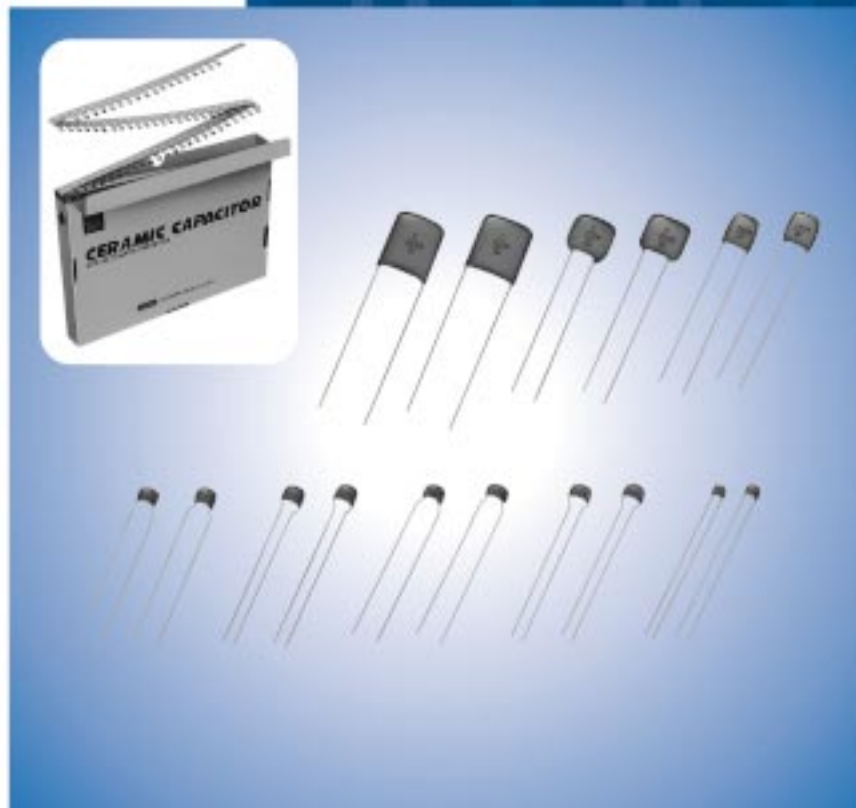


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May.10.2011

Radial Lead Type Monolithic Ceramic Capacitors



Cat.No.C49E-21

muRata *Innovator
in Electronics*
Murata
Manufacturing Co., Ltd.

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EU RoHS Compliant

- All the products in this catalog comply with EU RoHS.
- EU RoHS is "the European Directive 2002/95/EC on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment."
- For more details, please refer to our website 'Murata's Approach for EU RoHS' (<http://www.murata.com/info/rohs.html>).



CONTENTS

1

| | |
|---|----|
| Part Numbering | 2 |
| 1 RPE Series (DC25V-DC100V) | 4 |
| ● Marking | 5 |
| Temperature Compensating Type, COG Characteristics | 6 |
| High Dielectric Constant Type, X7R Characteristics | 9 |
| High Dielectric Constant Type, Y5V Characteristics | 10 |
| ● Specifications and Test Methods | 12 |
| 2 RPE Series Small Size, Large Capacitance (DC50V) | 15 |
| ● Marking | 16 |
| High Dielectric Constant Type, X7R Characteristics | 16 |
| ● Specifications and Test Methods | 17 |
| 3 RH Series 150°C max. (for Automotive) (DC50V-DC100V) | 19 |
| ● Marking | 20 |
| Temperature Compensating Type, X8G Characteristics | 20 |
| High Dielectric Constant Type, X8L Characteristics | 21 |
| ● Specifications and Test Methods | 24 |
| 4 RDE Series (For Commercial Use Only) (DC25V-DC630V) | 27 |
| ● Marking | 28 |
| Temperature Compensating Type, COG Characteristics | 28 |
| High Dielectric Constant Type, X7R/X7S Characteristics | 30 |
| High Dielectric Constant Type, F/Y5V Characteristics | 33 |
| ● Specifications and Test Methods | 34 |
| 5 RDE Series Large Capacitance and High Allowable Ripple Current (For Commercial Use Only) (DC250V-DC630V) | 37 |
| ● Marking | 38 |
| High Dielectric Constant Type, X7T Characteristics | 38 |
| ● Specifications and Test Methods | 40 |
| Reference Data (Typical Example) | 42 |
| RPE Series | 42 |
| RPE Series Small Size, Large Capacitance | 43 |
| RH Series | 44 |
| RDE Series | 45 |
| Packaging | 46 |
| △Caution | 48 |
| Notice | 51 |

2

3

4

5

● Part Numbering

Radial Lead Type Monolithic Ceramic Capacitors

(Part Number)

| | | | | | | | | | |
|----|---|----|----|-----|---|---|----|-----|---|
| RP | E | R7 | 1H | 104 | K | 2 | M1 | A03 | A |
| ① | ② | ③ | ④ | ⑤ | ⑥ | ⑦ | ⑧ | ⑨ | ⑩ |

① Product ID

② Series/Terminal

| Product ID | Series/Terminal | |
|------------|-----------------|---|
| RP | E | Radial Lead Type Monolithic Ceramic Capacitors (DC25V-DC100V) |
| RH | E/D | Radial Lead Type Monolithic Ceramic Capacitors 150°C max. (for Automotive) (DC50V-DC100V) |
| RD | E | Radial Lead Type Monolithic Ceramic Capacitors (For Commercial Use Only) (DC25V-DC630V) |

③ Temperature Characteristics

| Code | Temperature Characteristics | Reference Temperature | Temperature Range | Capacitance Change or Temperature Coefficient | Operating Temperature Range |
|------|-----------------------------|-----------------------|-------------------|---|-----------------------------|
| 5C | C0G* | 25°C | 25 to 125°C | 0±30ppm/°C | -55 to 125°C |
| 5G | X8G* | 25°C | 25 to 150°C | 0±30ppm/°C | -55 to 150°C |
| C7 | X7S | 25°C | -55 to 125°C | ±22% | -55 to 125°C |
| D7 | X7T | 25°C | -55 to 125°C | +22, -33% | -55 to 125°C |
| F1 | F | 20°C | -25 to 85°C | +30, -80% | -25 to 85°C |
| F5 | Y5V | 25°C | -30 to 85°C | +22, -82% | -30 to 85°C |
| L8 | X8L | 25°C | -55 to 125°C | ±15% | -55 to 150°C |
| | | | 125 to 150°C | +15, -40% | |
| R7 | X7R | 25°C | -55 to 125°C | ±15% | -55 to 125°C |

* Please refer to table for Capacitance change under reference temperature.

• Capacitance change from each temperature

| Char. | Nominal Values (ppm/°C) *1 | Capacitance Change from 25°C (%) | | | | | |
|-------|----------------------------|----------------------------------|-------|-------|-------|-------|-------|
| | | -55°C | | -30°C | | -10°C | |
| | | Max. | Min. | Max. | Min. | Max. | Min. |
| C0G | 0±30 | 0.58 | -0.24 | 0.40 | -0.17 | 0.25 | -0.11 |
| X8G | | | | | | | |

*1: Nominal values denote the temperature coefficient within a range of 25 to 125°C.

④ Rated Voltage

| Code | Rated Voltage |
|------|---------------|
| 1E | DC25V |
| 1H | DC50V |
| 2A | DC100V |
| 2E | DC250V |
| 2W | DC450V |
| 2J | DC630V |

⑤ Capacitance Tolerance

| Code | Capacitance Tolerance | Temperature Characteristics | Capacitance Step |
|------|-----------------------|-----------------------------|---------------------|
| C | ±0.25pF | C0G | ≤5pF : 1pF Step |
| D | ±0.5pF | | 6 to 9pF : 1pF Step |
| J | ±5% | C0G/X8G | ≥10 : E12 Series |
| K | ±10% | X7S/X7T/X7R/ X8L | E6 Series |
| M | ±20% | X7S/X7T/X7R/ X8L | E3 Series |
| Z | +80%, -20% | F/Y5V | E3 Series |

⑤ Capacitance

Expressed by three-digit alphanumerics. The unit is pico-farad (pF). The first and second figures are significant digits, and the third figure expresses the number of zeros that follow the two numbers.

If there is a decimal point, it is expressed by the capital letter "R."
 In this case, all figures are significant digits.

Continued on the following page.

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⑦ Dimensions (LxW)

| Code | Dimensions (LxW) |
|----------|---|
| 0 | 4.0X3.5mm or 5.0X3.5mm (Depends on Part Number List) |
| 1 | 4.0X3.5mm or 4.5X3.5mm or 5.0X3.5mm (Depends on Part Number List) |
| 2 | 5.0X3.5mm or 5.5X4.0mm or 5.7X4.5mm (Depends on Part Number List) |
| 3 | 5.0X4.5mm or 5.5X5.0mm or 6.0X5.5mm (Depends on Part Number List) |
| 5 | 7.5X7.5mm* |
| 6 | 10.0X10.0mm |
| 7 | 12.5X12.5mm |
| 8 | 7.5X5.5mm |
| U | 7.7X12.5mm* |
| W | 5.5X7.5mm |

* DC630V: W+0.5mm

⑧ Lead Style

| Code | Lead Style | Lead Spacing |
|--------------|----------------------|--------------|
| A2 | Straight Long | 2.5mm |
| B1 | Straight Long | 5.0mm |
| C1 | Straight Long | 10.0mm |
| DB | Straight Taping | 2.5mm |
| E1/E2 | Straight Taping | 5.0mm |
| K1 | Inside Crimp | 5.0mm |
| M1/M2 | Inside Crimp Taping | 5.0mm |
| P1 | Outside Crimp | 2.5mm |
| S1/S2 | Outside Crimp Taping | 2.5mm |

Lead distance between reference and bottom planes.

M1, S1: H₀ = 16.0±0.5mm

M2, S2: H₀ = 20.0±0.5mm

E1: H = 17.5±0.5mm

E2: H = 20.0±0.5mm

⑨ Individual Specification Code

Expressed by three-digit alphanumerics

⑩ Packaging

| Code | Packaging |
|----------|-----------|
| A | Ammo Pack |
| B | Bulk |

1

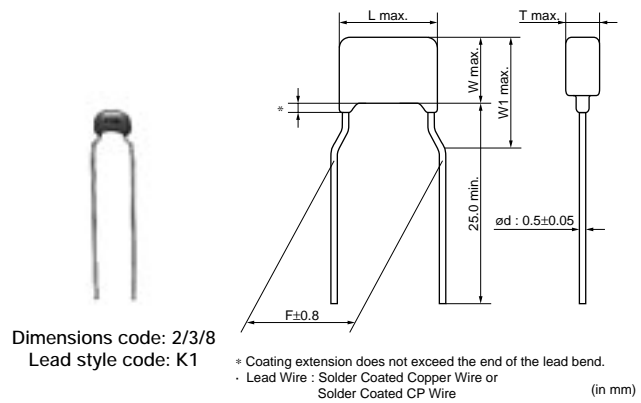
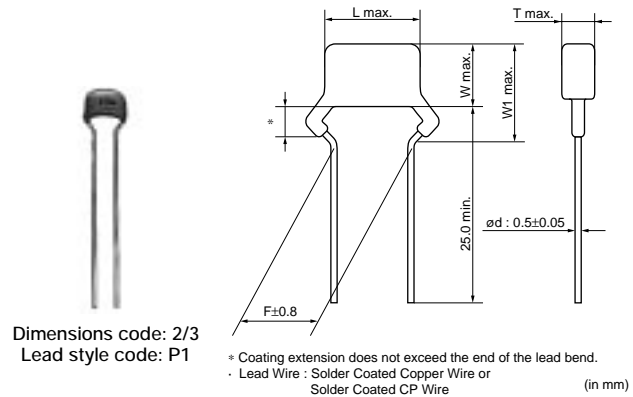
Radial Lead Type Monolithic Ceramic Capacitors



RPE Series (DC25V-DC100V)

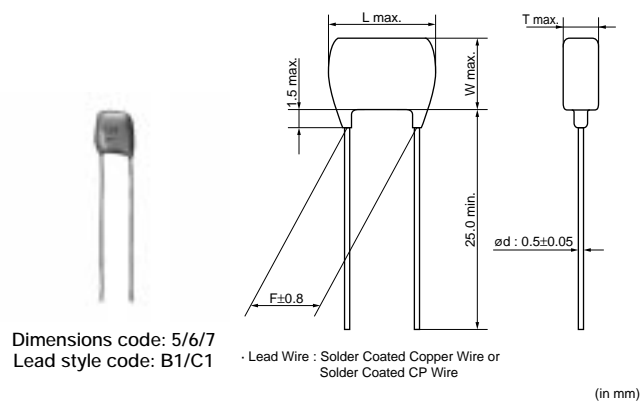
■ Features

1. The RPE series capacitors have small dimensions, large capacitance, and a capacity volume ratio of 10 micro F/cm cubed, close to that of electrolytic capacitors. They do not have polarity.
2. Excellent frequency characteristics and due to their small internal inductance are suitable for high frequencies.
3. Not coated with wax so there is no change in their exterior appearance due to the outflow of wax during soldering or solvent during cleansing.
4. They are highly nonflammable, having characteristics equivalent to the UL94V-0 standard.



■ Dimensions

| Dimensions and Lead Style Code | Dimensions (mm) | | | | | |
|--------------------------------|-----------------|------|-----|---|------|-----|
| | L | W | W1 | T | F | d |
| 2P1/2S1/2S2 | 5.0 | 3.5 | 5.0 | See the individual product specifications | 2.5 | 0.5 |
| 2K1/2M1/2M2 | 5.0 | 3.5 | 5.0 | | 5.0 | 0.5 |
| 3P1/3S1/3S2 | 5.0 | 4.5 | 6.3 | | 2.5 | 0.5 |
| 3K1/3M1/3M2 | 5.0 | 4.5 | 6.3 | | 5.0 | 0.5 |
| 5B1/5E1/5E2 | 7.5 | 7.5 | - | | 5.0 | 0.5 |
| 6B1/6E1/6E2 | 10.0 | 10.0 | - | | 5.0 | 0.5 |
| 7C1 | 12.5 | 12.5 | - | | 10.0 | 0.5 |
| 8K1/8M1/8M2 | 7.5 | 5.5 | 8.0 | 5.0 | 0.5 | |



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■ Marking


1

| Dimensions Code | Type | Temperature Compensating Type | High Dielectric Constant Type | |
|-------------------------------|---|-------------------------------|-------------------------------|-----|
| | Temp. Char. | C0G | X7R | Y5V |
| 2 | Individual Specification Code A□□ B□□ Z□□ | Marked on both sides | | |
| | Individual Specification Code Except A□□ B□□ Z□□ | | | |
| 3, 8 | | — | | — |
| 5, 6, 7 | | — | | — |
| Temperature Characteristics | Marked with code (C0G char.: A, X7R char.: C, Y5V char.: F) A part is omitted (Please refer to the marking example.) | | | |
| Nominal Capacitance | Under 100pF: Actual value 100pF and over: marked with 3 figures | | | |
| Capacitance Tolerance | Marked with code | | | |
| Rated Voltage | Marked with code (DC25V: 2, DC50V: 5, DC100V: 1) A part is omitted (Please refer to the marking example.) | | | |
| Manufacturer's Identification | Marked with A part is omitted (Please refer to the marking example.) | | | |

1

Temperature Compensating Type, C0G Characteristics

| Part Number | Temp. Char. | Rated Voltage (Vdc) | Capacitance (pF) | Dimensions LxW (mm) | Dimension T (mm) | Lead Space F (mm) | Lead Style Code Bulk | Lead Style Code Taping (1) | Lead Style Code Taping (2) |
|--------------------|-------------|---------------------|------------------|---------------------|------------------|-------------------|----------------------|----------------------------|----------------------------|
| RPE5C1H1R0C2□□B03□ | C0G | 50 | 1.0 ±0.25pF | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C1H1R0C2□□B03□ | C0G | 50 | 1.0 ±0.25pF | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C1H2R0C2□□B03□ | C0G | 50 | 2.0 ±0.25pF | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C1H2R0C2□□B03□ | C0G | 50 | 2.0 ±0.25pF | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C1H3R0C2□□B03□ | C0G | 50 | 3.0 ±0.25pF | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C1H3R0C2□□B03□ | C0G | 50 | 3.0 ±0.25pF | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C1H4R0C2□□B03□ | C0G | 50 | 4.0 ±0.25pF | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C1H4R0C2□□B03□ | C0G | 50 | 4.0 ±0.25pF | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C1H5R0C2□□B03□ | C0G | 50 | 5.0 ±0.25pF | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C1H5R0C2□□B03□ | C0G | 50 | 5.0 ±0.25pF | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C1H6R0D2□□B03□ | C0G | 50 | 6.0 ±0.5pF | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C1H6R0D2□□B03□ | C0G | 50 | 6.0 ±0.5pF | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C1H7R0D2□□Z03□ | C0G | 50 | 7.0 ±0.5pF | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C1H7R0D2□□Z03□ | C0G | 50 | 7.0 ±0.5pF | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C1H8R0D2□□Z03□ | C0G | 50 | 8.0 ±0.5pF | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C1H8R0D2□□Z03□ | C0G | 50 | 8.0 ±0.5pF | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C1H9R0D2□□Z03□ | C0G | 50 | 9.0 ±0.5pF | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C1H9R0D2□□Z03□ | C0G | 50 | 9.0 ±0.5pF | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C1H100J2□□Z03□ | C0G | 50 | 10 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C1H100J2□□Z03□ | C0G | 50 | 10 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C1H120J2□□Z03□ | C0G | 50 | 12 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C1H120J2□□Z03□ | C0G | 50 | 12 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C1H150J2□□Z03□ | C0G | 50 | 15 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C1H150J2□□Z03□ | C0G | 50 | 15 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C1H180J2□□Z03□ | C0G | 50 | 18 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C1H180J2□□Z03□ | C0G | 50 | 18 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C1H220J2□□Z03□ | C0G | 50 | 22 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C1H220J2□□Z03□ | C0G | 50 | 22 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C1H270J2□□Z03□ | C0G | 50 | 27 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C1H270J2□□Z03□ | C0G | 50 | 27 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C1H330J2□□Z03□ | C0G | 50 | 33 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C1H330J2□□Z03□ | C0G | 50 | 33 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C1H390J2□□Z03□ | C0G | 50 | 39 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C1H390J2□□Z03□ | C0G | 50 | 39 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C1H470J2□□Z03□ | C0G | 50 | 47 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C1H470J2□□Z03□ | C0G | 50 | 47 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C1H560J2□□Z03□ | C0G | 50 | 56 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C1H560J2□□Z03□ | C0G | 50 | 56 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C1H680J2□□Z03□ | C0G | 50 | 68 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C1H680J2□□Z03□ | C0G | 50 | 68 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C1H820J2□□Z03□ | C0G | 50 | 82 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C1H820J2□□Z03□ | C0G | 50 | 82 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C1H101J2□□A03□ | C0G | 50 | 100 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C1H101J2□□A03□ | C0G | 50 | 100 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C1H121J2□□A03□ | C0G | 50 | 120 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C1H121J2□□A03□ | C0G | 50 | 120 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C1H151J2□□A03□ | C0G | 50 | 150 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C1H151J2□□A03□ | C0G | 50 | 150 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C1H181J2□□A03□ | C0G | 50 | 180 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C1H181J2□□A03□ | C0G | 50 | 180 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C1H221J2□□A03□ | C0G | 50 | 220 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C1H221J2□□A03□ | C0G | 50 | 220 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C1H271J2□□A03□ | C0G | 50 | 270 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C1H271J2□□A03□ | C0G | 50 | 270 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |

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| Part Number | Temp. Char. | Rated Voltage (Vdc) | Capacitance (pF) | Dimensions LxW (mm) | Dimension T (mm) | Lead Space F (mm) | Lead Style Code Bulk | Lead Style Code Taping (1) | Lead Style Code Taping (2) |
|--------------------|-------------|---------------------|------------------|---------------------|------------------|-------------------|----------------------|----------------------------|----------------------------|
| RPE5C1H331J2□□A03□ | C0G | 50 | 330 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C1H331J2□□A03□ | C0G | 50 | 330 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C1H391J2□□A03□ | C0G | 50 | 390 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C1H391J2□□A03□ | C0G | 50 | 390 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C1H471J2□□A03□ | C0G | 50 | 470 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C1H471J2□□A03□ | C0G | 50 | 470 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C1H561J2□□A03□ | C0G | 50 | 560 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C1H561J2□□A03□ | C0G | 50 | 560 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C1H681J2□□A03□ | C0G | 50 | 680 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C1H681J2□□A03□ | C0G | 50 | 680 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C1H821J2□□A03□ | C0G | 50 | 820 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C1H821J2□□A03□ | C0G | 50 | 820 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C1H102J2□□A03□ | C0G | 50 | 1000 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C1H102J2□□A03□ | C0G | 50 | 1000 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C1H122J2□□A03□ | C0G | 50 | 1200 ±5% | 5.0 x 3.5 | 3.15 | 2.5 | P1 | S1 | S2 |
| RPE5C1H122J2□□A03□ | C0G | 50 | 1200 ±5% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | M2 |
| RPE5C1H152J2□□A03□ | C0G | 50 | 1500 ±5% | 5.0 x 3.5 | 3.15 | 2.5 | P1 | S1 | S2 |
| RPE5C1H152J2□□A03□ | C0G | 50 | 1500 ±5% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | M2 |
| RPE5C1H182J2□□C03□ | C0G | 50 | 1800 ±5% | 5.0 x 3.5 | 3.15 | 2.5 | P1 | S1 | S2 |
| RPE5C1H182J2□□A03□ | C0G | 50 | 1800 ±5% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | M2 |
| RPE5C1H222J2□□C03□ | C0G | 50 | 2200 ±5% | 5.0 x 3.5 | 3.15 | 2.5 | P1 | S1 | S2 |
| RPE5C1H222J2□□A03□ | C0G | 50 | 2200 ±5% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | M2 |
| RPE5C1H272J2□□C03□ | C0G | 50 | 2700 ±5% | 5.0 x 3.5 | 3.15 | 2.5 | P1 | S1 | S2 |
| RPE5C1H272J2□□A03□ | C0G | 50 | 2700 ±5% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | M2 |
| RPE5C1H332J2□□C03□ | C0G | 50 | 3300 ±5% | 5.0 x 3.5 | 3.15 | 2.5 | P1 | S1 | S2 |
| RPE5C1H332J2□□A03□ | C0G | 50 | 3300 ±5% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | M2 |
| RPE5C1H392J2□□C03□ | C0G | 50 | 3900 ±5% | 5.0 x 3.5 | 3.15 | 2.5 | P1 | S1 | S2 |
| RPE5C1H392J2□□A03□ | C0G | 50 | 3900 ±5% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | M2 |
| RPE5C1H472J2□□C03□ | C0G | 50 | 4700 ±5% | 5.0 x 3.5 | 3.15 | 2.5 | P1 | S1 | S2 |
| RPE5C1H472J2□□A03□ | C0G | 50 | 4700 ±5% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | M2 |
| RPE5C1H562J2□□C03□ | C0G | 50 | 5600 ±5% | 5.0 x 3.5 | 3.15 | 2.5 | P1 | S1 | S2 |
| RPE5C1H562J2□□A03□ | C0G | 50 | 5600 ±5% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | M2 |
| RPE5C1H682J2□□C03□ | C0G | 50 | 6800 ±5% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | M2 |
| RPE5C1H822J2□□C03□ | C0G | 50 | 8200 ±5% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | M2 |
| RPE5C1H103J2□□C03□ | C0G | 50 | 10000 ±5% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | M2 |
| RPE5C2A1R0C2□□B03□ | C0G | 100 | 1.0 ±0.25pF | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C2A1R0C2□□B03□ | C0G | 100 | 1.0 ±0.25pF | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C2A2R0C2□□B03□ | C0G | 100 | 2.0 ±0.25pF | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C2A2R0C2□□B03□ | C0G | 100 | 2.0 ±0.25pF | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C2A3R0C2□□B03□ | C0G | 100 | 3.0 ±0.25pF | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C2A3R0C2□□B03□ | C0G | 100 | 3.0 ±0.25pF | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C2A4R0C2□□B03□ | C0G | 100 | 4.0 ±0.25pF | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C2A4R0C2□□B03□ | C0G | 100 | 4.0 ±0.25pF | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C2A5R0C2□□B03□ | C0G | 100 | 5.0 ±0.25pF | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C2A5R0C2□□B03□ | C0G | 100 | 5.0 ±0.25pF | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C2A6R0D2□□B03□ | C0G | 100 | 6.0 ±0.5pF | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C2A6R0D2□□B03□ | C0G | 100 | 6.0 ±0.5pF | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C2A7R0D2□□Z03□ | C0G | 100 | 7.0 ±0.5pF | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C2A7R0D2□□Z03□ | C0G | 100 | 7.0 ±0.5pF | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C2A8R0D2□□Z03□ | C0G | 100 | 8.0 ±0.5pF | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C2A8R0D2□□Z03□ | C0G | 100 | 8.0 ±0.5pF | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C2A9R0D2□□Z03□ | C0G | 100 | 9.0 ±0.5pF | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C2A9R0D2□□Z03□ | C0G | 100 | 9.0 ±0.5pF | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C2A100J2□□Z03□ | C0G | 100 | 10 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C2A100J2□□Z03□ | C0G | 100 | 10 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C2A120J2□□Z03□ | C0G | 100 | 12 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C2A120J2□□Z03□ | C0G | 100 | 12 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |

Continued on the following page. ↗

⚠Note • Please read rating and ⚠CAUTION (for storage, operating, rating, soldering, mounting and handling) in this catalog to prevent smoking and/or burning, etc.
 • This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please review our product specifications or consult the approval sheet for product specifications before ordering.

Continued from the preceding page.


| Part Number | Temp. Char. | Rated Voltage (Vdc) | Capacitance (pF) | Dimensions LxW (mm) | Dimension T (mm) | Lead Space F (mm) | Lead Style Code Bulk | Lead Style Code Taping (1) | Lead Style Code Taping (2) |
|--------------------|-------------|---------------------|------------------|---------------------|------------------|-------------------|----------------------|----------------------------|----------------------------|
| RPE5C2A150J2□□Z03□ | C0G | 100 | 15 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C2A150J2□□Z03□ | C0G | 100 | 15 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C2A180J2□□Z03□ | C0G | 100 | 18 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C2A180J2□□Z03□ | C0G | 100 | 18 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C2A220J2□□Z03□ | C0G | 100 | 22 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C2A220J2□□Z03□ | C0G | 100 | 22 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C2A270J2□□Z03□ | C0G | 100 | 27 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C2A270J2□□Z03□ | C0G | 100 | 27 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C2A330J2□□Z03□ | C0G | 100 | 33 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C2A330J2□□Z03□ | C0G | 100 | 33 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C2A390J2□□Z03□ | C0G | 100 | 39 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C2A390J2□□Z03□ | C0G | 100 | 39 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C2A470J2□□Z03□ | C0G | 100 | 47 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C2A470J2□□Z03□ | C0G | 100 | 47 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C2A560J2□□Z03□ | C0G | 100 | 56 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C2A560J2□□Z03□ | C0G | 100 | 56 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C2A680J2□□Z03□ | C0G | 100 | 68 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C2A680J2□□Z03□ | C0G | 100 | 68 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C2A820J2□□Z03□ | C0G | 100 | 82 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C2A820J2□□Z03□ | C0G | 100 | 82 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C2A101J2□□A03□ | C0G | 100 | 100 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C2A101J2□□A03□ | C0G | 100 | 100 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C2A121J2□□A03□ | C0G | 100 | 120 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C2A121J2□□A03□ | C0G | 100 | 120 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C2A151J2□□A03□ | C0G | 100 | 150 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C2A151J2□□A03□ | C0G | 100 | 150 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C2A181J2□□A03□ | C0G | 100 | 180 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C2A181J2□□A03□ | C0G | 100 | 180 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C2A221J2□□A03□ | C0G | 100 | 220 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C2A221J2□□A03□ | C0G | 100 | 220 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C2A271J2□□A03□ | C0G | 100 | 270 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C2A271J2□□A03□ | C0G | 100 | 270 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C2A331J2□□A03□ | C0G | 100 | 330 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C2A331J2□□A03□ | C0G | 100 | 330 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C2A391J2□□A03□ | C0G | 100 | 390 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C2A391J2□□A03□ | C0G | 100 | 390 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C2A471J2□□A03□ | C0G | 100 | 470 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C2A471J2□□A03□ | C0G | 100 | 470 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C2A561J2□□A03□ | C0G | 100 | 560 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C2A561J2□□A03□ | C0G | 100 | 560 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C2A681J2□□A03□ | C0G | 100 | 680 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPE5C2A681J2□□A03□ | C0G | 100 | 680 ±5% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPE5C2A821J2□□A03□ | C0G | 100 | 820 ±5% | 5.0 x 3.5 | 3.15 | 2.5 | P1 | S1 | S2 |
| RPE5C2A821J2□□A03□ | C0G | 100 | 820 ±5% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | M2 |
| RPE5C2A102J2□□A03□ | C0G | 100 | 1000 ±5% | 5.0 x 3.5 | 3.15 | 2.5 | P1 | S1 | S2 |
| RPE5C2A102J2□□A03□ | C0G | 100 | 1000 ±5% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | M2 |
| RPE5C2A122J2□□A03□ | C0G | 100 | 1200 ±5% | 5.0 x 3.5 | 3.15 | 2.5 | P1 | S1 | S2 |
| RPE5C2A122J2□□A03□ | C0G | 100 | 1200 ±5% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | M2 |
| RPE5C2A152J2□□A03□ | C0G | 100 | 1500 ±5% | 5.0 x 3.5 | 3.15 | 2.5 | P1 | S1 | S2 |
| RPE5C2A152J2□□A03□ | C0G | 100 | 1500 ±5% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | M2 |

Two blank columns are filled with the lead style code. Please refer to the 3 columns on the right for the appropriate code.
 The last blank column is filled with the packaging code. (B: bulk, A: ammo pack)

△Note • Please read rating and △CAUTION (for storage, operating, rating, soldering, mounting and handling) in this catalog to prevent smoking and/or burning, etc.
 • This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please review our product specifications or consult the approval sheet for product specifications before ordering.

High Dielectric Constant Type, X7R Characteristics

| Part Number | Temp. Char. | Rated Voltage (Vdc) | Capacitance | Dimensions LxW (mm) | Dimension T (mm) | Lead Space F (mm) | Lead Style Code Bulk | Lead Style Code Taping (1) | Lead Style Code Taping (2) |
|--------------------|-------------|---------------------|--------------|---------------------|------------------|-------------------|----------------------|----------------------------|----------------------------|
| RPER71E474K2□□A03□ | X7R | 25 | 0.47μF ±10% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | M2 |
| RPER71E684K2□□C03□ | X7R | 25 | 0.68μF ±10% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | M2 |
| RPER71E105K2□□C03□ | X7R | 25 | 1.0μF ±10% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | M2 |
| RPER71E155K3□□C07□ | X7R | 25 | 1.5μF ±10% | 5.0 x 4.5 | 3.15 | 5.0 | K1 | M1 | M2 |
| RPER71E225K3□□C07□ | X7R | 25 | 2.2μF ±10% | 5.0 x 4.5 | 3.15 | 5.0 | K1 | M1 | M2 |
| RPER71H221K2□□A03□ | X7R | 50 | 220pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPER71H221K2□□A03□ | X7R | 50 | 220pF ±10% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPER71H331K2□□A03□ | X7R | 50 | 330pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPER71H331K2□□A03□ | X7R | 50 | 330pF ±10% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPER71H471K2□□A03□ | X7R | 50 | 470pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPER71H471K2□□A03□ | X7R | 50 | 470pF ±10% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPER71H681K2□□A03□ | X7R | 50 | 680pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPER71H681K2□□A03□ | X7R | 50 | 680pF ±10% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPER71H102K2□□A03□ | X7R | 50 | 1000pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPER71H102K2□□A03□ | X7R | 50 | 1000pF ±10% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPER71H152K2□□A03□ | X7R | 50 | 1500pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPER71H152K2□□A03□ | X7R | 50 | 1500pF ±10% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPER71H222K2□□A03□ | X7R | 50 | 2200pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPER71H222K2□□A03□ | X7R | 50 | 2200pF ±10% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPER71H332K2□□A03□ | X7R | 50 | 3300pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPER71H332K2□□A03□ | X7R | 50 | 3300pF ±10% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPER71H472K2□□A03□ | X7R | 50 | 4700pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPER71H472K2□□A03□ | X7R | 50 | 4700pF ±10% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPER71H682K2□□A03□ | X7R | 50 | 6800pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPER71H682K2□□A03□ | X7R | 50 | 6800pF ±10% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPER71H103K2□□A03□ | X7R | 50 | 10000pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPER71H103K2□□A03□ | X7R | 50 | 10000pF ±10% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPER71H153K2□□A03□ | X7R | 50 | 15000pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPER71H153K2□□A03□ | X7R | 50 | 15000pF ±10% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPER71H223K2□□A03□ | X7R | 50 | 22000pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPER71H223K2□□A03□ | X7R | 50 | 22000pF ±10% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPER71H333K2□□A03□ | X7R | 50 | 33000pF ±10% | 5.0 x 3.5 | 3.15 | 2.5 | P1 | S1 | S2 |
| RPER71H333K2□□A03□ | X7R | 50 | 33000pF ±10% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | M2 |
| RPER71H473K2□□A03□ | X7R | 50 | 47000pF ±10% | 5.0 x 3.5 | 3.15 | 2.5 | P1 | S1 | S2 |
| RPER71H473K2□□A03□ | X7R | 50 | 47000pF ±10% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | M2 |
| RPER71H683K2□□A03□ | X7R | 50 | 68000pF ±10% | 5.0 x 3.5 | 3.15 | 2.5 | P1 | S1 | S2 |
| RPER71H683K2□□A03□ | X7R | 50 | 68000pF ±10% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | M2 |
| RPER71H104K2□□A03□ | X7R | 50 | 0.10μF ±10% | 5.0 x 3.5 | 3.15 | 2.5 | P1 | S1 | S2 |
| RPER71H104K2□□A03□ | X7R | 50 | 0.10μF ±10% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | M2 |
| RPER71H154K2□□C03□ | X7R | 50 | 0.15μF ±10% | 5.0 x 3.5 | 3.15 | 2.5 | P1 | S1 | S2 |
| RPER71H154K2□□C03□ | X7R | 50 | 0.15μF ±10% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | M2 |
| RPER71H224K2□□C03□ | X7R | 50 | 0.22μF ±10% | 5.0 x 3.5 | 3.15 | 2.5 | P1 | S1 | S2 |
| RPER71H224K2□□C03□ | X7R | 50 | 0.22μF ±10% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | M2 |
| RPER71H334K2□□C03□ | X7R | 50 | 0.33μF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPER71H334K2□□C03□ | X7R | 50 | 0.33μF ±10% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPER71H474K2□□C03□ | X7R | 50 | 0.47μF ±10% | 5.0 x 3.5 | 3.15 | 2.5 | P1 | S1 | S2 |
| RPER71H474K2□□C03□ | X7R | 50 | 0.47μF ±10% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | M2 |
| RPER71H684K3□□C03□ | X7R | 50 | 0.68μF ±10% | 5.0 x 4.5 | 3.15 | 2.5 | P1 | S1 | S2 |
| RPER71H684K3□□C03□ | X7R | 50 | 0.68μF ±10% | 5.0 x 4.5 | 3.15 | 5.0 | K1 | M1 | M2 |
| RPER71H105K3□□C07□ | X7R | 50 | 1.0μF ±10% | 5.0 x 4.5 | 3.15 | 2.5 | P1 | S1 | S2 |
| RPER71H105K3□□C07□ | X7R | 50 | 1.0μF ±10% | 5.0 x 4.5 | 3.15 | 5.0 | K1 | M1 | M2 |
| RPER71H155K8□□C03□ | X7R | 50 | 1.5μF ±10% | 7.5 x 5.5 | 4.0 | 5.0 | K1 | M1 | M2 |
| RPER71H225K8□□C03□ | X7R | 50 | 2.2μF ±10% | 7.5 x 5.5 | 4.0 | 5.0 | K1 | M1 | M2 |
| RPER71H335K5□□C03□ | X7R | 50 | 3.3μF ±10% | 7.5 x 7.5 | 5.0 | 5.0 | B1 | E1 | E2 |

Continued on the following page. 

⚠ Note • Please read rating and ⚠ CAUTION (for storage, operating, rating, soldering, mounting and handling) in this catalog to prevent smoking and/or burning, etc.
 • This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please review our product specifications or consult the approval sheet for product specifications before ordering.

↳ Continued from the preceding page.

| Part Number | Temp. Char. | Rated Voltage (Vdc) | Capacitance | Dimensions LxW (mm) | Dimension T (mm) | Lead Space F (mm) | Lead Style Code Bulk | Lead Style Code Taping (1) | Lead Style Code Taping (2) |
|--------------------|-------------|---------------------|--------------|---------------------|------------------|-------------------|----------------------|----------------------------|----------------------------|
| RPER71H475K5□□C03□ | X7R | 50 | 4.7μF ±10% | 7.5 x 7.5 | 4.0 | 5.0 | B1 | E1 | E2 |
| RPER72A221K2□□B03□ | X7R | 100 | 220pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPER72A221K2□□B03□ | X7R | 100 | 220pF ±10% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPER72A331K2□□B03□ | X7R | 100 | 330pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPER72A331K2□□B03□ | X7R | 100 | 330pF ±10% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPER72A471K2□□B03□ | X7R | 100 | 470pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPER72A471K2□□B03□ | X7R | 100 | 470pF ±10% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPER72A681K2□□B03□ | X7R | 100 | 680pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPER72A681K2□□B03□ | X7R | 100 | 680pF ±10% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPER72A102K2□□A03□ | X7R | 100 | 1000pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPER72A102K2□□A03□ | X7R | 100 | 1000pF ±10% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPER72A152K2□□A03□ | X7R | 100 | 1500pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPER72A152K2□□A03□ | X7R | 100 | 1500pF ±10% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPER72A222K2□□A03□ | X7R | 100 | 2200pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPER72A222K2□□A03□ | X7R | 100 | 2200pF ±10% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPER72A332K2□□A03□ | X7R | 100 | 3300pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPER72A332K2□□A03□ | X7R | 100 | 3300pF ±10% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPER72A472K2□□A03□ | X7R | 100 | 4700pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPER72A472K2□□A03□ | X7R | 100 | 4700pF ±10% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPER72A682K2□□A03□ | X7R | 100 | 6800pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPER72A682K2□□A03□ | X7R | 100 | 6800pF ±10% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPER72A103K2□□A03□ | X7R | 100 | 10000pF ±10% | 5.0 x 3.5 | 3.15 | 2.5 | P1 | S1 | S2 |
| RPER72A103K2□□A03□ | X7R | 100 | 10000pF ±10% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | M2 |
| RPER72A153K2□□A03□ | X7R | 100 | 15000pF ±10% | 5.0 x 3.5 | 3.15 | 2.5 | P1 | S1 | S2 |
| RPER72A153K2□□A03□ | X7R | 100 | 15000pF ±10% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | M2 |
| RPER72A223K2□□A03□ | X7R | 100 | 22000pF ±10% | 5.0 x 3.5 | 3.15 | 2.5 | P1 | S1 | S2 |
| RPER72A223K2□□A03□ | X7R | 100 | 22000pF ±10% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | M2 |
| RPER72A333K2□□C03□ | X7R | 100 | 33000pF ±10% | 5.0 x 3.5 | 3.15 | 2.5 | P1 | S1 | S2 |
| RPER72A333K2□□C03□ | X7R | 100 | 33000pF ±10% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | M2 |
| RPER72A473K2□□C03□ | X7R | 100 | 47000pF ±10% | 5.0 x 3.5 | 3.15 | 2.5 | P1 | S1 | S2 |
| RPER72A473K2□□C03□ | X7R | 100 | 47000pF ±10% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | M2 |
| RPER72A683K3□□C07□ | X7R | 100 | 68000pF ±10% | 5.0 x 4.5 | 3.15 | 2.5 | P1 | S1 | S2 |
| RPER72A683K3□□C07□ | X7R | 100 | 68000pF ±10% | 5.0 x 4.5 | 3.15 | 5.0 | K1 | M1 | M2 |
| RPER72A104K3□□C07□ | X7R | 100 | 0.10μF ±10% | 5.0 x 4.5 | 3.15 | 2.5 | P1 | S1 | S2 |
| RPER72A104K3□□C07□ | X7R | 100 | 0.10μF ±10% | 5.0 x 4.5 | 3.15 | 5.0 | K1 | M1 | M2 |
| RPER72A154K8□□C03□ | X7R | 100 | 0.15μF ±10% | 7.5 x 5.5 | 4.0 | 5.0 | K1 | M1 | M2 |
| RPER72A224K8□□C03□ | X7R | 100 | 0.22μF ±10% | 7.5 x 5.5 | 4.0 | 5.0 | K1 | M1 | M2 |
| RPER72A334K5□□C03□ | X7R | 100 | 0.33μF ±10% | 7.5 x 7.5 | 4.0 | 5.0 | B1 | E1 | E2 |
| RPER72A474K8□□C03□ | X7R | 100 | 0.47μF ±10% | 7.5 x 5.5 | 4.0 | 5.0 | K1 | M1 | M2 |
| RPER72A684K6□□F14□ | X7R | 100 | 0.68μF ±10% | 10.0 x 10.0 | 4.0 | 5.0 | B1 | E1 | E2 |
| RPER72A105K5□□C03□ | X7R | 100 | 1.0μF ±10% | 7.5 x 7.5 | 4.0 | 5.0 | B1 | E1 | E2 |
| RPER72A155K7□□F03□ | X7R | 100 | 1.5μF ±10% | 12.5 x 12.5 | 5.0 | 10.0 | C1 | - | - |
| RPER72A225K7□□F03□ | X7R | 100 | 2.2μF ±10% | 12.5 x 12.5 | 5.0 | 10.0 | C1 | - | - |

Two blank columns are filled with the lead style code. Please refer to the 3 columns on the right for the appropriate code.
 The last blank column is filled with the packaging code. (B: bulk, A: ammo pack)

High Dielectric Constant Type, Y5V Characteristics

| Part Number | Temp. Char. | Rated Voltage (Vdc) | Capacitance | Dimensions LxW (mm) | Dimension T (mm) | Lead Space F (mm) | Lead Style Code Bulk | Lead Style Code Taping (1) | Lead Style Code Taping (2) |
|--------------------|-------------|---------------------|-----------------|---------------------|------------------|-------------------|----------------------|----------------------------|----------------------------|
| RPEF51H102Z2□□A03□ | Y5V | 50 | 1000pF +80/-20% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPEF51H102Z2□□A03□ | Y5V | 50 | 1000pF +80/-20% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPEF51H222Z2□□A03□ | Y5V | 50 | 2200pF +80/-20% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPEF51H222Z2□□A03□ | Y5V | 50 | 2200pF +80/-20% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPEF51H472Z2□□A03□ | Y5V | 50 | 4700pF +80/-20% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPEF51H472Z2□□A03□ | Y5V | 50 | 4700pF +80/-20% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |

Continued on the following page. ↗

⚠Note • Please read rating and ⚠CAUTION (for storage, operating, rating, soldering, mounting and handling) in this catalog to prevent smoking and/or burning, etc.
 • This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please review our product specifications or consult the approval sheet for product specifications before ordering.

↳ Continued from the preceding page.

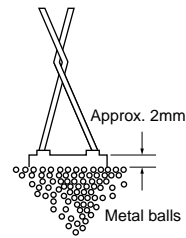
| Part Number | Temp. Char. | Rated Voltage (Vdc) | Capacitance | Dimensions LxW (mm) | Dimension T (mm) | Lead Space F (mm) | Lead Style Code Bulk | Lead Style Code Taping (1) | Lead Style Code Taping (2) |
|--------------------|-------------|---------------------|------------------|---------------------|------------------|-------------------|----------------------|----------------------------|----------------------------|
| RPEF51H103Z2□□A03□ | Y5V | 50 | 10000pF +80/-20% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPEF51H103Z2□□A03□ | Y5V | 50 | 10000pF +80/-20% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPEF51H223Z2□□A03□ | Y5V | 50 | 22000pF +80/-20% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPEF51H223Z2□□A03□ | Y5V | 50 | 22000pF +80/-20% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPEF51H473Z2□□A03□ | Y5V | 50 | 47000pF +80/-20% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPEF51H473Z2□□A03□ | Y5V | 50 | 47000pF +80/-20% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPEF51H104Z2□□A03□ | Y5V | 50 | 0.10μF +80/-20% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | S2 |
| RPEF51H104Z2□□A03□ | Y5V | 50 | 0.10μF +80/-20% | 5.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | M2 |
| RPEF51H224Z2□□A03□ | Y5V | 50 | 0.22μF +80/-20% | 5.0 x 3.5 | 3.15 | 2.5 | P1 | S1 | S2 |
| RPEF51H224Z2□□A03□ | Y5V | 50 | 0.22μF +80/-20% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | M2 |
| RPEF51H474Z2□□C03□ | Y5V | 50 | 0.47μF +80/-20% | 5.0 x 3.5 | 3.15 | 2.5 | P1 | S1 | S2 |
| RPEF51H474Z2□□C03□ | Y5V | 50 | 0.47μF +80/-20% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | M2 |

Two blank columns are filled with the lead style code. Please refer to the 3 columns on the right for the appropriate code.
 The last blank column is filled with the packaging code. (B: bulk, A: ammo pack)

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Specifications and Test Methods

| No. | Item | Specifications | | Test Method | | | | | | | | | | | | |
|-------------------------|---|--|---|--|------------------|------------------|------------------|-----------|----------|----------|---------|----------------------|-------------------|-------|---|------|
| | | Temperature Compensating Type | High Dielectric Constant Type | | | | | | | | | | | | | |
| 1 | Operating Temperature Range | -55 to +125°C | Char. X7R : -55 to +125°C Char. Y5V : -30 to +85°C | - | | | | | | | | | | | | |
| 2 | Rated Voltage | See previous pages | | The rated voltage is defined as the maximum voltage that may be applied continuously to the capacitor. When AC voltage is superimposed on DC voltage, V_{P-P} or V_{0-P} , whichever is larger, should be maintained within the rated voltage range. | | | | | | | | | | | | |
| 3 | Appearance | No defects or abnormalities | | Visual inspection | | | | | | | | | | | | |
| 4 | Dimension and Marking | See previous pages | | Visual inspection, Vernier Caliper | | | | | | | | | | | | |
| 5 | Dielectric Strength | Between Terminals | No defects or abnormalities | The capacitors should not be damaged when DC voltages of 300%* of the rated voltage are applied between the terminals for 1 to 5 sec. (Charge/Discharge current \leq 50mA) *250% for char. X7R, Y5V The capacitor is placed in a container with metal balls of 1mm diameter so that each terminal, short-circuited, is kept approximately 2mm from the balls as shown in the figure, and 250% of the rated DC voltage is impressed for 1 to 5 sec. between capacitor terminals and metal balls. (Charge/Discharge current \leq 50mA) | | | | | | | | | | | | |
| | | Body Insulation | No defects or abnormalities | | | | | | | | | | | | | |
| 6 | Insulation Resistance | Between Terminals | $C \leq 0.047\mu\text{F}$: 10,000M Ω min. $C > 0.047\mu\text{F}$: 500M $\Omega \cdot \mu\text{F}$ min. C : Nominal capacitance | The insulation resistance should be measured with a DC voltage not exceeding the rated voltage at normal temperature and humidity and within 2 min. of charging. (Charge/Discharge current \leq 50mA) | | | | | | | | | | | | |
| 7 | Capacitance | Within the specified tolerance | | The capacitance, Q/D.F. should be measured at 25°C at the frequency and voltage shown in the table. | | | | | | | | | | | | |
| 8 | Q/Dissipation Factor (D.F.) | 30pF min. : $Q \geq 1,000$ 30pF max. : $Q \geq 400+20C$ C : Nominal capacitance (pF) | Char. X7R : 0.025 max. Char. Y5V : 0.05 max. | <table border="1"> <thead> <tr> <th>Capacitance Item</th> <th>1000pF and below</th> <th>more than 1000pF</th> </tr> </thead> <tbody> <tr> <td>Frequency</td> <td>1±0.1MHz</td> <td>1±0.1kHz</td> </tr> <tr> <td>Voltage</td> <td>AC0.5 to 5V (r.m.s.)</td> <td>AC1±0.2V (r.m.s.)</td> </tr> </tbody> </table> | Capacitance Item | 1000pF and below | more than 1000pF | Frequency | 1±0.1MHz | 1±0.1kHz | Voltage | AC0.5 to 5V (r.m.s.) | AC1±0.2V (r.m.s.) | | | |
| Capacitance Item | 1000pF and below | more than 1000pF | | | | | | | | | | | | | | |
| Frequency | 1±0.1MHz | 1±0.1kHz | | | | | | | | | | | | | | |
| Voltage | AC0.5 to 5V (r.m.s.) | AC1±0.2V (r.m.s.) | | | | | | | | | | | | | | |
| 9 | Capacitance Temperature Characteristics | Capacitance Change | Within the specified tolerance (Table A on last column) | The capacitance change should be measured after 5 min. at each specified temperature stage. (1) Temperature Compensating Type The temperature coefficient is determined using the capacitance measured in step 3 as a reference. When cycling the temperature sequentially from step 1 through 5 (-55 to +125°C) the capacitance should be within the specified tolerance for the temperature coefficient and capacitance change as shown in Table A. The capacitance drift is calculated by dividing the differences between the maximum and minimum measured values in step 1, 3 and 5 by the cap. value in step 3. <table border="1"> <thead> <tr> <th>Step</th> <th>Temperature (°C)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>25±2</td> </tr> <tr> <td>2</td> <td>-55±3</td> </tr> <tr> <td>3</td> <td>25±2</td> </tr> <tr> <td>4</td> <td>125±3</td> </tr> <tr> <td>5</td> <td>25±2</td> </tr> </tbody> </table> (2) High Dielectric Constant Type The ranges of capacitance change compared with the 25°C value over the temperature ranges as shown in Table B should be within the specified ranges. | Step | Temperature (°C) | 1 | 25±2 | 2 | -55±3 | 3 | 25±2 | 4 | 125±3 | 5 | 25±2 |
| | | Step | Temperature (°C) | | | | | | | | | | | | | |
| | | 1 | 25±2 | | | | | | | | | | | | | |
| 2 | -55±3 | | | | | | | | | | | | | | | |
| 3 | 25±2 | | | | | | | | | | | | | | | |
| 4 | 125±3 | | | | | | | | | | | | | | | |
| 5 | 25±2 | | | | | | | | | | | | | | | |
| Temperature Coefficient | Within the specified tolerance (Table A on last column) | | | | | | | | | | | | | | | |
| Capacitance Drift | Within ±0.2% or ±0.05pF, whichever is larger | | | | | | | | | | | | | | | |

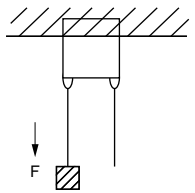



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Specifications and Test Methods

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Continued from the preceding page.

| No. | Item | | Specifications | | Test Method |
|-----|---------------------------------|---|--|--|--|
| | | | Temperature Compensating Type | High Dielectric Constant Type | |
| 10 | Terminal Strength | Tensile Strength | Termination not to be broken or loosened | | As in the figure, fix the capacitor body, apply the force gradually to each lead in the radial direction of the capacitor until reaching 10N and then keep the force applied for 10±1 sec.  |
| | | Bending Strength | Termination not to be broken or loosened | | |
| 11 | Vibration Resistance | Appearance | No defects or abnormalities | | The capacitor is soldered securely to a supporting terminal and a 10 to 55Hz vibration of 1.5mm peak-peak amplitude is applied for 6 hrs. total, 2 hrs. in each mutually perpendicular direction. Allow 1 min. to cycle the frequency from 10Hz to 55Hz and the converse. |
| | | Capacitance | Within the specified tolerance | | |
| | | Q/D.F. | 30pF min. : $Q \geq 1,000$ 30pF max. : $Q \geq 400+20C$ C : Nominal capacitance (pF) | Char. X7R : 0.025 max. Char. Y5V : 0.05 max. | |
| 12 | Solderability of Leads | | Lead wire should be soldered with uniform coating on the axial direction over 3/4 of the circumferential direction. | | The terminal of a capacitor is dipped into a 25% ethanol (JIS-K-8101) solution of rosin (JIS-K-5902) and then into molten solder for 2±0.5 sec. In both cases the depth of dipping is up to about 1.5mm to 2mm from the terminal body. Temp. of solder: 245±5°C Lead Free Solder (Sn-3.0Ag-0.5Cu) 235±5°C H60A or H63A Eutectic Solder |
| 13 | Resistance to Soldering Heat | Appearance | No defects or abnormalities | | The lead wire is immersed in the melted solder 1.5mm to 2mm from the main body at 350±10°C for 3.5±0.5 sec. The specified items are measured after 24±2 hrs. (temperature compensating type) or 48±4 hrs. (high dielectric type). • Initial measurement for high dielectric constant type The capacitors are heat treated for 1 hr. at 150±10°C, allowed to set at room temperature for 48±4 hrs., and given an initial measurement. |
| | | Capacitance Change | Within ±2.5% or ±0.25pF (whichever is larger) | Char. X7R : Within ±7.5% Char. Y5V : Within ±20% | |
| | | Dielectric Strength (Between Terminals) | No defects | | |
| 14 | Temperature and Immersion Cycle | Appearance | No defects or abnormalities | | First, repeat the following temperature/time cycle 5 times: >> lowest operating temperature ±3°C/30±3 min. >> ordinary temperature/3 min. max. >> highest operating temperature ±3°C/30±3 min. >> ordinary temperature/3 min. max. Next, repeat twice the successive cycles of immersion, each cycle consisting of immersion in a fresh water at 65±5°C for 15 min. and immersion in a saturated aqueous solution of salt at 0±3°C for 15 min. The capacitor is then promptly washed in running water, dried with a drying cloth, and allowed to sit at room temperature for 24±2 hrs. (temperature compensating type) or 48±4 hrs. (high dielectric type). • Initial measurement for high dielectric constant type The capacitors are heat treated for 1 hr. at 150±10°C, allowed to sit at room temperature for 48±4 hrs., and given an initial measurement. |
| | | Capacitance Change | Within ±5% or ±0.5pF (whichever is larger) | Char. X7R : Within ±12.5% Char. Y5V : Within ±30% | |
| | | Q/D.F. | 30pF min. : $Q \geq 350$ 10pF to 30pF : $Q \geq 275+5C/2$ 10pF max. : $Q \geq 200+10C$ C : Nominal capacitance (pF) | Char. X7R : 0.05 max. Char. Y5V : 0.075 max. | |
| | | Insulation Resistance | 1,000MΩ or 50MΩ • μF min. (whichever is smaller) | | |
| | | Dielectric Strength (Between Terminals) | No defects or abnormalities | | |

Continued on the following page. 

Specifications and Test Methods

Continued from the preceding page.

| No. | Item | Specifications | | Test Method | |
|-----|-------------------------|-------------------------------|---|--|---|
| | | Temperature Compensating Type | High Dielectric Constant Type | | |
| 15 | Humidity (Steady State) | Appearance | No defects or abnormalities | | Set the capacitor for 500 ± ²⁴ ₀ hrs. at 40±2°C in 90 to 95% humidity. Remove and set for 24±2 hrs. (temperature compensating type) and 48±4 hrs. (high dielectric constant type) at room temperature, then measure. |
| | | Capacitance Change | Within ±5% or ±0.5pF (whichever is larger) | Char. X7R : Within ±12.5% Char. Y5V : Within ±30% | |
| | | Q/D.F. | 30pF min. : Q ≥ 350 10pF to 30pF : Q ≥ 275+5C/2 10pF max. : Q ≥ 200+10C C : Nominal capacitance (pF) | Char. X7R : 0.05 max. Char. Y5V : 0.075 max. | |
| | | Insulation Resistance | 1,000MΩ or 50MΩ • μF min. (whichever is smaller) | | |
| 16 | Humidity Load | Appearance | No defects or abnormalities | | Apply the rated voltage for 500 ± ²⁴ ₀ hrs. at 40±2°C and in 90 to 95% humidity. Remove and set for 24±2 hrs. (temperature compensating type) and 48±4 hrs. (high dielectric constant type) at room temperature, then measure. (Charge/Discharge current ≤ 50mA) |
| | | Capacitance Change | Within ±7.5% or ±0.75pF (whichever is larger) | Char. X7R : Within ±12.5% Char. Y5V : Within ±30% | |
| | | Q/D.F. | 30pF min. : Q ≥ 200 30pF max. : Q ≥ 100+10C/3 C : Nominal capacitance (pF) | Char. X7R : 0.05 max. Char. Y5V : 0.075 max. | |
| | | Insulation Resistance | 500MΩ or 25MΩ • μF min. (whichever is smaller) | | |
| 17 | High Temperature Load | Appearance | No defects or abnormalities | | Apply 200% of the rated voltage for 1000 ± ⁴⁸ ₀ hrs. at the maximum operating temperature. Remove and set for 24±2 hrs. (temperature compensating type) and 48 ±4 hrs. (high dielectric constant type) at room temperature, then measure. (Charge/Discharge current ≤ 50mA) • Initial measurement for high dielectric constant type A voltage treatment should be given to the capacitor in which a DC voltage of 200% of the rated voltage is applied for 1 hr. at the maximum operating temperature ±3°C. Then set for 48±4 hrs. at room temperature and conduct initial measurement. |
| | | Capacitance Change | Within ±3% or ±0.3pF (whichever is larger) | Char. X7R : Within ±12.5% Char. Y5V : Within ±30% | |
| | | Q/D.F. | 30pF min. : Q ≥ 350 10pF to 30pF : Q ≥ 275+5C/2 10pF max. : Q ≥ 200+10C C : Nominal capacitance (pF) | Char. X7R : 0.04 max. Char. Y5V : 0.075 max. | |
| | | Insulation Resistance | 1,000MΩ or 50MΩ • μF min. (whichever is smaller) | | |
| 18 | Solvent Resistance | Appearance | No defects or abnormalities | | The capacitor should be fully immersed, unagitated, in reagent at 20 to 25°C for 30±5 sec. and then removed gently. Marking on the surface of the capacitor should immediately be visually examined. Reagent: • Isopropyl alcohol |
| | | Marking | Legible | | |

Table A

| Char. | Nominal Values (ppm/°C) *1 | Capacitance Change from 25°C (%) | | | | | |
|------------|----------------------------|----------------------------------|-------|-------|-------|-------|-------|
| | | -55°C | | -30°C | | -10°C | |
| | | Max. | Min. | Max. | Min. | Max. | Min. |
| C0G | 0±30 | 0.58 | -0.24 | 0.40 | -0.17 | 0.25 | -0.11 |

*1: Nominal values denote the temperature coefficient within a range of 25 to 125°C

Table B

| Char. | Temp. Range | Reference Temp. | Cap. Change Rate |
|------------|---------------|-----------------|---------------------------------------|
| X7R | -55 to +125°C | 25°C | Within ± 15% |
| Y5V | -30 to + 85°C | | Within ± ²² ₂ % |

Radial Lead Type Monolithic Ceramic Capacitors

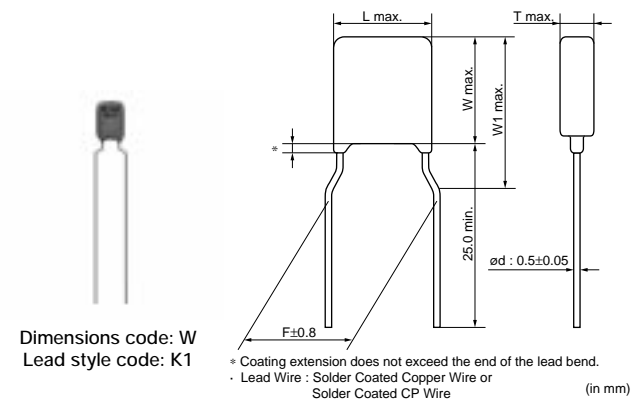
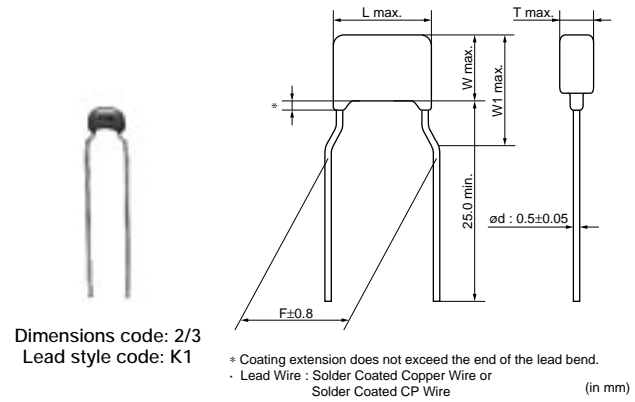


RPE Series Small Size, Large Capacitance (DC50V)

2

■ Features

1. The RPE series capacitors have small dimensions, large capacitance, and a capacity volume ratio of 10 micro F/cm cubed, close to that of electrolytic capacitors. They do not have polarity.
2. Excellent frequency characteristics and due to their small internal inductance are suitable for high frequencies.
3. They are not coated with wax so there is no change in their exterior appearance due to the outflow of wax during soldering or solvent during cleansing.
4. They are highly nonflammable, having characteristics equivalent to the UL94V-0 standard.
5. We design capacitors in much more compact size than current RPE Series, having reduced the diameter by 70% max.



■ Dimensions

| Dimensions and Lead Style Code | Dimensions (mm) | | | | | |
|--------------------------------|-----------------|-----|------|-----------------------------|-----|-----|
| | L | W | W1 | T | F | d |
| 2K1/2M1 | 5.5 | 4.0 | 6.0 | Depends on Part Number List | 5.0 | 0.5 |
| 3K1/3M1 | 5.5 | 5.0 | 7.5 | | 5.0 | 0.5 |
| WK1/WM1 | 5.5 | 7.5 | 10.0 | | 5.0 | 0.5 |

Continued on the following page. ↗

△Note • Please read rating and △CAUTION (for storage, operating, rating, soldering, mounting and handling) in this catalog to prevent smoking and/or burning, etc.
 • This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please review our product specifications or consult the approval sheet for product specifications before ordering.

Continued from the preceding page.

■ Marking

| Dimensions Code | Rated Voltage | DC50V |
|-------------------------------|---------------------------------|-------|
| | Temp. Char. | X7R |
| 2 | | |
| 3 | | |
| W | | |
| Temperature Characteristics | Marked with code (X7R char.: C) | |
| Nominal Capacitance | Marked with 3 figures | |
| Capacitance Tolerance | Marked with code | |
| Rated Voltage | Marked with code (DC50V: 5) | |
| Manufacturer's Identification | Marked with M | |

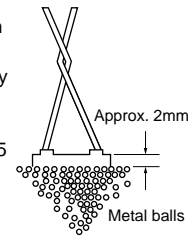
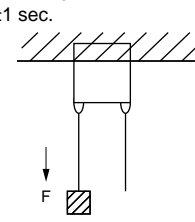
High Dielectric Constant Type, X7R Characteristics

| Part Number | Temp. Char. | Rated Voltage (Vdc) | Capacitance (μF) | Dimensions LxW (mm) | Dimension T (mm) | Lead Space F (mm) | Lead Style Code Bulk | Lead Style Code Taping (1) | Lead Style Code Taping (2) |
|--------------------|-------------|---------------------|------------------|---------------------|------------------|-------------------|----------------------|----------------------------|----------------------------|
| RPER71H105K2□□C60□ | X7R | 50 | 1.0 ±10% | 5.5 x 4.0 | 3.15 | 5.0 | K1 | M1 | - |
| RPER71H155K2□□C60□ | X7R | 50 | 1.5 ±10% | 5.5 x 4.0 | 3.15 | 5.0 | K1 | M1 | - |
| RPER71H225K2□□C60□ | X7R | 50 | 2.2 ±10% | 5.5 x 4.0 | 3.15 | 5.0 | K1 | M1 | - |
| RPER71H335K3□□C60□ | X7R | 50 | 3.3 ±10% | 5.5 x 5.0 | 4.0 | 5.0 | K1 | M1 | - |
| RPER71H475K3□□C60□ | X7R | 50 | 4.7 ±10% | 5.5 x 5.0 | 4.0 | 5.0 | K1 | M1 | - |
| RPER71H106MW□□C60□ | X7R | 50 | 10 ±20% | 5.5 x 7.5 | 4.0 | 5.0 | K1 | M1 | - |

Two blank columns are filled with the lead style code. Please refer to the 3 columns on the right for the appropriate code.
 The last blank column is filled with the packaging code. (B: bulk, A: ammo pack)

Specifications and Test Methods

2

| No. | Item | | Specifications | Test Method | | | | | | | | | | | | |
|-----|---|-------------------|--|--|------|------------------|---|------------|---|-------------|---|------------|---|-------------|---|------------|
| 1 | Operating Temperature Range | | -55 to +125°C | - | | | | | | | | | | | | |
| 2 | Appearance | | No defects or abnormalities | Visual inspection | | | | | | | | | | | | |
| 3 | Dimension and Marking | | See previous pages | Visual inspection, Vernier Caliper | | | | | | | | | | | | |
| 4 | | Between Terminals | No defects or abnormalities | The capacitor should not be damaged when DC voltage of 250% of the rated voltage is applied between the terminations for 1 to 5 sec. (Charge/Discharge current \leq 50mA) | | | | | | | | | | | | |
| | | Body Insulation | No defects or abnormalities | | | | | | | | | | | | | |
| 4 | Dielectric Strength | | No defects or abnormalities | The capacitor is placed in a container with metal balls of 1mm diameter so that each terminal, short-circuit, is kept approximately 2mm from the balls as shown in the figure, and 250% of the rated DC voltage is impressed for 1 to 5 sec. between capacitor terminals and metal balls. (Charge/Discharge current \leq 50mA)  | | | | | | | | | | | | |
| 5 | Insulation Resistance | Between Terminals | 500M Ω · μ F min. | The insulation resistance should be measured with a DC voltage not exceeding the rated voltage at normal temperature and humidity and within 2 min. of charging. (Charge/Discharge current \leq 50mA) | | | | | | | | | | | | |
| 6 | Capacitance | | Within the specified tolerance | The capacitance/D.F. should be measured at the frequency of 1 \pm 0.1kHz and a voltage of AC1 \pm 0.2V(r.m.s.) | | | | | | | | | | | | |
| 7 | Dissipation Factor (D.F.) | | 0.025 max. | | | | | | | | | | | | | |
| 8 | Capacitance Temperature Characteristics | | Within \pm 15% | The capacitance change should be measured after 5 min. at each specified temperature stage. <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Step</th> <th>Temperature (°C)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>25\pm2</td> </tr> <tr> <td>2</td> <td>-55\pm3</td> </tr> <tr> <td>3</td> <td>25\pm2</td> </tr> <tr> <td>4</td> <td>125\pm3</td> </tr> <tr> <td>5</td> <td>25\pm2</td> </tr> </tbody> </table> | Step | Temperature (°C) | 1 | 25 \pm 2 | 2 | -55 \pm 3 | 3 | 25 \pm 2 | 4 | 125 \pm 3 | 5 | 25 \pm 2 |
| | | | | | Step | Temperature (°C) | | | | | | | | | | |
| 1 | 25 \pm 2 | | | | | | | | | | | | | | | |
| 2 | -55 \pm 3 | | | | | | | | | | | | | | | |
| 3 | 25 \pm 2 | | | | | | | | | | | | | | | |
| 4 | 125 \pm 3 | | | | | | | | | | | | | | | |
| 5 | 25 \pm 2 | | | | | | | | | | | | | | | |
| 9 | Terminal Strength | Tensile Strength | Termination not to be broken or loosened | As in the figure, fix the capacitor body, apply the force gradually to each lead in the radial direction of the capacitor until reaching 10N and then keep the force applied for 10 \pm 1 sec.  | | | | | | | | | | | | |
| | | Bending Strength | Termination not to be broken or loosened | Each lead wire should be subjected to a force of 2.5N and then bent 90° at the point of egress in one direction. Each wire is then returned to the original position and bent 90° in the opposite direction at the rate of one bend per 2 to 3 sec. | | | | | | | | | | | | |
| 10 | Vibration Resistance | Appearance | No defects or abnormalities | The capacitor should be firmly soldered to the supporting lead wire and vibrated at a frequency range of 10 to 55Hz, 1.5mm in total amplitude, with about a 1 minute rate of vibration change from 10Hz to 55Hz and back to 10Hz. Apply for a total of 6 hrs., 2 hrs. each in 3 mutually perpendicular directions. | | | | | | | | | | | | |
| | | Capacitance | Within the specified tolerance | | | | | | | | | | | | | |
| | | D.F. | 0.025 max. | | | | | | | | | | | | | |

Continued on the following page.

Specifications and Test Methods

Continued from the preceding page.

2

| No. | Item | Specifications | Test Method |
|-----|------------------------------|---|--|
| 11 | Solderability of Leads | Lead wire should be soldered with uniform coating on the axial direction over 3/4 of the circumferential direction. | The terminal of a capacitor is dipped into a solution of ethanol (JIS-K-8101) and rosin (JIS-K-5902) (25% rosin in weight proportion) and then into molten solder (JIS-Z-3282) for 2±0.5 sec. In both cases the depth of dipping is up to about 1.5 to 2mm from the terminal body. Temp. of solder: 245±5°C Lead Free Solder (Sn-3.0Ag-0.5Cu) 235±5°C H60A or H63A Eutectic Solder |
| 12 | Resistance to Soldering Heat | Appearance | No defects or abnormalities |
| | | Capacitance Change | Within ±7.5% |
| | | Dielectric Strength (Between Terminals) | No defects |
| 13 | Temperature Cycle | Appearance | No defects or abnormalities |
| | | Capacitance Change | Within ±12.5% |
| | | D.F. | 0.05 max. |
| | | Insulation Resistance | 50MΩ · μF min. |
| | | Dielectric Strength (Between Terminals) | No defects or abnormalities |
| 14 | Humidity (Steady State) | Appearance | No defects or abnormalities |
| | | Capacitance Change | Within ±12.5% |
| | | D.F. | 0.05 max. |
| | | Insulation Resistance | 50MΩ · μF min. |
| 15 | Humidity Load | Appearance | No defects or abnormalities |
| | | Capacitance Change | Within ±12.5% |
| | | D.F. | 0.05 max. |
| | | Insulation Resistance | 50MΩ · μF min. |
| 16 | High Temperature Load | Appearance | No defects or abnormalities |
| | | Capacitance Change | Within ±12.5% |
| | | D.F. | 0.04 max. |
| | | Insulation Resistance | 50MΩ · μF min. |
| 17 | Solvent Resistance | Appearance | No defects or abnormalities |
| | | Marking | Legible |

| Step | Temperature (°C) | Time (min) |
|------|------------------|------------|
| 1 | -55±3 | 30±3 |
| 2 | Room Temp. | 3 max. |
| 3 | 125±3 | 30±3 |
| 4 | Room Temp. | 3 max. |

Radial Lead Type Monolithic Ceramic Capacitors

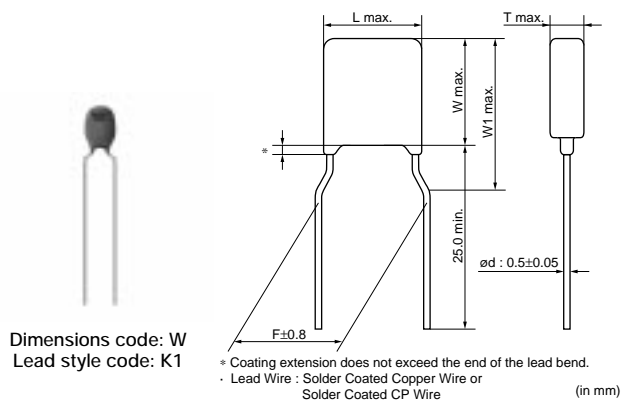
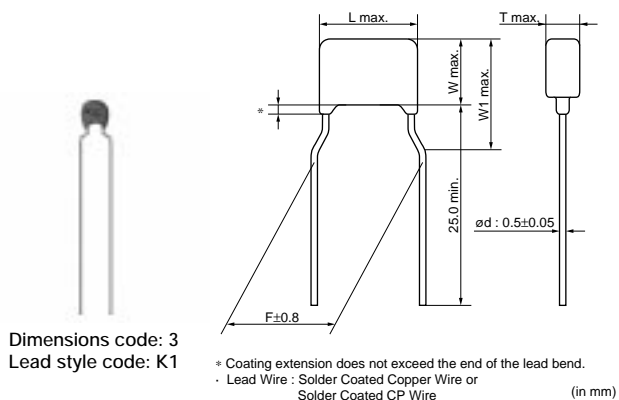
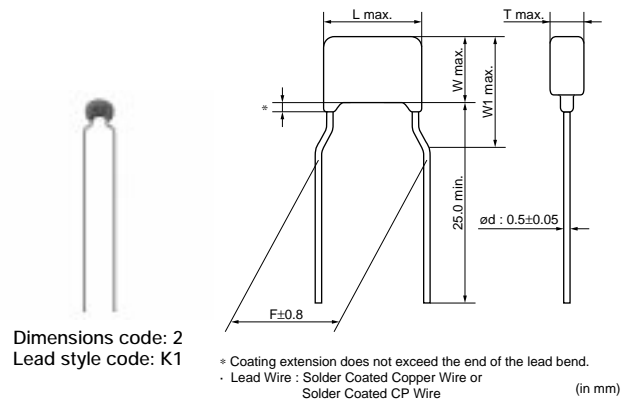
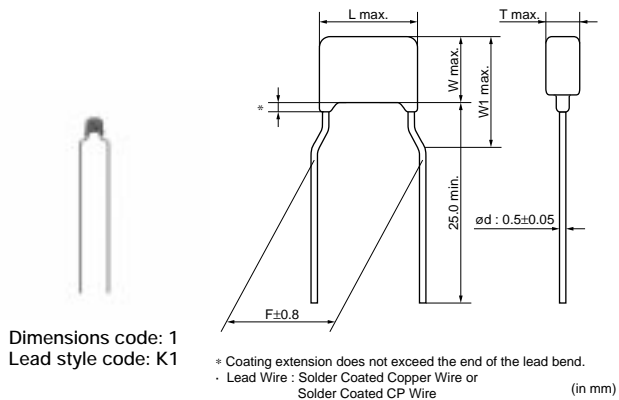
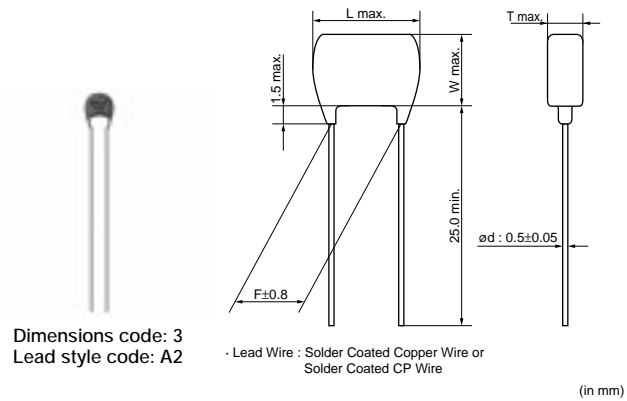
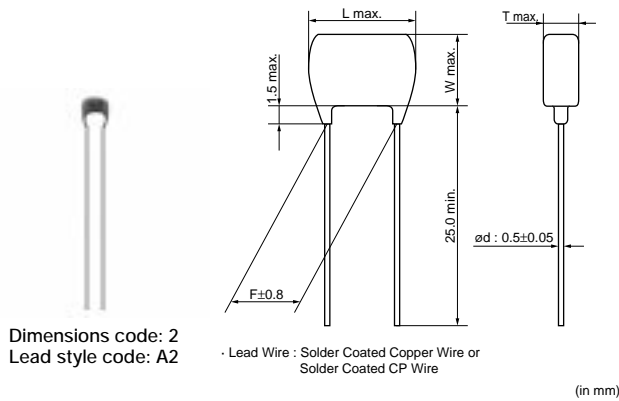
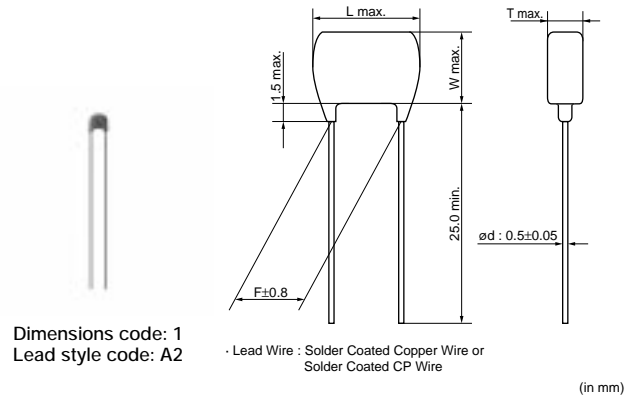


RH Series 150°C max. (for Automotive) (DC50V-DC100V)

■ Features

1. Small size and large capacitance
2. Low ESR and ESL suitable for high frequency
3. Applied maximum temperature up to 150 deg. C
 Note: Maximum accumulative time to 150 deg. C is within 2000 hours.
4. Coated with epoxy (LxW=4.0x3.5mm) or silicone (LxW=4.0x3.5mm over) resin which is suitable for heat cycle.
5. The RH series meet AEC-Q200 requirements.

3



Continued on the following page. ↗

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■ Dimensions

| Dimensions and Lead Style Code | Dimensions (mm) | | | | | |
|--------------------------------|-----------------|-----|------|---|-----|-----|
| | L | W | W1 | T | F | d |
| 1A2/1DB | 4.0 | 3.5 | - | See the individual product specifications | 2.5 | 0.5 |
| 1K1/1M1 | 4.0 | 3.5 | 5.0 | | 5.0 | 0.5 |
| 2A2/2DB | 5.7 | 4.5 | - | | 2.5 | 0.5 |
| 2K1/2M1 | 5.7 | 4.5 | 7.0 | | 5.0 | 0.5 |
| 3A2/3DB | 6.0 | 5.5 | - | | 2.5 | 0.5 |
| 3K1/3M1 | 6.0 | 5.5 | 7.5 | | 5.0 | 0.5 |
| WK1/WM1 | 6.0 | 8.0 | 10.0 | | 5.0 | 0.5 |

3

■ Marking

| Dimensions Code | Type | Temperature Compensating Type | High Dielectric Constant Type | |
|-------------------------------|---------------|--|-------------------------------|--------|
| | Rated Voltage | DC50V, DC100V | DC50V | DC100V |
| | Temp. Char. | X8G | X8L | |
| 1 | | | | |
| 2 | | — | | |
| 3, W | | — | | — |
| Temperature Characteristics | | Marked with code (X8G, X8L char.: 8) | | |
| Nominal Capacitance | | Marked with 3 figures | | |
| Capacitance Tolerance | | Marked with code | | |
| Rated Voltage | | Marked with code (DC50V: 5, DC100V: 1) A part is omitted (Please refer to the marking example.) | | |
| Manufacturer's Identification | | Marked with A part is omitted (Please refer to the marking example.) | | |

Temperature Compensating Type, X8G Characteristics

| Part Number | Temp. Char. | Rated Voltage (Vdc) | Capacitance (pF) | Dimensions LxW (mm) | Dimension T (mm) | Lead Space F (mm) | Lead Style Code Bulk | Lead Style Code Taping (1) | Lead Style Code Taping (2) |
|--------------------|-------------|---------------------|------------------|---------------------|------------------|-------------------|----------------------|----------------------------|----------------------------|
| RHE5G1H101J1□□A03□ | X8G | 50 | 100 ±5% | 4.0 x 3.5 | 2.5 | 2.5 | A2 | DB | - |
| RHE5G1H101J1□□A03□ | X8G | 50 | 100 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RHE5G1H121J1□□A03□ | X8G | 50 | 120 ±5% | 4.0 x 3.5 | 2.5 | 2.5 | A2 | DB | - |
| RHE5G1H121J1□□A03□ | X8G | 50 | 120 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RHE5G1H151J1□□A03□ | X8G | 50 | 150 ±5% | 4.0 x 3.5 | 2.5 | 2.5 | A2 | DB | - |
| RHE5G1H151J1□□A03□ | X8G | 50 | 150 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RHE5G1H181J1□□A03□ | X8G | 50 | 180 ±5% | 4.0 x 3.5 | 2.5 | 2.5 | A2 | DB | - |
| RHE5G1H181J1□□A03□ | X8G | 50 | 180 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RHE5G1H221J1□□A03□ | X8G | 50 | 220 ±5% | 4.0 x 3.5 | 2.5 | 2.5 | A2 | DB | - |
| RHE5G1H221J1□□A03□ | X8G | 50 | 220 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RHE5G1H271J1□□A03□ | X8G | 50 | 270 ±5% | 4.0 x 3.5 | 2.5 | 2.5 | A2 | DB | - |
| RHE5G1H271J1□□A03□ | X8G | 50 | 270 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RHE5G1H331J1□□A03□ | X8G | 50 | 330 ±5% | 4.0 x 3.5 | 2.5 | 2.5 | A2 | DB | - |
| RHE5G1H331J1□□A03□ | X8G | 50 | 330 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RHE5G1H391J1□□A03□ | X8G | 50 | 390 ±5% | 4.0 x 3.5 | 2.5 | 2.5 | A2 | DB | - |
| RHE5G1H391J1□□A03□ | X8G | 50 | 390 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |

Continued on the following page.

△Note • Please read rating and △CAUTION (for storage, operating, rating, soldering, mounting and handling) in this catalog to prevent smoking and/or burning, etc.
 • This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please review our product specifications or consult the approval sheet for product specifications before ordering.


Continued from the preceding page.

| Part Number | Temp. Char. | Rated Voltage (Vdc) | Capacitance (pF) | Dimensions LxW (mm) | Dimension T (mm) | Lead Space F (mm) | Lead Style Code Bulk | Lead Style Code Taping (1) | Lead Style Code Taping (2) |
|--------------------|-------------|---------------------|------------------|---------------------|------------------|-------------------|----------------------|----------------------------|----------------------------|
| RHE5G1H471J1□□A03□ | X8G | 50 | 470 ±5% | 4.0 x 3.5 | 2.5 | 2.5 | A2 | DB | - |
| RHE5G1H471J1□□A03□ | X8G | 50 | 470 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RHE5G1H561J1□□A03□ | X8G | 50 | 560 ±5% | 4.0 x 3.5 | 2.5 | 2.5 | A2 | DB | - |
| RHE5G1H561J1□□A03□ | X8G | 50 | 560 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RHE5G1H681J1□□A03□ | X8G | 50 | 680 ±5% | 4.0 x 3.5 | 2.5 | 2.5 | A2 | DB | - |
| RHE5G1H681J1□□A03□ | X8G | 50 | 680 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RHE5G1H821J1□□A03□ | X8G | 50 | 820 ±5% | 4.0 x 3.5 | 2.5 | 2.5 | A2 | DB | - |
| RHE5G1H821J1□□A03□ | X8G | 50 | 820 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RHE5G1H102J1□□A03□ | X8G | 50 | 1000 ±5% | 4.0 x 3.5 | 2.5 | 2.5 | A2 | DB | - |
| RHE5G1H102J1□□A03□ | X8G | 50 | 1000 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RHE5G1H122J1□□A03□ | X8G | 50 | 1200 ±5% | 4.0 x 3.5 | 2.5 | 2.5 | A2 | DB | - |
| RHE5G1H122J1□□A03□ | X8G | 50 | 1200 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RHE5G1H152J1□□A03□ | X8G | 50 | 1500 ±5% | 4.0 x 3.5 | 2.5 | 2.5 | A2 | DB | - |
| RHE5G1H152J1□□A03□ | X8G | 50 | 1500 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RHE5G2A101J1□□A03□ | X8G | 100 | 100 ±5% | 4.0 x 3.5 | 2.5 | 2.5 | A2 | DB | - |
| RHE5G2A101J1□□A03□ | X8G | 100 | 100 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RHE5G2A121J1□□A03□ | X8G | 100 | 120 ±5% | 4.0 x 3.5 | 2.5 | 2.5 | A2 | DB | - |
| RHE5G2A121J1□□A03□ | X8G | 100 | 120 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RHE5G2A151J1□□A03□ | X8G | 100 | 150 ±5% | 4.0 x 3.5 | 2.5 | 2.5 | A2 | DB | - |
| RHE5G2A151J1□□A03□ | X8G | 100 | 150 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RHE5G2A181J1□□A03□ | X8G | 100 | 180 ±5% | 4.0 x 3.5 | 2.5 | 2.5 | A2 | DB | - |
| RHE5G2A181J1□□A03□ | X8G | 100 | 180 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RHE5G2A221J1□□A03□ | X8G | 100 | 220 ±5% | 4.0 x 3.5 | 2.5 | 2.5 | A2 | DB | - |
| RHE5G2A221J1□□A03□ | X8G | 100 | 220 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RHE5G2A271J1□□A03□ | X8G | 100 | 270 ±5% | 4.0 x 3.5 | 2.5 | 2.5 | A2 | DB | - |
| RHE5G2A271J1□□A03□ | X8G | 100 | 270 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RHE5G2A331J1□□A03□ | X8G | 100 | 330 ±5% | 4.0 x 3.5 | 2.5 | 2.5 | A2 | DB | - |
| RHE5G2A331J1□□A03□ | X8G | 100 | 330 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RHE5G2A391J1□□A03□ | X8G | 100 | 390 ±5% | 4.0 x 3.5 | 2.5 | 2.5 | A2 | DB | - |
| RHE5G2A391J1□□A03□ | X8G | 100 | 390 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RHE5G2A471J1□□A03□ | X8G | 100 | 470 ±5% | 4.0 x 3.5 | 2.5 | 2.5 | A2 | DB | - |
| RHE5G2A471J1□□A03□ | X8G | 100 | 470 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RHE5G2A561J1□□A03□ | X8G | 100 | 560 ±5% | 4.0 x 3.5 | 2.5 | 2.5 | A2 | DB | - |
| RHE5G2A561J1□□A03□ | X8G | 100 | 560 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RHE5G2A681J1□□A03□ | X8G | 100 | 680 ±5% | 4.0 x 3.5 | 2.5 | 2.5 | A2 | DB | - |
| RHE5G2A681J1□□A03□ | X8G | 100 | 680 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RHE5G2A821J1□□A03□ | X8G | 100 | 820 ±5% | 4.0 x 3.5 | 2.5 | 2.5 | A2 | DB | - |
| RHE5G2A821J1□□A03□ | X8G | 100 | 820 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RHE5G2A102J1□□A03□ | X8G | 100 | 1000 ±5% | 4.0 x 3.5 | 2.5 | 2.5 | A2 | DB | - |
| RHE5G2A102J1□□A03□ | X8G | 100 | 1000 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |

Two blank columns are filled with the lead style code. Please refer to the 3 columns on the right for the appropriate code.
 The last blank column is filled with the packaging code. (B: bulk, A: ammo pack)

High Dielectric Constant Type, X8L Characteristics

| Part Number | Temp. Char. | Rated Voltage (Vdc) | Capacitance | Dimensions LxW (mm) | Dimension T (mm) | Lead Space F (mm) | Lead Style Code Bulk | Lead Style Code Taping (1) | Lead Style Code Taping (2) |
|--------------------|-------------|---------------------|-------------|---------------------|------------------|-------------------|----------------------|----------------------------|----------------------------|
| RHEL81H102K1□□A03□ | X8L | 50 | 1000pF ±10% | 4.0 x 3.5 | 2.5 | 2.5 | A2 | DB | - |
| RHEL81H102K1□□A03□ | X8L | 50 | 1000pF ±10% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RHEL81H152K1□□A03□ | X8L | 50 | 1500pF ±10% | 4.0 x 3.5 | 2.5 | 2.5 | A2 | DB | - |
| RHEL81H152K1□□A03□ | X8L | 50 | 1500pF ±10% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RHEL81H222K1□□A03□ | X8L | 50 | 2200pF ±10% | 4.0 x 3.5 | 2.5 | 2.5 | A2 | DB | - |
| RHEL81H222K1□□A03□ | X8L | 50 | 2200pF ±10% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RHEL81H332K1□□A03□ | X8L | 50 | 3300pF ±10% | 4.0 x 3.5 | 2.5 | 2.5 | A2 | DB | - |
| RHEL81H332K1□□A03□ | X8L | 50 | 3300pF ±10% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RHEL81H472K1□□A03□ | X8L | 50 | 4700pF ±10% | 4.0 x 3.5 | 2.5 | 2.5 | A2 | DB | - |

Continued on the following page. 

△Note • Please read rating and △CAUTION (for storage, operating, rating, soldering, mounting and handling) in this catalog to prevent smoking and/or burning, etc.
 • This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please review our product specifications or consult the approval sheet for product specifications before ordering.

Continued from the preceding page.

| Part Number | Temp. Char. | Rated Voltage (Vdc) | Capacitance | Dimensions LxW (mm) | Dimension T (mm) | Lead Space F (mm) | Lead Style Code Bulk | Lead Style Code Taping (1) | Lead Style Code Taping (2) |
|--------------------|-------------|---------------------|--------------|---------------------|------------------|-------------------|----------------------|----------------------------|----------------------------|
| RHEL81H472K1□□A03□ | X8L | 50 | 4700pF ±10% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RHEL81H682K1□□A03□ | X8L | 50 | 6800pF ±10% | 4.0 x 3.5 | 2.5 | 2.5 | A2 | DB | - |
| RHEL81H682K1□□A03□ | X8L | 50 | 6800pF ±10% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RHEL81H103K1□□A03□ | X8L | 50 | 10000pF ±10% | 4.0 x 3.5 | 2.5 | 2.5 | A2 | DB | - |
| RHEL81H103K1□□A03□ | X8L | 50 | 10000pF ±10% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RHEL81H153K1□□A03□ | X8L | 50 | 15000pF ±10% | 4.0 x 3.5 | 2.5 | 2.5 | A2 | DB | - |
| RHEL81H153K1□□A03□ | X8L | 50 | 15000pF ±10% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RHEL81H223K1□□A03□ | X8L | 50 | 22000pF ±10% | 4.0 x 3.5 | 2.5 | 2.5 | A2 | DB | - |
| RHEL81H223K1□□A03□ | X8L | 50 | 22000pF ±10% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RHEL81H333K1□□A03□ | X8L | 50 | 33000pF ±10% | 4.0 x 3.5 | 3.15 | 2.5 | A2 | DB | - |
| RHEL81H333K1□□A03□ | X8L | 50 | 33000pF ±10% | 4.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | - |
| RHEL81H473K1□□A03□ | X8L | 50 | 47000pF ±10% | 4.0 x 3.5 | 3.15 | 2.5 | A2 | DB | - |
| RHEL81H473K1□□A03□ | X8L | 50 | 47000pF ±10% | 4.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | - |
| RHEL81H683K1□□A03□ | X8L | 50 | 68000pF ±10% | 4.0 x 3.5 | 3.15 | 2.5 | A2 | DB | - |
| RHEL81H683K1□□A03□ | X8L | 50 | 68000pF ±10% | 4.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | - |
| RHEL81H104K1□□A03□ | X8L | 50 | 0.10μF ±10% | 4.0 x 3.5 | 3.15 | 2.5 | A2 | DB | - |
| RHEL81H104K1□□A03□ | X8L | 50 | 0.10μF ±10% | 4.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | - |
| RHDL81H154K2□□C03□ | X8L | 50 | 0.15μF ±10% | 5.7 x 4.5 | 4.5 | 2.5 | A2 | DB | - |
| RHDL81H154K2□□C03□ | X8L | 50 | 0.15μF ±10% | 5.7 x 4.5 | 4.5 | 5.0 | K1 | M1 | - |
| RHDL81H224K2□□C03□ | X8L | 50 | 0.22μF ±10% | 5.7 x 4.5 | 4.5 | 2.5 | A2 | DB | - |
| RHDL81H224K2□□C03□ | X8L | 50 | 0.22μF ±10% | 5.7 x 4.5 | 4.5 | 5.0 | K1 | M1 | - |
| RHDL81H334K2□□C03□ | X8L | 50 | 0.33μF ±10% | 5.7 x 4.5 | 4.5 | 2.5 | A2 | DB | - |
| RHDL81H334K2□□C03□ | X8L | 50 | 0.33μF ±10% | 5.7 x 4.5 | 4.5 | 5.0 | K1 | M1 | - |
| RHDL81H474K2□□C03□ | X8L | 50 | 0.47μF ±10% | 5.7 x 4.5 | 4.5 | 2.5 | A2 | DB | - |
| RHDL81H474K2□□C03□ | X8L | 50 | 0.47μF ±10% | 5.7 x 4.5 | 4.5 | 5.0 | K1 | M1 | - |
| RHDL81H684K2□□C03□ | X8L | 50 | 0.68μF ±10% | 5.7 x 4.5 | 4.5 | 2.5 | A2 | DB | - |
| RHDL81H684K2□□C03□ | X8L | 50 | 0.68μF ±10% | 5.7 x 4.5 | 4.5 | 5.0 | K1 | M1 | - |
| RHDL81H105K2□□C03□ | X8L | 50 | 1.0μF ±10% | 5.7 x 4.5 | 4.5 | 2.5 | A2 | DB | - |
| RHDL81H105K2□□C03□ | X8L | 50 | 1.0μF ±10% | 5.7 x 4.5 | 4.5 | 5.0 | K1 | M1 | - |
| RHDL81H155K2□□C03□ | X8L | 50 | 1.5μF ±10% | 5.7 x 4.5 | 4.5 | 2.5 | A2 | DB | - |
| RHDL81H155K2□□C03□ | X8L | 50 | 1.5μF ±10% | 5.7 x 4.5 | 4.5 | 5.0 | K1 | M1 | - |
| RHDL81H225K3□□C03□ | X8L | 50 | 2.2μF ±10% | 6.0 x 5.5 | 5.0 | 2.5 | A2 | DB | - |
| RHDL81H225K3□□C03□ | X8L | 50 | 2.2μF ±10% | 6.0 x 5.5 | 5.0 | 5.0 | K1 | M1 | - |
| RHDL81H335K3□□C03□ | X8L | 50 | 3.3μF ±10% | 6.0 x 5.5 | 5.0 | 2.5 | A2 | DB | - |
| RHDL81H335K3□□C03□ | X8L | 50 | 3.3μF ±10% | 6.0 x 5.5 | 5.0 | 5.0 | K1 | M1 | - |
| RHDL81H475K3□□C03□ | X8L | 50 | 4.7μF ±10% | 6.0 x 5.5 | 5.0 | 2.5 | A2 | DB | - |
| RHDL81H475K3□□C03□ | X8L | 50 | 4.7μF ±10% | 6.0 x 5.5 | 5.0 | 5.0 | K1 | M1 | - |
| RHDL81H106MW□□C03□ | X8L | 50 | 10μF ±20% | 6.0 x 8.0 | 5.0 | 5.0 | K1 | M1 | - |
| RHEL82A102K1□□A03□ | X8L | 100 | 1000pF ±10% | 4.0 x 3.5 | 2.5 | 2.5 | A2 | DB | - |
| RHEL82A102K1□□A03□ | X8L | 100 | 1000pF ±10% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RHEL82A152K1□□A03□ | X8L | 100 | 1500pF ±10% | 4.0 x 3.5 | 2.5 | 2.5 | A2 | DB | - |
| RHEL82A152K1□□A03□ | X8L | 100 | 1500pF ±10% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RHEL82A222K1□□A03□ | X8L | 100 | 2200pF ±10% | 4.0 x 3.5 | 2.5 | 2.5 | A2 | DB | - |
| RHEL82A222K1□□A03□ | X8L | 100 | 2200pF ±10% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RHEL82A332K1□□A03□ | X8L | 100 | 3300pF ±10% | 4.0 x 3.5 | 2.5 | 2.5 | A2 | DB | - |
| RHEL82A332K1□□A03□ | X8L | 100 | 3300pF ±10% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RHEL82A472K1□□A03□ | X8L | 100 | 4700pF ±10% | 4.0 x 3.5 | 2.5 | 2.5 | A2 | DB | - |
| RHEL82A472K1□□A03□ | X8L | 100 | 4700pF ±10% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RHEL82A682K1□□A03□ | X8L | 100 | 6800pF ±10% | 4.0 x 3.5 | 2.5 | 2.5 | A2 | DB | - |
| RHEL82A682K1□□A03□ | X8L | 100 | 6800pF ±10% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RHEL82A103K1□□A03□ | X8L | 100 | 10000pF ±10% | 4.0 x 3.5 | 3.15 | 2.5 | A2 | DB | - |
| RHEL82A103K1□□A03□ | X8L | 100 | 10000pF ±10% | 4.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | - |
| RHEL82A153K1□□A03□ | X8L | 100 | 15000pF ±10% | 4.0 x 3.5 | 3.15 | 2.5 | A2 | DB | - |
| RHEL82A153K1□□A03□ | X8L | 100 | 15000pF ±10% | 4.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | - |
| RHEL82A223K1□□A03□ | X8L | 100 | 22000pF ±10% | 4.0 x 3.5 | 3.15 | 2.5 | A2 | DB | - |
| RHEL82A223K1□□A03□ | X8L | 100 | 22000pF ±10% | 4.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | - |
| RHDL82A333K2□□C03□ | X8L | 100 | 33000pF ±10% | 5.7 x 4.5 | 4.5 | 2.5 | A2 | DB | - |

Continued on the following page. ↗

⚠Note • Please read rating and ⚠CAUTION (for storage, operating, rating, soldering, mounting and handling) in this catalog to prevent smoking and/or burning, etc.
 • This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please review our product specifications or consult the approval sheet for product specifications before ordering.

Continued from the preceding page.

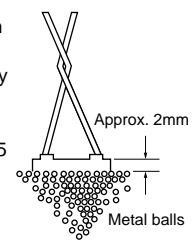
| Part Number | Temp. Char. | Rated Voltage (Vdc) | Capacitance | Dimensions LxW (mm) | Dimension T (mm) | Lead Space F (mm) | Lead Style Code Bulk | Lead Style Code Taping (1) | Lead Style Code Taping (2) |
|--------------------|-------------|---------------------|--------------|---------------------|------------------|-------------------|----------------------|----------------------------|----------------------------|
| RHDL82A333K2□□C03□ | X8L | 100 | 33000pF ±10% | 5.7 x 4.5 | 4.5 | 5.0 | K1 | M1 | - |
| RHDL82A473K2□□C03□ | X8L | 100 | 47000pF ±10% | 5.7 x 4.5 | 4.5 | 2.5 | A2 | DB | - |
| RHDL82A473K2□□C03□ | X8L | 100 | 47000pF ±10% | 5.7 x 4.5 | 4.5 | 5.0 | K1 | M1 | - |
| RHDL82A683K2□□C03□ | X8L | 100 | 68000pF ±10% | 5.7 x 4.5 | 4.5 | 2.5 | A2 | DB | - |
| RHDL82A683K2□□C03□ | X8L | 100 | 68000pF ±10% | 5.7 x 4.5 | 4.5 | 5.0 | K1 | M1 | - |
| RHDL82A104K2□□C03□ | X8L | 100 | 0.10μF ±10% | 5.7 x 4.5 | 4.5 | 2.5 | A2 | DB | - |
| RHDL82A104K2□□C03□ | X8L | 100 | 0.10μF ±10% | 5.7 x 4.5 | 4.5 | 5.0 | K1 | M1 | - |

Two blank columns are filled with the lead style code. Please refer to the 3 columns on the right for the appropriate code.
 The last blank column is filled with the packaging code. (B: bulk, A: ammo pack)

Specifications and Test Methods

3

| No. | Item | | Specifications | | Test Method |
|-----|---|-------------------------|---|--|--|
| | | | Temperature Compensating Type (Char. X8G) | High Dielectric Constant Type (Char. X8L) | |
| 1 | Operating Temperature Range | | -55 to +150°C | | - |
| 2 | Appearance | | No defects or abnormalities | | Visual inspection |
| 3 | Dimension and Marking | | See previous pages | | Visual inspection, Vernier Caliper |
| 4 | Dielectric Strength | Between Terminals | No defects or abnormalities | | The capacitor should not be damaged when DC voltage of 300% of the rated voltage (Temperature Compensating Type) or 250% of the rated voltage (High Dielectric Constant Type) is applied between the terminations for 1 to 5 sec. (Charge/Discharge current \leq 50mA) |
| | | Body Insulation | No defects or abnormalities | | |
| 5 | Insulation Resistance | Room Temperature | 10,000M Ω or 500M Ω · μ F min. (whichever is smaller) | | The insulation resistance should be measured at 25 \pm 3°C with a DC voltage not exceeding the rated voltage at normal temperature and humidity and within 2 min. of charging. (Charge/Discharge current \leq 50mA) |
| | | High Temperature | 100M Ω or 5M Ω · μ F min. (whichever is smaller) | | |
| 6 | Capacitance | | Within the specified tolerance | | The capacitance, Q/D.F. should be measured at 25°C at the frequency and voltage shown in the table. |
| 7 | Q/Dissipation Factor (D.F.) | | Q \geq 1,000 | 0.025 max. | |
| 8 | Capacitance Temperature Characteristics | Capacitance Change | Within the specified tolerance (Table A on last column) | Within \pm 15% (Temp. Range: -55 to +125°C) Within +15/-40% (Temp. Range: +125 to +150°C) | The capacitance change should be measured after 5 min. at each specified temperature stage. |
| | | Temperature Coefficient | Within the specified tolerance (Table A on last column) | | |
| | | Capacitance Drift | Within \pm 0.2% or \pm 0.05pF (whichever is larger) | | |



| Item \ Char. | X8G (1000pF and below) | X8G (more than 1000pF), X8L |
|--------------|------------------------|-----------------------------|
| Frequency | 1 \pm 0.1MHz | 1 \pm 0.1kHz |
| Voltage | AC0.5 to 5V (r.m.s.) | AC1 \pm 0.2V (r.m.s.) |

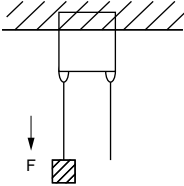
| Step | Temperature (°C) |
|------|------------------|
| 1 | 25 \pm 2 |
| 2 | -55 \pm 3 |
| 3 | 25 \pm 2 |
| 4 | 150 \pm 3 |
| 5 | 25 \pm 2 |

• Pretreatment for high dielectric constant type
 Perform a heat treatment at 150 \pm 0/-10°C for 1 hr., and then let sit at room temperature for 24 \pm 2 hrs.

Continued on the following page.

Specifications and Test Methods

Continued from the preceding page.

| No. | Item | | Specifications | | Test Method | | | | | | | | | | | | | | | |
|---|--|---|---|--|--|---|------------------|------------|---|-------|------|---|------------|--------|---|-------|------|---|------------|--------|
| | | | Temperature Compensating Type (Char. X8G) | High Dielectric Constant Type (Char. X8L) | | | | | | | | | | | | | | | | |
| 9 | Terminal Strength | Tensile Strength | Termination not to be broken or loosened | | As in the figure, fix the capacitor body, apply the force gradually to each lead in the radial direction of the capacitor until reaching 10N and then keep the force applied for 10±1 sec.  | | | | | | | | | | | | | | | |
| | | Bending Strength | Termination not to be broken or loosened | | | Each lead wire should be subjected to a force of 2.5N and then bent 90° at the point of egress in one direction. Each wire is then returned to the original position and bent 90° in the opposite direction at the rate of one bend per 2 to 3 sec. | | | | | | | | | | | | | | |
| 10 | Vibration Resistance | Appearance | No defects or abnormalities | | The capacitor should be firmly soldered to the supporting lead wire and vibrated at a frequency range of 10 to 2000Hz, 1.5mm in total amplitude, with about a 20 min. rate of vibration change from 10Hz to 2000Hz and back to 10Hz. Apply for a total of 6 hrs., 2 hrs. each in 3 mutually perpendicular directions. | | | | | | | | | | | | | | | |
| | | Capacitance | Within the specified tolerance | | | | | | | | | | | | | | | | | |
| | | Q/D.F. | Q≥1,000 | 0.025 max. | | | | | | | | | | | | | | | | |
| 11 | Solderability of Leads | | Lead wire should be soldered with uniform coating on the axial direction over 3/4 of the circumferential direction. | | The terminal of a capacitor is dipped into a solution of ethanol (JIS-K-8101) and rosin (JIS-K-5902) (25% rosin in weight proportion) and then into molten solder (JIS-Z-3282) for 2±0.5 sec. In both cases the depth of dipping is up to about 1.5 to 2mm from the terminal body. Temp. of solder: 245±5°C Lead Free Solder (Sn-3.0Ag-0.5Cu) 235±5°C H60A or H63A Eutectic Solder | | | | | | | | | | | | | | | |
| 12 | Resistance to Soldering Heat | Appearance | No defects or abnormalities | | The lead wire is immersed in the melted solder 1.5 to 2mm from the main body at 270±5°C for 3±0.5 sec. The specified items are measured after 24±2 hrs. • Pretreatment for high dielectric constant type Perform a heat treatment at 150+0/-10°C for 1 hr., and then let sit at room temperature for 24±2 hrs. | | | | | | | | | | | | | | | |
| | | Capacitance Change | Within ±2.5% or ±0.25pF (whichever is larger) | Within ±7.5% | | | | | | | | | | | | | | | | |
| | | Dielectric Strength (Between Terminals) | No defects | | | | | | | | | | | | | | | | | |
| 13 | Temperature Cycle | Appearance | No defects or abnormalities except color change of outer coating | | Repeat 1000 cycles according to 4 heat treatments listed in the following table. Remove and set for 24±2 hrs. at room temperature, then measure. <table border="1" style="margin: 5px auto;"> <thead> <tr> <th>Step</th> <th>Temperature (°C)</th> <th>Time (min)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-55±3</td> <td>30±3</td> </tr> <tr> <td>2</td> <td>Room Temp.</td> <td>3 max.</td> </tr> <tr> <td>3</td> <td>150±3</td> <td>30±3</td> </tr> <tr> <td>4</td> <td>Room Temp.</td> <td>3 max.</td> </tr> </tbody> </table> • Pretreatment for high dielectric constant type Perform a heat treatment at 150+0/-10°C for 1 hr., and then let sit at room temperature for 24±2 hrs. | Step | Temperature (°C) | Time (min) | 1 | -55±3 | 30±3 | 2 | Room Temp. | 3 max. | 3 | 150±3 | 30±3 | 4 | Room Temp. | 3 max. |
| | | Step | Temperature (°C) | Time (min) | | | | | | | | | | | | | | | | |
| | | 1 | -55±3 | 30±3 | | | | | | | | | | | | | | | | |
| | | 2 | Room Temp. | 3 max. | | | | | | | | | | | | | | | | |
| | | 3 | 150±3 | 30±3 | | | | | | | | | | | | | | | | |
| 4 | Room Temp. | 3 max. | | | | | | | | | | | | | | | | | | |
| Capacitance Change | Within ±5% or ±0.5pF (whichever is larger) | Within ±12.5% | | | | | | | | | | | | | | | | | | |
| Q/D.F. | Q≥350 | 0.05 max. | | | | | | | | | | | | | | | | | | |
| Insulation Resistance | 1,000MΩ or 50MΩ · μF min. (whichever is smaller) | | | | | | | | | | | | | | | | | | | |
| Dielectric Strength (Between Terminals) | No defects or abnormalities | | | | | | | | | | | | | | | | | | | |
| 14 | Humidity (Steady State) | Appearance | No defects or abnormalities | | Set the capacitor at 85±2°C and relative humidity of 85±2% for 500 ± ²⁴ ₀ hrs. Remove and set for 24±2 hrs. at room temperature, then measure. • Pretreatment for high dielectric constant type Perform a heat treatment at 150+0/-10°C for 1 hr., and then let sit at room temperature for 24±2 hrs. | | | | | | | | | | | | | | | |
| | | Capacitance Change | Within ±5% or ±0.5pF (whichever is larger) | Within ±12.5% | | | | | | | | | | | | | | | | |
| | | Q/D.F. | Q≥350 | 0.05 max. | | | | | | | | | | | | | | | | |
| | | Insulation Resistance | 1,000MΩ or 50MΩ · μF min. (whichever is smaller) | | | | | | | | | | | | | | | | | |
| 15 | Humidity Load | Appearance | No defects or abnormalities | | Apply the rated voltage at 85±2°C and relative humidity of 85±2% for 500 ± ²⁴ ₀ hrs. Remove and set for 24±2 hrs. at room temperature, then measure. (Charge/Discharge current ≤ 50mA) • Pretreatment for high dielectric constant type Perform a heat treatment at 150+0/-10°C for 1 hr., and then let sit at room temperature for 24±2 hrs. | | | | | | | | | | | | | | | |
| | | Capacitance Change | Within ±5% or ±0.5pF (whichever is larger) | Within ±12.5% | | | | | | | | | | | | | | | | |
| | | Q/D.F. | Q≥200 | 0.05 max. | | | | | | | | | | | | | | | | |
| | | Insulation Resistance | 500MΩ or 25MΩ · μF min. (whichever is smaller) | | | | | | | | | | | | | | | | | |

Continued on the following page.

Specifications and Test Methods

Continued from the preceding page.

| No. | Item | | Specifications | | Test Method |
|-----|-----------------------|-----------------------|---|--|--|
| | | | Temperature Compensating Type (Char. X8G) | High Dielectric Constant Type (Char. X8L) | |
| 16 | High Temperature Load | Appearance | No defects or abnormalities except color change of outer coating | | Apply a DC voltage of 150% of the rated voltage for 1000 \pm 48 hrs. at the maximum operating temperature. Remove and set for 24 \pm 2 hrs. at room temperature, then measure. (Charge/Discharge current \leq 50mA) • Pretreatment for high dielectric constant type Apply test voltage for 1 hr., at test temperature. Remove and set for 24 \pm 2 hrs. at room temperature. |
| | | Capacitance Change | Within \pm 3% or \pm 0.3pF (whichever is larger) | Within \pm 12.5% | |
| | | Q/D.F. | Q \geq 350 | 0.04 max. | |
| | | Insulation Resistance | 1,000M Ω or 50M Ω · μ F min. (whichever is smaller) | | |
| 17 | Solvent Resistance | Appearance | No defects or abnormalities | | The capacitor should be fully immersed, unagitated, in reagent at 20 to 25 °C for 30 \pm 5 sec. and then removed gently. Marking on the surface of the capacitor should immediately be visually examined. Reagent : • Isopropyl alcohol |
| | | Marking | Legible | | |

3

Table A

| Char. | Nominal Values (ppm/°C) *1 | Capacitance Change from 25°C (%) | | | | | |
|------------|-------------------------------|----------------------------------|-------|-------|-------|-------|-------|
| | | -55°C | | -30°C | | -10°C | |
| | | Max. | Min. | Max. | Min. | Max. | Min. |
| X8G | 0 \pm 30 | 0.58 | -0.24 | 0.40 | -0.17 | 0.25 | -0.11 |

*1: Nominal values denote the temperature coefficient within a range of 25 to 150°C

Radial Lead Type Monolithic Ceramic Capacitors



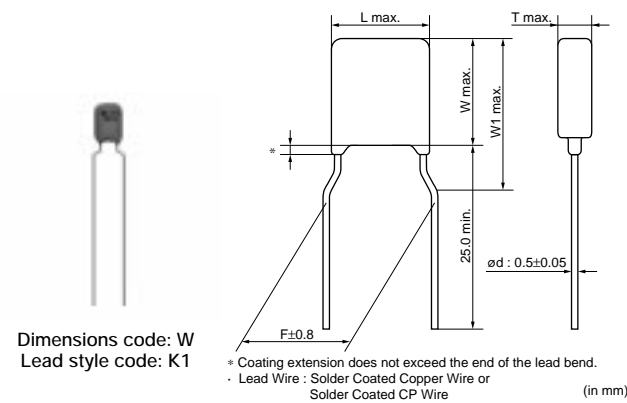
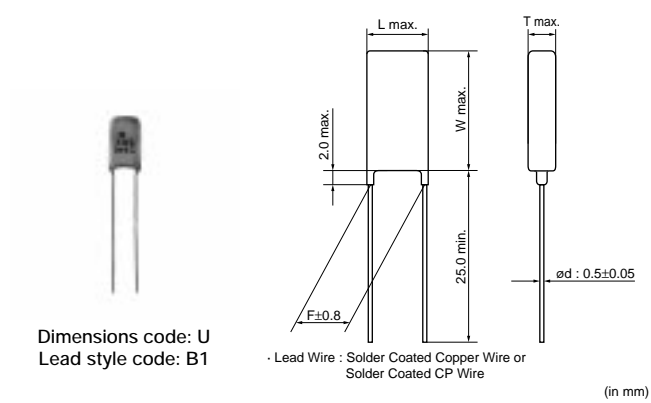
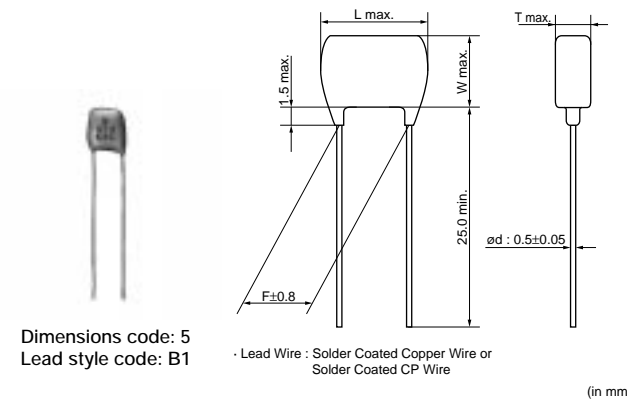
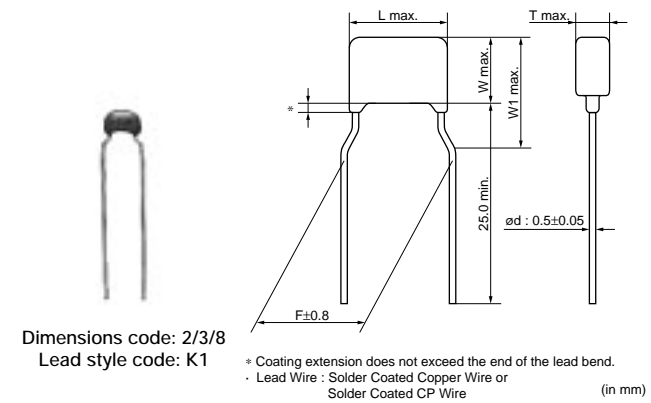
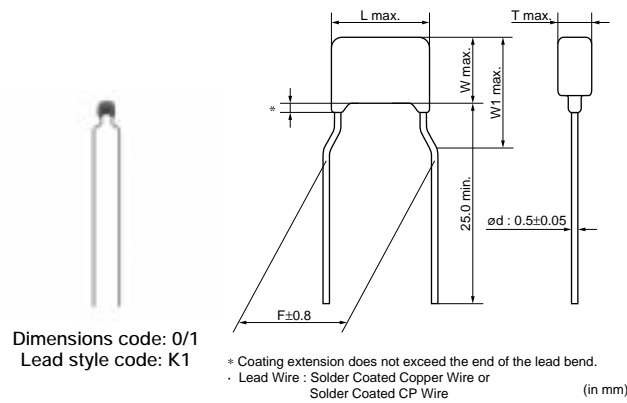
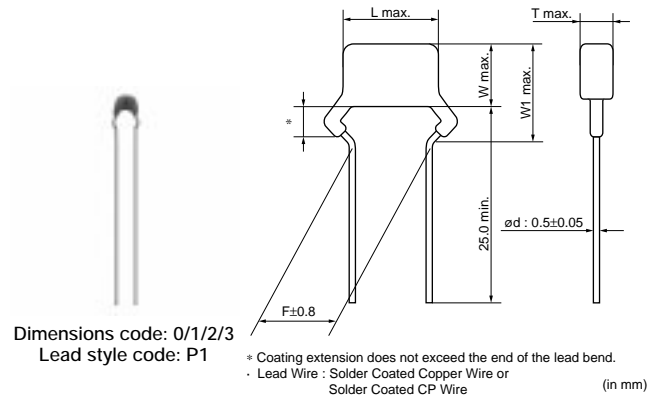
RDE Series (For Commercial Use Only) (DC25V-DC630V)

■ Features

1. Small size and large capacitance
2. Low ESR characteristics for high frequency
3. Coated with epoxy resin whose flammability is equivalent to UL94V-0

■ Applications

General electronic equipment
 (Do not use for automotive-related power train and safety equipment.)



4

■ Dimensions

| Dimensions and Lead Style Code | DC Rated Voltage | Dimensions (mm) | | | | | |
|--------------------------------|------------------|-----------------|-------|------|---|-----|-----|
| | | L | W | W1 | T | F | d |
| 0P1/0S1 | 25V/50V/100V | 5.0 | 3.5 | 6.0 | See the individual product specifications | 2.5 | 0.5 |
| 0K1/0M1 | 25V/50V/100V | 4.0 | 3.5 | 6.0 | | 5.0 | 0.5 |
| 1P1/1S1 | 25V/50V/100V | 5.0 | 3.5 | 5.0 | | 2.5 | 0.5 |
| 1K1/1M1 | 25V/50V/100V | 4.5 | 3.5 | 5.0 | | 5.0 | 0.5 |
| 2P1/2S1 | 25V/50V/100V | 5.5 | 4.0 | 6.0 | | 2.5 | 0.5 |
| 2K1/2M1 | 25V/50V/100V | 5.5 | 4.0 | 6.0 | | 5.0 | 0.5 |
| | 250V/630V | 5.0 | 3.5 | 5.0 | | 5.0 | 0.5 |
| 3P1/3S1 | 25V/50V/100V | 5.5 | 5.0 | 7.5 | | 2.5 | 0.5 |
| 3K1/3M1 | 25V/50V/100V | 5.5 | 5.0 | 7.5 | | 5.0 | 0.5 |
| | 250V/630V | 5.0 | 4.5 | 6.3 | | 5.0 | 0.5 |
| 5B1/5E1 | 250V/630V | 7.5 | 7.5* | - | | 5.0 | 0.5 |
| 8K1/8M1 | 250V/630V | 7.5 | 5.5 | 8.0 | | 5.0 | 0.5 |
| UB1/UE1 | 250V/630V | 7.7 | 12.5* | - | | 5.0 | 0.5 |
| WK1/WM1 | 25V/100V | 5.5 | 7.5 | 10.0 | | 5.0 | 0.5 |

*DC630V: W+0.5mm

Continued on the following page.

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 • This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please review our product specifications or consult the approval sheet for product specifications before ordering.

Continued from the preceding page.

■ Marking

| Dimensions Code | Type | Temperature Compensating Type | High Dielectric Constant Type | | | | | | | | | |
|-------------------------------|-----------------------------------|---|-------------------------------|------|-------------|-------------|-----|------|-------------|-------------|-------------|-------------|
| | Rated Voltage | DC50V, DC100V | DC25V | | DC50V | | | | DC100V | | DC250V | DC630V |
| | Temp. Char. | C0G | X7S | X7R | X7S | X7R | F | Y5V | X7S | X7R | X7R | |
| 0 | | A 102J | 224K | 104K | - | 224K | 473 | 103Z | - | 224K | - | - |
| 1 | | - | - | - | - | - | - | - | - | - | - | - |
| 2 | Individual Specification Code A□□ | - | Ⓜ475 K2C | - | Ⓜ475 K5C | Ⓜ105 K5C | - | - | - | Ⓜ105 K1C | 103K | - |
| | Individual Specification Code C□□ | - | - | - | - | - | - | - | - | - | Ⓜ153 K4C | Ⓜ153 K7C |
| 3, 8, W | | - | Ⓜ226 K2C | - | - | Ⓜ335 K5C | - | - | Ⓜ225 K1C | - | Ⓜ104 K4C | Ⓜ104 K7C |
| 5, U | | - | - | - | - | - | - | - | - | - | Ⓜ474 K4C | Ⓜ474 M7C |
| Temperature Characteristics | | Marked with code (C0G char.: A, X7S/X7R char.: C, F/Y5V char.: F) A part is omitted (Please refer to the marking example.) | | | | | | | | | | |
| Nominal Capacitance | | Under 100pF: Actual value 100pF and over: Marked with 3 figures | | | | | | | | | | |
| Capacitance Tolerance | | Marked with code A part is omitted (Please refer to the marking example.) | | | | | | | | | | |
| Rated Voltage | | Marked with code (DC25V: 2, DC50V: 5, DC100V: 1, DC250V: 4, DC630V: 7) Lower horizontal line for F char. A part is omitted (Please refer to the marking example.) | | | | | | | | | | |
| Manufacturer's Identification | | Marked with Ⓜ A part is omitted (Please refer to the marking example.) | | | | | | | | | | |

4

Temperature Compensating Type, C0G Characteristics


| Part Number | Temp. Char. | Rated Voltage (Vdc) | Capacitance (pF) | Dimensions LxW (mm) | Dimension T (mm) | Lead Space F (mm) | Lead Style Code Bulk | Lead Style Code Taping (1) | Lead Style Code Taping (2) |
|--------------------|-------------|---------------------|------------------|---------------------|------------------|-------------------|----------------------|----------------------------|----------------------------|
| RDE5C1H100J0□□C03□ | C0G | 50 | 10 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C1H100J0□□C03□ | C0G | 50 | 10 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C1H120J0□□C03□ | C0G | 50 | 12 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C1H120J0□□C03□ | C0G | 50 | 12 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C1H150J0□□C03□ | C0G | 50 | 15 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C1H150J0□□C03□ | C0G | 50 | 15 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C1H180J0□□C03□ | C0G | 50 | 18 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C1H180J0□□C03□ | C0G | 50 | 18 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C1H220J0□□C03□ | C0G | 50 | 22 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C1H220J0□□C03□ | C0G | 50 | 22 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C1H270J0□□C03□ | C0G | 50 | 27 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C1H270J0□□C03□ | C0G | 50 | 27 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C1H330J0□□C03□ | C0G | 50 | 33 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C1H330J0□□C03□ | C0G | 50 | 33 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C1H390J0□□C03□ | C0G | 50 | 39 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C1H390J0□□C03□ | C0G | 50 | 39 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C1H470J0□□C03□ | C0G | 50 | 47 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C1H470J0□□C03□ | C0G | 50 | 47 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C1H560J0□□C03□ | C0G | 50 | 56 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C1H560J0□□C03□ | C0G | 50 | 56 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |

Continued on the following page. ↗

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 • This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please review our product specifications or consult the approval sheet for product specifications before ordering.

Continued from the preceding page.

| Part Number | Temp. Char. | Rated Voltage (Vdc) | Capacitance (pF) | Dimensions LxW (mm) | Dimension T (mm) | Lead Space F (mm) | Lead Style Code Bulk | Lead Style Code Taping (1) | Lead Style Code Taping (2) |
|--------------------|-------------|---------------------|------------------|---------------------|------------------|-------------------|----------------------|----------------------------|----------------------------|
| RDE5C1H680J0□□C03□ | C0G | 50 | 68 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C1H680J0□□C03□ | C0G | 50 | 68 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C1H820J0□□C03□ | C0G | 50 | 82 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C1H820J0□□C03□ | C0G | 50 | 82 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C1H101J0□□C03□ | C0G | 50 | 100 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C1H101J0□□C03□ | C0G | 50 | 100 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C1H121J0□□C03□ | C0G | 50 | 120 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C1H121J0□□C03□ | C0G | 50 | 120 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C1H151J0□□C03□ | C0G | 50 | 150 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C1H151J0□□C03□ | C0G | 50 | 150 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C1H181J0□□C03□ | C0G | 50 | 180 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C1H181J0□□C03□ | C0G | 50 | 180 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C1H221J0□□C03□ | C0G | 50 | 220 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C1H221J0□□C03□ | C0G | 50 | 220 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C1H271J0□□C03□ | C0G | 50 | 270 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C1H271J0□□C03□ | C0G | 50 | 270 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C1H331J0□□C03□ | C0G | 50 | 330 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C1H331J0□□C03□ | C0G | 50 | 330 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C1H391J0□□C03□ | C0G | 50 | 390 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C1H391J0□□C03□ | C0G | 50 | 390 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C1H471J0□□C03□ | C0G | 50 | 470 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C1H471J0□□C03□ | C0G | 50 | 470 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C1H561J0□□C03□ | C0G | 50 | 560 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C1H561J0□□C03□ | C0G | 50 | 560 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C1H681J0□□C03□ | C0G | 50 | 680 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C1H681J0□□C03□ | C0G | 50 | 680 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C1H821J0□□C03□ | C0G | 50 | 820 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C1H821J0□□C03□ | C0G | 50 | 820 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C1H102J0□□C03□ | C0G | 50 | 1000 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C1H102J0□□C03□ | C0G | 50 | 1000 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C2A100J0□□C03□ | C0G | 100 | 10 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C2A100J0□□C03□ | C0G | 100 | 10 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C2A120J0□□C03□ | C0G | 100 | 12 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C2A120J0□□C03□ | C0G | 100 | 12 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C2A150J0□□C03□ | C0G | 100 | 15 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C2A150J0□□C03□ | C0G | 100 | 15 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C2A180J0□□C03□ | C0G | 100 | 18 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C2A180J0□□C03□ | C0G | 100 | 18 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C2A220J0□□C03□ | C0G | 100 | 22 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C2A220J0□□C03□ | C0G | 100 | 22 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C2A270J0□□C03□ | C0G | 100 | 27 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C2A270J0□□C03□ | C0G | 100 | 27 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C2A330J0□□C03□ | C0G | 100 | 33 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C2A330J0□□C03□ | C0G | 100 | 33 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C2A390J0□□C03□ | C0G | 100 | 39 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C2A390J0□□C03□ | C0G | 100 | 39 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C2A470J0□□C03□ | C0G | 100 | 47 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C2A470J0□□C03□ | C0G | 100 | 47 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C2A560J0□□C03□ | C0G | 100 | 56 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C2A560J0□□C03□ | C0G | 100 | 56 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C2A680J0□□C03□ | C0G | 100 | 68 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C2A680J0□□C03□ | C0G | 100 | 68 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C2A820J0□□C03□ | C0G | 100 | 82 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C2A820J0□□C03□ | C0G | 100 | 82 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C2A101J0□□C03□ | C0G | 100 | 100 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C2A101J0□□C03□ | C0G | 100 | 100 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C2A121J0□□C03□ | C0G | 100 | 120 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |

Continued on the following page. 

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 • This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please review our product specifications or consult the approval sheet for product specifications before ordering.

Continued from the preceding page.

| Part Number | Temp. Char. | Rated Voltage (Vdc) | Capacitance (pF) | Dimensions LxW (mm) | Dimension T (mm) | Lead Space F (mm) | Lead Style Code Bulk | Lead Style Code Taping (1) | Lead Style Code Taping (2) |
|--------------------|-------------|---------------------|------------------|---------------------|------------------|-------------------|----------------------|----------------------------|----------------------------|
| RDE5C2A121J0□□C03□ | C0G | 100 | 120 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C2A151J0□□C03□ | C0G | 100 | 150 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C2A151J0□□C03□ | C0G | 100 | 150 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C2A181J0□□C03□ | C0G | 100 | 180 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C2A181J0□□C03□ | C0G | 100 | 180 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C2A221J0□□C03□ | C0G | 100 | 220 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C2A221J0□□C03□ | C0G | 100 | 220 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C2A271J0□□C03□ | C0G | 100 | 270 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C2A271J0□□C03□ | C0G | 100 | 270 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C2A331J0□□C03□ | C0G | 100 | 330 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C2A331J0□□C03□ | C0G | 100 | 330 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C2A391J0□□C03□ | C0G | 100 | 390 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C2A391J0□□C03□ | C0G | 100 | 390 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C2A471J0□□C03□ | C0G | 100 | 470 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C2A471J0□□C03□ | C0G | 100 | 470 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C2A561J0□□C03□ | C0G | 100 | 560 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C2A561J0□□C03□ | C0G | 100 | 560 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C2A681J0□□C03□ | C0G | 100 | 680 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C2A681J0□□C03□ | C0G | 100 | 680 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C2A821J0□□C03□ | C0G | 100 | 820 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C2A821J0□□C03□ | C0G | 100 | 820 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDE5C2A102J0□□C03□ | C0G | 100 | 1000 ±5% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDE5C2A102J0□□C03□ | C0G | 100 | 1000 ±5% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |

Two blank columns are filled with the lead style code. Please refer to the 3 columns on the right for the appropriate code.
 The last blank column is filled with the packaging code. (B: bulk, A: ammo pack)

High Dielectric Constant Type, X7R/X7S Characteristics


| Part Number | Temp. Char. | Rated Voltage (Vdc) | Capacitance | Dimensions LxW (mm) | Dimension T (mm) | Lead Space F (mm) | Lead Style Code Bulk | Lead Style Code Taping (1) | Lead Style Code Taping (2) |
|--------------------|-------------|---------------------|-------------|---------------------|------------------|-------------------|----------------------|----------------------------|----------------------------|
| RDER71E104K0□□C03□ | X7R | 25 | 0.10μF ±10% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDER71E104K0□□C03□ | X7R | 25 | 0.10μF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDEC71E224K0□□C03□ | X7S | 25 | 0.22μF ±10% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDEC71E224K0□□C03□ | X7S | 25 | 0.22μF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDEC71E474K0□□C03□ | X7S | 25 | 0.47μF ±10% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDEC71E474K0□□C03□ | X7S | 25 | 0.47μF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDEC71E105K0□□C03□ | X7S | 25 | 1.0μF ±10% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDEC71E105K0□□C03□ | X7S | 25 | 1.0μF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDEC71E225K1□□C03□ | X7S | 25 | 2.2μF ±10% | 4.5 x 3.5 | 3.15 | 5.0 | K1 | M1 | - |
| RDEC71E225K1□□C03□ | X7S | 25 | 2.2μF ±10% | 5.0 x 3.5 | 3.15 | 2.5 | P1 | S1 | - |
| RDEC71E475K2□□C03□ | X7S | 25 | 4.7μF ±10% | 5.5 x 4.0 | 3.15 | 2.5 | P1 | S1 | - |
| RDEC71E475K2□□C03□ | X7S | 25 | 4.7μF ±10% | 5.5 x 4.0 | 3.15 | 5.0 | K1 | M1 | - |
| RDEC71E106K2□□C03□ | X7S | 25 | 10.0μF ±10% | 5.5 x 4.0 | 3.15 | 2.5 | P1 | S1 | - |
| RDEC71E106K2□□C03□ | X7S | 25 | 10.0μF ±10% | 5.5 x 4.0 | 3.15 | 5.0 | K1 | M1 | - |
| RDEC71E226K3□□C03□ | X7S | 25 | 22.0μF ±10% | 5.5 x 5.0 | 4.0 | 2.5 | P1 | S1 | - |
| RDEC71E226K3□□C03□ | X7S | 25 | 22.0μF ±10% | 5.5 x 5.0 | 4.0 | 5.0 | K1 | M1 | - |
| RDEC71E476MW□□C03□ | X7S | 25 | 47.0μF ±20% | 5.5 x 7.5 | 4.0 | 5.0 | K1 | M1 | - |
| RDER71H221K0□□C03□ | X7R | 50 | 220pF ±10% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDER71H221K0□□C03□ | X7R | 50 | 220pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDER71H331K0□□C03□ | X7R | 50 | 330pF ±10% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDER71H331K0□□C03□ | X7R | 50 | 330pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDER71H471K0□□C03□ | X7R | 50 | 470pF ±10% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDER71H471K0□□C03□ | X7R | 50 | 470pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDER71H681K0□□C03□ | X7R | 50 | 680pF ±10% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDER71H681K0□□C03□ | X7R | 50 | 680pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDER71H102K0□□C03□ | X7R | 50 | 1000pF ±10% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |

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 • This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please review our product specifications or consult the approval sheet for product specifications before ordering.

Continued from the preceding page.

| Part Number | Temp. Char. | Rated Voltage (Vdc) | Capacitance | Dimensions LxW (mm) | Dimension T (mm) | Lead Space F (mm) | Lead Style Code Bulk | Lead Style Code Taping (1) | Lead Style Code Taping (2) |
|--------------------|-------------|---------------------|--------------|---------------------|------------------|-------------------|----------------------|----------------------------|----------------------------|
| RDER71H102K0□□C03□ | X7R | 50 | 1000pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDER71H152K0□□C03□ | X7R | 50 | 1500pF ±10% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDER71H152K0□□C03□ | X7R | 50 | 1500pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDER71H222K0□□C03□ | X7R | 50 | 2200pF ±10% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDER71H222K0□□C03□ | X7R | 50 | 2200pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDER71H332K0□□C03□ | X7R | 50 | 3300pF ±10% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDER71H332K0□□C03□ | X7R | 50 | 3300pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDER71H472K0□□C03□ | X7R | 50 | 4700pF ±10% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDER71H472K0□□C03□ | X7R | 50 | 4700pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDER71H682K0□□C03□ | X7R | 50 | 6800pF ±10% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDER71H682K0□□C03□ | X7R | 50 | 6800pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDER71H103K0□□C03□ | X7R | 50 | 10000pF ±10% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDER71H103K0□□C03□ | X7R | 50 | 10000pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDER71H153K0□□C03□ | X7R | 50 | 15000pF ±10% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDER71H153K0□□C03□ | X7R | 50 | 15000pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDER71H223K0□□C03□ | X7R | 50 | 22000pF ±10% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDER71H223K0□□C03□ | X7R | 50 | 22000pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDER71H333K0□□C03□ | X7R | 50 | 33000pF ±10% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDER71H333K0□□C03□ | X7R | 50 | 33000pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDER71H473K0□□C03□ | X7R | 50 | 47000pF ±10% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDER71H473K0□□C03□ | X7R | 50 | 47000pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDER71H683K0□□C03□ | X7R | 50 | 68000pF ±10% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDER71H683K0□□C03□ | X7R | 50 | 68000pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDER71H104K0□□C03□ | X7R | 50 | 0.10μF ±10% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDER71H104K0□□C03□ | X7R | 50 | 0.10μF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDER71H154K1□□C03□ | X7R | 50 | 0.15μF ±10% | 4.5 x 3.5 | 3.15 | 5.0 | K1 | M1 | - |
| RDER71H154K1□□C03□ | X7R | 50 | 0.15μF ±10% | 5.0 x 3.5 | 3.15 | 2.5 | P1 | S1 | - |
| RDER71H224K1□□C03□ | X7R | 50 | 0.22μF ±10% | 4.5 x 3.5 | 3.15 | 5.0 | K1 | M1 | - |
| RDER71H224K1□□C03□ | X7R | 50 | 0.22μF ±10% | 5.0 x 3.5 | 3.15 | 2.5 | P1 | S1 | - |
| RDER71H334K1□□C03□ | X7R | 50 | 0.33μF ±10% | 4.5 x 3.5 | 3.15 | 5.0 | K1 | M1 | - |
| RDER71H334K1□□C03□ | X7R | 50 | 0.33μF ±10% | 5.0 x 3.5 | 3.15 | 2.5 | P1 | S1 | - |
| RDER71H474K1□□C03□ | X7R | 50 | 0.47μF ±10% | 4.5 x 3.5 | 3.15 | 5.0 | K1 | M1 | - |
| RDER71H474K1□□C03□ | X7R | 50 | 0.47μF ±10% | 5.0 x 3.5 | 3.15 | 2.5 | P1 | S1 | - |
| RDER71H684K2□□C03□ | X7R | 50 | 0.68μF ±10% | 5.5 x 4.0 | 3.15 | 2.5 | P1 | S1 | - |
| RDER71H684K2□□C03□ | X7R | 50 | 0.68μF ±10% | 5.5 x 4.0 | 3.15 | 5.0 | K1 | M1 | - |
| RDER71H105K2□□C03□ | X7R | 50 | 1.0μF ±10% | 5.5 x 4.0 | 3.15 | 2.5 | P1 | S1 | - |
| RDER71H105K2□□C03□ | X7R | 50 | 1.0μF ±10% | 5.5 x 4.0 | 3.15 | 5.0 | K1 | M1 | - |
| RDER71H155K2□□C03□ | X7R | 50 | 1.5μF ±10% | 5.5 x 4.0 | 3.15 | 2.5 | P1 | S1 | - |
| RDER71H155K2□□C03□ | X7R | 50 | 1.5μF ±10% | 5.5 x 4.0 | 3.15 | 5.0 | K1 | M1 | - |
| RDER71H225K2□□C03□ | X7R | 50 | 2.2μF ±10% | 5.5 x 4.0 | 3.15 | 2.5 | P1 | S1 | - |
| RDER71H225K2□□C03□ | X7R | 50 | 2.2μF ±10% | 5.5 x 4.0 | 3.15 | 5.0 | K1 | M1 | - |
| RDER71H335K3□□C03□ | X7R | 50 | 3.3μF ±10% | 5.5 x 5.0 | 4.0 | 2.5 | P1 | S1 | - |
| RDER71H335K3□□C03□ | X7R | 50 | 3.3μF ±10% | 5.5 x 5.0 | 4.0 | 5.0 | K1 | M1 | - |
| RDEC71H475K2□□C03□ | X7S | 50 | 4.7μF ±10% | 5.5 x 4.0 | 3.15 | 2.5 | P1 | S1 | - |
| RDEC71H475K2□□C03□ | X7S | 50 | 4.7μF ±10% | 5.5 x 4.0 | 3.15 | 5.0 | K1 | M1 | - |
| RDER72A102K0□□C03□ | X7R | 100 | 1000pF ±10% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDER72A102K0□□C03□ | X7R | 100 | 1000pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDER72A152K0□□C03□ | X7R | 100 | 1500pF ±10% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDER72A152K0□□C03□ | X7R | 100 | 1500pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDER72A222K0□□C03□ | X7R | 100 | 2200pF ±10% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDER72A222K0□□C03□ | X7R | 100 | 2200pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDER72A332K0□□C03□ | X7R | 100 | 3300pF ±10% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDER72A332K0□□C03□ | X7R | 100 | 3300pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDER72A472K0□□C03□ | X7R | 100 | 4700pF ±10% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDER72A472K0□□C03□ | X7R | 100 | 4700pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDER72A682K0□□C03□ | X7R | 100 | 6800pF ±10% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDER72A682K0□□C03□ | X7R | 100 | 6800pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |

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 • This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please review our product specifications or consult the approval sheet for product specifications before ordering.

Continued from the preceding page.

| Part Number | Temp. Char. | Rated Voltage (Vdc) | Capacitance | Dimensions LxW (mm) | Dimension T (mm) | Lead Space F (mm) | Lead Style Code Bulk | Lead Style Code Taping (1) | Lead Style Code Taping (2) |
|--------------------|-------------|---------------------|--------------|---------------------|------------------|-------------------|----------------------|----------------------------|----------------------------|
| RDER72A103K0□□C03□ | X7R | 100 | 10000pF ±10% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDER72A103K0□□C03□ | X7R | 100 | 10000pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDER72A153K0□□C03□ | X7R | 100 | 15000pF ±10% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDER72A153K0□□C03□ | X7R | 100 | 15000pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDER72A223K0□□C03□ | X7R | 100 | 22000pF ±10% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDER72A223K0□□C03□ | X7R | 100 | 22000pF ±10% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDER72A333K1□□C03□ | X7R | 100 | 33000pF ±10% | 4.5 x 3.5 | 3.15 | 5.0 | K1 | M1 | - |
| RDER72A333K1□□C03□ | X7R | 100 | 33000pF ±10% | 5.0 x 3.5 | 3.15 | 2.5 | P1 | S1 | - |
| RDER72A473K1□□C03□ | X7R | 100 | 47000pF ±10% | 4.5 x 3.5 | 3.15 | 5.0 | K1 | M1 | - |
| RDER72A473K1□□C03□ | X7R | 100 | 47000pF ±10% | 5.0 x 3.5 | 3.15 | 2.5 | P1 | S1 | - |
| RDER72A683K1□□C03□ | X7R | 100 | 68000pF ±10% | 4.5 x 3.5 | 3.15 | 5.0 | K1 | M1 | - |
| RDER72A683K1□□C03□ | X7R | 100 | 68000pF ±10% | 5.0 x 3.5 | 3.15 | 2.5 | P1 | S1 | - |
| RDER72A104K1□□C03□ | X7R | 100 | 0.10μF ±10% | 4.5 x 3.5 | 3.15 | 5.0 | K1 | M1 | - |
| RDER72A104K1□□C03□ | X7R | 100 | 0.10μF ±10% | 5.0 x 3.5 | 3.15 | 2.5 | P1 | S1 | - |
| RDER72A154K2□□C03□ | X7R | 100 | 0.15μF ±10% | 5.5 x 4.0 | 3.15 | 2.5 | P1 | S1 | - |
| RDER72A154K2□□C03□ | X7R | 100 | 0.15μF ±10% | 5.5 x 4.0 | 3.15 | 5.0 | K1 | M1 | - |
| RDER72A224K1□□C03□ | X7R | 100 | 0.22μF ±10% | 4.5 x 3.5 | 3.15 | 5.0 | K1 | M1 | - |
| RDER72A224K1□□C03□ | X7R | 100 | 0.22μF ±10% | 5.0 x 3.5 | 3.15 | 2.5 | P1 | S1 | - |
| RDER72A334K1□□C03□ | X7R | 100 | 0.33μF ±10% | 4.5 x 3.5 | 3.15 | 5.0 | K1 | M1 | - |
| RDER72A334K1□□C03□ | X7R | 100 | 0.33μF ±10% | 5.0 x 3.5 | 3.15 | 2.5 | P1 | S1 | - |
| RDER72A474K1□□C03□ | X7R | 100 | 0.47μF ±10% | 4.5 x 3.5 | 3.15 | 5.0 | K1 | M1 | - |
| RDER72A474K1□□C03□ | X7R | 100 | 0.47μF ±10% | 5.0 x 3.5 | 3.15 | 2.5 | P1 | S1 | - |
| RDER72A684K2□□C03□ | X7R | 100 | 0.68μF ±10% | 5.5 x 4.0 | 3.15 | 2.5 | P1 | S1 | - |
| RDER72A684K2□□C03□ | X7R | 100 | 0.68μF ±10% | 5.5 x 4.0 | 3.15 | 5.0 | K1 | M1 | - |
| RDER72A105K2□□C03□ | X7R | 100 | 1.0μF ±10% | 5.5 x 4.0 | 3.15 | 2.5 | P1 | S1 | - |
| RDER72A105K2□□C03□ | X7R | 100 | 1.0μF ±10% | 5.5 x 4.0 | 3.15 | 5.0 | K1 | M1 | - |
| RDEC72A155K3□□C03□ | X7S | 100 | 1.5μF ±10% | 5.5 x 5.0 | 4.0 | 2.5 | P1 | S1 | - |
| RDEC72A155K3□□C03□ | X7S | 100 | 1.5μF ±10% | 5.5 x 5.0 | 4.0 | 5.0 | K1 | M1 | - |
| RDEC72A225K3□□C03□ | X7S | 100 | 2.2μF ±10% | 5.5 x 5.0 | 4.0 | 2.5 | P1 | S1 | - |
| RDEC72A225K3□□C03□ | X7S | 100 | 2.2μF ±10% | 5.5 x 5.0 | 4.0 | 5.0 | K1 | M1 | - |
| RDEC72A475MW□□C03□ | X7S | 100 | 4.7μF ±20% | 5.5 x 7.5 | 4.0 | 5.0 | K1 | M1 | - |
| RDER72E102K2□□A11□ | X7R | 250 | 1000pF ±10% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | - |
| RDER72E152K2□□A11□ | X7R | 250 | 1500pF ±10% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | - |
| RDER72E222K2□□A11□ | X7R | 250 | 2200pF ±10% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | - |
| RDER72E332K2□□A11□ | X7R | 250 | 3300pF ±10% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | - |
| RDER72E472K2□□A11□ | X7R | 250 | 4700pF ±10% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | - |
| RDER72E682K2□□A11□ | X7R | 250 | 6800pF ±10% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | - |
| RDER72E103K2□□A11□ | X7R | 250 | 10000pF ±10% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | - |
| RDER72E153K2□□C11□ | X7R | 250 | 15000pF ±10% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | - |
| RDER72E223K2□□C11□ | X7R | 250 | 22000pF ±10% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | - |
| RDER72E333K2□□C11□ | X7R | 250 | 33000pF ±10% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | - |
| RDER72E473K2□□C11□ | X7R | 250 | 47000pF ±10% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | - |
| RDER72E683K3□□C11□ | X7R | 250 | 68000pF ±10% | 5.0 x 4.5 | 3.15 | 5.0 | K1 | M1 | - |
| RDER72E104K3□□C11□ | X7R | 250 | 0.10μF ±10% | 5.0 x 4.5 | 3.15 | 5.0 | K1 | B1 | - |
| RDER72E154K8□□C11□ | X7R | 250 | 0.15μF ±10% | 7.5 x 5.5 | 3.15 | 5.0 | K1 | M1 | - |
| RDER72E224K8□□C11□ | X7R | 250 | 0.22μF ±10% | 7.5 x 5.5 | 3.15 | 5.0 | K1 | M1 | - |
| RDER72E334K5□□C13□ | X7R | 250 | 0.33μF ±10% | 7.5 x 7.5 | 4.0 | 5.0 | B1 | E1 | - |
| RDER72E474K5□□C13□ | X7R | 250 | 0.47μF ±10% | 7.5 x 7.5 | 4.0 | 5.0 | B1 | E1 | - |
| RDER72E105MU□□C13□ | X7R | 250 | 1.0μF ±20% | 7.7 x 12.5 | 4.0 | 5.0 | B1 | E1 | - |
| RDER72J102K2□□C11□ | X7R | 630 | 1000pF ±10% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | - |
| RDER72J152K2□□C11□ | X7R | 630 | 1500pF ±10% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | - |
| RDER72J222K2□□C11□ | X7R | 630 | 2200pF ±10% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | - |
| RDER72J332K2□□C11□ | X7R | 630 | 3300pF ±10% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | - |
| RDER72J472K2□□C11□ | X7R | 630 | 4700pF ±10% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | - |
| RDER72J682K2□□C11□ | X7R | 630 | 6800pF ±10% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | - |
| RDER72J103K2□□C11□ | X7R | 630 | 10000pF ±10% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | - |
| RDER72J153K2□□C11□ | X7R | 630 | 15000pF ±10% | 5.0 x 3.5 | 3.15 | 5.0 | K1 | M1 | - |

Continued on the following page. ↗

△Note • Please read rating and △CAUTION (for storage, operating, rating, soldering, mounting and handling) in this catalog to prevent smoking and/or burning, etc.
 • This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please review our product specifications or consult the approval sheet for product specifications before ordering.

Continued from the preceding page.

| Part Number | Temp. Char. | Rated Voltage (Vdc) | Capacitance | Dimensions LxW (mm) | Dimension T (mm) | Lead Space F (mm) | Lead Style Code Bulk | Lead Style Code Taping (1) | Lead Style Code Taping (2) |
|--------------------|-------------|---------------------|--------------|---------------------|------------------|-------------------|----------------------|----------------------------|----------------------------|
| RDER72J223K3□□C11□ | X7R | 630 | 22000pF ±10% | 5.0 x 4.5 | 3.15 | 5.0 | K1 | M1 | - |
| RDER72J333K3□□C11□ | X7R | 630 | 33000pF ±10% | 5.0 x 4.5 | 3.15 | 5.0 | K1 | M1 | - |
| RDER72J473K3□□C11□ | X7R | 630 | 47000pF ±10% | 5.0 x 4.5 | 3.15 | 5.0 | K1 | M1 | - |
| RDER72J683K8□□C11□ | X7R | 630 | 68000pF ±10% | 7.5 x 5.5 | 3.15 | 5.0 | K1 | M1 | - |
| RDER72J104K8□□C11□ | X7R | 630 | 0.10μF ±10% | 7.5 x 5.5 | 3.15 | 5.0 | K1 | M1 | - |
| RDER72J154K5□□C13□ | X7R | 630 | 0.15μF ±10% | 7.5 x 8.0 | 4.0 | 5.0 | B1 | E1 | - |
| RDER72J224K5□□C13□ | X7R | 630 | 0.22μF ±10% | 7.5 x 8.0 | 4.0 | 5.0 | B1 | E1 | - |
| RDER72J474MU□□C13□ | X7R | 630 | 0.47μF ±20% | 7.7 x 13.0 | 4.0 | 5.0 | B1 | E1 | - |

Two blank columns are filled with the lead style code. Please refer to the 3 columns on the right for the appropriate code.
 The last blank column is filled with the packaging code. (B: bulk, A: ammo pack)

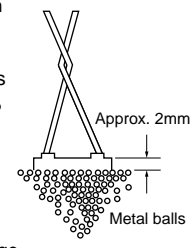
High Dielectric Constant Type, F/Y5V Characteristics

| Part Number | Temp. Char. | Rated Voltage (Vdc) | Capacitance | Dimensions LxW (mm) | Dimension T (mm) | Lead Space F (mm) | Lead Style Code Bulk | Lead Style Code Taping (1) | Lead Style Code Taping (2) |
|--------------------|-------------|---------------------|------------------|---------------------|------------------|-------------------|----------------------|----------------------------|----------------------------|
| RDEF11H103Z0□□C01□ | F | 50 | 10000pF +80/-20% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDEF11H103Z0□□C01□ | F | 50 | 10000pF +80/-20% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDEF51H103Z0□□C03□ | Y5V | 50 | 10000pF +80/-20% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDEF51H103Z0□□C03□ | Y5V | 50 | 10000pF +80/-20% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDEF11H223Z0□□C01□ | F | 50 | 22000pF +80/-20% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDEF11H223Z0□□C01□ | F | 50 | 22000pF +80/-20% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDEF51H223Z0□□C03□ | Y5V | 50 | 22000pF +80/-20% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDEF51H223Z0□□C03□ | Y5V | 50 | 22000pF +80/-20% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDEF11H473Z0□□C01□ | F | 50 | 47000pF +80/-20% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDEF11H473Z0□□C01□ | F | 50 | 47000pF +80/-20% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDEF51H473Z0□□C03□ | Y5V | 50 | 47000pF +80/-20% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDEF51H473Z0□□C03□ | Y5V | 50 | 47000pF +80/-20% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDEF11H104Z0□□C01□ | F | 50 | 0.10μF +80/-20% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDEF11H104Z0□□C01□ | F | 50 | 0.10μF +80/-20% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |
| RDEF51H104Z0□□C03□ | Y5V | 50 | 0.10μF +80/-20% | 4.0 x 3.5 | 2.5 | 5.0 | K1 | M1 | - |
| RDEF51H104Z0□□C03□ | Y5V | 50 | 0.10μF +80/-20% | 5.0 x 3.5 | 2.5 | 2.5 | P1 | S1 | - |

Two blank columns are filled with the lead style code. Please refer to the 3 columns on the right for the appropriate code.
 The last blank column is filled with the packaging code. (B: bulk, A: ammo pack)

Specifications and Test Methods

| No. | Item | Specifications | | Test Method | | | | | | | | | | | | | | | | | | | | | | |
|-----------------|-----------------------------|--|--|--|---------------|--------------|---------------|---------------------------|---------------|--------------|----------------|---------------------------|----------------|---------------------------|-------------------------|---------------------------|-------------|--|---------------------|--------------|-----------|----------------|----------------|---------|-------------------------|---------------------------|
| | | Temperature Compensating Type | High Dielectric Constant Type | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | Operating Temperature Range | -55 to +125°C | Char. X7R, X7S: -55 to +125°C Char. F: -25 to +85°C Char. Y5V: -30 to +85°C | - | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Appearance | No defects or abnormalities | | Visual inspection | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Dimension and Marking | See previous pages | | Visual inspection, Vernier Caliper | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Dielectric Strength | Between Terminals | No defects or abnormalities | The capacitors should not be damaged when test voltages of Table are applied between the terminals for 1 to 5 sec. (Charge/Discharge current \leq 50mA) Temperature Compensating Type <table border="1"> <thead> <tr> <th>Rated Voltage</th> <th>Test Voltage</th> </tr> </thead> <tbody> <tr> <td>DC50V, DC100V</td> <td>300% of the rated voltage</td> </tr> </tbody> </table> High Dielectric Constant Type <table border="1"> <thead> <tr> <th>Rated Voltage</th> <th>Test Voltage</th> </tr> </thead> <tbody> <tr> <td>DC25V, DC50V</td> <td>250% of the rated voltage</td> </tr> <tr> <td>DC100V, DC250V</td> <td>200% of the rated voltage</td> </tr> <tr> <td>DC630V</td> <td>150% of the rated voltage</td> </tr> </tbody> </table> | Rated Voltage | Test Voltage | DC50V, DC100V | 300% of the rated voltage | Rated Voltage | Test Voltage | DC25V, DC50V | 250% of the rated voltage | DC100V, DC250V | 200% of the rated voltage | DC630V | 150% of the rated voltage | | | | | | | | | | |
| | | Rated Voltage | Test Voltage | | | | | | | | | | | | | | | | | | | | | | | |
| DC50V, DC100V | 300% of the rated voltage | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rated Voltage | Test Voltage | | | | | | | | | | | | | | | | | | | | | | | | | |
| DC25V, DC50V | 250% of the rated voltage | | | | | | | | | | | | | | | | | | | | | | | | | |
| DC100V, DC250V | 200% of the rated voltage | | | | | | | | | | | | | | | | | | | | | | | | | |
| DC630V | 150% of the rated voltage | | | | | | | | | | | | | | | | | | | | | | | | | |
| Body Insulation | No defects or abnormalities | The capacitor is placed in a container with metal balls of 1mm diameter so that each terminal, short-circuited, is kept approximately 2mm from the balls as shown in the figure, and 250% of the rated voltage (200% of the rated voltage in case of rated voltage: DC100V, DC250V, DC630V) is impressed for 1 to 5 sec. between capacitor terminals and metal balls. (Charge/Discharge current \leq 50mA) | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | Insulation Resistance | Between Terminals | Rated Voltage: DC25V, DC50V, DC100V 10,000M Ω min. or 500M Ω • μ F min. whichever is smaller Rated Voltage: DC250V, DC630V 10,000M Ω min. or 100M Ω • μ F min. whichever is smaller | The insulation resistance should be measured with a DC voltage not exceeding the rated voltage (DC500 \pm 50V in case of rated voltage: DC630V) at normal temperature and humidity and within 2 min. of charging. (Charge/Discharge current \leq 50mA) | | | | | | | | | | | | | | | | | | | | | | |
| 6 | Capacitance | Within the specified tolerance | | The capacitance, Q/D.F. should be measured at 25°C at the frequency and voltage shown in the table. | | | | | | | | | | | | | | | | | | | | | | |
| 7 | Q/Dissipation Factor (D.F.) | 30pF min.: $Q \geq 1,000$ 30pF max.: $Q \geq 400+20C$ C: Nominal capacitance (pF) | Char. X7R: 0.025 max. Char. F, Y5V: 0.05 max. Char. X7S: 0.125 max. | Temperature Compensating Type <table border="1"> <thead> <tr> <th rowspan="2">Item</th> <th colspan="2">Capacitance</th> </tr> <tr> <th>C\leq1000pF</th> <th>C>1000pF</th> </tr> </thead> <tbody> <tr> <td>Frequency</td> <td>1\pm0.1MHz</td> <td>1\pm0.1kHz</td> </tr> <tr> <td>Voltage</td> <td>AC0.5 to 5V (r.m.s.)</td> <td>AC1\pm0.2V (r.m.s.)</td> </tr> </tbody> </table> High Dielectric Constant Type <table border="1"> <thead> <tr> <th rowspan="2">Item</th> <th colspan="2">Capacitance</th> </tr> <tr> <th>C\leq10μF</th> <th>C>10μF</th> </tr> </thead> <tbody> <tr> <td>Frequency</td> <td>1\pm0.1kHz</td> <td>120\pm24Hz</td> </tr> <tr> <td>Voltage</td> <td>AC1\pm0.2V (r.m.s.)</td> <td>AC0.5\pm0.1V (r.m.s.)</td> </tr> </tbody> </table> | Item | Capacitance | | C \leq 1000pF | C>1000pF | Frequency | 1 \pm 0.1MHz | 1 \pm 0.1kHz | Voltage | AC0.5 to 5V (r.m.s.) | AC1 \pm 0.2V (r.m.s.) | Item | Capacitance | | C \leq 10 μ F | C>10 μ F | Frequency | 1 \pm 0.1kHz | 120 \pm 24Hz | Voltage | AC1 \pm 0.2V (r.m.s.) | AC0.5 \pm 0.1V (r.m.s.) |
| Item | Capacitance | | | | | | | | | | | | | | | | | | | | | | | | | |
| | C \leq 1000pF | C>1000pF | | | | | | | | | | | | | | | | | | | | | | | | |
| Frequency | 1 \pm 0.1MHz | 1 \pm 0.1kHz | | | | | | | | | | | | | | | | | | | | | | | | |
| Voltage | AC0.5 to 5V (r.m.s.) | AC1 \pm 0.2V (r.m.s.) | | | | | | | | | | | | | | | | | | | | | | | | |
| Item | Capacitance | | | | | | | | | | | | | | | | | | | | | | | | | |
| | C \leq 10 μ F | C>10 μ F | | | | | | | | | | | | | | | | | | | | | | | | |
| Frequency | 1 \pm 0.1kHz | 120 \pm 24Hz | | | | | | | | | | | | | | | | | | | | | | | | |
| Voltage | AC1 \pm 0.2V (r.m.s.) | AC0.5 \pm 0.1V (r.m.s.) | | | | | | | | | | | | | | | | | | | | | | | | |

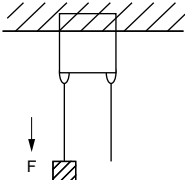


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Specifications and Test Methods

Continued from the preceding page.

| No. | Item | | Specifications | | Test Method | | | | | | | | | | | | |
|-------------------------|---|---|---|---|---|---|------------------|---|------|---|-------|---|------|---|-------|---|------|
| | | | Temperature Compensating Type | High Dielectric Constant Type | | | | | | | | | | | | | |
| 8 | Capacitance Temperature Characteristics | Capacitance Change | Within the specified tolerance (Table A on last column) | Within the specified tolerance (Table B on last column) | The capacitance change should be measured after 5 min. at each specified temperature stage. (1) Temperature Compensating Type The temperature coefficient is determined using the capacitance measured in step 3 as a reference. When cycling the temperature sequentially from step 1 through 5 (-55 to +125°C) the capacitance should be within the specified tolerance for the temperature coefficient and capacitance change as shown in Table A. The capacitance drift is calculated by dividing the differences between the maximum and minimum measured values in step 1, 3 and 5 by the cap. value in step 3. <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Step</th> <th>Temperature (°C)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>25±2</td> </tr> <tr> <td>2</td> <td>-55±3</td> </tr> <tr> <td>3</td> <td>25±2</td> </tr> <tr> <td>4</td> <td>125±3</td> </tr> <tr> <td>5</td> <td>25±2</td> </tr> </tbody> </table> (2) High Dielectric Constant Type The ranges of capacitance change compared with the 25°C (Char. F: 20°C) value over the temperature ranges as shown in Table B should be within the specified ranges. • Pretreatment (for high dielectric constant type) Perform a heat treatment at 150±0/-10°C for 1 hr., and then let sit at room temperature for 24±2 hrs. | Step | Temperature (°C) | 1 | 25±2 | 2 | -55±3 | 3 | 25±2 | 4 | 125±3 | 5 | 25±2 |
| | | Step | Temperature (°C) | | | | | | | | | | | | | | |
| | | 1 | 25±2 | | | | | | | | | | | | | | |
| 2 | -55±3 | | | | | | | | | | | | | | | | |
| 3 | 25±2 | | | | | | | | | | | | | | | | |
| 4 | 125±3 | | | | | | | | | | | | | | | | |
| 5 | 25±2 | | | | | | | | | | | | | | | | |
| Temperature Coefficient | Within the specified tolerance (Table A on last column) | | | | | | | | | | | | | | | | |
| Capacitance Drift | Within ±0.2% or ±0.05pF, whichever is larger | | | | | | | | | | | | | | | | |
| 9 | Terminal Strength | Tensile Strength | Termination not to be broken or loosened | | As in the figure, fix the capacitor body, apply the force gradually to each lead in the radial direction of the capacitor until reaching 10N and then keep the force applied for 10±1 sec.  | | | | | | | | | | | | |
| | | Bending Strength | Termination not to be broken or loosened | | | Each lead wire should be subjected to a force of 2.5N and then bent 90° at the point of egress in one direction. Each wire is then returned to the original position and bent 90° in the opposite direction at the rate of one bend per 2 to 3 sec. | | | | | | | | | | | |
| 10 | Vibration Resistance | Appearance | No defects or abnormalities | | The capacitor is soldered securely to a supporting terminal and a 10 to 55Hz vibration of 1.5mm peak-peak amplitude is applied for 6 hrs. total, 2 hrs. in each mutually perpendicular direction. Allow 1 min. to cycle the frequency from 10Hz to 55Hz and the converse. | | | | | | | | | | | | |
| | | Capacitance | Within the specified tolerance | | | | | | | | | | | | | | |
| | | Q/D.F. | 30pF min.: Q≥1,000 30pF max.: Q≥400+20C C: Nominal capacitance (pF) | Char. X7R: 0.025 max. Char. F, Y5V: 0.05 max. Char. X7S: 0.125 max. | | | | | | | | | | | | | |
| 11 | Solderability of Leads | | Lead wire should be soldered with uniform coating on the axial direction over 3/4 of the circumferential direction. | | The terminal of a capacitor is dipped into a 25% ethanol (JIS-K-8101) solution of rosin (JIS-K-5902) and then into molten solder for 2±0.5 sec. In both cases the depth of dipping is up to about 1.5mm to 2mm from the terminal body. Temp. of solder: 245±5°C Lead Free Solder (Sn-3.0Ag-0.5Cu) 235±5°C H60A or H63A Eutectic Solder | | | | | | | | | | | | |
| 12 | Resistance to Soldering Heat | Appearance | No defects or abnormalities | | The lead wire is immersed in the melted solder 1.5mm to 2mm from the main body at 350±10°C for 3.5±0.5 sec. The specified items are measured after 24±2 hrs. • Pretreatment (for high dielectric constant type) Perform a heat treatment at 150±0/-10°C for 1 hr., and then let sit at room temperature for 24±2 hrs. | | | | | | | | | | | | |
| | | Capacitance Change | Within ±2.5% or ±0.25pF (whichever is larger) | Char. X7R, X7S: Within ±10% Char. F, Y5V: Within ±20% | | | | | | | | | | | | | |
| | | Dielectric Strength (Between Terminals) | No defects | | | | | | | | | | | | | | |

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Specifications and Test Methods

Continued from the preceding page.

| No. | Item | Specifications | | Test Method | | | | | | | | | | | | | | | | |
|---|--|---|--|---|--|---------------|------------------|--------------|---------------------------|-------------------------|---------------------------|--------|---------------------------|--------|---|-------------------------|------|---|------------|--------|
| | | Temperature Compensating Type | High Dielectric Constant Type | | | | | | | | | | | | | | | | | |
| 13 | Temperature Cycle | Appearance | No defects or abnormalities | | The capacitor should be subjected to 5 temperature cycles. Remove and set for 24±2 hrs. at room temperature, then measure. <table border="1"> <thead> <tr> <th>Step</th> <th>Temperature (°C)</th> <th>Time (min)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Min. Operating Temp. ±3</td> <td>30±3</td> </tr> <tr> <td>2</td> <td>Room Temp.</td> <td>3 max.</td> </tr> <tr> <td>3</td> <td>Max. Operating Temp. ±3</td> <td>30±3</td> </tr> <tr> <td>4</td> <td>Room Temp.</td> <td>3 max.</td> </tr> </tbody> </table> <ul style="list-style-type: none"> • Pretreatment (for high dielectric constant type) Perform a heat treatment at 150+0/-10°C for 1 hr., and then let sit at room temperature for 24±2 hrs. | Step | Temperature (°C) | Time (min) | 1 | Min. Operating Temp. ±3 | 30±3 | 2 | Room Temp. | 3 max. | 3 | Max. Operating Temp. ±3 | 30±3 | 4 | Room Temp. | 3 max. |
| | | Step | Temperature (°C) | Time (min) | | | | | | | | | | | | | | | | |
| | | 1 | Min. Operating Temp. ±3 | 30±3 | | | | | | | | | | | | | | | | |
| | | 2 | Room Temp. | 3 max. | | | | | | | | | | | | | | | | |
| | | 3 | Max. Operating Temp. ±3 | 30±3 | | | | | | | | | | | | | | | | |
| 4 | Room Temp. | 3 max. | | | | | | | | | | | | | | | | | | |
| Capacitance Change | Within ±5% or ±0.5pF (whichever is larger) | Char. X7R, X7S: Within ±12.5% Char. F, Y5V: Within ±30% | | | | | | | | | | | | | | | | | | |
| Q/D.F. | 30pF min.: Q≥350 10pF to 30pF: Q≥275+5C/2 10pF max.: Q≥200+10C C: Nominal capacitance (pF) | Char. X7R: 0.05 max. Char. F, Y5V: 0.075 max. Char. X7S: 0.2 max. | | | | | | | | | | | | | | | | | | |
| Insulation Resistance | Rated Voltage: DC25V, DC50V, DC100V 1,000MΩ, 50MΩ • μF min. (whichever is smaller) Rated Voltage: DC250V, DC630V 1,000MΩ, 10MΩ • μF min. (whichever is smaller) | | | | | | | | | | | | | | | | | | | |
| Dielectric Strength (Between Terminals) | No defects or abnormalities | | | | | | | | | | | | | | | | | | | |
| 14 | Humidity (Steady State) | Appearance | No defects or abnormalities | | Set the capacitor at 40±2°C and relative humidity of 90 to 95% for 500±2 ⁴ hrs. Remove and set for 24±2 hrs. at room temperature, then measure. <ul style="list-style-type: none"> • Pretreatment (for high dielectric constant type) Perform a heat treatment at 150+0/-10°C for 1 hr., and then let sit at room temperature for 24±2 hrs. | | | | | | | | | | | | | | | |
| | | Capacitance Change | Within ±5% or ±0.5pF (whichever is larger) | Char. X7R, X7S: Within ±15% Char. F, Y5V: Within ±30% | | | | | | | | | | | | | | | | |
| | | Q/D.F. | 30pF min.: Q≥350 10pF to 30pF: Q≥275+5C/2 10pF max.: Q≥200+10C C: Nominal capacitance (pF) | Char. X7R: 0.05 max. Char. F, Y5V: 0.075 max. Char. X7S: 0.2 max. | | | | | | | | | | | | | | | | |
| | | Insulation Resistance | Rated Voltage: DC25V, DC50V, DC100V 1,000MΩ, 50MΩ • μF min. (whichever is smaller) Rated Voltage: DC250V, DC630V 1,000MΩ, 10MΩ • μF min. (whichever is smaller) | | | | | | | | | | | | | | | | | |
| 15 | Humidity Load | Appearance | No defects or abnormalities | | Apply the rated voltage for 500±2 ⁴ hrs. at 40±2°C and in 90 to 95% humidity. Remove and set for 24±2 hrs. at room temperature, then measure. (Charge/Discharge current ≤50mA) <ul style="list-style-type: none"> • Pretreatment (for high dielectric constant type) Perform a heat treatment at 150+0/-10°C for 1 hr., and then let sit at room temperature for 24±2 hrs. | | | | | | | | | | | | | | | |
| | | Capacitance Change | Within ±7.5% or ±0.75pF (whichever is larger) | Char. X7R, X7S: Within ±15% Char. F, Y5V: Within ±30% | | | | | | | | | | | | | | | | |
| | | Q/D.F. | 30pF min.: Q≥200 30pF max.: Q≥100+10C/3 C: Nominal capacitance (pF) | Char. X7R: 0.05 max. Char. F, Y5V: 0.075 max. Char. X7S: 0.2 max. | | | | | | | | | | | | | | | | |
| | | Insulation Resistance | Rated Voltage: DC25V, DC50V, DC100V 500MΩ or 25MΩ • μF min. (whichever is smaller) Rated Voltage: DC250V, DC630V 1,000MΩ or 10MΩ • μF min. (whichever is smaller) | | | | | | | | | | | | | | | | | |
| 16 | High Temperature Load | Appearance | No defects or abnormalities | | Apply voltage in Table for 1000±4 ⁸ hrs. at the maximum operating temperature±3°C. Remove and set for 24±2 hrs. at room temperature, then measure. (Charge/Discharge current ≤50mA) <table border="1"> <thead> <tr> <th>Rated Voltage</th> <th>Test Voltage</th> </tr> </thead> <tbody> <tr> <td>DC25V, DC50V</td> <td>150% of the rated voltage</td> </tr> <tr> <td>DC100V, DC250V</td> <td>150% of the rated voltage</td> </tr> <tr> <td>DC630V</td> <td>120% of the rated voltage</td> </tr> </tbody> </table> <ul style="list-style-type: none"> • Pretreatment (for high dielectric constant type) Apply test voltage for 1 hr., at test temperature. Remove and set for 24±2 hrs. at room temperature. | Rated Voltage | Test Voltage | DC25V, DC50V | 150% of the rated voltage | DC100V, DC250V | 150% of the rated voltage | DC630V | 120% of the rated voltage | | | | | | | |
| | | Rated Voltage | Test Voltage | | | | | | | | | | | | | | | | | |
| | | DC25V, DC50V | 150% of the rated voltage | | | | | | | | | | | | | | | | | |
| | | DC100V, DC250V | 150% of the rated voltage | | | | | | | | | | | | | | | | | |
| DC630V | 120% of the rated voltage | | | | | | | | | | | | | | | | | | | |
| Capacitance Change | Within ±3% or ±0.3pF (whichever is larger) | Char. X7R, X7S: Within ±15% Char. F, Y5V: Within ±30% | | | | | | | | | | | | | | | | | | |
| Q/D.F. | 30pF min.: Q≥350 10pF to 30pF: Q≥275+5C/2 10pF max.: Q≥200+10C C: Nominal capacitance (pF) | Char. X7R: 0.05 max. Char. F, Y5V: 0.075 max. Char. X7S: 0.2 max. | | | | | | | | | | | | | | | | | | |
| Insulation Resistance | Rated Voltage: DC25V, DC50V, DC100V 1,000MΩ, 50MΩ • μF min. (whichever is smaller) Rated Voltage: DC250V, DC630V 1,000MΩ, 10MΩ • μF min. (whichever is smaller) | | | | | | | | | | | | | | | | | | | |
| 17 | Solvent Resistance | Appearance | No defects or abnormalities | | The capacitor should be fully immersed, unagitated, in reagent at 20 to 25°C for 30±5 sec. and then removed gently. Marking on the surface of the capacitor should immediately be visually examined. Reagent: <ul style="list-style-type: none"> • Isopropyl alcohol | | | | | | | | | | | | | | | |
| | | Marking | Legible | | | | | | | | | | | | | | | | | |

Table A

| Char. | Nominal Values (ppm/°C) *1 | Capacitance Change from 25°C (%) | | | | | |
|------------|----------------------------|----------------------------------|-------|-------|-------|-------|-------|
| | | -55°C | | -30°C | | -10°C | |
| | | Max. | Min. | Max. | Min. | Max. | Min. |
| COG | 0±30 | 0.58 | -0.24 | 0.40 | -0.17 | 0.25 | -0.11 |

*1: Nominal values denote the temperature coefficient within a range of 25 to 125°C

Table B

| Char. | Temp. Range | Reference Temp. | Cap. Change Rate |
|------------|---------------|-----------------|------------------|
| X7R | -55 to +125°C | 25°C | Within ±15% |
| X7S | | | Within ±22% |
| Y5V | -30 to + 85°C | 20°C | Within ±32% |
| F | -25 to + 85°C | | Within ±38% |

Radial Lead Type Monolithic Ceramic Capacitors



RDE Series Large Capacitance and High Allowable Ripple Current (For Commercial Use Only) (DC250V-DC630V)

■ Features

- Higher capacitance with DC-Bias; approximately 40% higher than X7R under loaded rated voltage.
- Applicable for use as a DC smoothing capacitor in LED Bulb Lighting circuits after the bridge rectifier circuit
 AC100V input: 250V rating type
 maximum capacitance of X7T, 250V is 2.2 micro F though X7R, 630V is 0.47 micro F.
 AC200V input: 450V rating type
 maximum capacitance of X7T, 450V is 1.2 micro F though X7R, 630V is 0.47 micro F.
- Allowable higher ripple current
- Reduces acoustic noise
 Approximately 15dB reduction in comparison to leaded X7R characteristics parts.
 Approximately 30dB reduction in comparison to SMD X7T characteristics part because the contact area is smaller than a SMD.
- Maximum capacitance is doubled by the dual chip structure in the leaded component construction.

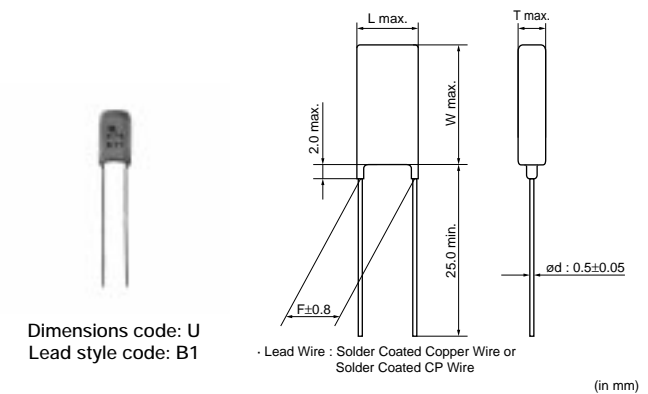
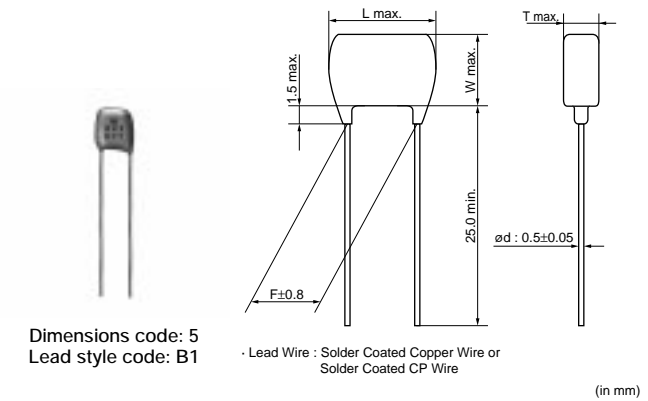
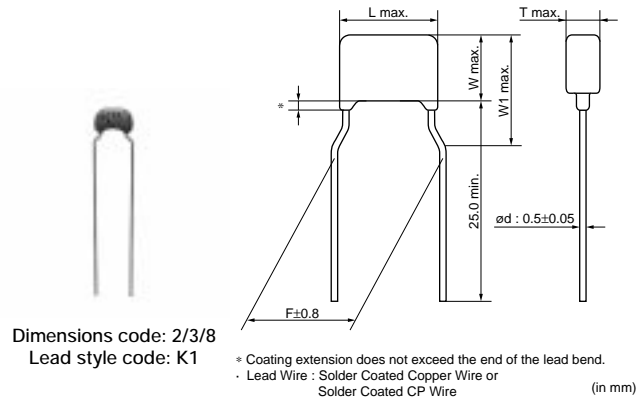
■ Applications

- DC smoothing capacitor for LED bulb
- PFC capacitor for general use SMPS
- Replace Al-E capacitor for long-life equipment

■ Dimensions

| Dimensions and Lead Style Code | DC Rated Voltage | Dimensions (mm) | | | | | |
|--------------------------------|------------------|-----------------|-------|-----|---|-----|-----|
| | | L | W | W1 | T | F | d |
| 2K1/2M1 | 250V/450V/630V | 5.5 | 4.0 | 6.0 | See the individual product specifications | 5.0 | 0.5 |
| 3K1/3M1 | 250V/450V/630V | 5.5 | 5.0 | 7.5 | | 5.0 | 0.5 |
| 5B1/5E1 | 250V/450V/630V | 7.5 | 7.5* | - | | 5.0 | 0.5 |
| 8K1/8M1 | 250V/450V/630V | 7.5 | 5.5 | 8.0 | | 5.0 | 0.5 |
| UB1/UE1 | 250V/450V/630V | 7.7 | 12.5* | - | | 5.0 | 0.5 |

*DC630V: W+0.5mm



5

Continued on the following page.

△Note • Please read rating and △CAUTION (for storage, operating, rating, soldering, mounting and handling) in this catalog to prevent smoking and/or burning, etc.
 • This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please review our product specifications or consult the approval sheet for product specifications before ordering.

Continued from the preceding page.

■ Marking

| Dimensions Code | Rated Voltage | DC250V | DC450V | DC630V |
|-------------------------------|---------------|--|--------|--------|
| | Temp. Char. | X7T | | |
| 2 | | | | |
| 3, 8 | | | | |
| 5, U | | | | |
| Temperature Characteristics | | Marked with code (X7T char.: 7) | | |
| Nominal Capacitance | | Marked with 3 figures | | |
| Capacitance Tolerance | | Marked with code | | |
| Rated Voltage | | Marked with code (DC250V: 4, DC450V: 9, DC630V: 7) | | |
| Manufacturer's Identification | | Marked with | | |

High Dielectric Constant Type, X7T Characteristics

| Part Number | Temp. Char. | Rated Voltage (Vdc) | Capacitance | Dimensions LxW (mm) | Dimension T (mm) | Lead Space F (mm) | Lead Style Code Bulk | Lead Style Code Taping (1) | Lead Style Code Taping (2) |
|--------------------|-------------|---------------------|--------------|---------------------|------------------|-------------------|----------------------|----------------------------|----------------------------|
| RDED72E333K2□□C11□ | X7T | 250 | 33000pF ±10% | 5.5 x 4.0 | 3.15 | 5.0 | K1 | M1 | - |
| RDED72E473K2□□C11□ | X7T | 250 | 47000pF ±10% | 5.5 x 4.0 | 3.15 | 5.0 | K1 | M1 | - |
| RDED72E683K2□□C11□ | X7T | 250 | 68000pF ±10% | 5.5 x 4.0 | 3.15 | 5.0 | K1 | M1 | - |
| RDED72E104K3□□C11□ | X7T | 250 | 0.10μF ±10% | 5.5 x 5.0 | 4.0 | 5.0 | K1 | M1 | - |
| RDED72E154K3□□C11□ | X7T | 250 | 0.15μF ±10% | 5.5 x 5.0 | 4.0 | 5.0 | K1 | M1 | - |
| RDED72E224K8□□C11□ | X7T | 250 | 0.22μF ±10% | 7.5 x 5.5 | 4.0 | 5.0 | K1 | M1 | - |
| RDED72E334K8□□C11□ | X7T | 250 | 0.33μF ±10% | 7.5 x 5.5 | 4.0 | 5.0 | K1 | M1 | - |
| RDED72E474K5□□C13□ | X7T | 250 | 0.47μF ±10% | 7.5 x 7.5 | 4.5 | 5.0 | B1 | E1 | - |
| RDED72E684K5□□C13□ | X7T | 250 | 0.68μF ±10% | 7.5 x 7.5 | 4.5 | 5.0 | B1 | E1 | - |
| RDED72E105K5□□C13□ | X7T | 250 | 1.0μF ±10% | 7.5 x 7.5 | 4.5 | 5.0 | B1 | E1 | - |
| RDED72E225MU□□C13□ | X7T | 250 | 2.2μF ±20% | 7.7 x 12.5 | 4.5 | 5.0 | B1 | E1 | - |
| RDED72W103K2□□C11□ | X7T | 450 | 10000pF ±10% | 5.5 x 4.0 | 3.15 | 5.0 | K1 | M1 | - |
| RDED72W153K2□□C11□ | X7T | 450 | 15000pF ±10% | 5.5 x 4.0 | 3.15 | 5.0 | K1 | M1 | - |
| RDED72W223K2□□C11□ | X7T | 450 | 22000pF ±10% | 5.5 x 4.0 | 3.15 | 5.0 | K1 | M1 | - |
| RDED72W333K2□□C11□ | X7T | 450 | 33000pF ±10% | 5.5 x 4.0 | 3.15 | 5.0 | K1 | M1 | - |
| RDED72W473K2□□C11□ | X7T | 450 | 47000pF ±10% | 5.5 x 4.0 | 3.15 | 5.0 | K1 | M1 | - |
| RDED72W683K3□□C11□ | X7T | 450 | 68000pF ±10% | 5.5 x 5.0 | 4.0 | 5.0 | K1 | M1 | - |
| RDED72W104K3□□C11□ | X7T | 450 | 0.10μF ±10% | 5.5 x 5.0 | 4.0 | 5.0 | K1 | M1 | - |
| RDED72W154K8□□C11□ | X7T | 450 | 0.15μF ±10% | 7.5 x 5.5 | 4.0 | 5.0 | K1 | M1 | - |
| RDED72W224K5□□C13□ | X7T | 450 | 0.22μF ±10% | 7.5 x 7.5 | 4.5 | 5.0 | B1 | E1 | - |
| RDED72W334K5□□C13□ | X7T | 450 | 0.33μF ±10% | 7.5 x 7.5 | 4.5 | 5.0 | B1 | E1 | - |
| RDED72W474K5□□C13□ | X7T | 450 | 0.47μF ±10% | 7.5 x 7.5 | 4.5 | 5.0 | B1 | E1 | - |
| RDED72W564K5□□C13□ | X7T | 450 | 0.56μF ±10% | 7.5 x 7.5 | 4.5 | 5.0 | B1 | E1 | - |
| RDED72W105MU□□C13□ | X7T | 450 | 1.0μF ±20% | 7.7 x 12.5 | 4.5 | 5.0 | B1 | E1 | - |
| RDED72W125MU□□C13□ | X7T | 450 | 1.2μF ±20% | 7.7 x 12.5 | 4.5 | 5.0 | B1 | E1 | - |
| RDED72J103K2□□C11□ | X7T | 630 | 10000pF ±10% | 5.5 x 4.0 | 3.15 | 5.0 | K1 | M1 | - |
| RDED72J153K2□□C11□ | X7T | 630 | 15000pF ±10% | 5.5 x 4.0 | 3.15 | 5.0 | K1 | M1 | - |
| RDED72J223K3□□C11□ | X7T | 630 | 22000pF ±10% | 5.5 x 5.0 | 4.0 | 5.0 | K1 | M1 | - |
| RDED72J333K3□□C11□ | X7T | 630 | 33000pF ±10% | 5.5 x 5.0 | 4.0 | 5.0 | K1 | M1 | - |
| RDED72J473K3□□C11□ | X7T | 630 | 47000pF ±10% | 5.5 x 5.0 | 4.0 | 5.0 | K1 | M1 | - |
| RDED72J683K8□□C11□ | X7T | 630 | 68000pF ±10% | 7.5 x 5.5 | 4.0 | 5.0 | K1 | M1 | - |
| RDED72J104K5□□C13□ | X7T | 630 | 0.10μF ±10% | 7.5 x 8.0 | 4.5 | 5.0 | B1 | E1 | - |
| RDED72J154K5□□C13□ | X7T | 630 | 0.15μF ±10% | 7.5 x 8.0 | 4.5 | 5.0 | B1 | E1 | - |
| RDED72J224K5□□C13□ | X7T | 630 | 0.22μF ±10% | 7.5 x 8.0 | 4.5 | 5.0 | B1 | E1 | - |

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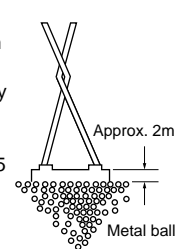
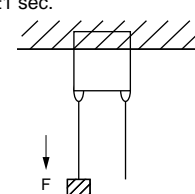
△Note • Please read rating and △CAUTION (for storage, operating, rating, soldering, mounting and handling) in this catalog to prevent smoking and/or burning, etc.
 • This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please review our product specifications or consult the approval sheet for product specifications before ordering.


Continued from the preceding page.

| Part Number | Temp. Char. | Rated Voltage (Vdc) | Capacitance | Dimensions LxW (mm) | Dimension T (mm) | Lead Space F (mm) | Lead Style Code Bulk | Lead Style Code Taping (1) | Lead Style Code Taping (2) |
|--------------------|-------------|---------------------|-------------|---------------------|------------------|-------------------|----------------------|----------------------------|----------------------------|
| RDED72J274K5□□C13□ | X7T | 630 | 0.27μF ±10% | 7.5 x 8.0 | 4.5 | 5.0 | B1 | E1 | - |
| RDED72J474MU□□C13□ | X7T | 630 | 0.47μF ±20% | 7.7 x 13.0 | 4.5 | 5.0 | B1 | E1 | - |
| RDED72J564MU□□C13□ | X7T | 630 | 0.56μF ±20% | 7.7 x 13.0 | 4.5 | 5.0 | B1 | E1 | - |

Two blank columns are filled with the lead style code. Please refer to the 3 columns on the right for the appropriate code.
 The last blank column is filled with the packaging code. (B: bulk, A: ammo pack)

Specifications and Test Methods

| No. | Item | Specifications | Test Method | | | | | | | | | | | | |
|-----------------|--|--------------------------------|---|---------------|------------------|--------|---------------------------|--------|---------------------------|--------|---------------------------|---|-------|---|------|
| 1 | Operating Temperature Range | -55 to +125°C | - | | | | | | | | | | | | |
| 2 | Appearance | No defects or abnormalities | Visual inspection | | | | | | | | | | | | |
| 3 | Dimension and Marking | See previous pages | Visual inspection, Vernier Caliper | | | | | | | | | | | | |
| 4 | Dielectric Strength | Between Terminals | <p>The capacitor should not be damaged when voltage in Table is applied between the terminations for 1 to 5 sec. (Charge/Discharge current \leq 50mA)</p> <table border="1"> <thead> <tr> <th>Rated Voltage</th> <th>Test Voltage</th> </tr> </thead> <tbody> <tr> <td>DC250V</td> <td>200% of the rated voltage</td> </tr> <tr> <td>DC450V</td> <td>150% of the rated voltage</td> </tr> <tr> <td>DC630V</td> <td>120% of the rated voltage</td> </tr> </tbody> </table> | Rated Voltage | Test Voltage | DC250V | 200% of the rated voltage | DC450V | 150% of the rated voltage | DC630V | 120% of the rated voltage | | | | |
| | | Rated Voltage | Test Voltage | | | | | | | | | | | | |
| DC250V | 200% of the rated voltage | | | | | | | | | | | | | | |
| DC450V | 150% of the rated voltage | | | | | | | | | | | | | | |
| DC630V | 120% of the rated voltage | | | | | | | | | | | | | | |
| Body Insulation | <p>The capacitor is placed in a container with metal balls of 1mm diameter so that each terminal, short-circuit, is kept approximately 2mm from the balls as shown in the figure, and 200% of the rated DC voltage is impressed for 1 to 5 sec. between capacitor terminals and metal balls. (Charge/Discharge current \leq 50mA)</p>  | | | | | | | | | | | | | | |
| 5 | Insulation Resistance | Between Terminals | <p>The insulation resistance should be measured with DC500±50V (DC250±25V in case of rated voltage: DC250V, DC450V) at normal temperature and humidity and within 2 min. of charging. (Charge/Discharge current \leq 50mA)</p> | | | | | | | | | | | | |
| 6 | Capacitance | Within the specified tolerance | The capacitance/D.F. should be measured at the frequency of 1±0.1kHz and a voltage of AC1±0.2V(r.m.s.). | | | | | | | | | | | | |
| 7 | Dissipation Factor (D.F.) | 0.01 max. | | | | | | | | | | | | | |
| 8 | Capacitance Temperature Characteristics | Within +22/-33% | <p>The capacitance change should be measured after 5 min. at each specified temperature stage.</p> <table border="1"> <thead> <tr> <th>Step</th> <th>Temperature (°C)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>25±2</td> </tr> <tr> <td>2</td> <td>-55±3</td> </tr> <tr> <td>3</td> <td>25±2</td> </tr> <tr> <td>4</td> <td>125±3</td> </tr> <tr> <td>5</td> <td>25±2</td> </tr> </tbody> </table> | Step | Temperature (°C) | 1 | 25±2 | 2 | -55±3 | 3 | 25±2 | 4 | 125±3 | 5 | 25±2 |
| Step | Temperature (°C) | | | | | | | | | | | | | | |
| 1 | 25±2 | | | | | | | | | | | | | | |
| 2 | -55±3 | | | | | | | | | | | | | | |
| 3 | 25±2 | | | | | | | | | | | | | | |
| 4 | 125±3 | | | | | | | | | | | | | | |
| 5 | 25±2 | | | | | | | | | | | | | | |
| 9 | Terminal Strength | Tensile Strength | <p>Termination not to be broken or loosened</p>  | | | | | | | | | | | | |
| | | Bending Strength | <p>Termination not to be broken or loosened</p> <p>Each lead wire should be subjected to a force of 2.5N and then bent 90° at the point of egress in one direction. Each wire is then returned to the original position and bent 90° in the opposite direction at the rate of one bend per 2 to 3 sec.</p> | | | | | | | | | | | | |
| 10 | Vibration Resistance | Appearance | The capacitor should be firmly soldered to the supporting lead wire and vibrated at a frequency range of 10 to 55Hz, 1.5mm in total amplitude, with about a 1 minute rate of vibration change from 10Hz to 55Hz and back to 10Hz. Apply for a total of 6 hrs., 2 hrs. each in 3 mutually perpendicular directions. | | | | | | | | | | | | |
| | | Capacitance | | | | | | | | | | | | | |
| | | D.F. | | | | | | | | | | | | | |

Continued on the following page. 

Specifications and Test Methods

Continued from the preceding page.

| No. | Item | Specifications | Test Method |
|-----|------------------------------|---|--|
| 11 | Solderability of Leads | Lead wire should be soldered with uniform coating on the axial direction over 3/4 of the circumferential direction. | The terminal of a capacitor is dipped into a solution of ethanol (JIS-K-8101) and rosin (JIS-K-5902) (25% rosin in weight proportion) and then into molten solder (JIS-Z-3282) for 2±0.5 sec. In both cases the depth of dipping is up to about 1.5 to 2mm from the terminal body. Temp. of solder: 245±5°C Lead Free Solder (Sn-3.0Ag-0.5Cu) 235±5°C H60A or H63A Eutectic Solder |
| 12 | Resistance to Soldering Heat | Appearance | No defects or abnormalities |
| | | Capacitance Change | Within ±10% |
| | | Dielectric Strength (Between Terminals) | No defects |
| 13 | Temperature Cycle | Appearance | No defects or abnormalities |
| | | Capacitance Change | Within ±7.5% |
| | | D.F. | 0.01 max. |
| | | Insulation Resistance | More than 10,000MΩ or 100MΩ · μF (Whichever is smaller) |
| | | Dielectric Strength (Between Terminals) | No defects or abnormalities |
| 14 | Humidity (Steady State) | Appearance | No defects or abnormalities |
| | | Capacitance Change | Within ±12.5% |
| | | D.F. | 0.02 max. |
| | | Insulation Resistance | More than 1,000MΩ or 10MΩ · μF (Whichever is smaller) |
| 15 | Humidity Load | Appearance | No defects or abnormalities |
| | | Capacitance Change | Within ±12.5% |
| | | D.F. | 0.02 max. |
| | | Insulation Resistance | More than 1,000MΩ or 10MΩ · μF (Whichever is smaller) |
| 16 | High Temperature Load | Appearance | No defects or abnormalities |
| | | Capacitance Change | Within ±12.5% |
| | | D.F. | 0.02 max. |
| | | Insulation Resistance | More than 1,000MΩ or 10MΩ · μF (Whichever is smaller) |
| 17 | Solvent Resistance | Appearance | No defects or abnormalities |
| | | Marking | Legible |

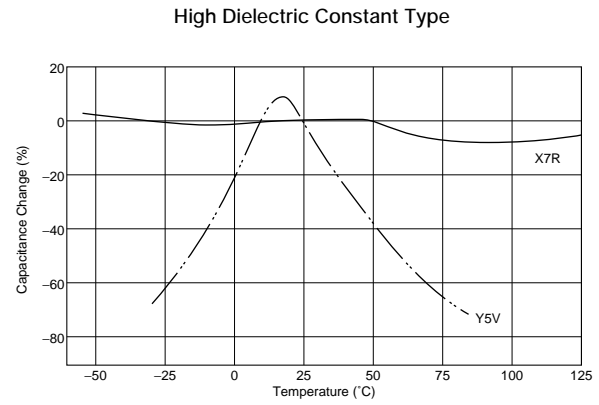
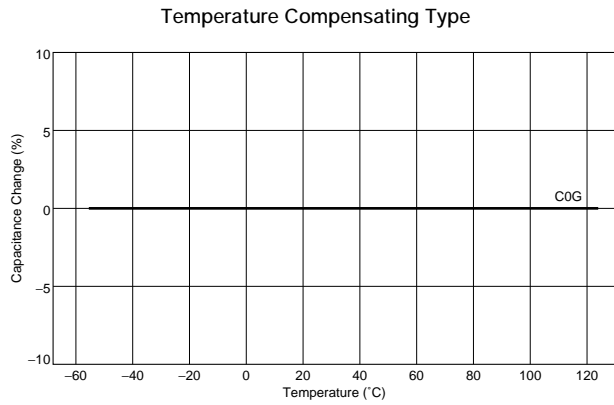
The capacitor should be subjected to 5 temperature cycles.

| Step | Temperature (°C) | Time (min) |
|------|------------------|------------|
| 1 | -55±3 | 30±3 |
| 2 | Room Temp. | 3 max. |
| 3 | 125±3 | 30±3 |
| 4 | Room Temp. | 3 max. |

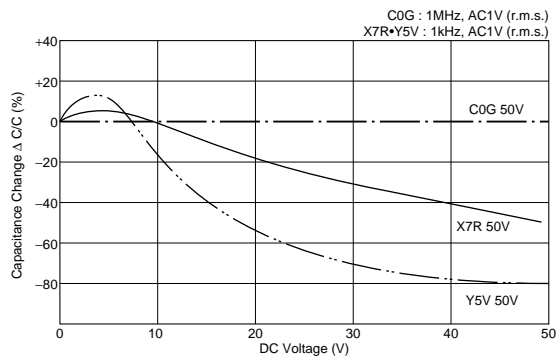
5

RPE Series Characteristics Reference Data (Typical Example)

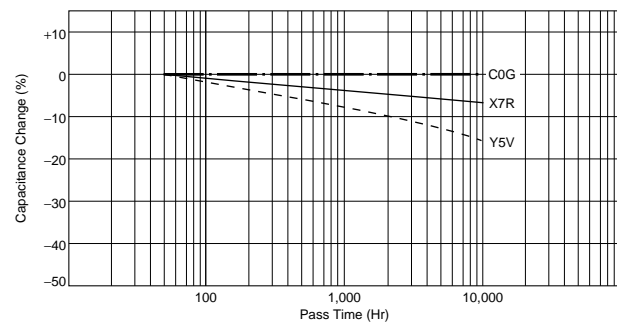
■ Capacitance - Temperature Characteristics



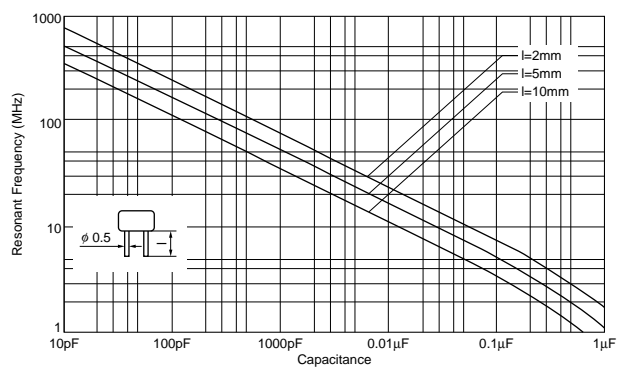
■ Capacitance - DC Voltage Characteristics



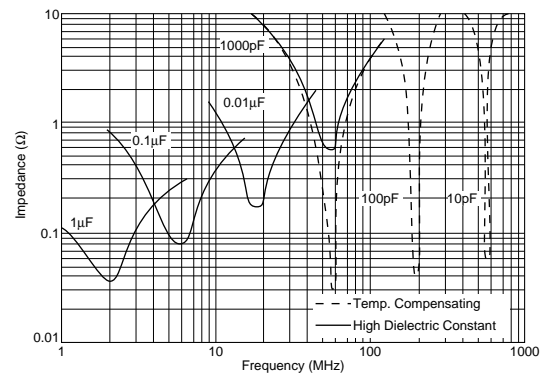
■ Capacitance Change - Aging



■ Capacitance - Resonant Frequency

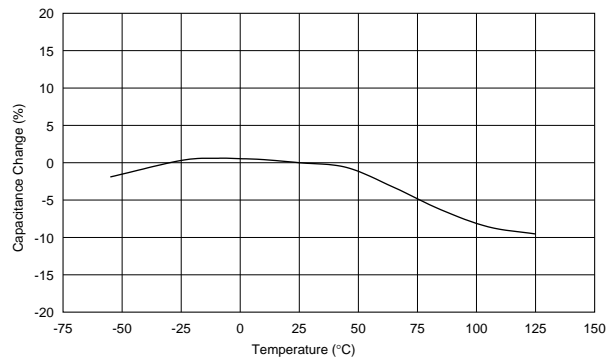


■ Impedance - Frequency Characteristics

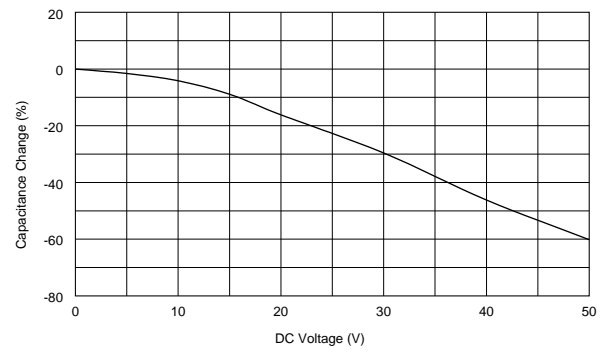


RPE Series Small Size, Large Capacitance Characteristics Reference Data (Typical Example)

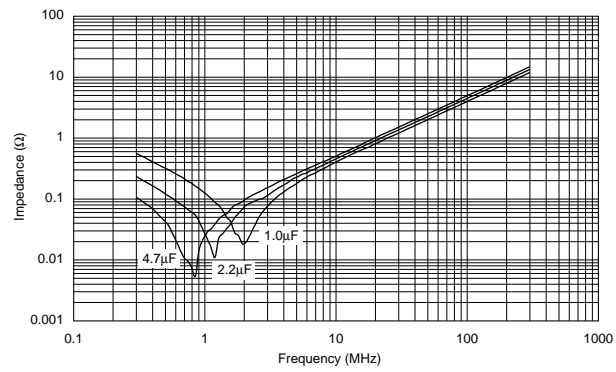
■ Capacitance - Temperature Characteristics



■ Capacitance - DC Voltage Characteristics

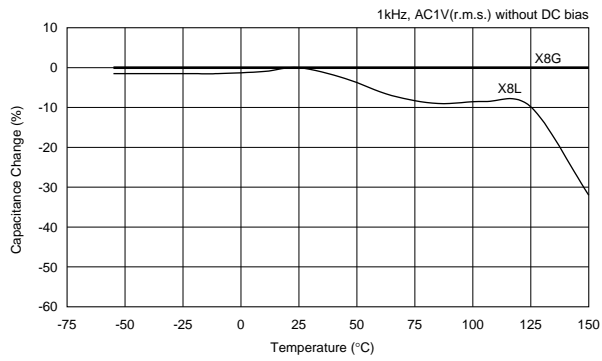


■ Impedance - Frequency Characteristics

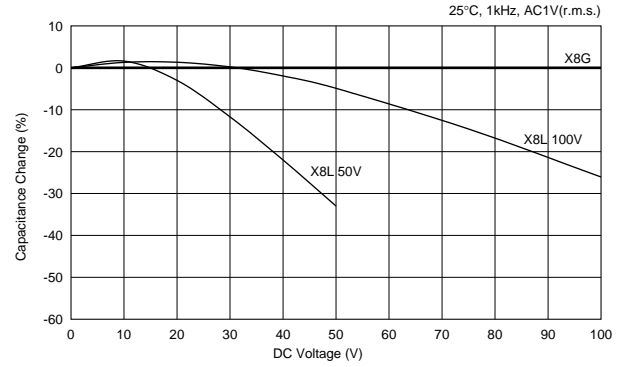


RH Series Characteristics Reference Data (Typical Example)

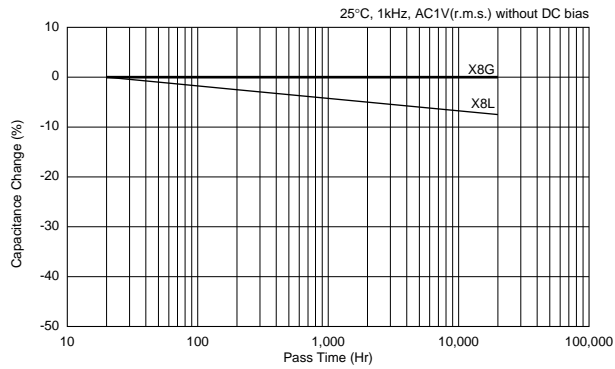
■ Capacitance - Temperature Characteristics



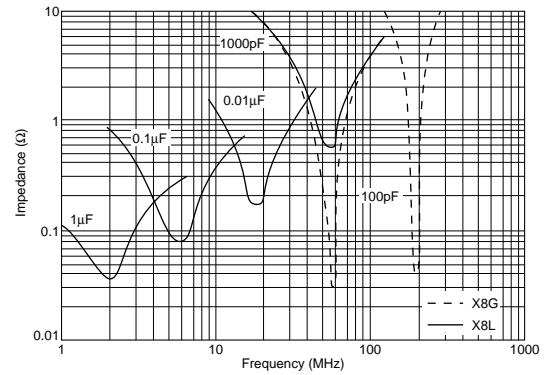
■ Capacitance - DC Voltage Characteristics



■ Capacitance Change - Aging

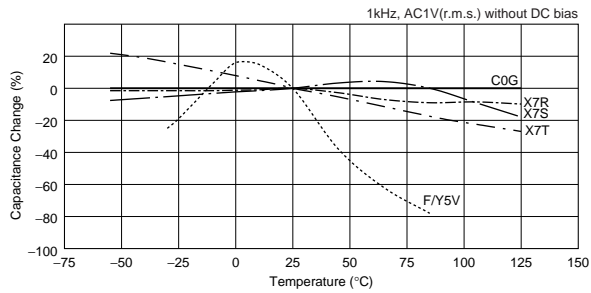


■ Impedance - Frequency Characteristics



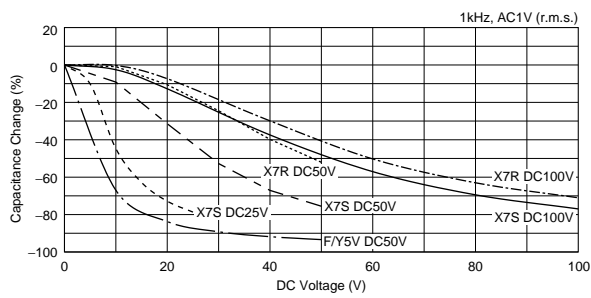
RDE Series Characteristics Reference Data (Typical Example)

■ Capacitance - Temperature Characteristics

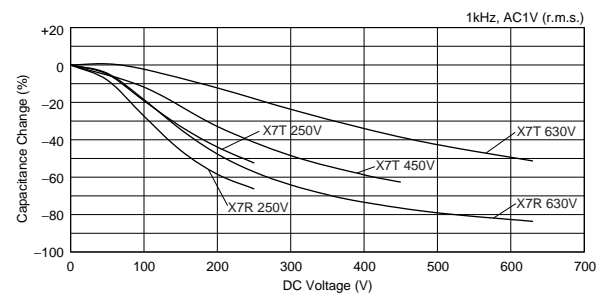


■ Capacitance - DC Voltage Characteristics

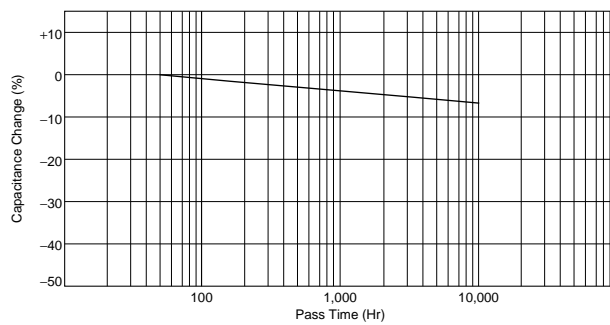
Rated Voltage: DC25V to DC100V



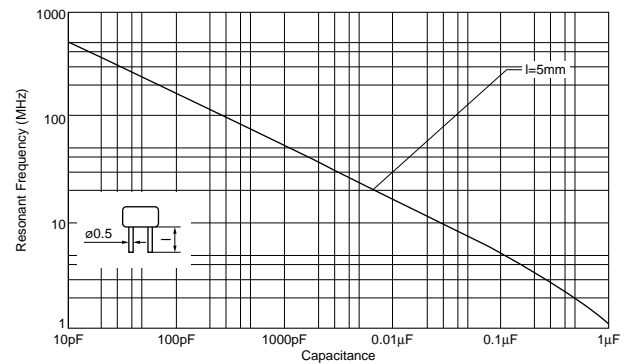
Rated Voltage: DC250V to DC630V



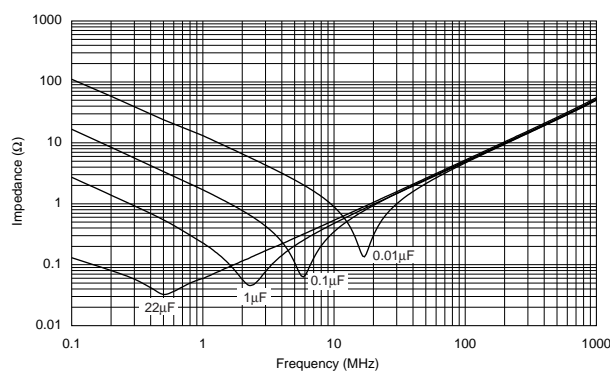
■ Capacitance Change - Aging



■ Capacitance - Resonant Frequency



■ Impedance - Frequency Characteristics



Packaging

■ Packaging

Two types of packaging for monolithic ceramic capacitors are available.

1. Bulk Packaging

Minimum Quantity

| Dimensions Code | Dimensions (L×W) | Minimum Quantity (pcs./Bag) |
|-----------------|---|-----------------------------|
| 0 | 4.0×3.5mm or 5.0×3.5mm (Depends on Part Number List) | 500*1 |
| 1 | 4.0×3.5mm or 4.5×3.5mm or 5.0×3.5mm (Depends on Part Number List) | |
| 2 | 5.0×3.5mm or 5.5×4.0mm or 5.7×4.5mm (Depends on Part Number List) | |
| 3 | 5.0×4.5mm or 5.5×5.0mm or 6.0×5.5mm (Depends on Part Number List) | |
| 5 | 7.5×7.5mm (DC630V: 7.5×8.0mm) | |
| 6 | 10.0×10.0mm | |
| 8 | 7.5×5.5mm | |
| W | 5.5×7.5mm or 6.0×8.0mm (Depends on Part Number List) | 100 |
| 7 | 12.5×12.5mm | |
| U | 7.7×12.5mm (DC630V: 7.7×13.0mm) | |

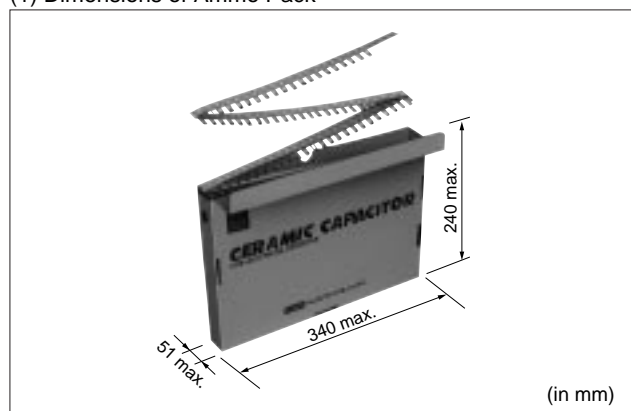
Please order with an integral multiple of the minimum quantity above.

*1 400 pcs. for **RHDL81H□□□K3□□C03B**

250 pcs. for **RHDL81H106MWWK1C03B**

2. Tape Carrier Packaging

(1) Dimensions of Ammo Pack



(2) Minimum Quantity

| Dimensions Code | Dimensions (L×W) | Minimum Quantity (pcs./Ammo Pack) |
|-----------------|---|-----------------------------------|
| 0 | 4.0×3.5mm or 5.0×3.5mm (Depends on Part Number List) | 2000*2 |
| 1 | 4.0×3.5mm or 4.5×3.5mm or 5.0×3.5mm (Depends on Part Number List) | |
| 2 | 5.0×3.5mm or 5.5×4.0mm or 5.7×4.5mm (Depends on Part Number List) | |
| 3 | 5.0×4.5mm or 5.5×5.0mm or 6.0×5.5mm (Depends on Part Number List) | |
| 5 | 7.5×7.5mm (DC630V: 7.5×8.0mm) | 2000*3 |
| 6 | 10.0×10.0mm | 1500*4 |
| 8 | 7.5×5.5mm | |
| W | 5.5×7.5mm or 6.0×8.0mm (Depends on Part Number List) | |
| U | 7.7×12.5mm (DC630V: 7.7×13.0mm) | 1000*5 |

Please order with an integral multiple of the minimum quantity above.

*2 1500 pcs. for **RPER71H335K3M1C60A**, **RPER71H475K3M1C60A**, **RDER71H335K3□□C03A**, **RDEC71E226K3□□C03A**, **RDEC72A155K3□□C03A**, **RDEC72A225K3□□C03A** and **RHD Series**

*3 1500 pcs. for **RPER71H335K5□□C03A**, **RPER71H475K5□□C03A**, **RPER72A105K5□□C03A** and **RDE Series**

(Two blank columns are filled with the lead style code.)

*4 1000 pcs. for **RHDL81H106MWM1C03A**

*5 1500 pcs. for **RDED72W105MUE1C13A**, **RDER72E105MUE1C13A**, **RDER72J474MUE1C13A**

"Minimum Quantity" means the numbers of units of each delivery or order. The quantity should be an integral multiple of the "minimum quantity." (Please note that the actual delivery quantity in a package may change sometimes.)

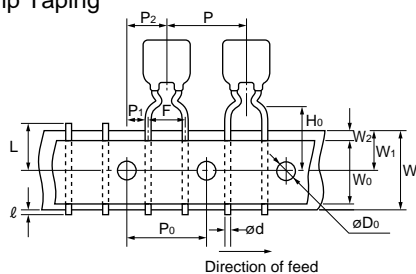
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Packaging

Continued from the preceding page.

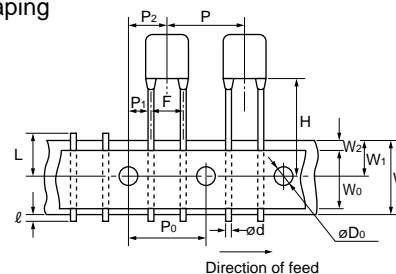
Taping Dimensions

Inside Crimp Taping



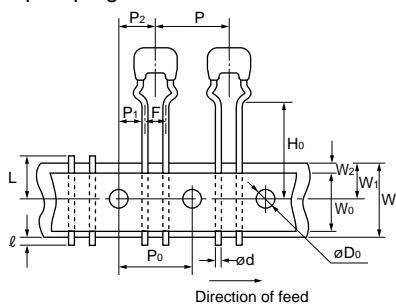
| Dimensions and Lead style code | Dimensions (L×W) |
|--------------------------------|--|
| 0M1 | 4.0×3.5mm |
| 1M1 | 4.0×3.5mm or 4.5×3.5mm (Depends on Part Number List) |
| 2M1 | 5.0×3.5mm or 5.5×4.0mm or 5.7×4.5mm (Depends on Part Number List) |
| 2M2 | |
| 3M1 | 5.0×4.5mm or 5.5×5.0mm (Depends on Part Number List) |
| 3M2 | |
| 8M1 | 7.5×5.5mm |
| 8M2 | |
| WM1 | 5.5×7.5mm |

Straight Taping



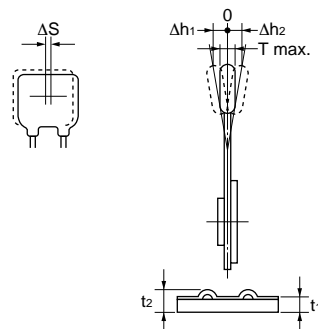
| Dimensions and Lead style code | Dimensions (L×W) |
|--------------------------------|------------------------------------|
| 1DB | 4.0×3.5mm |
| 2DB | 5.7×4.5mm |
| 3DB | 6.0×5.5mm |
| 5E1 | 7.5×7.5mm (DC630V: 7.5×8.0mm) |
| 5E2 | |
| 6E1 | 10.0×10.0mm |
| 6E2 | |
| UE1 | 7.7×12.5mm (DC630V: 7.7×13.0mm) |

Outside Crimp Taping



| Dimensions and Lead style code | Dimensions (L×W) |
|--------------------------------|---|
| 0S1 | 5.0×3.5mm |
| 1S1 | |
| 2S1 | 5.0×3.5mm or 5.5×4.0mm (Depends on Part Number List) |
| 2S2 | |
| 3S1 | 5.0×4.5mm or 5.5×5.0mm (Depends on Part Number List) |
| 3S2 | |

| Item | Code | Dimensions (mm) |
|--|------------|---|
| Pitch of Component | P | 12.7±1.0 |
| Pitch of Sprocket Hole | P0 | 12.7±0.2 |
| Lead Spacing | F | 2.5 ^{+0.4} _{-0.2} (DB) (S1) (S2) |
| | | 5.0 ^{+0.6} _{-0.2} |
| Length from Hole Center to Component Center | P2 | 6.35±1.3 |
| Length from Hole Center to Lead | P1 | 3.85±0.7 |
| | | 5.1±0.7 (DB) (S1) (S2) |
| | | 254±1.5 Total length of components pitch X 20 |
| Body Dimension | | Depends on Part Number List |
| Deviation Along Tape, Left or Right Defect | ΔS | ±2.0 |
| Carrier Tape Width | W | 18.0±0.5 |
| Position of Sprocket Hole | W1 | 9.0 ⁺⁰ _{-0.5} |
| Lead Distance between Reference and Bottom Plane | H0 | 16.0±0.5 (M1) (S1) |
| | | 20.0±0.5 (M2) (S2) |
| For Straight Lead Type | H | 20±0.5 (E2), 17.5±0.5 (E1), 16±0.5 (DB) |
| Diameter of Sprocket Hole | D0 | 4.0±0.1 |
| Lead Diameter | d | 0.5±0.05 |
| Total Tape Thickness | t1 | 0.6±0.3 |
| Total Thickness of Tape and Lead Wire | t2 | 1.5 max. |
| Body Thickness | T | Depends on Part Number List |
| Deviation Across Tape | Δh1 Δh2 | 1.0 max. (RHD Series: 1.5 max., Dimensions code W, U: 2.0 max.) |
| Portion to Cut in Case of Defect | L | 11.0 ⁺⁰ _{-1.0} |
| Protrusion Length | ℓ | 0.5 max. |
| Hold Down Tape Width | W0 | 9.5 min. |
| Hold Down Tape Position | W2 | 1.5±1.5 |
| Coating Extension | | Depends on Dimensions |



⚠Caution

■ ⚠Caution (Storage and Operating Condition)

Operating and storage environment

The insulating coating of capacitors does not form a perfect seal; therefore, do not use or store capacitors in a corrosive atmosphere, especially where chloride gas, sulfide gas, acid, alkali, salt or the like are present. Also avoid exposure to moisture. Before cleaning, bonding or molding this product, verify that these processes do not affect product quality by testing the performance of a cleaned, bonded or molded product in the intended equipment. Store the capacitors where the temperature and relative humidity do not exceed 5 to 40 degrees centigrade and 20 to 70%.
Use capacitors within 6 months after delivery.

FAILURE TO FOLLOW THE ABOVE CAUTIONS MAY RESULT, WORST CASE, IN A SHORT CIRCUIT AND CAUSE FUMING OR PARTIAL DISPERSION WHEN THE PRODUCT IS USED.

⚠ Caution

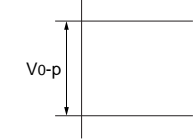
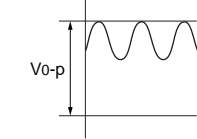
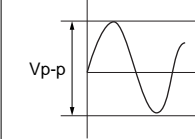
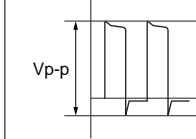
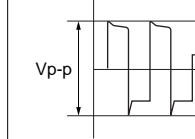
■ ⚠ Caution (Rating)

1. Operating Voltage

When DC-rated capacitors are to be used in AC or ripple current circuits, be sure to maintain the V_{p-p} value of the applied voltage or the V_{0-p} which contains DC bias within the rated voltage range.

When the voltage is applied to the circuit, starting or stopping may generate irregular voltage for a transit period because of resonance or switching. Be sure to use a capacitor with a rated voltage range that includes these irregular voltages.

When DC-rated capacitors are to be used in input circuits from commercial power source (AC filter), be sure to use Safety Recognized Capacitors because various regulations on withstand voltage or impulse withstand established for all equipment should be taken into consideration.

| Voltage | DC Voltage | DC+AC Voltage | AC Voltage | Pulse Voltage (1) | Pulse Voltage (2) |
|------------------------|--|--|---|--|--|
| Positional Measurement |  |  |  |  |  |

2. Operating Temperature and Self-generated Heat

Keep the surface temperature of a capacitor below the upper limit of its rated operating temperature range. Be sure to take into account the heat generated by the capacitor itself. When the capacitor is used in a high-frequency current, pulse current or similar current, it may have self-generated heat due to dielectric loss. In the case of "High Dielectric Constant Type Capacitors," applied voltage load should be such that self-generated heat is within 20 °C under the condition where the capacitor is subjected at an atmosphere temperature of 25 °C. Please contact us if self-generated heat occurs with "Temperature Compensating Type Capacitors".

When measuring, use a thermocouple of small thermal capacity -K of $\phi 0.1\text{mm}$ under conditions where the capacitor is not affected by radiant heat from other components or wind from surroundings. Excessive heat may lead to deterioration of the capacitor's characteristics and reliability. Never attempt to perform measurement with the cooling fan running. Otherwise, accurate measurement cannot be ensured.

3. Fail-Safe

Be sure to provide an appropriate fail-safe function on your product to prevent a second damage that may be caused by the abnormal function or the failure of our product.

FAILURE TO FOLLOW THE ABOVE CAUTIONS MAY RESULT, WORST CASE, IN A SHORT CIRCUIT AND CAUSE FUMING OR PARTIAL DISPERSION WHEN THE PRODUCT IS USED.

⚠Caution

■ ⚠Caution (Soldering and Mounting)

1. Vibration and impact

Do not expose a capacitor or its leads to excessive shock or vibration during use.

2. Soldering

When soldering this product to a PCB/PWB, do not exceed the solder heat resistance specification of the capacitor. Subjecting this product to excessive heating could melt the internal junction solder and may result in thermal shocks that can crack the ceramic element.

3. Bonding, resin molding and coating

In case of bonding, molding or coating this product, verify that these processes do not affect the quality of the capacitor by testing the performance of the bonded, molded or coated product in the intended equipment.

In case the amount of application, dryness/hardening conditions of adhesives and molding resins containing organic solvents (ethyl acetate, methyl ethyl ketone, toluene, etc.) are unsuitable, the outer coating resin of a capacitor may be damaged by the organic solvents and may result, worst case, in a short circuit.

The variation in thickness of adhesive or molding resin or coating may cause an outer coating resin cracking and/or ceramic element cracking of a capacitor in a temperature cycling.

4. Treatment after bonding, resin molding and coating

When the outer coating is hot (over 100 degrees centigrade) after soldering, it becomes soft and fragile, so please be careful not to give it mechanical stress.

FAILURE TO FOLLOW THE ABOVE CAUTIONS MAY RESULT, WORST CASE, IN A SHORT CIRCUIT AND CAUSE FUMING OR PARTIAL DISPERSION WHEN THE PRODUCT IS USED.

■ ⚠Caution (Handling)

Vibration and impact

Do not expose a capacitor or its leads to excessive shock or vibration during use.

FAILURE TO FOLLOW THE ABOVE CAUTIONS MAY RESULT, WORST CASE, IN A SHORT CIRCUIT AND CAUSE FUMING OR PARTIAL DISPERSION WHEN THE PRODUCT IS USED.

Notice

■ **Notice (Rating)**

Capacitance change of capacitor

In case of F/X7R/X7S/X7T/X8L/Y5V char.

Capacitors have an aging characteristic, whereby the capacitor continually decreases its capacitance slightly if the capacitor is left on for a long time. Moreover, capacitance might change greatly depending on the surrounding temperature or an applied voltage.

■ **Notice (Soldering and Mounting)**

1. **Cleaning (ultrasonic cleaning)**

To perform ultrasonic cleaning, observe the following conditions.

Rinse bath capacity: Output of 20 watts per liter or less.

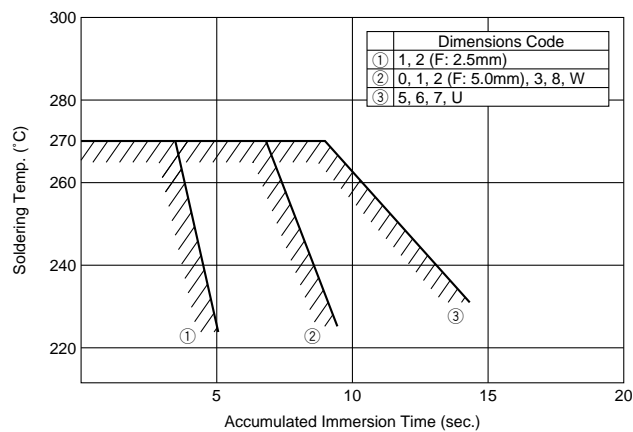
Rinsing time: 5 min. maximum.

Do not vibrate the PCB/PWB directly.

Excessive ultrasonic cleaning may lead to fatigue destruction of the lead wires.

2. **Soldering and Mounting**

(1) Allowable Conditions for Soldering Temperature and Time



Perform soldering within tolerance range (shaded portion).

(2) **Insertion of the Lead Wire**

- When soldering, insert the lead wire into the PCB without mechanically stressing the lead wire.
- Insert the lead wire into the PCB with a distance appropriate to the lead space.

△Note:

1. Export Control

<For customers outside Japan>

No Murata products should be used or sold, through any channels, for use in the design, development, production, utilization, maintenance or operation of, or otherwise contribution to (1) any weapons (Weapons of Mass Destruction [nuclear, chemical or biological weapons or missiles] or conventional weapons) or (2) goods or systems specially designed or intended for military end-use or utilization by military end-users.

<For customers in Japan>

For products which are controlled items subject to the "Foreign Exchange and Foreign Trade Law" of Japan, the export license specified by the law is required for export.

2. Please contact our sales representatives or product engineers before using the products in this catalog for the applications listed below, which require especially high reliability for the prevention of defects which might directly damage a third party's life, body or property, or when one of our products is intended for use in applications other than those specified in this catalog.

- | | |
|-----------------------------|--|
| ① Aircraft equipment | ② Aerospace equipment |
| ③ Undersea equipment | ④ Power plant equipment |
| ⑤ Medical equipment | ⑥ Transportation equipment (vehicles, trains, ships, etc.) |
| ⑦ Traffic signal equipment | ⑧ Disaster prevention / crime prevention equipment |
| ⑨ Data-processing equipment | ⑩ Application of similar complexity and/or reliability requirements to the applications listed above |

3. Product specifications in this catalog are as of March 2011. They are subject to change or our products in it may be discontinued without advance notice. Please check with our sales representatives or product engineers before ordering. If there are any questions, please contact our sales representatives or product engineers.

4. Please read rating and △CAUTION (for storage, operating, rating, soldering, mounting and handling) in this catalog to prevent smoking and/or burning, etc.

5. This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please review our product specifications or consult the approval sheet for product specifications before ordering.

6. Please note that unless otherwise specified, we shall assume no responsibility whatsoever for any conflict or dispute that may occur in connection with the effect of our and/or a third party's intellectual property rights and other related rights in consideration of your use of our products and/or information described or contained in our catalogs. In this connection, no representation shall be made to the effect that any third parties are authorized to use the rights mentioned above under licenses without our consent.

7. No ozone depleting substances (ODS) under the Montreal Protocol are used in our manufacturing process.

 **Murata Manufacturing Co., Ltd.**

<http://www.murata.com/>

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