

Reference Specification

150°C Operation Leaded MLCC for Automotive with AEC-Q200 RH Series

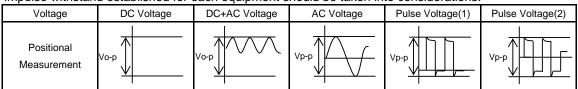
Product specifications in this catalog are as of Mar. 2022, and are subject to change or obsolescence without notice.

Please consult the approval sheet before ordering. Please read rating and Cautions first.

1. OPERATING VOLTAGE

When DC-rated capacitors are to be used in AC or ripple current circuits, be sure to maintain the Vp-p value of the applied voltage or the Vo-p which contains DC bias within the rated voltage range. When the voltage is started to apply to the circuit or it is stopped applying, the irregular voltage may be generated for a transit period because of resonance or switching. Be sure to use a capacitor within rated voltage containing these irregular voltage.

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 each equipment should be taken into considerations.



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 the like, it may have the selfgenerated heat due to dielectric-loss. In case of Class 2 capacitors (Temp.Char. : X7R,X7S,X8L, etc.), applied voltage should be the load such as self-generated heat is within 20 °C on <u>the condition of</u> <u>atmosphere temperature 25 °C</u>. Please contact us if self-generated heat is occurred with Class 1 capacitors (Temp.Char. : C0G,U2J,X8G, etc.). When measuring, use a thermocouple of small thermal capacity-K of Φ 0.1mm and be in the condition where capacitor is not affected by radiant heat of other components and wind of surroundings. Excessive heat may lead to deterioration of the capacitor's characteristics and reliability.

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.

4. 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. And 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 °C and 20 to 70%. Use capacitors within 6 months.

5. VIBRATION AND IMPACT

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

6. 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.

7. BONDING AND RESIN MOLDING, RESIN COAT

In case of bonding, molding or coating this product, verify that these processes do not affect the quality of capacitor by testing the performance of a bonded or molded product in the intended equipment. In case of the amount of applications, 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 is damaged by the organic solvents and it may result, worst case, in a short circuit.

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

8. TREATMENT AFTER BONDING AND RESIN MOLDING, RESIN COAT

When the outer coating is hot (over 100 °C) 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.

9. LIMITATION OF APPLICATIONS

Please contact us before using our products for the applications listed below which require especially high reliability for the prevention of defects which might directly cause damage to the third party's life, body or property.

- 1. Aircraft equipment
- 2. Aerospace equipment
- 3. Undersea equipment

7. Traffic signal equipment

- 5. Medical equipment
- 4. Power plant control equipment
- 6. Transportation equipment (vehicles, trains, ships, etc.)
 - 8. Disaster prevention / crime prevention equipment
- 9. Data-processing equipment exerting influence on public

10. Application of similar complexity and/or reliability requirements to the applications listed in the above.

NOTICE

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

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.

3. CAPACITANCE CHANGE OF CAPACITORS

• Class 2 capacitors (Temp.Char. : X7R,X7S,X8L etc.)

Class 2 capacitors an aging characteristic, whereby the capacitor continually decreases its capacitance slightly if the capacitor leaves for a long time. Moreover, capacitance might change greatly depending on a surrounding temperature or an applied voltage. So, it is not likely to be able to use for the time constant circuit.

Please contact us if you need a detail information.

- 1. Please make sure that your product has been evaluated in view of your specifications with our product being mounted to your product.
- 2. You are requested not to use our product deviating from this specification.

| • | Note : M | naximum tempei laximum accum | rature up to 150°C | | | | | | | |
|-----------|--|--|--|--------------------------|--------------------|---------------|--------------------|-----------------|----------------------|--|
| • ex.) | | | | is within 2000 |) hours. | | | | | |
| | Part Number Configura RHE 5G Series Temperature | | 1H 101 | J | 0 | A2 | Н | | В | |
| | | Temperature Characteristics | Rated Capacitance Voltage | Capacitance Tolerance | Dimension (LxW) | Lead Style | Individ Specifi | | Package | |
| • 5 | Series | | 2 | | | | | | | |
| | Cod RHE | | Content coated, 150°C max. | | | | | | | |
| | | Сроху | coaled, 150 C max. | | | | | | | |
| • | Tempera | ture Characteris | stics | | | | | | | |
| | Code | Temp. Char. | Temp. Range | Temp.co | oef. | Stand Tem | | • | perating p. Range | |
| | 5G | X8G (Murata code) | 25~150°C | 0+/-30ppr | m/°C | 25° | | | ∼150°C | |
| _ | | | | | | | | | | |
| • | Rated Voltage Code Rated voltage | | | | | | | | | |
| | 1H | Code Rated voltage | | | | | | | | |
| | | | | | | | | | | |
| | | DC | 50V | | | | | | | |
| • (| 2A Capacitar | DC DC1 | 50V 100V | , the least divid | dan atau tik | | : | 0 in n F | | |
| | 2A Capacitar The first ex.) Iı | DC DC1 two digits deno n case of 101 10×10 ¹ = 10 | 50V 100V te significant figures | ; the last digit | denotes th | e multipl | ier of 1 | 0 in pF | | |
| | 2A Capacitar The first ex.) Iı | DC DC1 nce two digits deno n case of 101 10×10 ¹ = 10 nce Tolerance | 50V 100V te significant figures | ; the last digit | denotes th | e multipl | ier of 1 | 0 in pF | | |
| | 2A Capacitar The first ex.) Iı <u>Capacita</u> | DC DC1 nce two digits deno n case of 101 10×10 ¹ = 10 <u>nce Tolerance</u> e Capacita | 50V 100V te significant figures 00pF | ; the last digit | denotes th | e multipl | ier of 1 | 0 in pF | | |
| • | 2A Capacitar The first ex.) Ii Capacita Code J Dimensic Pleas Lead Sty | DC DC1 DC1 nce two digits deno n case of 101 10×10 ¹ = 10 <u>nce Tolerance</u> Capacita on (LxW) se refer to [Part le | 50V 100V te significant figures 00pF ance Tolerance +/-5% number list]. | ; the last digit | denotes th | e multipl | ier of 1 | 0 in pF | | |
| • | 2A Capacitar The first ex.) Ii Capacita Code J Dimensic Pleas Lead Sty | DC DC1 DC1 nce two digits deno n case of 101 10×10 ¹ = 10 nce Tolerance e Capacita on (LxW) the refer to [Part le | 50V 100V te significant figures 00pF ance Tolerance +/-5% number list]. | | | e multip | ier of 1 | 0 in pF | | |
| • | 2A Capacitar The first ex.) In Capacita Code J Dimensic Pleas Lead Sty <u>*Lead w</u> | DC DC1 DC1 nce two digits deno n case of 101 10×10 ¹ = 10 nce Tolerance e Capacita on (LxW) the refer to [Part le <u>vire is "solder co</u> | 50V 100V te significant figures 00pF ance Tolerance +/-5% number list]. | | denotes th | e multipl | ier of 1 | 0 in pF | | |
| • | 2A Capacitar The first ex.) In Capacita Cod J Dimensic Pleas Lead Sty *Lead w Cod | DC DC1 DC1 nce two digits deno n case of 101 10×10 ¹ = 10 nce Tolerance e Capacita on (LxW) se refer to [Part le vire is "solder co e Straight ty | 50V 100V te significant figures 00pF ance Tolerance +/-5% number list]. | Lead space | cing (mm) | e multipl | ier of 1 | 0 in pF | | |
| • | 2A Capacitar The first ex.) In Capacita Code J Dimensic Pleas Lead Sty *Lead w Code A2 | DC DC1 DC1 nce two digits deno n case of 101 10×10 ¹ = 10 nce Tolerance e Capacita on (LxW) se refer to [Part le vire is "solder co e Straight ty | 50V 100V te significant figures 00pF ance Tolerance +/-5% number list]. bated CP wire". Lead Style ype aping type | Lead space 2.5+/-0.8 | cing (mm) | e multipl | ier of 1 | 0 in pF | | |

Package

| Code | Package |
|------|---------------------|
| A | Taping type of Ammo |
| В | Bulk type |

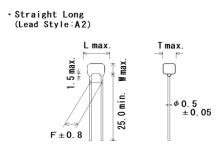
3. Marking

| Temp. char. | : | Letter code : 8 (X8G char.) |
|-----------------------|---|-----------------------------|
| Capacitance | : | 3 digit numbers |
| Capacitance tolerance | : | Code |

(Ex.)

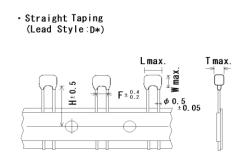
| Dimension code | Ex. |
|----------------|-----------|
| 0,1 | 8 102J |

4. Part number list



| Customer | | T 0 | DC Rated | 0 | Cap. | | Dime | ension (| (mm) | | Dimension | Pa |
|-------------|--------------------|------------|--------------|---------|------|-----|------|----------|------|-----|---------------------|-----------|
| Part Number | Murata Part Number | T.C. | Volt. (V) | Cap. | Tol. | L | W | W1 | F | Т | (LxW) Lead Style | qt (po |
| | RHE5G1H101J0A2H03B | X8G | 50 | 100pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 0A2 | 5 |
| | RHE5G1H121J0A2H03B | X8G | 50 | 120pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 0A2 | 5 |
| | RHE5G1H151J0A2H03B | X8G | 50 | 150pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 0A2 | 5 |
| | RHE5G1H181J0A2H03B | X8G | 50 | 180pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 0A2 | 5 |
| | RHE5G1H221J0A2H03B | X8G | 50 | 220pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 0A2 | 5 |
| | RHE5G1H271J0A2H03B | X8G | 50 | 270pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 0A2 | 5 |
| | RHE5G1H331J0A2H03B | X8G | 50 | 330pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 0A2 | 5 |
| | RHE5G1H391J0A2H03B | X8G | 50 | 390pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 0A2 | 5 |
| | RHE5G1H471J0A2H03B | X8G | 50 | 470pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 0A2 | 5 |
| | RHE5G1H561J0A2H03B | X8G | 50 | 560pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 0A2 | 5 |
| | RHE5G1H681J0A2H03B | X8G | 50 | 680pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 0A2 | 5 |
| | RHE5G1H821J0A2H03B | X8G | 50 | 820pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 0A2 | Ę |
| | RHE5G1H102J0A2H03B | X8G | 50 | 1000pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 0A2 | 5 |
| | RHE5G1H122J0A2H03B | X8G | 50 | 1200pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 0A2 | Ę |
| | RHE5G1H152J0A2H03B | X8G | 50 | 1500pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 0A2 | Ę |
| | RHE5G1H182J0A2H03B | X8G | 50 | 1800pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 0A2 | Ę |
| | RHE5G1H222J0A2H03B | X8G | 50 | 2200pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 0A2 | Ę |
| | RHE5G1H272J0A2H03B | X8G | 50 | 2700pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 0A2 | Ę |
| | RHE5G1H332J0A2H03B | X8G | 50 | 3300pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 0A2 | Ę |
| | RHE5G1H392J0A2H03B | X8G | 50 | 3900pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 0A2 | 5 |
| | RHE5G1H472J1A2H03B | X8G | 50 | 4700pF | ±5% | 4.0 | 3.5 | - | 2.5 | 2.5 | 1A2 | Ę |
| | RHE5G1H562J1A2H03B | X8G | 50 | 5600pF | ±5% | 4.0 | 3.5 | - | 2.5 | 2.5 | 1A2 | 5 |
| | RHE5G1H682J1A2H03B | X8G | 50 | 6800pF | ±5% | 4.0 | 3.5 | - | 2.5 | 2.5 | 1A2 | Ę |
| | RHE5G1H822J1A2H03B | X8G | 50 | 8200pF | ±5% | 4.0 | 3.5 | - | 2.5 | 2.5 | 1A2 | Ę |
| | RHE5G1H103J1A2H03B | X8G | 50 | 10000pF | ±5% | 4.0 | 3.5 | - | 2.5 | 2.5 | 1A2 | Ę |
| | RHE5G2A101J0A2H03B | X8G | 100 | 100pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 0A2 | Ę |
| | RHE5G2A121J0A2H03B | X8G | 100 | 120pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 0A2 | 5 |
| | RHE5G2A151J0A2H03B | X8G | 100 | 150pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 0A2 | 5 |
| | RHE5G2A181J0A2H03B | X8G | 100 | 180pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 0A2 | 5 |
| | RHE5G2A221J0A2H03B | X8G | 100 | 220pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 0A2 | 5 |
| | RHE5G2A271J0A2H03B | X8G | 100 | 270pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 0A2 | 5 |
| | RHE5G2A331J0A2H03B | X8G | 100 | 330pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 0A2 | 5 |
| | RHE5G2A391J0A2H03B | X8G | 100 | 390pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 0A2 | 5 |
| | RHE5G2A471J0A2H03B | X8G | 100 | 470pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 0A2 | 5 |
| | RHE5G2A561J0A2H03B | X8G | 100 | 560pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 0A2 | 5 |
| | RHE5G2A681J0A2H03B | X8G | 100 | 680pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 0A2 | 5 |
| | RHE5G2A821J0A2H03B | X8G | 100 | 820pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 0A2 | 5 |
| | RHE5G2A102J0A2H03B | X8G | 100 | 1000pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 0A2 | 5 |
| | RHE5G2A122J0A2H03B | X8G | 100 | 1200pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 0A2 | 5 |
| | RHE5G2A152J0A2H03B | X8G | 100 | 1500pF | ±5% | 3.6 | 3.5 | _ | 2.5 | 2.5 | 0A2 | 5 |

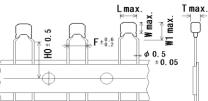
| • Straight Lo (Lead Style | | | | • Inside (Lead S | Crimp tyle∶K*) | | | | | | | |
|------------------------------|--|------------|-----------------------|---------------------|-------------------|-----------------------------------|------------|------------------------|------------|------------|------------------------|------------------|
| F ± 0 | ÷ ÷ ÷ ÷ ÷ ÷ ÷ ÷ ÷ ÷ ÷ ÷ ÷ ÷ | 5 | | $F \pm 0$. | ot | 25.0 min. Wmax. ⊼→→ W1 max. | T ma | ax. ∲ 0.5 ±0. | 05 | | | |
| | Ι | | DC | | | | Dime | ension (| mm) | | Unit : mm Dimension | F |
| Customer Part Number | Murata Part Number | T.C. | Rated Volt. (V) | Cap. | Cap. Tol. | L | W | W1 | , F | т | (LxW) Lead Style | |
| | RHE5G2A182J1A2H03B | X8G | 100 | 1800pF | ±5% | 4.0 | 3.5 | - | 2.5 | 2.5 | 1A2 | T |
| | RHE5G2A222J1A2H03B | X8G | 100 | 2200pF | ±5% | 4.0 | 3.5 | - | 2.5 | 2.5 | 1A2 | |
| | RHE5G2A272J1A2H03B | X8G | 100 | 2700pF | ±5% | 4.0 | 3.5 | - | 2.5 | 2.5 | 1A2 | |
| | RHE5G2A332J1A2H03B | X8G | 100 | 3300pF | ±5% | 4.0 | 3.5 | - | 2.5 | 2.5 | 1A2 | |
| | RHE5G1H101J0K1H03B | X8G | 50 | 100pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | 0K1 | |
| | RHE5G1H121J0K1H03B | X8G | 50 | 120pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | 0K1 | |
| | RHE5G1H151J0K1H03B | X8G | 50 | 150pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | 0K1 | |
| | RHE5G1H181J0K1H03B | X8G | 50 | 180pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | 0K1 | L |
| | RHE5G1H221J0K1H03B | X8G | 50 | 220pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | 0K1 | |
| | RHE5G1H271J0K1H03B | X8G | 50 | 270pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | 0K1 | |
| | RHE5G1H331J0K1H03B | X8G | 50 | 330pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | 0K1 | - |
| | RHE5G1H391J0K1H03B | X8G | 50 | 390pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 2.5 | 0K1 | |
| | RHE5G1H471J0K1H03B RHE5G1H561J0K1H03B | X8G X8G | 50 50 | 470pF 560pF | ±5% ±5% | 3.6 3.6 | 3.5 3.5 | 6.0 6.0 | 5.0 5.0 | 2.5 | 0K1 0K1 | - |
| | RHE5G1H681J0K1H03B | X8G | 50 | 680pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | 0K1 | t |
| | RHE5G1H821J0K1H03B | X8G | 50 | 820pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | 0K1 | t |
| | RHE5G1H102J0K1H03B | X8G | 50 | 1000pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | 0K1 | ŀ |
| | RHE5G1H122J0K1H03B | X8G | 50 | 1200pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | 0K1 | ŀ |
| | RHE5G1H152J0K1H03B | X8G | 50 | 1500pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | - | ľ |
| | RHE5G1H182J0K1H03B | X8G | 50 | 1800pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | | ľ |
| | RHE5G1H222J0K1H03B | X8G | 50 | 2200pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | 0K1 | ľ |
| | RHE5G1H272J0K1H03B | X8G | 50 | 2700pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | 0K1 | |
| | RHE5G1H332J0K1H03B | X8G | 50 | 3300pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | 0K1 | |
| | RHE5G1H392J0K1H03B | X8G | 50 | 3900pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | 0K1 | |
| | RHE5G1H472J1K1H03B | X8G | 50 | 4700pF | ±5% | 4.0 | 3.5 | 5.0 | 5.0 | 2.5 | 1K1 | |
| | RHE5G1H562J1K1H03B | X8G | 50 | 5600pF | ±5% | 4.0 | 3.5 | 5.0 | 5.0 | 2.5 | 1K1 | |
| | RHE5G1H682J1K1H03B | X8G | 50 | 6800pF | ±5% | 4.0 | 3.5 | 5.0 | 5.0 | 2.5 | | L |
| | RHE5G1H822J1K1H03B | X8G | 50 | 8200pF | ±5% | 4.0 | 3.5 | 5.0 | 5.0 | 2.5 | | |
| | RHE5G1H103J1K1H03B | X8G | 50 100 | 10000pF | ±5% | 4.0 | 3.5 | 5.0 | 5.0 | 2.5 | | - |
| | RHE5G2A101J0K1H03B RHE5G2A121J0K1H03B | X8G X8G | 100 100 | 100pF 120pF | ±5% ±5% | 3.6 3.6 | 3.5 3.5 | 6.0 6.0 | 5.0 5.0 | 2.5 2.5 | | $\left \right $ |
| | RHE5G2A121J0K1H03B | X8G | 100 | 120pF 150pF | ±5% | 3.6 | 3.5 3.5 | 6.0 | 5.0 5.0 | 2.5 | | ┢ |
| | RHE5G2A181J0K1H03B | X8G | 100 | 180pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | | ŀ |
| | RHE5G2A221J0K1H03B | X8G | 100 | 220pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | | t |
| | RHE5G2A271J0K1H03B | X8G | 100 | 270pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | | t |
| | RHE5G2A331J0K1H03B | X8G | 100 | 330pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | | t |
| | RHE5G2A391J0K1H03B | X8G | 100 | 390pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | | T |
| | RHE5G2A471J0K1H03B | X8G | 100 | 470pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | 0K1 | T |
| | RHE5G2A561J0K1H03B | X8G | 100 | 560pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | 0K1 | ľ |
| | RHE5G2A681J0K1H03B | X8G | 100 | 680pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | 0K1 | T |



| Customer | Museta Dari Nusahar | то | DC Rated | 0 | Cap. | | D | imensi | on (mn | ר) | | Dimension | Pa |
|-------------|---------------------|------|--------------|---------|------|-----|-----|--------|--------|-----|------|---------------------|-----------|
| Part Number | Murata Part Number | T.C. | Volt. (V) | Cap. | Tol. | L | W | W1 | F | Т | H/H0 | (LxW) Lead Style | qt (pe |
| | RHE5G1H101J0DBH03A | X8G | 50 | 100pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 16.0 | 0DB | 20 |
| | RHE5G1H121J0DBH03A | X8G | 50 | 120pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 16.0 | 0DB | 20 |
| | RHE5G1H151J0DBH03A | X8G | 50 | 150pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 16.0 | 0DB | 20 |
| | RHE5G1H181J0DBH03A | X8G | 50 | 180pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 16.0 | 0DB | 20 |
| | RHE5G1H221J0DBH03A | X8G | 50 | 220pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 16.0 | 0DB | 2 |
| | RHE5G1H271J0DBH03A | X8G | 50 | 270pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 16.0 | 0DB | 2 |
| | RHE5G1H331J0DBH03A | X8G | 50 | 330pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 16.0 | 0DB | 2 |
| | RHE5G1H391J0DBH03A | X8G | 50 | 390pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 16.0 | 0DB | 2 |
| | RHE5G1H471J0DBH03A | X8G | 50 | 470pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 16.0 | 0DB | 20 |
| | RHE5G1H561J0DBH03A | X8G | 50 | 560pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 16.0 | 0DB | 20 |
| | RHE5G1H681J0DBH03A | X8G | 50 | 680pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 16.0 | 0DB | 2 |
| | RHE5G1H821J0DBH03A | X8G | 50 | 820pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 16.0 | 0DB | 2 |
| | RHE5G1H102J0DBH03A | X8G | 50 | 1000pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 16.0 | 0DB | 2 |
| | RHE5G1H122J0DBH03A | X8G | 50 | 1200pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 16.0 | 0DB | 2 |
| | RHE5G1H152J0DBH03A | X8G | 50 | 1500pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 16.0 | 0DB | 2 |
| | RHE5G1H182J0DBH03A | X8G | 50 | 1800pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 16.0 | 0DB | 2 |
| | RHE5G1H222J0DBH03A | X8G | 50 | 2200pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 16.0 | 0DB | 2 |
| | RHE5G1H272J0DBH03A | X8G | 50 | 2700pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 16.0 | 0DB | 2 |
| | RHE5G1H332J0DBH03A | X8G | 50 | 3300pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 16.0 | 0DB | 2 |
| | RHE5G1H392J0DBH03A | X8G | 50 | 3900pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 16.0 | 0DB | 2 |
| | RHE5G1H472J1DBH03A | X8G | 50 | 4700pF | ±5% | 4.0 | 3.5 | - | 2.5 | 2.5 | 16.0 | 1DB | 2 |
| | RHE5G1H562J1DBH03A | X8G | 50 | 5600pF | ±5% | 4.0 | 3.5 | - | 2.5 | 2.5 | 16.0 | 1DB | 2 |
| | RHE5G1H682J1DBH03A | X8G | 50 | 6800pF | ±5% | 4.0 | 3.5 | - | 2.5 | 2.5 | 16.0 | 1DB | 2 |
| | RHE5G1H822J1DBH03A | X8G | 50 | 8200pF | ±5% | 4.0 | 3.5 | - | 2.5 | 2.5 | 16.0 | 1DB | 2 |
| | RHE5G1H103J1DBH03A | X8G | 50 | 10000pF | ±5% | 4.0 | 3.5 | - | 2.5 | 2.5 | 16.0 | 1DB | 2 |
| | RHE5G2A101J0DBH03A | X8G | 100 | 100pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 16.0 | 0DB | 2 |
| | RHE5G2A121J0DBH03A | X8G | 100 | 120pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 16.0 | 0DB | 2 |
| | RHE5G2A151J0DBH03A | X8G | 100 | 150pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 16.0 | 0DB | 2 |
| | RHE5G2A181J0DBH03A | X8G | 100 | 180pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 16.0 | 0DB | 2 |
| | RHE5G2A221J0DBH03A | X8G | 100 | 220pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 16.0 | 0DB | 2 |
| | RHE5G2A271J0DBH03A | X8G | 100 | 270pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 16.0 | 0DB | 2 |
| | RHE5G2A331J0DBH03A | X8G | 100 | 330pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 16.0 | 0DB | 2 |
| | RHE5G2A391J0DBH03A | X8G | 100 | 390pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 16.0 | 0DB | 2 |
| | RHE5G2A471J0DBH03A | X8G | 100 | 470pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 16.0 | 0DB | 2 |
| | RHE5G2A561J0DBH03A | X8G | 100 | 560pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 16.0 | 0DB | 20 |
| | RHE5G2A681J0DBH03A | X8G | 100 | 680pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 16.0 | 0DB | 20 |
| | RHE5G2A821J0DBH03A | X8G | 100 | 820pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 16.0 | 0DB | 2 |
| | RHE5G2A102J0DBH03A | X8G | 100 | 1000pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 16.0 | 0DB | 2 |
| | RHE5G2A122J0DBH03A | X8G | 100 | 1200pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 16.0 | 0DB | 20 |
| | RHE5G2A152J0DBH03A | X8G | 100 | 1500pF | ±5% | 3.6 | 3.5 | - | 2.5 | 2.5 | 16.0 | 0DB | 20 |

| (Lead Sty | /le∶D*) | | | (Lead | Style∶M* |) | | | - | | | | |
|-------------------------|--|------------|----------------------|----------------|--------------|------------|------------|------------|------------|------------|--------------|--------------------|----------|
| | $F \pm \frac{0.4}{0.5}$ | T max. | | | H0 + 0 - 2 | F± | | φ 0. 5 | .05 | ax. | | | |
| | | 1 | 1 | | | | | | | | | Unit : mm | ī |
| Customer Part Number | Murata Part Number | T.C. | DC Rated Volt. | Cap. | Cap. Tol. | | D | imensi | on (mm | 1) | | Dimension (LxW) | q |
| | | | (V) | | | L | W | W1 | F | Т | H/H0 | Lead Style | (p |
| | RHE5G2A182J1DBH03A | X8G | 100 | 1800pF | ±5% | 4.0 | 3.5 | - | 2.5 | 2.5 | 16.0 | 1DB | 20 |
| | RHE5G2A222J1DBH03A | X8G | 100 | 2200pF | ±5% | 4.0 | 3.5 | - | 2.5 | 2.5 | 16.0 | 1DB | 20 |
| | RHE5G2A272J1DBH03A | X8G | 100 | 2700pF | ±5% | 4.0 | 3.5 | - | 2.5 | 2.5 | 16.0 | 1DB | 20 |
| | RHE5G2A332J1DBH03A | X8G | 100 | 3300pF | ±5% | 4.0 | 3.5 | - | 2.5 | 2.5 | 16.0 | 1DB | 20 |
| | RHE5G1H101J0M1H03A RHE5G1H121J0M1H03A | X8G | 50 | 100pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | 16.0 | 0M1 | 20 |
| | | X8G | 50 | 120pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | 16.0 | 0M1 | 20 |
| | RHE5G1H151J0M1H03A | X8G | 50 | 150pF | ±5% | 3.6 3.6 | 3.5 | 6.0 | 5.0 5.0 | 2.5 | 16.0 | 0M1 | 20 |
| | RHE5G1H181J0M1H03A | X8G X8G | 50 50 | 180pF | ±5% ±5% | 3.6 | 3.5 3.5 | 6.0 6.0 | 5.0 5.0 | 2.5 2.5 | 16.0 16.0 | 0M1 0M1 | 20 20 |
| | RHE5G1H221J0M1H03A RHE5G1H271J0M1H03A | X8G | 50 | 220pF 270pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | 16.0 | 0M1 | 20 |
| | RHE5G1H331J0M1H03A | X8G | 50 | 270pF 330pF | ±5% | 3.6 | 3.5 3.5 | 6.0 | 5.0 | 2.5 | 16.0 | 0M1 | 20 |
| | RHE5G1H391J0M1H03A | 78G | 50 | 390pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | 16.0 | 0M1 | 20 |
| | RHE5G1H471J0M1H03A | X8G | 50 | 470pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | 16.0 | 0M1 | 20 |
| | RHE5G1H561J0M1H03A | X8G | 50 | 560pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | 16.0 | 0M1 | 20 |
| | RHE5G1H681J0M1H03A | X8G | 50 | 680pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | 16.0 | 0M1 | 20 |
| | RHE5G1H821J0M1H03A | X8G | 50 | 820pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | 16.0 | 0M1 | 20 |
| | RHE5G1H102J0M1H03A | X8G | 50 | 1000pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | 16.0 | 0M1 | 20 |
| | RHE5G1H122J0M1H03A | X8G | 50 | 1200pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | 16.0 | 0M1 | 20 |
| | RHE5G1H152J0M1H03A | X8G | 50 | 1500pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | 16.0 | 0M1 | 20 |
| | RHE5G1H182J0M1H03A | X8G | 50 | 1800pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | 16.0 | 0M1 | 20 |
| | RHE5G1H222J0M1H03A | X8G | 50 | 2200pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | 16.0 | 0M1 | 20 |
| | RHE5G1H272J0M1H03A | X8G | 50 | 2700pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | 16.0 | 0M1 | 20 |
| | RHE5G1H332J0M1H03A | X8G | 50 | 3300pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | 16.0 | 0M1 | 20 |
| | RHE5G1H392J0M1H03A | X8G | 50 | 3900pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | 16.0 | 0M1 | 20 |
| | RHE5G1H472J1M1H03A | X8G | 50 | 4700pF | ±5% | 4.0 | 3.5 | 5.0 | 5.0 | 2.5 | 16.0 | 1M1 | 20 |
| | RHE5G1H562J1M1H03A | X8G | 50 | 5600pF | ±5% | 4.0 | 3.5 | 5.0 | 5.0 | 2.5 | 16.0 | 1M1 | 20 |
| | RHE5G1H682J1M1H03A | X8G | 50 | 6800pF | ±5% | 4.0 | 3.5 | 5.0 | 5.0 | 2.5 | | 1M1 | 20 |
| | RHE5G1H822J1M1H03A | X8G | 50 | 8200pF | ±5% | 4.0 | 3.5 | 5.0 | 5.0 | 2.5 | 16.0 | 1M1 | 20 |
| | RHE5G1H103J1M1H03A | X8G | 50 | 10000pF | ±5% | 4.0 | 3.5 | 5.0 | 5.0 | 2.5 | 16.0 | 1M1 | 20 |
| | RHE5G2A101J0M1H03A | X8G | 100 | 100pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | 16.0 | 0M1 | 20 |
| | RHE5G2A121J0M1H03A | X8G | 100 | 120pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | 16.0 | 0M1 | 20 |
| | RHE5G2A151J0M1H03A | X8G | 100 | 150pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | 16.0 | 0M1 | 20 |
| | RHE5G2A181J0M1H03A | X8G | 100 | 180pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | | 0M1 | 20 |
| | RHE5G2A221J0M1H03A | X8G | 100 | 220pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | | 0M1 | 20 |
| | RHE5G2A271J0M1H03A | X8G X8G | 100 100 | 270pF | ±5% | 3.6 3.6 | 3.5 | 6.0 | 5.0 5.0 | 2.5 | 16.0 16.0 | 0M1 0M1 | 20 20 |
| | RHE5G2A331J0M1H03A RHE5G2A391J0M1H03A | X8G X8G | 100 | 330pF 390pF | ±5% ±5% | 3.6 3.6 | 3.5 3.5 | 6.0 6.0 | 5.0 5.0 | 2.5 2.5 | 16.0 | 0M1 | 20 |
| | RHE5G2A391J0M1H03A | X8G | 100 | 390pF 470pF | ±5% | 3.6 | 3.5 3.5 | 6.0 | 5.0 5.0 | 2.5 | | 0M1 | 20 |
| | INTEGZA47 IJUNTEUJA | 700 | | | | 3.6 | 3.5 3.5 | 6.0 | 5.0 5.0 | 2.5 | | | |
| | RHE5G2A561J0M1H03A | X8G | 100 | 560pF | ±5% | | | | | | 16.0 | 0M1 | 20 |

• Inside Crimp Taping (Lead Style: M*)

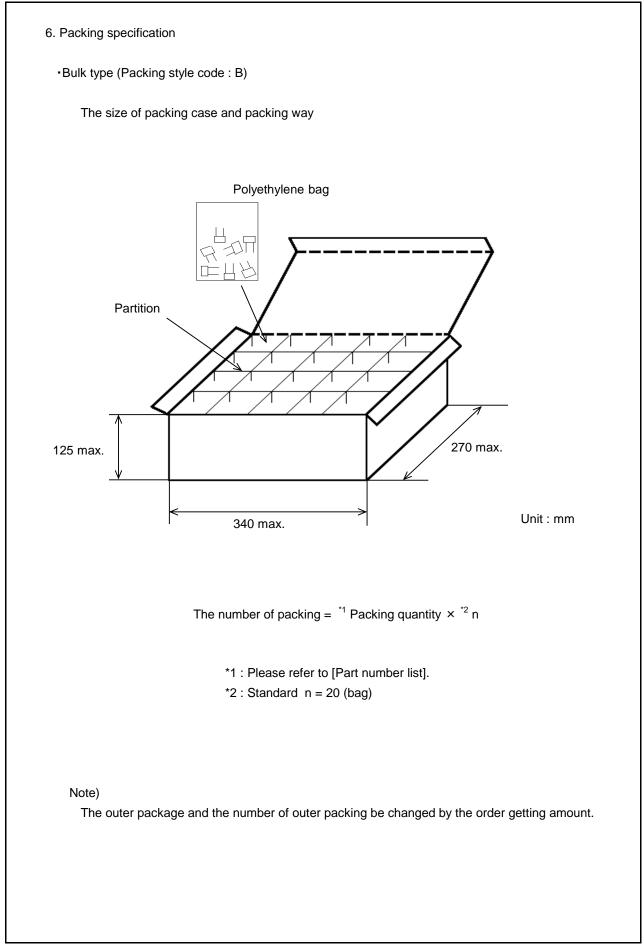


| | | | | | | | | | | | | Unit : mm | |
|-------------|--------------------|------|--------------|--------|------|-----|-----|--------|--------|-----|------|--------------------|---------------|
| Customer | Murata Part Number | T.C. | DC Rated | Cap. | Cap. | | D | imensi | on (mm | 1) | | Dimension (LxW) | Pack |
| Part Number | Murata Part Number | 1.0. | Volt. (V) | Cap. | Tol. | L | W | W1 | F | Т | H/H0 | Lead Style | qty. (pcs) |
| | RHE5G2A821J0M1H03A | X8G | 100 | 820pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | 16.0 | 0M1 | 2000 |
| | RHE5G2A102J0M1H03A | X8G | 100 | 1000pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | 16.0 | 0M1 | 2000 |
| | RHE5G2A122J0M1H03A | X8G | 100 | 1200pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | 16.0 | 0M1 | 2000 |
| | RHE5G2A152J0M1H03A | X8G | 100 | 1500pF | ±5% | 3.6 | 3.5 | 6.0 | 5.0 | 2.5 | 16.0 | 0M1 | 2000 |
| | RHE5G2A182J1M1H03A | X8G | 100 | 1800pF | ±5% | 4.0 | 3.5 | 5.0 | 5.0 | 2.5 | 16.0 | 1M1 | 2000 |
| | RHE5G2A222J1M1H03A | X8G | 100 | 2200pF | ±5% | 4.0 | 3.5 | 5.0 | 5.0 | 2.5 | 16.0 | 1M1 | 2000 |
| | RHE5G2A272J1M1H03A | X8G | 100 | 2700pF | ±5% | 4.0 | 3.5 | 5.0 | 5.0 | 2.5 | 16.0 | 1M1 | 2000 |
| | RHE5G2A332J1M1H03A | X8G | 100 | 3300pF | ±5% | 4.0 | 3.5 | 5.0 | 5.0 | 2.5 | 16.0 | 1M1 | 2000 |

| - | | -Q200 t Item | Specification | AEC-Q200 Test Method |
|--------|-----------------------------------|--|--|---|
| | Pre-and Post-S Electrical Test | Stress | | - - |
| 2 | High Temperature Exposure | Appearance Capacitance Change | No defects or abnormalities. Within ±3% or ±0.3pF (Whichever is larger) | Sit the capacitor for 1000±12h at 150±3°C. Let sit for 24±2h at *room condition, then measure. |
| | (Storage) | Q I.R. | Q ≧ 350 1,000MΩ min. | - |
| 3 | Temperature Cycling | Appearance | No defects or abnormalities except color change of outer coating. | Perform the 1000 cycles according to the four heat treatments listed in the following table. Let sit for 24±2 h at *room condition, then measure. |
| | | Capacitance Change | Within ±5% or ±0.5pF (Whichever is larger) | Step 1 2 3 4 |
| | | Q I.R. | Q ≧ 350 1,000MΩ min. | Temp. (°C) -55+0/-3 Room Temp. 150+3/-0 Room Temp. Time (ric) 15±3 1 15±3 1 |
| 4 | Moisture | Appearance | No defects or abnormalities. | (min.) 1010 1010 Apply the 24h heat (25 to 65°C) and humidity (80 to 98%) |
| 4 | Resistance | Capacitance Change Q | Within $\pm 5\%$ or $\pm 0.5pF$ (Whichever is larger) $Q \ge 200$ | treatment shown below, 10 consecutive times. Let sit for 24±2 h at *room condition, then measure. |
| | | I.R. | 500MΩ min. | 1einpet autor Humidity 80-98% Humidity 90-98% 90-98% 70 90-98% 90-98% 90-98% 90-98% 90-98% 65 90 |
| 5 | Biased Humidity | Appearance Capacitance Change Q | No defects or abnormalities. Within $\pm 5\%$ or $\pm 0.5 pF$ (Whichever is larger) $Q \ge 200$ | Apply the rated voltage and DC1.3+0.2/-0V (add 100kΩ resistor) at 85±3°C and 80 to 85% humidity for 1000±12h. Remove and let sit for 24±2 h at *room condition, then measure. The charge/discharge current is less than 50mA. |
| 6 | Operational Life | I.R. Appearance Capacitance Change Q I.R. | 500MΩ min. No defects or abnormalities except color change of outer coating. Within ±3% or ±0.3pF (Whichever is larger) Q ≥ 350 1,000MΩ min. | Apply 150% of the rated voltage for 1000±12h at 150±3°C. Let sit for 24±2 h at *room condition, then measure. The charge/discharge current is less than 50mA. |
| 7 8 | External Visua | | No defects or abnormalities. | Visual inspection. |
| 8 9 | Physical Dime Marking | | Within the specified dimensions. To be easily legible. | Using calipers and micrometers. Visual inspection. |
| 10 | Resistance | Appearance | No defects or abnormalities. | Per MIL-STD-202 Method 215 |
| | to Solvents | Capacitance Q | Within the specified tolerance. $Q \ge 1,000$ | Solvent 1 : 1 part (by volume) of isopropyl alcohol 3 parts (by volume) of mineral spirits |
| | | I.R. | 10,000MΩ min. | Solvent 2 : Terpene defluxer Solvent 3 : 42 parts (by volume) of water 1part (by volume) of propylene glycol monomethyl ether 1 part (by volume) of monoethanolamine |
| "roor | n condition" To | emperature : 15 | to 35°C, Relative humidity : 45 to 75%, Atmo | 1 part (by volume) of monoethanolamine |

| Ş | | -Q200 t Item Appearance Capacitance | Specification No defects or abnormalities. | Three shoc | | AEC-Q200 Test M | ethod | | | | | |
|-------|-----------------|--|---|--|------------------|---------------------------|----------------------|----------|--|--|--|--|
| S | | | No defects or abnormalities. | Three shoc | | | | | | | | |
| | Shock | Capacitance | | 111100 31100 | ks in each dire | ction should be appli | ied along 3 | | | | | |
| 12 \ | | | Within the specified tolerance. | mutually pe | rpendicular ax | es of the test specim | ien (18 shocks). | | | | | |
| 12 \ | | Q | Q ≧ 1,000 | The specifie | ed test pulse sl | nould be Half-sine ar | nd should have a | | | | | |
| 12 \ | | | | duration : 0.5ms, peak value : 1500G and velocity change : 4.7m/s. The capacitor should be subjected to a simple harmonic motion having a total amplitude of 1.5mm, the frequency being varied uniformly between the approximate limits of 10 and 2,000Hz. | | | | | | | | |
| | Vibration | Appearance | No defects or abnormalities. | | | | | | | | | |
| | | Capacitance | Within the specified tolerance. | | | | | | | | | |
| | | Q | Q ≧ 1,000 | | | | | | | | | |
| | | | | Uniformly between the approximate limits of 10 and 2,000Hz. The frequency range, from 10 to 2000Hz and return to 10Hz, | | | | | | | | |
| | | | | should be tr | raversed in app | proximately 20 min. | This motion | | | | | |
| | | | | should be a | pplied for 12 it | ems in each 3 mutua | ally perpendicular | | | | | |
| | | | | directions (1 | total of 36 time | s). | | | | | | |
| 3-1 F | Resistance | Appearance | No defects or abnormalities. | The lead wi | res should be | mmersed in the mel | ted solder 1.5 to 2. | 0mm | | | | |
| t | 0 | Capacitance | Within ±2.5% or ±0.25pF | from the roo | ot of terminal a | t 260±5°C for 10±1 s | seconds. | | | | | |
| | Soldering | Change | (Whichever is larger) | | | | | | | | | |
| ŀ | Heat | Dielectric | No defects | Post-treat | ment | | | | | | | |
| (| Non- | Strength | | | | d for 24±2 hours at | *room condition | | | | | |
| F | Preheat) | (Between | | e apacitor e | | | | | | | | |
| ſ | , | terminals) | | | | | | | | | | |
| 3-2 5 | Resistance | Appearance | No defects or abnormalities. | First the ca | pacitor should | be stored at 120+0/- | 5°C for 60+0/-5 co | conds | | | | |
| | 0 | Capacitance | Within $\pm 2.5\%$ or $\pm 0.25pF$ | First the capacitor should be stored at 120+0/-5°C for 60+0/-5 seconds. Then, the lead wires should be immersed in the melted solder | | | | | | | | |
| | Soldering | Capacitance | (Whichever is larger) | , | | t of terminal at $260\pm$ | | condo | | | | |
| | Heat | | · · · · · · · · · · · · · · · · · · · | 1.5 10 2.0m | m nom the 100 | t or terminal at 200± | 5 0 101 7.5+0/-1 Se | conus. | | | | |
| | On- | Dielectric | No defects | Post-treat | mont | | | | | | | |
| ` | Preheat) | Strength | | | | d for 21.2 hours at | *room condition | | | | | |
| ľ | reneat | (Between | | Capacitor s | noula de store | d for 24±2 hours at | room condition. | | | | | |
| | | terminals) | | - | | | | | | | | |
| | Resistance | Appearance | No defects or abnormalities. | Test conditi | | | | | | | | |
| | 0 Deleterier | Capacitance | Within ±2.5% or ±0.25pF | Temperature of iron-tip : 350±10°C | | | | | | | | |
| | Soldering | Change | (Whichever is larger) | Soldering time : 3.5±0.5 seconds | | | | | | | | |
| | Heat | Dielectric | No defects. | Soldering position | | | | | | | | |
| ` | soldering | Strength | | Straight Le | ead : 1.5 to 2.0 | mm from the root of | terminal. | | | | | |
| i | ron method) | (Between | | Crimp Lea | ad : 1.5 to 2.0m | m from the end of le | ad bend. | | | | | |
| | | terminals) | | | | | | | | | | |
| | | | | Post-treat | ment | | | | | | | |
| | | | | Capacitor s | hould be store | d for 24±2 hours at | room condition. | | | | | |
| 14 7 | Thermal | Appearance | No defects or abnormalities. | Perform the | 300 cycles ac | cording to the two he | eat treatments liste | d in the | | | | |
| S | Shock | Capacitance | Within ±5% or ±0.5pF | following ta | ble(Maximum t | ransfer time is 20 se | econds.). | | | | | |
| | | Change | (Whichever is larger) | Let sit for 2- | 4±2 h at *room | condition, then mea | sure. | | | | | |
| | | Q | Q ≧ 350 | | Step | 1 | 2 | ٦ | | | | |
| | | I.R. | 1,000MΩ min. | | Temp. | | | - | | | | |
| | | | | | (°C) | -55+0/-3 | 150+3/-0 | | | | | |
| | | | | 1 | Time | | | 1 | | | | |
| | | | | | (min.) | 15±3 | 15±3 | | | | | |
| | | | | | · · · · · | | | J | | | | |
| 15 E | ESD | Appearance | No defects or abnormalities. | Per AEC-Q | 200-002 | | | | | | | |
| | | Capacitance | Within the specified tolerance. | | | | | | | | | |
| | | Q | Q ≧ 1,000 | | | | | | | | | |
| | | I.R. | 10,000MΩ min. | | | | | | | | | |
| 16 5 | Solderability | | Lead wire should be soldered with | The termina | al of a capacito | r is dipped into a sol | ution of ethanol | | | | | |
| | - | | uniform coating on the axial direction | (JIS-K-8101 | 1) and rosin (JI | S-K-5902) (25%rosii | n in weight propotic | on) and | | | | |
| | | | over 95% of the circumferential direction. | then into me | olten solder (JI | S-Z-3282) for 2±0.5 | seconds. In both ca | ases | | | | |
| | | | | | , | to about 1.5 to 2mm | | | | | | |
| | | | | | | | | - | | | | |
| | | | | Temp. of so | older : | | | | | | | |
| | | | | | | der (Sn-3.0Ag-0.5Cu | ı) | | | | | |
| | | | | | | Eutectic Solder | , | | | | | |
| | | emperaturo · 15 | to 35°C, Relative humidity : 45 to 75%, Atmo | | | | | | | | | |

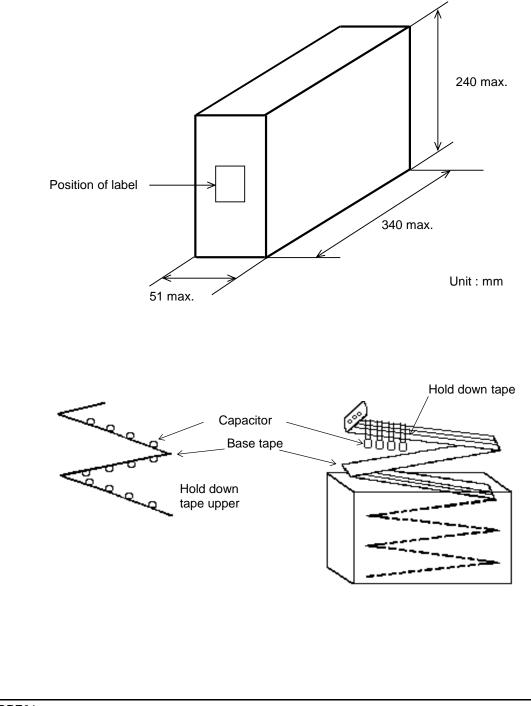
| | AEC-Q200 | | | Specifications | AEC-Q200 Test Method | | |
|----|---------------------------------------|------------------|---|------------------------------|--|--|--|
| | | t Item | | | | | |
| | Electrical | Appearance | No defects or a | | Visual inspection. | | |
| | Characte- rization | Capacitance Q | $Q \ge 1,000$ | cified tolerance. | The capacitance, Q should be measured at 25°C at the frequency and voltage shown in the table. | | |
| | IIZation | Q | | | | | |
| | | | | | Nominal Cap. Frequency Voltage | | |
| | | | | | $C \le 1000 \text{pF}$ 1±0.1MHz AC0.5 to 5V(r.m.s.) | | |
| | | | | | C > 1000pF 1±0.1kHz AC1±0.2V(r.m.s.) | | |
| | | Insulation | Room | 10,000MΩ min. | The insulation resistance should be measured at 25±3 °C with a | | |
| | Resistance | | Temperature | | DC voltage not exceeding the rated voltage at normal temperature | | |
| | | (I.R.) | | | and humidity and within 2 min. of charging. | | |
| | | | | | (Charge/Discharge current \leq 50mA.) | | |
| | | | High | 100MΩ min. | The insulation resistance should be measured at 150±3 °C with a | | |
| | | | Temperature | | DC voltage not exceeding the rated voltage at normal temperature | | |
| | | | | | and humidity and within 2 min. of charging. (Charge/Discharge current ≦ 50mA.) | | |
| | | Dielectric | Between | No defects or abnormalities. | The capacitor should not be damaged when DC voltage of 300% | | |
| | | Strength | Terminals | No delects of abriormanites. | of the rated voltage is applied between the terminations for | | |
| | | | | | 1 to 5 seconds. | | |
| | | | | | (Charge/Discharge current \leq 50mA.) | | |
| | | | Body Insulation | 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, and 250% of the rated $\int_{V} \int_{V} \sqrt{2n}$ | | |
| | | | | | DC voltage is impressed for 1 to 5 seconds | | |
| | | | | | between capacitor terminals and metal balls. Meta (Charge/Discharge current ≤ 50mA) bal | | |
| 18 | Terminal | Tanaila | Termination no | t to be broken or lessened | | | |
| | Terminal Tensile Strength 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 | | |
| | Strength | Strength | | | 10 each read in the radial direction of the capacitor until reaching $10N$ and then keep the force applied for 10 ± 1 seconds. | | |
| | | Bending | Termination no | ot to be broken or loosened. | Each lead wire should be subjected to a force of 2.5N and then | | |
| | | Strength | | | be 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 seconds | | |
| 19 | Capacitance | | Within the spe | cified Tolerance. | The capacitance change should be measured after 5min. at | | |
| | Temperature | | 25°C to 150°C : 0±30 ppm/°C | | each specified temperature step. | | |
| | Characteristics | 5 | -55°C to 25°C | : 0+30/-72 ppm/°C | Step Temperature(°C) | | |
| | | | | | 1 25±2 | | |
| | | | | | 2 -55±3 | | |
| | | | | | 3 25±2 | | |
| | | | | | 0 1011 | | |
| | | | | | 4 150±3 | | |
| | | | | | | | |
| | | | | | 4 150±3 | | |
| | | | | | 4 150±3 5 25±2 | | |
| | | | | | 4 150±3 5 25±2 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°C to 150°C) | | |
| | | | | | 4 150±3 5 25±2 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°C to 150°C) the capacitance should be within the specified tolerance for the | | |
| | | | | | 4 150±3 5 25±2 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°C to 150°C) the capacitance should be within the specified tolerance for the temperature coefficient and capacitance change as Table A. | | |
| | | | | | $\begin{tabular}{ c c c c }\hline \hline & 4 & 150\pm 3 \\ \hline & 5 & 25\pm 2 \\ \hline \end{tabular}$ 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°C to 150°C) the capacitance should be within the specified tolerance for the temperature coefficient and capacitance change as Table A. The capacitance drift is calculated by dividing the differences | | |
| | | | | | 4 150±3 5 25±2 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°C to 150°C) the capacitance should be within the specified tolerance for the temperature coefficient and capacitance change as Table A. | | |



-Ammo pack taping type (Packing style code : A)

A crease is made every 25 pitches, and the tape with capacitors is packed zigzag into a case. When body of the capacitor is piled on other body under it.

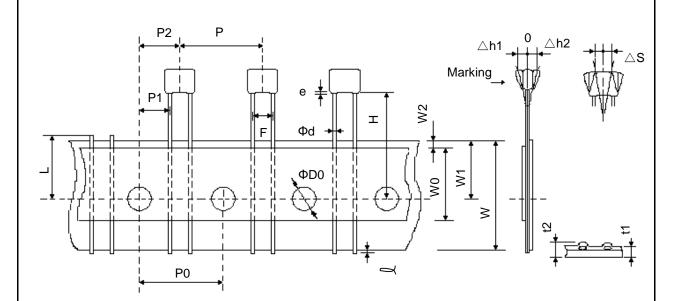
The size of packing case and packing way



7. Taping specification

7-1. Dimension of capacitors on tape

Straight taping type < Lead Style : DB > Pitch of component 12.7mm / Lead spacing 2.5mm

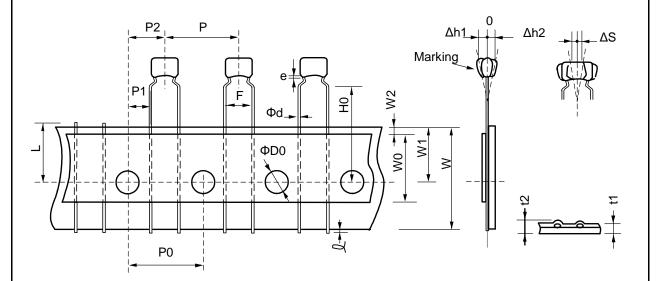


Unit : mm

| Item | Code | Dimensions | Remarks |
|--|------|--------------|---------------------------------------|
| Pitch of component | Р | 12.7+/-1.0 | |
| Pitch of sprocket hole | P0 | 12.7+/-0.2 | |
| Lead spacing | F | 2.5+0.4/-0.2 | |
| Length from hole center to component center | | 6.35+/-1.3 | Deviation of progress direction |
| Length from hole center to lead | P1 | 5.1+/-0.7 | |
| Deviation along tape, left or right defect | | 0+/-2.0 | They include deviation by lead bend |
| Carrier tape width | W | 18.0+/-0.5 | |
| Position of sprocket hole | W1 | 9.0+0/-0.5 | Deviation of tape width direction |
| Lead distance between reference and bottom plane | Н | 16.0+/-0.5 | |
| Protrusion length | l | 0.5 max. | |
| Diameter of sprocket hole | ΦD0 | 4.0+/-0.1 | |
| Lead diameter | Φd | 0.5+/-0.05 | |
| Total tape thickness | t1 | 0.6+/-0.3 | They include hold down tape thickness |
| Total thickness of tape and lead wire | t2 | 1.5 max. | |
| Doviation across tand | ∆h1 | 1.0 max. | |
| Deviation across tape | | 1.0 max. | |
| Portion to cut in case of defect | L | 11.0+0/-1.0 | |
| Hold down tape width | | 9.5 min. | |
| Hold down tape position | W2 | 1.5+/-1.5 | |
| Coating extension on lead | е | 1.5 max. | |

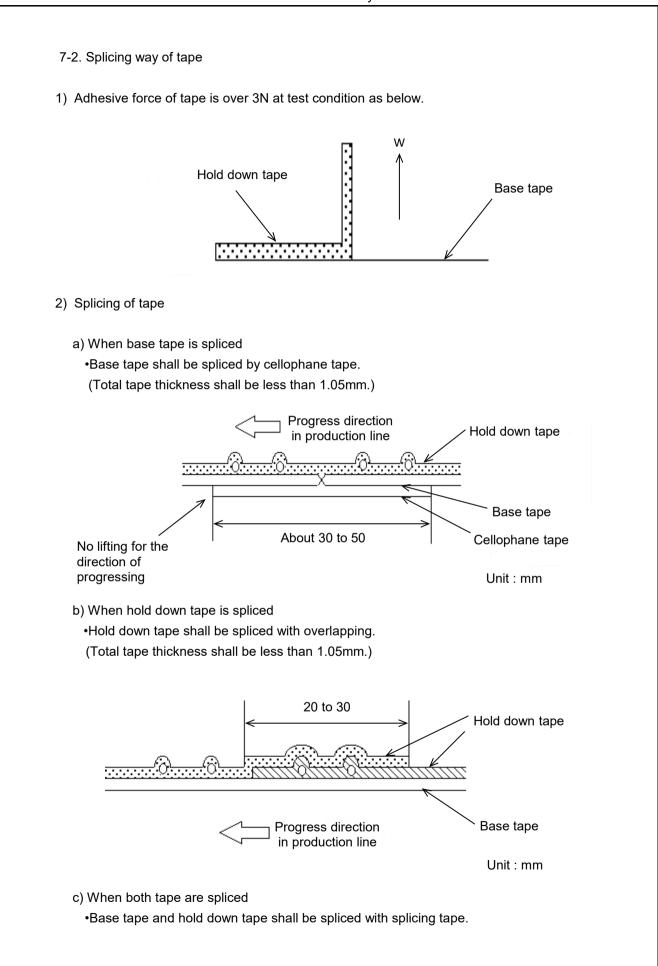
ETP1DB02A

Inside crimp taping type < Lead Style : M1 > Pitch of component 12.7mm / Lead spacing 5.0mm



Unit : mm

| Item | Code | Dimensions | Remarks | |
|--|------|----------------------------|---------------------------------------|--|
| Pitch of component | | 12.7+/-1.0 | | |
| Pitch of sprocket hole | | 12.7+/-0.2 | | |
| Lead spacing | | 5.0+0.6/-0.2 | | |
| Length from hole center to component center | | 6.35+/-1.3 | Deviation of progress direction | |
| Length from hole center to lead | P1 | 3.85+/-0.7 | | |
| Deviation along tape, left or right defect | | 0+/-2.0 | They include deviation by lead bend | |
| Carrier tape width | W | 18.0+/-0.5 | | |
| Position of sprocket hole | W1 | 9.0+0/-0.5 | Deviation of tape width direction | |
| Lead distance between reference and bottom plane | H0 | 16.0+/-0.5 | | |
| Protrusion length | l | 0.5 max. | | |
| Diameter of sprocket hole | ΦD0 | 4.0+/-0.1 | | |
| Lead diameter | Φd | 0.5+/-0.05 | | |
| Total tape thickness | t1 | 0.6+/-0.3 | They include hold down tape thickness | |
| Total thickness of tape and lead wire | t2 | 1.5 max. | | |
| Deviation across tape | | 2.0 max. (Di | Dimension code : W) | |
| | | 1.0 max. (except as above) | | |
| Portion to cut in case of defect | L | 11.0+0/-1.0 | | |
| Hold down tape width | | 9.5 min. | | |
| Hold down tape position | W2 | 1.5+/-1.5 | | |
| Coating extension on lead | е | Up to the end of | crimp | |



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