | 0.072 | 1880 | EBH1JM511W25OT |
| | | 14.5x20 | 0.10 | 0.072 | 1510 | EBH1JM511X20OT |
| | 620 | 16x20 | 0.10 | 0.062 | 1630 | EBH1JM621L20OT |
| | 680 | 12.5x30 | 0.10 | 0.052 | 2410 | EBH1JM681W30OT |
| | | 14.5x25 | 0.10 | 0.054 | 2130 | EBH1JM681X25OT |
| | 820 | 12.5x35 | 0.10 | 0.044 | 2760 | EBH1JM821W35OT |
| | | 18x20 | 0.10 | 0.055 | 1750 | EBH1JM821M20OT |
| | 910 | 14.5x30 | 0.10 | 0.042 | 2700 | EBH1JM911X30OT |
| | | 16x25 | 0.10 | 0.047 | 2300 | EBH1JM911L25OT |
| | 1000 | 12.5x40 | 0.10 | 0.038 | 3080 | EBH1JM102W40OT |
| | | 14.5x35 | 0.10 | 0.037 | 2940 | EBH1JM112X35OT |
| | 1100 | 16x30 | 0.10 | 0.037 | 2940 | EBH1JM112L30OT |
| | | 18x25 | 0.10 | 0.044 | 2440 | EBH1JM122M25OT |
| | 1300 | 14.5x40 | 0.10 | 0.032 | 3350 | EBH1JM132X40OT |
| | | 16x35 | 0.10 | 0.031 | 3220 | EBH1JM132L35OT |
| | 1500 | 18x30 | 0.10 | 0.037 | 3100 | EBH1JM152M30OT |
| | 1800 | 16x40 | 0.10 | 0.028 | 3590 | EBH1JM182L40OT |
| | 2000 | 18x35 | 0.12 | 0.028 | 3450 | EBH1JM202M35OT |
| | 2400 | 18x40 | 0.12 | 0.023 | 3690 | EBH1JM242M40OT |

BH series

■ STANDARD RATINGS

| WV (V _{dc}) | Cap (μF) | Size D×L(mm) | tan | Impedance (max/20°C, 100kHz) | Rated ripple current (mA _{rms} /130°C, 100kHz) | Part Number |
|-----------------------|----------|--------------|-------|------------------------------|---|----------------|
| 80(1B) | 240 | 12.5×20 | 0.08 | 0.097 | 1310 | EBH1BM241W20OT |
| | 330 | 12.5×25 | 0.08 | 0.072 | 1880 | EBH1BM331W25OT |
| | | 14.5×20 | 0.08 | 0.072 | 1510 | EBH1BM331X20OT |
| | | 16×20 | 0.08 | 0.062 | 1630 | EBH1BM391L20OT |
| | 430 | 12.5×30 | 0.08 | 0.052 | 2410 | EBH1BM431W30OT |
| | 470 | 14.5×25 | 0.08 | 0.054 | 2130 | EBH1BM471X25OT |
| | 560 | 12.5×35 | 0.08 | 0.044 | 2760 | EBH1BM561W35OT |
| | | 16×25 | 0.08 | 0.047 | 2300 | EBH1BM561L25OT |
| | | 18×20 | 0.08 | 0.055 | 1750 | EBH1BM561M20OT |
| | 620 | 12.5×40 | 0.08 | 0.038 | 3080 | EBH1BM621W40OT |
| | | 14.5×30 | 0.08 | 0.042 | 2700 | EBH1BM621X30OT |
| | 680 | 14.5×35 | 0.08 | 0.037 | 2940 | EBH1BM681X35OT |
| | | 16×30 | 0.08 | 0.037 | 2940 | EBH1BM681L30OT |
| | 750 | 18×25 | 0.08 | 0.044 | 2440 | EBH1BM751M25OT |
| | 820 | 14.5×40 | 0.08 | 0.032 | 3350 | EBH1BM821X40OT |
| | 910 | 16×35 | 0.08 | 0.031 | 3220 | EBH1BM911L35OT |
| | | 18×30 | 0.08 | 0.037 | 3100 | EBH1BM911M30OT |
| | 1100 | 16×40 | 0.08 | 0.028 | 3590 | EBH1BM112L40OT |
| 1300 | 18×35 | 0.08 | 0.028 | 3450 | EBH1BM132M35OT | |
| 1500 | 18×40 | 0.08 | 0.023 | 3690 | EBH1BM152M40OT | |
| 100(1K) | 130 | 12.5×20 | 0.08 | 0.12 | 1210 | EBH1KM131W20OT |
| | 180 | 14.5×20 | 0.08 | 0.082 | 1450 | EBH1KM181X20OT |
| | 200 | 12.5×25 | 0.08 | 0.082 | 1800 | EBH1KM201W25OT |
| | 240 | 12.5×30 | 0.08 | 0.062 | 2290 | EBH1KM241W30OT |
| | | 16×20 | 0.08 | 0.071 | 1580 | EBH1KM241L20OT |
| | 270 | 14.5×25 | 0.08 | 0.064 | 2050 | EBH1KM271X25OT |
| | 330 | 12.5×35 | 0.08 | 0.051 | 2680 | EBH1KM331W35OT |
| | | 16×25 | 0.08 | 0.057 | 2190 | EBH1KM331L25OT |
| | | 18×20 | 0.08 | 0.069 | 1690 | EBH1KM331M20OT |
| | 360 | 14.5×30 | 0.08 | 0.050 | 2620 | EBH1KM361X30OT |
| | | 12.5×40 | 0.08 | 0.044 | 2970 | EBH1KM391W40OT |
| | 390 | 14.5×35 | 0.08 | 0.044 | 2850 | EBH1KM391X35OT |
| | | 16×30 | 0.08 | 0.044 | 2770 | EBH1KM391L30OT |
| | 430 | 18×25 | 0.08 | 0.054 | 2310 | EBH1KM431M25OT |
| | | 14.5×40 | 0.08 | 0.038 | 3230 | EBH1KM511X40OT |
| | 510 | 16×35 | 0.08 | 0.037 | 3010 | EBH1KM511L35OT |
| | | 18×30 | 0.08 | 0.043 | 2830 | EBH1KM561M30OT |
| | 620 | 16×40 | 0.08 | 0.032 | 3320 | EBH1KM621L40OT |
| 680 | 18×35 | 0.08 | 0.034 | 3210 | EBH1KM681M35OT | |
| 820 | 18×40 | 0.08 | 0.029 | 3410 | EBH1KM821M40OT | |

| WV (V _{dc}) | Cap (μF) | Size D×L(mm) | tan | Impedance (max/20°C, 100kHz) | Rated ripple current (mA _{rms} /130°C, 100kHz) | Part Number |
|-----------------------|----------|--------------|------|------------------------------|---|----------------|
| 160(2C) | 47 | 12.5×25 | 0.15 | — | 590 | EBH2CM470W25OT |
| | 68 | 16×25 | 0.15 | — | 750 | EBH2CM680L25OT |
| | 82 | 16×25 | 0.15 | — | 825 | EBH2CM820L25OT |
| | 100 | 16×25 | 0.15 | — | 960 | EBH2CM101L25OT |
| | | 18×20 | 0.15 | — | 960 | EBH2CM101M20OT |
| | 150 | 18×30 | 0.15 | — | 1050 | EBH2CM151M30OT |
| | 220 | 18×35 | 0.15 | — | 1500 | EBH2CM221M35OT |
| 200(2D) | 33 | 12.5×20 | 0.15 | — | 500 | EBH2DM330W20OT |
| | 47 | 12.5×25 | 0.15 | — | 650 | EBH2DM470W25OT |
| | 68 | 16×20 | 0.15 | — | 650 | EBH2DM470L20OT |
| | 68 | 16×25 | 0.15 | — | 750 | EBH2DM680L25OT |
| | 82 | 16×30 | 0.15 | — | 900 | EBH2DM820L30OT |
| | | 18×25 | 0.15 | — | 900 | EBH2DM820M25OT |
| | 100 | 16×30 | 0.15 | — | 1100 | EBH2DM101L30OT |
| 150 | 18×25 | 0.15 | — | 1100 | EBH2DM101M25OT | |
| | 18×35 | 0.15 | — | 1350 | EBH2DM151M35OT | |
| 250(2E) | 22 | 12.5×20 | 0.15 | — | 430 | EBH2EM220W20OT |
| | 33 | 12.5×25 | 0.15 | — | 530 | EBH2EM330W25OT |
| | | 16×20 | 0.15 | — | 530 | EBH2EM330L20OT |
| | 47 | 16×25 | 0.15 | — | 690 | EBH2EM470L25OT |
| | | 18×20 | 0.15 | — | 690 | EBH2EM470M20OT |
| | 68 | 16×30 | 0.15 | — | 780 | EBH2EM680L30OT |
| | 82 | 18×25 | 0.15 | — | 780 | EBH2EM680M25OT |
| 18×25 | | 0.15 | — | 900 | EBH2EM820M25OT | |
| 100 | 18×30 | 0.15 | — | 970 | EBH2EM101M30OT | |
| 350(2V) | 15 | 12.5×25 | 0.20 | — | 335 | EBH2VM150W25OT |
| | | 16×20 | 0.20 | — | 335 | EBH2VM150L20OT |
| | 22 | 16×25 | 0.20 | — | 450 | EBH2VM220L25OT |
| | | 16×30 | 0.20 | — | 535 | EBH2VM330L30OT |
| | 33 | 16×35 | 0.20 | — | 555 | EBH2VM330L35OT |
| | | 18×30 | 0.20 | — | 700 | EBH2VM470M30OT |
| | 47 | 18×35 | 0.20 | — | 750 | EBH2VM470M35OT |
| 18×40 | | 0.20 | — | 900 | EBH2VM680M40OT | |
| 400(2G) | 12 | 12.5×25 | 0.20 | — | 280 | EBH2GM120W25OT |
| | 15 | 12.5×25 | 0.20 | — | 335 | EBH2GM150W25OT |
| | | 16×20 | 0.20 | — | 335 | EBH2GM150L20OT |
| | 22 | 16×25 | 0.20 | — | 480 | EBH2GM220L25OT |
| | | 16×30 | 0.20 | — | 500 | EBH2GM220L30OT |
| | 33 | 18×30 | 0.20 | — | 635 | EBH2GM330M30OT |
| | 47 | 18×35 | 0.20 | — | 750 | EBH2GM470M35OT |
| 18×40 | | 0.20 | — | 900 | EBH2GM680M40OT | |

LK series

- Standard series for general purpose
- Endurance: 2,000 hours at 85°C
- RoHS Compliant

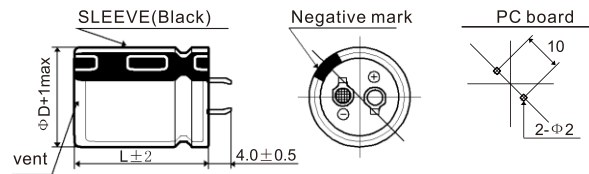


SPECIFICATIONS

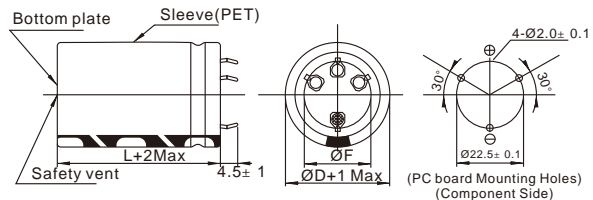
| Items | Characteristics | |
|--|---|---|
| Category Temperature Range | -40~+85°C | -25~ +85°C |
| Rated Voltage Range | 10~100V.DC | 160~500V.DC |
| Capacitance Tolerance | ±20% (M) (at 20°C, 120Hz) | |
| Leakage Current | I 3√CV Where, I: Max.leakage current (μA), C: Nominal capacitance (μF), V: Rated voltage (V) (at 20 °C after 5 minutes) | |
| Dissipation Factor (tan δ) | Rated Voltage (V _{dc}) | 10 16 25 35 50 63 80 100 160 to 400 420 to 500 (at 20°C, 120Hz) |
| | tan (max.) | 0.55 0.50 0.45 0.40 0.35 0.30 0.25 0.20 0.15 0.15 |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage (V _{dc}) | 10 16 25 35 50 63 80 100 160 to 400 420 to 500 |
| | Z(-25°C)/Z(+20°C) | 4 4 3 3 2 2 2 2 4 8 (at 120Hz) |
| | Z(-40°C)/Z(+20°C) | 15 15 10 8 6 6 5 5 - - |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 20°C after DC voltage plus the rated ripple current is applied for 2,000 hours at 85°C. | |
| | Capacitance Change | ±20% of the initial value |
| | D.F. (tan δ) | 200% of the initial specified value |
| | Leakage Current | The initial specified value |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 85°C without voltage applied. | |
| | Capacitance Change | ±20% of the initial value |
| | D.F. (tan δ) | 150% of the initial specified value |
| | Leakage Current | 200% of the initial specified value |

DIMENSIONS [mm]

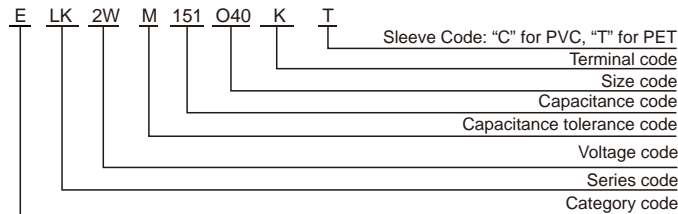
- Terminal Code : K (22 to 35) : Standard



- Terminal Code: P (40 to 45)



PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| Rated voltage(V _{dc}) | Freq.(Hz) | | | |
|---------------------------------|-----------|------|------|------|
| | 120 | 1k | 10k | 100k |
| 10~50 | 1.00 | 1.03 | 1.05 | 1.08 |
| 63~100 | 1.00 | 1.07 | 1.13 | 1.19 |
| 160~250 | 1.00 | 1.32 | 1.45 | 1.50 |
| 315~500 | 1.00 | 1.30 | 1.41 | 1.43 |

The endurance of capacitors is shortened with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

LK series

■ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Size DxDL(mm) | tan | Rated ripple current (Arms/85°C, 120Hz) | Part Number |
|----------|----------|---------------|-------|---|----------------|
| 10(1A) | 12000 | 22x25 | 0.55 | 2.41 | ELK1AM123O25KT |
| | 15000 | 22x30 | 0.55 | 2.88 | ELK1AM153O30KT |
| | | 25x25 | 0.55 | 2.88 | ELK1AM153P25KT |
| | | 22x35 | 0.55 | 3.22 | ELK1AM183O35KT |
| | 18000 | 25x30 | 0.55 | 3.08 | ELK1AM183P30KT |
| | | 22x40 | 0.55 | 3.79 | ELK1AM223O40KT |
| | 22000 | 25x30 | 0.55 | 3.66 | ELK1AM223P30KT |
| | | 30x25 | 0.55 | 3.53 | ELK1AM223Q25KT |
| | | 22x45 | 0.55 | 4.04 | ELK1AM273O45KT |
| | 27000 | 25x35 | 0.55 | 4.04 | ELK1AM273P35KT |
| | | 30x30 | 0.55 | 3.99 | ELK1AM273Q30KT |
| | | 22x50 | 0.55 | 4.58 | ELK1AM333O50KT |
| | 33000 | 25x40 | 0.55 | 4.56 | ELK1AM333P40KT |
| | | 30x30 | 0.55 | 4.58 | ELK1AM333Q30KT |
| | | 25x45 | 0.55 | 5.29 | ELK1AM393P45KT |
| | 39000 | 30x35 | 0.55 | 5.21 | ELK1AM393Q35KT |
| | | 35x30 | 0.55 | 5.05 | ELK1AM393R30KT |
| | | 25x50 | 0.55 | 5.78 | ELK1AM473P50KT |
| | 47000 | 30x40 | 0.55 | 5.78 | ELK1AM473Q40KT |
| | | 35x35 | 0.55 | 5.55 | ELK1AM473R35KT |
| | 56000 | 30x45 | 0.55 | 6.59 | ELK1AM563Q45KT |
| | | 35x35 | 0.55 | 6.40 | ELK1AM563R35KT |
| | 68000 | 30x50 | 0.55 | 7.50 | ELK1AM683Q50KT |
| | | 35x40 | 0.55 | 7.48 | ELK1AM683R40KT |
| 82000 | 35x50 | 0.55 | 8.50 | ELK1AM823R50KT | |
| 16(1C) | 8200 | 22x25 | 0.50 | 2.56 | ELK1CM822O25KT |
| | 10000 | 22x30 | 0.50 | 2.81 | ELK1CM103O30KT |
| | | 22x30 | 0.50 | 3.31 | ELK1CM123O30KT |
| | 12000 | 25x25 | 0.50 | 2.96 | ELK1CM123P25KT |
| | | 22x35 | 0.50 | 3.69 | ELK1CM153O35KT |
| | 15000 | 25x30 | 0.50 | 3.64 | ELK1CM153P30KT |
| | | 30x25 | 0.50 | 3.73 | ELK1CM153Q25KT |
| | | 22x40 | 0.50 | 3.98 | ELK1CM183O40KT |
| | 18000 | 25x35 | 0.50 | 3.98 | ELK1CM183P35KT |
| | | 30x30 | 0.50 | 3.88 | ELK1CM183Q30KT |
| | | 22x50 | 0.50 | 4.52 | ELK1CM223O50KT |
| | 22000 | 25x40 | 0.50 | 4.44 | ELK1CM223P40KT |
| | | 30x30 | 0.50 | 4.38 | ELK1CM223Q30KT |
| | | 25x45 | 0.50 | 4.98 | ELK1CM273P45KT |
| | 27000 | 30x35 | 0.50 | 4.82 | ELK1CM273Q35KT |
| | | 35x30 | 0.50 | 4.82 | ELK1CM273R30KT |
| | | 25x50 | 0.50 | 5.49 | ELK1CM333P50KT |
| | 33000 | 30x40 | 0.50 | 5.38 | ELK1CM333Q40KT |
| | | 35x35 | 0.50 | 5.33 | ELK1CM333R35KT |
| | | 30x45 | 0.50 | 6.11 | ELK1CM393Q45KT |
| | 39000 | 35x35 | 0.50 | 6.01 | ELK1CM393R35KT |
| | | 30x50 | 0.50 | 6.80 | ELK1CM473Q50KT |
| | 47000 | 35x40 | 0.50 | 6.80 | ELK1CM473R40KT |
| | | 56000 | 35x45 | 0.50 | 7.62 |
| 25(1E) | 5600 | 22x25 | 0.45 | 2.31 | ELK1EM562O25KT |
| | 6800 | 22x30 | 0.45 | 2.56 | ELK1EM682O30KT |
| | | 22x35 | 0.45 | 2.81 | ELK1EM822O35KT |
| | 8200 | 25x25 | 0.45 | 2.78 | ELK1EM822P25KT |
| | | 22x35 | 0.45 | 3.18 | ELK1EM103O35KT |
| | 10000 | 25x30 | 0.45 | 3.16 | ELK1EM103P30KT |
| | | 22x40 | 0.45 | 3.53 | ELK1EM123O40KT |
| | 12000 | 25x35 | 0.45 | 3.48 | ELK1EM123P35KT |
| | | 30x25 | 0.45 | 3.53 | ELK1EM123Q25KT |
| | | 22x50 | 0.45 | 4.08 | ELK1EM153O50KT |
| | 15000 | 25x40 | 0.45 | 4.00 | ELK1EM153P40KT |
| | | 30x30 | 0.45 | 4.00 | ELK1EM153Q30KT |

| WV (Vdc) | Cap (μF) | Size DxDL(mm) | tan | Rated ripple current (Arms/85°C, 120Hz) | Part Number | |
|----------|----------|---------------|-------|---|----------------|----------------|
| 25(1E) | 18000 | 25x45 | 0.45 | 4.68 | ELK1EM183P45KT | |
| | | 30x35 | 0.45 | 4.66 | ELK1EM183Q35KT | |
| | | 35x30 | 0.45 | 4.68 | ELK1EM183R30KT | |
| | 22000 | 30x40 | 0.45 | 5.19 | ELK1EM223Q40KT | |
| | | 35x35 | 0.45 | 5.20 | ELK1EM223R35KT | |
| | | 30x45 | 0.45 | 6.02 | ELK1EM273Q45KT | |
| | 27000 | 35x40 | 0.45 | 6.02 | ELK1EM273R40KT | |
| | | 33000 | 35x45 | 0.45 | 6.75 | ELK1EM333R45KT |
| | | 39000 | 35x50 | 0.45 | 7.56 | ELK1EM393R50KT |
| 35(1V) | 3900 | 22x25 | 0.40 | 2.22 | ELK1VM392O25KT | |
| | | 22x30 | 0.40 | 2.46 | ELK1VM472O30KT | |
| | | 25x25 | 0.40 | 2.43 | ELK1VM472P25KT | |
| | 4700 | 22x35 | 0.40 | 2.79 | ELK1VM562O35KT | |
| | | 25x30 | 0.40 | 2.75 | ELK1VM562P30KT | |
| | | 22x40 | 0.40 | 2.89 | ELK1VM682O40KT | |
| | 5600 | 25x30 | 0.40 | 2.89 | ELK1VM682P30KT | |
| | | 30x25 | 0.40 | 3.09 | ELK1VM682Q25KT | |
| | | 22x45 | 0.40 | 3.47 | ELK1VM822O45KT | |
| | 6800 | 25x35 | 0.40 | 3.33 | ELK1VM822P35KT | |
| | | 30x30 | 0.40 | 3.29 | ELK1VM822Q30KT | |
| | | 22x50 | 0.40 | 3.59 | ELK1VM103O50KT | |
| | 8200 | 25x40 | 0.40 | 3.59 | ELK1VM103P40KT | |
| | | 30x30 | 0.40 | 3.61 | ELK1VM103Q30KT | |
| | | 25x45 | 0.40 | 4.01 | ELK1VM123P45KT | |
| 10000 | 30x35 | 0.40 | 4.01 | ELK1VM123Q35KT | | |
| | 35x30 | 0.40 | 4.02 | ELK1VM123R30KT | | |
| | 30x40 | 0.40 | 4.80 | ELK1VM153Q40KT | | |
| 12000 | 35x35 | 0.40 | 4.80 | ELK1VM153R35KT | | |
| | 30x45 | 0.40 | 5.18 | ELK1VM183Q45KT | | |
| | 35x40 | 0.40 | 5.71 | ELK1VM183R40KT | | |
| 15000 | 22000 | 35x45 | 0.40 | 6.38 | ELK1VM223R45KT | |
| | 27000 | 35x50 | 0.40 | 6.90 | ELK1VM273R50KT | |
| | 50(1H) | 2200 | 22x25 | 0.35 | 1.93 | ELK1HM222O25KT |
| 2700 | | | 22x30 | 0.35 | 2.21 | ELK1HM272O30KT |
| 22x30 | | | 0.35 | 2.41 | ELK1HM332O30KT | |
| 3300 | | 25x25 | 0.35 | 2.38 | ELK1HM332P25KT | |
| | | 22x35 | 0.35 | 2.72 | ELK1HM392O35KT | |
| | | 25x30 | 0.35 | 2.68 | ELK1HM392P30KT | |
| 3900 | | 22x40 | 0.35 | 3.01 | ELK1HM472O40KT | |
| | | 25x30 | 0.35 | 3.03 | ELK1HM472P30KT | |
| | | 30x25 | 0.35 | 3.01 | ELK1HM472Q25KT | |
| 4700 | | 22x45 | 0.35 | 3.43 | ELK1HM562O45KT | |
| | | 25x35 | 0.35 | 3.37 | ELK1HM562P35KT | |
| | | 30x30 | 0.35 | 3.43 | ELK1HM562Q30KT | |
| 5600 | 22x50 | 0.35 | 3.94 | ELK1HM682O50KT | | |
| | 25x40 | 0.35 | 3.87 | ELK1HM682P40KT | | |
| | 30x35 | 0.35 | 3.87 | ELK1HM682Q35KT | | |
| 6800 | 25x45 | 0.35 | 4.37 | ELK1HM822P45KT | | |
| | 30x35 | 0.35 | 4.42 | ELK1HM822Q35KT | | |
| | 35x30 | 0.35 | 4.41 | ELK1HM822R30KT | | |
| 8200 | 30x40 | 0.35 | 5.02 | ELK1HM103Q40KT | | |
| | 35x35 | 0.35 | 4.92 | ELK1HM103R35KT | | |
| | 30x50 | 0.35 | 5.60 | ELK1HM123Q50KT | | |
| 10000 | 35x40 | 0.35 | 5.60 | ELK1HM123R40KT | | |
| | 15000 | 35x45 | 0.35 | 6.44 | ELK1HM153R45KT | |
| | 18000 | 35x50 | 0.35 | 6.71 | ELK1HM183R50KT | |
| 63(1J) | 1800 | 22x25 | 0.30 | 1.90 | ELK1JM182O25KT | |
| | | 22x30 | 0.30 | 2.35 | ELK1JM222O30KT | |
| | | 25x25 | 0.30 | 2.30 | ELK1JM222P25KT | |
| | 2700 | 22x35 | 0.30 | 2.50 | ELK1JM272O35KT | |
| | | 25x30 | 0.30 | 2.49 | ELK1JM272P30KT | |

Snap-in&Lug Terminal Type

LK series

■ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Size DxDL(mm) | tan | Rated ripple current (Arms/85°C, 120Hz) | Part Number | |
|----------|----------|---------------|-------|---|----------------|----------------|
| 63(1J) | 3300 | 22x40 | 0.30 | 2.69 | ELK1JM332O40KT | |
| | | 25x30 | 0.30 | 2.69 | ELK1JM332P30KT | |
| | | 30x25 | 0.30 | 2.78 | ELK1JM332Q25KT | |
| | 3900 | 22x45 | 0.30 | 3.10 | ELK1JM392O45KT | |
| | | 25x35 | 0.30 | 3.09 | ELK1JM392P35KT | |
| | | 30x30 | 0.30 | 3.09 | ELK1JM392Q30KT | |
| | 4700 | 22x50 | 0.30 | 3.49 | ELK1JM472O50KT | |
| | | 25x40 | 0.30 | 3.37 | ELK1JM472P40KT | |
| | | 30x30 | 0.30 | 3.37 | ELK1JM472Q30KT | |
| | 5600 | 25x45 | 0.30 | 3.80 | ELK1JM562P45KT | |
| | | 30x35 | 0.30 | 3.81 | ELK1JM562Q35KT | |
| | | 35x30 | 0.30 | 3.75 | ELK1JM562R30KT | |
| | 6800 | 25x50 | 0.30 | 4.41 | ELK1JM682P50KT | |
| | | 30x40 | 0.30 | 4.41 | ELK1JM682Q40KT | |
| | | 35x35 | 0.30 | 4.33 | ELK1JM682R35KT | |
| | 8200 | 30x45 | 0.30 | 4.90 | ELK1JM822Q45KT | |
| | | 35x35 | 0.30 | 4.80 | ELK1JM822R35KT | |
| | 10000 | 30x50 | 0.30 | 5.49 | ELK1JM103Q50KT | |
| | | 35x40 | 0.30 | 5.47 | ELK1JM103R40KT | |
| | 12000 | 35x50 | 0.30 | 6.30 | ELK1JM123R50KT | |
| | 80(1B) | 1200 | 22x25 | 0.25 | 1.77 | ELK1BM122O25KT |
| | | 1500 | 22x30 | 0.25 | 2.01 | ELK1BM152O30KT |
| | | 1800 | 22x35 | 0.25 | 2.25 | ELK1BM182O35KT |
| | | | 25x25 | 0.25 | 2.26 | ELK1BM182P25KT |
| 2200 | | 22x40 | 0.25 | 2.53 | ELK1BM222O40KT | |
| | | 25x30 | 0.25 | 2.53 | ELK1BM222P30KT | |
| 2700 | | 30x25 | 0.25 | 2.50 | ELK1BM222Q25KT | |
| | | 22x45 | 0.25 | 2.93 | ELK1BM272O45KT | |
| 3300 | | 25x35 | 0.25 | 2.93 | ELK1BM272P35KT | |
| | | 30x30 | 0.25 | 2.91 | ELK1BM272Q30KT | |
| | | 22x50 | 0.25 | 3.25 | ELK1BM332O50KT | |
| 3900 | | 25x40 | 0.25 | 3.25 | ELK1BM332P40KT | |
| | | 30x30 | 0.25 | 3.23 | ELK1BM332Q30KT | |
| 4700 | | 25x45 | 0.25 | 3.62 | ELK1BM392P45KT | |
| | | 30x35 | 0.25 | 3.62 | ELK1BM392Q35KT | |
| 5600 | | 25x50 | 0.25 | 4.28 | ELK1BM472P50KT | |
| | | 30x40 | 0.25 | 4.15 | ELK1BM472Q40KT | |
| 6800 | | 35x30 | 0.25 | 4.10 | ELK1BM472R30KT | |
| | | 30x45 | 0.25 | 4.55 | ELK1BM562Q45KT | |
| 8200 | | 35x35 | 0.25 | 4.51 | ELK1BM562R35KT | |
| | | 30x50 | 0.25 | 5.18 | ELK1BM682Q50KT | |
| | | 35x40 | 0.25 | 5.14 | ELK1BM682R40KT | |
| | | 35x45 | 0.25 | 5.83 | ELK1BM822R45KT | |
| 100(1K) | | 820 | 22x25 | 0.20 | 1.86 | ELK1KM821O25KT |
| | 1000 | 22x30 | 0.20 | 2.02 | ELK1KM102O30KT | |
| | 1200 | 22x30 | 0.20 | 2.12 | ELK1KM122O30KT | |
| | | 25x25 | 0.20 | 2.10 | ELK1KM122P25KT | |
| | 1500 | 22x35 | 0.20 | 2.45 | ELK1KM152O35KT | |
| | | 25x30 | 0.20 | 2.43 | ELK1KM152P30KT | |
| | 1800 | 22x40 | 0.20 | 2.77 | ELK1KM182O40KT | |
| | | 25x35 | 0.20 | 2.77 | ELK1KM182P35KT | |
| | 2200 | 30x25 | 0.20 | 2.65 | ELK1KM182Q25KT | |
| | | 22x45 | 0.20 | 3.12 | ELK1KM222O45KT | |
| | 2700 | 25x40 | 0.20 | 3.20 | ELK1KM222P40KT | |
| | | 30x30 | 0.20 | 3.10 | ELK1KM222Q30KT | |
| | 3300 | 25x45 | 0.20 | 3.61 | ELK1KM272P45KT | |
| | | 30x35 | 0.20 | 3.60 | ELK1KM272Q35KT | |
| | 3900 | 35x30 | 0.20 | 3.71 | ELK1KM272R30KT | |
| | | 25x50 | 0.20 | 4.06 | ELK1KM332P50KT | |
| | 4700 | 30x40 | 0.20 | 4.05 | ELK1KM332Q40KT | |
| | | 35x35 | 0.20 | 4.07 | ELK1KM332R35KT | |
| | | 30x45 | 0.20 | 4.60 | ELK1KM392Q45KT | |
| | | 35x35 | 0.20 | 4.50 | ELK1KM392R35KT | |
| | | 30x50 | 0.20 | 5.13 | ELK1KM472Q50KT | |
| | | 35x40 | 0.20 | 5.12 | ELK1KM472R40KT | |

| WV (Vdc) | Cap (μF) | Size DxDL(mm) | tan | Rated ripple current (Arms/85°C, 120Hz) | Part Number |
|----------|----------|---------------|------|---|----------------|
| 100(1K) | 5600 | 35x45 | 0.20 | 5.75 | ELK1KM562R45KT |
| | 6800 | 35x50 | 0.20 | 6.01 | ELK1KM682R50KT |
| 160(2C) | 390 | 22x25 | 0.15 | 1.55 | ELK2CM391O25KT |
| | | 22x30 | 0.15 | 1.77 | ELK2CM471O30KT |
| | 470 | 25x25 | 0.15 | 1.77 | ELK2CM471P25KT |
| | | 22x35 | 0.15 | 2.05 | ELK2CM561O35KT |
| | 560 | 25x30 | 0.15 | 2.05 | ELK2CM561P30KT |
| | | 22x40 | 0.15 | 2.24 | ELK2CM681O40KT |
| | 680 | 25x30 | 0.15 | 2.22 | ELK2CM681P30KT |
| | | 30x25 | 0.15 | 2.22 | ELK2CM681Q25KT |
| | 820 | 22x45 | 0.15 | 2.55 | ELK2CM821O45KT |
| | | 25x35 | 0.15 | 2.52 | ELK2CM821P35KT |
| | 1000 | 30x30 | 0.15 | 2.51 | ELK2CM821Q30KT |
| | | 22x50 | 0.15 | 2.88 | ELK2CM102O50KT |
| 1200 | 25x40 | 0.15 | 2.86 | ELK2CM102P40KT | |
| | 30x30 | 0.15 | 2.82 | ELK2CM102Q30KT | |
| 1500 | 25x45 | 0.15 | 3.27 | ELK2CM122P45KT | |
| | 30x35 | 0.15 | 3.25 | ELK2CM122Q35KT | |
| 1800 | 35x30 | 0.15 | 3.24 | ELK2CM122R30KT | |
| | 30x40 | 0.15 | 3.77 | ELK2CM152Q40KT | |
| 2200 | 35x35 | 0.15 | 3.75 | ELK2CM152R35KT | |
| | 30x45 | 0.15 | 4.10 | ELK2CM182Q45KT | |
| 2700 | 35x35 | 0.15 | 4.08 | ELK2CM182R35KT | |
| | 35x45 | 0.15 | 4.72 | ELK2CM222R45KT | |
| | 35x50 | 0.15 | 5.30 | ELK2CM272R50KT | |
| 180(2L) | 330 | 22x25 | 0.15 | 1.42 | ELK2LM331O25KT |
| | 390 | 22x30 | 0.15 | 1.61 | ELK2LM391O30KT |
| | 470 | 22x30 | 0.15 | 1.80 | ELK2LM471O30KT |
| | | 25x25 | 0.15 | 1.80 | ELK2LM471P25KT |
| | 560 | 22x35 | 0.15 | 2.09 | ELK2LM561O35KT |
| | | 25x30 | 0.15 | 2.05 | ELK2LM561P30KT |
| | 680 | 22x40 | 0.15 | 2.36 | ELK2LM681O40KT |
| | | 25x35 | 0.15 | 2.34 | ELK2LM681P35KT |
| | 820 | 30x25 | 0.15 | 2.27 | ELK2LM681Q25KT |
| | | 22x45 | 0.15 | 2.72 | ELK2LM821O45KT |
| | 1000 | 25x35 | 0.15 | 2.58 | ELK2LM821P35KT |
| | | 30x30 | 0.15 | 2.56 | ELK2LM821Q30KT |
| 1200 | 25x45 | 0.15 | 2.91 | ELK2LM102P45KT | |
| | 30x35 | 0.15 | 2.95 | ELK2LM102Q35KT | |
| 1500 | 25x50 | 0.15 | 3.46 | ELK2LM122P50KT | |
| | 30x40 | 0.15 | 3.38 | ELK2LM122Q40KT | |
| 1800 | 35x30 | 0.15 | 3.32 | ELK2LM122R30KT | |
| | 30x45 | 0.15 | 3.90 | ELK2LM152Q45KT | |
| 2200 | 35x35 | 0.15 | 3.83 | ELK2LM152R35KT | |
| | 30x50 | 0.15 | 4.33 | ELK2LM182Q50KT | |
| 2700 | 35x40 | 0.15 | 4.32 | ELK2LM182R40KT | |
| | 35x45 | 0.15 | 4.60 | ELK2LM222R45KT | |
| | 35x50 | 0.15 | 5.05 | ELK2LM272R50KT | |
| 200(2D) | 270 | 22x25 | 0.15 | 1.30 | ELK2DM271O25KT |
| | 330 | 22x25 | 0.15 | 1.44 | ELK2DM331O25KT |
| | 390 | 22x30 | 0.15 | 1.65 | ELK2DM391O30KT |
| | | 25x25 | 0.15 | 1.63 | ELK2DM391P25KT |
| | 470 | 22x35 | 0.15 | 1.88 | ELK2DM471O35KT |
| | | 25x35 | 0.15 | 1.86 | ELK2DM471P35KT |
| | 560 | 22x40 | 0.15 | 2.08 | ELK2DM561O40KT |
| | | 25x30 | 0.15 | 2.05 | ELK2DM561P30KT |
| | 680 | 30x25 | 0.15 | 2.05 | ELK2DM561Q25KT |
| | | 22x45 | 0.15 | 2.36 | ELK2DM681O45KT |
| | 820 | 25x35 | 0.15 | 2.36 | ELK2DM681P35KT |
| | | 30x30 | 0.15 | 2.36 | ELK2DM681Q30KT |

LK series

■ STANDARD RATINGS

| WV (Vdc) | Cap (µF) | Size DxL(mm) | tan | Rated ripple current (Arms/85°C, 120Hz) | Part Number |
|----------|----------|--------------|------|---|----------------|
| 200(2D) | 820 | 22x50 | 0.15 | 2.68 | ELK2DM821O50KT |
| | | 25x40 | 0.15 | 2.66 | ELK2DM821P40KT |
| | | 30x30 | 0.15 | 2.62 | ELK2DM821Q30KT |
| | 1000 | 25x45 | 0.15 | 3.12 | ELK2DM102P45KT |
| | | 30x35 | 0.15 | 3.00 | ELK2DM102Q35KT |
| | | 35x30 | 0.15 | 2.96 | ELK2DM102R30KT |
| | 1200 | 25x50 | 0.15 | 3.44 | ELK2DM122P50KT |
| | | 30x40 | 0.15 | 3.44 | ELK2DM122Q40KT |
| | | 35x35 | 0.15 | 3.40 | ELK2DM122R35KT |
| | 1500 | 30x50 | 0.15 | 3.93 | ELK2DM152Q50KT |
| | | 35x40 | 0.15 | 3.87 | ELK2DM152R40KT |
| | 1800 | 35x45 | 0.15 | 4.37 | ELK2DM182R45KT |
| 2200 | 35x50 | 0.15 | 5.00 | ELK2DM222R50KT | |
| 220(2N) | 220 | 22x25 | 0.15 | 1.18 | ELK2NM221O25KT |
| | 270 | 22x25 | 0.15 | 1.31 | ELK2NM271O25KT |
| | 330 | 22x30 | 0.15 | 1.58 | ELK2NM331O30KT |
| | | 25x25 | 0.15 | 1.49 | ELK2NM331P25KT |
| | 390 | 22x35 | 0.15 | 1.69 | ELK2NM391O35KT |
| | | 25x30 | 0.15 | 1.71 | ELK2NM391P30KT |
| | 470 | 22x40 | 0.15 | 1.99 | ELK2NM471O40KT |
| | | 25x30 | 0.15 | 1.95 | ELK2NM471P30KT |
| | | 30x25 | 0.15 | 1.89 | ELK2NM471Q25KT |
| | 560 | 22x45 | 0.15 | 2.28 | ELK2NM561O45KT |
| | | 25x35 | 0.15 | 2.22 | ELK2NM561P35KT |
| | | 30x30 | 0.15 | 2.19 | ELK2NM561Q30KT |
| | 680 | 22x50 | 0.15 | 2.46 | ELK2NM681O50KT |
| | | 25x40 | 0.15 | 2.40 | ELK2NM681P40KT |
| | | 30x30 | 0.15 | 2.39 | ELK2NM681Q30KT |
| 820 | 25x45 | 0.15 | 2.81 | ELK2NM821P45KT | |
| | 30x35 | 0.15 | 2.70 | ELK2NM821Q35KT | |
| | 35x30 | 0.15 | 2.62 | ELK2NM821R30KT | |
| 1000 | 25x50 | 0.15 | 3.13 | ELK2NM102P50KT | |
| | 30x40 | 0.15 | 3.08 | ELK2NM102Q40KT | |
| | 35x35 | 0.15 | 3.05 | ELK2NM102R35KT | |
| 1200 | 30x45 | 0.15 | 3.60 | ELK2NM122Q45KT | |
| | 35x40 | 0.15 | 3.51 | ELK2NM122R40KT | |
| 1500 | 35x45 | 0.15 | 3.92 | ELK2NM152R45KT | |
| 250(2E) | 220 | 22x25 | 0.15 | 1.18 | ELK2EM221O25KT |
| | 270 | 22x30 | 0.15 | 1.43 | ELK2EM271O30KT |
| | 330 | 22x30 | 0.15 | 1.58 | ELK2EM331O30KT |
| | | 25x25 | 0.15 | 1.53 | ELK2EM331P25KT |
| | 390 | 22x25 | 0.15 | 1.79 | ELK2EM391O25KT |
| | | 25x30 | 0.15 | 1.79 | ELK2EM391P30KT |
| | 470 | 22x40 | 0.15 | 2.05 | ELK2EM471O40KT |
| | | 25x35 | 0.15 | 2.05 | ELK2EM471P35KT |
| | | 30x25 | 0.15 | 1.94 | ELK2EM471Q25KT |
| | 560 | 22x45 | 0.15 | 2.36 | ELK2EM561O45KT |
| | | 25x35 | 0.15 | 2.24 | ELK2EM561P35KT |
| | | 30x30 | 0.15 | 2.24 | ELK2EM561Q30KT |
| | 680 | 25x40 | 0.15 | 2.54 | ELK2EM681P40KT |
| | | 30x35 | 0.15 | 2.58 | ELK2EM681Q35KT |
| | 820 | 25x50 | 0.15 | 2.87 | ELK2EM821P50KT |
| | | 30x35 | 0.15 | 2.84 | ELK2EM821Q35KT |
| | | 35x30 | 0.15 | 2.82 | ELK2EM821R30KT |
| | 1000 | 30x45 | 0.15 | 3.39 | ELK2EM102Q45KT |
| 35x35 | | 0.15 | 3.31 | ELK2EM102R35KT | |
| 1200 | 30x50 | 0.15 | 3.80 | ELK2EM122Q50KT | |
| | 35x40 | 0.15 | 3.66 | ELK2EM122R40KT | |
| 1500 | 35x45 | 0.15 | 4.12 | ELK2EM152R45KT | |
| 1800 | 35x50 | 0.15 | 4.31 | ELK2EM182R50KT | |

| WV (Vdc) | Cap (µF) | Size DxL(mm) | tan | Rated ripple current (Arms/85°C, 120Hz) | Part Number |
|----------|----------|--------------|----------------|---|----------------|
| 315(2F) | 180 | 22x30 | 0.15 | 1.23 | ELK2FM181O30KT |
| | | 25x25 | 0.15 | 1.31 | ELK2FM181P25KT |
| | 220 | 22x35 | 0.15 | 1.34 | ELK2FM221O35KT |
| | | 25x30 | 0.15 | 1.40 | ELK2FM221P30KT |
| | 270 | 22x40 | 0.15 | 1.60 | ELK2FM271O40KT |
| | | 25x30 | 0.15 | 1.62 | ELK2FM271P30KT |
| | 330 | 22x45 | 0.15 | 1.82 | ELK2FM331O45KT |
| | | 25x35 | 0.15 | 1.85 | ELK2FM331P35KT |
| | | 30x30 | 0.15 | 1.89 | ELK2FM331Q30KT |
| | 390 | 22x50 | 0.15 | 1.97 | ELK2FM391O50KT |
| | | 25x40 | 0.15 | 2.01 | ELK2FM391P40KT |
| | | 30x30 | 0.15 | 2.05 | ELK2FM391Q30KT |
| 470 | 25x45 | 0.15 | 2.20 | ELK2FM471P45KT | |
| | 30x35 | 0.15 | 2.27 | ELK2FM471Q35KT | |
| | 35x30 | 0.15 | 2.25 | ELK2FM471R30KT | |
| 560 | 30x40 | 0.15 | 2.50 | ELK2FM561Q40KT | |
| | 35x35 | 0.15 | 2.56 | ELK2FM561R35KT | |
| 680 | 30x45 | 0.15 | 2.67 | ELK2FM681Q45KT | |
| | 35x40 | 0.15 | 2.90 | ELK2FM681R40KT | |
| 820 | 30x50 | 0.15 | 3.12 | ELK2FM821Q50KT | |
| | 35x45 | 0.15 | 3.29 | ELK2FM821R45KT | |
| 1000 | 35x50 | 0.15 | 3.40 | ELK2FM102R50KT | |
| 350(2V) | 120 | 22x25 | 0.15 | 0.99 | ELK2VM121O25KT |
| | | 22x30 | 0.15 | 1.44 | ELK2VM151O30KT |
| | 150 | 25x25 | 0.15 | 1.16 | ELK2VM151P25KT |
| | | 22x35 | 0.15 | 1.28 | ELK2VM181O35KT |
| | 180 | 25x30 | 0.15 | 1.30 | ELK2VM181P30KT |
| | | 22x40 | 0.15 | 1.40 | ELK2VM221O40KT |
| | 220 | 25x35 | 0.15 | 1.46 | ELK2VM221P35KT |
| | | 30x25 | 0.15 | 1.47 | ELK2VM221Q25KT |
| | 270 | 22x45 | 0.15 | 1.62 | ELK2VM271O45KT |
| | | 25x35 | 0.15 | 1.65 | ELK2VM271P35KT |
| | | 30x30 | 0.15 | 1.71 | ELK2VM271Q30KT |
| | 330 | 22x50 | 0.15 | 1.78 | ELK2VM331O50KT |
| 25x40 | | 0.15 | 1.88 | ELK2VM331P40KT | |
| 30x35 | | 0.15 | 1.93 | ELK2VM331Q35KT | |
| 390 | 25x45 | 0.15 | 2.04 | ELK2VM391P45KT | |
| | 30x35 | 0.15 | 2.12 | ELK2VM391Q35KT | |
| | 35x30 | 0.15 | 2.19 | ELK2VM391R30KT | |
| 470 | 30x40 | 0.15 | 2.41 | ELK2VM471Q40KT | |
| | 35x35 | 0.15 | 2.43 | ELK2VM471R35KT | |
| 560 | 30x45 | 0.15 | 2.60 | ELK2VM561Q45KT | |
| | 35x35 | 0.15 | 2.62 | ELK2VM561R35KT | |
| 680 | 35x40 | 0.15 | 3.00 | ELK2VM681R40KT | |
| | 820 | 35x50 | 0.15 | 3.30 | ELK2VM821R50KT |
| 385(3B) | 82 | 22x25 | 0.15 | 0.70 | ELK3BM820O25KT |
| | | 100 | 22x30 | 0.15 | 0.82 |
| | 120 | 22x30 | 0.15 | 0.91 | ELK3BM121O30KT |
| | | 25x25 | 0.15 | 0.95 | ELK3BM121P25KT |
| | 150 | 22x35 | 0.15 | 1.04 | ELK3BM151O35KT |
| | | 25x30 | 0.15 | 1.08 | ELK3BM151P30KT |
| | 180 | 22x40 | 0.15 | 1.18 | ELK3BM181O40KT |
| | | 25x35 | 0.15 | 1.20 | ELK3BM181P35KT |
| | | 30x25 | 0.15 | 1.28 | ELK3BM181Q25KT |
| | 220 | 22x45 | 0.15 | 1.33 | ELK3BM221O45KT |
| | | 25x35 | 0.15 | 1.44 | ELK3BM221P35KT |
| | 270 | 30x30 | 0.15 | 1.40 | ELK3BM221Q30KT |
| 25x40 | | 0.15 | 1.56 | ELK3BM271P40KT | |
| 30x35 | 0.15 | 1.62 | ELK3BM271Q35KT | | |

Snap-in&Lug Terminal Type

LK series

■ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (Arms/85°C, 120Hz) | Part Number |
|----------|----------|--------------|-------|---|----------------|
| 385(3B) | 330 | 25x50 | 0.15 | 1.80 | ELK3BM331P50KT |
| | | 30x40 | 0.15 | 1.85 | ELK3BM331Q40KT |
| | | 35x30 | 0.15 | 1.85 | ELK3BM331R30KT |
| | 390 | 30x40 | 0.15 | 2.04 | ELK3BM391Q40KT |
| | | 35x35 | 0.15 | 2.06 | ELK3BM391R35KT |
| | | 30x50 | 0.15 | 2.27 | ELK3BM471Q50KT |
| | 470 | 35x40 | 0.15 | 2.30 | ELK3BM471R40KT |
| | | 560 | 35x45 | 0.15 | 2.57 |
| | 680 | 35x50 | 0.15 | 2.80 | ELK3BM681R50KT |
| | 400(2G) | 82 | 22x25 | 0.15 | 0.80 |
| 100 | | 22x30 | 0.15 | 0.94 | ELK2GM101O30KT |
| | | 22x30 | 0.15 | 1.04 | ELK2GM121O30KT |
| 120 | | 25x25 | 0.15 | 1.08 | ELK2GM121P25KT |
| | | 22x35 | 0.15 | 1.18 | ELK2GM151O35KT |
| 150 | | 25x30 | 0.15 | 1.21 | ELK2GM151P30KT |
| | | 22x40 | 0.15 | 1.34 | ELK2GM181O40KT |
| 180 | | 25x35 | 0.15 | 1.37 | ELK2GM181P35KT |
| | | 30x25 | 0.15 | 1.45 | ELK2GM181Q25KT |
| | | 22x50 | 0.15 | 1.50 | ELK2GM221O50KT |
| 220 | | 25x35 | 0.15 | 1.56 | ELK2GM221P35KT |
| | | 30x30 | 0.15 | 1.58 | ELK2GM221Q30KT |
| 270 | | 25x40 | 0.15 | 1.70 | ELK2GM271P40KT |
| | | 30x35 | 0.15 | 1.73 | ELK2GM271Q35KT |
| 330 | | 25x50 | 0.15 | 1.90 | ELK2GM331P50KT |
| | | 30x40 | 0.15 | 1.95 | ELK2GM331Q40KT |
| | | 35x30 | 0.15 | 1.95 | ELK2GM331R30KT |
| 390 | | 30x40 | 0.15 | 2.15 | ELK2GM391Q40KT |
| | | 35x35 | 0.15 | 2.17 | ELK2GM391R35KT |
| 470 | | 30x50 | 0.15 | 2.39 | ELK2GM471Q50KT |
| | | 35x40 | 0.15 | 2.42 | ELK2GM471R40KT |
| 560 | | 35x45 | 0.15 | 2.71 | ELK2GM561R45KT |
| 680 | | 35x50 | 0.15 | 2.95 | ELK2GM681R50KT |
| 820 | | 35x60 | 0.15 | 3.25 | ELK2GM821R60KT |
| | | 40x50 | 0.15 | 3.20 | ELK2GM821Y50PT |
| 1000 | | 35x70 | 0.15 | 3.65 | ELK2GM102R70KT |
| | | 40x60 | 0.15 | 3.55 | ELK2GM102Y60PT |
| 1200 | | 35x80 | 0.15 | 4.20 | ELK2GM122R80KT |
| | | 40x70 | 0.15 | 4.20 | ELK2GM122Y70PT |
| 1500 | | 40x80 | 0.15 | 4.90 | ELK2GM152Y80PT |
| 1800 | 40x90 | 0.15 | 5.75 | ELK2GM182Y90PT | |
| 2200 | 40x100 | 0.15 | 6.66 | ELK2GM222YA0PT | |
| 420(2T) | 82 | 22x25 | 0.15 | 0.75 | ELK2TM820O25KT |
| | 100 | 22x30 | 0.15 | 0.87 | ELK2TM101O30KT |
| | | 25x25 | 0.15 | 0.92 | ELK2TM101P25KT |
| | 120 | 22x30 | 0.15 | 1.01 | ELK2TM121O30KT |
| | | 25x25 | 0.15 | 1.03 | ELK2TM121P25KT |
| | 150 | 22x35 | 0.15 | 1.19 | ELK2TM151O35KT |
| | | 25x30 | 0.15 | 1.19 | ELK2TM151P30KT |
| | 180 | 30x25 | 0.15 | 1.14 | ELK2TM151Q25KT |
| | | 22x45 | 0.15 | 1.36 | ELK2TM181O45KT |
| | 220 | 25x35 | 0.15 | 1.37 | ELK2TM181P35KT |
| | | 30x25 | 0.15 | 1.35 | ELK2TM181Q25KT |
| | | 22x50 | 0.15 | 1.69 | ELK2TM221O50KT |
| | 270 | 25x40 | 0.15 | 1.58 | ELK2TM221P40KT |
| | | 30x30 | 0.15 | 1.56 | ELK2TM221Q30KT |
| | 330 | 25x45 | 0.15 | 1.83 | ELK2TM271P45KT |
| | | 30x35 | 0.15 | 1.72 | ELK2TM271Q35KT |
| | 390 | 35x30 | 0.15 | 1.76 | ELK2TM271R30KT |
| | | 25x50 | 0.15 | 2.18 | ELK2TM331P50KT |
| | | 30x40 | 0.15 | 1.98 | ELK2TM331Q40KT |
| | 35x35 | 0.15 | 2.04 | ELK2TM331R35KT | |

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (Arms/85°C, 120Hz) | Part Number |
|----------|----------|--------------|------|---|----------------|
| 420(2T) | 390 | 30x45 | 0.15 | 2.34 | ELK2TM391Q45KT |
| | | 35x35 | 0.15 | 2.26 | ELK2TM391R35KT |
| | 470 | 30x50 | 0.15 | 2.67 | ELK2TM471Q50KT |
| | | 35x40 | 0.15 | 2.60 | ELK2TM471R40KT |
| | 560 | 35x45 | 0.15 | 2.93 | ELK2TM561R45KT |
| | 680 | 35x50 | 0.15 | 3.25 | ELK2TM681R50KT |
| | 820 | 35x60 | 0.15 | 3.60 | ELK2TM821R60KT |
| | | 40x50 | 0.15 | 3.59 | ELK2TM821Y50PT |
| | 1000 | 35x70 | 0.15 | 3.96 | ELK2TM102R70KT |
| | | 40x60 | 0.15 | 3.80 | ELK2TM102Y60PT |
| 1200 | 35x80 | 0.15 | 4.60 | ELK2TM122R80KT | |
| | 40x70 | 0.15 | 4.49 | ELK2TM122Y70PT | |
| 1500 | 40x80 | 0.15 | 5.32 | ELK2TM152Y80PT | |
| 1800 | 40x100 | 0.15 | 5.95 | ELK2TM182YA0PT | |
| 2200 | 45x100 | 0.15 | 6.85 | ELK2TM222IA0PT | |
| 450(2W) | 68 | 22x25 | 0.15 | 0.68 | ELK2WM680O25KT |
| | 82 | 22x30 | 0.15 | 0.82 | ELK2WM820O30KT |
| | 100 | 22x35 | 0.15 | 0.90 | ELK2WM101O35KT |
| | | 25x25 | 0.15 | 0.92 | ELK2WM101P25KT |
| | 120 | 22x35 | 0.15 | 1.02 | ELK2WM121O35KT |
| | | 25x30 | 0.15 | 1.04 | ELK2WM121P30KT |
| | 150 | 30x25 | 0.15 | 1.07 | ELK2WM121Q25KT |
| | | 22x40 | 0.15 | 1.12 | ELK2WM151O40KT |
| | 180 | 25x35 | 0.15 | 1.19 | ELK2WM151P35KT |
| | | 30x30 | 0.15 | 1.23 | ELK2WM151Q30KT |
| | | 22x50 | 0.15 | 1.26 | ELK2WM181O50KT |
| | 220 | 25x40 | 0.15 | 1.33 | ELK2WM181P40KT |
| | | 30x30 | 0.15 | 1.38 | ELK2WM181Q30KT |
| | 270 | 25x45 | 0.15 | 1.51 | ELK2WM221P45KT |
| | | 30x35 | 0.15 | 1.56 | ELK2WM221Q35KT |
| | 330 | 35x30 | 0.15 | 1.58 | ELK2WM221R30KT |
| | | 25x50 | 0.15 | 1.65 | ELK2WM271P50KT |
| | 390 | 30x40 | 0.15 | 1.80 | ELK2WM271Q40KT |
| | | 35x35 | 0.15 | 1.81 | ELK2WM271R35KT |
| | 470 | 30x45 | 0.15 | 2.02 | ELK2WM331Q45KT |
| | | 35x35 | 0.15 | 2.05 | ELK2WM331R35KT |
| | 560 | 30x50 | 0.15 | 2.24 | ELK2WM391Q50KT |
| | | 35x40 | 0.15 | 2.27 | ELK2WM391R40KT |
| | 680 | 35x45 | 0.15 | 2.55 | ELK2WM471R45KT |
| | | 35x50 | 0.15 | 2.85 | ELK2WM561R50KT |
| | 820 | 35x50 | 0.15 | 3.15 | ELK2WM681R50KT |
| | | 35x60 | 0.15 | 3.60 | ELK2WM821R60KT |
| | 1000 | 40x55 | 0.15 | 3.69 | ELK2WM821Y55PT |
| | | 35x80 | 0.15 | 4.30 | ELK2WM102R80KT |
| | 1200 | 40x70 | 0.15 | 4.42 | ELK2WM102Y70PT |
| 40x80 | | 0.15 | 4.80 | ELK2WM122Y80PT | |
| 1500 | 40x85 | 0.15 | 5.40 | ELK2WM152Y85PT | |
| 1800 | 40x100 | 0.15 | 5.90 | ELK2WM182YA0PT | |
| 2200 | 45x100 | 0.15 | 7.00 | ELK2WM222IA0PT | |

LK series

■ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (Arms/85°C, 120Hz) | Part Number |
|----------|----------|--------------|------|---|----------------|
| 500(2H) | 56 | 22x25 | 0.15 | 0.63 | ELK2HM560O25KT |
| | 68 | 22x30 | 0.15 | 0.69 | ELK2HM680O30KT |
| | | 25x25 | 0.15 | 0.68 | ELK2HM680P25KT |
| | 82 | 22x35 | 0.15 | 0.85 | ELK2HM820O35KT |
| | | 25x30 | 0.15 | 0.88 | ELK2HM820P30KT |
| | 100 | 22x40 | 0.15 | 0.94 | ELK2HM101O40KT |
| | | 25x35 | 0.15 | 0.96 | ELK2HM101P35KT |
| | 120 | 22x45 | 0.15 | 1.06 | ELK2HM121O45KT |
| | | 25x40 | 0.15 | 1.09 | ELK2HM121P40KT |
| | | 30x35 | 0.15 | 1.13 | ELK2HM121Q35KT |
| | 150 | 22x50 | 0.15 | 1.19 | ELK2HM151O50KT |
| | | 25x45 | 0.15 | 1.23 | ELK2HM151P45KT |
| | | 30x40 | 0.15 | 1.26 | ELK2HM151Q40KT |
| | 180 | 25x50 | 0.15 | 1.39 | ELK2HM181P50KT |
| | | 30x45 | 0.15 | 1.43 | ELK2HM181Q45KT |
| | 220 | 30x50 | 0.15 | 1.60 | ELK2HM221Q50KT |
| | | 35x35 | 0.15 | 1.62 | ELK2HM221R35KT |
| | 270 | 35x40 | 0.15 | 1.85 | ELK2HM271R40KT |
| | 330 | 35x50 | 0.15 | 2.08 | ELK2HM331R50KT |
| | 390 | 35x55 | 0.15 | 2.31 | ELK2HM391R55KT |
| 470 | 35x60 | 0.15 | 2.61 | ELK2HM471R60KT | |

LH series

- Withstand high temperature, for general purpose
- Endurance: 2,000 hours at 105°C
- RoHS Compliant

Upgrade

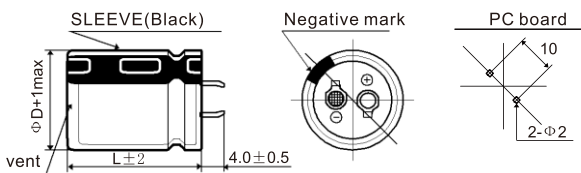


SPECIFICATIONS

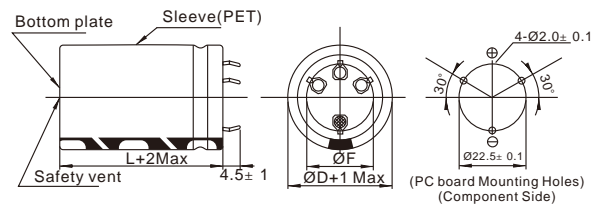
| Items | Characteristics | | | | | | | | | | | |
|--|--|-------------------------------------|------|------|------|------|-------------|------|------|------------|------------|------------|
| Category Temperature Range | -40~+105°C | | | | | | -25~+105°C | | | | | |
| Rated Voltage Range | 10~100V.DC | | | | | | 160~500V.DC | | | | | |
| Capacitance Tolerance | ±20% (M) (at 20°C, 120Hz) | | | | | | | | | | | |
| Leakage Current | $I \leq 3\sqrt{CV}$ Where, I: Max.leakage current (μA), C: Nominal capacitance (μF), V: Rated voltage (V) (at 20°C after 5 minutes) | | | | | | | | | | | |
| Dissipation Factor (tan δ) | Rated Voltage (V _{dc}) | 10 | 16 | 25 | 35 | 50 | 63 | 80 | 100 | 160 to 250 | 315 to 450 | 500 |
| | tan δ (max.) | 0.55 | 0.50 | 0.45 | 0.40 | 0.35 | 0.30 | 0.25 | 0.20 | 0.15 | 0.15 | 0.20 |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage (V _{dc}) | 10 | 16 | 25 | 35 | 50 | 63 | 80 | 100 | 160 to 250 | 315 to 400 | 420 to 500 |
| | Z(-25°C)/Z(+20°C) | 4 | 4 | 3 | 3 | 2 | 2 | 2 | 2 | 4 | 8 | 8 |
| | Z(-40°C)/Z(+20°C) | 15 | 15 | 10 | 8 | 6 | 6 | 5 | 5 | - | - | - |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 20°C after DC voltage plus the rated ripple current is applied for 2,000 hours at 105°C. | | | | | | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | | | | | |
| | D.F. (tan δ) | 200% of the initial specified value | | | | | | | | | | |
| | Leakage Current | The initial specified value | | | | | | | | | | |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 105°C without voltage applied. | | | | | | | | | | | |
| | Capacitance Change | ±20% of the initial value | | | | | | | | | | |
| | D.F. (tan δ) | 150% of the initial specified value | | | | | | | | | | |
| | Leakage Current | 200% of the initial specified value | | | | | | | | | | |

DIMENSIONS [mm]

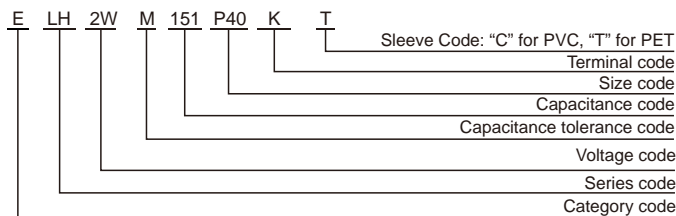
- Terminal Code : K (22 to 35) : Standard



- Terminal Code: P (40 to 45)



PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| Rated voltage(V _{dc}) | Freq.(Hz) | | | |
|---------------------------------|-----------|------|------|------|
| | 120 | 1k | 10k | 100k |
| 10~50 | 1.00 | 1.03 | 1.05 | 1.08 |
| 63~100 | 1.00 | 1.07 | 1.13 | 1.19 |
| 160~250 | 1.00 | 1.32 | 1.45 | 1.50 |
| 315~500 | 1.00 | 1.30 | 1.41 | 1.43 |

The endurance of capacitors is shortened with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

LH series

■ STANDARD RATINGS

| WV (Vdc) | Cap (µF) | Size DxL(mm) | tan | Rated ripple current (Arms/105°C, 120Hz) | Part Number | |
|----------|----------|--------------|-------|--|----------------|----------------|
| 10(1A) | 10000 | 22x25 | 0.55 | 1.77 | ELH1AM103O25KT | |
| | 12000 | 22x30 | 0.55 | 2.10 | ELH1AM123O30KT | |
| | | 25x25 | 0.55 | 1.94 | ELH1AM123P25KT | |
| | | 22x35 | 0.55 | 2.23 | ELH1AM153O35KT | |
| | 15000 | 25x30 | 0.55 | 2.10 | ELH1AM153P30KT | |
| | | 22x40 | 0.55 | 2.41 | ELH1AM183O40KT | |
| | 18000 | 25x30 | 0.55 | 2.34 | ELH1AM183P30KT | |
| | | 30x25 | 0.55 | 2.25 | ELH1AM183Q25KT | |
| | | 22x45 | 0.55 | 2.58 | ELH1AM223O45KT | |
| | 22000 | 25x35 | 0.55 | 2.54 | ELH1AM223P35KT | |
| | | 30x30 | 0.55 | 2.50 | ELH1AM223Q30KT | |
| | 27000 | 22x50 | 0.55 | 3.17 | ELH1AM273O50KT | |
| | | 25x40 | 0.55 | 3.07 | ELH1AM273P40KT | |
| | | 30x30 | 0.55 | 2.95 | ELH1AM273Q30KT | |
| | 33000 | 25x45 | 0.55 | 3.39 | ELH1AM333P45KT | |
| | | 30x35 | 0.55 | 3.33 | ELH1AM333Q35KT | |
| | | 35x30 | 0.55 | 3.21 | ELH1AM333R30KT | |
| | 39000 | 30x40 | 0.55 | 3.70 | ELH1AM393Q40KT | |
| | | 35x35 | 0.55 | 3.68 | ELH1AM393R35KT | |
| | 47000 | 30x45 | 0.55 | 4.22 | ELH1AM473Q45KT | |
| | | 35x40 | 0.55 | 4.16 | ELH1AM473R40KT | |
| | 56000 | 35x45 | 0.55 | 5.00 | ELH1AM563R45KT | |
| | 16(1C) | 6800 | 22x25 | 0.50 | 1.75 | ELH1CM682O25KT |
| | | 8200 | 22x30 | 0.50 | 2.00 | ELH1CM822O30KT |
| 10000 | | 22x30 | 0.50 | 2.10 | ELH1CM103O30KT | |
| | | 25x25 | 0.50 | 2.05 | ELH1CM103P25KT | |
| 12000 | | 22x35 | 0.50 | 2.31 | ELH1CM123O35KT | |
| | | 25x30 | 0.50 | 2.30 | ELH1CM123P30KT | |
| | | 30x25 | 0.50 | 2.30 | ELH1CM123Q25KT | |
| 15000 | | 22x40 | 0.50 | 2.68 | ELH1CM153O40KT | |
| | | 25x35 | 0.50 | 2.58 | ELH1CM153P35KT | |
| | | 30x30 | 0.50 | 2.57 | ELH1CM153Q30KT | |
| 18000 | | 22x50 | 0.50 | 3.20 | ELH1CM183O50KT | |
| | | 25x40 | 0.50 | 3.16 | ELH1CM183P40KT | |
| | | 30x30 | 0.50 | 2.98 | ELH1CM183Q30KT | |
| | | 25x45 | 0.50 | 3.36 | ELH1CM223P45KT | |
| 22000 | | 30x35 | 0.50 | 3.30 | ELH1CM223Q35KT | |
| | | 35x30 | 0.50 | 3.25 | ELH1CM223R30KT | |
| | | 25x50 | 0.50 | 3.85 | ELH1CM273P50KT | |
| 27000 | | 30x40 | 0.50 | 3.80 | ELH1CM273Q40KT | |
| | | 35x35 | 0.50 | 3.93 | ELH1CM273R35KT | |
| | | 30x45 | 0.50 | 4.30 | ELH1CM333Q45KT | |
| 33000 | | 35x35 | 0.50 | 4.27 | ELH1CM333R35KT | |
| | | 30x50 | 0.50 | 4.81 | ELH1CM393Q50KT | |
| 39000 | | 35x40 | 0.50 | 4.80 | ELH1CM393R40KT | |
| | | 47000 | 35x45 | 0.50 | 5.53 | ELH1CM473R45KT |
| 25(1E) | 4700 | 22x25 | 0.45 | 1.61 | ELH1EM472O25KT | |
| | 5600 | 22x30 | 0.45 | 1.80 | ELH1EM562O30KT | |
| | 6800 | 22x35 | 0.45 | 2.09 | ELH1EM682O35KT | |
| | | 25x25 | 0.45 | 1.87 | ELH1EM682P25KT | |
| | 8200 | 22x40 | 0.45 | 2.31 | ELH1EM822O40KT | |
| | | 25x30 | 0.45 | 2.34 | ELH1EM822P30KT | |
| | | 30x25 | 0.45 | 2.16 | ELH1EM822Q25KT | |
| | 10000 | 22x45 | 0.45 | 2.65 | ELH1EM103O45KT | |
| | | 25x35 | 0.45 | 2.61 | ELH1EM103P35KT | |
| | | 30x30 | 0.45 | 2.61 | ELH1EM103Q30KT | |
| | 12000 | 22x50 | 0.45 | 2.80 | ELH1EM123O50KT | |
| | | 25x40 | 0.45 | 2.81 | ELH1EM123P40KT | |
| 30x30 | | 0.45 | 2.74 | ELH1EM123Q30KT | | |

| WV (Vdc) | Cap (µF) | Size DxL(mm) | tan | Rated ripple current (Arms/105°C, 120Hz) | Part Number | |
|----------|----------|--------------|-------|--|----------------|----------------|
| 25(1E) | 15000 | 25x45 | 0.45 | 3.27 | ELH1EM153P45KT | |
| | | 30x35 | 0.45 | 3.13 | ELH1EM153Q35KT | |
| | | 35x30 | 0.45 | 3.26 | ELH1EM153R30KT | |
| | 18000 | 30x40 | 0.45 | 3.56 | ELH1EM183Q40KT | |
| | | 35x35 | 0.45 | 3.84 | ELH1EM183R35KT | |
| | | 30x45 | 0.45 | 4.04 | ELH1EM223Q45KT | |
| | 22000 | 35x35 | 0.45 | 3.75 | ELH1EM223R35KT | |
| | | 27000 | 35x45 | 0.45 | 4.74 | ELH1EM273R45KT |
| | | 33000 | 35x50 | 0.45 | 5.50 | ELH1EM333R50KT |
| | 35(1V) | 3300 | 22x25 | 0.40 | 1.45 | ELH1VM332O25KT |
| | | 3900 | 22x30 | 0.40 | 1.69 | ELH1VM392O30KT |
| | | 4700 | 22x35 | 0.40 | 2.02 | ELH1VM472O35KT |
| 25x25 | | | 0.40 | 1.62 | ELH1VM472P25KT | |
| 5600 | | 22x35 | 0.40 | 2.13 | ELH1VM562O35KT | |
| | | 25x30 | 0.40 | 2.00 | ELH1VM562P30KT | |
| 6800 | | 22x40 | 0.40 | 2.41 | ELH1VM682O40KT | |
| | | 25x35 | 0.40 | 2.31 | ELH1VM682P35KT | |
| | | 30x25 | 0.40 | 2.31 | ELH1VM682Q25KT | |
| | | 22x50 | 0.40 | 2.85 | ELH1VM822O50KT | |
| 8200 | | 25x40 | 0.40 | 2.73 | ELH1VM822P40KT | |
| | | 30x30 | 0.40 | 2.75 | ELH1VM822Q30KT | |
| | 25x45 | 0.40 | 3.05 | ELH1VM103P45KT | | |
| | 30x35 | 0.40 | 3.05 | ELH1VM103Q35KT | | |
| 10000 | 25x50 | 0.40 | 3.37 | ELH1VM123P50KT | | |
| | 30x40 | 0.40 | 3.23 | ELH1VM123Q40KT | | |
| | 35x30 | 0.40 | 3.19 | ELH1VM123R30KT | | |
| | 30x45 | 0.40 | 3.72 | ELH1VM153Q45KT | | |
| 15000 | 35x35 | 0.40 | 3.67 | ELH1VM153R35KT | | |
| | 18000 | 35x40 | 0.40 | 4.37 | ELH1VM183R40KT | |
| | 22000 | 35x45 | 0.40 | 4.92 | ELH1VM223R45KT | |
| | 50(1H) | 1800 | 22x25 | 0.35 | 1.34 | ELH1HM182O25KT |
| 2200 | | 22x30 | 0.35 | 1.60 | ELH1HM222O30KT | |
| 2700 | | 22x30 | 0.35 | 1.70 | ELH1HM272O30KT | |
| | | 25x25 | 0.35 | 1.70 | ELH1HM272P25KT | |
| 3300 | | 22x35 | 0.35 | 1.97 | ELH1HM332O35KT | |
| | | 25x30 | 0.35 | 1.88 | ELH1HM332P30KT | |
| | | 22x40 | 0.35 | 2.22 | ELH1HM392O40KT | |
| 3900 | | 25x30 | 0.35 | 2.20 | ELH1HM392P30KT | |
| | | 30x25 | 0.35 | 1.95 | ELH1HM392Q25KT | |
| | | 22x45 | 0.35 | 2.43 | ELH1HM472O45KT | |
| 4700 | | 25x35 | 0.35 | 2.43 | ELH1HM472P35KT | |
| | | 30x30 | 0.35 | 2.25 | ELH1HM472Q30KT | |
| | 22x50 | 0.35 | 2.75 | ELH1HM562O50KT | | |
| 5600 | 25x40 | 0.35 | 2.72 | ELH1HM562P40KT | | |
| | 30x30 | 0.35 | 2.64 | ELH1HM562Q30KT | | |
| | 25x45 | 0.35 | 3.30 | ELH1HM682P45KT | | |
| 6800 | 30x35 | 0.35 | 3.30 | ELH1HM682Q35KT | | |
| | 35x30 | 0.35 | 3.25 | ELH1HM682R30KT | | |
| | 30x40 | 0.35 | 3.60 | ELH1HM822Q40KT | | |
| 8200 | 35x35 | 0.35 | 3.60 | ELH1HM822R35KT | | |
| | 30x50 | 0.35 | 4.05 | ELH1HM103Q50KT | | |
| | 35x40 | 0.35 | 4.04 | ELH1HM103R40KT | | |
| 10000 | 35x45 | 0.35 | 4.56 | ELH1HM123R45KT | | |
| | 12000 | 35x50 | 0.35 | 4.77 | ELH1HM153R50KT | |
| | 15000 | 35x50 | 0.35 | 4.77 | ELH1HM153R50KT | |
| 63(1J) | 1200 | 22x25 | 0.30 | 1.20 | ELH1JM122O25KT | |
| | 1500 | 22x30 | 0.30 | 1.47 | ELH1JM152O30KT | |
| | 1800 | 22x30 | 0.30 | 1.58 | ELH1JM182O30KT | |
| | | 25x25 | 0.30 | 1.52 | ELH1JM182P25KT | |
| | 2200 | 22x35 | 0.30 | 1.82 | ELH1JM222O35KT | |
| | | 25x30 | 0.30 | 1.75 | ELH1JM222P30KT | |

Snap-in&Lug
Terminal Type

LH series

■ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (Arms/105°C, 120Hz) | Part Number |
|----------|----------|--------------|------|--|----------------|
| 63(1J) | 2700 | 22x40 | 0.30 | 2.07 | ELH1JM272O40KT |
| | | 25x35 | 0.30 | 2.11 | ELH1JM272P35KT |
| | | 30x25 | 0.30 | 1.72 | ELH1JM272Q25KT |
| | 3300 | 22x45 | 0.30 | 2.33 | ELH1JM332O45KT |
| | | 25x35 | 0.30 | 2.27 | ELH1JM332P35KT |
| | | 30x30 | 0.30 | 2.24 | ELH1JM332Q30KT |
| | 3900 | 25x40 | 0.30 | 2.51 | ELH1JM392P40KT |
| | | 30x35 | 0.30 | 2.55 | ELH1JM392Q35KT |
| | 4700 | 25x50 | 0.30 | 2.97 | ELH1JM472P50KT |
| | | 30x40 | 0.30 | 2.86 | ELH1JM472Q40KT |
| | | 35x30 | 0.30 | 2.80 | ELH1JM472R30KT |
| | 5600 | 30x40 | 0.30 | 3.22 | ELH1JM562Q40KT |
| | | 35x35 | 0.30 | 3.20 | ELH1JM562R35KT |
| | 6800 | 30x50 | 0.30 | 3.65 | ELH1JM682Q50KT |
| | | 35x40 | 0.30 | 3.65 | ELH1JM682R40KT |
| | 8200 | 35x45 | 0.30 | 4.04 | ELH1JM822R45KT |
| 10000 | 35x50 | 0.30 | 4.48 | ELH1JM103R50KT | |
| 80(1B) | 1000 | 22x25 | 0.25 | 1.19 | ELH1BM102O25KT |
| | 1200 | 22x30 | 0.25 | 1.44 | ELH1BM122O30KT |
| | 1500 | 22x30 | 0.25 | 1.59 | ELH1BM152O30KT |
| | | 25x25 | 0.25 | 1.59 | ELH1BM152P25KT |
| | 1800 | 22x35 | 0.25 | 1.79 | ELH1BM182O35KT |
| | | 25x30 | 0.25 | 1.71 | ELH1BM182P30KT |
| | 2200 | 22x40 | 0.25 | 2.03 | ELH1BM222O40KT |
| | | 25x35 | 0.25 | 1.98 | ELH1BM222P35KT |
| | | 30x25 | 0.25 | 1.98 | ELH1BM222Q25KT |
| | 2700 | 22x45 | 0.25 | 2.39 | ELH1BM272O45KT |
| | | 25x40 | 0.25 | 2.35 | ELH1BM272P40KT |
| | | 30x30 | 0.25 | 2.35 | ELH1BM272Q30KT |
| | 3300 | 25x45 | 0.25 | 2.64 | ELH1BM332P45KT |
| | | 30x35 | 0.25 | 2.61 | ELH1BM332Q35KT |
| | | 35x30 | 0.25 | 2.74 | ELH1BM332R30KT |
| | 3900 | 25x50 | 0.25 | 2.92 | ELH1BM392P50KT |
| | | 30x40 | 0.25 | 2.82 | ELH1BM392Q40KT |
| | | 35x30 | 0.25 | 2.97 | ELH1BM392R30KT |
| | 4700 | 30x45 | 0.25 | 3.34 | ELH1BM472Q45KT |
| | | 35x35 | 0.25 | 3.38 | ELH1BM472R35KT |
| 5600 | 30x50 | 0.25 | 3.80 | ELH1BM562Q50KT | |
| | 35x40 | 0.25 | 3.80 | ELH1BM562R40KT | |
| 6800 | 35x45 | 0.25 | 3.90 | ELH1BM682R45KT | |
| 8200 | 35x50 | 0.25 | 4.20 | ELH1BM822R50KT | |
| 100(1K) | 680 | 22x25 | 0.20 | 1.09 | ELH1KM681O25KT |
| | 820 | 22x30 | 0.20 | 1.32 | ELH1KM821O30KT |
| | 1000 | 22x30 | 0.20 | 1.47 | ELH1KM102O30KT |
| | | 25x25 | 0.20 | 1.45 | ELH1KM102P25KT |
| | 1200 | 22x35 | 0.20 | 1.69 | ELH1KM122O35KT |
| | | 25x30 | 0.20 | 1.68 | ELH1KM122P30KT |
| | 1500 | 22x40 | 0.20 | 1.97 | ELH1KM152O40KT |
| | | 25x35 | 0.20 | 1.98 | ELH1KM152P35KT |
| | | 30x25 | 0.20 | 1.95 | ELH1KM152Q25KT |
| | 1800 | 22x45 | 0.20 | 2.23 | ELH1KM182O45KT |
| | | 25x40 | 0.20 | 2.20 | ELH1KM182P40KT |
| | | 30x30 | 0.20 | 2.20 | ELH1KM182Q30KT |
| | 2200 | 25x45 | 0.20 | 2.53 | ELH1KM222P45KT |
| | | 30x35 | 0.20 | 2.55 | ELH1KM222Q35KT |
| | | 35x30 | 0.20 | 2.50 | ELH1KM222R30KT |
| | 2700 | 25x50 | 0.20 | 2.82 | ELH1KM272P50KT |
| | | 30x40 | 0.20 | 2.86 | ELH1KM272Q40KT |
| | | 35x35 | 0.20 | 2.89 | ELH1KM272R35KT |
| | 3300 | 30x45 | 0.20 | 3.30 | ELH1KM332Q45KT |
| | | 35x35 | 0.20 | 3.25 | ELH1KM332R35KT |

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (Arms/105°C, 120Hz) | Part Number | |
|----------|----------|--------------|-------|--|----------------|----------------|
| 100(1K) | 3900 | 30x50 | 0.20 | 3.60 | ELH1KM392Q50KT | |
| | | 35x40 | 0.20 | 3.67 | ELH1KM392R40KT | |
| | 4700 | 35x45 | 0.20 | 3.80 | ELH1KM472R45KT | |
| | | 35x50 | 0.20 | 4.05 | ELH1KM562R50KT | |
| 160(2C) | 220 | 22x25 | 0.15 | 0.92 | ELH2CM221O25KT | |
| | | 330 | 22x25 | 0.15 | 1.03 | ELH2CM331O25KT |
| | 390 | 22x30 | 0.15 | 1.17 | ELH2CM391O30KT | |
| | | 470 | 22x30 | 0.15 | 1.28 | ELH2CM471O30KT |
| | 470 | 25x25 | 0.15 | 1.29 | ELH2CM471P25KT | |
| | | 560 | 22x35 | 0.15 | 1.45 | ELH2CM561O35KT |
| | 560 | 25x30 | 0.15 | 1.49 | ELH2CM561P30KT | |
| | | 680 | 22x40 | 0.15 | 1.64 | ELH2CM681O40KT |
| | 680 | 25x35 | 0.15 | 1.70 | ELH2CM681P35KT | |
| | | 820 | 30x25 | 0.15 | 1.63 | ELH2CM681Q25KT |
| | 820 | 22x45 | 0.15 | 1.85 | ELH2CM821O45KT | |
| | | | 25x40 | 0.15 | 1.92 | ELH2CM821P40KT |
| 30x30 | | 0.15 | 1.91 | ELH2CM821Q30KT | | |
| | | 1000 | 25x45 | 0.15 | 2.17 | ELH2CM102P45KT |
| 1000 | 30x35 | 0.15 | 2.19 | ELH2CM102Q35KT | | |
| | | 25x50 | 0.15 | 2.43 | ELH2CM122P50KT | |
| 1200 | 30x40 | 0.15 | 2.48 | ELH2CM122Q40KT | | |
| | 35x30 | 0.15 | 2.25 | ELH2CM122R30KT | | |
| 1500 | 30x45 | 0.15 | 2.82 | ELH2CM152Q45KT | | |
| | 35x35 | 0.15 | 2.62 | ELH2CM152R35KT | | |
| 1800 | 30x50 | 0.15 | 3.13 | ELH2CM182Q50KT | | |
| | 35x40 | 0.15 | 2.97 | ELH2CM182R40KT | | |
| 2200 | 35x45 | 0.15 | 3.34 | ELH2CM222R45KT | | |
| 180(2L) | 270 | 22x25 | 0.15 | 0.97 | ELH2LM271O25KT | |
| | 330 | 22x30 | 0.15 | 1.13 | ELH2LM331O30KT | |
| | 390 | 22x30 | 0.15 | 1.32 | ELH2LM391O30KT | |
| | | 25x25 | 0.15 | 1.33 | ELH2LM391P25KT | |
| | 470 | 22x35 | 0.15 | 1.39 | ELH2LM471O35KT | |
| | | 25x30 | 0.15 | 1.43 | ELH2LM471P30KT | |
| | 560 | 22x40 | 0.15 | 1.56 | ELH2LM561O40KT | |
| | | 25x30 | 0.15 | 1.53 | ELH2LM561P30KT | |
| | | 30x25 | 0.15 | 1.56 | ELH2LM561Q25KT | |
| | 680 | 22x45 | 0.15 | 1.76 | ELH2LM681O45KT | |
| | | 25x35 | 0.15 | 1.76 | ELH2LM681P35KT | |
| | | 30x30 | 0.15 | 1.74 | ELH2LM681Q30KT | |
| | 820 | 22x50 | 0.15 | 1.97 | ELH2LM821O50KT | |
| | | 25x40 | 0.15 | 1.99 | ELH2LM821P40KT | |
| | | 30x30 | 0.15 | 1.93 | ELH2LM821Q30KT | |
| | 1000 | 25x45 | 0.15 | 2.24 | ELH2LM102P45KT | |
| | | 30x35 | 0.15 | 2.24 | ELH2LM102Q35KT | |
| | | 35x30 | 0.15 | 2.20 | ELH2LM102R30KT | |
| | | 1200 | 30x40 | 0.15 | 2.53 | ELH2LM122Q40KT |
| | | 35x35 | 0.15 | 2.54 | ELH2LM122R35KT | |
| 1500 | 30x50 | 0.15 | 3.03 | ELH2LM152Q50KT | | |
| | 35x40 | 0.15 | 2.91 | ELH2LM152R40KT | | |
| 1800 | 35x45 | 0.15 | 3.25 | ELH2LM182R45KT | | |
| 2200 | 35x50 | 0.15 | 3.62 | ELH2LM222R50KT | | |
| 200(2D) | 270 | 22x25 | 0.15 | 0.99 | ELH2DM271O25KT | |
| | | 330 | 22x30 | 0.15 | 1.20 | ELH2DM331O30KT |
| | 330 | 25x25 | 0.15 | 1.20 | ELH2DM331P25KT | |
| | | 390 | 22x35 | 0.15 | 1.30 | ELH2DM391O35KT |
| | 390 | 25x30 | 0.15 | 1.34 | ELH2DM391P30KT | |
| | | 470 | 22x40 | 0.15 | 1.44 | ELH2DM471O40KT |
| | 470 | 25x30 | 0.15 | 1.44 | ELH2DM471P30KT | |
| | | 30x25 | 0.15 | 1.48 | ELH2DM471Q25KT | |

LH series

■ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (Arms/105°C, 120Hz) | Part Number | |
|----------|----------|--------------|-------|--|----------------|----------------|
| 200(2D) | 560 | 22x45 | 0.15 | 1.60 | ELH2DM561O45KT | |
| | | 25x35 | 0.15 | 1.60 | ELH2DM561P35KT | |
| | | 30x30 | 0.15 | 1.60 | ELH2DM561Q30KT | |
| | 680 | 22x50 | 0.15 | 1.75 | ELH2DM681O50KT | |
| | | 25x40 | 0.15 | 1.76 | ELH2DM681P40KT | |
| | | 30x30 | 0.15 | 1.74 | ELH2DM681Q30KT | |
| | 820 | 25x45 | 0.15 | 2.10 | ELH2DM821P45KT | |
| | | 30x35 | 0.15 | 2.11 | ELH2DM821Q35KT | |
| | | 35x30 | 0.15 | 2.10 | ELH2DM821R30KT | |
| | 1000 | 25x50 | 0.15 | 2.36 | ELH2DM102P50KT | |
| | | 30x40 | 0.15 | 2.40 | ELH2DM102Q40KT | |
| | | 35x35 | 0.15 | 2.30 | ELH2DM102R35KT | |
| | 1200 | 30x45 | 0.15 | 2.69 | ELH2DM122Q45KT | |
| | | 35x35 | 0.15 | 2.53 | ELH2DM122R35KT | |
| | 1500 | 35x40 | 0.15 | 2.97 | ELH2DM152R40KT | |
| | 1800 | 35x50 | 0.15 | 3.45 | ELH2DM182R50KT | |
| | 220(2N) | 220 | 22x25 | 0.15 | 0.94 | ELH2NM221O25KT |
| | | 270 | 22x30 | 0.15 | 1.09 | ELH2NM271O30KT |
| 330 | | 22x35 | 0.15 | 1.24 | ELH2NM331O35KT | |
| | | 25x25 | 0.15 | 1.14 | ELH2NM331P25KT | |
| 390 | | 22x35 | 0.15 | 1.30 | ELH2NM391O35KT | |
| | | 25x25 | 0.15 | 1.26 | ELH2NM391P25KT | |
| 470 | | 22x40 | 0.15 | 1.41 | ELH2NM471O40KT | |
| | | 25x30 | 0.15 | 1.39 | ELH2NM471P30KT | |
| 560 | | 30x25 | 0.15 | 1.37 | ELH2NM471Q25KT | |
| | | 22x45 | 0.15 | 1.60 | ELH2NM561O45KT | |
| | | 25x35 | 0.15 | 1.56 | ELH2NM561P35KT | |
| 680 | | 30x30 | 0.15 | 1.61 | ELH2NM561Q30KT | |
| | | 35x25 | 0.15 | 1.52 | ELH2NM561R25KT | |
| | | 25x40 | 0.15 | 1.75 | ELH2NM681P40KT | |
| 820 | | 30x35 | 0.15 | 1.76 | ELH2NM681Q35KT | |
| | | 35x30 | 0.15 | 1.72 | ELH2NM681R30KT | |
| | | 25x45 | 0.15 | 1.97 | ELH2NM821P45KT | |
| 1000 | | 30x40 | 0.15 | 2.06 | ELH2NM821Q40KT | |
| | | 35x30 | 0.15 | 1.95 | ELH2NM821R30KT | |
| | | 30x45 | 0.15 | 2.44 | ELH2NM102Q45KT | |
| 1200 | | 35x35 | 0.15 | 2.20 | ELH2NM102R35KT | |
| | | 35x40 | 0.15 | 2.37 | ELH2NM122R40KT | |
| 1500 | | 30x45 | 0.15 | 2.64 | ELH2NM152Q45KT | |
| 250(2E) | | 180 | 22x25 | 0.15 | 0.84 | ELH2EM181O25KT |
| | 22x30 | | 0.15 | 0.97 | ELH2EM221O30KT | |
| | 220 | 25x25 | 0.15 | 0.99 | ELH2EM221P25KT | |
| | | 22x35 | 0.15 | 1.11 | ELH2EM271O35KT | |
| | 270 | 25x30 | 0.15 | 1.15 | ELH2EM271P30KT | |
| | | 22x40 | 0.15 | 1.26 | ELH2EM331O40KT | |
| | 330 | 25x30 | 0.15 | 1.26 | ELH2EM331P30KT | |
| | | 30x25 | 0.15 | 1.31 | ELH2EM331Q25KT | |
| | 390 | 22x45 | 0.15 | 1.41 | ELH2EM391O45KT | |
| | | 25x35 | 0.15 | 1.42 | ELH2EM391P35KT | |
| | 470 | 30x30 | 0.15 | 1.50 | ELH2EM391Q30KT | |
| | | 22x50 | 0.15 | 1.58 | ELH2EM471O50KT | |
| | 560 | 25x40 | 0.15 | 1.61 | ELH2EM471P40KT | |
| | | 30x30 | 0.15 | 1.61 | ELH2EM471Q30KT | |
| | | 25x45 | 0.15 | 1.80 | ELH2EM561P45KT | |
| | 680 | 30x35 | 0.15 | 1.84 | ELH2EM561Q35KT | |
| | | 25x50 | 0.15 | 2.03 | ELH2EM681P50KT | |
| | | 30x40 | 0.15 | 2.09 | ELH2EM681Q40KT | |
| | 820 | 35x30 | 0.15 | 1.96 | ELH2EM681R30KT | |
| | | 30x45 | 0.15 | 2.35 | ELH2EM821Q45KT | |
| | | | 35x35 | 0.15 | 2.26 | ELH2EM821R35KT |

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (Arms/105°C, 120Hz) | Part Number |
|----------|----------|--------------|-------|--|----------------|
| 250(2E) | 1000 | 30x50 | 0.15 | 2.64 | ELH2EM102Q50KT |
| | | 35x40 | 0.15 | 2.57 | ELH2EM102R40KT |
| | | 1200 | 35x45 | 0.15 | 2.88 |
| 315(2F) | 120 | 22x25 | 0.15 | 0.56 | ELH2FM121O25KT |
| | | 22x30 | 0.15 | 0.66 | ELH2FM151O30KT |
| | | 25x25 | 0.15 | 0.65 | ELH2FM151P25KT |
| | 150 | 22x35 | 0.15 | 0.78 | ELH2FM181O35KT |
| | | 25x30 | 0.15 | 0.71 | ELH2FM181P30KT |
| | 180 | 22x40 | 0.15 | 0.89 | ELH2FM221O40KT |
| | | 25x30 | 0.15 | 0.85 | ELH2FM221P30KT |
| | 220 | 30x25 | 0.15 | 0.83 | ELH2FM221Q25KT |
| | | 22x45 | 0.15 | 1.01 | ELH2FM271O45KT |
| | 270 | 25x35 | 0.15 | 0.98 | ELH2FM271P35KT |
| | | 30x30 | 0.15 | 1.01 | ELH2FM271Q30KT |
| | 330 | 22x50 | 0.15 | 1.14 | ELH2FM331O50KT |
| | | 25x40 | 0.15 | 1.12 | ELH2FM331P40KT |
| | | 30x35 | 0.15 | 1.21 | ELH2FM331Q35KT |
| | 390 | 25x45 | 0.15 | 1.31 | ELH2FM391P45KT |
| | | 30x35 | 0.15 | 1.30 | ELH2FM391Q35KT |
| | | 35x30 | 0.15 | 1.23 | ELH2FM391R30KT |
| | 470 | 30x40 | 0.15 | 1.53 | ELH2FM471Q40KT |
| 35x35 | | 0.15 | 1.47 | ELH2FM471R35KT | |
| 560 | 30x45 | 0.15 | 1.65 | ELH2FM561Q45KT | |
| | 35x40 | 0.15 | 1.66 | ELH2FM561R40KT | |
| 680 | 35x45 | 0.15 | 1.96 | ELH2FM681R45KT | |
| 820 | 35x50 | 0.15 | 2.19 | ELH2FM821R50KT | |
| 350(2V) | 100 | 22x25 | 0.15 | 0.53 | ELH2VM101O25KT |
| | | 22x30 | 0.15 | 0.61 | ELH2VM121O30KT |
| | | 25x25 | 0.15 | 0.62 | ELH2VM121P25KT |
| | 120 | 22x35 | 0.15 | 0.73 | ELH2VM151O35KT |
| | | 25x30 | 0.15 | 0.73 | ELH2VM151P30KT |
| | 150 | 22x40 | 0.15 | 0.83 | ELH2VM181O40KT |
| | | 25x30 | 0.15 | 0.80 | ELH2VM181P30KT |
| | 180 | 30x25 | 0.15 | 0.81 | ELH2VM181Q25KT |
| | | 22x45 | 0.15 | 0.94 | ELH2VM221O45KT |
| | 220 | 25x35 | 0.15 | 0.92 | ELH2VM221P35KT |
| | | 30x30 | 0.15 | 0.98 | ELH2VM221Q30KT |
| | 270 | 22x50 | 0.15 | 1.07 | ELH2VM271O50KT |
| | | 25x40 | 0.15 | 1.05 | ELH2VM271P40KT |
| | 330 | 30x30 | 0.15 | 1.03 | ELH2VM271Q30KT |
| | | 25x45 | 0.15 | 1.24 | ELH2VM331P45KT |
| | 390 | 30x35 | 0.15 | 1.24 | ELH2VM331Q35KT |
| | | 35x30 | 0.15 | 1.18 | ELH2VM331R30KT |
| | 470 | 25x50 | 0.15 | 1.38 | ELH2VM391P50KT |
| | | 30x40 | 0.15 | 1.39 | ELH2VM391Q40KT |
| | 560 | 35x35 | 0.15 | 1.39 | ELH2VM391R35KT |
| | | 30x45 | 0.15 | 1.57 | ELH2VM471Q45KT |
| | 680 | 35x35 | 0.15 | 1.50 | ELH2VM471R35KT |
| | | 30x50 | 0.15 | 1.75 | ELH2VM561Q50KT |
| | | | 35x40 | 0.15 | 1.69 |
| | | 35x45 | 0.15 | 1.96 | ELH2VM681R45KT |
| 385(3B) | 68 | 22x25 | 0.15 | 0.45 | ELH3BM680O25KT |
| | | 22x30 | 0.15 | 0.52 | ELH3BM820Q30KT |
| | | 22x30 | 0.15 | 0.58 | ELH3BM101O30KT |
| | 82 | 25x25 | 0.15 | 0.57 | ELH3BM101P25KT |
| | | 22x35 | 0.15 | 0.68 | ELH3BM121O35KT |
| | 100 | 25x30 | 0.15 | 0.68 | ELH3BM121P30KT |
| | | 22x40 | 0.15 | 0.79 | ELH3BM151O40KT |
| | 120 | 25x30 | 0.15 | 0.78 | ELH3BM151P30KT |
| | | 30x25 | 0.15 | 0.75 | ELH3BM151Q25KT |

Snap-in&Lug Terminal Type

LH series

■ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Size DxDL(mm) | tan | Rated ripple current (Arms/105°C, 120Hz) | Part Number |
|----------|----------|---------------|------|--|----------------|
| 385(3B) | 180 | 22x45 | 0.15 | 0.89 | ELH3BM181O45KT |
| | | 25x35 | 0.15 | 0.86 | ELH3BM181P35KT |
| | | 30x30 | 0.15 | 0.88 | ELH3BM181Q30KT |
| | 220 | 22x50 | 0.15 | 1.01 | ELH3BM221O50KT |
| | | 25x40 | 0.15 | 1.00 | ELH3BM221P40KT |
| | | 30x30 | 0.15 | 1.00 | ELH3BM221Q30KT |
| | 270 | 25x45 | 0.15 | 1.13 | ELH3BM271P45KT |
| | | 30x40 | 0.15 | 1.14 | ELH3BM271Q40KT |
| | | 35x30 | 0.15 | 1.10 | ELH3BM271R30KT |
| | 330 | 30x45 | 0.15 | 1.31 | ELH3BM331Q45KT |
| | | 35x35 | 0.15 | 1.32 | ELH3BM331R35KT |
| | 390 | 30x50 | 0.15 | 1.48 | ELH3BM391Q50KT |
| | | 35x40 | 0.15 | 1.48 | ELH3BM391R40KT |
| | 470 | 35x45 | 0.15 | 1.76 | ELH3BM471R45KT |
| | 560 | 35x50 | 0.15 | 1.95 | ELH3BM561R50KT |
| 400(2G) | 68 | 22x25 | 0.15 | 0.49 | ELH2GM680O25KT |
| | 82 | 22x30 | 0.15 | 0.56 | ELH2GM820O30KT |
| | 100 | 22x30 | 0.15 | 0.62 | ELH2GM101O30KT |
| | | 25x25 | 0.15 | 0.61 | ELH2GM101P25KT |
| | 120 | 22x35 | 0.15 | 0.73 | ELH2GM121O35KT |
| | | 25x30 | 0.15 | 0.73 | ELH2GM121P30KT |
| | 150 | 22x40 | 0.15 | 0.85 | ELH2GM151O40KT |
| | | 25x35 | 0.15 | 0.85 | ELH2GM151P35KT |
| | 180 | 30x25 | 0.15 | 0.79 | ELH2GM151Q25KT |
| | | 22x45 | 0.15 | 0.95 | ELH2GM181O45KT |
| | 220 | 25x35 | 0.15 | 0.92 | ELH2GM181P35KT |
| | | 30x30 | 0.15 | 0.95 | ELH2GM181Q30KT |
| | | 22x50 | 0.15 | 1.08 | ELH2GM221O50KT |
| | 270 | 25x40 | 0.15 | 1.05 | ELH2GM221P40KT |
| | | 30x35 | 0.15 | 1.24 | ELH2GM221Q35KT |
| | | 25x50 | 0.15 | 1.29 | ELH2GM271P50KT |
| | 330 | 30x40 | 0.15 | 1.30 | ELH2GM271Q40KT |
| | | 35x30 | 0.15 | 1.18 | ELH2GM271R30KT |
| | 390 | 30x45 | 0.15 | 1.47 | ELH2GM331Q45KT |
| | | 35x35 | 0.15 | 1.40 | ELH2GM331R35KT |
| | 470 | 30x50 | 0.15 | 1.64 | ELH2GM391Q50KT |
| | | 35x40 | 0.15 | 1.59 | ELH2GM391R40KT |
| | 560 | 35x45 | 0.15 | 1.68 | ELH2GM471R45KT |
| | 680 | 35x50 | 0.15 | 1.90 | ELH2GM561R50KT |
| | 820 | 35x50 | 0.15 | 2.03 | ELH2GM681R50KT |
| | 1000 | 35x60 | 0.15 | 2.36 | ELH2GM821R60KT |
| | | 35x70 | 0.15 | 2.65 | ELH2GM102R70KT |
| 1200 | 40x60 | 0.15 | 2.60 | ELH2GM102Y60PT | |
| 1500 | 40x70 | 0.15 | 2.97 | ELH2GM122Y70PT | |
| 1800 | 40x80 | 0.15 | 3.48 | ELH2GM152Y80PT | |
| 1800 | 40x100 | 0.15 | 4.31 | ELH2GM182YA0PT | |
| 420(2T) | 68 | 22x25 | 0.15 | 0.50 | ELH2TM680O25KT |
| | 82 | 22x30 | 0.15 | 0.56 | ELH2TM820O30KT |
| | 100 | 25x25 | 0.15 | 0.56 | ELH2TM820P25KT |
| | | 22x30 | 0.15 | 0.63 | ELH2TM101O30KT |
| | 120 | 25x25 | 0.15 | 0.63 | ELH2TM101P25KT |
| | | 22x35 | 0.15 | 0.73 | ELH2TM121O35KT |
| | | 25x30 | 0.15 | 0.72 | ELH2TM121P30KT |
| | 150 | 30x25 | 0.15 | 0.75 | ELH2TM121Q25KT |
| | | 22x45 | 0.15 | 0.86 | ELH2TM151O45KT |
| | | 25x35 | 0.15 | 0.83 | ELH2TM151P35KT |
| | 180 | 30x25 | 0.15 | 0.83 | ELH2TM151Q25KT |
| | | 22x50 | 0.15 | 1.02 | ELH2TM181O50KT |
| | | 25x40 | 0.15 | 0.94 | ELH2TM181P40KT |
| | 180 | 30x30 | 0.15 | 0.95 | ELH2TM181Q30KT |
| | | 35x25 | 0.15 | 0.90 | ELH2TM181R25KT |

| WV (Vdc) | Cap (μF) | Size DxDL(mm) | tan | Rated ripple current (Arms/105°C, 120Hz) | Part Number | |
|----------|----------|---------------|-------|--|----------------|----------------|
| 420(2T) | 220 | 25x45 | 0.15 | 1.13 | ELH2TM221P45KT | |
| | | 30x35 | 0.15 | 1.09 | ELH2TM221Q35KT | |
| | | 35x30 | 0.15 | 1.05 | ELH2TM221R30KT | |
| | 270 | 25x50 | 0.15 | 1.37 | ELH2TM271P50KT | |
| | | 30x40 | 0.15 | 1.25 | ELH2TM271Q40KT | |
| | | 35x35 | 0.15 | 1.25 | ELH2TM271R35KT | |
| | 330 | 30x45 | 0.15 | 1.49 | ELH2TM331Q45KT | |
| | | 35x35 | 0.15 | 1.42 | ELH2TM331R35KT | |
| | 390 | 30x50 | 0.15 | 1.67 | ELH2TM391Q50KT | |
| | | 35x40 | 0.15 | 1.61 | ELH2TM391R40KT | |
| | | 470 | 35x45 | 0.15 | 1.86 | ELH2TM471R45KT |
| | 420(2T) | 560 | 35x50 | 0.15 | 2.02 | ELH2TM561R50KT |
| | | 680 | 35x50 | 0.15 | 2.20 | ELH2TM681R50KT |
| | | 820 | 35x60 | 0.15 | 2.45 | ELH2TM821R60KT |
| | | 1000 | 35x70 | 0.15 | 2.82 | ELH2TM102R70KT |
| 1200 | | 40x60 | 0.15 | 2.80 | ELH2TM102Y60PT | |
| 1500 | | 40x70 | 0.15 | 3.20 | ELH2TM122Y70PT | |
| 1800 | | 40x85 | 0.15 | 3.56 | ELH2TM152Y85PT | |
| 1800 | 40x100 | 0.15 | 4.31 | ELH2TM182YA0PT | | |
| 450(2W) | 56 | 22x25 | 0.15 | 0.42 | ELH2WM560O25KT | |
| | 68 | 22x30 | 0.15 | 0.50 | ELH2WM680O30KT | |
| | 82 | 25x25 | 0.15 | 0.50 | ELH2WM680P25KT | |
| | | 22x35 | 0.15 | 0.56 | ELH2WM820O35KT | |
| | 100 | 25x30 | 0.15 | 0.57 | ELH2WM820P30KT | |
| | | 22x40 | 0.15 | 0.64 | ELH2WM101O40KT | |
| | 120 | 25x30 | 0.15 | 0.63 | ELH2WM101P30KT | |
| | | 30x25 | 0.15 | 0.67 | ELH2WM101Q25KT | |
| | | 22x45 | 0.15 | 0.72 | ELH2WM121O45KT | |
| | 150 | 25x35 | 0.15 | 0.71 | ELH2WM121P35KT | |
| | | 30x30 | 0.15 | 0.77 | ELH2WM121Q30KT | |
| | | 22x50 | 0.15 | 0.80 | ELH2WM151O50KT | |
| | 180 | 25x40 | 0.15 | 0.82 | ELH2WM151P40KT | |
| | | 30x30 | 0.15 | 0.85 | ELH2WM151Q30KT | |
| | 220 | 25x45 | 0.15 | 0.93 | ELH2WM181P45KT | |
| | | 30x35 | 0.15 | 0.97 | ELH2WM181Q35KT | |
| | | 25x50 | 0.15 | 1.05 | ELH2WM221P50KT | |
| | 270 | 30x40 | 0.15 | 1.10 | ELH2WM221Q40KT | |
| | | 35x30 | 0.15 | 1.01 | ELH2WM221R30KT | |
| | | 30x45 | 0.15 | 1.25 | ELH2WM271Q45KT | |
| | 330 | 35x35 | 0.15 | 1.26 | ELH2WM271R35KT | |
| | | 30x50 | 0.15 | 1.42 | ELH2WM331Q50KT | |
| | | 35x40 | 0.15 | 1.44 | ELH2WM331R40KT | |
| | 390 | 35x45 | 0.15 | 1.61 | ELH2WM391R45KT | |
| | | 470 | 35x50 | 0.15 | 1.80 | ELH2WM471R50KT |
| | | 560 | 35x50 | 0.15 | 1.90 | ELH2WM561R50KT |
| | 680 | 35x55 | 0.15 | 2.12 | ELH2WM681R55KT | |
| 35x65 | | 0.15 | 2.55 | ELH2WM821R65KT | | |
| 35x80 | | 0.15 | 2.85 | ELH2WM102R80KT | | |
| 1000 | 40x70 | 0.15 | 2.82 | ELH2WM102Y70PT | | |
| 1200 | 40x80 | 0.15 | 3.22 | ELH2WM122Y80PT | | |
| 1500 | 40x100 | 0.15 | 3.63 | ELH2WM152YA0PT | | |
| 1800 | 45x100 | 0.15 | 4.35 | ELH2WM182IA0PT | | |
| 500(2H) | 47 | 22x25 | 0.20 | 0.41 | ELH2HM470O25KT | |
| | 56 | 22x30 | 0.20 | 0.43 | ELH2HM560O30KT | |
| | 68 | 22x30 | 0.20 | 0.52 | ELH2HM680O30KT | |
| | | 25x25 | 0.20 | 0.55 | ELH2HM680P25KT | |
| | 82 | 22x35 | 0.20 | 0.62 | ELH2HM820O35KT | |
| | | 25x30 | 0.20 | 0.57 | ELH2HM820P30KT | |
| | 100 | 22x45 | 0.20 | 0.68 | ELH2HM101O45KT | |
| | | 25x30 | 0.20 | 0.72 | ELH2HM101P30KT | |

LH series

■ STANDARD RATINGS

| WV (V _{dc}) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (Arms/105°C, 120Hz) | Part Number |
|-----------------------|----------|--------------|------|--|----------------|
| 500(2H) | 120 | 22x50 | 0.20 | 0.76 | ELH2HM121O50KT |
| | | 25x35 | 0.20 | 0.79 | ELH2HM121P35KT |
| | | 30x30 | 0.20 | 0.91 | ELH2HM121Q30KT |
| | 150 | 25x45 | 0.20 | 1.08 | ELH2HM151P45KT |
| | | 30x35 | 0.20 | 1.04 | ELH2HM151Q35KT |
| | | 35x25 | 0.20 | 0.99 | ELH2HM151R25KT |
| | 180 | 25x50 | 0.20 | 1.20 | ELH2HM181P50KT |
| | | 30x40 | 0.20 | 1.17 | ELH2HM181Q40KT |
| | | 35x30 | 0.20 | 1.10 | ELH2HM181R30KT |
| | 220 | 30x45 | 0.20 | 1.33 | ELH2HM221Q45KT |
| | | 35x35 | 0.20 | 1.23 | ELH2HM221R35KT |
| | 270 | 30x50 | 0.20 | 1.50 | ELH2HM271Q50KT |
| | | 35x40 | 0.20 | 1.42 | ELH2HM271R40KT |
| | 330 | 35x45 | 0.20 | 1.60 | ELH2HM331R45KT |
| | 390 | 35x50 | 0.20 | 1.78 | ELH2HM391R50KT |
| | 470 | 35x60 | 0.20 | 2.03 | ELH2HM471R60KT |

Snap-in&Lug Terminal Type

LC series

- Wide temperature range
- Miniaturized
- Endurance: 2,000 hours at 105°C
- Suitable for charging pile
- **RoHS Compliant**



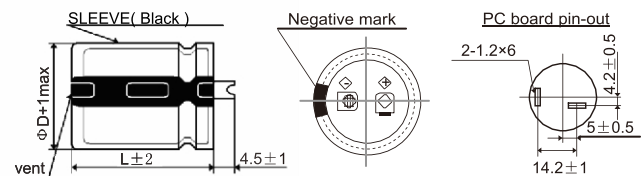
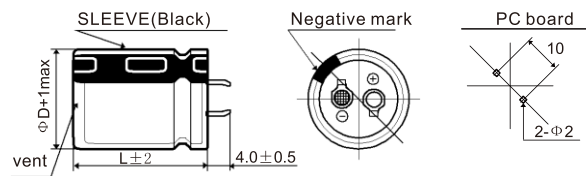
SPECIFICATIONS

| Items | Characteristics | | |
|--|---|-------------------------------------|---------|
| Category Temperature Range | -40~+105°C | | |
| Rated Voltage Range | 400~500V.DC | | |
| Capacitance Tolerance | ±20%(M) (at 20°C,120Hz) | | |
| Leakage Current | $I \leq 3\sqrt{CV}$ Where, I:Max.leakage current (µA),C:Nominal capacitance (µF),V: Rated voltage (V) (at 20°C after 5 minutes) | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 400 | 450,500 |
| | tan (max.) | 0.15 | 0.20 |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) | 400~500 | |
| | Z(-25°C)/Z(+20°C) | 6 | |
| | Z(-40°C)/Z(+20°C) | 8 | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 20°C after DC voltage plus the rated ripple current is applied for 2,000 hours at 105 °C. | | |
| | Capacitance Change | ±20% of the initial value | |
| | D.F. (tan δ) | 200% of the initial specified value | |
| | Leakage Current | The initial specified value | |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 105°C without voltage applied. | | |
| | Capacitance Change | ±15% of the initial value | |
| | D.F. (tan δ) | 150% of the initial specified value | |
| | Leakage Current | 200% of the initial specified value | |

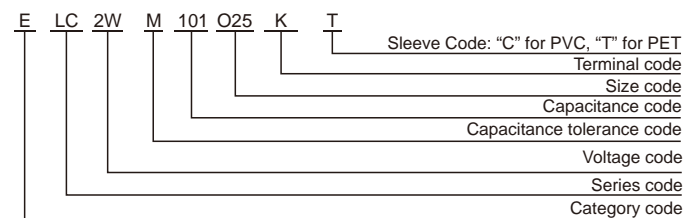
DIMENSIONS[mm]

- Terminal Code : K (22 to 35) : Standard

- Terminal Code : L (35)



PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| Rated voltage(V _{dc}) \ Freq.(Hz) | 120 | 1k | 10k | 100k |
|---|------|------|------|------|
| 400~500 | 1.00 | 1.30 | 1.41 | 1.43 |

The endurance of capacitors is shortened with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

LC series

■ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (Arms/105°C, 120Hz) | Part Number |
|----------|----------|--------------|-------|--|-----------------|
| 400(2G) | 100 | 22x25 | 0.15 | 0.70 | ELC2GM101O25KT |
| | 120 | 22x30 | 0.15 | 0.75 | ELC2GM121O30KT |
| | 150 | 22x30 | 0.15 | 0.88 | ELC2GM151O30KT |
| | | 25x25 | 0.15 | 0.88 | ELC2GM151P25KT |
| | 180 | 22x35 | 0.15 | 0.95 | ELC2GM181O35KT |
| | | 25x30 | 0.15 | 0.95 | ELC2GM181P30KT |
| | 220 | 22x45 | 0.15 | 1.10 | ELC2GM221O45KT |
| | | 25x35 | 0.15 | 1.10 | ELC2GM221P35KT |
| | | 30x25 | 0.15 | 1.10 | ELC2GM221Q25KT |
| | 270 | 22x50 | 0.15 | 1.22 | ELC2GM271O50KT |
| | | 25x40 | 0.15 | 1.22 | ELC2GM271P40KT |
| | | 30x30 | 0.15 | 1.22 | ELC2GM271Q30KT |
| | | 35x25 | 0.15 | 1.22 | ELC2GM271R25KT |
| | 330 | 25x45 | 0.15 | 1.44 | ELC2GM331P45KT |
| | | 30x35 | 0.15 | 1.44 | ELC2GM331Q35KT |
| | | 35x30 | 0.15 | 1.44 | ELC2GM331R30KT |
| | 390 | 25x50 | 0.15 | 1.55 | ELC2GM391P50KT |
| | | 30x40 | 0.15 | 1.55 | ELC2GM391Q40KT |
| | | 35x30 | 0.15 | 1.55 | ELC2GM391R30KT |
| | 470 | 30x45 | 0.15 | 1.68 | ELC2GM471Q45KT |
| | | 35x35 | 0.15 | 1.68 | ELC2GM471R35KT |
| | 560 | 30x50 | 0.15 | 1.90 | ELC2GM561Q50KT |
| | | 35x40 | 0.15 | 1.90 | ELC2GM561R40KT |
| | 680 | 35x45 | 0.15 | 2.12 | ELC2GM681R45KT |
| 450(2W) | 100 | 22x25 | 0.20 | 0.71 | ELC2WWM101O25KT |
| | 120 | 22x30 | 0.20 | 0.82 | ELC2WWM121O30KT |
| | 150 | 22x35 | 0.20 | 0.94 | ELC2WWM151O35KT |
| | | 25x30 | 0.20 | 0.89 | ELC2WWM151P30KT |
| | 180 | 22x40 | 0.20 | 1.05 | ELC2WWM181O40KT |
| | | 25x30 | 0.20 | 1.00 | ELC2WWM181P30KT |
| | 220 | 22x45 | 0.20 | 1.19 | ELC2WWM221O45KT |
| | | 25x35 | 0.20 | 1.16 | ELC2WWM221P35KT |
| | | 30x30 | 0.20 | 1.11 | ELC2WWM221Q30KT |
| | 270 | 22x50 | 0.20 | 1.36 | ELC2WWM271O50KT |
| | | 25x40 | 0.20 | 1.32 | ELC2WWM271P40KT |
| | | 30x30 | 0.20 | 1.26 | ELC2WWM271Q30KT |
| | | 35x25 | 0.20 | 1.26 | ELC2WWM271R25KT |
| | 330 | 25x50 | 0.20 | 1.52 | ELC2WWM331P50KT |
| | | 30x35 | 0.20 | 1.45 | ELC2WWM331Q35KT |
| | | 35x30 | 0.20 | 1.45 | ELC2WWM331R30KT |
| | 390 | 30x40 | 0.20 | 1.63 | ELC2WWM391Q40KT |
| | | 30x45 | 0.20 | 1.85 | ELC2WWM471Q45KT |
| | 470 | 30x50 | 0.20 | 1.90 | ELC2WWM471Q50KT |
| | | 35x35 | 0.20 | 1.77 | ELC2WWM471R35KT |
| | | 560 | 35x40 | 0.20 | 2.02 |
| | 680 | 35x50 | 0.20 | 2.36 | ELC2WWM681R50KT |

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (Arms/105°C, 120Hz) | Part Number |
|----------|----------|--------------|-------|--|----------------|
| 500(2H) | 47 | 22x25 | 0.20 | 0.51 | ELC2HM470O25KT |
| | 56 | 22x25 | 0.20 | 0.58 | ELC2HM560O25KT |
| | 68 | 25x25 | 0.20 | 0.65 | ELC2HM680P25KT |
| | 82 | 22x35 | 0.20 | 0.72 | ELC2HM820O35KT |
| | | 25x30 | 0.20 | 0.74 | ELC2HM820P30KT |
| | 100 | 22x40 | 0.20 | 0.83 | ELC2HM101O40KT |
| | | 25x30 | 0.20 | 0.82 | ELC2HM101P30KT |
| | 120 | 22x45 | 0.20 | 0.93 | ELC2HM121O45KT |
| | | 25x35 | 0.20 | 0.93 | ELC2HM121P35KT |
| | | 30x30 | 0.20 | 0.91 | ELC2HM121Q30KT |
| | 150 | 25x40 | 0.20 | 1.08 | ELC2HM151P40KT |
| | | 30x35 | 0.20 | 1.04 | ELC2HM151Q35KT |
| | | 35x25 | 0.20 | 0.99 | ELC2HM151R25KT |
| | | 25x50 | 0.20 | 1.20 | ELC2HM181P50KT |
| | 180 | 30x40 | 0.20 | 1.17 | ELC2HM181Q40KT |
| | | 35x30 | 0.20 | 1.10 | ELC2HM181R30KT |
| | | 220 | 30x45 | 0.20 | 1.33 |
| | 270 | 35x35 | 0.20 | 1.23 | ELC2HM221R35KT |
| | | 30x50 | 0.20 | 1.50 | ELC2HM271Q50KT |
| | | 35x40 | 0.20 | 1.42 | ELC2HM271R40KT |
| | 330 | 35x45 | 0.20 | 1.60 | ELC2HM331R45KT |
| | 390 | 35x50 | 0.20 | 1.78 | ELC2HM391R50KT |
| | 470 | 35x60 | 0.20 | 2.03 | ELC2HM471R60KT |

Snap-in&Lug Terminal Type

LS series

- Downsized, longer life series
- Endurance: 3,000 hours at 85°C
- Non solvent-proof type
- **RoHS Compliant**

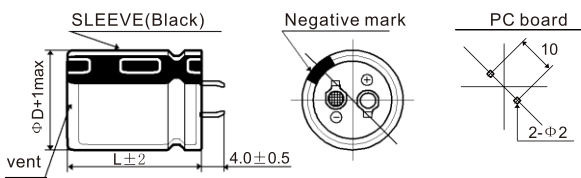


SPECIFICATIONS

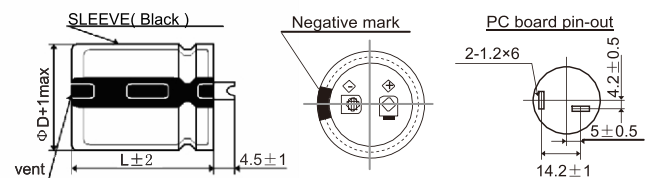
| Items | Characteristics | | | |
|--|---|-------------------------------------|------------|------|
| Category Temperature Range | -25~+85°C | | | |
| Rated Voltage Range | 160~600V.DC | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | | |
| Leakage Current | $I \leq 3\sqrt{CV}$ Where, I:Max.leakage current (µA), C:Nominal capacitance (µF), V: Rated voltage (V) (at 20°C after 5 minutes) | | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 160 to 400 | 420 to 550 | 600 |
| | tan δ (max.) | 0.15 | 0.20 | 0.30 |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) | 160 to 400 | 420 to 550 | 600 |
| | Z(-25°C)/Z(+20°C) | 4 | 8 | 10 |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 20°C after DC voltage plus the rated ripple current is applied for 3,000 hours at 85°C. | | | |
| | Capacitance Change | ±20% of the initial value | | |
| | D.F. (tan δ) | 200% of the initial specified value | | |
| | Leakage Current | The initial specified value | | |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 85°C without voltage applied. | | | |
| | Capacitance Change | ±15% of the initial value | | |
| | D.F. (tan δ) | 150% of the initial specified value | | |
| | Leakage Current | 200% of the initial specified value | | |

DIMENSIONS[mm]

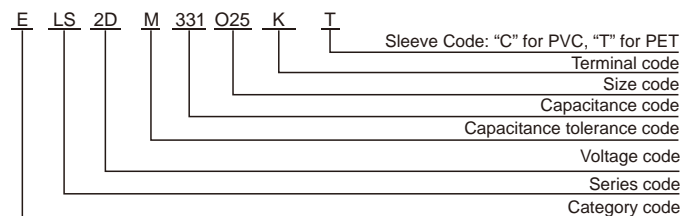
- Terminal Code : K (22 to 35) : Standard



- Terminal Code : L (35)



PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| Rated voltage(V _{dc}) | Freq.(Hz) | | | |
|---------------------------------|-----------|------|------|------|
| | 120 | 1k | 10k | 100k |
| 160~250 | 1.00 | 1.32 | 1.45 | 1.50 |
| 315~600 | 1.00 | 1.30 | 1.41 | 1.43 |

The endurance of capacitors is shortened with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

LS series

■ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (Arms/85°C, 120Hz) | Part Number |
|----------|----------|--------------|------|---|----------------|
| 160(2C) | 270 | 22x20 | 0.15 | 1.30 | ELS2CM271O20KT |
| | 330 | 22x25 | 0.15 | 1.55 | ELS2CM331O25KT |
| | 390 | 22x25 | 0.15 | 1.63 | ELS2CM391O25KT |
| | | 25x20 | 0.15 | 1.62 | ELS2CM391P20KT |
| | 470 | 22x30 | 0.15 | 1.86 | ELS2CM471O30KT |
| | | 25x25 | 0.15 | 1.86 | ELS2CM471P25KT |
| | 560 | 22x30 | 0.15 | 2.15 | ELS2CM561O30KT |
| | | 25x25 | 0.15 | 2.15 | ELS2CM561P25KT |
| | | 30x20 | 0.15 | 2.05 | ELS2CM561Q20KT |
| | 680 | 22x35 | 0.15 | 2.35 | ELS2CM681O35KT |
| | | 25x30 | 0.15 | 2.33 | ELS2CM681P30KT |
| | | 30x25 | 0.15 | 2.33 | ELS2CM681Q25KT |
| | | 35x20 | 0.15 | 2.26 | ELS2CM681R20KT |
| | 820 | 22x40 | 0.15 | 2.68 | ELS2CM821O40KT |
| | | 25x30 | 0.15 | 2.65 | ELS2CM821P30KT |
| | | 30x25 | 0.15 | 2.64 | ELS2CM821Q25KT |
| | | 35x20 | 0.15 | 2.49 | ELS2CM821R20KT |
| | 1000 | 22x45 | 0.15 | 3.02 | ELS2CM102O45KT |
| | | 25x35 | 0.15 | 3.00 | ELS2CM102P35KT |
| | | 30x30 | 0.15 | 3.96 | ELS2CM102Q30KT |
| | | 35x25 | 0.15 | 3.13 | ELS2CM102R25KT |
| | 1200 | 22x50 | 0.15 | 3.47 | ELS2CM122O50KT |
| | | 25x40 | 0.15 | 3.43 | ELS2CM122P40KT |
| | | 30x30 | 0.15 | 3.41 | ELS2CM122Q30KT |
| | 1500 | 35x25 | 0.15 | 3.40 | ELS2CM122R25KT |
| | | 25x50 | 0.15 | 3.96 | ELS2CM152P50KT |
| | | 30x35 | 0.15 | 3.96 | ELS2CM152Q35KT |
| | 1800 | 35x30 | 0.15 | 3.94 | ELS2CM152R30KT |
| | | 30x40 | 0.15 | 4.31 | ELS2CM182Q40KT |
| | 2200 | 35x35 | 0.15 | 4.28 | ELS2CM182R35KT |
| | | 30x50 | 0.15 | 4.96 | ELS2CM222Q50KT |
| | 2700 | 35x40 | 0.15 | 4.96 | ELS2CM222R40KT |
| | | 35x45 | 0.15 | 5.57 | ELS2CM272R45KT |
| 3300 | 35x50 | 0.15 | 6.21 | ELS2CM332R50KT | |
| 180(2L) | 220 | 22x20 | 0.15 | 1.18 | ELS2LM221O20KT |
| | 330 | 22x25 | 0.15 | 1.77 | ELS2LM331O25KT |
| | 390 | 25x20 | 0.15 | 1.49 | ELS2LM331P20KT |
| | | 22x25 | 0.15 | 1.84 | ELS2LM391O25KT |
| | 470 | 22x30 | 0.15 | 1.91 | ELS2LM471O30KT |
| | | 25x25 | 0.15 | 2.08 | ELS2LM471P25KT |
| | 560 | 30x20 | 0.15 | 1.88 | ELS2LM471Q20KT |
| | | 22x35 | 0.15 | 2.25 | ELS2LM561O35KT |
| | | 25x25 | 0.15 | 2.25 | ELS2LM561P25KT |
| | 680 | 22x35 | 0.15 | 2.48 | ELS2LM681O35KT |
| | | 25x30 | 0.15 | 2.50 | ELS2LM681P30KT |
| | | 30x25 | 0.15 | 2.46 | ELS2LM681Q25KT |
| | 820 | 35x20 | 0.15 | 2.26 | ELS2LM681R20KT |
| | | 22x40 | 0.15 | 2.86 | ELS2LM821O40KT |
| | | 25x35 | 0.15 | 2.75 | ELS2LM821P35KT |
| | | 30x25 | 0.15 | 2.69 | ELS2LM821Q25KT |
| | 1000 | 22x50 | 0.15 | 3.10 | ELS2LM102O50KT |
| | | 25x40 | 0.15 | 3.06 | ELS2LM102P40KT |
| | | 30x30 | 0.15 | 3.10 | ELS2LM102Q30KT |
| | | 35x25 | 0.15 | 2.98 | ELS2LM102R25KT |
| | 1200 | 25x45 | 0.15 | 3.63 | ELS2LM122P45KT |
| | | 30x35 | 0.15 | 3.55 | ELS2LM122Q35KT |
| | 1500 | 35x30 | 0.15 | 3.49 | ELS2LM122R30KT |
| | | 30x40 | 0.15 | 4.10 | ELS2LM152Q40KT |
| | 1800 | 35x35 | 0.15 | 4.02 | ELS2LM152R35KT |
| | | 30x45 | 0.15 | 4.55 | ELS2LM182Q45KT |
| | 2200 | 35x35 | 0.15 | 4.54 | ELS2LM182R35KT |
| | | 35x40 | 0.15 | 4.83 | ELS2LM222R40KT |
| | 2700 | 35x50 | 0.15 | 5.30 | ELS2LM272R50KT |

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (Arms/85°C, 120Hz) | Part Number |
|----------|----------|--------------|-------|---|----------------|
| 200(2D) | 220 | 22x20 | 0.15 | 1.18 | ELS2DM221O20KT |
| | 270 | 22x25 | 0.15 | 1.37 | ELS2DM271O25KT |
| | | 25x20 | 0.15 | 1.35 | ELS2DM271P20KT |
| | 330 | 22x25 | 0.15 | 1.51 | ELS2DM331O25KT |
| | | 25x20 | 0.15 | 1.49 | ELS2DM331P20KT |
| | 390 | 22x30 | 0.15 | 1.73 | ELS2DM391O30KT |
| | | 25x25 | 0.15 | 1.71 | ELS2DM391P25KT |
| | | 30x20 | 0.15 | 1.71 | ELS2DM391Q20KT |
| | 470 | 22x30 | 0.15 | 1.97 | ELS2DM471O30KT |
| | | 25x25 | 0.15 | 1.95 | ELS2DM471P25KT |
| | | 30x20 | 0.15 | 1.88 | ELS2DM471Q20KT |
| | | 22x35 | 0.15 | 2.18 | ELS2DM561O35KT |
| | 560 | 25x30 | 0.15 | 2.15 | ELS2DM561P30KT |
| | | 30x25 | 0.15 | 2.15 | ELS2DM561Q25KT |
| | | 35x20 | 0.15 | 2.05 | ELS2DM561R20KT |
| | | 22x40 | 0.15 | 2.48 | ELS2DM681O40KT |
| | 680 | 25x30 | 0.15 | 2.48 | ELS2DM681P30KT |
| | | 30x25 | 0.15 | 2.48 | ELS2DM681Q25KT |
| | | 35x20 | 0.15 | 2.36 | ELS2DM681R20KT |
| | | 22x45 | 0.15 | 2.81 | ELS2DM821O45KT |
| | 820 | 25x35 | 0.15 | 2.79 | ELS2DM821P35KT |
| | | 30x30 | 0.15 | 2.80 | ELS2DM821Q30KT |
| | | 35x25 | 0.15 | 2.83 | ELS2DM821R25KT |
| | 1000 | 22x50 | 0.15 | 3.28 | ELS2DM102O50KT |
| | | 25x40 | 0.15 | 3.28 | ELS2DM102P40KT |
| | | 30x35 | 0.15 | 3.15 | ELS2DM102Q35KT |
| | | 35x30 | 0.15 | 3.26 | ELS2DM102R30KT |
| | 1200 | 25x45 | 0.15 | 3.61 | ELS2DM122P45KT |
| | | 30x35 | 0.15 | 3.61 | ELS2DM122Q35KT |
| | | 35x30 | 0.15 | 3.57 | ELS2DM122R30KT |
| | 1500 | 30x45 | 0.15 | 4.13 | ELS2DM152Q45KT |
| | | 35x35 | 0.15 | 4.06 | ELS2DM152R35KT |
| | | 30x50 | 0.15 | 4.60 | ELS2DM182O50KT |
| 1800 | 35x40 | 0.15 | 4.59 | ELS2DM182R40KT | |
| | 2200 | 35x45 | 0.15 | 5.25 | ELS2DM222R45KT |
| 220(2N) | 180 | 22x20 | 0.15 | 1.06 | ELS2NM181O20KT |
| | 270 | 22x25 | 0.15 | 1.47 | ELS2NM271O25KT |
| | | 25x20 | 0.15 | 1.35 | ELS2NM271P20KT |
| | 330 | 22x30 | 0.15 | 1.70 | ELS2NM331O30KT |
| | | 25x25 | 0.15 | 1.69 | ELS2NM331P25KT |
| | | 30x20 | 0.15 | 1.58 | ELS2NM331Q20KT |
| | 390 | 22x30 | 0.15 | 1.89 | ELS2NM391O30KT |
| | | 25x25 | 0.15 | 1.84 | ELS2NM391P25KT |
| | | 30x20 | 0.15 | 1.71 | ELS2NM391Q20KT |
| | 470 | 22x35 | 0.15 | 2.08 | ELS2NM471O35KT |
| | | 25x30 | 0.15 | 2.08 | ELS2NM471P30KT |
| | | 30x25 | 0.15 | 2.12 | ELS2NM471Q25KT |
| | | 35x20 | 0.15 | 1.88 | ELS2NM471R20KT |
| | 560 | 22x40 | 0.15 | 2.33 | ELS2NM561O40KT |
| | | 25x35 | 0.15 | 2.38 | ELS2NM561P35KT |
| | | 30x25 | 0.15 | 2.31 | ELS2NM561Q25KT |
| | | 35x20 | 0.15 | 2.14 | ELS2NM561R20KT |
| | 680 | 22x45 | 0.15 | 2.63 | ELS2NM681O45KT |
| | | 25x35 | 0.15 | 2.68 | ELS2NM681P35KT |
| | | 30x30 | 0.15 | 2.62 | ELS2NM681Q30KT |
| | 820 | 35x25 | 0.15 | 2.58 | ELS2NM681R25KT |
| | | 25x45 | 0.15 | 3.01 | ELS2NM821P45KT |
| | | 30x35 | 0.15 | 2.99 | ELS2NM821Q35KT |
| | | 35x30 | 0.15 | 2.79 | ELS2NM821R30KT |
| | 1000 | 25x50 | 0.15 | 3.40 | ELS2NM102P50KT |
| | | 30x35 | 0.15 | 3.42 | ELS2NM102Q35KT |
| | | 35x30 | 0.15 | 3.29 | ELS2NM102R30KT |
| | 1200 | 30x40 | 0.15 | 3.88 | ELS2NM122Q40KT |
| | | 35x35 | 0.15 | 3.68 | ELS2NM122R35KT |
| | | 30x50 | 0.15 | 4.44 | ELS2NM152Q50KT |
| | 1500 | 35x40 | 0.15 | 4.10 | ELS2NM152R40KT |
| | | 1800 | 35x45 | 0.15 | 4.52 |

Snap-in&Lug Terminal Type

LS series

■ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Size DxD(mm) | tan | Rated ripple current (Arms/85°C, 120Hz) | Part Number |
|----------|----------|--------------|------|---|----------------|
| 250(2E) | 150 | 22x20 | 0.15 | 0.97 | ELS2EM151O20KT |
| | 180 | 22x20 | 0.15 | 1.06 | ELS2EM181O20KT |
| | 220 | 22x25 | 0.15 | 1.24 | ELS2EM221O25KT |
| | | 25x20 | 0.15 | 1.22 | ELS2EM221P20KT |
| | 270 | 22x25 | 0.15 | 1.50 | ELS2EM271O25KT |
| | | 22x30 | 0.15 | 1.66 | ELS2EM331O30KT |
| | 330 | 25x25 | 0.15 | 1.61 | ELS2EM331P25KT |
| | | 30x20 | 0.15 | 1.58 | ELS2EM331Q20KT |
| | | 22x35 | 0.15 | 1.88 | ELS2EM391O35KT |
| | 390 | 25x30 | 0.15 | 1.88 | ELS2EM391P30KT |
| | | 30x25 | 0.15 | 1.86 | ELS2EM391Q25KT |
| | | 35x20 | 0.15 | 1.71 | ELS2EM391R20KT |
| | 470 | 22x35 | 0.15 | 2.15 | ELS2EM471O35KT |
| | | 25x35 | 0.15 | 2.15 | ELS2EM471P35KT |
| | | 30x25 | 0.15 | 2.05 | ELS2EM471Q25KT |
| | 560 | 35x20 | 0.15 | 1.88 | ELS2EM471R20KT |
| | | 22x40 | 0.15 | 2.48 | ELS2EM561O40KT |
| | | 25x35 | 0.15 | 2.35 | ELS2EM561P35KT |
| | 680 | 30x25 | 0.15 | 2.35 | ELS2EM561Q25KT |
| | | 22x50 | 0.15 | 2.61 | ELS2EM681O50KT |
| | | 25x40 | 0.15 | 2.67 | ELS2EM681P40KT |
| | 820 | 30x30 | 0.15 | 2.71 | ELS2EM681Q30KT |
| | | 35x25 | 0.15 | 2.58 | ELS2EM681R25KT |
| | | 25x45 | 0.15 | 3.01 | ELS2EM821P45KT |
| 1000 | 30x35 | 0.15 | 2.98 | ELS2EM821Q35KT | |
| | 35x30 | 0.15 | 2.96 | ELS2EM821R30KT | |
| | 30x40 | 0.15 | 3.56 | ELS2EM102Q40KT | |
| 1200 | 35x35 | 0.15 | 3.48 | ELS2EM102R35KT | |
| | 30x45 | 0.15 | 3.99 | ELS2EM122Q45KT | |
| 1500 | 35x35 | 0.15 | 3.84 | ELS2EM122R35KT | |
| | 35x40 | 0.15 | 4.33 | ELS2EM152R40KT | |
| 1800 | 35x50 | 0.15 | 4.54 | ELS2EM182R50KT | |
| 315(2F) | 100 | 22x20 | 0.15 | 0.79 | ELS2FM101O20KT |
| | 120 | 25x20 | 0.15 | 0.90 | ELS2FM121P20KT |
| | | 22x25 | 0.15 | 1.06 | ELS2FM151O25KT |
| | 150 | 25x20 | 0.15 | 1.00 | ELS2FM151P20KT |
| | | 22x30 | 0.15 | 1.29 | ELS2FM181O30KT |
| | 180 | 25x25 | 0.15 | 1.38 | ELS2FM181P25KT |
| | | 30x20 | 0.15 | 1.16 | ELS2FM181Q20KT |
| | 220 | 22x30 | 0.15 | 1.41 | ELS2FM221O30KT |
| | | 25x25 | 0.15 | 1.47 | ELS2FM221P25KT |
| | | 30x20 | 0.15 | 1.28 | ELS2FM221Q20KT |
| | 270 | 22x35 | 0.15 | 1.68 | ELS2FM271O35KT |
| | | 25x30 | 0.15 | 1.70 | ELS2FM271P30KT |
| | | 30x25 | 0.15 | 1.55 | ELS2FM271Q25KT |
| | 330 | 35x20 | 0.15 | 1.43 | ELS2FM271R20KT |
| | | 22x40 | 0.15 | 1.91 | ELS2FM331O40KT |
| | | 25x35 | 0.15 | 1.94 | ELS2FM331P35KT |
| | 390 | 30x25 | 0.15 | 1.98 | ELS2FM331Q25KT |
| | | 22x45 | 0.15 | 2.07 | ELS2FM391O45KT |
| | | 25x40 | 0.15 | 2.11 | ELS2FM391P40KT |
| | 470 | 30x30 | 0.15 | 2.15 | ELS2FM391Q30KT |
| | | 35x25 | 0.15 | 1.95 | ELS2FM391R25KT |
| | | 25x45 | 0.15 | 2.31 | ELS2FM471P45KT |
| | 560 | 30x35 | 0.15 | 2.38 | ELS2FM471Q35KT |
| | | 35x30 | 0.15 | 2.46 | ELS2FM471R30KT |
| | | 25x50 | 0.15 | 2.46 | ELS2FM561P50KT |
| | 680 | 30x35 | 0.15 | 2.63 | ELS2FM561P35KT |
| | | 35x30 | 0.15 | 2.69 | ELS2FM561R30KT |
| | | 30x45 | 0.15 | 2.82 | ELS2FM681Q45KT |
| | 820 | 35x35 | 0.15 | 3.05 | ELS2FM681R35KT |
| | | 30x50 | 0.15 | 3.28 | ELS2FM821R40KT |
| | 1000 | 35x40 | 0.15 | 3.45 | ELS2FM821R40KT |
| | 1000 | 35x45 | 0.15 | 3.59 | ELS2FM102R45KT |

| WV (Vdc) | Cap (μF) | Size DxD(mm) | tan | Rated ripple current (Arms/85°C, 120Hz) | Part Number | |
|----------|----------|--------------|-------|---|----------------|----------------|
| 350(2V) | 82 | 22x20 | 0.15 | 0.72 | ELS2VM820O20KT | |
| | 120 | 22x25 | 0.15 | 1.04 | ELS2VM121O25KT | |
| | | 25x20 | 0.15 | 0.90 | ELS2VM121P20KT | |
| | 150 | 22x30 | 0.15 | 1.20 | ELS2VM151O30KT | |
| | | 25x25 | 0.15 | 1.22 | ELS2VM151P25KT | |
| | | 30x20 | 0.15 | 1.06 | ELS2VM151Q20KT | |
| | 180 | 22x30 | 0.15 | 1.34 | ELS2VM181O30KT | |
| | | 25x25 | 0.15 | 1.37 | ELS2VM181P25KT | |
| | | 30x20 | 0.15 | 1.16 | ELS2VM181Q20KT | |
| | 220 | 22x35 | 0.15 | 1.47 | ELS2VM221O35KT | |
| | | 25x30 | 0.15 | 1.53 | ELS2VM221P30KT | |
| | | 30x25 | 0.15 | 1.54 | ELS2VM221Q25KT | |
| | 270 | 35x20 | 0.15 | 1.29 | ELS2VM221R20KT | |
| | | 22x40 | 0.15 | 1.70 | ELS2VM271O40KT | |
| | | 25x35 | 0.15 | 1.73 | ELS2VM271P35KT | |
| | 330 | 30x25 | 0.15 | 1.80 | ELS2VM271Q25KT | |
| | | 35x20 | 0.15 | 1.49 | ELS2VM271R20KT | |
| | | 22x45 | 0.15 | 1.87 | ELS2VM331O45KT | |
| | 390 | 25x35 | 0.15 | 1.97 | ELS2VM331P35KT | |
| | | 30x30 | 0.15 | 2.03 | ELS2VM331Q30KT | |
| | | 35x25 | 0.15 | 1.80 | ELS2VM331R25KT | |
| | 470 | 25x40 | 0.15 | 2.14 | ELS2VM391P40KT | |
| | | 30x35 | 0.15 | 2.23 | ELS2VM391Q35KT | |
| | | 35x30 | 0.15 | 2.30 | ELS2VM391R30KT | |
| | 560 | 25x50 | 0.15 | 2.55 | ELS2VM471P50KT | |
| | | 30x35 | 0.15 | 2.53 | ELS2VM471Q35KT | |
| | | 35x30 | 0.15 | 2.55 | ELS2VM471R30KT | |
| | 680 | 30x40 | 0.15 | 2.73 | ELS2VM561Q40KT | |
| | | 35x35 | 0.15 | 2.75 | ELS2VM561R35KT | |
| | | 30x50 | 0.15 | 3.15 | ELS2VM681Q50KT | |
| | 820 | 35x40 | 0.15 | 3.15 | ELS2VM681R40KT | |
| | | 35x45 | 0.15 | 3.47 | ELS2VM821R45KT | |
| | 1000 | 35x50 | 0.15 | 3.60 | ELS2VM102R50KT | |
| | 400(2G) | 68 | 22x20 | 0.15 | 0.65 | ELS2GM680O20KT |
| | | 82 | 22x25 | 0.15 | 0.84 | ELS2GM820O25KT |
| | | | 25x20 | 0.15 | 0.74 | ELS2GM820P20KT |
| | | 100 | 22x25 | 0.15 | 0.99 | ELS2GM101O25KT |
| | | | 25x20 | 0.15 | 0.82 | ELS2GM101P20KT |
| | | 120 | 22x30 | 0.15 | 1.09 | ELS2GM121O30KT |
| | | | 25x25 | 0.15 | 1.13 | ELS2GM121P25KT |
| | | | 30x20 | 0.15 | 0.95 | ELS2GM121Q20KT |
| | | 150 | 22x35 | 0.15 | 1.24 | ELS2GM151O35KT |
| | | | 25x30 | 0.15 | 1.27 | ELS2GM151P30KT |
| | | | 30x25 | 0.15 | 1.20 | ELS2GM151Q25KT |
| | | 180 | 22x40 | 0.15 | 1.41 | ELS2GM181O40KT |
| | | | 25x30 | 0.15 | 1.44 | ELS2GM181P30KT |
| | | | 30x25 | 0.15 | 1.52 | ELS2GM181Q25KT |
| | | 220 | 35x20 | 0.15 | 1.16 | ELS2GM181R20KT |
| 22x45 | | | 0.15 | 1.58 | ELS2GM221O45KT | |
| 25x35 | | | 0.15 | 1.64 | ELS2GM221P35KT | |
| 270 | | 30x30 | 0.15 | 1.66 | ELS2GM221Q30KT | |
| | | 35x25 | 0.15 | 1.47 | ELS2GM221R25KT | |
| | | 22x50 | 0.15 | 1.65 | ELS2GM271O50KT | |
| 330 | | 25x40 | 0.15 | 1.79 | ELS2GM271P40KT | |
| | | 30x30 | 0.15 | 1.82 | ELS2GM271Q30KT | |
| | | 35x25 | 0.15 | 1.63 | ELS2GM271R25KT | |
| 390 | | 25x45 | 0.15 | 2.00 | ELS2GM331P45KT | |
| | | 30x35 | 0.15 | 2.05 | ELS2GM331Q35KT | |
| | | 35x30 | 0.15 | 2.05 | ELS2GM331R30KT | |
| 470 | | 25x50 | 0.15 | 2.12 | ELS2GM391P50KT | |
| | | 30x40 | 0.15 | 2.26 | ELS2GM391Q40KT | |
| | | 35x35 | 0.15 | 2.28 | ELS2GM391R35KT | |
| 560 | | 30x45 | 0.15 | 2.51 | ELS2GM471Q45KT | |
| | | 35x35 | 0.15 | 2.54 | ELS2GM471R35KT | |
| | | 30x50 | 0.15 | 2.85 | ELS2GM561Q50KT | |
| 680 | | 35x40 | 0.15 | 2.85 | ELS2GM561R40KT | |
| | | 35x50 | 0.15 | 3.10 | ELS2GM681R50KT | |

LS series

■ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (Arms/85°C, 120Hz) | Part Number | |
|----------|----------|--------------|-------|---|----------------|----------------|
| 420(2T) | 47 | 22x20 | 0.20 | 0.54 | ELS2TM470O20KT | |
| | 56 | 22x20 | 0.20 | 0.59 | ELS2TM560O20KT | |
| | 68 | 25x20 | 0.20 | 0.68 | ELS2TM680P20KT | |
| | 82 | 22x25 | 0.20 | 0.85 | ELS2TM820O25KT | |
| | | 25x20 | 0.20 | 0.74 | ELS2TM820P20KT | |
| | 100 | 22x30 | 0.20 | 0.97 | ELS2TM101O30KT | |
| | | 25x25 | 0.20 | 0.98 | ELS2TM101P25KT | |
| | | 30x20 | 0.20 | 0.87 | ELS2TM101Q20KT | |
| | 120 | 22x30 | 0.20 | 1.07 | ELS2TM121O30KT | |
| | | 25x25 | 0.20 | 1.08 | ELS2TM121P25KT | |
| | | 30x20 | 0.20 | 0.95 | ELS2TM121Q20KT | |
| | 150 | 22x35 | 0.20 | 1.21 | ELS2TM151O35KT | |
| | | 25x30 | 0.20 | 1.26 | ELS2TM151P30KT | |
| | | 30x25 | 0.20 | 1.30 | ELS2TM151Q25KT | |
| | | 35x20 | 0.20 | 1.11 | ELS2TM151R20KT | |
| | 180 | 22x40 | 0.20 | 1.33 | ELS2TM181O40KT | |
| | | 25x35 | 0.20 | 1.42 | ELS2TM181P35KT | |
| | | 30x25 | 0.20 | 1.48 | ELS2TM181Q25KT | |
| | | 35x20 | 0.20 | 1.16 | ELS2TM181R20KT | |
| | 220 | 22x45 | 0.20 | 1.55 | ELS2TM221O45KT | |
| | | 25x35 | 0.20 | 1.58 | ELS2TM221P35KT | |
| | | 30x30 | 0.20 | 1.65 | ELS2TM221Q30KT | |
| | | 35x25 | 0.20 | 1.47 | ELS2TM221R25KT | |
| | 270 | 25x40 | 0.20 | 1.74 | ELS2TM271P40KT | |
| | | 30x35 | 0.20 | 1.90 | ELS2TM271Q35KT | |
| | | 35x30 | 0.20 | 1.94 | ELS2TM271R30KT | |
| | 330 | 25x50 | 0.20 | 2.20 | ELS2TM331P50KT | |
| | | 30x35 | 0.20 | 1.98 | ELS2TM331Q35KT | |
| | | 35x35 | 0.20 | 2.17 | ELS2TM331R35KT | |
| | 390 | 30x40 | 0.20 | 2.22 | ELS2TM391Q40KT | |
| | | 35x35 | 0.20 | 2.27 | ELS2TM391R35KT | |
| | | 470 | 30x45 | 0.20 | 2.50 | ELS2TM471Q45KT |
| | 560 | 35x40 | 0.20 | 2.61 | ELS2TM471R40KT | |
| | | 35x45 | 0.20 | 2.95 | ELS2TM561R45KT | |
| | 680 | 35x50 | 0.20 | 3.15 | ELS2TM681R50KT | |
| | 450(2W) | 47 | 22x20 | 0.20 | 0.54 | ELS2WM470O20KT |
| | | 56 | 22x20 | 0.20 | 0.59 | ELS2WM560O20KT |
| | | 68 | 22x25 | 0.20 | 0.71 | ELS2WM680O25KT |
| | | | 25x20 | 0.20 | 0.68 | ELS2WM680P20KT |
| | | 82 | 22x25 | 0.20 | 0.86 | ELS2WM820O25KT |
| | | | 25x20 | 0.20 | 0.74 | ELS2WM820P20KT |
| | | | 30x20 | 0.20 | 0.79 | ELS2WM820Q20KT |
| 100 | | 22x30 | 0.20 | 0.95 | ELS2WM101O30KT | |
| | | 25x25 | 0.20 | 0.97 | ELS2WM101P25KT | |
| | | 30x20 | 0.20 | 0.87 | ELS2WM101Q20KT | |
| 120 | | 22x35 | 0.20 | 1.07 | ELS2WM121O35KT | |
| | | 25x30 | 0.20 | 1.09 | ELS2WM121P30KT | |
| | | 30x25 | 0.20 | 1.12 | ELS2WM121Q25KT | |
| | | 35x20 | 0.20 | 0.99 | ELS2WM121R20KT | |
| 150 | | 22x40 | 0.20 | 1.18 | ELS2WM151O40KT | |
| | | 25x30 | 0.20 | 1.25 | ELS2WM151P30KT | |
| | | 30x25 | 0.20 | 1.29 | ELS2WM151Q25KT | |
| | | 35x20 | 0.20 | 1.06 | ELS2WM151R20KT | |
| 180 | | 22x45 | 0.20 | 1.32 | ELS2WM181O45KT | |
| | | 25x35 | 0.20 | 1.40 | ELS2WM181P35KT | |
| | | 30x30 | 0.20 | 1.45 | ELS2WM181Q30KT | |
| | | 35x25 | 0.20 | 1.33 | ELS2WM181R25KT | |
| 220 | | 22x50 | 0.20 | 1.48 | ELS2WM221O50KT | |
| | | 25x40 | 0.20 | 1.59 | ELS2WM221P40KT | |
| | | 30x30 | 0.20 | 1.64 | ELS2WM221Q30KT | |
| | | 35x25 | 0.20 | 1.66 | ELS2WM221R25KT | |
| 270 | | 25x45 | 0.20 | 1.73 | ELS2WM271P45KT | |
| | | 30x35 | 0.20 | 1.89 | ELS2WM271Q35KT | |
| | | 35x30 | 0.20 | 1.90 | ELS2WM271R30KT | |
| 330 | | 25x50 | 0.20 | 2.12 | ELS2WM331P50KT | |
| | | 30x40 | 0.20 | 2.12 | ELS2WM331Q40KT | |
| | | 35x35 | 0.20 | 2.15 | ELS2WM331R35KT | |
| 390 | | 30x45 | 0.20 | 2.35 | ELS2WM391Q45KT | |
| | | 35x40 | 0.20 | 2.38 | ELS2WM391R40KT | |
| | | 470 | 30x50 | 0.20 | 2.65 | ELS2WM471Q50KT |
| 560 | | 35x45 | 0.20 | 2.68 | ELS2WM471R45KT | |
| | | 35x50 | 0.20 | 2.88 | ELS2WM561R50KT | |

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (Arms/85°C, 120Hz) | Part Number | |
|----------|----------|--------------|-------|---|----------------|----------------|
| 500(2H) | 47 | 22x20 | 0.20 | 0.59 | ELS2HM470O20KT | |
| | 56 | 22x25 | 0.20 | 0.61 | ELS2HM560O25KT | |
| | | 25x20 | 0.20 | 0.62 | ELS2HM560P20KT | |
| | 68 | 22x30 | 0.20 | 0.75 | ELS2HM680O30KT | |
| | | 25x25 | 0.20 | 0.78 | ELS2HM680P25KT | |
| | 82 | 22x30 | 0.20 | 0.92 | ELS2HM820O30KT | |
| | | 25x25 | 0.20 | 0.95 | ELS2HM820P25KT | |
| | 100 | 22x35 | 0.20 | 1.02 | ELS2HM101O35KT | |
| | | 25x30 | 0.20 | 1.06 | ELS2HM101P30KT | |
| | | 30x25 | 0.20 | 1.01 | ELS2HM101Q25KT | |
| | 120 | 22x40 | 0.20 | 1.12 | ELS2HM121O40KT | |
| | | 25x35 | 0.20 | 1.23 | ELS2HM121P35KT | |
| | | 30x30 | 0.20 | 1.20 | ELS2HM121Q30KT | |
| | 150 | 22x45 | 0.20 | 1.22 | ELS2HM151O45KT | |
| | | 25x40 | 0.20 | 1.26 | ELS2HM151P40KT | |
| | | 30x30 | 0.20 | 1.34 | ELS2HM151Q30KT | |
| | | 22x50 | 0.20 | 1.39 | ELS2HM181O50KT | |
| | 180 | 25x45 | 0.20 | 1.45 | ELS2HM181P45KT | |
| | | 30x35 | 0.20 | 1.47 | ELS2HM181Q35KT | |
| | | 25x50 | 0.20 | 1.52 | ELS2HM221P50KT | |
| | 220 | 30x40 | 0.20 | 1.60 | ELS2HM221Q40KT | |
| | | 30x45 | 0.20 | 1.98 | ELS2HM271Q45KT | |
| | 270 | 35x35 | 0.20 | 2.02 | ELS2HM271R35KT | |
| | | 30x50 | 0.20 | 2.25 | ELS2HM331Q50KT | |
| | 330 | 35x40 | 0.20 | 2.27 | ELS2HM331R40KT | |
| | | 35x45 | 0.20 | 2.45 | ELS2HM391R45KT | |
| | 390 | 35x50 | 0.20 | 2.76 | ELS2HM471R50KT | |
| | | 470 | 35x60 | 0.20 | 2.90 | ELS2HM561R60KT |
| | 550(2J) | 47 | 22x25 | 0.20 | 0.59 | ELS2JM470O25KT |
| | | 56 | 22x30 | 0.20 | 0.63 | ELS2JM560O30KT |
| | | 68 | 22x30 | 0.20 | 0.76 | ELS2JM680O30KT |
| | | | 25x25 | 0.20 | 0.72 | ELS2JM680P25KT |
| | | 82 | 22x35 | 0.20 | 0.91 | ELS2JM820O35KT |
| | | | 25x30 | 0.20 | 0.89 | ELS2JM820P30KT |
| | | | 30x25 | 0.20 | 0.88 | ELS2JM820Q25KT |
| | | 100 | 22x40 | 0.20 | 0.97 | ELS2JM101O40KT |
| | | | 25x35 | 0.20 | 0.97 | ELS2JM101P35KT |
| | | | 30x25 | 0.20 | 0.92 | ELS2JM101Q25KT |
| | | 120 | 22x45 | 0.20 | 1.07 | ELS2JM121O45KT |
| | | | 25x40 | 0.20 | 1.16 | ELS2JM121P40KT |
| | | | 30x30 | 0.20 | 1.12 | ELS2JM121Q30KT |
| | | | 25x45 | 0.20 | 1.25 | ELS2JM151P45KT |
| 150 | | 30x35 | 0.20 | 1.29 | ELS2JM151Q35KT | |
| | | 35x30 | 0.20 | 1.29 | ELS2JM151R30KT | |
| | | 25x50 | 0.20 | 1.40 | ELS2JM181P50KT | |
| 180 | | 30x40 | 0.20 | 1.45 | ELS2JM181Q40KT | |
| | | 35x30 | 0.20 | 1.36 | ELS2JM181R30KT | |
| | | 30x45 | 0.20 | 1.61 | ELS2JM221Q45KT | |
| 220 | | 35x35 | 0.20 | 1.60 | ELS2JM221R35KT | |
| | | 35x40 | 0.20 | 2.00 | ELS2JM271R40KT | |
| 270 | | 35x45 | 0.20 | 2.26 | ELS2JM331R45KT | |
| | | 390 | 35x50 | 0.20 | 2.45 | ELS2JM391R50KT |
| 470 | | 35x60 | 0.20 | 2.80 | ELS2JM471R60KT | |
| 600(2K) | | 47 | 22x30 | 0.30 | 0.59 | ELS2KM470O30KT |
| | | 56 | 22x35 | 0.30 | 0.63 | ELS2KM560O35KT |
| | | | 25x30 | 0.30 | 0.62 | ELS2KM560P30KT |
| | | 68 | 22x40 | 0.30 | 0.76 | ELS2KM680O40KT |
| | | | 25x35 | 0.30 | 0.76 | ELS2KM680P35KT |
| | | 82 | 22x45 | 0.30 | 0.92 | ELS2KM820O45KT |
| | | | 25x40 | 0.30 | 0.90 | ELS2KM820P40KT |
| | | 100 | 25x45 | 0.30 | 1.01 | ELS2KM101P45KT |
| | | | 30x35 | 0.30 | 1.01 | ELS2KM101Q35KT |
| | | | 25x50 | 0.30 | 1.16 | ELS2KM121P50KT |
| | | 120 | 30x40 | 0.30 | 1.16 | ELS2KM121Q40KT |
| | | | 30x45 | 0.30 | 1.29 | ELS2KM151Q45KT |
| | | 150 | 30x50 | 0.30 | 1.45 | ELS2KM181Q50KT |
| | | | 35x40 | 0.30 | 1.45 | ELS2KM181R40KT |
| | | 220 | 35x45 | 0.30 | 1.61 | ELS2KM221R45KT |
| | | | 270 | 35x50 | 0.30 | 2.02 |
| | | 330 | 35x60 | 0.30 | 2.27 | ELS2KM331R60KT |

Snap-in&Lug Terminal Type

LM series

- Downsized, longer life
- Endurance: 3,000 hours at 105°C
- RoHS Compliant

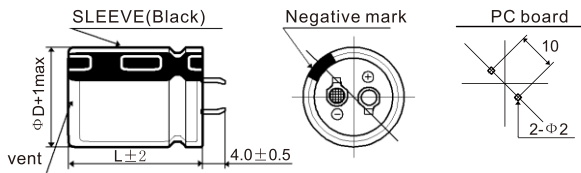


SPECIFICATIONS

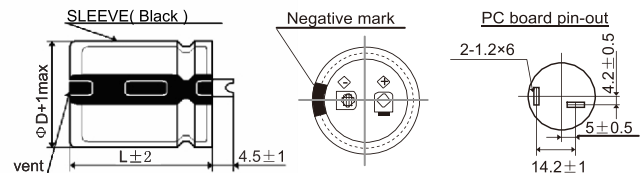
| Items | Characteristics | | |
|--|---|-------------------------------------|------------|
| Category Temperature Range | -25~+105°C | | |
| Rated Voltage Range | 160~550V.DC | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | |
| Leakage Current | $I \leq 3\sqrt{CV}$ Where, I:Max.leakage current (µA), C:Nominal capacitance (µF), V: Rated voltage (V) (at 20°C after 5 minutes) | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 160 to 400 | 420 to 550 |
| | tan δ (max.) | 0.15 | 0.20 |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) | 160 to 250 | 315 to 550 |
| | Z(-25°C)/Z(+20°C) | 4 | 8 |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 20°C after DC voltage plus the rated ripple current is applied for 3,000 hours at 105 °C. | | |
| | Capacitance Change | ±20% of the initial value | |
| | D.F. (tan δ) | 200% of the initial specified value | |
| | Leakage Current | The initial specified value | |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 105°C without voltage applied. | | |
| | Capacitance Change | ±15% of the initial value | |
| | D.F. (tan δ) | 150% of the initial specified value | |
| | Leakage Current | 200% of the initial specified value | |

DIMENSIONS[mm]

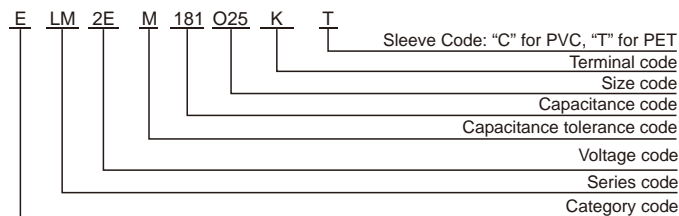
- Terminal Code : K (22 to 35) : Standard



- Terminal Code : L (35)



PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| Rated voltage(V _{dc}) \ Freq.(Hz) | 120 | 1k | 10k | 100k |
|---|------|------|------|------|
| 160~250 | 1.00 | 1.32 | 1.45 | 1.50 |
| 315~550 | 1.00 | 1.30 | 1.41 | 1.43 |

The endurance of capacitors is shortened with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

LM series

■ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (Arms/105°C, 120Hz) | Part Number |
|----------|----------|--------------|------|--|----------------|
| 160(2C) | 220 | 22x20 | 0.15 | 0.81 | ELM2CM221O20KT |
| | 270 | 25x20 | 0.15 | 0.98 | ELM2CM271P20KT |
| | 330 | 22x25 | 0.15 | 1.20 | ELM2CM331O25KT |
| | | 25x20 | 0.15 | 1.02 | ELM2CM331P20KT |
| | 390 | 22x25 | 0.15 | 1.30 | ELM2CM391O25KT |
| | | 25x25 | 0.15 | 1.26 | ELM2CM391P25KT |
| | | 30x20 | 0.15 | 1.25 | ELM2CM391Q20KT |
| | 470 | 22x30 | 0.15 | 1.55 | ELM2CM471O30KT |
| | | 25x25 | 0.15 | 1.55 | ELM2CM471P25KT |
| | | 30x20 | 0.15 | 1.30 | ELM2CM471Q20KT |
| | 560 | 22x35 | 0.15 | 1.67 | ELM2CM561O35KT |
| | | 25x30 | 0.15 | 1.67 | ELM2CM561P30KT |
| | | 30x25 | 0.15 | 1.67 | ELM2CM561Q25KT |
| | | 35x20 | 0.15 | 1.46 | ELM2CM561R20KT |
| | 680 | 22x40 | 0.15 | 1.82 | ELM2CM681O40KT |
| | | 25x30 | 0.15 | 1.82 | ELM2CM681P30KT |
| | | 30x25 | 0.15 | 1.82 | ELM2CM681Q25KT |
| | | 35x20 | 0.15 | 1.51 | ELM2CM681R20KT |
| | 820 | 22x45 | 0.15 | 2.04 | ELM2CM821O45KT |
| | | 25x35 | 0.15 | 2.04 | ELM2CM821P35KT |
| | | 30x30 | 0.15 | 2.04 | ELM2CM821Q30KT |
| | | 35x25 | 0.15 | 2.04 | ELM2CM821R25KT |
| | 1000 | 22x50 | 0.15 | 2.25 | ELM2CM102O50KT |
| | | 25x40 | 0.15 | 2.25 | ELM2CM102P40KT |
| | | 30x30 | 0.15 | 2.25 | ELM2CM102Q30KT |
| | | 35x25 | 0.15 | 2.25 | ELM2CM102R25KT |
| | 1200 | 25x45 | 0.15 | 2.49 | ELM2CM122P45KT |
| | | 30x35 | 0.15 | 2.49 | ELM2CM122Q35KT |
| | | 35x30 | 0.15 | 2.49 | ELM2CM122R30KT |
| | 1500 | 25x60 | 0.15 | 2.97 | ELM2CM152P60KT |
| | | 30x40 | 0.15 | 2.84 | ELM2CM152Q40KT |
| | | 35x30 | 0.15 | 2.84 | ELM2CM152R30KT |
| | 1800 | 30x45 | 0.15 | 3.32 | ELM2CM182Q45KT |
| 35x35 | | 0.15 | 3.00 | ELM2CM182R35KT | |
| 30x60 | | 0.15 | 3.86 | ELM2CM222Q60KT | |
| 2200 | 35x45 | 0.15 | 3.50 | ELM2CM222R45KT | |
| 2700 | 35x50 | 0.15 | 4.00 | ELM2CM272R50KT | |
| 3300 | 35x60 | 0.15 | 4.63 | ELM2CM332R60KT | |
| 180(2L) | 180 | 22x20 | 0.15 | 0.80 | ELM2LM181O20KT |
| | 220 | 25x20 | 0.15 | 0.90 | ELM2LM221P20KT |
| | 270 | 22x25 | 0.15 | 1.00 | ELM2LM271O25KT |
| | | 25x20 | 0.15 | 0.95 | ELM2LM271P20KT |
| | 330 | 22x25 | 0.15 | 1.20 | ELM2LM331O25KT |
| | | 25x25 | 0.15 | 1.16 | ELM2LM331P25KT |
| | | 30x20 | 0.15 | 1.15 | ELM2LM331Q20KT |
| | 390 | 22x30 | 0.15 | 1.35 | ELM2LM391O30KT |
| | | 25x25 | 0.15 | 1.35 | ELM2LM391P25KT |
| | | 30x20 | 0.15 | 1.20 | ELM2LM391Q20KT |
| | 470 | 22x35 | 0.15 | 1.50 | ELM2LM471O35KT |
| | | 25x30 | 0.15 | 1.50 | ELM2LM471P30KT |
| | | 30x25 | 0.15 | 1.50 | ELM2LM471Q25KT |
| | | 35x20 | 0.15 | 1.36 | ELM2LM471R20KT |
| | 560 | 22x40 | 0.15 | 1.67 | ELM2LM561O40KT |
| | | 25x30 | 0.15 | 1.67 | ELM2LM561P30KT |
| | | 30x25 | 0.15 | 1.67 | ELM2LM561Q25KT |
| | | 35x20 | 0.15 | 1.43 | ELM2LM561R20KT |
| | 680 | 22x45 | 0.15 | 1.78 | ELM2LM681O45KT |
| | | 25x35 | 0.15 | 1.78 | ELM2LM681P35KT |
| | | 30x30 | 0.15 | 1.78 | ELM2LM681Q30KT |
| | | 35x25 | 0.15 | 1.83 | ELM2LM681R25KT |
| | 820 | 22x50 | 0.15 | 2.04 | ELM2LM821O50KT |
| | | 25x40 | 0.15 | 2.04 | ELM2LM821P40KT |
| | | 30x30 | 0.15 | 2.04 | ELM2LM821Q30KT |
| | | 35x25 | 0.15 | 2.04 | ELM2LM821R25KT |
| | 1000 | 25x45 | 0.15 | 2.30 | ELM2LM102P45KT |
| | | 30x35 | 0.15 | 2.30 | ELM2LM102Q35KT |
| | | 35x30 | 0.15 | 2.30 | ELM2LM102R30KT |
| | | 25x50 | 0.15 | 2.55 | ELM2LM122P50KT |
| | 1200 | 30x40 | 0.15 | 2.55 | ELM2LM122Q40KT |
| | | 35x30 | 0.15 | 2.55 | ELM2LM122R30KT |
| | | 30x45 | 0.15 | 2.90 | ELM2LM152Q45KT |
| 1500 | 35x35 | 0.15 | 2.90 | ELM2LM152R35KT | |
| | 30x60 | 0.15 | 3.49 | ELM2LM182Q60KT | |
| | 35x40 | 0.15 | 3.30 | ELM2LM182R40KT | |
| 2200 | 35x50 | 0.15 | 3.65 | ELM2LM222R50KT | |
| 2700 | 35x60 | 0.15 | 4.19 | ELM2LM272R60KT | |

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (Arms/105°C, 120Hz) | Part Number |
|----------|----------|--------------|------|--|----------------|
| 200(2D) | 150 | 22x20 | 0.15 | 0.73 | ELM2DM151O20KT |
| | 180 | 22x20 | 0.15 | 0.80 | ELM2DM181O20KT |
| | 220 | 25x20 | 0.15 | 0.85 | ELM2DM221P20KT |
| | | 22x25 | 0.15 | 1.10 | ELM2DM271O25KT |
| | 270 | 30x20 | 0.15 | 1.05 | ELM2DM271Q20KT |
| | | 22x30 | 0.15 | 1.25 | ELM2DM331O30KT |
| | | 25x25 | 0.15 | 1.25 | ELM2DM331P25KT |
| | 330 | 30x20 | 0.15 | 1.10 | ELM2DM331Q20KT |
| | | 22x30 | 0.15 | 1.35 | ELM2DM391O30KT |
| | | 25x25 | 0.15 | 1.35 | ELM2DM391P25KT |
| | 390 | 35x20 | 0.15 | 1.30 | ELM2DM391R20KT |
| | | 22x35 | 0.15 | 1.50 | ELM2DM471O35KT |
| | | 25x30 | 0.15 | 1.50 | ELM2DM471P30KT |
| | | 30x25 | 0.15 | 1.50 | ELM2DM471Q25KT |
| | 470 | 35x20 | 0.15 | 1.41 | ELM2DM471R20KT |
| | | 22x40 | 0.15 | 1.67 | ELM2DM561O40KT |
| | | 25x30 | 0.15 | 1.67 | ELM2DM561P30KT |
| | | 30x25 | 0.15 | 1.67 | ELM2DM561Q25KT |
| | 560 | 22x45 | 0.15 | 1.78 | ELM2DM681O45KT |
| | | 25x35 | 0.15 | 1.78 | ELM2DM681P35KT |
| | | 30x30 | 0.15 | 1.78 | ELM2DM681Q30KT |
| | | 35x25 | 0.15 | 1.78 | ELM2DM681R25KT |
| | 820 | 25x45 | 0.15 | 2.04 | ELM2DM821P45KT |
| | | 30x30 | 0.15 | 2.04 | ELM2DM821Q30KT |
| | | 35x25 | 0.15 | 2.04 | ELM2DM821R25KT |
| | | 25x50 | 0.15 | 2.30 | ELM2DM102P50KT |
| | 1000 | 30x35 | 0.15 | 2.30 | ELM2DM102Q35KT |
| | | 35x30 | 0.15 | 2.30 | ELM2DM102R30KT |
| | | 25x60 | 0.15 | 2.66 | ELM2DM122P60KT |
| | 1200 | 30x40 | 0.15 | 2.65 | ELM2DM122Q40KT |
| | | 35x35 | 0.15 | 2.65 | ELM2DM122R35KT |
| | | 30x50 | 0.15 | 3.08 | ELM2DM152Q50KT |
| | 1500 | 35x40 | 0.15 | 3.08 | ELM2DM152R40KT |
| 30x60 | | 0.15 | 3.49 | ELM2DM182Q60KT | |
| 35x45 | | 0.15 | 3.48 | ELM2DM182R45KT | |
| 2200 | 35x50 | 0.15 | 3.78 | ELM2DM222R50KT | |
| 220(2N) | 150 | 22x20 | 0.15 | 0.67 | ELM2NM151O20KT |
| | 180 | 25x20 | 0.15 | 0.76 | ELM2NM181P20KT |
| | 220 | 22x25 | 0.15 | 1.00 | ELM2NM221O25KT |
| | | 25x20 | 0.15 | 0.84 | ELM2NM221P20KT |
| | 270 | 22x30 | 0.15 | 1.15 | ELM2NM271O30KT |
| | | 25x25 | 0.15 | 1.08 | ELM2NM271P25KT |
| | | 30x20 | 0.15 | 0.98 | ELM2NM271Q20KT |
| | 330 | 22x35 | 0.15 | 1.25 | ELM2NM331O35KT |
| | | 25x25 | 0.15 | 1.25 | ELM2NM331P25KT |
| | | 35x20 | 0.15 | 1.13 | ELM2NM331R20KT |
| | 390 | 22x35 | 0.15 | 1.40 | ELM2NM391O35KT |
| | | 25x30 | 0.15 | 1.40 | ELM2NM391P30KT |
| | | 30x25 | 0.15 | 1.36 | ELM2NM391Q25KT |
| | 470 | 35x20 | 0.15 | 1.23 | ELM2NM391R20KT |
| | | 22x40 | 0.15 | 1.51 | ELM2NM471O40KT |
| | | 25x35 | 0.15 | 1.54 | ELM2NM471P35KT |
| | | 30x25 | 0.15 | 1.50 | ELM2NM471Q25KT |
| | 560 | 22x45 | 0.15 | 1.70 | ELM2NM561O45KT |
| | | 25x40 | 0.15 | 1.72 | ELM2NM561P40KT |
| | | 30x30 | 0.15 | 1.70 | ELM2NM561Q30KT |
| | | 35x25 | 0.15 | 1.71 | ELM2NM561R25KT |
| | 680 | 25x45 | 0.15 | 1.94 | ELM2NM681P45KT |
| | | 30x35 | 0.15 | 1.93 | ELM2NM681Q35KT |
| | | 35x25 | 0.15 | 1.89 | ELM2NM681R25KT |
| | | 25x50 | 0.15 | 2.18 | ELM2NM821P50KT |
| | 820 | 30x40 | 0.15 | 2.19 | ELM2NM821Q40KT |
| | | 35x30 | 0.15 | 2.16 | ELM2NM821R30KT |
| | | 25x60 | 0.15 | 2.54 | ELM2NM102P60KT |
| | | 30x45 | 0.15 | 2.50 | ELM2NM102Q45KT |
| | 1000 | 35x35 | 0.15 | 2.44 | ELM2NM102R35KT |
| | | 30x50 | 0.15 | 2.81 | ELM2NM122Q50KT |
| | | 35x40 | 0.15 | 2.79 | ELM2NM122R40KT |
| | 1200 | 30x60 | 0.15 | 3.30 | ELM2NM152Q60KT |
| 35x45 | | 0.15 | 3.22 | ELM2NM152R45KT | |
| 35x50 | | 0.15 | 3.63 | ELM2NM182R50KT | |
| 2200 | 35x60 | 0.15 | 4.23 | ELM2NM222R60KT | |

Snap-in Lug Terminal Type

LM series

■ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (Arms/105°C, 120Hz) | Part Number |
|----------|----------|--------------|------|--|----------------|
| 250(2E) | 120 | 22x20 | 0.15 | 0.60 | ELM2EM121O20KT |
| | 150 | 25x20 | 0.15 | 0.74 | ELM2EM151P20KT |
| | 180 | 22x25 | 0.15 | 0.78 | ELM2EM181O25KT |
| | | 25x20 | 0.15 | 0.75 | ELM2EM181P20KT |
| | 220 | 22x25 | 0.15 | 1.00 | ELM2EM221O25KT |
| | | 25x25 | 0.15 | 0.95 | ELM2EM221P25KT |
| | | 30x20 | 0.15 | 0.95 | ELM2EM221Q20KT |
| | 270 | 22x30 | 0.15 | 1.18 | ELM2EM271O30KT |
| | | 25x25 | 0.15 | 1.18 | ELM2EM271P25KT |
| | | 30x20 | 0.15 | 1.00 | ELM2EM271Q20KT |
| | 330 | 22x35 | 0.15 | 1.30 | ELM2EM331O35KT |
| | | 25x30 | 0.15 | 1.30 | ELM2EM331P30KT |
| | | 30x25 | 0.15 | 1.30 | ELM2EM331Q25KT |
| | | 35x20 | 0.15 | 1.16 | ELM2EM331R20KT |
| | 390 | 22x40 | 0.15 | 1.49 | ELM2EM391O40KT |
| | | 25x35 | 0.15 | 1.49 | ELM2EM391P35KT |
| | | 30x25 | 0.15 | 1.49 | ELM2EM391Q25KT |
| | 470 | 22x45 | 0.15 | 1.65 | ELM2EM471O45KT |
| | | 25x35 | 0.15 | 1.65 | ELM2EM471P35KT |
| | | 30x30 | 0.15 | 1.65 | ELM2EM471Q30KT |
| | | 35x25 | 0.15 | 1.65 | ELM2EM471R25KT |
| | 560 | 22x50 | 0.15 | 1.67 | ELM2EM561O50KT |
| | | 25x40 | 0.15 | 1.80 | ELM2EM561P40KT |
| | | 30x30 | 0.15 | 1.80 | ELM2EM561Q30KT |
| 35x25 | | 0.15 | 1.80 | ELM2EM561R25KT | |
| 680 | 25x50 | 0.15 | 2.00 | ELM2EM681P50KT | |
| | 30x35 | 0.15 | 2.00 | ELM2EM681Q35KT | |
| | 35x30 | 0.15 | 2.00 | ELM2EM681R30KT | |
| 820 | 25x60 | 0.15 | 2.20 | ELM2EM821P60KT | |
| | 30x40 | 0.15 | 2.30 | ELM2EM821Q40KT | |
| | 35x35 | 0.15 | 2.30 | ELM2EM821R35KT | |
| 1000 | 30x50 | 0.15 | 2.47 | ELM2EM102R40KT | |
| | 35x40 | 0.15 | 2.47 | ELM2EM102R40KT | |
| 1200 | 30x60 | 0.15 | 2.85 | ELM2EM122Q60KT | |
| | 35x45 | 0.15 | 2.60 | ELM2EM122R45KT | |
| 1500 | 35x50 | 0.15 | 3.00 | ELM2EM152R50KT | |
| 1800 | 35x60 | 0.15 | 3.42 | ELM2EM182R60KT | |
| 315(2F) | 68 | 22x20 | 0.15 | 0.45 | ELM2FM680O20KT |
| | 82 | 22x20 | 0.15 | 0.47 | ELM2FM820O20KT |
| | 100 | 22x25 | 0.15 | 0.61 | ELM2FM101O25KT |
| | | 25x20 | 0.15 | 0.56 | ELM2FM101P20KT |
| | 120 | 22x25 | 0.15 | 0.75 | ELM2FM121O25KT |
| | | 25x20 | 0.15 | 0.62 | ELM2FM121P20KT |
| | | 30x20 | 0.15 | 0.65 | ELM2FM121Q20KT |
| | 150 | 22x30 | 0.15 | 0.82 | ELM2FM151O30KT |
| | | 25x25 | 0.15 | 0.82 | ELM2FM151P25KT |
| | | 30x20 | 0.15 | 0.70 | ELM2FM151Q20KT |
| | 180 | 35x20 | 0.15 | 0.76 | ELM2FM151R20KT |
| | | 22x35 | 0.15 | 0.92 | ELM2FM181O35KT |
| | | 25x25 | 0.15 | 0.92 | ELM2FM181P25KT |
| | 220 | 30x25 | 0.15 | 0.90 | ELM2FM181Q25KT |
| | | 35x20 | 0.15 | 0.85 | ELM2FM181R20KT |
| | | 22x40 | 0.15 | 1.04 | ELM2FM221O40KT |
| | 270 | 25x30 | 0.15 | 1.04 | ELM2FM221P30KT |
| | | 30x25 | 0.15 | 1.04 | ELM2FM221Q25KT |
| | | 35x20 | 0.15 | 0.90 | ELM2FM221R20KT |
| | 330 | 22x45 | 0.15 | 1.16 | ELM2FM271O45KT |
| | | 25x35 | 0.15 | 1.16 | ELM2FM271P35KT |
| | | 30x25 | 0.15 | 1.16 | ELM2FM271Q25KT |
| | | 35x25 | 0.15 | 1.15 | ELM2FM271R25KT |
| | 390 | 22x50 | 0.15 | 1.33 | ELM2FM331O50KT |
| | | 25x40 | 0.15 | 1.33 | ELM2FM331P40KT |
| | | 30x30 | 0.15 | 1.33 | ELM2FM331Q30KT |
| | 470 | 35x25 | 0.15 | 1.33 | ELM2FM331R25KT |
| | | 25x45 | 0.15 | 1.47 | ELM2FM391P45KT |
| | | 30x35 | 0.15 | 1.47 | ELM2FM391Q35KT |
| | 560 | 35x30 | 0.15 | 1.47 | ELM2FM391R30KT |
| | | 25x50 | 0.15 | 1.70 | ELM2FM471P50KT |
| | | 30x40 | 0.15 | 1.70 | ELM2FM471Q40KT |
| | 680 | 35x30 | 0.15 | 1.70 | ELM2FM471R30KT |
| | | 30x45 | 0.15 | 2.05 | ELM2FM561Q45KT |
| | | 35x35 | 0.15 | 2.05 | ELM2FM561R35KT |
| | 820 | 30x50 | 0.15 | 2.17 | ELM2FM681Q50KT |
| | | 35x40 | 0.15 | 2.17 | ELM2FM681R40KT |
| | 1000 | 35x45 | 0.15 | 2.20 | ELM2FM821R45KT |
| | 1000 | 35x60 | 0.15 | 2.55 | ELM2FM102R60KT |

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (Arms/105°C, 120Hz) | Part Number | |
|----------|----------|--------------|-------|--|----------------|----------------|
| 350(2V) | 56 | 22x20 | 0.15 | 0.41 | ELM2VM560O20KT | |
| | 68 | 25x20 | 0.15 | 0.46 | ELM2VM680P20KT | |
| | 82 | 22x25 | 0.15 | 0.55 | ELM2VM820O25KT | |
| | | 25x20 | 0.15 | 0.51 | ELM2VM820P20KT | |
| | 100 | 22x30 | 0.15 | 0.69 | ELM2VM101O30KT | |
| | | 30x20 | 0.15 | 0.60 | ELM2VM101Q20KT | |
| | | 22x30 | 0.15 | 0.75 | ELM2VM121O30KT | |
| | 120 | 25x25 | 0.15 | 0.75 | ELM2VM121P25KT | |
| | | 30x20 | 0.15 | 0.65 | ELM2VM121Q20KT | |
| | | 22x35 | 0.15 | 0.82 | ELM2VM151O35KT | |
| | 150 | 25x30 | 0.15 | 0.83 | ELM2VM151P30KT | |
| | | 30x25 | 0.15 | 0.82 | ELM2VM151Q25KT | |
| | | 35x20 | 0.15 | 0.76 | ELM2VM151R20KT | |
| | | 22x40 | 0.15 | 0.92 | ELM2VM181O40KT | |
| | 180 | 25x30 | 0.15 | 0.92 | ELM2VM181P30KT | |
| | | 30x25 | 0.15 | 0.90 | ELM2VM181Q25KT | |
| | | 22x45 | 0.15 | 1.05 | ELM2VM221O45KT | |
| | 220 | 25x35 | 0.15 | 1.04 | ELM2VM221P35KT | |
| | | 30x30 | 0.15 | 1.02 | ELM2VM221Q30KT | |
| | | 35x25 | 0.15 | 1.04 | ELM2VM221R25KT | |
| | 270 | 22x50 | 0.15 | 1.16 | ELM2VM271O50KT | |
| | | 25x40 | 0.15 | 1.18 | ELM2VM271P40KT | |
| | | 30x30 | 0.15 | 1.17 | ELM2VM271Q30KT | |
| | | 35x25 | 0.15 | 1.20 | ELM2VM271R25KT | |
| | 330 | 25x45 | 0.15 | 1.29 | ELM2VM331P45KT | |
| | | 30x35 | 0.15 | 1.34 | ELM2VM331Q35KT | |
| | | 35x30 | 0.15 | 1.22 | ELM2VM331R30KT | |
| | 390 | 25x50 | 0.15 | 1.51 | ELM2VM391P50KT | |
| | | 30x40 | 0.15 | 1.51 | ELM2VM391Q40KT | |
| | | 35x35 | 0.15 | 1.47 | ELM2VM391R35KT | |
| | 470 | 25x60 | 0.15 | 1.66 | ELM2VM471P60KT | |
| | | 30x45 | 0.15 | 1.65 | ELM2VM471Q45KT | |
| | | 35x35 | 0.15 | 1.69 | ELM2VM471R35KT | |
| | 560 | 30x50 | 0.15 | 1.85 | ELM2VM561Q50KT | |
| | | 35x40 | 0.15 | 1.90 | ELM2VM561R40KT | |
| | 680 | 30x60 | 0.15 | 2.15 | ELM2VM681Q60KT | |
| | | 35x50 | 0.15 | 1.99 | ELM2VM681R50KT | |
| | 820 | 35x60 | 0.15 | 2.31 | ELM2VM821R60KT | |
| | 400(2G) | 47 | 22x20 | 0.15 | 0.37 | ELM2GM470O20KT |
| | | 56 | 25x20 | 0.15 | 0.42 | ELM2GM560P20KT |
| | | 68 | 22x25 | 0.15 | 0.50 | ELM2GM680O25KT |
| | | | 25x20 | 0.15 | 0.46 | ELM2GM680P20KT |
| | | 82 | 22x25 | 0.15 | 0.64 | ELM2GM820O25KT |
| | | | 30x20 | 0.15 | 0.55 | ELM2GM820Q20KT |
| | | | 22x30 | 0.15 | 0.70 | ELM2GM101O30KT |
| | | 100 | 25x25 | 0.15 | 0.70 | ELM2GM101P25KT |
| | | | 30x20 | 0.15 | 0.60 | ELM2GM101Q20KT |
| | | | 22x35 | 0.15 | 0.75 | ELM2GM121O35KT |
| 120 | | 25x25 | 0.15 | 0.75 | ELM2GM121P25KT | |
| | | 30x25 | 0.15 | 0.73 | ELM2GM121Q25KT | |
| | | 35x20 | 0.15 | 0.75 | ELM2GM121R20KT | |
| 150 | | 22x40 | 0.15 | 0.88 | ELM2GM151O40KT | |
| | | 25x30 | 0.15 | 0.88 | ELM2GM151P30KT | |
| | | 30x25 | 0.15 | 0.88 | ELM2GM151Q25KT | |
| | | 35x20 | 0.15 | 0.80 | ELM2GM151R20KT | |
| 180 | | 22x45 | 0.15 | 0.98 | ELM2GM181O45KT | |
| | | 25x35 | 0.15 | 0.98 | ELM2GM181P35KT | |
| | | 30x30 | 0.15 | 0.98 | ELM2GM181Q30KT | |
| | | 35x25 | 0.15 | 0.98 | ELM2GM181R25KT | |
| 220 | | 22x50 | 0.15 | 1.10 | ELM2GM221O50KT | |
| | | 25x40 | 0.15 | 1.10 | ELM2GM221P40KT | |
| | | 30x30 | 0.15 | 1.10 | ELM2GM221Q30KT | |
| 270 | | 35x25 | 0.15 | 1.10 | ELM2GM221R25KT | |
| | | 25x45 | 0.15 | 1.22 | ELM2GM271P45KT | |
| | | 30x35 | 0.15 | 1.22 | ELM2GM271Q35KT | |
| 330 | | 35x30 | 0.15 | 1.22 | ELM2GM271R30KT | |
| | | 25x50 | 0.15 | 1.44 | ELM2GM331P50KT | |
| | | 30x40 | 0.15 | 1.44 | ELM2GM331Q40KT | |
| 390 | | 35x30 | 0.15 | 1.44 | ELM2GM331R30KT | |
| | | 25x60 | 0.15 | 1.51 | ELM2GM391P60KT | |
| | | 30x45 | 0.15 | 1.60 | ELM2GM391Q45KT | |
| 470 | | 35x35 | 0.15 | 1.60 | ELM2GM391R35KT | |
| | | 30x50 | 0.15 | 1.90 | ELM2GM471Q50KT | |
| | | 35x40 | 0.15 | 1.90 | ELM2GM471R40KT | |
| 560 | | 30x60 | 0.15 | 2.10 | ELM2GM561Q60KT | |
| | | 35x45 | 0.15 | 2.12 | ELM2GM561R45KT | |
| 680 | | 35x60 | 0.15 | 2.27 | ELM2GM681R60KT | |

LM series

■ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (Arms/105°C, 120Hz) | Part Number | |
|----------|----------|--------------|-------|--|----------------|----------------|
| 420(2T) | 47 | 22x20 | 0.20 | 0.37 | ELM2TM470O20KT | |
| | 56 | 25x20 | 0.20 | 0.42 | ELM2TM560P20KT | |
| | 68 | 22x25 | 0.20 | 0.50 | ELM2TM680O25KT | |
| | | 25x20 | 0.20 | 0.46 | ELM2TM680P20KT | |
| | 82 | 22x25 | 0.20 | 0.64 | ELM2TM820O25KT | |
| | | 25x25 | 0.20 | 0.58 | ELM2TM820P25KT | |
| | | 30x20 | 0.20 | 0.53 | ELM2TM820Q20KT | |
| | 100 | 22x30 | 0.20 | 0.70 | ELM2TM101O30KT | |
| | | 25x25 | 0.20 | 0.70 | ELM2TM101P25KT | |
| | | 30x20 | 0.20 | 0.59 | ELM2TM101Q20KT | |
| | 120 | 22x35 | 0.20 | 0.75 | ELM2TM121O35KT | |
| | | 25x30 | 0.20 | 0.75 | ELM2TM121P30KT | |
| | | 30x25 | 0.20 | 0.73 | ELM2TM121Q25KT | |
| | | 35x20 | 0.20 | 0.67 | ELM2TM121R20KT | |
| | 150 | 22x40 | 0.20 | 0.88 | ELM2TM151O40KT | |
| | | 25x35 | 0.20 | 0.88 | ELM2TM151P35KT | |
| | | 30x25 | 0.20 | 0.88 | ELM2TM151Q25KT | |
| | 180 | 22x45 | 0.20 | 0.95 | ELM2TM181O45KT | |
| | | 25x35 | 0.20 | 0.95 | ELM2TM181P35KT | |
| | | 30x30 | 0.20 | 0.95 | ELM2TM181Q30KT | |
| | | 35x25 | 0.20 | 0.94 | ELM2TM181R25KT | |
| | 220 | 22x50 | 0.20 | 1.10 | ELM2TM221O50KT | |
| | | 25x45 | 0.20 | 1.10 | ELM2TM221P45KT | |
| | | 30x35 | 0.20 | 1.10 | ELM2TM221Q35KT | |
| | | 35x25 | 0.20 | 1.10 | ELM2TM221R25KT | |
| | 270 | 25x50 | 0.20 | 1.22 | ELM2TM271P50KT | |
| | | 30x40 | 0.20 | 1.22 | ELM2TM271Q40KT | |
| | | 35x30 | 0.20 | 1.22 | ELM2TM271R30KT | |
| | 330 | 25x60 | 0.20 | 1.41 | ELM2TM331P60KT | |
| | | 30x45 | 0.20 | 1.45 | ELM2TM331Q45KT | |
| | | 35x35 | 0.20 | 1.45 | ELM2TM331R35KT | |
| | 390 | 30x50 | 0.20 | 1.55 | ELM2TM391Q50KT | |
| | | 35x40 | 0.20 | 1.55 | ELM2TM391R40KT | |
| | 470 | 30x60 | 0.20 | 1.79 | ELM2TM471Q60KT | |
| | 560 | 35x45 | 0.20 | 1.90 | ELM2TM471R45KT | |
| | 680 | 35x50 | 0.20 | 2.15 | ELM2TM561R50KT | |
| | 680 | 35x60 | 0.20 | 2.27 | ELM2TM681R60KT | |
| | 450(2W) | 56 | 22x25 | 0.20 | 0.40 | ELM2WM560O25KT |
| | | 68 | 22x30 | 0.20 | 0.53 | ELM2WM680O30KT |
| | | 68 | 25x25 | 0.20 | 0.50 | ELM2WM680P25KT |
| | | | 22x30 | 0.20 | 0.64 | ELM2WM820O30KT |
| | | 82 | 25x25 | 0.20 | 0.64 | ELM2WM820P25KT |
| 22x35 | | | 0.20 | 0.69 | ELM2WM101O35KT | |
| 100 | | 25x30 | 0.20 | 0.69 | ELM2WM101P30KT | |
| | | 30x25 | 0.20 | 0.64 | ELM2WM101Q25KT | |
| 120 | | 22x40 | 0.20 | 0.80 | ELM2WM121O40KT | |
| | | 25x30 | 0.20 | 0.80 | ELM2WM121P30KT | |
| | | 30x25 | 0.20 | 0.80 | ELM2WM121Q25KT | |
| 150 | | 35x25 | 0.20 | 0.73 | ELM2WM121R25KT | |
| | | 22x45 | 0.20 | 0.88 | ELM2WM151O45KT | |
| | | 25x35 | 0.20 | 0.88 | ELM2WM151P35KT | |
| | | 30x30 | 0.20 | 0.88 | ELM2WM151Q30KT | |
| 180 | | 35x25 | 0.20 | 0.75 | ELM2WM151R25KT | |
| | | 22x50 | 0.20 | 1.00 | ELM2WM181O50KT | |
| | | 25x40 | 0.20 | 1.00 | ELM2WM181P40KT | |
| 220 | | 30x30 | 0.20 | 1.00 | ELM2WM181Q30KT | |
| | | 25x45 | 0.20 | 1.12 | ELM2WM221P45KT | |
| | | 30x35 | 0.20 | 1.12 | ELM2WM221Q35KT | |
| 270 | | 35x30 | 0.20 | 1.12 | ELM2WM221R30KT | |
| | | 25x60 | 0.20 | 1.18 | ELM2WM271P60KT | |
| | | 30x40 | 0.20 | 1.28 | ELM2WM271Q40KT | |
| 330 | | 35x35 | 0.20 | 1.28 | ELM2WM271R35KT | |
| | | 30x50 | 0.20 | 1.45 | ELM2WM331Q50KT | |
| | | 35x40 | 0.20 | 1.45 | ELM2WM331R40KT | |
| 390 | | 30x60 | 0.20 | 1.51 | ELM2WM391Q60KT | |
| | | 35x40 | 0.20 | 1.55 | ELM2WM391R40KT | |
| 470 | | 35x50 | 0.20 | 1.85 | ELM2WM471R50KT | |
| 560 | | 35x60 | 0.20 | 1.91 | ELM2WM561R60KT | |

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (Arms/105°C, 120Hz) | Part Number | |
|----------|----------|--------------|-------|--|----------------|----------------|
| 500(2H) | 47 | 22x25 | 0.20 | 0.51 | ELM2HM470O25KT | |
| | 56 | 22x30 | 0.20 | 0.58 | ELM2HM560O30KT | |
| | 68 | 25x25 | 0.20 | 0.65 | ELM2HM680P25KT | |
| | | 22x35 | 0.20 | 0.72 | ELM2HM820O35KT | |
| | 82 | 25x30 | 0.20 | 0.74 | ELM2HM820P30KT | |
| | | 22x45 | 0.20 | 0.83 | ELM2HM101O45KT | |
| | 100 | 30x25 | 0.20 | 0.82 | ELM2HM101Q25KT | |
| | | 22x50 | 0.20 | 0.93 | ELM2HM121O50KT | |
| | 120 | 25x35 | 0.20 | 0.93 | ELM2HM121P35KT | |
| | | 30x30 | 0.20 | 0.91 | ELM2HM121Q30KT | |
| | | 25x45 | 0.20 | 1.08 | ELM2HM151P45KT | |
| | 150 | 30x35 | 0.20 | 1.04 | ELM2HM151Q35KT | |
| | | 35x25 | 0.20 | 0.99 | ELM2HM151R25KT | |
| | | 25x50 | 0.20 | 1.20 | ELM2HM181P50KT | |
| | 180 | 30x40 | 0.20 | 1.17 | ELM2HM181Q40KT | |
| | | 35x30 | 0.20 | 1.10 | ELM2HM181R30KT | |
| | 220 | 30x45 | 0.20 | 1.33 | ELM2HM221Q45KT | |
| | | 35x35 | 0.20 | 1.23 | ELM2HM221R35KT | |
| | | 30x50 | 0.20 | 1.50 | ELM2HM271O50KT | |
| | 270 | 35x40 | 0.20 | 1.42 | ELM2HM271R40KT | |
| | | 330 | 35x45 | 0.20 | 1.60 | ELM2HM331R45KT |
| | 390 | 35x50 | 0.20 | 1.78 | ELM2HM391R50KT | |
| | 470 | 35x60 | 0.20 | 2.03 | ELM2HM471R60KT | |
| | 550(2J) | 82 | 22x35 | 0.20 | 0.72 | ELM2JM820O35KT |
| | | 100 | 25x30 | 0.20 | 0.74 | ELM2JM820P30KT |
| | | | 22x45 | 0.20 | 0.83 | ELM2JM101O45KT |
| | | | 25x35 | 0.20 | 0.85 | ELM2JM101P35KT |
| | | 120 | 30x25 | 0.20 | 0.82 | ELM2JM101Q25KT |
| | | | 22x50 | 0.20 | 0.93 | ELM2JM121O50KT |
| | | | 25x40 | 0.20 | 0.95 | ELM2JM121P40KT |
| | | 150 | 30x30 | 0.20 | 0.91 | ELM2JM121Q30KT |
| | | | 35x25 | 0.20 | 0.88 | ELM2JM121R25KT |
| | | | 25x45 | 0.20 | 1.08 | ELM2JM151P45KT |
| | | 180 | 30x35 | 0.20 | 1.04 | ELM2JM151Q35KT |
| | | | 25x50 | 0.20 | 1.20 | ELM2JM181P50KT |
| | | | 30x40 | 0.20 | 1.17 | ELM2JM181Q40KT |
| | | 220 | 35x30 | 0.20 | 1.10 | ELM2JM181R30KT |
| | | | 30x45 | 0.20 | 1.33 | ELM2JM221Q45KT |
| | | | 35x35 | 0.20 | 1.23 | ELM2JM221R35KT |
| | | 270 | 30x50 | 0.20 | 1.50 | ELM2JM271Q50KT |
| | | | 35x40 | 0.20 | 1.42 | ELM2JM271R40KT |
| | | | 330 | 35x45 | 0.20 | 1.60 |
| 390 | | 35x50 | 0.20 | 1.64 | ELM2JM391R50KT | |
| 470 | | 35x60 | 0.20 | 2.03 | ELM2JM471R60KT | |

Snap-in&Lug Terminal Type

LP series

- Longer life, high ripple current series
- Endurance: 3,000 hours at 105°C
- RoHS Compliant

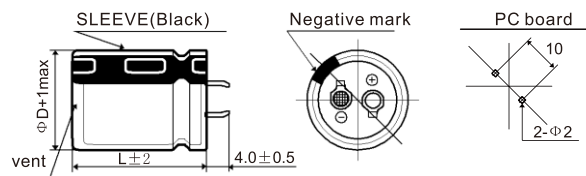


SPECIFICATIONS

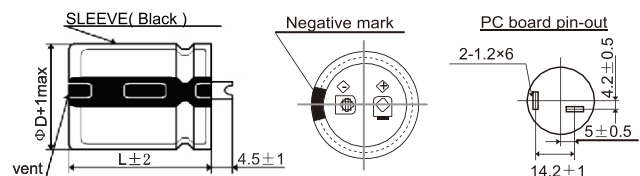
| Items | Characteristics | | |
|--|--|-------------------------------------|---------|
| Category Temperature Range | -40~+105°C | | |
| Rated Voltage Range | 400~450V.DC | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | |
| Leakage Current | $I \leq 3\sqrt{CV}$ Where, I:Max.leakage current (μA), C:Nominal capacitance (μF), V: Rated voltage (V) (at 20°C after 5 minutes) | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 400 | 420,450 |
| | tan δ (max.) | 0.15 | 0.20 |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) | 400~450 | |
| | Z(-25°C)/Z(+20°C) | 6 | |
| | Z(-40°C)/Z(+20°C) | 8 | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 20°C after DC voltage plus the rated ripple current is applied for 3,000 hours at 105°C. | | |
| | Capacitance Change | ±20% of the initial value | |
| | D.F. (tan δ) | 200% of the initial specified value | |
| | Leakage Current | The initial specified value | |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 105°C without voltage applied. | | |
| | Capacitance Change | ±15% of the initial value | |
| | D.F. (tan δ) | 150% of the initial specified value | |
| | Leakage Current | 200% of the initial specified value | |

DIMENSIONS[mm]

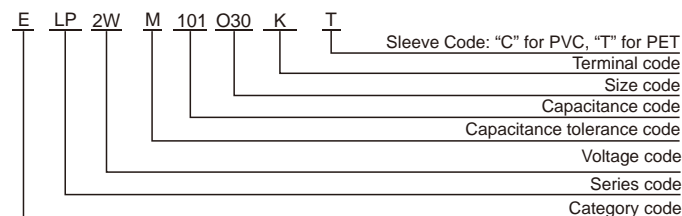
- Terminal Code : K (22 to 35) : Standard



- Terminal Code : L (35)



PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| Rated voltage(V _{dc}) \ Freq.(Hz) | 120 | 1k | 10k | 100k |
|---|------|------|------|------|
| 400~450 | 1.00 | 1.30 | 1.41 | 1.43 |

The endurance of capacitors is shortened with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

LP series

■ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Size DxDL(mm) | tan | Rated ripple current (Arms/105°C, 120Hz) | Part Number |
|----------|----------|---------------|-------|--|----------------|
| 400(2G) | 100 | 22x25 | 0.15 | 0.85 | ELP2GM101O25KT |
| | 120 | 22x30 | 0.15 | 1.01 | ELP2GM121O30KT |
| | | 25x25 | 0.15 | 1.04 | ELP2GM121P25KT |
| | 150 | 22x35 | 0.15 | 1.15 | ELP2GM151O35KT |
| | | 180 | 22x40 | 0.15 | 1.27 |
| | 25x30 | | 0.15 | 1.22 | ELP2GM181P30KT |
| | 220 | 30x25 | 0.15 | 1.35 | ELP2GM181Q25KT |
| | | 22x45 | 0.15 | 1.40 | ELP2GM221O45KT |
| | | 25x35 | 0.15 | 1.40 | ELP2GM221P35KT |
| | 270 | 30x30 | 0.15 | 1.56 | ELP2GM221Q30KT |
| | | 22x50 | 0.15 | 1.55 | ELP2GM271O50KT |
| | | 25x40 | 0.15 | 1.55 | ELP2GM271P40KT |
| | | 30x35 | 0.15 | 1.78 | ELP2GM271Q35KT |
| | 330 | 35x25 | 0.15 | 1.78 | ELP2GM271R25KT |
| | | 25x50 | 0.15 | 1.83 | ELP2GM331P50KT |
| | | 30x40 | 0.15 | 2.00 | ELP2GM331Q40KT |
| | 390 | 35x30 | 0.15 | 1.95 | ELP2GM331R30KT |
| | | 30x45 | 0.15 | 2.20 | ELP2GM391Q45KT |
| | 470 | 35x35 | 0.15 | 2.20 | ELP2GM391R35KT |
| | | 30x50 | 0.15 | 2.38 | ELP2GM471Q50KT |
| 560 | 35x40 | 0.15 | 2.49 | ELP2GM471R40KT | |
| | 35x45 | 0.15 | 2.74 | ELP2GM561R45KT | |
| 680 | 35x50 | 0.15 | 2.95 | ELP2GM681R50KT | |
| 420(2T) | 100 | 22x25 | 0.20 | 0.89 | ELP2TM101O25KT |
| | 120 | 22x30 | 0.20 | 1.06 | ELP2TM121O30KT |
| | | 25x25 | 0.20 | 1.09 | ELP2TM121P25KT |
| | 150 | 22x35 | 0.20 | 1.21 | ELP2TM151O35KT |
| | | 180 | 22x40 | 0.20 | 1.34 |
| | 25x30 | | 0.20 | 1.28 | ELP2TM181P30KT |
| | 220 | 30x25 | 0.20 | 1.42 | ELP2TM181Q25KT |
| | | 22x45 | 0.20 | 1.47 | ELP2TM221O45KT |
| | | 22x50 | 0.20 | 1.60 | ELP2TM221O50KT |
| | 270 | 25x35 | 0.20 | 1.47 | ELP2TM221P35KT |
| | | 30x30 | 0.20 | 1.64 | ELP2TM221Q30KT |
| | | 35x25 | 0.20 | 1.64 | ELP2TM221R25KT |
| | 330 | 25x40 | 0.20 | 1.63 | ELP2TM271P40KT |
| | | 25x45 | 0.20 | 1.79 | ELP2TM271P45KT |
| | 390 | 30x35 | 0.20 | 1.87 | ELP2TM271Q35KT |
| | | 25x50 | 0.20 | 1.93 | ELP2TM331P50KT |
| | | 30x40 | 0.20 | 2.10 | ELP2TM331Q40KT |
| | 470 | 35x30 | 0.20 | 2.05 | ELP2TM331R30KT |
| | | 30x45 | 0.20 | 2.32 | ELP2TM391Q45KT |
| | 560 | 35x35 | 0.20 | 2.32 | ELP2TM391R35KT |
| 30x50 | | 0.20 | 2.51 | ELP2TM471Q50KT | |
| 680 | 35x40 | 0.20 | 2.62 | ELP2TM471R40KT | |
| 820 | 35x45 | 0.20 | 2.88 | ELP2TM561R45KT | |
| | 35x50 | 0.20 | 3.10 | ELP2TM681R50KT | |
| | 35x60 | 0.20 | 3.50 | ELP2TM821R60KT | |

| WV (Vdc) | Cap (μF) | Size DxDL(mm) | tan | Rated ripple current (Arms/105°C, 120Hz) | Part Number |
|----------|----------|---------------|-------|--|----------------|
| 450(2W) | 82 | 22x25 | 0.20 | 0.81 | ELP2WM820O25KT |
| | 100 | 22x30 | 0.20 | 0.97 | ELP2WM101O30KT |
| | | 25x25 | 0.20 | 1.04 | ELP2WM101P25KT |
| | 120 | 22x35 | 0.20 | 1.08 | ELP2WM121O35KT |
| | | 150 | 22x40 | 0.20 | 1.22 |
| | 25x35 | | 0.20 | 1.31 | ELP2WM151P35KT |
| | 180 | 30x25 | 0.20 | 1.31 | ELP2WM151Q25KT |
| | | 22x45 | 0.20 | 1.35 | ELP2WM181O45KT |
| | | 22x50 | 0.20 | 1.42 | ELP2WM181O50KT |
| | 220 | 25x40 | 0.20 | 1.35 | ELP2WM181P40KT |
| | | 30x30 | 0.20 | 1.49 | ELP2WM181Q30KT |
| | | 35x25 | 0.20 | 1.60 | ELP2WM181R25KT |
| | | 25x45 | 0.20 | 1.55 | ELP2WM221P45KT |
| | 270 | 30x35 | 0.20 | 1.71 | ELP2WM221Q35KT |
| | | 25x50 | 0.20 | 1.74 | ELP2WM271P50KT |
| | | 30x40 | 0.20 | 1.90 | ELP2WM271Q40KT |
| | 330 | 35x30 | 0.20 | 1.90 | ELP2WM271R30KT |
| | | 30x45 | 0.20 | 2.20 | ELP2WM331Q45KT |
| | 390 | 35x35 | 0.20 | 2.20 | ELP2WM331R35KT |
| | | 30x50 | 0.20 | 2.40 | ELP2WM391Q50KT |
| 470 | 35x40 | 0.20 | 2.42 | ELP2WM391R40KT | |
| | 35x45 | 0.20 | 2.67 | ELP2WM471R45KT | |
| 560 | 35x50 | 0.20 | 2.85 | ELP2WM561R50KT | |
| 680 | 35x60 | 0.20 | 3.15 | ELP2WM681R60KT | |
| 820 | 35x70 | 0.20 | 3.48 | ELP2WM821R70KT | |

Snap-in&Lug Terminal Type

LQ series

- Longer life series
- Endurance: 5,000 hours at 85°C
- Non solvent-proof type
- **RoHS Compliant**

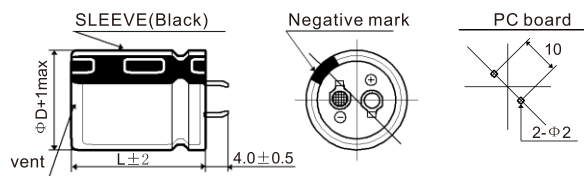


SPECIFICATIONS

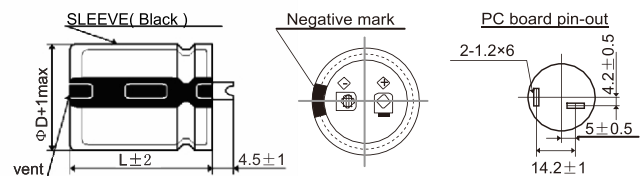
| Items | Characteristics | | |
|--|--|-------------------------------------|---------|
| Category Temperature Range | -25~+85°C | | |
| Rated Voltage Range | 160~450V.DC | | |
| Capacitance Tolerance | ±20%(M) (at 20°C,120Hz) | | |
| Leakage Current | $I \leq 3\sqrt{CV}$ Where, I:Max.leakage current (µA),C:Nominal capacitance (µF),V: Rated voltage (V) (at 20°C after 5 minutes) | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 160~400 | 420~450 |
| | tan δ (max.) | 0.15 | 0.20 |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) | 160~400 | 420~450 |
| | Z(-25°C)/Z(+20°C) | 4 | 8 |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 20°C after DC voltage plus the rated ripple current is applied for 5,000 hours at 85 °C. | | |
| | Capacitance Change | ±20% of the initial value | |
| | D.F. (tan δ) | 200% of the initial specified value | |
| | Leakage Current | The initial specified value | |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 85°C without voltage applied. | | |
| | Capacitance Change | ±15% of the initial value | |
| | D.F. (tan δ) | 150% of the initial specified value | |
| | Leakage Current | The initial specified value | |

DIMENSIONS[mm]

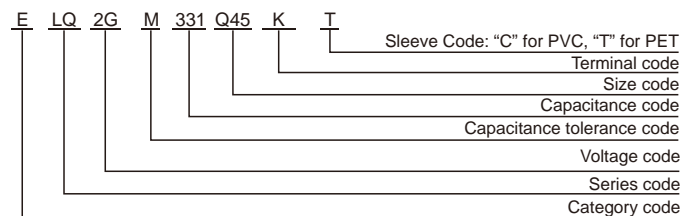
- Terminal Code : K (22 to 35) : Standard



- Terminal Code : L (35)



PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| Rated voltage(V _{dc}) \ Freq.(Hz) | 120 | 1k | 10k | 100k |
|---|------|------|------|------|
| 160~250 | 1.00 | 1.32 | 1.45 | 1.50 |
| 315~450 | 1.00 | 1.30 | 1.41 | 1.43 |

The endurance of capacitors is shortened with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

LQ series

■ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (Arms/85°C, 120Hz) | Part Number |
|----------|----------|--------------|------|---|----------------|
| 160(2C) | 220 | 22x25 | 0.15 | 1.00 | ELQ2CM221O25KT |
| | 270 | 22x25 | 0.15 | 1.10 | ELQ2CM271O25KT |
| | 330 | 22x25 | 0.15 | 1.30 | ELQ2CM331O25KT |
| | 390 | 22x30 | 0.15 | 1.50 | ELQ2CM391O30KT |
| | | 25x25 | 0.15 | 1.51 | ELQ2CM391P25KT |
| | 470 | 22x30 | 0.15 | 1.65 | ELQ2CM471O30KT |
| | | 25x25 | 0.15 | 1.70 | ELQ2CM471P25KT |
| | 560 | 22x35 | 0.15 | 1.91 | ELQ2CM561O35KT |
| | | 25x30 | 0.15 | 1.90 | ELQ2CM561P30KT |
| | | 30x25 | 0.15 | 2.01 | ELQ2CM561Q25KT |
| | 680 | 22x40 | 0.15 | 2.10 | ELQ2CM681O40KT |
| | | 25x35 | 0.15 | 2.20 | ELQ2CM681P35KT |
| | | 30x30 | 0.15 | 2.22 | ELQ2CM681Q30KT |
| | 820 | 22x50 | 0.15 | 2.48 | ELQ2CM821O50KT |
| | | 25x40 | 0.15 | 2.43 | ELQ2CM821P40KT |
| | | 30x30 | 0.15 | 2.49 | ELQ2CM821Q30KT |
| | | 35x25 | 0.15 | 2.45 | ELQ2CM821R25KT |
| | 1000 | 25x45 | 0.15 | 2.69 | ELQ2CM102P45KT |
| | | 30x35 | 0.15 | 2.79 | ELQ2CM102Q35KT |
| | | 35x30 | 0.15 | 2.71 | ELQ2CM102R30KT |
| | 1200 | 25x50 | 0.15 | 3.09 | ELQ2CM122P50KT |
| | | 30x40 | 0.15 | 3.11 | ELQ2CM122Q40KT |
| 35x35 | | 0.15 | 3.05 | ELQ2CM122R35KT | |
| 1500 | 30x45 | 0.15 | 3.68 | ELQ2CM152Q45KT | |
| | 35x40 | 0.15 | 3.51 | ELQ2CM152R40KT | |
| 1800 | 35x45 | 0.15 | 3.88 | ELQ2CM182R45KT | |
| 2200 | 35x50 | 0.15 | 4.52 | ELQ2CM222R50KT | |
| 180(2L) | 270 | 22x25 | 0.15 | 1.19 | ELQ2LM271O25KT |
| | 330 | 22x30 | 0.15 | 1.38 | ELQ2LM331O30KT |
| | 390 | 22x30 | 0.15 | 1.45 | ELQ2LM391O30KT |
| | | 25x25 | 0.15 | 1.49 | ELQ2LM391P25KT |
| | 470 | 22x35 | 0.15 | 1.68 | ELQ2LM471O35KT |
| | | 25x30 | 0.15 | 2.69 | ELQ2LM471P30KT |
| | 560 | 30x25 | 0.15 | 1.81 | ELQ2LM471Q25KT |
| | | 22x40 | 0.15 | 1.89 | ELQ2LM561O40KT |
| | | 25x35 | 0.15 | 2.01 | ELQ2LM561P35KT |
| | 680 | 30x30 | 0.15 | 2.10 | ELQ2LM561Q30KT |
| | | 22x50 | 0.15 | 2.29 | ELQ2LM681O50KT |
| | | 25x40 | 0.15 | 2.21 | ELQ2LM681P40KT |
| | 820 | 30x30 | 0.15 | 2.31 | ELQ2LM681Q30KT |
| | | 35x25 | 0.15 | 2.22 | ELQ2LM681R25KT |
| | | 25x45 | 0.15 | 2.51 | ELQ2LM821P45KT |
| | 1000 | 30x35 | 0.15 | 2.60 | ELQ2LM821Q35KT |
| | | 35x30 | 0.15 | 2.66 | ELQ2LM821R30KT |
| | | 25x50 | 0.15 | 2.91 | ELQ2LM102P50KT |
| | 1200 | 30x40 | 0.15 | 2.90 | ELQ2LM102Q40KT |
| | | 35x35 | 0.15 | 2.94 | ELQ2LM102R35KT |
| | 1500 | 30x45 | 0.15 | 3.29 | ELQ2LM122Q45KT |
| | | 35x35 | 0.15 | 3.19 | ELQ2LM122R35KT |
| 1800 | 35x45 | 0.15 | 3.60 | ELQ2LM152R45KT | |
| 1800 | 35x50 | 0.15 | 4.11 | ELQ2LM182R50KT | |

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (Arms/85°C, 120Hz) | Part Number |
|----------|----------|--------------|------|---|----------------|
| 200(2D) | 220 | 22x25 | 0.15 | 1.11 | ELQ2DM221O25KT |
| | 270 | 22x25 | 0.15 | 1.21 | ELQ2DM271O25KT |
| | 330 | 22x30 | 0.15 | 1.41 | ELQ2DM331O30KT |
| | | 25x25 | 0.15 | 1.40 | ELQ2DM331P25KT |
| | 390 | 22x35 | 0.15 | 1.59 | ELQ2DM391O35KT |
| | | 25x30 | 0.15 | 1.61 | ELQ2DM391P30KT |
| | 470 | 22x40 | 0.15 | 1.78 | ELQ2DM471O40KT |
| | | 25x35 | 0.15 | 1.85 | ELQ2DM471P35KT |
| | | 30x25 | 0.15 | 1.88 | ELQ2DM471Q25KT |
| | 560 | 22x45 | 0.15 | 2.11 | ELQ2DM561O45KT |
| | | 25x35 | 0.15 | 2.13 | ELQ2DM561P35KT |
| | | 30x30 | 0.15 | 2.10 | ELQ2DM561Q30KT |
| | | 35x25 | 0.15 | 2.05 | ELQ2DM561R25KT |
| | 680 | 25x40 | 0.15 | 2.33 | ELQ2DM681P40KT |
| | | 30x35 | 0.15 | 2.40 | ELQ2DM681Q35KT |
| | | 35x30 | 0.15 | 2.48 | ELQ2DM681R30KT |
| | 820 | 25x50 | 0.15 | 2.59 | ELQ2DM821P50KT |
| | | 30x40 | 0.15 | 2.78 | ELQ2DM821Q40KT |
| | | 35x30 | 0.15 | 2.59 | ELQ2DM821R30KT |
| | 1000 | 30x45 | 0.15 | 3.06 | ELQ2DM102Q45KT |
| | | 35x35 | 0.15 | 2.80 | ELQ2DM102R35KT |
| | 1200 | 30x50 | 0.15 | 3.41 | ELQ2DM122Q50KT |
| 35x40 | | 0.15 | 3.18 | ELQ2DM122R40KT | |
| 1500 | 35x50 | 0.15 | 3.80 | ELQ2DM152R50KT | |
| 220(2N) | 180 | 22x25 | 0.15 | 1.06 | ELQ2NM181O25KT |
| | 220 | 22x25 | 0.15 | 1.10 | ELQ2NM221O25KT |
| | 270 | 22x30 | 0.15 | 1.19 | ELQ2NM271O30KT |
| | | 25x25 | 0.15 | 1.20 | ELQ2NM271P25KT |
| | 330 | 22x35 | 0.15 | 1.40 | ELQ2NM331O35KT |
| | | 25x30 | 0.15 | 1.42 | ELQ2NM331P30KT |
| | | 30x25 | 0.15 | 1.42 | ELQ2NM331Q25KT |
| | 390 | 22x40 | 0.15 | 1.57 | ELQ2NM391O40KT |
| | | 25x35 | 0.15 | 1.58 | ELQ2NM391P35KT |
| | | 30x30 | 0.15 | 1.55 | ELQ2NM391Q30KT |
| | 470 | 22x45 | 0.15 | 1.77 | ELQ2NM471O45KT |
| | | 25x40 | 0.15 | 1.79 | ELQ2NM471P40KT |
| | | 30x30 | 0.15 | 1.81 | ELQ2NM471Q30KT |
| | 560 | 22x50 | 0.15 | 2.12 | ELQ2NM561O50KT |
| | | 25x45 | 0.15 | 2.22 | ELQ2NM561P45KT |
| | | 30x35 | 0.15 | 2.28 | ELQ2NM561Q35KT |
| | | 35x30 | 0.15 | 2.26 | ELQ2NM561R30KT |
| | 680 | 25x50 | 0.15 | 2.35 | ELQ2NM681P50KT |
| | | 30x40 | 0.15 | 2.30 | ELQ2NM681Q40KT |
| | | 35x30 | 0.15 | 2.36 | ELQ2NM681R30KT |
| | 820 | 30x45 | 0.15 | 2.81 | ELQ2NM821Q45KT |
| | | 35x35 | 0.15 | 2.79 | ELQ2NM821R35KT |
| 1000 | 30x50 | 0.15 | 3.12 | ELQ2NM102Q50KT | |
| | 35x40 | 0.15 | 3.29 | ELQ2NM102R40KT | |
| 1200 | 35x45 | 0.15 | 3.40 | ELQ2NM122R45KT | |
| 1500 | 35x50 | 0.15 | 3.86 | ELQ2NM152R50KT | |

Snap-in&Lug Terminal Type

LQ series

■ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (Arms/85°C, 120Hz) | Part Number |
|----------|----------|--------------|------|---|----------------|
| 250(2E) | 180 | 22x25 | 0.15 | 0.94 | ELQ2EM181O25KT |
| | 220 | 22x30 | 0.15 | 1.09 | ELQ2EM221O30KT |
| | | 25x25 | 0.15 | 1.10 | ELQ2EM221P25KT |
| | 270 | 22x35 | 0.15 | 1.19 | ELQ2EM271O35KT |
| | | 25x30 | 0.15 | 1.21 | ELQ2EM271P30KT |
| | 330 | 22x40 | 0.15 | 1.38 | ELQ2EM331O40KT |
| | | 25x30 | 0.15 | 1.39 | ELQ2EM331P30KT |
| | | 30x25 | 0.15 | 1.48 | ELQ2EM331Q25KT |
| | 390 | 22x45 | 0.15 | 1.61 | ELQ2EM391O45KT |
| | | 25x35 | 0.15 | 1.60 | ELQ2EM391P35KT |
| | | 30x30 | 0.15 | 1.63 | ELQ2EM391Q30KT |
| | 470 | 22x50 | 0.15 | 1.79 | ELQ2EM471O50KT |
| | | 25x40 | 0.15 | 1.78 | ELQ2EM471P40KT |
| | 560 | 30x30 | 0.15 | 1.81 | ELQ2EM471Q30KT |
| | | 25x45 | 0.15 | 2.01 | ELQ2EM561P45KT |
| | 680 | 30x35 | 0.15 | 2.10 | ELQ2EM561Q35KT |
| 30x40 | | 0.15 | 2.25 | ELQ2EM681Q40KT | |
| 820 | 35x35 | 0.15 | 2.39 | ELQ2EM681R35KT | |
| | 30x45 | 0.15 | 2.61 | ELQ2EM821Q45KT | |
| 1000 | 35x40 | 0.15 | 2.59 | ELQ2EM821R40KT | |
| | 35x45 | 0.15 | 2.87 | ELQ2EM102R45KT | |
| 1200 | 35x50 | 0.15 | 3.32 | ELQ2EM122R50KT | |
| 315(2F) | 100 | 22x25 | 0.15 | 0.79 | ELQ2FM101O25KT |
| | 120 | 22x30 | 0.15 | 0.90 | ELQ2FM121O30KT |
| | 150 | 22x30 | 0.15 | 1.06 | ELQ2FM151O30KT |
| | | 25x25 | 0.15 | 1.00 | ELQ2FM151P25KT |
| | 180 | 22x35 | 0.15 | 1.29 | ELQ2FM181O35KT |
| | | 25x30 | 0.15 | 1.32 | ELQ2FM181P30KT |
| | 220 | 22x40 | 0.15 | 1.41 | ELQ2FM221O40KT |
| | | 25x35 | 0.15 | 1.45 | ELQ2FM221P35KT |
| | | 30x25 | 0.15 | 1.28 | ELQ2FM221Q25KT |
| | 270 | 22x45 | 0.15 | 1.68 | ELQ2FM271O45KT |
| | | 25x40 | 0.15 | 1.62 | ELQ2FM271P40KT |
| | | 30x30 | 0.15 | 1.55 | ELQ2FM271Q30KT |
| | 330 | 35x25 | 0.15 | 1.43 | ELQ2FM271R25KT |
| | | 25x45 | 0.15 | 1.94 | ELQ2FM331P45KT |
| | | 30x35 | 0.15 | 1.98 | ELQ2FM331Q35KT |
| | 390 | 35x30 | 0.15 | 1.91 | ELQ2FM331R30KT |
| | | 25x50 | 0.15 | 2.11 | ELQ2FM391P50KT |
| | | 30x40 | 0.15 | 2.15 | ELQ2FM391Q40KT |
| | 470 | 35x30 | 0.15 | 1.95 | ELQ2FM391R30KT |
| | | 30x45 | 0.15 | 2.38 | ELQ2FM471Q45KT |
| | 560 | 35x35 | 0.15 | 2.46 | ELQ2FM471R35KT |
| | | 30x50 | 0.15 | 2.63 | ELQ2FM561Q50KT |
| | 680 | 35x40 | 0.15 | 2.69 | ELQ2FM561R40KT |
| | | 35x45 | 0.15 | 3.05 | ELQ2FM681R45KT |

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (Arms/85°C, 120Hz) | Part Number |
|----------|----------|--------------|------|---|----------------|
| 350(2V) | 82 | 22x25 | 0.15 | 0.64 | ELQ2VM820O25KT |
| | 100 | 22x25 | 0.15 | 0.86 | ELQ2VM101O25KT |
| | 120 | 22x30 | 0.15 | 1.04 | ELQ2VM121O30KT |
| | | 25x25 | 0.15 | 0.90 | ELQ2VM121P25KT |
| | 150 | 22x35 | 0.15 | 1.20 | ELQ2VM151O35KT |
| | | 25x30 | 0.15 | 1.22 | ELQ2VM151P30KT |
| | 180 | 22x40 | 0.15 | 1.34 | ELQ2VM181O40KT |
| | | 25x30 | 0.15 | 1.37 | ELQ2VM181P30KT |
| | 220 | 22x45 | 0.15 | 1.47 | ELQ2VM221O45KT |
| | | 25x35 | 0.15 | 1.53 | ELQ2VM221P35KT |
| | | 30x30 | 0.15 | 1.54 | ELQ2VM221Q30KT |
| | 270 | 35x25 | 0.15 | 1.29 | ELQ2VM221R25KT |
| | | 25x45 | 0.15 | 1.73 | ELQ2VM271P45KT |
| | | 30x35 | 0.15 | 1.80 | ELQ2VM271Q35KT |
| | 330 | 35x30 | 0.15 | 1.49 | ELQ2VM271R30KT |
| | | 25x50 | 0.15 | 1.97 | ELQ2VM331P50KT |
| 30x40 | | 0.15 | 2.03 | ELQ2VM331Q40KT | |
| 390 | 35x30 | 0.15 | 1.80 | ELQ2VM331R30KT | |
| | 30x40 | 0.15 | 2.23 | ELQ2VM391Q40KT | |
| 470 | 35x35 | 0.15 | 2.30 | ELQ2VM391R35KT | |
| | 30x45 | 0.15 | 2.53 | ELQ2VM471Q45KT | |
| 560 | 35x40 | 0.15 | 2.55 | ELQ2VM471R40KT | |
| | 35x45 | 0.15 | 2.75 | ELQ2VM561R45KT | |
| 680 | 35x50 | 0.15 | 3.15 | ELQ2VM681R50KT | |
| 400(2G) | 68 | 22x25 | 0.15 | 0.65 | ELQ2GM680O25KT |
| | 82 | 22x25 | 0.15 | 0.84 | ELQ2GM820O25KT |
| | 100 | 22x30 | 0.15 | 0.99 | ELQ2GM101O30KT |
| | | 25x25 | 0.15 | 0.82 | ELQ2GM101P25KT |
| | 120 | 22x35 | 0.15 | 1.09 | ELQ2GM121O35KT |
| | | 25x30 | 0.15 | 1.13 | ELQ2GM121P30KT |
| | 150 | 22x40 | 0.15 | 1.24 | ELQ2GM151O40KT |
| | | 25x30 | 0.15 | 1.27 | ELQ2GM151P30KT |
| | | 30x25 | 0.15 | 1.20 | ELQ2GM151Q25KT |
| | 180 | 22x45 | 0.15 | 1.41 | ELQ2GM181O45KT |
| | | 25x35 | 0.15 | 1.44 | ELQ2GM181P35KT |
| | | 30x30 | 0.15 | 1.52 | ELQ2GM181Q30KT |
| | 220 | 35x25 | 0.15 | 1.16 | ELQ2GM181R25KT |
| | | 22x50 | 0.15 | 1.58 | ELQ2GM221O50KT |
| | | 25x40 | 0.15 | 1.64 | ELQ2GM221P40KT |
| | 270 | 30x35 | 0.15 | 1.66 | ELQ2GM221Q35KT |
| | | 35x30 | 0.15 | 1.47 | ELQ2GM221R30KT |
| | | 25x45 | 0.15 | 1.79 | ELQ2GM271P45KT |
| | 330 | 30x40 | 0.15 | 1.82 | ELQ2GM271Q40KT |
| | | 35x30 | 0.15 | 1.63 | ELQ2GM271R30KT |
| | | 30x45 | 0.15 | 2.05 | ELQ2GM331Q45KT |
| | 390 | 35x35 | 0.15 | 2.05 | ELQ2GM331R35KT |
| | | 30x50 | 0.15 | 2.26 | ELQ2GM391Q50KT |
| | 470 | 35x40 | 0.15 | 2.28 | ELQ2GM391R40KT |
| 35x45 | | 0.15 | 2.54 | ELQ2GM471R45KT | |
| 560 | 35x50 | 0.15 | 2.85 | ELQ2GM561R50KT | |

LQ series

■ STANDARD RATINGS

| WV (V _{dc}) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (Arms/85°C, 120Hz) | Part Number |
|-----------------------|----------|--------------|------|---|----------------|
| 420(2T) | 100 | 22x30 | 0.20 | 0.97 | ELQ2TM101O30KT |
| | | 25x25 | 0.20 | 0.98 | ELQ2TM101P25KT |
| | 120 | 22x30 | 0.20 | 1.07 | ELQ2TM121O30KT |
| | | 25x30 | 0.20 | 1.08 | ELQ2TM121P30KT |
| | 150 | 22x40 | 0.20 | 1.21 | ELQ2TM151O40KT |
| | | 25x35 | 0.20 | 1.26 | ELQ2TM151P35KT |
| | 180 | 25x35 | 0.20 | 1.42 | ELQ2TM181P35KT |
| | | 30x30 | 0.20 | 1.48 | ELQ2TM181Q30KT |
| | 220 | 25x40 | 0.20 | 1.58 | ELQ2TM221P40KT |
| | | 30x35 | 0.20 | 1.65 | ELQ2TM221Q35KT |
| | 270 | 30x35 | 0.20 | 1.90 | ELQ2TM271Q35KT |
| | | 35x30 | 0.20 | 1.94 | ELQ2TM271R30KT |
| | 330 | 35x35 | 0.20 | 2.17 | ELQ2TM331R35KT |
| | 390 | 30x50 | 0.20 | 2.22 | ELQ2TM391Q50KT |
| 35x45 | | 0.20 | 2.23 | ELQ2TM391R45KT | |
| 560 | 35x50 | 0.20 | 2.93 | ELQ2TM561R50KT | |
| 450(2W) | 68 | 22x30 | 0.20 | 0.71 | ELQ2WM680O30KT |
| | 82 | 22x35 | 0.20 | 0.86 | ELQ2WM820O35KT |
| | 100 | 22x35 | 0.20 | 0.95 | ELQ2WM101O35KT |
| | | 25x30 | 0.20 | 0.97 | ELQ2WM101P30KT |
| | 120 | 22x40 | 0.20 | 1.07 | ELQ2WM121O40KT |
| | | 25x35 | 0.20 | 1.09 | ELQ2WM121P35KT |
| | 150 | 22x50 | 0.20 | 1.18 | ELQ2WM151O50KT |
| | | 25x40 | 0.20 | 1.25 | ELQ2WM151P40KT |
| | | 30x30 | 0.20 | 1.29 | ELQ2WM151Q30KT |
| | 180 | 25x45 | 0.20 | 1.40 | ELQ2WM181P45KT |
| | | 30x35 | 0.20 | 1.45 | ELQ2WM181Q35KT |
| | | 35x25 | 0.20 | 1.30 | ELQ2WM181R25KT |
| | 220 | 25x50 | 0.20 | 1.59 | ELQ2WM221P50KT |
| | | 30x40 | 0.20 | 1.64 | ELQ2WM221Q40KT |
| | | 35x30 | 0.20 | 1.60 | ELQ2WM221R30KT |
| | 270 | 30x45 | 0.20 | 1.88 | ELQ2WM271Q45KT |
| | | 35x35 | 0.20 | 1.89 | ELQ2WM271R35KT |
| | 330 | 30x50 | 0.20 | 2.12 | ELQ2WM331Q50KT |
| | | 35x40 | 0.20 | 2.15 | ELQ2WM331R40KT |
| | 390 | 35x45 | 0.20 | 2.35 | ELQ2WM391R45KT |
| 470 | 35x50 | 0.20 | 2.65 | ELQ2WM471R50KT | |

Snap-in&Lug Terminal Type

LG series

- Longer life, high ripple current series
- Endurance: 12,000 hours at 85°C
- RoHS Compliant

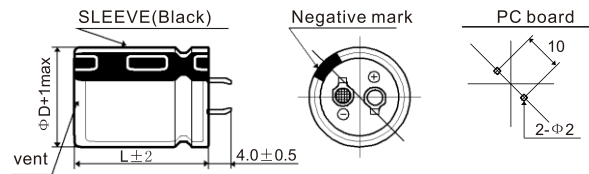


SPECIFICATIONS

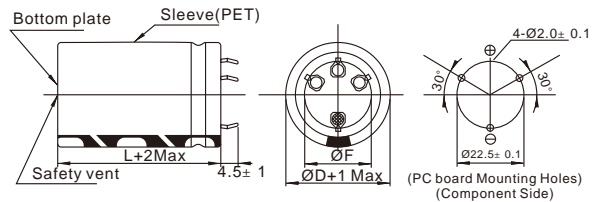
| Items | Characteristics | |
|--|---|-------------------------------------|
| Category Temperature Range | -25~+85°C | |
| Rated Voltage Range | 350~450V.DC | |
| Capacitance Tolerance | ±20%(M) (at 20°C,120Hz) | |
| Leakage Current | $I \leq 3\sqrt{CV}$ Where, I:Max.leakage current (µA),C:Nominal capacitance (µF),V: Rated voltage (V) (at 20°C after 5 minutes) | |
| Dissipation Factor (tan) | Rated Voltage(V _{dc}) | 350~450 |
| | tan (max.) | 0.20 (at 20°C,120Hz) |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) | 350~450 |
| | Z(-25°C)/Z(+20°C) | 8 (at 120Hz) |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 20°C after DC voltage plus the rated ripple current is applied for 12,000 hours at 85 °C. | |
| | Capacitance Change | ±20% of the initial value |
| | D.F. (tan) | 200% of the initial specified value |
| | Leakage Current | The initial specified value |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 85°C without voltage applied. | |
| | Capacitance Change | ±15% of the initial value |
| | D.F. (tan) | 150% of the initial specified value |
| | Leakage Current | 200% of the initial specified value |

DIMENSIONS[mm]

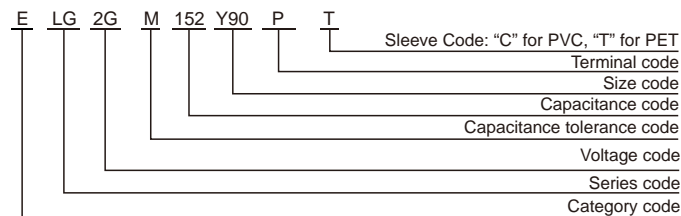
- Terminal Code: K (35)



- Terminal Code: P (35 to 45)



PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| Rated voltage(V _{dc}) \ Freq.(Hz) | 50 | 120 | 300 | 1k | 10k | 100k |
|---|------|------|------|------|------|------|
| 350~450 | 0.77 | 1.00 | 1.16 | 1.30 | 1.41 | 1.43 |

The endurance of capacitors is shortened with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

LG series

■ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (Arms/85°C, 120Hz) | Part Number |
|----------|----------|--------------|------|---|----------------|
| 350(2V) | 680 | 35x50 | 0.20 | 3.62 | ELG2VM681R50KT |
| | 820 | 35x55 | 0.20 | 3.97 | ELG2VM821R55KT |
| | | 40x50 | 0.20 | 4.08 | ELG2VM821Y50PT |
| | 1000 | 35x65 | 0.20 | 4.54 | ELG2VM102R65KT |
| | | 40x55 | 0.20 | 4.46 | ELG2VM102Y55PT |
| | 1200 | 35x75 | 0.20 | 5.09 | ELG2VM122R75PT |
| | | 40x60 | 0.20 | 4.82 | ELG2VM122Y60PT |
| | | 45x50 | 0.20 | 4.43 | ELG2VM122I50PT |
| | 1500 | 35x95 | 0.20 | 5.98 | ELG2VM152R95PT |
| | | 40x70 | 0.20 | 5.47 | ELG2VM152Y70PT |
| | | 45x60 | 0.20 | 5.20 | ELG2VM152I60PT |
| | 1800 | 40x90 | 0.20 | 6.51 | ELG2VM182Y90PT |
| | | 45x65 | 0.20 | 5.53 | ELG2VM182I65PT |
| | 2200 | 45x85 | 0.20 | 6.73 | ELG2VM222I85PT |
| 2700 | 45x100 | 0.20 | 7.62 | ELG2VM272IA0PT | |
| 400(2G) | 560 | 35x50 | 0.20 | 3.45 | ELG2GM561R50KT |
| | 680 | 35x60 | 0.20 | 3.98 | ELG2GM681R60KT |
| | | 40x50 | 0.20 | 3.90 | ELG2GM681Y50PT |
| | 820 | 35x65 | 0.20 | 4.32 | ELG2GM821R65KT |
| | | 40x55 | 0.20 | 4.25 | ELG2GM821Y55PT |
| | | 45x50 | 0.20 | 4.27 | ELG2GM821I50PT |
| | 1000 | 35x80 | 0.20 | 5.02 | ELG2GM102R80PT |
| | | 40x65 | 0.20 | 4.88 | ELG2GM102Y65PT |
| | | 45x55 | 0.20 | 4.64 | ELG2GM102I55PT |
| | 1200 | 35x90 | 0.20 | 5.54 | ELG2GM122R90PT |
| | | 40x75 | 0.20 | 5.47 | ELG2GM122Y75PT |
| | | 45x60 | 0.20 | 4.99 | ELG2GM122I60PT |
| | 1500 | 40x90 | 0.20 | 6.30 | ELG2GM152Y90PT |
| | | 45x70 | 0.20 | 5.65 | ELG2GM152I70PT |
| | 1800 | 45x80 | 0.20 | 6.28 | ELG2GM182I80PT |
| | 2200 | 45x95 | 0.20 | 7.18 | ELG2GM222I95PT |

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (Arms/85°C, 120Hz) | Part Number |
|----------|----------|--------------|------|---|----------------|
| 420(2T) | 560 | 35x50 | 0.20 | 3.39 | ELG2TM561R50KT |
| | 680 | 35x60 | 0.20 | 3.92 | ELG2TM681R60KT |
| | | 40x50 | 0.20 | 3.85 | ELG2TM681Y50PT |
| | 820 | 35x65 | 0.20 | 4.26 | ELG2TM821R65KT |
| | | 40x55 | 0.20 | 4.21 | ELG2TM821Y55PT |
| | 1000 | 35x80 | 0.20 | 4.94 | ELG2TM102R80PT |
| | | 40x65 | 0.20 | 4.82 | ELG2TM102Y65PT |
| | | 45x50 | 0.20 | 4.23 | ELG2TM102I50PT |
| | 1200 | 35x95 | 0.20 | 5.58 | ELG2TM122R95PT |
| | | 40x75 | 0.20 | 5.42 | ELG2TM122Y75PT |
| | | 45x60 | 0.20 | 4.97 | ELG2TM122I60PT |
| | 1500 | 40x90 | 0.20 | 6.19 | ELG2TM152Y90PT |
| | | 45x70 | 0.20 | 5.63 | ELG2TM152I70PT |
| | 1800 | 45x85 | 0.20 | 6.50 | ELG2TM182I85PT |
| 2200 | 45x100 | 0.20 | 7.36 | ELG2TM222IA0PT | |
| 450(2W) | 470 | 35x50 | 0.20 | 3.25 | ELG2WM471R50KT |
| | 560 | 35x55 | 0.20 | 3.56 | ELG2WM561R55KT |
| | | 40x50 | 0.20 | 3.70 | ELG2WM561Y50PT |
| | 680 | 35x65 | 0.20 | 4.07 | ELG2WM681R65KT |
| | | 40x55 | 0.20 | 4.06 | ELG2WM681Y55PT |
| | 820 | 35x75 | 0.20 | 4.55 | ELG2WM821R75PT |
| | | 40x60 | 0.20 | 4.41 | ELG2WM821Y60PT |
| | | 45x50 | 0.20 | 4.14 | ELG2WM821I50PT |
| | 1000 | 35x85 | 0.20 | 5.07 | ELG2WM102R85PT |
| | | 40x70 | 0.20 | 5.00 | ELG2WM102Y70PT |
| | | 45x60 | 0.20 | 4.84 | ELG2WM102I60PT |
| | 1200 | 35x100 | 0.20 | 5.71 | ELG2WM122RA0PT |
| | | 40x80 | 0.20 | 5.57 | ELG2WM122Y80PT |
| | | 45x65 | 0.20 | 5.18 | ELG2WM122I65PT |
| | 1500 | 40x95 | 0.20 | 6.36 | ELG2WM152Y95PT |
| | | 45x80 | 0.20 | 6.13 | ELG2WM152I80PT |
| 1800 | 45x90 | 0.20 | 6.71 | ELG2WM182I90PT | |

LT series

- Downsized and long life series
- Endurance: 5,000 hours at 105°C
- RoHS Compliant

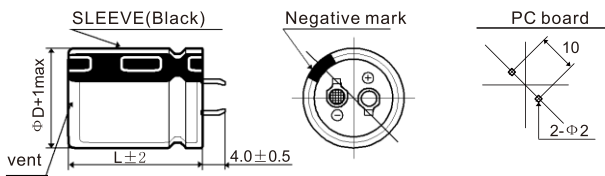


SPECIFICATIONS

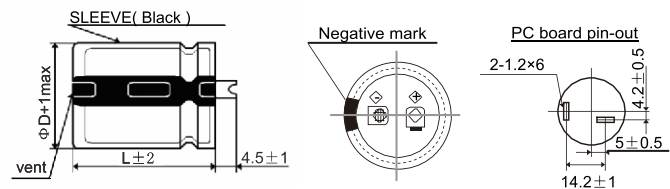
| Items | Characteristics | | | |
|--|--|---|---------|------------------|
| Category Temperature Range | -25~+105°C | | | |
| Rated Voltage Range | 160~550V.DC | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | | |
| Leakage Current | $I \leq 3\sqrt{CV}$ Where, I:Max.leakage current (µA), C:Nominal capacitance (µF), V: Rated voltage (V) (at 20°C after 5 minutes) | | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 160~400 | 420~550 | (at 20°C, 120Hz) |
| | tan δ (max.) | 0.15 | 0.20 | |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) | 160~250 | 315~550 | (at 120Hz) |
| | Z(-25°C)/Z(+20°C) | 4 | 8 | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 20°C after DC voltage plus the rated ripple current is applied for 5,000 hours at 105°C. | | | |
| | Capacitance Change | ±20% of the initial value | | |
| | D.F. (tan δ) | 200% of the initial specified value (500V _{dc} : 250%; 550V _{dc} : 300%) | | |
| | Leakage Current | The initial specified value | | |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 105°C without voltage applied. | | | |
| | Capacitance Change | ±15% of the initial value | | |
| | D.F. (tan δ) | 150% of the initial specified value | | |
| | Leakage Current | 200% of the initial specified value | | |

DIMENSIONS[mm]

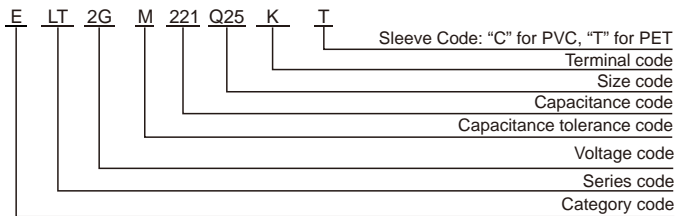
- Terminal Code : K (22 to 35) : Standard



- Terminal Code : L (35)



PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| Rated voltage(V _{dc}) \ Freq.(Hz) | 120 | 1k | 10k | 100k |
|---|------|------|------|------|
| 160~250 | 1.00 | 1.32 | 1.45 | 1.50 |
| 315~550 | 1.00 | 1.30 | 1.41 | 1.43 |

The endurance of capacitors is shortened with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

LT series

■ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (Arms/105°C, 120Hz) | Part Number |
|----------|----------|--------------|------|--|----------------|
| 160(2C) | 390 | 22x25 | 0.15 | 1.32 | ELT2CM391O25KT |
| | 560 | 22x30 | 0.15 | 1.66 | ELT2CM561O30KT |
| | | 25x25 | 0.15 | 1.68 | ELT2CM561P25KT |
| | 680 | 22x35 | 0.15 | 1.87 | ELT2CM681O35KT |
| | | 25x30 | 0.15 | 1.88 | ELT2CM681P30KT |
| | | 30x25 | 0.15 | 1.96 | ELT2CM681Q25KT |
| | 820 | 22x40 | 0.15 | 2.09 | ELT2CM821O40KT |
| | 1000 | 22x50 | 0.15 | 2.41 | ELT2CM102O50KT |
| | | 25x35 | 0.15 | 2.38 | ELT2CM102P35KT |
| | | 30x30 | 0.15 | 2.40 | ELT2CM102Q30KT |
| | | 35x25 | 0.15 | 2.55 | ELT2CM102R25KT |
| | 1200 | 25x45 | 0.15 | 2.71 | ELT2CM122P45KT |
| | | 30x40 | 0.15 | 2.77 | ELT2CM122Q40KT |
| | | 35x30 | 0.15 | 2.86 | ELT2CM122R30KT |
| | 1500 | 25x50 | 0.15 | 3.08 | ELT2CM152P50KT |
| | | 30x45 | 0.15 | 3.17 | ELT2CM152Q45KT |
| | 1800 | 35x35 | 0.15 | 3.22 | ELT2CM152R35KT |
| | | 30x50 | 0.15 | 3.53 | ELT2CM182Q50KT |
| | 2200 | 35x40 | 0.15 | 3.66 | ELT2CM182R40KT |
| | | 35x45 | 0.15 | 4.14 | ELT2CM222R45KT |
| 2700 | 35x50 | 0.15 | 4.68 | ELT2CM272R50KT | |
| 180(2L) | 330 | 22x25 | 0.15 | 1.21 | ELT2LM331O25KT |
| | 470 | 22x30 | 0.15 | 1.52 | ELT2LM471O30KT |
| | | 25x25 | 0.15 | 1.52 | ELT2LM471P25KT |
| | 560 | 22x35 | 0.15 | 1.70 | ELT2LM561O35KT |
| | | 25x30 | 0.15 | 1.78 | ELT2LM561P30KT |
| | 680 | 22x40 | 0.15 | 1.91 | ELT2LM681O40KT |
| | | 25x30 | 0.15 | 1.88 | ELT2LM681P30KT |
| | 820 | 22x45 | 0.15 | 1.99 | ELT2LM821O45KT |
| | | 25x35 | 0.15 | 2.16 | ELT2LM821P35KT |
| | | 30x30 | 0.15 | 2.17 | ELT2LM821Q30KT |
| | 1000 | 35x25 | 0.15 | 2.31 | ELT2LM821R25KT |
| | | 22x50 | 0.15 | 2.25 | ELT2LM102O50KT |
| | | 25x45 | 0.15 | 2.47 | ELT2LM102P45KT |
| | 1200 | 30x35 | 0.15 | 2.46 | ELT2LM102Q35KT |
| | | 25x50 | 0.15 | 2.75 | ELT2LM122P50KT |
| | | 30x40 | 0.15 | 2.77 | ELT2LM122Q40KT |
| | 1500 | 35x30 | 0.15 | 2.86 | ELT2LM122R30KT |
| | | 30x50 | 0.15 | 3.22 | ELT2LM152Q50KT |
| | | 35x35 | 0.15 | 3.22 | ELT2LM152R35KT |
| | 1800 | 35x45 | 0.15 | 3.74 | ELT2LM182R45KT |
| 2200 | 35x50 | 0.15 | 4.22 | ELT2LM222R50KT | |

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (Arms/105°C, 120Hz) | Part Number |
|----------|----------|--------------|------|--|----------------|
| 200(2D) | 270 | 22x25 | 0.15 | 1.10 | ELT2DM271O25KT |
| | 390 | 22x30 | 0.15 | 1.38 | ELT2DM391O30KT |
| | | 25x25 | 0.15 | 1.39 | ELT2DM391P25KT |
| | 470 | 22x35 | 0.15 | 1.55 | ELT2DM471O35KT |
| | 560 | 22x40 | 0.15 | 1.73 | ELT2DM561O40KT |
| | | 25x30 | 0.15 | 1.71 | ELT2DM561P30KT |
| | | 30x25 | 0.15 | 1.78 | ELT2DM561Q25KT |
| | 680 | 22x45 | 0.15 | 1.81 | ELT2DM681O45KT |
| | | 25x35 | 0.15 | 1.87 | ELT2DM681P35KT |
| | | 30x30 | 0.15 | 1.98 | ELT2DM681Q30KT |
| | | 35x25 | 0.15 | 2.10 | ELT2DM681R25KT |
| | 820 | 22x50 | 0.15 | 2.18 | ELT2DM821O50KT |
| | | 25x40 | 0.15 | 2.09 | ELT2DM821P40KT |
| | | 30x35 | 0.15 | 2.22 | ELT2DM821Q35KT |
| | 1000 | 25x50 | 0.15 | 2.39 | ELT2DM102P50KT |
| | | 30x40 | 0.15 | 2.53 | ELT2DM102Q40KT |
| | | 35x30 | 0.15 | 2.61 | ELT2DM102R30KT |
| | 1200 | 30x50 | 0.15 | 2.88 | ELT2DM122Q50KT |
| | | 35x35 | 0.15 | 2.88 | ELT2DM122R35KT |
| | 1500 | 35x40 | 0.15 | 3.34 | ELT2DM152R40KT |
| 1800 | 35x50 | 0.15 | 3.82 | ELT2DM182R50KT | |
| 220(2N) | 270 | 22x25 | 0.15 | 1.10 | ELT2NM271O25KT |
| | 330 | 22x30 | 0.15 | 1.19 | ELT2NM331O30KT |
| | 390 | 25x25 | 0.15 | 1.39 | ELT2NM391P25KT |
| | 470 | 22x35 | 0.15 | 1.55 | ELT2NM471O35KT |
| | | 25x30 | 0.15 | 1.56 | ELT2NM471P30KT |
| | | 30x25 | 0.15 | 1.63 | ELT2NM471Q25KT |
| | 560 | 22x40 | 0.15 | 1.73 | ELT2NM561O40KT |
| | | 30x30 | 0.15 | 1.79 | ELT2NM561Q30KT |
| | | 22x50 | 0.15 | 1.99 | ELT2NM681O50KT |
| | 680 | 25x35 | 0.15 | 1.96 | ELT2NM681P35KT |
| | | 30x35 | 0.15 | 2.02 | ELT2NM681Q35KT |
| | | 35x25 | 0.15 | 2.10 | ELT2NM681R25KT |
| | | 25x45 | 0.15 | 2.24 | ELT2NM821P45KT |
| | 820 | 30x40 | 0.15 | 2.29 | ELT2NM821Q40KT |
| | | 35x30 | 0.15 | 2.36 | ELT2NM821R30KT |
| | | 25x50 | 0.15 | 2.51 | ELT2NM102P50KT |
| | 1000 | 30x45 | 0.15 | 2.59 | ELT2NM102Q45KT |
| | | 35x35 | 0.15 | 2.63 | ELT2NM102R35KT |
| | | 30x50 | 0.15 | 2.88 | ELT2NM122Q50KT |
| | 1200 | 35x40 | 0.15 | 2.98 | ELT2NM122R40KT |
| 1500 | | 35x45 | 0.15 | 3.41 | ELT2NM152R45KT |
| 1800 | 35x50 | 0.15 | 3.82 | ELT2NM182R50KT | |

Snap-in&Lug Terminal Type

LT series

■ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Size D×L(mm) | tan | Rated ripple current (Arms/105°C, 120Hz) | Part Number |
|----------|----------|--------------|------|--|----------------|
| 250(2E) | 220 | 22×25 | 0.15 | 1.01 | ELT2EM221O25KT |
| | 270 | 22×30 | 0.15 | 1.20 | ELT2EM271O30KT |
| | 330 | 25×25 | 0.15 | 1.32 | ELT2EM331P25KT |
| | 390 | 22×35 | 0.15 | 1.44 | ELT2EM391O35KT |
| | | 25×30 | 0.15 | 1.43 | ELT2EM391P30KT |
| | | 30×25 | 0.15 | 1.51 | ELT2EM391Q25KT |
| | 470 | 22×40 | 0.15 | 1.62 | ELT2EM471O40KT |
| | 560 | 22×50 | 0.15 | 1.84 | ELT2EM561O50KT |
| | | 25×35 | 0.15 | 1.78 | ELT2EM561P35KT |
| | | 30×30 | 0.15 | 1.83 | ELT2EM561Q30KT |
| | | 35×25 | 0.15 | 1.91 | ELT2EM561R25KT |
| | 680 | 25×45 | 0.15 | 2.04 | ELT2EM681P45KT |
| | | 30×35 | 0.15 | 2.06 | ELT2EM681Q35KT |
| | | 35×30 | 0.15 | 2.15 | ELT2EM681R30KT |
| | 820 | 25×50 | 0.15 | 2.28 | ELT2EM821P50KT |
| | | 30×45 | 0.15 | 2.39 | ELT2EM821Q45KT |
| | | 35×35 | 0.15 | 2.38 | ELT2EM821R35KT |
| | 1000 | 30×50 | 0.15 | 2.68 | ELT2EM102Q50KT |
| | | 35×40 | 0.15 | 2.72 | ELT2EM102R40KT |
| | 1200 | 35×45 | 0.15 | 3.05 | ELT2EM122R45KT |
| 1500 | 35×50 | 0.15 | 3.49 | ELT2EM152R50KT | |
| 315(2F) | 150 | 22×25 | 0.15 | 0.80 | ELT2FM151O25KT |
| | 180 | 22×30 | 0.15 | 0.92 | ELT2FM181O30KT |
| | | 25×25 | 0.15 | 0.94 | ELT2FM181P25KT |
| | 220 | 22×35 | 0.15 | 1.04 | ELT2FM221O35KT |
| | | 30×25 | 0.15 | 1.17 | ELT2FM221Q25KT |
| | 270 | 22×40 | 0.15 | 1.18 | ELT2FM271O40KT |
| | | 25×30 | 0.15 | 1.19 | ELT2FM271P30KT |
| | 330 | 22×45 | 0.15 | 1.33 | ELT2FM331O45KT |
| | | 25×35 | 0.15 | 1.37 | ELT2FM331P35KT |
| | | 30×30 | 0.15 | 1.40 | ELT2FM331Q30KT |
| | | 35×25 | 0.15 | 1.49 | ELT2FM331R25KT |
| | 390 | 22×50 | 0.15 | 1.48 | ELT2FM391O50KT |
| | | 25×40 | 0.15 | 1.52 | ELT2FM391P40KT |
| | 470 | 25×45 | 0.15 | 1.70 | ELT2FM471P45KT |
| | | 30×35 | 0.15 | 1.71 | ELT2FM471Q35KT |
| | | 35×30 | 0.15 | 1.82 | ELT2FM471R30KT |
| | 560 | 25×50 | 0.15 | 1.88 | ELT2FM561P50KT |
| | | 30×45 | 0.15 | 1.97 | ELT2FM561Q45KT |
| | | 35×35 | 0.15 | 2.00 | ELT2FM561R35KT |
| | 680 | 30×50 | 0.15 | 2.21 | ELT2FM681Q50KT |
| 35×40 | | 0.15 | 2.29 | ELT2FM681R40KT | |
| 820 | 35×45 | 0.15 | 2.57 | ELT2FM821R45KT | |
| 1000 | 35×50 | 0.15 | 2.89 | ELT2FM102R50KT | |

| WV (Vdc) | Cap (μF) | Size D×L(mm) | tan | Rated ripple current (Arms/105°C, 120Hz) | Part Number |
|----------|----------|--------------|------|--|----------------|
| 350(2V) | 120 | 22×25 | 0.15 | 0.72 | ELT2VM121O25KT |
| | 150 | 22×30 | 0.15 | 0.84 | ELT2VM151O30KT |
| | 180 | 25×25 | 0.15 | 0.94 | ELT2VM181P25KT |
| | 220 | 22×40 | 0.15 | 1.06 | ELT2VM221O40KT |
| | | 25×30 | 0.15 | 1.07 | ELT2VM221P30KT |
| | | 30×25 | 0.15 | 1.13 | ELT2VM221Q25KT |
| | 270 | 22×45 | 0.15 | 1.20 | ELT2VM271O45KT |
| | | 25×35 | 0.15 | 1.24 | ELT2VM271P35KT |
| | | 30×30 | 0.15 | 1.27 | ELT2VM271Q30KT |
| | | 35×25 | 0.15 | 1.35 | ELT2VM271R25KT |
| | 330 | 22×50 | 0.15 | 1.36 | ELT2VM331O50KT |
| | | 25×40 | 0.15 | 1.39 | ELT2VM331P40KT |
| | | 30×35 | 0.15 | 1.43 | ELT2VM331Q35KT |
| | 390 | 25×45 | 0.15 | 1.55 | ELT2VM391P45KT |
| | | 30×40 | 0.15 | 1.60 | ELT2VM391Q40KT |
| | | 35×30 | 0.15 | 1.66 | ELT2VM391R30KT |
| | 470 | 25×50 | 0.15 | 1.72 | ELT2VM471P50KT |
| | | 30×45 | 0.15 | 1.81 | ELT2VM471Q45KT |
| | | 35×35 | 0.15 | 1.83 | ELT2VM471R35KT |
| | 560 | 30×50 | 0.15 | 2.00 | ELT2VM561Q50KT |
| 35×40 | | 0.15 | 2.07 | ELT2VM561R40KT | |
| 680 | 35×45 | 0.15 | 2.34 | ELT2VM681R45KT | |
| 820 | 35×50 | 0.15 | 2.62 | ELT2VM821R50KT | |
| 400(2G) | 100 | 22×25 | 0.15 | 0.66 | ELT2GM101O25KT |
| | 120 | 22×30 | 0.15 | 0.75 | ELT2GM121O30KT |
| | 150 | 22×35 | 0.15 | 0.86 | ELT2GM151O35KT |
| | | 25×25 | 0.15 | 0.86 | ELT2GM151P25KT |
| | 180 | 22×40 | 0.15 | 0.96 | ELT2GM181O40KT |
| | | 25×30 | 0.15 | 0.97 | ELT2GM181P30KT |
| | | 30×25 | 0.15 | 1.02 | ELT2GM181Q25KT |
| | 220 | 22×45 | 0.15 | 1.09 | ELT2GM221O45KT |
| | | 25×35 | 0.15 | 1.12 | ELT2GM221P35KT |
| | 270 | 30×25 | 0.15 | 1.22 | ELT2GM221Q25KT |
| | | 22×50 | 0.15 | 1.23 | ELT2GM271O50KT |
| | | 25×45 | 0.15 | 1.29 | ELT2GM271P45KT |
| | 330 | 30×30 | 0.15 | 1.27 | ELT2GM271Q30KT |
| | | 25×50 | 0.15 | 1.44 | ELT2GM331P50KT |
| | | 30×35 | 0.15 | 1.43 | ELT2GM331Q35KT |
| | 390 | 35×30 | 0.15 | 1.52 | ELT2GM331R30KT |
| | | 30×40 | 0.15 | 1.60 | ELT2GM391Q40KT |
| | 470 | 35×35 | 0.15 | 1.67 | ELT2GM391R35KT |
| | | 30×50 | 0.15 | 1.84 | ELT2GM471Q50KT |
| | 560 | 35×40 | 0.15 | 1.90 | ELT2GM471R40KT |
| 35×45 | | 0.15 | 2.12 | ELT2GM561R45KT | |
| 680 | 35×50 | 0.15 | 2.39 | ELT2GM681R50KT | |

LT series

■ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (Arms/105°C, 120Hz) | Part Number |
|----------|----------|--------------|------|--|----------------|
| 420(2T) | 100 | 22x25 | 0.20 | 0.66 | ELT2TM101O25KT |
| | 120 | 22x30 | 0.20 | 0.75 | ELT2TM121O30KT |
| | | 25x25 | 0.20 | 0.77 | ELT2TM121P25KT |
| | 150 | 22x35 | 0.20 | 0.86 | ELT2TM151O35KT |
| | 180 | 22x45 | 0.20 | 0.98 | ELT2TM181O45KT |
| | | 25x35 | 0.20 | 1.01 | ELT2TM181P35KT |
| | | 30x25 | 0.20 | 1.02 | ELT2TM181Q25KT |
| | 220 | 22x50 | 0.20 | 1.11 | ELT2TM221O50KT |
| | | 25x40 | 0.20 | 1.14 | ELT2TM221P40KT |
| | | 30x30 | 0.20 | 1.14 | ELT2TM221Q30KT |
| | 270 | 35x25 | 0.20 | 1.22 | ELT2TM221R25KT |
| | | 25x45 | 0.20 | 1.29 | ELT2TM271P45KT |
| | | 30x35 | 0.20 | 1.30 | ELT2TM271Q35KT |
| | | 35x30 | 0.20 | 1.38 | ELT2TM271R30KT |
| | 330 | 25x50 | 0.20 | 1.44 | ELT2TM331P50KT |
| | | 30x40 | 0.20 | 1.48 | ELT2TM331Q40KT |
| | | 35x35 | 0.20 | 1.54 | ELT2TM331R35KT |
| | 390 | 30x45 | 0.20 | 1.64 | ELT2TM391Q45KT |
| | | 35x40 | 0.20 | 1.73 | ELT2TM391R40KT |
| | 470 | 30x50 | 0.20 | 1.84 | ELT2TM471Q50KT |
| 35x45 | | 0.20 | 1.94 | ELT2TM471R45KT | |
| 560 | 35x50 | 0.20 | 2.17 | ELT2TM561R50KT | |
| 450(2W) | 82 | 22x25 | 0.20 | 0.59 | ELT2WM820O25KT |
| | 100 | 22x30 | 0.20 | 0.69 | ELT2WM101O30KT |
| | | 25x25 | 0.20 | 0.70 | ELT2WM101P25KT |
| | 120 | 22x35 | 0.20 | 0.77 | ELT2WM121O35KT |
| | 150 | 22x45 | 0.20 | 0.90 | ELT2WM151O45KT |
| | | 25x35 | 0.20 | 0.92 | ELT2WM151P35KT |
| | | 30x25 | 0.20 | 0.93 | ELT2WM151Q25KT |
| | 180 | 22x50 | 0.20 | 1.01 | ELT2WM181O50KT |
| | | 25x40 | 0.20 | 1.03 | ELT2WM181P40KT |
| | | 30x30 | 0.20 | 1.03 | ELT2WM181Q30KT |
| 35x25 | | 0.20 | 1.10 | ELT2WM181R25KT | |

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (Arms/105°C, 120Hz) | Part Number |
|----------|----------|--------------|------|--|----------------|
| 450(2W) | 220 | 25x45 | 0.20 | 1.16 | ELT2WM221P45KT |
| | | 30x35 | 0.20 | 1.17 | ELT2WM221Q35KT |
| | | 35x30 | 0.20 | 1.24 | ELT2WM221R30KT |
| | 270 | 25x50 | 0.20 | 1.31 | ELT2WM271P50KT |
| | | 30x40 | 0.20 | 1.33 | ELT2WM271Q40KT |
| | | 35x35 | 0.20 | 1.39 | ELT2WM271R35KT |
| | 330 | 30x45 | 0.20 | 1.51 | ELT2WM331Q45KT |
| | 390 | 30x50 | 0.20 | 1.67 | ELT2WM391Q50KT |
| | | 35x45 | 0.20 | 1.77 | ELT2WM391R45KT |
| | 470 | 35x50 | 0.20 | 1.98 | ELT2WM471R50KT |
| 500(2H) | 100 | 30x25 | 0.20 | 0.82 | ELT2HM101Q25KT |
| | 120 | 30x30 | 0.20 | 0.91 | ELT2HM121Q30KT |
| | | 35x25 | 0.20 | 0.88 | ELT2HM121R25KT |
| | 150 | 30x35 | 0.20 | 1.04 | ELT2HM151Q35KT |
| | 180 | 30x40 | 0.20 | 1.17 | ELT2HM181Q40KT |
| | | 35x30 | 0.20 | 1.10 | ELT2HM181R30KT |
| | 220 | 30x45 | 0.20 | 1.33 | ELT2HM221Q45KT |
| | | 35x35 | 0.20 | 1.23 | ELT2HM221R35KT |
| | 270 | 30x50 | 0.20 | 1.50 | ELT2HM271Q50KT |
| | | 35x40 | 0.20 | 1.42 | ELT2HM271R40KT |
| 330 | 35x45 | 0.20 | 1.60 | ELT2HM331R45KT | |
| 390 | 35x50 | 0.20 | 1.78 | ELT2HM391R50KT | |
| | 470 | 35x60 | 0.20 | 2.03 | ELT2HM471R60KT |
| 550(2J) | 120 | 30x30 | 0.20 | 0.91 | ELT2JM121Q30KT |
| | 150 | 30x35 | 0.20 | 1.04 | ELT2JM151Q35KT |
| | 180 | 30x40 | 0.20 | 1.17 | ELT2JM181Q40KT |
| | | 35x30 | 0.20 | 1.10 | ELT2JM181R30KT |
| | 220 | 30x50 | 0.20 | 1.35 | ELT2JM221Q50KT |
| | | 35x40 | 0.20 | 1.28 | ELT2JM221R40KT |
| | 270 | 35x45 | 0.20 | 1.45 | ELT2JM271R45KT |
| | 330 | 35x50 | 0.20 | 1.64 | ELT2JM331R50KT |
| | 390 | 35x60 | 0.20 | 1.85 | ELT2JM391R60KT |

Snap-in&Lug Terminal Type

LX series

- Extremely long life
- Endurance: 7,000 hours at 105°C
- RoHS Compliant

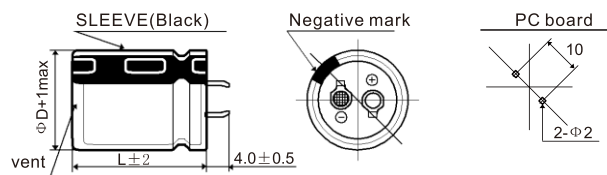


SPECIFICATIONS

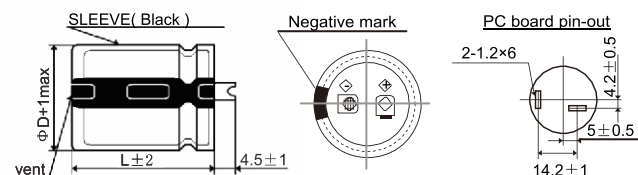
| Items | Characteristics | | |
|--|---|-------------------------------------|---------|
| Category Temperature Range | -25~+105°C | | |
| Rated Voltage Range | 160~450V.DC | | |
| Capacitance Tolerance | ±20%(M) (at 20°C,120Hz) | | |
| Leakage Current | $I \leq 3\sqrt{CV}$ Where, I:Max.leakage current (µA),C:Nominal capacitance (µF),V: Rated voltage (V) (at 20°C after 5 minutes) | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 160~400 | 420~450 |
| | tan δ (max.) | 0.15 | 0.20 |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) | 160~400 | 420~450 |
| | Z(-25°C)/Z(+20°C) | 4 | 8 |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 20°C after DC voltage plus the rated ripple current is applied for 7,000 hours at 105 °C. | | |
| | Capacitance Change | ±20% of the initial value | |
| | D.F. (tan δ) | 250% of the initial specified value | |
| | Leakage Current | The initial specified value | |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 105°C without voltage applied. | | |
| | Capacitance Change | ±15% of the initial value | |
| | D.F. (tan δ) | 150% of the initial specified value | |
| | Leakage Current | 150% of the initial specified value | |

DIMENSIONS[mm]

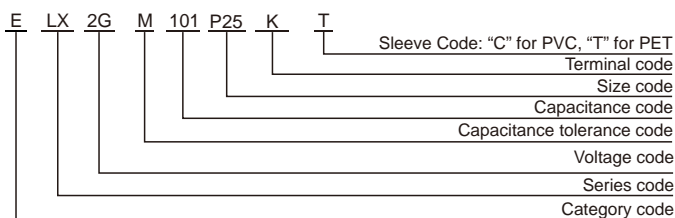
- Terminal Code : K (22 to 35) : Standard



- Terminal Code : L (35)



PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| Rated voltage(V _{dc}) \ Freq.(Hz) | 120 | 1k | 10k | 100k |
|---|------|------|------|------|
| 160~250 | 1.00 | 1.32 | 1.45 | 1.50 |
| 315~450 | 1.00 | 1.30 | 1.41 | 1.43 |

The endurance of capacitors is shortened with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

LX series

■ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (Arms/105°C, 120Hz) | Part Number |
|----------|----------|--------------|------|--|----------------|
| 160(2C) | 330 | 22x25 | 0.15 | 1.11 | ELX2CM331O25KT |
| | 390 | 22x30 | 0.15 | 1.26 | ELX2CM391O30KT |
| | 470 | 22x30 | 0.15 | 1.39 | ELX2CM471O30KT |
| | | 25x25 | 0.15 | 1.38 | ELX2CM471P25KT |
| | 560 | 22x35 | 0.15 | 1.55 | ELX2CM561O35KT |
| | | 25x30 | 0.15 | 1.55 | ELX2CM561P30KT |
| | 680 | 22x40 | 0.15 | 1.75 | ELX2CM681O40KT |
| | | 25x35 | 0.15 | 1.78 | ELX2CM681P35KT |
| | | 30x25 | 0.15 | 1.74 | ELX2CM681Q25KT |
| | 820 | 22x50 | 0.15 | 1.97 | ELX2CM821O50KT |
| | | 25x40 | 0.15 | 2.01 | ELX2CM821P40KT |
| | | 30x30 | 0.15 | 1.96 | ELX2CM821Q30KT |
| | 1000 | 25x45 | 0.15 | 2.27 | ELX2CM102P45KT |
| | | 30x35 | 0.15 | 2.26 | ELX2CM102Q35KT |
| | | 25x50 | 0.15 | 2.54 | ELX2CM122P50KT |
| | 1200 | 30x40 | 0.15 | 2.56 | ELX2CM122Q40KT |
| | | 35x30 | 0.15 | 2.52 | ELX2CM122R30KT |
| | | 30x45 | 0.15 | 2.96 | ELX2CM152Q45KT |
| | 1500 | 35x35 | 0.15 | 2.89 | ELX2CM152R35KT |
| | | 30x50 | 0.15 | 3.32 | ELX2CM182Q50KT |
| 1800 | 35x40 | 0.15 | 3.30 | ELX2CM182R40KT | |
| | 2200 | 35x50 | 0.15 | 3.87 | ELX2CM222R50KT |
| 180(2L) | 270 | 22x25 | 0.15 | 1.00 | ELX2LM271O25KT |
| | 330 | 22x30 | 0.15 | 1.16 | ELX2LM331O30KT |
| | 390 | 22x30 | 0.15 | 1.26 | ELX2LM391O30KT |
| | | 25x25 | 0.15 | 1.26 | ELX2LM391P25KT |
| | 470 | 22x35 | 0.15 | 1.42 | ELX2LM471O35KT |
| | | 25x30 | 0.15 | 1.42 | ELX2LM471P30KT |
| | 560 | 22x40 | 0.15 | 1.59 | ELX2LM561O40KT |
| | | 25x30 | 0.15 | 1.55 | ELX2LM561P30KT |
| | 680 | 30x25 | 0.15 | 1.58 | ELX2LM561Q25KT |
| | | 22x45 | 0.15 | 1.79 | ELX2LM681O45KT |
| | | 25x35 | 0.15 | 1.78 | ELX2LM681P35KT |
| | 820 | 30x30 | 0.15 | 1.79 | ELX2LM681Q30KT |
| | | 25x40 | 0.15 | 2.01 | ELX2LM821P40KT |
| | | 30x35 | 0.15 | 2.04 | ELX2LM821Q35KT |
| | 1000 | 25x50 | 0.15 | 2.32 | ELX2LM102P50KT |
| | | 30x35 | 0.15 | 2.26 | ELX2LM102Q35KT |
| | | 35x30 | 0.15 | 2.30 | ELX2LM102R30KT |
| | 1200 | 30x45 | 0.15 | 2.65 | ELX2LM122Q45KT |
| | | 35x35 | 0.15 | 2.58 | ELX2LM122R35KT |
| | | 30x50 | 0.15 | 3.03 | ELX2LM152Q50KT |
| 1500 | 35x40 | 0.15 | 3.01 | ELX2LM152R40KT | |
| | 1800 | 35x45 | 0.15 | 3.41 | ELX2LM182R45KT |
| 2200 | 35x50 | 0.15 | 3.87 | ELX2LM222R50KT | |
| 200(2D) | 220 | 22x25 | 0.15 | 0.90 | ELX2DM221O25KT |
| | 270 | 22x30 | 0.15 | 1.05 | ELX2DM271O30KT |
| | | 22x30 | 0.15 | 1.16 | ELX2DM331O30KT |
| | 330 | 25x25 | 0.15 | 1.16 | ELX2DM331P25KT |
| | | 22x35 | 0.15 | 1.29 | ELX2DM391O35KT |
| | 390 | 25x30 | 0.15 | 1.29 | ELX2DM391P30KT |
| | | 22x40 | 0.15 | 1.46 | ELX2DM471O40KT |
| | 470 | 25x30 | 0.15 | 1.42 | ELX2DM471P30KT |
| | | 30x25 | 0.15 | 1.45 | ELX2DM471Q25KT |
| | | 22x45 | 0.15 | 1.63 | ELX2DM561O45KT |
| | 560 | 25x35 | 0.15 | 1.62 | ELX2DM561P35KT |
| | | 30x30 | 0.15 | 1.62 | ELX2DM561Q30KT |

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (Arms/105°C, 120Hz) | Part Number |
|----------|----------|--------------|-------|--|----------------|
| 200(2D) | 680 | 25x40 | 0.15 | 1.83 | ELX2DM681P40KT |
| | | 30x30 | 0.15 | 1.79 | ELX2DM681Q30KT |
| | 820 | 25x45 | 0.15 | 2.06 | ELX2DM821P45KT |
| | | 30x35 | 0.15 | 2.04 | ELX2DM821Q35KT |
| | 1000 | 30x45 | 0.15 | 2.42 | ELX2DM102Q45KT |
| | | 35x30 | 0.15 | 2.30 | ELX2DM102R30KT |
| | | 30x50 | 0.15 | 2.71 | ELX2DM122Q50KT |
| | 1200 | 35x40 | 0.15 | 2.70 | ELX2DM122R40KT |
| | | 1500 | 35x45 | 0.15 | 3.11 |
| | 1800 | 35x50 | 0.15 | 3.50 | ELX2DM182R50KT |
| 220(2N) | 220 | 22x25 | 0.15 | 0.90 | ELX2NM221O25KT |
| | 270 | 22x30 | 0.15 | 1.05 | ELX2NM271O30KT |
| | 330 | 22x35 | 0.15 | 1.19 | ELX2NM331O35KT |
| | | 25x25 | 0.15 | 1.16 | ELX2NM331P25KT |
| | 390 | 22x40 | 0.15 | 1.33 | ELX2NM391O40KT |
| | | 25x30 | 0.15 | 1.29 | ELX2NM391P30KT |
| | 470 | 22x45 | 0.15 | 1.49 | ELX2NM471O45KT |
| | | 25x35 | 0.15 | 1.48 | ELX2NM471P35KT |
| | | 30x25 | 0.15 | 1.45 | ELX2NM471Q25KT |
| | 560 | 22x50 | 0.15 | 1.63 | ELX2NM561O50KT |
| | | 25x40 | 0.15 | 1.71 | ELX2NM561P40KT |
| | | 30x30 | 0.15 | 1.62 | ELX2NM561Q30KT |
| | | 25x45 | 0.15 | 1.87 | ELX2NM681P45KT |
| | | 30x35 | 0.15 | 1.86 | ELX2NM681Q35KT |
| | | 25x50 | 0.15 | 2.10 | ELX2NM821P50KT |
| 820 | 30x40 | 0.15 | 2.12 | ELX2NM821Q40KT | |
| | 35x30 | 0.15 | 2.08 | ELX2NM821R30KT | |
| | 30x50 | 0.15 | 2.48 | ELX2NM102Q50KT | |
| 1000 | 35x40 | 0.15 | 2.46 | ELX2NM102R40KT | |
| | 1200 | 35x45 | 0.15 | 2.78 | ELX2NM122R45KT |
| | 1500 | 35x50 | 0.15 | 3.20 | ELX2NM152R50KT |
| 250(2E) | 180 | 22x25 | 0.15 | 0.82 | ELX2EM181O25KT |
| | 220 | 22x30 | 0.15 | 0.95 | ELX2EM221O30KT |
| | | 22x35 | 0.15 | 1.08 | ELX2EM271O35KT |
| | 270 | 25x25 | 0.15 | 1.05 | ELX2EM271P25KT |
| | | 22x40 | 0.15 | 1.22 | ELX2EM331O40KT |
| | 330 | 25x30 | 0.15 | 1.19 | ELX2EM331P30KT |
| | | 22x45 | 0.15 | 1.36 | ELX2EM391O45KT |
| | 390 | 25x35 | 0.15 | 1.35 | ELX2EM391P35KT |
| | | 30x25 | 0.15 | 1.32 | ELX2EM391Q25KT |
| | | 22x50 | 0.15 | 1.49 | ELX2EM471O50KT |
| | 470 | 25x40 | 0.15 | 1.52 | ELX2EM471P40KT |
| | | 30x30 | 0.15 | 1.49 | ELX2EM471Q30KT |
| | | 25x45 | 0.15 | 1.70 | ELX2EM561P45KT |
| | 560 | 30x35 | 0.15 | 1.69 | ELX2EM561Q35KT |
| | | 25x50 | 0.15 | 1.91 | ELX2EM681P50KT |
| | | 30x40 | 0.15 | 1.93 | ELX2EM681Q40KT |
| | 680 | 35x30 | 0.15 | 1.90 | ELX2EM681R30KT |
| | | 30x45 | 0.15 | 2.19 | ELX2EM821Q45KT |
| 35x35 | | 0.15 | 2.13 | ELX2EM821R35KT | |
| 1000 | 35x40 | 0.15 | 2.46 | ELX2EM102R40KT | |
| | 1200 | 35x50 | 0.15 | 2.86 | ELX2EM122R50KT |
| 315(2F) | 100 | 22x25 | 0.15 | 0.67 | ELX2FM101O25KT |
| | 120 | 22x30 | 0.15 | 0.77 | ELX2FM121O30KT |
| | 150 | 22x30 | 0.15 | 0.86 | ELX2FM151O30KT |
| 25x25 | | 0.15 | 0.85 | ELX2FM151P25KT | |

Snap-in&Lug Terminal Type

LX series

■ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (Arms/105°C, 120Hz) | Part Number | |
|----------|----------|--------------|-------|--|----------------|----------------|
| 315(2F) | 180 | 22x35 | 0.15 | 0.96 | ELX2FM181O35KT | |
| | | 25x30 | 0.15 | 0.96 | ELX2FM181P30KT | |
| | 220 | 220 | 22x40 | 0.15 | 1.09 | ELX2FM221O40KT |
| | | | 25x30 | 0.15 | 1.06 | ELX2FM221P30KT |
| | | 30x25 | 0.15 | 1.08 | ELX2FM221Q25KT | |
| | 270 | 220 | 22x45 | 0.15 | 1.24 | ELX2FM271O45KT |
| | | | 25x35 | 0.15 | 1.23 | ELX2FM271P35KT |
| | | 30x30 | 0.15 | 1.23 | ELX2FM271Q30KT | |
| | 330 | 250 | 25x40 | 0.15 | 1.40 | ELX2FM331P40KT |
| | | | 30x35 | 0.15 | 1.42 | ELX2FM331Q35KT |
| | | 35x30 | 0.15 | 1.45 | ELX2FM331R30KT | |
| | 390 | 250 | 25x50 | 0.15 | 1.59 | ELX2FM391P50KT |
| | | | 30x35 | 0.15 | 1.54 | ELX2FM391Q35KT |
| | | 35x30 | 0.15 | 1.57 | ELX2FM391R35KT | |
| | 470 | 300 | 30x45 | 0.15 | 1.81 | ELX2FM471Q45KT |
| | | | 35x35 | 0.15 | 1.77 | ELX2FM471R35KT |
| | 560 | 300 | 30x50 | 0.15 | 2.03 | ELX2FM561Q50KT |
| | | | 35x40 | 0.15 | 2.02 | ELX2FM561R40KT |
| | 680 | 350 | 35x45 | 0.15 | 2.29 | ELX2FM681R45KT |
| | 820 | 350 | 35x50 | 0.15 | 2.59 | ELX2FM821R50KT |
| 350(2V) | 100 | 22x25 | 0.15 | 0.67 | ELX2VM101O25KT | |
| | | 22x30 | 0.15 | 0.77 | ELX2VM121O30KT | |
| | 120 | 250 | 25x25 | 0.15 | 0.76 | ELX2VM121P25KT |
| | | | 22x35 | 0.15 | 0.88 | ELX2VM151O35KT |
| | 150 | 250 | 25x30 | 0.15 | 0.88 | ELX2VM151P30KT |
| | | | 22x40 | 0.15 | 0.99 | ELX2VM181O40KT |
| | 180 | 250 | 25x30 | 0.15 | 0.96 | ELX2VM181P30KT |
| | | | 30x25 | 0.15 | 0.98 | ELX2VM181Q25KT |
| | | 22x45 | 0.15 | 1.12 | ELX2VM221O45KT | |
| | 220 | 250 | 25x35 | 0.15 | 1.11 | ELX2VM221P35KT |
| | | | 30x30 | 0.15 | 1.11 | ELX2VM221Q30KT |
| | | 25x40 | 0.15 | 1.26 | ELX2VM271P40KT | |
| | 270 | 300 | 30x35 | 0.15 | 1.28 | ELX2VM271Q35KT |
| | | | 25x45 | 0.15 | 1.40 | ELX2VM331P45KT |
| | 330 | 300 | 30x35 | 0.15 | 1.42 | ELX2VM331Q35KT |
| | | | 35x30 | 0.15 | 1.45 | ELX2VM331R30KT |
| | | 30x40 | 0.15 | 1.60 | ELX2VM391Q40KT | |
| | 390 | 350 | 35x35 | 0.15 | 1.61 | ELX2VM391R35KT |
| | | | 30x50 | 0.15 | 1.86 | ELX2VM471Q50KT |
| | 470 | 350 | 35x40 | 0.15 | 1.85 | ELX2VM471R40KT |
| 560 | | | 350 | 35x40 | 0.15 | 2.02 |
| 680 | 350 | 35x50 | 0.15 | 2.36 | ELX2VM681R50KT | |
| 400(2G) | 68 | 22x25 | 0.15 | 0.55 | ELX2GM680O25KT | |
| | | 82 | 22x30 | 0.15 | 0.63 | ELX2GM820O30KT |
| | 100 | 220 | 22x30 | 0.15 | 0.70 | ELX2GM101O30KT |
| | | | 25x25 | 0.15 | 0.70 | ELX2GM101P25KT |
| | 120 | 220 | 22x35 | 0.15 | 0.79 | ELX2GM121O35KT |
| | | | 25x30 | 0.15 | 0.79 | ELX2GM121P30KT |
| | 150 | 220 | 22x40 | 0.15 | 0.90 | ELX2GM151O40KT |
| | | | 25x30 | 0.15 | 0.88 | ELX2GM151P30KT |
| | | 30x25 | 0.15 | 0.90 | ELX2GM151Q25KT | |
| | 180 | 220 | 22x45 | 0.15 | 0.99 | ELX2GM181O45KT |
| | | | 25x35 | 0.15 | 1.01 | ELX2GM181P35KT |
| | | 30x30 | 0.15 | 1.01 | ELX2GM181Q30KT | |
| | 220 | 250 | 25x40 | 0.15 | 1.14 | ELX2GM221P40KT |
| | | | 30x35 | 0.15 | 1.16 | ELX2GM221Q35KT |

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (Arms/105°C, 120Hz) | Part Number | |
|----------|----------|--------------|-------|--|----------------|----------------|
| 400(2G) | 270 | 25x50 | 0.15 | 1.32 | ELX2GM271P50KT | |
| | | 30x40 | 0.15 | 1.33 | ELX2GM271Q40KT | |
| | | 35x30 | 0.15 | 1.31 | ELX2GM271R30KT | |
| | 330 | 300 | 30x45 | 0.15 | 1.52 | ELX2GM331Q45KT |
| | | | 35x35 | 0.15 | 1.48 | ELX2GM331R35KT |
| | | 30x50 | 0.15 | 1.69 | ELX2GM391Q50KT | |
| | 390 | 350 | 35x40 | 0.15 | 1.68 | ELX2GM391R40KT |
| | | | 470 | 350 | 35x45 | 0.15 |
| | 560 | 350 | 35x50 | 0.15 | 2.14 | ELX2GM561R50KT |
| | 420(2T) | 56 | 22x25 | 0.20 | 0.50 | ELX2TM560O25KT |
| 68 | | | 22x30 | 0.20 | 0.58 | ELX2TM680O30KT |
| 82 | | 220 | 22x30 | 0.20 | 0.63 | ELX2TM820O30KT |
| | | | 25x25 | 0.20 | 0.63 | ELX2TM820P25KT |
| 100 | | 220 | 22x35 | 0.20 | 0.72 | ELX2TM101O35KT |
| | | | 25x30 | 0.20 | 0.72 | ELX2TM101P30KT |
| 120 | | 220 | 22x40 | 0.20 | 0.81 | ELX2TM121O40KT |
| | | | 25x30 | 0.20 | 0.79 | ELX2TM121P30KT |
| | | 30x25 | 0.20 | 0.80 | ELX2TM121Q25KT | |
| 150 | | 220 | 22x45 | 0.20 | 0.92 | ELX2TM151O45KT |
| | | | 25x35 | 0.20 | 0.92 | ELX2TM151P35KT |
| | | 30x30 | 0.20 | 0.92 | ELX2TM151Q30KT | |
| 180 | | 250 | 25x40 | 0.20 | 1.03 | ELX2TM181P40KT |
| | | | 30x35 | 0.20 | 1.05 | ELX2TM181Q35KT |
| | | 25x50 | 0.20 | 1.19 | ELX2TM221P50KT | |
| 220 | | 300 | 30x35 | 0.20 | 1.16 | ELX2TM221Q35KT |
| | | | 35x30 | 0.20 | 1.18 | ELX2TM221R30KT |
| | | 30x45 | 0.20 | 1.38 | ELX2TM271Q45KT | |
| 270 | | 350 | 35x35 | 0.20 | 1.34 | ELX2TM271R35KT |
| | | | 30x50 | 0.20 | 1.56 | ELX2TM331Q50KT |
| 330 | 350 | 35x40 | 0.20 | 1.55 | ELX2TM331R40KT | |
| | | 390 | 350 | 35x45 | 0.20 | 1.74 |
| 470 | 350 | 35x50 | 0.20 | 1.96 | ELX2TM471R50KT | |
| 450(2W) | 47 | 22x25 | 0.20 | 0.46 | ELX2WM470O25KT | |
| | | 56 | 22x30 | 0.20 | 0.52 | ELX2WM560O30KT |
| | 68 | 220 | 22x30 | 0.20 | 0.58 | ELX2WM680O30KT |
| | | | 25x25 | 0.20 | 0.58 | ELX2WM680P25KT |
| | 82 | 220 | 22x35 | 0.20 | 0.65 | ELX2WM820O35KT |
| | | | 25x30 | 0.20 | 0.65 | ELX2WM820P30KT |
| | 100 | 220 | 22x40 | 0.20 | 0.74 | ELX2WM101O40KT |
| | | | 25x30 | 0.20 | 0.72 | ELX2WM101P30KT |
| | | 30x25 | 0.20 | 0.73 | ELX2WM101Q25KT | |
| | 120 | 220 | 22x45 | 0.20 | 0.83 | ELX2WM121O45KT |
| | | | 25x35 | 0.20 | 0.82 | ELX2WM121P35KT |
| | | 30x30 | 0.20 | 0.82 | ELX2WM121Q30KT | |
| | 150 | 250 | 25x40 | 0.20 | 0.94 | ELX2WM151P40KT |
| | | | 30x35 | 0.20 | 0.96 | ELX2WM151Q35KT |
| | 180 | 250 | 25x45 | 0.20 | 1.06 | ELX2WM181P45KT |
| | | | 30x35 | 0.20 | 1.05 | ELX2WM181Q35KT |
| | | 35x30 | 0.20 | 1.07 | ELX2WM181R30KT | |
| | 220 | 300 | 30x40 | 0.20 | 1.20 | ELX2WM221Q40KT |
| | | | 35x35 | 0.20 | 1.21 | ELX2WM221R35KT |
| | 270 | 300 | 30x50 | 0.20 | 1.41 | ELX2WM271Q50KT |
| 35x40 | | | 0.20 | 1.40 | ELX2WM271R40KT | |
| 330 | 350 | 35x45 | 0.20 | 1.60 | ELX2WM331R45KT | |
| 390 | 350 | 35x50 | 0.20 | 1.79 | ELX2WM391R50KT | |

LB series

- High reliability. Extremely long life series
- Endurance with ripple current: 10,000 hours at 105°C
- RoHS Compliant

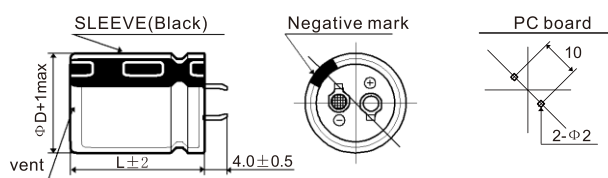


SPECIFICATIONS

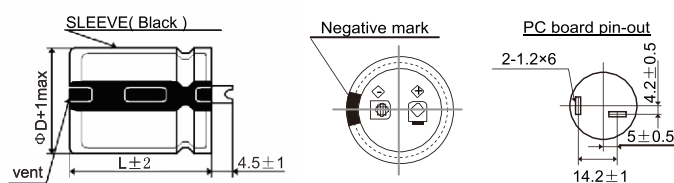
| Items | Characteristics | | |
|--|--|-------------------------------------|------|
| Category Temperature Range | -25~+105°C | | |
| Rated Voltage Range | 200~450V.DC | | |
| Capacitance Tolerance | ±20%(M) (at 20°C,120Hz) | | |
| Leakage Current | $I \leq 3\sqrt{CV}$ Where, I:Max.leakage current (μA),C:Nominal capacitance (μF),V: Rated voltage (V) (at 20°C after 5 minutes) | | |
| Dissipation Factor (tan δ) | Rated Voltage(V _{dc}) | 200~400 | 450 |
| | tan δ (max.) | 0.15 | 0.20 |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V _{dc}) | 200~400 | 450 |
| | Z(-25°C)/Z(+20°C) | 4 | 8 |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 20°C after DC voltage plus the rated ripple current is applied for 10,000 hours at 105 °C. | | |
| | Capacitance Change | ±20% of the initial value | |
| | D.F. (tan δ) | 250% of the initial specified value | |
| | Leakage Current | The initial specified value | |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 105°C without voltage applied. | | |
| | Capacitance Change | ±15% of the initial value | |
| | D.F. (tan δ) | 150% of the initial specified value | |
| | Leakage Current | 200% of the initial specified value | |

DIMENSIONS[mm]

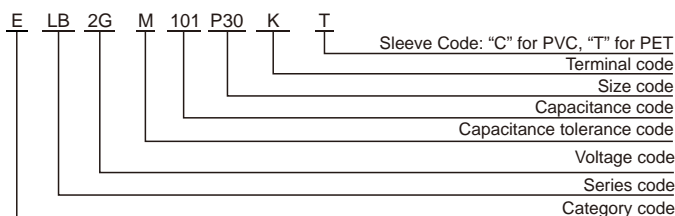
- Terminal Code : K (22 to 35) : Standard



- Terminal Code : L (35)



PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| Rated voltage(V _{dc}) \ Freq.(Hz) | 120 | 1k | 10k | 100k |
|---|------|------|------|------|
| 200, 250 | 1.00 | 1.32 | 1.45 | 1.50 |
| 400, 450 | 1.00 | 1.30 | 1.41 | 1.43 |

The endurance of capacitors is shortened with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

LB series

■ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (Arms/105°C, 120Hz) | Part Number |
|----------|----------|--------------|------|--|----------------|
| 200(2D) | 220 | 22x25 | 0.15 | 1.01 | ELB2DM221O25KT |
| | 270 | 22x30 | 0.15 | 1.09 | ELB2DM271O30KT |
| | | 25x25 | 0.15 | 1.12 | ELB2DM271P25KT |
| | 330 | 22x30 | 0.15 | 1.21 | ELB2DM331O30KT |
| | | 25x25 | 0.15 | 1.21 | ELB2DM331P25KT |
| | 390 | 22x35 | 0.15 | 1.32 | ELB2DM391O35KT |
| | | 25x30 | 0.15 | 1.29 | ELB2DM391P30KT |
| | | 30x25 | 0.15 | 1.31 | ELB2DM391Q25KT |
| | 470 | 22x40 | 0.15 | 1.41 | ELB2DM471O40KT |
| | | 25x35 | 0.15 | 1.42 | ELB2DM471P35KT |
| | | 30x30 | 0.15 | 1.40 | ELB2DM471Q30KT |
| | 560 | 22x45 | 0.15 | 1.52 | ELB2DM561O45KT |
| | | 25x35 | 0.15 | 1.51 | ELB2DM561P35KT |
| | | 30x30 | 0.15 | 1.52 | ELB2DM561Q30KT |
| | 680 | 25x40 | 0.15 | 1.72 | ELB2DM681P40KT |
| | | 30x35 | 0.15 | 1.71 | ELB2DM681Q35KT |
| | 820 | 25x50 | 0.15 | 2.01 | ELB2DM821P50KT |
| | | 30x40 | 0.15 | 2.02 | ELB2DM821Q40KT |
| | | 35x30 | 0.15 | 2.01 | ELB2DM821R30KT |
| | 1000 | 30x45 | 0.15 | 2.20 | ELB2DM102Q45KT |
| 35x35 | | 0.15 | 2.21 | ELB2DM102R35KT | |
| 1200 | 30x50 | 0.15 | 2.32 | ELB2DM122Q50KT | |
| | 35x40 | 0.15 | 2.31 | ELB2DM122R40KT | |
| 1500 | 35x50 | 0.15 | 2.51 | ELB2DM152R50KT | |
| 250(2E) | 180 | 22x30 | 0.15 | 0.91 | ELB2EM181O30KT |
| | | 25x25 | 0.15 | 0.90 | ELB2EM181P25KT |
| | 220 | 22x30 | 0.15 | 1.01 | ELB2EM221O30KT |
| | | 25x25 | 0.15 | 1.00 | ELB2EM221P25KT |
| | 270 | 22x35 | 0.15 | 1.11 | ELB2EM271O35KT |
| | | 25x30 | 0.15 | 1.10 | ELB2EM271P30KT |
| | | 30x25 | 0.15 | 1.12 | ELB2EM271Q25KT |
| | 330 | 22x40 | 0.15 | 1.20 | ELB2EM331O40KT |
| | | 25x35 | 0.15 | 1.21 | ELB2EM331P35KT |
| | | 30x25 | 0.15 | 1.20 | ELB2EM331Q25KT |
| | 390 | 22x45 | 0.15 | 1.30 | ELB2EM391O45KT |
| | | 25x35 | 0.15 | 1.32 | ELB2EM391P35KT |
| | | 30x30 | 0.15 | 1.33 | ELB2EM391Q30KT |
| | 470 | 25x45 | 0.15 | 1.40 | ELB2EM471P45KT |
| | | 30x35 | 0.15 | 1.42 | ELB2EM471Q35KT |
| | | 35x30 | 0.15 | 1.40 | ELB2EM471R30KT |
| | 560 | 25x50 | 0.15 | 1.51 | ELB2EM561P50KT |
| | | 30x35 | 0.15 | 1.50 | ELB2EM561Q35KT |
| | | 35x30 | 0.15 | 1.52 | ELB2EM561R30KT |
| | 680 | 30x45 | 0.15 | 1.72 | ELB2EM681Q45KT |
| 35x35 | | 0.15 | 1.71 | ELB2EM681R35KT | |
| 820 | 30x50 | 0.15 | 2.01 | ELB2EM821Q50KT | |
| | 35x40 | 0.15 | 2.01 | ELB2EM821R40KT | |
| 1000 | 35x45 | 0.15 | 2.22 | ELB2EM102R45KT | |
| 1200 | 35x50 | 0.15 | 2.32 | ELB2EM122R50KT | |

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (Arms/105°C, 120Hz) | Part Number |
|----------|----------|--------------|------|--|----------------|
| 400(2G) | 56 | 22x25 | 0.15 | 0.51 | ELB2GM560O25KT |
| | 68 | 22x30 | 0.15 | 0.55 | ELB2GM680O30KT |
| | | 25x25 | 0.15 | 0.56 | ELB2GM680P25KT |
| | 82 | 22x35 | 0.15 | 0.64 | ELB2GM820O35KT |
| | | 25x25 | 0.15 | 0.65 | ELB2GM820P25KT |
| | 100 | 22x35 | 0.15 | 0.70 | ELB2GM101O35KT |
| | | 25x30 | 0.15 | 0.69 | ELB2GM101P30KT |
| | 120 | 22x40 | 0.15 | 0.75 | ELB2GM121O40KT |
| | | 25x35 | 0.15 | 0.76 | ELB2GM121P35KT |
| | | 30x25 | 0.15 | 0.75 | ELB2GM121Q25KT |
| | 150 | 22x50 | 0.15 | 0.82 | ELB2GM151O50KT |
| | | 25x40 | 0.15 | 0.83 | ELB2GM151P40KT |
| | | 30x30 | 0.15 | 0.82 | ELB2GM151Q30KT |
| | 180 | 25x45 | 0.15 | 0.90 | ELB2GM181P45KT |
| | | 30x35 | 0.15 | 0.91 | ELB2GM181Q35KT |
| | | 35x25 | 0.15 | 0.90 | ELB2GM181R25KT |
| | 220 | 25x50 | 0.15 | 1.01 | ELB2GM221P50KT |
| | | 30x40 | 0.15 | 1.02 | ELB2GM221Q40KT |
| | | 35x30 | 0.15 | 1.00 | ELB2GM221R30KT |
| | 270 | 30x45 | 0.15 | 1.10 | ELB2GM271Q45KT |
| 35x35 | | 0.15 | 1.10 | ELB2GM271R35KT | |
| 330 | 30x50 | 0.15 | 1.20 | ELB2GM331Q50KT | |
| | 35x40 | 0.15 | 1.21 | ELB2GM331R40KT | |
| 390 | 35x45 | 0.15 | 1.29 | ELB2GM391R45KT | |
| 470 | 35x50 | 0.15 | 1.35 | ELB2GM471R50KT | |
| 450(2W) | 39 | 22x25 | 0.20 | 0.37 | ELB2WM390O25KT |
| | 47 | 22x30 | 0.20 | 0.40 | ELB2WM470O30KT |
| | 56 | 22x35 | 0.20 | 0.47 | ELB2WM560O35KT |
| | | 25x25 | 0.20 | 0.48 | ELB2WM560P25KT |
| | 68 | 22x40 | 0.20 | 0.53 | ELB2WM680O40KT |
| | | 25x30 | 0.20 | 0.53 | ELB2WM680P30KT |
| | 82 | 22x45 | 0.20 | 0.56 | ELB2WM820O45KT |
| | | 25x35 | 0.20 | 0.56 | ELB2WM820P35KT |
| | | 30x25 | 0.20 | 0.56 | ELB2WM820Q25KT |
| | 100 | 22x50 | 0.20 | 0.64 | ELB2WM101O50KT |
| | | 25x40 | 0.20 | 0.64 | ELB2WM101P40KT |
| | | 30x30 | 0.20 | 0.64 | ELB2WM101Q30KT |
| | 120 | 25x45 | 0.20 | 0.72 | ELB2WM121P45KT |
| | | 30x30 | 0.20 | 0.72 | ELB2WM121Q30KT |
| | | 25x50 | 0.20 | 0.79 | ELB2WM151P50KT |
| | 150 | 30x40 | 0.20 | 0.79 | ELB2WM151Q40KT |
| | | 35x30 | 0.20 | 0.78 | ELB2WM151R30KT |
| | 180 | 30x45 | 0.20 | 0.87 | ELB2WM181Q45KT |
| | | 35x35 | 0.20 | 0.87 | ELB2WM181R35KT |
| | 220 | 30x50 | 0.20 | 1.00 | ELB2WM221Q50KT |
| 35x40 | | 0.20 | 1.01 | ELB2WM221R40KT | |
| 270 | 35x45 | 0.20 | 1.19 | ELB2WM271R45KT | |
| 330 | 35x50 | 0.20 | 1.38 | ELB2WM331R50KT | |

LU series

- No sparks against DC over-voltage
- Endurance: 2,000 hours at 105°C
- RoHS Compliant

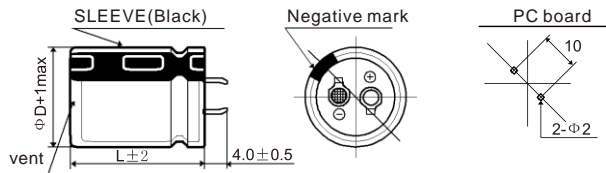


SPECIFICATIONS

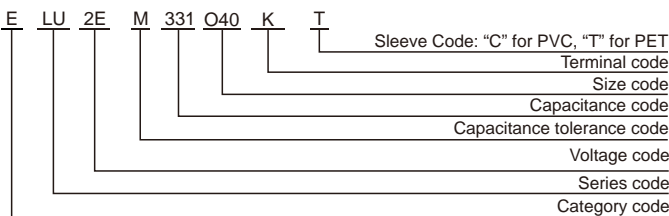
| Items | Characteristics | | | |
|--|---|-------------------------------------|---------|------------|
| Category Temperature Range | -25~+105°C | | | |
| Rated Voltage Range | 200~450V.DC | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | | |
| Leakage Current | $I \leq 3\sqrt{CV}$ Where, I: Max.leakage current (µA), C: Nominal capacitance (µF), V: Rated voltage(V) (at 20°C after 5 minutes) | | | |
| ESL | 50nH max. (at 20°C, 1MHz) | | | |
| Dissipation Factor (tan δ) | 200V.DC:0.15 max.(0.02 max. for D=35mm) 400V.DC:0.15 max. (at 20°C, 120Hz) | | | |
| Low Temperature Characteristics (Max. Impedance Ratio) | Rated Voltage(V.DC) | 200~250 | 400~450 | (at 120Hz) |
| | Z(-25°C)/Z(+20°C) | 4 | 8 | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 20°C after DC voltage plus the rated ripple current is applied for 2,000 hours at 105 °C. | | | |
| | Capacitance Change | ±20% of the initial value | | |
| | D.F. (tan δ) | 200% of the initial specified value | | |
| | Leakage Current | The initial specified value | | |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 105°C without voltage applied. | | | |
| | Capacitance Change | ±15% of the initial value | | |
| | D.F. (tan δ) | 150% of the initial specified value | | |
| | Leakage Current | 200% of the initial specified value | | |

DIMENSIONS[mm]

- Terminal Code : K (22 to 35) : Standard



PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

Frequency correction factor for ripple current

| Rated voltage(V _{dc}) | Freq.(Hz) | | | |
|---------------------------------|-----------|------|------|------|
| | 120 | 1k | 10k | 100k |
| 200~250 | 1.00 | 1.32 | 1.45 | 1.50 |
| 400~450 | 1.00 | 1.30 | 1.41 | 1.43 |

The endurance of capacitors is shortened with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

LU series

■ STANDARD RATINGS

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (Arms/105°C, 120Hz) | Part Number |
|----------|----------|--------------|-------|--|----------------|
| 200(2D) | 180 | 22x20 | 0.15 | 0.82 | ELU2DM181O20KT |
| | 220 | 22x20 | 0.15 | 0.90 | ELU2DM221O20KT |
| | 270 | 22x25 | 0.15 | 1.02 | ELU2DM271O25KT |
| | 330 | 22x30 | 0.15 | 1.20 | ELU2DM331O30KT |
| | | 25x25 | 0.15 | 1.20 | ELU2DM331P25KT |
| | 390 | 22x30 | 0.15 | 1.35 | ELU2DM391O30KT |
| | | 25x25 | 0.15 | 1.35 | ELU2DM391P25KT |
| | 470 | 22x35 | 0.15 | 1.45 | ELU2DM471O35KT |
| | | 25x30 | 0.15 | 1.45 | ELU2DM471P30KT |
| | | 30x25 | 0.15 | 1.47 | ELU2DM471Q25KT |
| | 560 | 22x40 | 0.15 | 1.62 | ELU2DM561O40KT |
| | | 25x30 | 0.15 | 1.60 | ELU2DM561P30KT |
| | | 30x25 | 0.15 | 1.60 | ELU2DM561Q25KT |
| | 680 | 25x35 | 0.15 | 1.82 | ELU2DM681P35KT |
| | | 30x30 | 0.15 | 1.81 | ELU2DM681Q30KT |
| | | 35x25 | 0.20 | 1.86 | ELU2DM681R25KT |
| | 820 | 25x45 | 0.15 | 2.11 | ELU2DM821P45KT |
| | | 30x35 | 0.15 | 2.11 | ELU2DM821Q35KT |
| | | 35x25 | 0.20 | 2.11 | ELU2DM821R25KT |
| | 1000 | 30x35 | 0.15 | 2.40 | ELU2DM102Q35KT |
| | | 35x30 | 0.20 | 2.40 | ELU2DM102R30KT |
| | 1200 | 30x45 | 0.15 | 2.69 | ELU2DM122Q45KT |
| | | 35x35 | 0.20 | 2.65 | ELU2DM122R35KT |
| | 250(2E) | 120 | 22x20 | 0.15 | 0.68 |
| 180 | | 22x25 | 0.15 | 0.87 | ELU2EM181O25KT |
| | | 25x20 | 0.15 | 0.93 | ELU2EM181P20KT |
| 220 | | 22x30 | 0.15 | 1.00 | ELU2EM221O30KT |
| 270 | | 22x35 | 0.15 | 1.14 | ELU2EM271O35KT |
| | | 25x25 | 0.15 | 1.13 | ELU2EM271P25KT |
| | | 30x20 | 0.15 | 1.25 | ELU2EM271Q20KT |
| 330 | | 22x40 | 0.15 | 1.28 | ELU2EM331O40KT |
| | | 25x30 | 0.15 | 1.29 | ELU2EM331P30KT |
| 390 | | 22x45 | 0.15 | 1.42 | ELU2EM391O45KT |
| | | 25x35 | 0.15 | 1.46 | ELU2EM391P35KT |
| | | 30x25 | 0.15 | 1.52 | ELU2EM391Q25KT |

| WV (Vdc) | Cap (μF) | Size DxL(mm) | tan | Rated ripple current (Arms/105°C, 120Hz) | Part Number | |
|----------|----------|--------------|-------|--|----------------|----------------|
| 250(2E) | 390 | 35x20 | 0.20 | 1.62 | ELU2EM391R20KT | |
| | 470 | 25x40 | 0.15 | 1.64 | ELU2EM471P40KT | |
| | | 30x30 | 0.15 | 1.67 | ELU2EM471Q30KT | |
| | 560 | 25x45 | 0.15 | 1.82 | ELU2EM561P45KT | |
| | | 30x35 | 0.15 | 1.87 | ELU2EM561Q35KT | |
| | | 35x25 | 0.20 | 1.99 | ELU2EM561R25KT | |
| | 680 | 30x40 | 0.15 | 2.12 | ELU2EM681Q40KT | |
| | | 35x30 | 0.20 | 2.19 | ELU2EM681R30KT | |
| | 820 | 30x45 | 0.15 | 2.39 | ELU2EM821Q45KT | |
| | | 35x35 | 0.20 | 2.42 | ELU2EM821R35KT | |
| | 400(2G) | 56 | 22x20 | 0.15 | 0.45 | ELU2GM560O20KT |
| | | 68 | 22x20 | 0.15 | 0.51 | ELU2GM680O20KT |
| 82 | | 22x25 | 0.15 | 0.58 | ELU2GM820O25KT | |
| 100 | | 22x25 | 0.15 | 0.66 | ELU2GM101O25KT | |
| | | 25x25 | 0.15 | 0.66 | ELU2GM101P25KT | |
| 120 | | 22x30 | 0.15 | 0.76 | ELU2GM121O30KT | |
| | | 25x25 | 0.15 | 0.76 | ELU2GM121P25KT | |
| 150 | | 22x35 | 0.15 | 0.85 | ELU2GM151O35KT | |
| | | 25x30 | 0.15 | 0.85 | ELU2GM151P30KT | |
| | | 30x25 | 0.15 | 0.85 | ELU2GM151Q25KT | |
| 180 | | 22x40 | 0.15 | 0.94 | ELU2GM181O40KT | |
| | | 25x35 | 0.15 | 0.95 | ELU2GM181P35KT | |
| | | 30x25 | 0.15 | 0.95 | ELU2GM181Q25KT | |
| | | 25x35 | 0.15 | 1.24 | ELU2GM221P35KT | |
| | | 220 | 30x30 | 0.15 | 1.24 | ELU2GM221Q30KT |
| | | | 35x25 | 0.15 | 1.24 | ELU2GM221R25KT |
| 270 | | 25x45 | 0.15 | 1.30 | ELU2GM271P45KT | |
| | | 30x35 | 0.15 | 1.30 | ELU2GM271Q35KT | |
| | 35x25 | 0.15 | 1.30 | ELU2GM271R25KT | | |
| 330 | 30x40 | 0.15 | 1.47 | ELU2GM331Q40KT | | |
| | 35x30 | 0.15 | 1.47 | ELU2GM331R30KT | | |
| 450(2W) | 180 | 30x35 | 0.20 | 1.00 | ELU2WM181Q35KT | |
| | 220 | 30x40 | 0.20 | 1.20 | ELU2WM221Q40KT | |
| | 390 | 35x40 | 0.20 | 1.60 | ELU2WM391R40KT | |

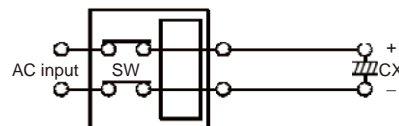
■ DC OVERVOLTAGE TEST CONDITIONS

The vent will operate and the capacitor shall become open-circuited without burning materials when the following excess DC voltage is applied.

■ Test DC voltage

| Rated Voltage | Nominal Capacitance | Current Limit | Test DC Voltage |
|---------------|---------------------|---------------|-----------------|
| 200Vdc | <330μF | 4A | 300/375Vdc |
| | 330μF C<470μF | 5A | |
| | 470μF | 7A | |
| 250Vdc | <100μF | 4A | 350/450Vdc |
| | 100μF C<220μF | 5A | |
| | 220μF | 7A | |
| 400Vdc | <100μF | 2A | 500/600Vdc |
| | 100μF C<220μF | 4A | |
| | 220μF | 7A | |
| 450Vdc | <100μF | 2A | 550/675Vdc |
| | 100μF C<220μF | 4A | |
| | 220μF | 7A | |

■ Test Circuit



Constant DC voltage/current power supply

NR series

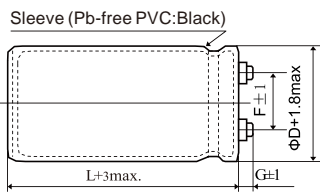
- Endurance with ripple current: 2,000 hours at 85°C
- Applications: Uninterruptible power supplies and frequency converters
- Detail specification: IEC 60384-4
- RoHS Compliant



SPECIFICATIONS

| Items | Characteristics | |
|---------------------------------|--|-------------------------------------|
| Category Temperature Range | -25~+85°C(350~550 V _{dc}) | |
| Surge Voltage | 1.10* V _R | |
| Rated Capacitance Range | 1000~15000µF | |
| Rated Voltage Range | 350~550 V _{dc} | |
| Capacitance Tolerance | ±20% (M) (at 20°C, 120Hz) | |
| Leakage Current | I=0.02CV [µA] or 5mA, whichever is smaller. Where, I: Max.leakage current (µA), C : Rated capacitance (µF), V : Rated voltage (V) (at 20°C after 5 minutes) | |
| Dissipation Factor (tan δ) | 0.20 (at 20°C, 120Hz) | |
| Low Temperature Characteristics | Capacitance Change C(-25°C)/C(+20°C) 0.7 (at 120Hz) | |
| Insulation Resistance | When measured between the terminals shorted each other and the mounting clamp on the insulating sleeve covering the case by using an insulation resistance meter of 500V _{dc} , the insulation resistance shall not be less than 100MΩ. | |
| Insulation Withstanding Voltage | When a voltage of 2,000Vac is applied for 1 minute between the terminals shorted each other and the mounting clamp on the insulating sleeve covering the case, there shall not be electrical damage. | |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 20°C after DC voltage plus the rated ripple current is applied for 2,000 hours at 85°C. | |
| | Capacitance Change | ±20% of the initial value |
| | D.F. (tan δ) | 200% of the initial specified value |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 85°C without voltage applied. | |
| | Capacitance Change | ±20% of the initial value |
| | D.F. (tan δ) | 150% of the initial specified value |
| | Leakage Current | The initial specified value |

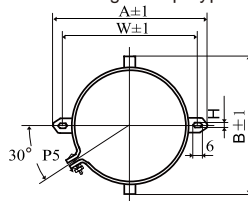
DIMENSIONS(Screw-Mount)[mm]



Ø35 to Ø51.6:G=7
Ø64.3 to Ø91:G=6.5

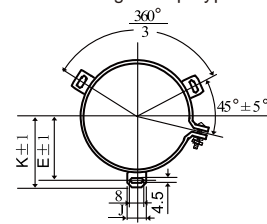
* The screw and the mounting clamp are separately supplied and not attached to the product.

• Mounting Clamp Type:I



| ØD | A | B | W | F |
|------|-------|------|------|------|
| 35 | 58.0 | 44.0 | 48.0 | 12.7 |
| 51.6 | 80.0 | 62.0 | 68.0 | 22.2 |
| 64.3 | 93.0 | 82.0 | 81.0 | 28.5 |
| 77 | 106.0 | 94.0 | 93.5 | 31.7 |

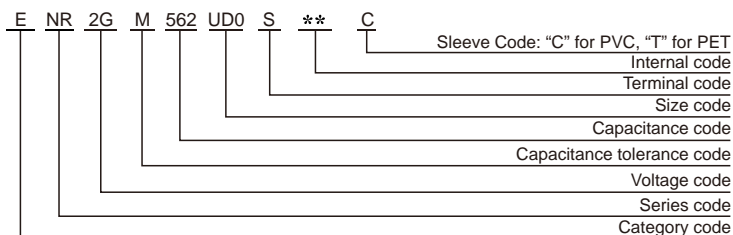
• Mounting Clamp Type:Y



| ØD | E | K | J | F |
|------|------|------|------|------|
| 51.6 | 32.5 | 35.8 | 14.0 | 22.2 |
| 64.3 | 38.4 | 42.5 | 14.0 | 28.5 |
| 77 | 44.5 | 47.5 | 14.0 | 31.7 |
| 91 | 50.8 | 54.7 | 14.0 | 31.7 |

<Screw specifications>
Plus hexagon-headed screw:
M5x0.8x10 or M6x1.0x12
Maximum screw tightening torque:3.23Nm

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

- Frequency Coefficient

| Frequency(Hz) | 50 | 120 | 300 | 1k | 3k |
|---------------|-----|-----|-----|-----|-----|
| Coefficient | 0.8 | 1.0 | 1.1 | 1.3 | 1.4 |

The endurance of capacitors is shortened with internal heating produced by ripple current at the rate of halving the lifetime with every 5 or 10°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

NR series

■ STANDARD RATINGS

| WV (V _{dc}) | Cap (μF) | Case size D×L(mm) | tan | ESR typ. 120Hz 20°C m | ESR max. 120Hz 20°C m | Rated ripple current (Arms/85°C, 120Hz) | Part Number |
|-----------------------|----------|-------------------|------|-----------------------|-----------------------|---|------------------|
| 350(2V) | 1000 | 51.6×65 | 0.20 | 82 | 123 | 3.6 | ENR2VM102S65*00C |
| | 2200 | 51.6×105 | 0.20 | 51 | 77 | 7.6 | ENR2VM222SA5*00C |
| | 2700 | 64.3×96 | 0.20 | 46 | 68 | 8.9 | ENR2VM272T96*00C |
| | 3300 | 64.3×105 | 0.20 | 35 | 52 | 10.0 | ENR2VM332TA5*00C |
| | 3900 | 64.3×115 | 0.20 | 31 | 46 | 11.4 | ENR2VM392TB5*00C |
| | 4700 | 76.9×105 | 0.20 | 28 | 42 | 13.5 | ENR2VM472UA5*00C |
| | 5600 | 76.9×115 | 0.20 | 24 | 35 | 15.4 | ENR2VM562UB5*00C |
| | 6800 | 76.9×143 | 0.20 | 21 | 31 | 17.3 | ENR2VM682UE3*00C |
| | 8200 | 76.9×168 | 0.20 | 18 | 27 | 19.8 | ENR2VM822UG8*00C |
| | 10000 | 91×157 | 0.20 | 15 | 22 | 23.7 | ENR2VM103VF7*00C |
| | 12000 | 91×168 | 0.20 | 13 | 19 | 24.3 | ENR2VM123VG8*00C |
| 15000 | 91×196 | 0.20 | 11 | 16 | 29.2 | ENR2VM153VJ6*00C | |
| 400(2G) | 1000 | 51.6×65 | 0.20 | 88 | 131 | 3.7 | ENR2GM102S65*00C |
| | 2200 | 51.6×115 | 0.20 | 58 | 87 | 7.5 | ENR2GM222SB5*00C |
| | 2700 | 64.3×96 | 0.20 | 47 | 71 | 9.0 | ENR2GM272T96*00C |
| | 3300 | 64.3×115 | 0.20 | 39 | 58 | 10.6 | ENR2GM332TB5*00C |
| | 3900 | 64.3×130 | 0.20 | 33 | 49 | 12.5 | ENR2GM392TD0*00C |
| | 4700 | 76.9×115 | 0.20 | 30 | 45 | 14.1 | ENR2GM472UB5*00C |
| | 5600 | 76.9×130 | 0.20 | 26 | 39 | 16.8 | ENR2GM562UD0*00C |
| | 6800 | 76.9×155 | 0.20 | 24 | 35 | 17.6 | ENR2GM682UF5*00C |
| | 8200 | 91×157 | 0.20 | 19 | 29 | 21.5 | ENR2GM822VF7*00C |
| | 10000 | 91×168 | 0.20 | 17 | 26 | 22.8 | ENR2GM103VG8*00C |
| | 12000 | 91×196 | 0.20 | 15 | 22 | 26.6 | ENR2GM123VJ6*00C |
| 15000 | 91×220 | 0.20 | 13 | 18 | 27.4 | ENR2GM153VM0*00C | |
| 450(2W) | 1800 | 51.6×130 | 0.20 | 68 | 102 | 6.5 | ENR2WM182SD0*00C |
| | 2200 | 64.3×96 | 0.20 | 56 | 83 | 7.8 | ENR2WM222T96*00C |
| | 2700 | 64.3×115 | 0.20 | 45 | 68 | 8.8 | ENR2WM272TB5*00C |
| | 3300 | 64.3×130 | 0.20 | 37 | 55 | 10.7 | ENR2WM332TD0*00C |
| | 3900 | 76.9×115 | 0.20 | 31 | 46 | 12.0 | ENR2WM392UB5*00C |
| | 4700 | 76.9×130 | 0.20 | 27 | 41 | 14.1 | ENR2WM472UD0*00C |
| | 5600 | 76.9×155 | 0.20 | 25 | 38 | 16.0 | ENR2WM562UF5*00C |
| | 6800 | 91×157 | 0.20 | 21 | 31 | 18.8 | ENR2WM682VF7*00C |
| | 8200 | 91×157 | 0.20 | 17 | 28 | 19.1 | ENR2WM822VF7*00C |
| | 10000 | 91×196 | 0.20 | 13 | 25 | 21.2 | ENR2WM103VJ6*00C |
| | 12000 | 91×220 | 0.20 | 11 | 22 | 23.7 | ENR2WM123VM0*00C |
| 500(2H) | 2200 | 64.3×115 | 0.25 | 54 | 80 | 7.3 | ENR2HM222TB5*00C |
| | 2700 | 64.3×130 | 0.25 | 43 | 64 | 8.5 | ENR2HM272TD0*00C |
| | 3300 | 76.9×115 | 0.25 | 36 | 53 | 10.0 | ENR2HM332UB5*00C |
| | 3900 | 76.9×130 | 0.25 | 30 | 47 | 11.4 | ENR2HM392UD0*00C |
| | 4700 | 76.9×155 | 0.25 | 27 | 40 | 13.3 | ENR2HM472UF5*00C |
| | 5600 | 91×157 | 0.25 | 25 | 38 | 14.8 | ENR2HM562VF7*00C |
| | 8200 | 91×196 | 0.25 | 16 | 26 | 18.1 | ENR2HM822VJ6*00C |
| | 10000 | 91×220 | 0.25 | 15 | 24 | 22.2 | ENR2HM103VM0*00V |
| 550(2J) | 1500 | 64.3×115 | 0.30 | 60 | 95 | 7.0 | ENR2JM152TB5*00C |
| | 2200 | 76.9×105 | 0.30 | 52 | 78 | 8.1 | ENR2JM222UA5*00C |
| | 2700 | 76.9×115 | 0.30 | 42 | 62 | 9.0 | ENR2JM272UB5*00C |
| | 3300 | 76.9×130 | 0.30 | 35 | 51 | 10.5 | ENR2JM332UD0*00C |
| | 3900 | 76.9×155 | 0.30 | 29 | 45 | 11.0 | ENR2JM392UF5*00C |
| | 4700 | 91×157 | 0.30 | 26 | 38 | 12.9 | ENR2JM472VF7*00C |

Note: "*" may be "A" or "B" or "S" or "T".
S: Ring clip mounting special design

A: Ring clip mounting standard design
T: Threaded stud special design

B: Threaded stud standard design

NS series

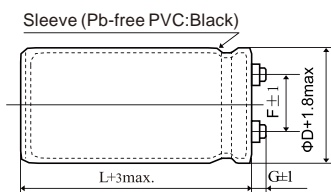
- Endurance with ripple current: 2,000 hours at 105°C
- Applications: Uninterruptible power supplies and frequency converters
- Detail specification: IEC 60384-4
- RoHS Compliant



SPECIFICATIONS

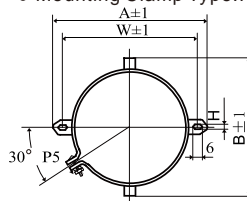
| Items | Characteristics |
|---------------------------------|--|
| Category Temperature Range | -25~+105°C(350~450 V _{dc}) |
| Surge Voltage | 1.10* V _R |
| Rated Capacitance Range | 1000~15000µF |
| Rated Voltage Range | 350~450 V _{dc} |
| Capacitance Tolerance | ±20% (M) (at 20°C, 120Hz) |
| Leakage Current | I=0.02CV [µA] or 5mA, whichever is smaller. Where, I: Max.leakage current (µA), C : Rated capacitance (µF), V : Rated voltage (V) (at 20°C after 5 minutes) |
| Dissipation Factor (tan) | 0.20 (at 20°C, 120Hz) |
| Low Temperature Characteristics | Capacitance Change C(-25°C)/C(+20°C) 0.7 (at 120Hz) |
| Insulation Resistance | When measured between the terminals shorted each other and the mounting clamp on the insulating sleeve covering the case by using an insulation resistance meter of 500V _{dc} , the insulation resistance shall not be less than 100M . |
| Insulation Withstanding Voltage | When a voltage of 2,000Vac is applied for 1 minute between the terminals shorted each other and the mounting clamp on the insulating sleeve covering the case, there shall not be electrical damage. |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 20°C after DC voltage plus the rated ripple current is applied for 2,000 hours at 105°C. |
| | Capacitance Change ±20% of the initial value |
| | D.F. (tan) 200% of the initial specified value |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 105°C without voltage applied. |
| | Capacitance Change ±20% of the initial value |
| | D.F. (tan) 150% of the initial specified value |
| | Leakage Current The initial specified value |

DIMENSIONS(Screw-Mount)[mm]



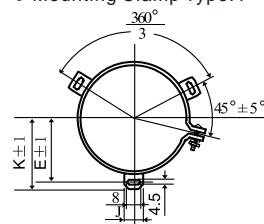
Ø35 to Ø51.6:G=7
Ø64.3 to Ø91:G=6.5

• Mounting Clamp Type:I



| ØD | A | B | W | F |
|------|-------|------|------|------|
| 35 | 58.0 | 44.0 | 48.0 | 12.7 |
| 51.6 | 80.0 | 62.0 | 68.0 | 22.2 |
| 64.3 | 93.0 | 82.0 | 81.0 | 28.5 |
| 77 | 106.0 | 94.0 | 93.5 | 31.7 |

• Mounting Clamp Type:Y

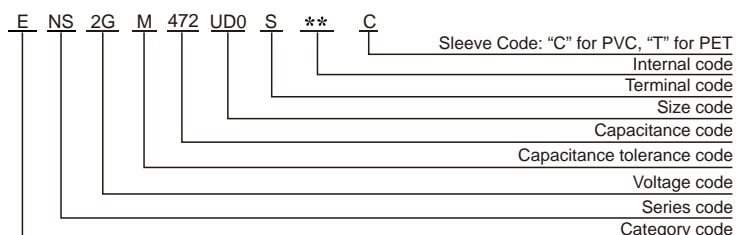


| ØD | E | K | J | F |
|------|------|------|------|------|
| 51.6 | 32.5 | 35.8 | 14.0 | 22.2 |
| 64.3 | 38.4 | 42.5 | 14.0 | 28.5 |
| 77 | 44.5 | 47.5 | 14.0 | 31.7 |
| 91 | 50.8 | 54.7 | 14.0 | 31.7 |

<Screw specifications>
Plus hexagon-headed screw:
M5x0.8x10 or M6x1.0x12
Maximum screw tightening torque:3.23Nm

* The screw and the mounting clamp are separately supplied and not attached to the product.

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

- Frequency Coefficient

| Frequency(Hz) | 50 | 120 | 300 | 1k | 3k |
|---------------|-----|-----|-----|-----|-----|
| Coefficient | 0.8 | 1.0 | 1.1 | 1.3 | 1.4 |

The endurance of capacitors is shortened with internal heating produced by ripple current at the rate of halving the lifetime with every 5 or 10°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

NS series

■ STANDARD RATINGS

| WV (V _{dc}) | Cap (μF) | Case size D×L(mm) | tan | ESR typ. 120Hz 20°C m | ESR max. 120Hz 20°C m | Rated ripple current (Arms/105°C, 120Hz) | Part Number |
|-----------------------|----------|-------------------|------|-----------------------|-----------------------|--|------------------|
| 350(2V) | 1000 | 51.6×80 | 0.20 | 108 | 157 | 2.6 | ENS2VM102S80*00C |
| | 1500 | 51.6×80 | 0.20 | 79 | 116 | 3.2 | ENS2VM152S80*00C |
| | 2200 | 51.6×96 | 0.20 | 57 | 81 | 4.2 | ENS2VM222S96*00C |
| | 3300 | 64.3×105 | 0.20 | 43 | 59 | 5.1 | ENS2VM332TA5*00C |
| | 3900 | 64.3×115 | 0.20 | 39 | 54 | 6.7 | ENS2VM392TB5*00C |
| | 4700 | 64.3×143 | 0.20 | 35 | 48 | 7.2 | ENS2VM472TE3*00C |
| | 5600 | 76.9×130 | 0.20 | 30 | 40 | 8.5 | ENS2VM562UD0*00C |
| | 6800 | 76.9×143 | 0.20 | 27 | 36 | 10.0 | ENS2VM682UE3*00C |
| | 8200 | 76.9×168 | 0.20 | 23 | 31 | 11.7 | ENS2VM822UG8*00C |
| | 10000 | 76.9×196 | 0.20 | 19 | 28 | 14.3 | ENS2VM103UJ6*00C |
| | 12000 | 76.9×220 | 0.20 | 17 | 25 | 16.8 | ENS2VM123UM0*00C |
| 15000 | 91.0×196 | 0.20 | 16 | 24 | 18.3 | ENS2VM153VJ6*00C | |
| 400(2G) | 1000 | 51.6×80 | 0.20 | 109 | 158 | 3.0 | ENS2GM102S80*00C |
| | 1500 | 51.6×96 | 0.20 | 75 | 107 | 3.7 | ENS2GM152S96*00C |
| | 2200 | 64.3×105 | 0.20 | 35 | 76 | 4.6 | ENS2GM222TA5*00C |
| | 3300 | 64.3×130 | 0.20 | 31 | 53 | 6.4 | ENS2GM332TD0*00C |
| | 3900 | 76.9×115 | 0.20 | 28 | 46 | 7.9 | ENS2GM392UB5*00C |
| | 4700 | 76.9×130 | 0.20 | 23 | 40 | 8.0 | ENS2GM472UD0*00C |
| | 5600 | 76.9×143 | 0.20 | 21 | 36 | 9.8 | ENS2GM562UE3*00C |
| | 6800 | 76.9×168 | 0.20 | 14 | 31 | 10.5 | ENS2GM682UG8*00C |
| | 8200 | 76.9×196 | 0.20 | 14 | 30 | 13.3 | ENS2GM822UJ6*00C |
| | 10000 | 76.9×220 | 0.20 | 12 | 25 | 17.5 | ENS2GM103UM0*00C |
| | 12000 | 91.0×196 | 0.20 | 11 | 23 | 21.3 | ENS2GM123VJ6*00C |
| 450(2W) | 1000 | 51.6×105 | 0.20 | 95 | 153 | 4.3 | ENS2WM102SA5*00C |
| | 1500 | 51.6×115 | 0.20 | 63 | 102 | 5.8 | ENS2WM152SB5*00C |
| | 2200 | 64.3×115 | 0.20 | 43 | 75 | 7.3 | ENS2WM222TB5*00C |
| | 3300 | 76.9×130 | 0.20 | 27 | 51 | 10.1 | ENS2WM332UD0*00C |
| | 3900 | 76.9×143 | 0.20 | 23 | 45 | 10.9 | ENS2WM392UE3*00C |
| | 4700 | 76.9×168 | 0.20 | 20 | 40 | 12.7 | ENS2WM472UG8*00C |
| | 5600 | 76.9×196 | 0.20 | 17 | 36 | 15.9 | ENS2WM562UJ6*00C |
| | 6800 | 76.9×220 | 0.20 | 14 | 32 | 16.4 | ENS2WM682UM0*00C |
| | 8200 | 91.0×196 | 0.20 | 11 | 24 | 17.0 | ENS2WM822VJ6*00C |
| | 10000 | 91.0×220 | 0.20 | 9 | 21 | 18.8 | ENS2WM103VM0*00C |

Note: "*" may be "A" or "B" or "S" or "T".
A: Ring clip mounting standard design
B: Threaded stud standard design
S: Ring clip mounting special design
T: Threaded stud special design

NX series

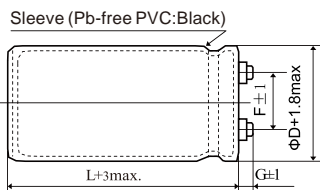
- Endurance with ripple current: 5,000 hours at 85°C
- Applications: Professional power supplies, Solar and wind generator and frequency converters
- Detail specification: IEC 60384-4
- RoHS Compliant



SPECIFICATIONS

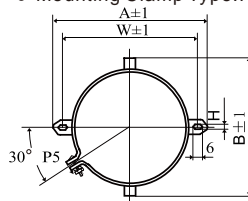
| Items | Characteristics |
|---------------------------------|--|
| Category Temperature Range | -25~+85°C(350~500 V _{dc}) |
| Surge Voltage | 1.10* V _R |
| Rated Capacitance Range | 1000~12000µF |
| Rated Voltage Range | 350~500 V _{dc} |
| Capacitance Tolerance | ±20% (M) (at 20°C, 120Hz) |
| Leakage Current | I=0.02CV [µA] or 5mA, whichever is smaller. Where, I: Max.leakage current (µA), C : Rated capacitance (µF), V : Rated voltage (V) (at 20°C after 5 minutes) |
| Dissipation Factor (tan) | 0.20 (at 20°C, 120Hz) |
| Low Temperature Characteristics | Capacitance Change C(-25°C)/C(+20°C) 0.7 (at 120Hz) |
| Insulation Resistance | When measured between the terminals shorted each other and the mounting clamp on the insulating sleeve covering the case by using an insulation resistance meter of 500V _{dc} , the insulation resistance shall not be less than 100M . |
| Insulation Withstanding Voltage | When a voltage of 2,000Vac is applied for 1 minute between the terminals shorted each other and the mounting clamp on the insulating sleeve covering the case, there shall not be electrical damage. |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 20°C after DC voltage plus the rated ripple current is applied for 5,000 hours at 85°C. |
| | Capacitance Change ±20% of the initial value |
| | D.F. (tan) 200% of the initial specified value |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 85°C without voltage applied. |
| | Capacitance Change ±20% of the initial value |
| | D.F. (tan) 150% of the initial specified value |
| | Leakage Current The initial specified value |

DIMENSIONS(Screw-Mount)[mm]



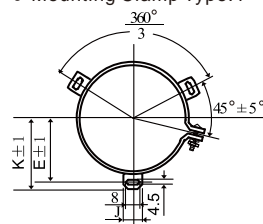
Ø35 to Ø51.6:G=7
Ø64.3 to Ø91:G=6.5

• Mounting Clamp Type:I



| ØD | A | B | W | F |
|------|-------|------|------|------|
| 35 | 58.0 | 44.0 | 48.0 | 12.7 |
| 51.6 | 80.0 | 62.0 | 68.0 | 22.2 |
| 64.3 | 93.0 | 82.0 | 81.0 | 28.5 |
| 77 | 106.0 | 94.0 | 93.5 | 31.7 |

• Mounting Clamp Type:Y

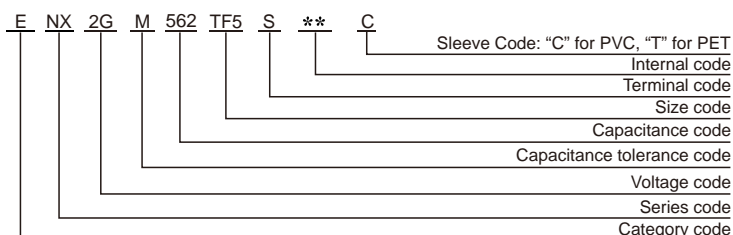


| ØD | E | K | J | F |
|------|------|------|------|------|
| 51.6 | 32.5 | 35.8 | 14.0 | 22.2 |
| 64.3 | 38.4 | 42.5 | 14.0 | 28.5 |
| 77 | 44.5 | 47.5 | 14.0 | 31.7 |
| 91 | 50.8 | 54.7 | 14.0 | 31.7 |

<Screw specifications>
Plus hexagon-headed screw:
M5x0.8x10 or M6x1.0x12
Maximum screw tightening torque:3.23Nm

* The screw and the mounting clamp are separately supplied and not attached to the product.

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

- Frequency Coefficient

| Frequency(Hz) | 50 | 120 | 300 | 1k | 3k |
|---------------|-----|-----|-----|-----|-----|
| Coefficient | 0.8 | 1.0 | 1.1 | 1.3 | 1.4 |

The endurance of capacitors is shortened with internal heating produced by ripple current at the rate of halving the lifetime with every 5 or 10°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

NX series

■ STANDARD RATINGS

| WV (V _{dc}) | Cap (μF) | Case size D×L(mm) | tan | ESR typ. 120Hz 20°C m | ESR max. 120Hz 20°C m | Rated ripple current (Arms/85°C, 120Hz) | Part Number |
|-----------------------|----------|-------------------|------|-----------------------|-----------------------|---|------------------|
| 350(2V) | 1500 | 51.6×80 | 0.20 | 86 | 130 | 6.0 | ENX2VM152S80*00C |
| | 2200 | 51.6×105 | 0.20 | 59 | 89 | 7.9 | ENX2VM222SA5*00C |
| | 2700 | 64.3×96 | 0.20 | 47 | 70 | 9.3 | ENX2VM272T96*00C |
| | 3300 | 64.3×105 | 0.20 | 39 | 58 | 10.9 | ENX2VM332TA5*00C |
| | 3900 | 64.3×115 | 0.20 | 33 | 49 | 12.3 | ENX2VM392TB5*00C |
| | 4700 | 64.3×130 | 0.20 | 29 | 45 | 14.2 | ENX2VM472TD0*00C |
| | 5600 | 76.9×115 | 0.20 | 26 | 39 | 16.6 | ENX2VM562UB5*00C |
| | 6800 | 76.9×130 | 0.20 | 21 | 32 | 19.0 | ENX2VM682UD0*00C |
| | 8200 | 76.9×155 | 0.20 | 18 | 26 | 22.3 | ENX2VM822UF5*00C |
| | 10000 | 91×157 | 0.20 | 14 | 19 | 25.2 | ENX2VM103VF7*00C |
| 12000 | 91×168 | 0.20 | 12 | 17 | 29.3 | ENX2VM123VG8*00C | |
| 400(2G) | 1000 | 51.6×75 | 0.20 | 92 | 153 | 4.7 | ENX2GM102S75*00C |
| | 1500 | 51.6×80 | 0.20 | 63 | 113 | 6.1 | ENX2GM152S80*00C |
| | 2200 | 51.6×115 | 0.20 | 41 | 85 | 8.9 | ENX2GM222SB5*00C |
| | 2700 | 64.3×96 | 0.20 | 31 | 69 | 10.3 | ENX2GM272T96*00C |
| | 3300 | 64.3×115 | 0.20 | 28 | 58 | 11.3 | ENX2GM332TB5*00C |
| | 3900 | 64.3×130 | 0.20 | 25 | 49 | 13.0 | ENX2GM392TD0*00C |
| | 4700 | 64.3×143 | 0.20 | 22 | 40 | 15.4 | ENX2GM472TE3*00C |
| | 5600 | 64.3×155 | 0.20 | 21 | 35 | 18.3 | ENX2GM562TF5*00C |
| | 6800 | 76.9×155 | 0.20 | 19 | 30 | 20.4 | ENX2GM682UF5*00C |
| | 8200 | 76.9×168 | 0.20 | 15 | 26 | 22.8 | ENX2GM822UG8*00C |
| 10000 | 91×157 | 0.20 | 13 | 21 | 26.9 | ENX2GM103VF7*00C | |
| 12000 | 91×196 | 0.20 | 10 | 18 | 30.5 | ENX2GM123VJ6*00C | |
| 450(2W) | 1000 | 51.6×80 | 0.20 | 115 | 169 | 5.0 | ENX2WM102S80*00C |
| | 1500 | 51.6×105 | 0.20 | 75 | 112 | 6.5 | ENX2WM152SA5*00C |
| | 2200 | 64.3×105 | 0.20 | 58 | 90 | 8.9 | ENX2WM222TA5*00C |
| | 2700 | 64.3×115 | 0.20 | 39 | 74 | 10.3 | ENX2WM272TB5*00C |
| | 3300 | 64.3×130 | 0.20 | 28 | 58 | 12.0 | ENX2WM332TD0*00C |
| | 3900 | 76.9×115 | 0.20 | 23 | 48 | 13.9 | ENX2WM392UB5*00C |
| | 4700 | 76.9×130 | 0.20 | 20 | 39 | 16.0 | ENX2WM472UD0*00C |
| | 5600 | 76.9×155 | 0.20 | 16 | 36 | 18.5 | ENX2WM562UF5*00C |
| | 6800 | 76.9×168 | 0.20 | 14 | 30 | 20.8 | ENX2WM682UG8*00C |
| | 8200 | 91×157 | 0.20 | 13 | 25 | 24.5 | ENX2WM822VF7*00C |
| 10000 | 91×196 | 0.20 | 11 | 22 | 28.0 | ENX2WM103VJ6*00C | |
| 500(2H) | 1000 | 51.6×105 | 0.25 | 110 | 165 | 4.9 | ENX2HM102SA5*00C |
| | 1500 | 64.3×105 | 0.25 | 74 | 110 | 7.8 | ENX2HM152TA5*00C |
| | 2200 | 64.3×130 | 0.25 | 56 | 88 | 10.0 | ENX2HM222TD0*00C |
| | 2700 | 64.3×143 | 0.25 | 48 | 72 | 11.6 | ENX2HM272TE3*00C |
| | 3300 | 76.9×130 | 0.25 | 37 | 56 | 13.1 | ENX2HM332UD0*00C |
| | 3900 | 76.9×155 | 0.25 | 32 | 46 | 14.5 | ENX2HM392UF5*00C |
| | 4700 | 76.9×168 | 0.25 | 25 | 38 | 16.6 | ENX2HM472UG8*00C |

Note: "*" may be "A" or "B" or "S" or "T".
A: Ring clip mounting standard design
B: Threaded stud standard design
S: Ring clip mounting special design
T: Threaded stud special design

NL series

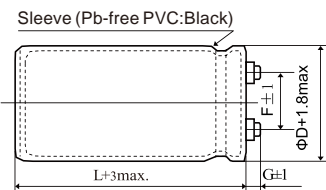
- Endurance with ripple current: 12,000 hours at 85°C
- Applications: Professional power supplies, Solar and wind generator and frequency converters
- Detail specification: IEC 60384-4
- RoHS Compliant



SPECIFICATIONS

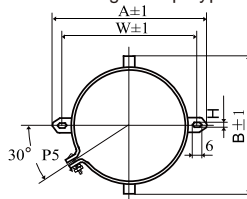
| Items | Characteristics |
|---------------------------------|--|
| Category Temperature Range | -25~+85°C(350~450 V _{dc}) |
| Surge Voltage | 1.10* V _R |
| Rated Capacitance Range | 1500~15000μF |
| Rated Voltage Range | 350~450 V _{dc} |
| Capacitance Tolerance | ±20% (M) (at 20°C, 120Hz) |
| Leakage Current | I=0.02CV [μA] or 5mA, whichever is smaller. Where, I: Max.leakage current (μA), C : Rated capacitance (μF), V : Rated voltage (V) (at 20°C after 5 minutes) |
| Dissipation Factor (tan) | 0.20 (at 20°C, 120Hz) |
| Low Temperature Characteristics | Capacitance Change C(-25°C)/C(+20°C) 0.7 (at 120Hz) |
| Insulation Resistance | When measured between the terminals shorted each other and the mounting clamp on the insulating sleeve covering the case by using an insulation resistance meter of 500V _{dc} , the insulation resistance shall not be less than 100M . |
| Insulation Withstanding Voltage | When a voltage of 2,000Vac is applied for 1 minute between the terminals shorted each other and the mounting clamp on the insulating sleeve covering the case, there shall not be electrical damage. |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 20°C after DC voltage plus the rated ripple current is applied for 12,000 hours at 85°C. |
| | Capacitance Change ±20% of the initial value |
| | D.F. (tan) 200% of the initial specified value |
| | Leakage Current The initial specified value |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 85°C without voltage applied. |
| | Capacitance Change ±20% of the initial value |
| | D.F. (tan) 150% of the initial specified value |
| | Leakage current The initial specified value |

DIMENSIONS(Screw-Mount)[mm]



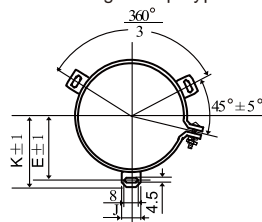
Ø35 to Ø51.6:G=7
Ø64.3 to Ø91:G=6.5

● Mounting Clamp Type:I



| ØD | A | B | W | F |
|------|-------|------|------|------|
| 35 | 58.0 | 44.0 | 48.0 | 12.7 |
| 51.6 | 80.0 | 62.0 | 68.0 | 22.2 |
| 64.3 | 93.0 | 82.0 | 81.0 | 28.5 |
| 77 | 106.0 | 94.0 | 93.5 | 31.7 |

● Mounting Clamp Type:Y

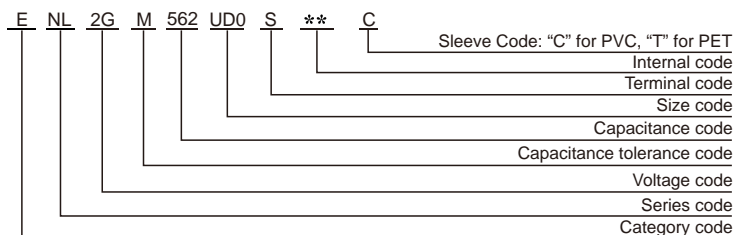


| ØD | E | K | J | F |
|------|------|------|------|------|
| 51.6 | 32.5 | 35.8 | 14.0 | 22.2 |
| 64.3 | 38.4 | 42.5 | 14.0 | 28.5 |
| 77 | 44.5 | 47.5 | 14.0 | 31.7 |
| 91 | 50.8 | 54.7 | 14.0 | 31.7 |

<Screw specifications>
Plus hexagon-headed screw:
M5x0.8x10 or M6x1.0x12
Maximum screw tightening torque:3.23Nm

* The screw and the mounting clamp are separately supplied and not attached to the product.

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

- Frequency Coefficient

| Frequency(Hz) | 50 | 120 | 300 | 1k | 3k |
|---------------|-----|-----|-----|-----|-----|
| Coefficient | 0.8 | 1.0 | 1.1 | 1.3 | 1.4 |

The endurance of capacitors is shortened with internal heating produced by ripple current at the rate of halving the lifetime with every 5 or 10°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

NL series

■ STANDARD RATINGS

| WV (V _{dc}) | Cap (μF) | Case size D×L(mm) | tan | ESR typ. 120Hz 20°C m | ESR max. 120Hz 20°C m | Rated ripple current (Arms/85°C,120Hz) | Part Number |
|-----------------------|----------|-------------------|------|-----------------------|-----------------------|--|------------------|
| 350(2V) | 1500 | 51.6×80 | 0.20 | 57 | 98 | 6.0 | ENL2VM152S80*00C |
| | 2200 | 51.6×105 | 0.20 | 45 | 78 | 7.8 | ENL2VM222SA5*00C |
| | 3300 | 64.3×115 | 0.20 | 36 | 53 | 10.5 | ENL2VM332TB5*00C |
| | 3900 | 64.3×130 | 0.20 | 32 | 47 | 12.6 | ENL2VM392TD0*00C |
| | 4700 | 76.9×105 | 0.20 | 30 | 43 | 14.0 | ENL2VM472UA5*00C |
| | 5600 | 76.9×115 | 0.20 | 27 | 37 | 15.5 | ENL2VM562UB5*00C |
| | 6800 | 76.9×130 | 0.20 | 23 | 34 | 18.1 | ENL2VM682UD0*00C |
| | 8200 | 76.9×155 | 0.20 | 20 | 28 | 21.5 | ENL2VM822UF5*00C |
| | 10000 | 91.0×157 | 0.20 | 16 | 24 | 24.6 | ENL2VM103VF7*00C |
| | 12000 | 91.0×196 | 0.20 | 14 | 22 | 29.0 | ENL2VM123VJ6*00C |
| 400(2G) | 1500 | 51.6×80 | 0.20 | 58 | 89 | 6.1 | ENL2GM152S80*00C |
| | 2200 | 51.6×115 | 0.20 | 56 | 81 | 8.2 | ENL2GM222SB5*00C |
| | 3300 | 64.3×130 | 0.20 | 37 | 55 | 11.6 | ENL2GM332TD0*00C |
| | 3900 | 64.3×155 | 0.20 | 29 | 49 | 15.5 | ENL2GM392TF5*00C |
| | 4700 | 76.9×115 | 0.20 | 26 | 43 | 19.4 | ENL2GM472UB5*00C |
| | 5600 | 76.9×130 | 0.20 | 25 | 40 | 21.3 | ENL2GM562UD0*00C |
| | 6800 | 76.9×155 | 0.20 | 20 | 34 | 23.4 | ENL2GM682UF5*00C |
| | 8200 | 91.0×157 | 0.20 | 19 | 29 | 24.2 | ENL2GM822VF7*00C |
| | 10000 | 91.0×168 | 0.20 | 13 | 23 | 30.3 | ENL2GM103VG8*00C |
| | 12000 | 91.0×196 | 0.20 | 11 | 19 | 35.5 | ENL2GM123VJ6*00C |
| 450(2W) | 1500 | 51.6×115 | 0.20 | 56 | 97 | 7.1 | ENL2WM152SB5*00C |
| | 2200 | 64.3×115 | 0.20 | 43 | 65 | 10.5 | ENL2WM222TB5*00C |
| | 3300 | 64.3×143 | 0.20 | 33 | 49 | 14.8 | ENL2WM332TE3*00C |
| | 3900 | 64.3×155 | 0.20 | 29 | 41 | 16.5 | ENL2WM392TF5*00C |
| | 4700 | 76.9×143 | 0.20 | 22 | 39 | 19.8 | ENL2WM472UE3*00C |
| | 5600 | 76.9×168 | 0.20 | 20 | 35 | 21.9 | ENL2WM562UG8*00C |
| | 6800 | 76.9×196 | 0.20 | 18 | 30 | 26.4 | ENL2WM682UJ6*00C |
| | 8200 | 91.0×168 | 0.20 | 16 | 24 | 29.6 | ENL2WM822VG8*00C |
| | 10000 | 91.0×196 | 0.20 | 15 | 21 | 31.8 | ENL2WM103VJ6*00C |

Note: "*" may be "A" or "B" or "S" or "T".

A: Ring clip mounting standard design

B: Threaded stud standard design

S: Ring clip mounting special design

T: Threaded stud special design

NE series

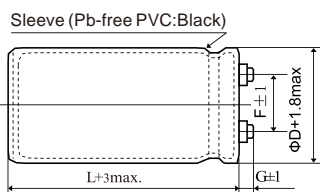
- Endurance of 20,000 hours application of rated ripple current at 85°C
- Applications: Professional power supplies, solar and wind generator and frequency converters
- Detail specification: IEC 60384-4
- RoHS Compliant



SPECIFICATIONS

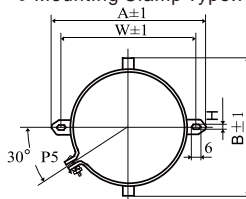
| Items | Characteristics |
|---------------------------------|--|
| Category Temperature Range | -25~+85°C(350~450 V _{dc}) |
| Surge Voltage | 1.10* V _R |
| Rated Capacitance Range | 1500~15000µF |
| Rated Voltage Range | 350~450 V _{dc} |
| Capacitance Tolerance | ±20% (M) (at 20°C, 120Hz) |
| Leakage Current | I=0.02CV [µA] or 5mA, whichever is smaller. Where, I: Max.leakage current (µA), C : Rated capacitance (µF), V : Rated voltage (V) (at 20°C after 5 minutes) |
| Dissipation Factor (tan) | 0.20 (at 20°C, 120Hz) |
| Low Temperature Characteristics | Capacitance Change C(-25°C)/C(+20°C) 0.7 (at 120Hz) |
| Insulation Resistance | When measured between the terminals shorted each other and the mounting clamp on the insulating sleeve covering the case by using an insulation resistance meter of 500V _{dc} , the insulation resistance shall not be less than 100M . |
| Insulation Withstanding Voltage | When a voltage of 2,000Vac is applied for 1 minute between the terminals shorted each other and the mounting clamp on the insulating sleeve covering the case, there shall not be electrical damage. |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 20°C after DC voltage plus the rated ripple current is applied for 20,000 hours at 85°C. |
| | Capacitance Change ±20% of the initial value |
| | D.F. (tan) 200% of the initial specified value |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 85°C without voltage applied. |
| | Capacitance Change ±20% of the initial value |
| | D.F. (tan) 150% of the initial specified value |
| | Leakage Current The initial specified value |

DIMENSIONS(Screw-Mount)[mm]



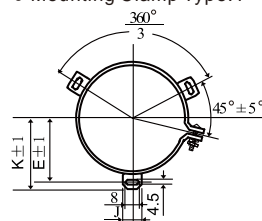
Ø35 to Ø51.6:G=7
Ø64.3 to Ø91:G=6.5

• Mounting Clamp Type:I



| ØD | A | B | W | F |
|------|-------|------|------|------|
| 35 | 58.0 | 44.0 | 48.0 | 12.7 |
| 51.6 | 80.0 | 62.0 | 68.0 | 22.2 |
| 64.3 | 93.0 | 82.0 | 81.0 | 28.5 |
| 77 | 106.0 | 94.0 | 93.5 | 31.7 |

• Mounting Clamp Type:Y

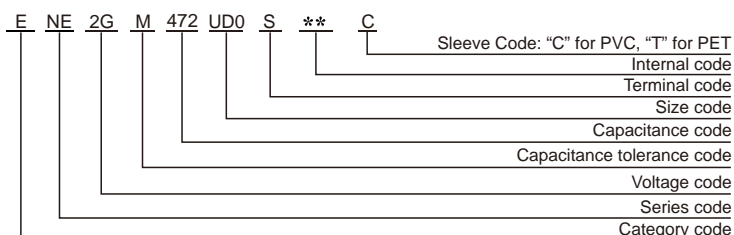


| ØD | E | K | J | F |
|------|------|------|------|------|
| 51.6 | 32.5 | 35.8 | 14.0 | 22.2 |
| 64.3 | 38.4 | 42.5 | 14.0 | 28.5 |
| 77 | 44.5 | 47.5 | 14.0 | 31.7 |
| 91 | 50.8 | 54.7 | 14.0 | 31.7 |

<Screw specifications>
Plus hexagon-headed screw:
M5x0.8x10 or M6x1.0x12
Maximum screw tightening torque:3.23Nm

* The screw and the mounting clamp are separately supplied and not attached to the product.

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

- Frequency Coefficient

| Frequency(Hz) | 50 | 120 | 300 | 1k | 3k |
|---------------|-----|-----|-----|-----|-----|
| Coefficient | 0.8 | 1.0 | 1.1 | 1.3 | 1.4 |

The endurance of capacitors is shortened with internal heating produced by ripple current at the rate of halving the lifetime with every 5 or 10°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

NE series

■ STANDARD RATINGS

| WV (V _{dc}) | Cap (μF) | Case size D×L(mm) | tan | ESR typ. 120Hz 20°C m | ESR max. 120Hz 20°C m | Rated ripple current (Arms/85°C, 120Hz) | Part Number |
|-----------------------|----------|-------------------|------|-----------------------|-----------------------|---|------------------|
| 350(2V) | 1500 | 51.6×96 | 0.20 | 67 | 98 | 5.4 | ENE2VM152S96*00C |
| | 2200 | 51.6×130 | 0.20 | 53 | 78 | 7.3 | ENE2VM222SD0*00C |
| | 3300 | 64.3×115 | 0.20 | 36 | 53 | 11.3 | ENE2VM332TB5*00C |
| | 3900 | 64.3×130 | 0.20 | 32 | 47 | 13.0 | ENE2VM392TD0*00C |
| | 4700 | 64.3×155 | 0.20 | 29 | 43 | 15.1 | ENE2VM472TF5*00C |
| | 5600 | 76.9×130 | 0.20 | 26 | 37 | 17.0 | ENE2VM562UD0*00C |
| | 6800 | 76.9×155 | 0.20 | 23 | 34 | 20.4 | ENE2VM682UF5*00C |
| | 8200 | 76.9×168 | 0.20 | 19 | 28 | 23.2 | ENE2VM822UG8*00C |
| | 10000 | 76.9×220 | 0.20 | 16 | 24 | 26.9 | ENE2VM103UM0*00C |
| | 12000 | 91.0×196 | 0.20 | 14 | 22 | 30.3 | ENE2VM123VJ6*00C |
| 15000 | 91.0×220 | 0.20 | 11 | 18 | 32.1 | ENE2VM153VM0*00C | |
| 400(2G) | 1500 | 51.6×105 | 0.20 | 71 | 101 | 5.9 | ENE2GM152SA5*00C |
| | 2200 | 51.6×130 | 0.20 | 56 | 81 | 7.2 | ENE2GM222SD0*00C |
| | 3300 | 64.3×130 | 0.20 | 37 | 55 | 11.9 | ENE2GM332TD0*00C |
| | 3900 | 76.9×115 | 0.20 | 34 | 49 | 14.1 | ENE2GM392UB5*00C |
| | 4700 | 76.9×130 | 0.20 | 29 | 43 | 15.7 | ENE2GM472UD0*00C |
| | 5600 | 76.9×155 | 0.20 | 27 | 40 | 18.3 | ENE2GM562UF5*00C |
| | 6800 | 76.9×168 | 0.20 | 22 | 34 | 21.1 | ENE2GM682UG8*00C |
| | 8200 | 91.0×157 | 0.20 | 19 | 29 | 24.3 | ENE2GM822VF7*00C |
| | 10000 | 91.0×196 | 0.20 | 16 | 23 | 27.2 | ENE2GM103VJ6*00C |
| | 12000 | 91.0×220 | 0.20 | 14 | 19 | 30.2 | ENE2GM123VM0*00C |
| 450(2W) | 1500 | 51.6×130 | 0.20 | 74 | 108 | 5.9 | ENE2WM152SD0*00C |
| | 2200 | 64.3×115 | 0.20 | 49 | 78 | 9.2 | ENE2WM222TB5*00C |
| | 3300 | 64.3×155 | 0.20 | 38 | 49 | 12.8 | ENE2WM332TF5*00C |
| | 3900 | 64.3×168 | 0.20 | 32 | 41 | 14.4 | ENE2WM392TG8*00C |
| | 4700 | 76.9×155 | 0.20 | 27 | 39 | 16.8 | ENE2WM472UF5*00C |
| | 5600 | 76.9×196 | 0.20 | 24 | 35 | 20.3 | ENE2WM562UJ6*00C |
| | 6800 | 91.0×196 | 0.20 | 21 | 30 | 23.1 | ENE2WM682VJ6*00C |
| | 8200 | 91.0×196 | 0.20 | 18 | 26 | 26.6 | ENE2WM822VJ6*00C |
| | 10000 | 91.0×220 | 0.20 | 15 | 21 | 27.8 | ENE2WM103VM0*00C |

Note: "*" may be "A" or "B" or "S" or "T".
A: Ring clip mounting standard design
B: Threaded stud standard design
S: Ring clip mounting special design
T: Threaded stud special design

NT series

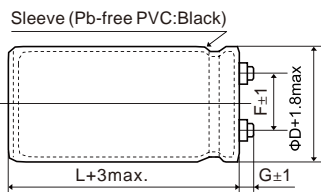
- Endurance with ripple current: 3,000 hours at 105°C
- Applications: Uninterruptible power supplies and frequency converters
- Detail specification: IEC 60384-4
- RoHS Compliant



SPECIFICATIONS

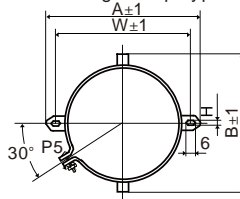
| Items | Characteristics |
|---------------------------------|--|
| Category Temperature Range | -25~+105°C(350~450 V _{dc}) |
| Surge Voltage | 1.10* V _R |
| Rated Capacitance Range | 1000~12000μF |
| Rated Voltage Range | 350~450 V _{dc} |
| Capacitance Tolerance | ±20% (M) (at 20°C, 120Hz) |
| Leakage Current | I=0.02CV [μA] or 5mA, whichever is smaller. Where, I: Max.leakage current (μA), C : Rated capacitance (μF), V : Rated voltage (V) (at 20°C after 5 minutes) |
| Dissipation Factor (tan δ) | 0.20 (at 20°C, 120Hz) |
| Low Temperature Characteristics | Capacitance Change C(-25°C)/C(+20°C) 0.7 (at 120Hz) |
| Insulation Resistance | When measured between the terminals shorted each other and the mounting clamp on the insulating sleeve covering the case by using an insulation resistance meter of 500V _{dc} , the insulation resistance shall not be less than 100MΩ. |
| Insulation Withstanding Voltage | When a voltage of 2,000Vac is applied for 1 minute between the terminals shorted each other and the mounting clamp on the insulating sleeve covering the case, there shall not be electrical damage. |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 20°C after DC voltage plus the rated ripple current is applied for 3,000 hours at 105°C. |
| | Capacitance Change ±20% of the initial value |
| | D.F. (tan δ) 200% of the initial specified value |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 105°C without voltage applied. |
| | Capacitance Change ±20% of the initial value |
| | D.F. (tan δ) 150% of the initial specified value |

DIMENSIONS(Screw-Mount)[mm]



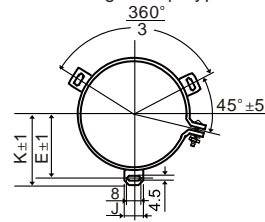
Ø35 to Ø51.6:G=7
Ø64.3 to Ø91:G=6.5

• Mounting Clamp Type:I



| ØD | A | B | W | F |
|------|-------|------|------|------|
| 35 | 58.0 | 44.0 | 48.0 | 12.7 |
| 51.6 | 80.0 | 62.0 | 68.0 | 22.2 |
| 64.3 | 93.0 | 82.0 | 81.0 | 28.5 |
| 77 | 106.0 | 94.0 | 93.5 | 31.7 |

• Mounting Clamp Type:Y

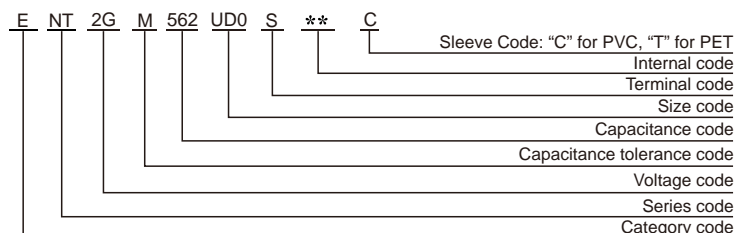


| ØD | E | K | J | F |
|------|------|------|------|------|
| 51.6 | 32.5 | 35.8 | 14.0 | 22.2 |
| 64.3 | 38.4 | 42.5 | 14.0 | 28.5 |
| 77 | 44.5 | 47.5 | 14.0 | 31.7 |
| 91 | 50.8 | 54.7 | 14.0 | 31.7 |

<Screw specifications>
Plus hexagon-headed screw:
M5x0.8x10 or M6x1.0x12
Maximum screw tightening torque:3.23Nm

* The screw and the mounting clamp are separately supplied and not attached to the product.

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

- Frequency Coefficient

| Frequency(Hz) | 50 | 120 | 300 | 1k | 3k |
|---------------|-----|-----|-----|-----|-----|
| Coefficient | 0.8 | 1.0 | 1.1 | 1.3 | 1.4 |

The endurance of capacitors is shortened with internal heating produced by ripple current at the rate of halving the lifetime with every 5 or 10°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

NT series

■ STANDARD RATINGS

| WV (V _{dc}) | Cap (μF) | Case size D×L(mm) | tan | ESR typ. 120Hz 20°C m | ESR max. 120Hz 20°C m | Rated ripple current (Arms/105°C,120Hz) | Part Number |
|-----------------------|----------|-------------------|------|-----------------------|-----------------------|---|------------------|
| 350(2V) | 1000 | 51.6×80 | 0.20 | 108 | 157 | 2.4 | ENT2VM102S80*00C |
| | 1500 | 51.6×80 | 0.20 | 79 | 116 | 3.0 | ENT2VM152S80*00C |
| | 2200 | 51.6×96 | 0.20 | 57 | 81 | 4.1 | ENT2VM222S96*00C |
| | 3300 | 64.3×105 | 0.20 | 43 | 59 | 4.8 | ENT2VM332TA5*00C |
| | 3900 | 64.3×115 | 0.20 | 39 | 54 | 6.5 | ENT2VM392TB5*00C |
| | 4700 | 64.3×130 | 0.20 | 35 | 48 | 7.0 | ENT2VM472TD0*00C |
| | 5600 | 76.9×130 | 0.20 | 30 | 40 | 8.5 | ENT2VM562UD0*00C |
| | 6800 | 76.9×143 | 0.20 | 27 | 36 | 10.0 | ENT2VM682UE3*00C |
| | 8200 | 76.9×168 | 0.20 | 23 | 31 | 11.4 | ENT2VM822UG8*00C |
| | 10000 | 91.0×170 | 0.20 | 19 | 28 | 14.1 | ENT2VM103VH0*00C |
| 12000 | 91.0×220 | 0.20 | 17 | 25 | 16.2 | ENT2VM123VM0*00C | |
| 400(2G) | 1000 | 51.6×80 | 0.20 | 109 | 158 | 3.0 | ENT2GM102S80*00C |
| | 1500 | 51.6×96 | 0.20 | 75 | 107 | 3.7 | ENT2GM152S96*00C |
| | 2200 | 64.3×105 | 0.20 | 35 | 76 | 4.6 | ENT2GM222TA5*00C |
| | 3300 | 64.3×130 | 0.20 | 31 | 53 | 6.4 | ENT2GM332TD0*00C |
| | 3900 | 76.9×115 | 0.20 | 28 | 46 | 7.9 | ENT2GM392UB5*00C |
| | 4700 | 76.9×130 | 0.20 | 23 | 40 | 8.0 | ENT2GM472UD0*00C |
| | 5600 | 76.9×143 | 0.20 | 21 | 36 | 9.8 | ENT2GM562UE3*00C |
| | 6800 | 76.9×155 | 0.20 | 14 | 31 | 10.5 | ENT2GM682UF5*00C |
| | 8200 | 91.0×155 | 0.20 | 12 | 30 | 13.3 | ENT2GM822VF5*00C |
| | 10000 | 91.0×170 | 0.20 | 11 | 23 | 18.0 | ENT2GM103VH0*00C |
| 12000 | 91.0×196 | 0.20 | 10 | 21 | 22.6 | ENT2GM123VJ6*00C | |
| 450(2W) | 1000 | 51.6×105 | 0.20 | 95 | 153 | 4.3 | ENT2WM102SA5*00C |
| | 1500 | 51.6×115 | 0.20 | 63 | 102 | 5.8 | ENT2WM152SB5*00C |
| | 2200 | 64.3×115 | 0.20 | 40 | 70 | 7.6 | ENT2WM222TB5*00C |
| | 3300 | 76.9×115 | 0.20 | 25 | 48 | 10.5 | ENT2WM332UB5*00C |
| | 3900 | 76.9×130 | 0.20 | 22 | 42 | 11.3 | ENT2WM392UD0*00C |
| | 4700 | 76.9×155 | 0.20 | 20 | 40 | 12.7 | ENT2WM472UF5*00C |
| | 5600 | 91.0×130 | 0.20 | 17 | 36 | 16.0 | ENT2WM562VD0*00C |
| | 6800 | 91.0×155 | 0.20 | 14 | 32 | 16.9 | ENT2WM682VF5*00C |
| | 8200 | 91.0×196 | 0.20 | 10 | 22 | 17.5 | ENT2WM822VJ6*00C |
| | 10000 | 91.0×220 | 0.20 | 8 | 20 | 18.1 | ENT2WM103VM0*00C |

Note: "*" may be "A" or "B" or "S" or "T".
A: Ring clip mounting standard design
B: Threaded stud standard design
S: Ring clip mounting special design
T: Threaded stud special design

NF series

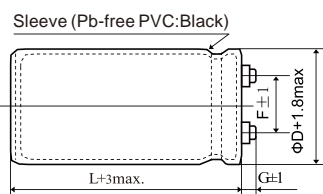
- Endurance with ripple current: 5,000 hours at 105°C
- Applications: Professional power supplies, Frequency converters and Traction
- Detail specification: IEC 60384-4
- RoHS Compliant



SPECIFICATIONS

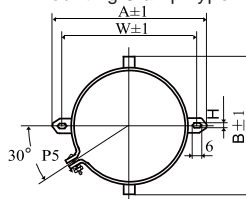
| Items | Characteristics |
|---------------------------------|--|
| Category Temperature Range | -25~+105°C(350~450 V _{dc}) |
| Surge Voltage | 1.10* V _R |
| Rated Capacitance Range | 1000~15000µF |
| Rated Voltage Range | 350~450 V _{dc} |
| Capacitance Tolerance | ±20% (M) (at 20°C, 120Hz) |
| Leakage Current | I=0.02CV [µA] or 5mA, whichever is smaller. Where, I: Max.leakage current (µA), C : Rated capacitance (µF), V : Rated voltage (V) (at 20°C after 5 minutes) |
| Dissipation Factor (tan δ) | 0.20 (at 20°C, 120Hz) |
| Low Temperature Characteristics | Capacitance Change C(-25°C)/C(+20°C) 0.7 (at 120Hz) |
| Insulation Resistance | When measured between the terminals shorted each other and the mounting clamp on the insulating sleeve covering the case by using an insulation resistance meter of 500V _{dc} , the insulation resistance shall not be less than 100MΩ. |
| Insulation Withstanding Voltage | When a voltage of 2,000Vac is applied for 1 minute between the terminals shorted each other and the mounting clamp on the insulating sleeve covering the case, there shall not be electrical damage. |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 20°C after DC voltage plus the rated ripple current is applied for 5,000 hours at 105°C. |
| | Capacitance Change ±20% of the initial value |
| | D.F. (tan δ) 200% of the initial specified value |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 105°C without voltage applied. |
| | Capacitance Change ±20% of the initial value |
| | D.F. (tan δ) 150% of the initial specified value |
| | Leakage Current The initial specified value |

DIMENSIONS(Screw-Mount)[mm]



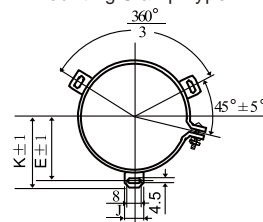
Ø35 to Ø51.6:G=7
Ø64.3 to Ø91:G=6.5

• Mounting Clamp Type:I



| ØD | A | B | W | F |
|------|-------|------|------|------|
| 35 | 58.0 | 44.0 | 48.0 | 12.7 |
| 51.6 | 80.0 | 62.0 | 68.0 | 22.2 |
| 64.3 | 93.0 | 82.0 | 81.0 | 28.5 |
| 77 | 106.0 | 94.0 | 93.5 | 31.7 |

• Mounting Clamp Type:Y

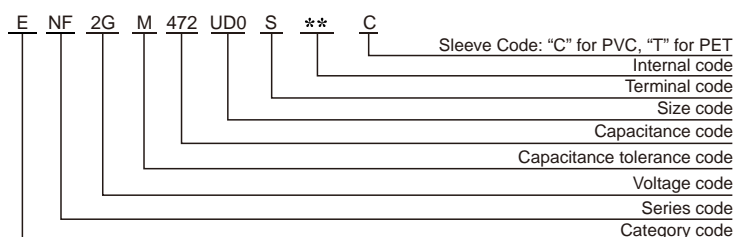


| ØD | E | K | J | F |
|------|------|------|------|------|
| 51.6 | 32.5 | 35.8 | 14.0 | 22.2 |
| 64.3 | 38.4 | 42.5 | 14.0 | 28.5 |
| 77 | 44.5 | 47.5 | 14.0 | 31.7 |
| 91 | 50.8 | 54.7 | 14.0 | 31.7 |

<Screw specifications>
Plus hexagon-headed screw:
M5x0.8x10 or M6x1.0x12
Maximum screw tightening torque:3.23Nm

* The screw and the mounting clamp are separately supplied and not attached to the product.

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

- Frequency Coefficient

| Frequency(Hz) | 50 | 120 | 300 | 1k | 3k |
|---------------|-----|-----|-----|-----|-----|
| Coefficient | 0.8 | 1.0 | 1.1 | 1.3 | 1.4 |

The endurance of capacitors is shortened with internal heating produced by ripple current at the rate of halving the lifetime with every 5 or 10°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

NF series

■ STANDARD RATINGS

| WV (V _{dc}) | Cap (μF) | Case size D×L(mm) | tan | ESR typ. 120Hz 20°C m | ESR max. 120Hz 20°C m | Rated ripple current (Arms/105°C,120Hz) | Part Number |
|-----------------------|----------|-------------------|------|-----------------------|-----------------------|---|------------------|
| 350(2V) | 1000 | 51.6×80 | 0.20 | 99 | 148 | 4.2 | ENF2VM102S80*00C |
| | 1500 | 51.6×96 | 0.20 | 71 | 107 | 5.3 | ENF2VM152S96*00C |
| | 2200 | 51.6×105 | 0.20 | 49 | 72 | 7.2 | ENF2VM222SA5*00C |
| | 3300 | 64.3×115 | 0.20 | 34 | 50 | 10.0 | ENF2VM332TB5*00C |
| | 3900 | 64.3×130 | 0.20 | 30 | 45 | 11.7 | ENF2VM392TD0*00C |
| | 4700 | 64.3×143 | 0.20 | 26 | 39 | 12.6 | ENF2VM472TE3*00C |
| | 5600 | 76.9×143 | 0.20 | 21 | 32 | 14.9 | ENF2VM562UE3*00C |
| | 6800 | 76.9×168 | 0.20 | 19 | 28 | 17.0 | ENF2VM682UG8*00C |
| | 8200 | 76.9×196 | 0.20 | 15 | 25 | 19.8 | ENF2VM822UJ6*00C |
| | 10000 | 76.9×220 | 0.20 | 13 | 20 | 23.2 | ENF2VM103UM0*00C |
| | 12000 | 91×196 | 0.20 | 11 | 16 | 26.9 | ENF2VM123VJ6*00C |
| 15000 | 91×220 | 0.20 | 9 | 13 | 30.9 | ENF2VM153VM0*00C | |
| 400(2G) | 1000 | 51.6×80 | 0.20 | 101 | 151 | 4.4 | ENF2GM102S80*00C |
| | 1500 | 51.6×96 | 0.20 | 67 | 98 | 5.9 | ENF2GM152S96*00C |
| | 2200 | 64.3×105 | 0.20 | 48 | 68 | 7.4 | ENF2GM222TA5*00C |
| | 3300 | 64.3×130 | 0.20 | 30 | 45 | 10.5 | ENF2GM332TD0*00C |
| | 3900 | 76.9×115 | 0.20 | 27 | 39 | 11.3 | ENF2GM392UB5*00C |
| | 4700 | 76.9×130 | 0.20 | 22 | 32 | 14.0 | ENF2GM472UD0*00C |
| | 5600 | 76.9×143 | 0.20 | 20 | 28 | 15.1 | ENF2GM562UE3*00C |
| | 6800 | 76.9×168 | 0.20 | 17 | 23 | 18.0 | ENF2GM682UG8*00C |
| | 8200 | 76.9×196 | 0.20 | 15 | 21 | 21.3 | ENF2GM822UJ6*00C |
| | 10000 | 76.9×220 | 0.20 | 13 | 19 | 22.1 | ENF2GM103UM0*00C |
| | 12000 | 91×220 | 0.20 | 9 | 13 | 27.6 | ENF2GM123VM0*00C |
| 450(2W) | 1000 | 51.6×105 | 0.20 | 97 | 145 | 4.3 | ENF2WM102SA5*00C |
| | 1500 | 51.6×130 | 0.20 | 65 | 97 | 6.1 | ENF2WM152SD0*00C |
| | 2200 | 64.3×115 | 0.20 | 45 | 67 | 7.8 | ENF2WM222TB5*00C |
| | 3300 | 76.9×130 | 0.20 | 29 | 43 | 10.8 | ENF2WM332UD0*00C |
| | 3900 | 76.9×143 | 0.20 | 25 | 37 | 12.9 | ENF2WM392UE3*00C |
| | 4700 | 76.9×168 | 0.20 | 22 | 32 | 14.3 | ENF2WM472UG8*00C |
| | 5600 | 76.9×196 | 0.20 | 19 | 28 | 14.7 | ENF2WM562UJ6*00C |
| | 6800 | 76.9×220 | 0.20 | 16 | 23 | 18.1 | ENF2WM682UM0*00C |
| | 8200 | 91×196 | 0.20 | 12 | 17 | 19.7 | ENF2WM822VJ6*00C |
| | 10000 | 91×220 | 0.20 | 10 | 15 | 23.5 | ENF2WM103VM0*00C |

Note: "*" may be "A" or "B" or "S" or "T".
A: Ring clip mounting standard design
B: Threaded stud standard design
S: Ring clip mounting special design
T: Threaded stud special design

NK series

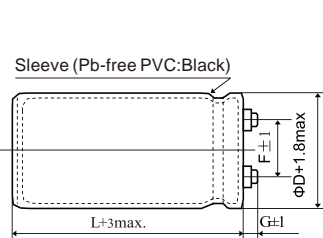
- Endurance with ripple current: 5,000 hours at 105°C
- High ripple and long life series
- Detail specification: IEC 60384-4
- RoHS Compliant



SPECIFICATIONS

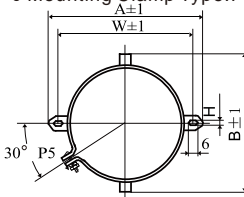
| Items | Characteristics |
|---------------------------------|--|
| Category Temperature Range | -25~+105°C(350~450 V _{dc}) |
| Surge Voltage | 1.10* V _R |
| Rated Capacitance Range | 1000~15000µF |
| Rated Voltage Range | 350~450 V _{dc} |
| Capacitance Tolerance | ±20% (M) (at 20°C, 120Hz) |
| Leakage Current | I=0.02CV [µA] or 5mA, whichever is smaller. Where, I: Max.leakage current (µA), C : Rated capacitance (µF), V : Rated voltage (V) (at 20°C after 5 minutes) |
| Dissipation Factor (tan δ) | 0.20 (at 20°C, 120Hz) |
| Low Temperature Characteristics | Capacitance Change C(-25°C)/C(+20°C) 0.7 (at 120Hz) |
| Insulation Resistance | When measured between the terminals shorted each other and the mounting clamp on the insulating sleeve covering the case by using an insulation resistance meter of 500V _{dc} , the insulation resistance shall not be less than 100MΩ. |
| Insulation Withstanding Voltage | When a voltage of 2,000Vac is applied for 1 minute between the terminals shorted each other and the mounting clamp on the insulating sleeve covering the case, there shall not be electrical damage. |
| Endurance | The following specifications shall be satisfied when the capacitors are restored to 20°C after DC voltage plus the rated ripple current is applied for 5,000 hours at 105°C. |
| | Capacitance Change ±20% of the initial value |
| | D.F. (tan δ) 200% of the initial specified value |
| | Leakage Current The initial specified value |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1,000 hours at 105°C without voltage applied. |
| | Capacitance Change ±20% of the initial value |
| | D.F. (tan δ) 150% of the initial specified value |
| | Leakage Current The initial specified value |

DIMENSIONS(Screw-Mount)[mm]



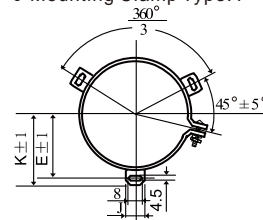
Ø35 to Ø51.6:G=7
Ø64.3 to Ø91:G=6.5

● Mounting Clamp Type:I



| ØD | A | B | W | F |
|------|-------|------|------|------|
| 35 | 58.0 | 44.0 | 48.0 | 12.7 |
| 51.6 | 80.0 | 62.0 | 68.0 | 22.2 |
| 64.3 | 93.0 | 82.0 | 81.0 | 28.5 |
| 77 | 106.0 | 94.0 | 93.5 | 31.7 |

● Mounting Clamp Type:Y

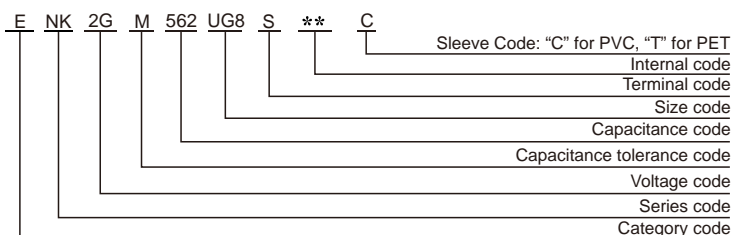


| ØD | E | K | J | F |
|------|------|------|------|------|
| 51.6 | 32.5 | 35.8 | 14.0 | 22.2 |
| 64.3 | 38.4 | 42.5 | 14.0 | 28.5 |
| 77 | 44.5 | 47.5 | 14.0 | 31.7 |
| 91 | 50.8 | 54.7 | 14.0 | 31.7 |

<Screw specifications>
Plus hexagon-headed screw:
M5x0.8x10 or M6x1.0x12
Maximum screw tightening torque:3.23Nm

* The screw and the mounting clamp are separately supplied and not attached to the product.

PART NUMBERING SYSTEM



RATED RIPPLE CURRENT MULTIPLIERS

- Frequency Coefficient

| Frequency(Hz) | 50 | 120 | 300 | 1k | 3k |
|---------------|-----|-----|-----|-----|-----|
| Coefficient | 0.8 | 1.0 | 1.1 | 1.3 | 1.4 |

The endurance of capacitors is shortened with internal heating produced by ripple current at the rate of halving the lifetime with every 5 or 10°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

NK series

■ STANDARD RATINGS

| WV (V _{dc}) | Cap (μF) | Case size D×L(mm) | tan | ESR typ. 120Hz 20°C m | ESR max. 120Hz 20°C m | Rated ripple current (Arms/105°C,120Hz) | Part Number |
|-----------------------|----------|-------------------|----------|-----------------------|-----------------------|---|------------------|
| 350(2V) | 1000 | 51.6×80 | 0.20 | 88 | 140 | 5.3 | ENK2VM102S80*00C |
| | 1500 | 51.6×80 | 0.20 | 65 | 99 | 7.9 | ENK2VM152S80*00C |
| | 2200 | 51.6×105 | 0.20 | 40 | 68 | 10.2 | ENK2VM222SA5*00C |
| | 3300 | 64.3×115 | 0.20 | 26 | 45 | 14.5 | ENK2VM332TB5*00C |
| | 3900 | 64.3×130 | 0.20 | 23 | 41 | 16.4 | ENK2VM392TD0*00C |
| | 4700 | 64.3×155 | 0.20 | 20 | 36 | 19.2 | ENK2VM472TF5*00C |
| | 5600 | 76.9×143 | 0.20 | 18 | 29 | 21.9 | ENK2VM562UE3*00C |
| | 6800 | 76.9×168 | 0.20 | 15 | 25 | 26.3 | ENK2VM682UG8*00C |
| | 8200 | 76.9×196 | 0.20 | 13 | 23 | 30.2 | ENK2VM822UJ6*00C |
| | 10000 | 76.9×220 | 0.20 | 11 | 18 | 33.7 | ENK2VM103UM0*00C |
| | 12000 | 100×196 | 0.20 | 10 | 14 | 38.0 | ENK2VM123AJ6*00C |
| | 15000 | 100×250 | 0.20 | 8 | 12 | 47.9 | ENK2VM153AP0*00C |
| 400(2G) | 1000 | 51.6×80 | 0.20 | 90 | 141 | 5.2 | ENK2GM102S80*00C |
| | 1500 | 51.6×96 | 0.20 | 61 | 92 | 7.1 | ENK2GM152S96*00C |
| | 2200 | 64.3×105 | 0.20 | 45 | 61 | 10.4 | ENK2GM222TA5*00C |
| | 3300 | 64.3×130 | 0.20 | 29 | 42 | 15.2 | ENK2GM332TD0*00C |
| | 3900 | 76.9×130 | 0.20 | 25 | 35 | 18.0 | ENK2GM392UD0*00C |
| | 4700 | 76.9×143 | 0.20 | 20 | 29 | 20.6 | ENK2GM472UE3*00C |
| | 5600 | 76.9×168 | 0.20 | 19 | 26 | 23.9 | ENK2GM562UG8*00C |
| | 6800 | 76.9×196 | 0.20 | 16 | 21 | 27.5 | ENK2GM682UJ6*00C |
| | 8200 | 91×196 | 0.20 | 13 | 19 | 30.8 | ENK2GM822VJ6*00C |
| | 10000 | 100×196 | 0.20 | 11 | 17 | 34.9 | ENK2GM103AJ6*00C |
| | 12000 | 100×220 | 0.20 | 7 | 11 | 40 | ENK2GM123AM0*00C |
| | 450(2W) | 1000 | 51.6×105 | 0.20 | 87 | 138 | 5.3 |
| 1500 | | 51.6×115 | 0.20 | 60 | 92 | 7.1 | ENK2WM152SB5*00C |
| 2200 | | 64.3×115 | 0.20 | 41 | 62 | 11.9 | ENK2WM222TB5*00C |
| 3300 | | 76.9×130 | 0.20 | 25 | 39 | 16.7 | ENK2WM332UD0*00C |
| 3900 | | 76.9×143 | 0.20 | 23 | 34 | 18.9 | ENK2WM392UE3*00C |
| 4700 | | 76.9×168 | 0.20 | 20 | 29 | 21.9 | ENK2WM472UG8*00C |
| 5600 | | 76.9×196 | 0.20 | 17 | 26 | 24.4 | ENK2WM562UJ6*00C |
| 6800 | | 76.9×220 | 0.20 | 13 | 20 | 28.0 | ENK2WM682UM0*00C |
| 8200 | | 91×196 | 0.20 | 10 | 15 | 32.3 | ENK2WM822VJ6*00C |
| 10000 | | 100×220 | 0.20 | 8 | 13 | 36.9 | ENK2WM103AM0*00C |

Note: "*" may be "A" or "B" or "S" or "T".

- A: Ring clip mounting standard design
- B: Threaded stud standard design
- S: Ring clip mounting special design
- T: Threaded stud special design

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