# muRata

**Reference Specification** 

Type KX Safety Standard Certified Lead Type Disc Ceramic Capacitors for General Purpose

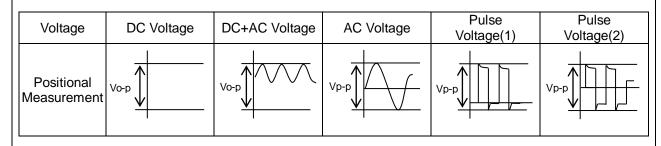
Product specifications in this catalog are as of Jun. 2019, and are subject to change or obsolescence without notice.

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.



#### 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. Applied voltage should be the load such as self-generated heat is within 20 °C on the condition of atmosphere temperature 25 °C. When measuring, use a thermocouple of small thermal capacity-K of  $\phi$ 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.(Never attempt to perform measurement with the cooling fan running. Otherwise, accurate measurement cannot be ensured.)

## 3. TEST CONDITION FOR WITHSTANDING VOLTAGE

#### (1) TEST EQUIPMENT

Test equipment for AC withstanding voltage should be used with the performance of the wave similar to 50/60 Hz sine wave.

If the distorted sine wave or over load exceeding the specified voltage value is applied, the defective may be caused.

#### (2) VOLTAGE APPLIED METHOD

When the withstanding voltage is applied, capacitor's lead or terminal should be firmly connected to the out-put of the withstanding voltage test equipment, and then the voltage should be raised from near zero to the test voltage.

If the test voltage without the raise from near zero voltage would be applied directly to capacitor, test voltage should be applied with the \*zero cross. At the end of the test time, the test voltage should be reduced to near zero, and then capacitor's lead or terminal should be taken off the out-put of the withstanding voltage test equipment.

If the test voltage without the raise from near zero voltage would be applied directly to capacitor, the surge voltage may arise, and therefore, the defective may be caused.

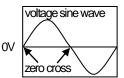
\*ZERO CROSS is the point where voltage sine wave pass 0V. - See the right figure -

# 4. FAIL-SAFE

When capacitor would be broken, failure may result in a short circuit. Be sure to provide an appropriate fail-safe function like a fuse on your product if failure would follow an electric shock, fire or fume.

#### 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.

When soldering capacitor with a soldering iron, it should be performed in following conditions.

Temperature of iron-tip : 400 °C max.

Soldering iron wattage : 50W max.

Soldering time : 3.5s max.

# 7. BONDING, RESIN MOLDING AND COATING

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 the bonded, molded or coated 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, molding resin or coating may cause a outer coating resin cracking and/or ceramic element cracking of a capacitor in a temperature cycling.

#### 8. TREATMENT AFTER BONDING, RESIN MOLDING AND COATING

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. 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 -10 to 40 °C and 15 to 85%.

Use capacitors within 6 months after delivered. Check the solderability after 6 months or more.

### **10. 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
- 4. Power plant control 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 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. CAPACITANCE CHANGE OF CAPACITORS

· Class 1 capacitors

Capacitance might change a little depending on a surrounding temperature or an applied voltage. Please contact us if you use for the strict time constant circuit.

· Class 2 and 3 capacitors

Class 2 and 3 capacitors like temperature characteristic B, E and F have 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.

#### 3. PERFORMANCE CHÉCK BY EQUIPMENT

Before using a capacitor, check that there is no problem in the equipment's performance and the specifications.

Generally speaking, CLASS 2 ceramic capacitors have voltage dependence characteristics and temperature dependence characteristics in capacitance. So, the capacitance value may change depending on the operating condition in a equipment. Therefore, be sure to confirm the apparatus performance of receiving influence in a capacitance value change of a capacitor, such as leakage current and noise suppression characteristic.

Moreover, check the surge-proof ability of a capacitor in the equipment, if needed, because the surge voltage may exceed specific value by the inductance of the circuit.

# \land ΝΟΤΕ

- 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.

#### 1. Application

This specification is applied to Safety Standard Certified Lead Type Disc Ceramic Capacitors Type KX used for General Electric equipment.

Type KX is Safety Standard Certified capacitors of Class X1,Y1.

Do not use these products in any automotive power train or safety equipment including battery chargers for electric vehicles and plug-in hybrids.

Approval standard and certified number

|       | Standard number                                   | *Certified number | AC Rated volt.<br>V(r.m.s.) |
|-------|---|-------------------|-----------------------------|
| UL    | UL60384-14  | E37921            |                             |
| CSA   | CSA E60384-14                                     | 1343810           |                             |
| VDE   | IEC60384-14, EN60384-14                           | 40002831          |                             |
| BSI   | EN60065 (8.8,14.2),<br>IEC60384-14,<br>EN60384-14 | KM 37901          |                             |
| SEMKO |   | 1612604           | X1:440                      |
| DEMKO |   | D-05321           | Y1:300                      |
| FIMKO | IEC60384-14,<br>EN60384-14                        | FI 29602          |                             |
| NEMKO | LIN00304-14                                       | P16221232         |                             |
| ESTI  |   | 18.0079           |                             |
| IMQ   | EN60384-14  | V4069             |                             |
| CQC   | IEC60384-14                                       | CQC12001079941    |                             |

\*Above Certified number may be changed on account of the revision of standards and the renewal of certification.

#### 2. Rating

2-1. Operating temperature range

-40 ~ +125°C

2-2. Part number configuration

| ex.) <u>DE1</u> | E3             | KX   | 472         | M           | A4   | В          | P01F          |
|-----------------|----------------|------|-------------|-------------|------|------------|---------------|
| Product         | Temperature    | Туре | Capacitance | Capacitance | Lead | Packing    | Individual    |
| code            | characteristic | name |             | tolerance   | code | style code | specification |

Product code

DE1 denotes X1,Y1 class .

• Temperature characteristic

| • | Code | Temperature characteristic |  |  |  |  |  |
|---|------|----------------------------|--|--|--|--|--|
|   | B3   | В                          |  |  |  |  |  |
|   | E3   | E                          |  |  |  |  |  |

Please confirm detailed specification on [ Specification and test methods ].

• Type name

This denotes safety certified type name Type KX.

Capacitance

The first two digits denote significant figures ; the last digit denotes the multiplier of 10 in pF. ex.) In case of 472.

$$47 \times 10^2 = 4700 \text{pF}$$

• Capacitance tolerance Please refer to [ Part number list ].

#### Lead code

| Code                                  | Lead style                                    |                     |  |  |  |  |
|---------------------------------------|---|---------------------|--|--|--|--|
| A*                                    | Vertical crimp long type                      |                     |  |  |  |  |
| B*                                    | Vartical arimp short type                     | Lead Length : 5mm   |  |  |  |  |
| J*                                    | <ul> <li>Vertical crimp short type</li> </ul> | Lead Length : 3.5mm |  |  |  |  |
| N* Vertical crimp taping type         |   |                     |  |  |  |  |
| * Place refer to [ Part number list ] |   |                     |  |  |  |  |

\* Please refer to [Part number list]

#### Packing style code

| Code | Packing type          |
|------|-----------------------|
| В    | Bulk type             |
| A    | Ammo pack taping type |

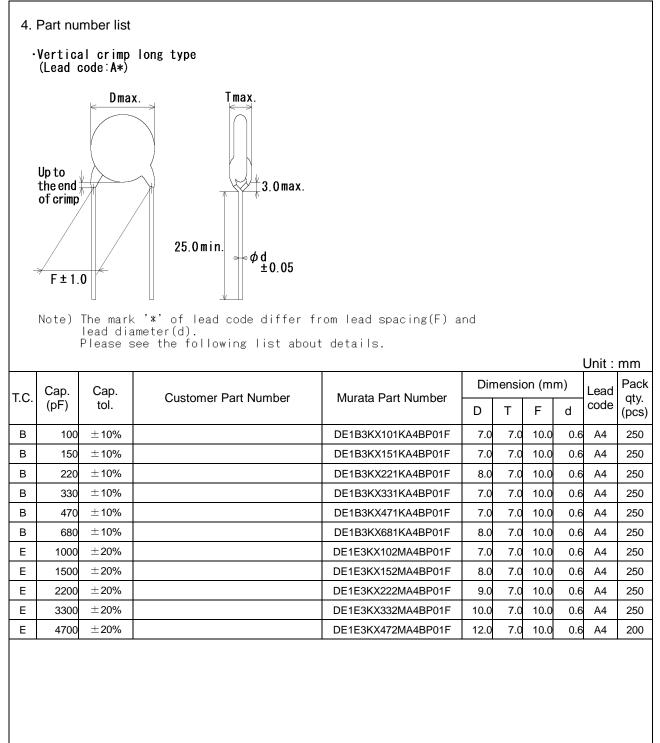
#### • Individual specification

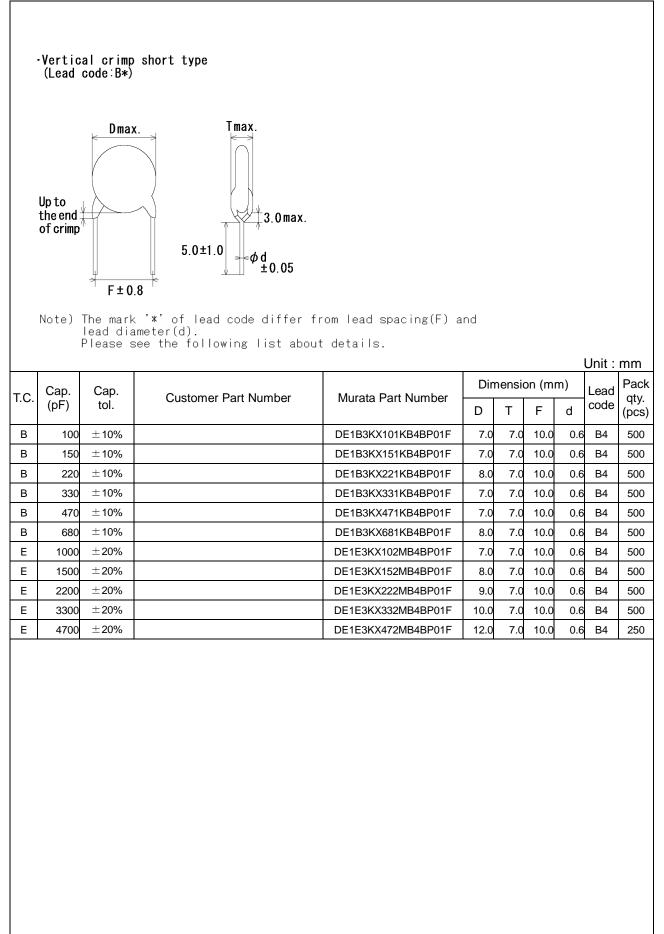
In case part number cannot be identified without 'individual specification', it is added at the end of part number.

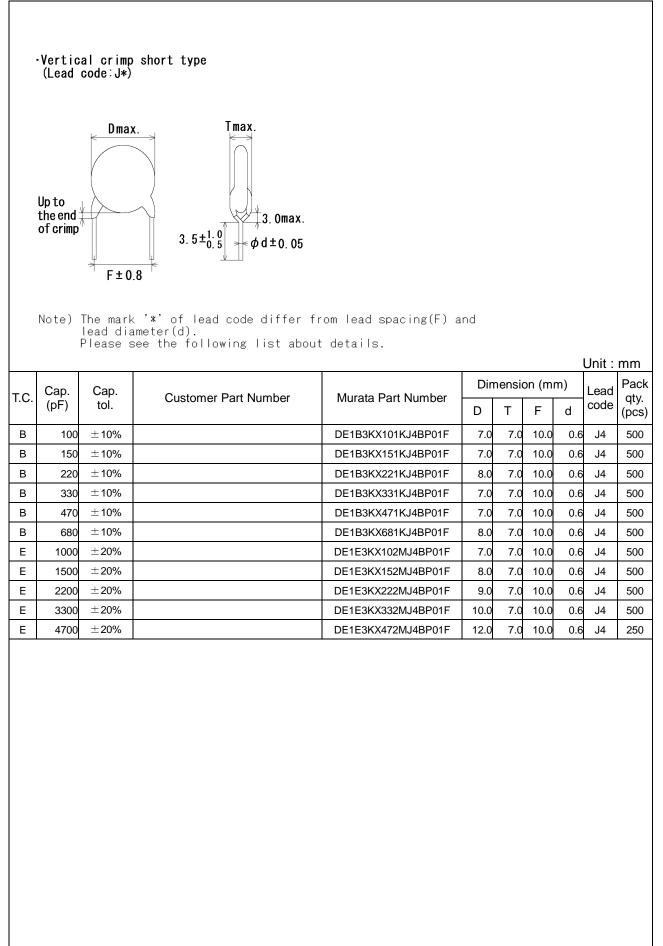
| Code | Specification  |
|------|--|
| P01F | <ul> <li>Rated voltage : AC300V(r.m.s.)</li> <li>Halogen free         <ul> <li>Br ≤ 900ppm, Cl ≤ 900ppm</li> <li>Br + Cl ≤ 1500ppm</li> <li>CP wire</li> </ul> </li> </ul> |

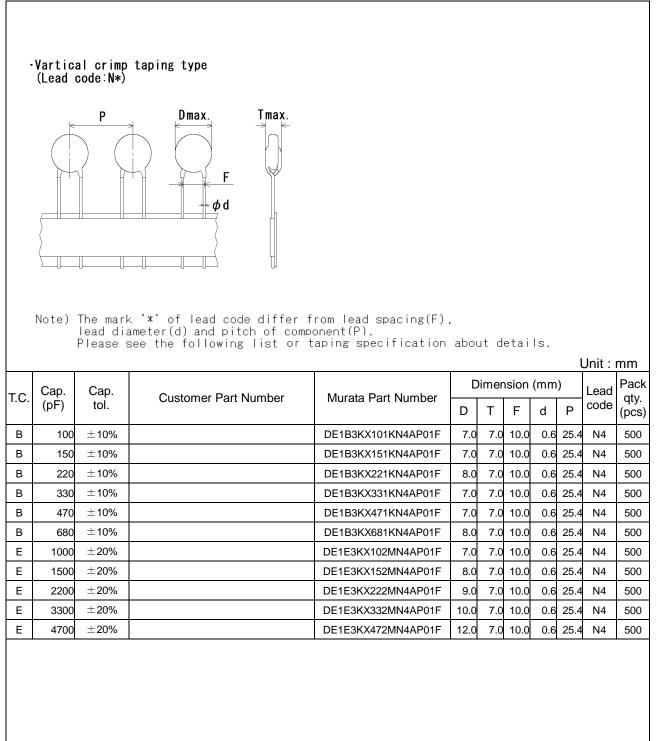
Note) Murata part numbers might be changed depending on lead code or any other changes. Therefore, please specify only the type name(KX) and capacitance of products in the parts list when it is required for applying safety standard of electric equipment.

| 3. Marking   |  |   |   |
|--|--|---|---|
| Nominal capa<br>Capacitance to<br>Type name<br>Rated voltage<br>Class code<br>Halogen free<br>Manufacturing<br>Manufacturing | olerance : Code<br>: KX<br>• mark : <b>300~</b><br>: <b>X1Y</b><br>mark :<br>;<br>g year : Lette | I<br>er code(The last c<br>⊖<br>∫ Feb./Mar. → 2 | ligit of A.D. year.)<br>Aug./Sep. → 8<br>Oct./Nov. → O<br>Dec./Jan. → D |
| Company nam  | e code : 🕅   | 5 (Made in Thail                                | and)  |
|  |  | (Ex   | ample)  |
|  |  |   | 472M<br>KX300-<br>X1Y1 HF<br>5D @15                                     |







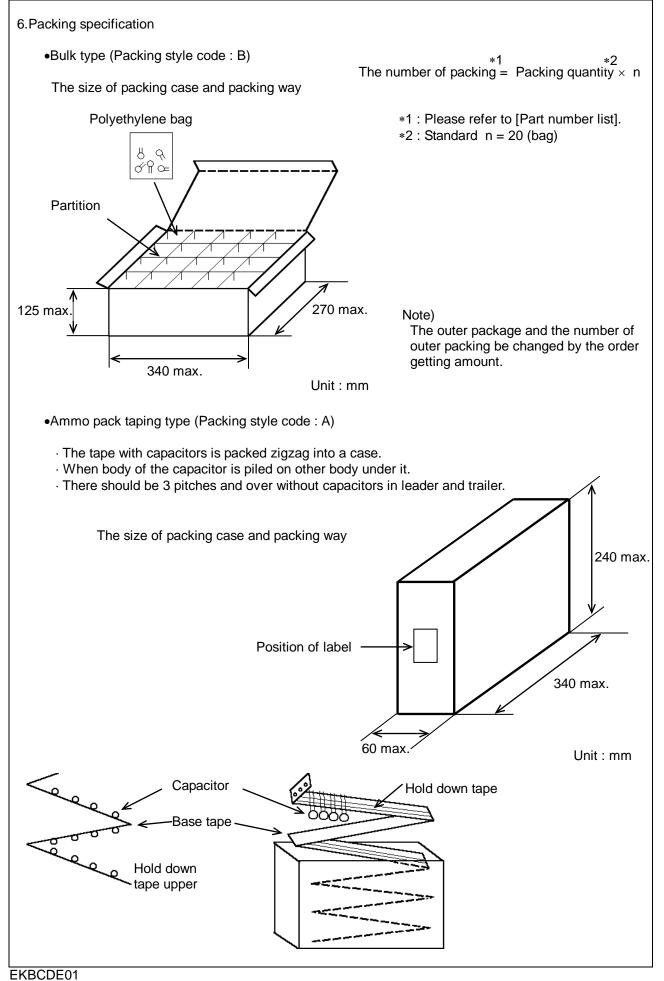


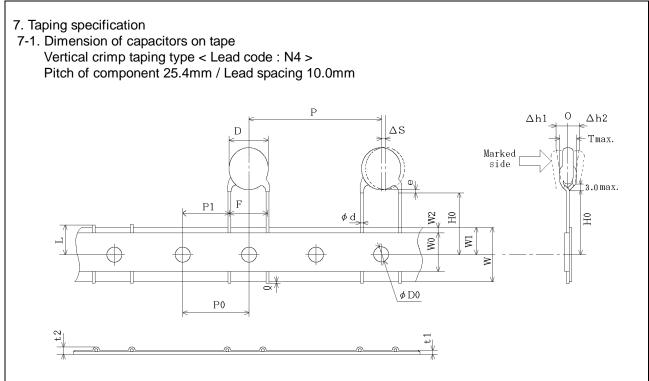
| No.     Item     Specification     Test method       1     Appearance and dimensions.     No marked defect on appearance three appearances are appearances.       2     Marking     No failure.     The capacitor should be inspected or provide appearance are appearances are appearance and an appearance of a appearance and an appearance of a appearance and an appearance of a appearance and an appearance and appearance and an appearance and appearance and appearance and appearance and appearance and an appearance and appearance and appearance and and appearance and appearance and and appearance and and appearance and appearance and appearance and an appearance and appearance and an appearance and appearance and appearance and appearance and metal applies.       4     Insulation Resistance (I.R.)     10000M2 min.     The insulation resistance should be measured and metal applies.       5     Capacitance     Within specified tolerance  |   |                     | ~                         |                           |                   |               |   |   |  |  |  |           |
|--|---|---------------------|---------------------------|---------------------------|-------------------|---------------|---|---|--|--|--|-----------|
| form and dimensions.       Please refer to Part number list.       1     To be easily legible.     The capacitor should be measured with slide calipers.       3     Dielecting     Between lead wires     No failure.       8     Body insulation     No failure.     The capacitor should be measured with slide calipers.       9     Body insulation     No failure.     First, the terminals of the capacitor should be conserved with the distance of the capacitor should be conserved with the distance of the capacitor should be conserved with the distance of the capacitor should be measured with the distance of the capacitor should be measured with the distance of the capacitor should be measured with the distance of the capacitor should be measured with DC 50040742 is applied for constant filled with meal balls of about 1 mm diameter.       4     Insulation Resistance (I.R.)     10000MΩ min.     The insulation resistance should be measured with DC 500450V (trm.s.)-50/60H22 is applied for 60 is between the capacitor function with a balls of about 1 mm diameter.       5     Capacitance     Within specified tolerance.     The insulation resistance should be measured with DC 500450V within the capacitor function and the capacitor fu  | 1 |                     |                           |                           |                   |               |   |   |  |  |  |           |
| Please refer to [Part number ist].         Dimensions should be measured with side calipers.           3         Dielectric<br>strength         Between lead<br>wires         No failure.         Active flammability         The capacitor should not be damaged when<br>AC400V(rm.s.)<5000Hz is applied between the<br>lead wires for 60 s.           Body<br>insulation         No failure.         No failure.         Active flammability         No failure.           0         Insulation         No failure.         No failure.         The capacitor should be<br>connected together.           1         Body<br>insulation         No failure.         Then, a metal foil should be<br>closely wapped around<br>the body of the capacitor should be<br>manufactor should be inserted into a<br>container filed with metal balls of about 1mm<br>diameter.           4         Insulation Resistance (I.R.)         10000MΩ min.         The insulation resistance should be measured with<br>DC500250V within 050-5 so (Larging).<br>The votage should be applied to the capacitor<br>through a resistor of 1M2.           5         Capacitance         Within specified tolerance.         The capacitor should be measured at 20°C with<br>150. It and AC5V(rm.s.) max.           7         Temperature characteristic         Char. B : Within ±10 %<br>Char. E : Within ±20/55%<br>(Temp. range : -25 to ±45°C)         The capacitor should be measured at 20°C with<br>150. It and AC5V(rm.s.) max.           8         Active flammability         The cheese-cloth should not be<br>on fire.         The capacitor should be individually wrapped in at  | • | Appearance and d    | Appearance and dimensions |                           |                   |               |   |   |  |  |  |           |
| 2       Marking       To be easily legible.       The capacitor should not be damaged when AC4000V(rm, s.)-5000Hz> is applied between the lead writes for 60 s.         3       Dielectric       Between lead writes       No failure.       First, the terminals of the capacitor should be connected together. Then, a metal foil should be consist metal with metal balls of about 1 mm diameter. Finally, AC4000V (rm.s.)-50/60Hz> is applied for 60 s between the capacitor lead wires and metal balls.         4       Insulation Resistance (LR.)       10000MΩ min.       Discourd together. The capacitor should be measured with DC500+50V with 60±5 s of charging. The voltage should be measured with DC500+50V with 60±5 s of charging. The voltage should be measured at 20°C with 1:0.1kHz and AC5V(rm.s.) max.         6       Dissipation Factor (D.F.)       2.5% max.       The capacitance should be measured at 20°C with 1:0.1kHz and ACSV(rm.s.) max.         7       Temperature characteristic       Char. B :: Within ±10 %. Char. B :: Within ±20%55%. (Temp. range :=25 to ±85°C)       The capacitance should be made at each stop specified in Table.         8       Active flammability       The cheese-cloth should not be on fire.       The capacitors should be made at discharge. The mer than two complete syste of in at the all discharge. The interval botware macrossine discharge. The interval botware maxima struct botware point for 2 is 2 i  |   |                     |                           |                           |                   |               |   |   |  |  |  |           |
| 3       Delectric<br>strength       Between lead<br>wies       No failure.       The capacitor should be damaged when<br>AC40007(m.s.).50500Hz> is applied between the<br>lead wires for 60 s.         Body<br>insulation       No failure.       The capacitor should be<br>connected together.<br>Then, a metal foil should be<br>closely wrapped around<br>to the distance of<br>about 3 to firm.<br>Then, a metal foil should be<br>closely wrapped around<br>to the distance of<br>about 3 to firm.<br>Then, the capacitor should be inserted into a<br>container filed with metal balls of about 1mm<br>diameter.         4       Insulation Resistance (I.R.)       10000MΩ min.       The insulation resistance should be measured with<br>DC500250V within 6025 of charging.         5       Capacitance       Within specified tolerance.       The capacitor calculate advices and metal<br>balls.         6       Dissipation Factor (D.F.)       2.5% max.       The capacitance should be measured at 20°C with<br>1±0.1kHz and AC5V(rm.s.) max.         7       Temperature characteristic       Char. B : Within ±10 %<br>Char. E : Within ±20/55%.<br>(Temp. range : 250 to 48°C)       The capacitance measured at 20°C with<br>1±0.1kHz and AC5V(rm.s.) max.         8       Active flammability       The cheese-cloth should not be<br>on fire.       The capacitor should be subjected<br>to 2 discharges.<br>The interval between successive<br>discharges should be subjected<br>to 2 discharges.<br>The interval between successive<br>discharges. The interval between successive<br>discharges. The interval between the capacitor interval<br>to 2 discharges. The interval between successive<br>discharges should be oblight and<br>the fire.  | 2 | Marking             |                           |                           |                   |               |   |   |  |  |  |           |
| Body<br>insulation     No failure.     First, the terminals of the capacitor should be<br>concered together.<br>Then, a metal foil should be<br>closely wrapped around<br>to the distance of<br>about 3 to firm.<br>Then, a capacitor should be inserted into a<br>container filled with meta balls of about 1mm<br>diameter.       4     Insulation Resistance (I.R.)     10000MΩ min.       5     Capacitance     Within specified tolerance.<br>The voltage should be appaired at with of a charging.<br>The voltage should be measured at 20°C with<br>150 kHz and ACSV(rm.s.) max.       6     Dissipation Factor (D.F.)     2.5% max.       7     Temperature characteristic     Char. B.: Within ±10 %<br>Char. E.: Within ±10 %<br>Char. E.: Within ±20/55%.<br>(Temp. range: -25 to +65°C)       8     Active flammability     The capaciton remasured at 20°C with<br>150 kHz and ACSV(rm.s.) max.       8     Active flammability     The capaciton remasured at 20°C with<br>150 kHz and ACSV(rm.s.) max.       8     Active flammability     The capaciton censurement should be measured at 20°C with<br>150 kHz and ACSV(rm.s.) max.       8     Active flammability     The capaciton censurement should be subjected<br>to 2 discharges.<br>No faile.       8     Active flammability     The cheese-cloth should not be<br>on fire.       C1.2     : µ H±10%, C3: 0.030,µ F5%, 100V       C1.2     : µ H±10%, C3: 0.030,µ F5%, 100V       C2.3     : 100.22%, C1: 3.105M,µ F5%, 100V       C2.4     : 100.22%, C1: 3.105M,µ F5%, 100V       C1.2     : 100.22%, C1: 3.105M,µ F5%, 100V   | 3 | Dielectric          |                           | No failure.               | No failure.       |               | The c   | apacitor s  | hould not b  | e damaged  | l when   |           |
| insulation       insulation       connected together.<br>Then, a metal foll should be<br>closely wrapped around<br>the body of the capacitor<br>to the capacitor should be inserted into a<br>batul 3 to 6 mm<br>from each terminal.<br>Then, the capacitor should be inserted into a<br>container filled with metal balls of about 1 mm<br>diameter.         4       Insulation Resistance (I.R.)       10000MΩ min.       The insulation resistance should be measured with<br>DCS00:200 within 60:25 of charging.<br>The voltage should be measured with<br>DCS00:200 within 60:25 of charging.<br>The voltage should be measured at 20°C with<br>1:0.114/z and ACSV(rm.s.), max.         5       Capacitance       Within specified tolerance.       The dissipation factor should be measured at 20°C with<br>1:0.114/z and ACSV(rm.s.), max.         6       Dissipation Factor (D.F.)       2.5% max.       The dissipation factor should be measured at 20°C with<br>1:0.114/z and ACSV(rm.s.), max.         7       Temperature characteristic       Char. B: Within ±10 %<br>Char. E: Within ±20/55%<br>(Temp, range : -25 to ±45°C)       The capacitors should be mease at a<br>20 ± 2 ± 2 ± 2 ± 2 ± 2 ± 2 ± 2 ± 2 ± 2 ±   |   | strength            |                           |                           |                   |               | lead v  | vires for 60  | ) s.   |  |  | the       |
| a     closely wrapped around the body of the capacitor to the capacitor should be inserted into a container filled with metal balls of about 1 mm diameter.     A tool mm filled with metal balls of about 1 mm diameter.       4     Insulation Resistance (I.R.)     10000MΩ min.     The insulation resistance should be measured with Dc300:500 within 60:55 of charging. The voltage should be measured with Dc300:500 within 60:55 of charging.       5     Capacitance     Within specified tolerance.     The capacitance should be measured at 20°C with 1:0.114/z and AC5V(rm.s.) max.       6     Dissipation Factor (D.F.)     2.5% max.     The dissipation factor should be measured at 20°C with 1:0.114/z and AC5V(rm.s.) max.       7     Temperature characteristic     Char. B: Within ±10 % Char. C: Within ±20/55% (Temp. range : -25 to ±45°C)     The capacitance measurement should be made at each step specified in Table.       8     Active flammability     The cheese-cloth should not be on fire.     The capacitors should be interval between successive discharges should be 5 is. The UA should be with successive discharges should be 5 is. The UA should be with weapped in at least one but more than wo complete layers of cheese-cloth. The capacitor should be mineral between successive discharges should be 5 is. The UA should be with each should be maintained for 20 discharges. The interval between successive discharges should be 5 is. The UA should be with each should be maintained for 20 discharges. The interval between successive discharges should be 5 is. The UA should be under store should be maintained for 20 discharges. The interval between successive discharges should be consel to s   |   |                     |                           | No failure.               |                   |               | conne   | ected toget   | her.   |  | iould be<br>₩  |           |
| a     he body of the capacitor<br>to the distance of<br>about 3 to 6mm<br>from each terminal.     About About<br>Then, the capacitor should be inserted into a<br>container filled with metal balls of about 1mm<br>diameter.       4     Insulation Resistance (I.R.)     10000MΩ min.     The insulation resistance should be measured with<br>DC500±50V within bd25 s of charging.<br>The voltage should be measured at 20°C with<br>1±0.1KHz and AC5V(rm.s.) max.       5     Capacitance     Within specified tolerance.     The cipacitance should be measured at 20°C with<br>1±0.1KHz and AC5V(rm.s.) max.       6     Dissipation Factor (D.F.)     2.5% max.     The capacitance should be measured at 20°C with<br>1±0.1KHz and AC5V(rm.s.) max.       7     Temperature characteristic     Char. B : Within ±10 %<br>Char. E : Within ±20 kHz and AC5V(rm.s.) max.       8     Active flammability     The cheese-cloth should not be<br>on fire.     The capacitors should be individually wrapped in at<br>least one but more than two complete layers of<br>cheese-cloth. The capacitors should be individually wrapped in at<br>least one but more than two complete layers of<br>cheese-cloth. The capacitors find the individually wrapped in at<br>least one but more than two complete layers of<br>cheese-cloth. The capacitors find the should be<br>maintained for 2rm after the last discharge.       8     Active flammability     The cheese-cloth should not be<br>maintained for 2rm after the last discharge.       9     Implement of the instruction develope<br>to the store of the instruction develope<br>to the store of the instruction develope<br>to the store of the R and to core choke<br>R = 10002-280, C13, IE-5% 10KV<br>L1 to L4 : 1.5mH±20% 016, Rade core choke<br>R = 10002-280, C13, IE-5% 10KV   |   |                     |                           |                           |                   |               |   |   |  | е  | Ŵ  |           |
| 4     Insulation Resistance (I.R.)     10 000MΩ min.     The insulation resistance should be inserted into a container filled with metal balls of about from dameter.       4     Insulation Resistance (I.R.)     10 000MΩ min.     The insulation resistance should be measured with DC500-DC50V within 60±5 so changing. The voltage should be applied to the capacitor relation resistance should be measured with DC500-DC50V within 60±5 so changing. The voltage should be measured at 20°C with 1±0.1KHz and AC5V(r.m.s.) max.       5     Capacitance     Within specified tolerance.     The capacitance should be measured at 20°C with 1±0.1KHz and AC5V(r.m.s.) max.       6     Dissipation Factor (D.F.)     2.5% max.     The dispation factor should be measured at 20°C with 1±0.1KHz and AC5V(r.m.s.) max.       7     Temperature characteristic     Char. B : Within ±10 % Char. E : Within ±20 × 20±2 ± 3 ± 4 ± 5 ± ± ± ± ± ± ± ± ± ± ± ± ± ± ± ±  |   |                     |                           |                           |                   |               |   | , ,,  |  | Motal (  | Λ.   | A         |
| 8       Active flammability       Char. B : Within ±10 %<br>Char. Char. C  |   |                     |                           |                           |                   |               |   |   | •  | foil 📈   |  | 3 to 6 mr |
| Then, the capacitor should be inserted into a container filled with metal balls of about 1mm diameter.<br>Finally, AC4000 (trm.s.)-S0/60H2> is applied for<br>E0 s between the capacitor lead wires and metal balls.4Insulation Resistance (I.R.)10000MΩ min.The insulation resistance should be measured with DC500±50V within 60±5 s of charging.<br>The voltage should be applied to the capacitor through a resistor of 1MΩ.5CapacitanceWithin specified tolerance.The capacitance should be measured at 20°C with 1±0.1kHz and AC5V(rm.s.) max.6Dissipation Factor (D.F.)2.5% max.The dissipation factor should be measured at 20°C with 1±0.1kHz and AC5V(rm.s.) max.7Temperature characteristicChar. B : Within ±10 %<br>Char. E : Within ±20/55%<br>(Temp. range : -25 to ±85°C.)The capacitance measurement should be made at each step specified in Table.8Active flammabilityThe cheese-cloth should not be on fire.The capacitor should be individually wrapped in at least the last discharge.<br>within after the last discharge.8Active flammabilityThe cheese-cloth should not be maintained for 2min after the last discharge.<br>within after the last discharge.9Image: Capacitor should be for 2min after the last discharge.<br>within after the last discharge.8Active flammabilityThe cheese-cloth should not be maintained for 2min after the last discharge.<br>With and Cape.9Image: Capacitor should be for 2min after the last discharge.<br>with the last discharge.9Image: Capacitor should be for 2min after the last discharge.<br>With the Capacitor should be for 2min after the last discharge.<br>With the Capacitor worker the last discharge.<br>With the capaci   |   |                     |                           |                           |                   |               |   |   |  | 0 001078   | 0000000  | Matal     |
|  |   |                     |                           |                           |                   |               |   |   |  |  |  | Dalls     |
| 4       Insulation Resistance (I.R.)       10000MΩ min.       Finally, AC400V (rm.s.)+50/60Hz> is applied for 60 s between the capacitor lead wires and metal balls.         4       Insulation Resistance (I.R.)       10000MΩ min.       The insulation resistance should be measured with DC500±50V within 60±5 s of charging. The voltage should be applied to the capacitor through a resistor of 1MΩ.         5       Capacitance       Within specified tolerance.       The capacitance should be measured at 20°C with 1±0.1kHz and ACSV(rm.s.) max.         6       Dissipation Factor (D.F.)       2.5% max.       The dissipation factor should be measured at 20°C with 1±0.1kHz and ACSV(rm.s.) max.         7       Temperature characteristic       Char. B: Within ±10 % Char. E: Within ±20/55%. (Temp. range : -25 to ±85°C.)       The capacitance measurement should be made at each step specified in Table.         8       Active flammability       The cheese-cloth should not be on fire.       The capacitors should be individually wrapped in at least one but more than two complete layers of cheese-cloth. The capacitor should be subjected to 20 discharges. The interval between successive discharges. Should be 5 s. The UAc should be for the cheaperior should be subjected to 20 discharges. The interval between successive discharges. C1: 3µ:E±0% 10kV L1 to L4: 1: 50H±20% 16A Rod core choke R is 100Ω±2% 163 Mcd core choke R is 100Ω±2% 164 Mcd core choke R is 100Ω±2% 16   |   |                     |                           |                           |                   |               |   | •   |  |  |  |           |
| 4     Insulation Resistance (I.R.)     10000MΩ min.     The insulation resistance should be measured with DCS00±50V within 60±5 s of charging. The voltage should be applied to the capacitor through a resistor of 1M0.       5     Capacitance     Within specified tolerance.     The voltage should be measured at 20°C with 1±0.1KHz and ACSV(r.m.s.) max.       6     Dissipation Factor (D.F.)     2.5% max.     The dissipation factor should be measured at 20°C with 1±0.1KHz and ACSV(r.m.s.) max.       7     Temperature characteristic     Char. B : Within ±10 %. Char. E : Within ±20/-55%. (Temp. range : -25 to ±85°C)     The capacitance measurement should be measured at 20°C with 1±0.1KHz and ACSV(r.m.s.) max.       8     Active flammability     The cheese-cloth should not be on fire.     The capacitor should be individually wrapped in at least one but more than two complete layers of the capacitor should be subjected to 20 discharges. The interval between successive discharges should be 5. S. The UAc should be measured with research. The capacitor should be subjected to 20 discharge.       8     Active flammability     The cheese-cloth should not be on fire.     The capacitor should be subjected to be subjected to should be subjected to 20 discharges. The interval between successive discharges. The interval between successive discharge.       8     Active flammability     The cheese-cloth should not be maintained for 2min after the last discharge.       9     Image applied to the subjected t  |   |                     |                           |                           |                   |               |   |   |  |  |  |           |
| 4     Insulation Resistance (I.R.)     10000MΩ min.     balls.       4     Insulation Resistance should be measured with DCS00±50V within 60±5 s of charging.<br>The voltage should be applied to the capacitor through a resistor of 1MΩ.     The voltage should be measured at 20°C with 1±0.1KHz and ACSV(r.m.s.) max.       5     Capacitance     Within specified tolerance.     The capacitance should be measured at 20°C with 1±0.1KHz and ACSV(r.m.s.) max.       6     Dissipation Factor (D.F.)     2.5% max.     The dissipation factor should be measured at 20°C with 1±0.1KHz and ACSV(r.m.s.) max.       7     Temperature characteristic     Char. B: Within ±10 %<br>Char. E: Within ±20/-55%<br>(Temp. range : -25 to ±85°C)     The capacitance measurement should be made at each step specified in Table.       8     Active flammability     The cheese-cloth should not be on fire.     The capacitor should be individually wrapped in at least one but more than two complete layers of cheese-sloth. The capacitor should be subjected to 20 discharges. The interval between successive discharge.       8     Active flammability     The cheese-cloth should not be maintained for 2min after the last discharge.       91     12     14     14       92     10     2     14     14       93     11     12     15     14       94     12     14     14     15       94     14     14     14     14       95     14     14  |   |                     |                           |                           |                   |               |   |   |  |  |  |           |
| 4       Insulation Resistance (I.R.)       10000MΩ min.       The insulation resistance should be measured with DC500±50V within 60±5 s of charging. The voltage should be applied to the capacitor through a resistor of 1MΩ.         5       Capacitance       Within specified tolerance.       The capacitance should be measured at 20°C with 1±0.1kHz and AC5V(r.m.s.) max.         6       Dissipation Factor (D.F.)       2.5% max.       The dapacitance should be measured at 20°C with 1±0.1kHz and AC5V(r.m.s.) max.         7       Temperature characteristic       Char. B : Within ±10 % Char. E : Within ±10 % Char. E : Within ±20/55% (Temp. range : -25 to +85°C)       The capacitance measurement should be made at each step specified in Table.         8       Active flammability       The cheese-cloth should not be on fire.       The capacitor should be subjected to 20 discharges. The low accords while the last discharge.         8       Active flammability       The cheese-cloth should not be maintained for 2min after the last discharge.         8       Active flammability       The cheese-cloth should not be maintained for 2min after the last discharge.         9       Import 1 = 100 = 10 = 100 = 10 = 100 = 1   |   |                     |                           |                           |                   |               |   | between th  | e capacitor  | lead wires   | and meta   | al        |
| 8       Active flammability       The cheese-cloth should not be on fire.       The capacitor should be masured at 20°C with 1±0.1kHz and ACSV(r.m.s.) max         7       Temperature characteristic       Char. B : Within ±10 % Char. E : Within ±10 % Char. E : Within ±20/55% (Temp. range : -25 to +85°C )       The capacitance measurement should be made at each step specified in Table.         8       Active flammability       The cheese-cloth should not be on fire.       The capacitors should be thereas on the capacitor should be made at least one but more than two complete layers of cheese-cloth. The capacitor should be be usubjected to 20 discharges. The interval between successive discharge.         8       Active flammability       The cheese-cloth should not be on fire.       The capacitor should be for 2min after the last discharge.         8       Active flammability       The cheese-cloth should not be on fire.       The capacitor should be for 2min after the last discharge.         8       Active flammability       The cheese-cloth should not be on fire.       The capacitor should be for 2min after the last discharge.         8       Active flammability       The capacitor should be for 2min after the last discharge.       Image applied to Ct.         9       The capacitor under test for 2min after the last discharge.       Image applied to Ct.       Image applied to Ct.         9       The capacitor under test for 2min after the last discharge.       Image applied to Ct.       Image applied to Ct. <th>4</th> <th>Insulation Resistar</th> <th>nce (I.R.)</th> <th>10000MΩ min</th> <th></th> <th></th> <th></th> <th>nsulation r</th> <th>esistance s</th> <th>hould be m</th> <th>neasured v</th> <th>with</th>   | 4 | Insulation Resistar | nce (I.R.)                | 10000MΩ min               |                   |               |   | nsulation r   | esistance s  | hould be m   | neasured v   | with      |
| through a resistor of 1M2.5Capacitance6Dissipation Factor (D.F.)2.5% max.The capacitance should be measured at 20°C with $1\pm 0.1 \text{kHz}$ and ACSV(r.m.s.) max.7Temperature characteristic7Temperature characteristic6Char. B : Within ±10 %<br>Char. E : Within ±20/55%,<br>(Temp. range : .25 to +85°C)7The capacitance measurement should be made at each step specified in Table.8Active flammability8Active flammability7The capacitor should be individually wrapped in at least one but more than two complete layers of cheese-cloth should not be on fire.9Image: .25 to +85°C (Temp. range : .25 to +10°C)8Active flammability7The cheese-cloth should not be on fire.8Active flammability7The cheese-cloth should not be on fire.9Image: .25 to +10°C (Temp. range : .25 to +10°C)9Image: .25 to +10°C (Temp. range : .25 to +10°C)9Image: .25 to +10°C (Temp. range : .25 to +10°C)9Image: .25 to +10°C (Temp. range : .25 to +10°C)9Image: .25 to +10°C (Temp. range : .25 to +10°C)9Image: .25 to +10°C (Temp. range : .25 to +10°C)9Image: .25 to +10°C (Temp. range : .25 to +10°C)9Image: .25 to +10°C (Temp. range : .25 to +10°C)1010 to 10 to 10 to 10°C (Temp. range : .25 to +10°C)1111 to 14 to 10°C (Temp. range : .25 to +10°C (Temp. range : .25 to +10°C)1211 to 14 to 10°C (Temp. range : .25 to +10°C (Temp. range : .25 to +10°C (Temp. range :   |   |                     |                           |                           |                   |               |   |   |  |  |  |           |
| 5       Capacitance       Within specified tolerance.       The capacitance should be measured at 20°C with 1±0.1kHz and AC5V(r.m.s.) max         6       Dissipation Factor (D.F.)       2.5% max.       The dissipation factor should be measured at 20°C with 1±0.1kHz and AC5V(r.m.s.) max         7       Temperature characteristic       Char. B : Within ±10 %<br>Char. E : Within ±20/55%<br>(Temp. range : -25 to ±85°C)       The capacitance measurement should be made at each step specified in Table.         8       Active flammability       The cheese-cloth should not be on fire.       The capacitor should be individually wrapped in at least one but more than two complete layers of cheese-cloth. The capacitor should be 5 s. The UAc should be maintained for 2min after the last discharge.         8       Active flammability       The cheese-cloth should not be on fire.       The capacitor capacitor should be individually wrapped in at least one but more than two complete layers of cheese-cloth. The capacitor should be 5 s. The UAc should be maintained for 2min after the last discharge.         8       Active flammability       The cheese-cloth should not be on fire.       Step 1 1 2 3 4 5 (Clother Capacitor should be for 20 (Clother Capacitor should be for 20 (Clother Capacitor Capacitor UAC should be for 20 (Clother Capacitor UAC should be for 2   |   |                     |                           |                           |                   |               |   |   |  | lied to the c  | apacitor   |           |
| 1±0.1kHz and AC5V(r.m.s.) max.         6       Dissipation Factor (D.F.)         2.5% max.       The dissipation factor should be measured at 20°C with 1±0.1kHz and AC5V(r.m.s.) max.         7       Temperature characteristic       Char. B : Within ±10 %<br>Char. E : Within ±20/55%<br>(Temp. range : -25 to +85°C)       The capacitance measurement should be made at each step specified in Table.         8       Active flammability       The cheese-cloth should not be on fire.       The cheese-cloth. The capacitors should be individually wrapped in at least one but more than two complete layers of cheese-cloth. The capacitor should be subjected to 20 discharges. The interval between successive discharges should be 5 s. The UAc should be maintained for 2min after the last discharge.         8       C1.2       : 1 µE±10%, C3 : 0.033µE±5% 10kV L1 to L4 : 1.5mH±20% 16A Rod core choke R : 100Ω±2%, C1 : 3µE±5% 10kV UAc : UR ±5% UR : Rated voltage CX : : 20acitor under test F : Fuse, Rated 10A Ut : Voltage applied to C1  | 5 | Capacitance         |                           | Within specifie           | d tolerance.      |               |   |   |  | measured   | at 20°C v  | vith      |
| 7       Temperature characteristic       Char. B : Within ±10 %<br>Char. E : Within ±20/-55%<br>(Temp. range : -25 to +85°C)       The capacitance measurement should be made at<br>each step specified in Table.         8       Active flammability       The cheese-cloth should not be<br>on fire.       The capacitors should be individually wrapped in at<br>least one but more than two complete layers of<br>cheese-cloth. The capacitor should be 5 s. The UAc should be<br>maintained for Zmin after the last discharge.         8       Active flammability       The cheese-cloth should not be<br>on fire.       The capacitors should be individually wrapped in at<br>least one but more than two complete layers of<br>cheese-cloth. The capacitor should be subjected<br>to 20 discharges. The interval between successive<br>discharges should be 5 s. The UAc should be<br>maintained for Zmin after the last discharge.         9       Image: Line the stant discharge.       Image: Line the stant discharge.         9       Image: Line the stant discharge.       Image: Line the stant discharge.         9       Image: Line the stant discharge.       Image: Line the stant discharge.         9       Image: Line the stant discharge.       Image: Line the stant discharge.         9       Image: Line the stant discharge.       Image: Line the stant discharge.         9       Image: Line the stant discharge.       Image: Line the stant discharge.         9       Image: Line the stant discharge.       Image: Line the stant discharge.         1       Image: Line the stant discharge.  | 6 |                     |                           | -                         |                   |               |   |   |  |  |  |           |
| 7       Temperature characteristic       Char. B : Within ±10 %<br>Char. E : Within ±20/-55%<br>(Temp. range : -25 to +85°C)       The capacitance measurement should be made at each step specified in Table.         8       Active flammability       The cheese-cloth should not be on fire.       The capacitors should be individually wrapped in at least one but more than two complete layers of cheese-cloth. The capacitor should be subjected to 20 discharges. The interval between successive discharges should be 5 s. The UAc should be maintained for 2min after the last discharge.         8       Active flammability       The cheese-cloth should not be on fire.         7       Temp. range : -25 to +85°C )       The capacitors should be subjected to 20 discharges. The interval between successive discharges should be 5 s. The UAc should be maintained for 2min after the last discharge.         8       Active flammability       The cheese-cloth should not be maintained for 2min after the last discharge.         9       Image: Capacitor should be subjected to 20 discharges. The interval between successive discharge.         9       Image: Capacitor should be subjected to 20 discharge. The interval between successive discharge.         9       Image: Capacitor should be subjected to 20 discharge. The interval between successive discharge.         9       Image: Capacitor should be subjected to 20 discharge. The interval between successive discharge.         9       Image: Capacitor should be subjected to 20 discharge. The interval between successive discharge. The interval between successive discharge. The interval be  | 6 | Dissipation Factor  | (D.F.)                    | 2.5% max.                 |                   |               |   | •   |  |  | sured at 20  | ℃ with    |
| Char. E : Within +20/-55%<br>(Temp. range : -25 to +85°C)each step specified in Table.Step12345Temp.(°C) $20\pm 2$ $-25\pm 2$ $20\pm 2$ $85\pm 2$ $20\pm 2$ 8Active flammabilityThe cheese-cloth should not be<br>on fire.The capacitors should be individually wrapped in at<br>least one but more than two complete layers of<br>cheese-cloth. The capacitor should be subjected<br>to 20 discharges. The interval between successive<br>discharges. The interval between successive<br>discharge.8Active flammabilityThe cheese-cloth should not be<br>on fire.The capacitor should be subjected<br>to 20 discharges. The interval between successive<br>discharge. The interval between successive<br>discharge. The interval between successive<br>discharge. The interval between successive<br>discharge.91 $-1$ </th <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>1±0.1</th> <th></th> <th></th> <th>, max</th> <th></th> <th></th>  |   |                     |                           |                           |                   |               | 1±0.1   |   |  | , max  |  |           |
| Char. E : Within +20/-55%<br>(Temp. range : -25 to +85°C)each step specified in Table.Step12345Temp. (°C) $20\pm 2$ $-25\pm 2$ $20\pm 2$ $85\pm 2$ $20\pm 2$ 8Active flammabilityThe cheese-cloth should not be<br>on fire.The capacitors should be individually wrapped in at<br>least one but more than two complete layers of<br>cheese-cloth. The capacitor should be subjected<br>to 20 discharges. The interval between successive<br>discharges should be 5 s. The UAc should be<br>maintained for 2min after the last discharge.8 $1 \pm 2 \pm 3$ $1 \pm 2 \pm 4 \pm 4$  | 7 | Temperature chara   | acteristic                | Char B · Within +10 %     |                   | $\rightarrow$ | The   | apacitance  | e measurer   | nent should  | d be made  | at        |
| Step12345Temp.(°C) $20\pm 2$ $-25\pm 2$ $20\pm 2$ $20\pm 2$ $20\pm 2$ 8Active flammabilityThe cheese-cloth should not be<br>on fire.The capacitors should be individually wrapped in at<br>least one but more than two complete layers of<br>cheese-cloth. The capacitor should be subjected<br>to 20 discharges. The interval between successive<br>discharges. The interval between successive<br>discharges should be 5 s. The UAc should be<br>maintained for 2min after the last discharge. $stipr_t$   |   |                     |                           | Char. E : Within +20/-55% |                   |               |   |   |  |  |  |           |
| 8Active flammabilityThe cheese-cloth should not be<br>on fire.The capacitors should be individually wrapped in at<br>least one but more than two complete layers of<br>cheese-cloth. The capacitor should be subjected<br>to 20 discharges. The interval between successive<br>discharges should be 5 s. The UAc should be<br>maintained for 2min after the last discharge.8 $C1, 2$ $1 \mu F \pm 10\%$ , C3 : $0.033 \mu F \pm 5\%$ 10kV<br>L1 to L4 : $1.5 m H \pm 20\%$ , C1 : $3 \mu F \pm 5\%$ 10kV<br>UAc<br>R<br>$= 1002 \pm 2\%$ , UR : Rated voltage<br>Cx $C1, 2$ $1 \mu F \pm 10\%$ , C3 : $0.033 \mu F \pm 5\%$ 10kV<br>UAc<br>$= 1002 \pm 2\%$ , UR : Rated voltage<br>CxC $C1, 2$ $C1, 2$ $C1, 3 \mu F \pm 5\%$ 10kV<br>UAc<br>$= 1002 \pm 2\%$ , UR : Rated voltage<br>CXC $C1, 2$ $C1, 2$ $C1, 2$ $C1, 2$ C $C1, 2$ $C1, 3 \mu F \pm 5\%$ 10kV<br>UAc<br>$= 1002 \pm 2\%$ , UR : Rated voltage<br>CXC $C1, 2$ $C1, 2$ $C1, 2$ C $C1, 2$ $C1, 2$ C $C1, 2$ $C1, 3 \mu F \pm 5\%$ 10kV<br>UAc<br>CYUA $C1, 3 \mu F \pm 5\%$ 10kV<br>UAc<br>CYUA $C1, 3 \mu F \pm 5\%$ 10kV<br>UA<br>UA<br>CYUA $C1, 2$ $C2, 20$ C $C1, 2$ C $C2, 20$ C $C1, 2$ C $C1,$   |   |                     |                           |                           |                   |               |   |   |  |  |  |           |
| 8Active flammabilityThe cheese-cloth should not be<br>on fire.The capacitors should be individually wrapped in at<br>least one but more than two complete layers of<br>cheese-cloth. The capacitor should be subjected<br>to 20 discharges. The interval between successive<br>discharges should be 5 s. The UAc should be<br>maintained for 2min after the last discharge.8 $C1, 2$ $1 \mu F \pm 10\%$ , C3 : $0.033\mu F \pm 5\%$ 10kV<br>L1 to L4 : $1.5 m H \pm 20\%$ , C1 : $3\mu F \pm 5\%$ 10kV<br>UAc<br>$C = UR \pm 5\%$ UR : Rated voltage<br>$C \propto : Capacitor under test$<br>$F = : Fuse, Rated 10AUt : Voltage applied to Ct$  |   |                     |                           | Step                      |                   |               | 1 2 3 4 5   |   |  |  |  |           |
| on fire.<br>least one but more than two complete layers of<br>cheese-cloth. The capacitor should be subjected<br>to 20 discharges. The interval between successive<br>discharges should be 5 s. The UAc should be<br>maintained for 2min after the last discharge.<br>$s_1 \longrightarrow t_1 \longrightarrow t_2 \longrightarrow t_2 \longrightarrow t_3 \longrightarrow t_4 \longrightarrow $ |   |                     |                           |                           | · · ·             |               |   |   |  |  |  |           |
|  | 8 | Active flammability |                           |                           | oth should not be |               | least<br>chees<br>to 20<br>disch<br>maint<br>C1,2<br>L1 to<br>R<br>UAc<br>Cx<br>F | one but mo<br>se-cloth. The<br>discharges<br>arges shout<br>ained for 2<br>$\mu_{Tr} = \frac{1}{2} \frac{1}{2}$ | bre than two<br>the capacitor<br>s. The inter-<br>luld be 5 s. The inter-<br>train after the<br>$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$<br>$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$<br>$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$<br>$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$<br>$\frac{1}{2}$ $\frac{1}{2}$ $\frac$ | o complete<br>or should be<br>val between<br>The UAc shall be<br>a last disc<br>$\frac{2}{3}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$<br>$\frac{1}{2}$ | layers of<br>e subjecte<br>n success<br>hould be<br>harge.<br><u>ct</u><br><u>ct</u><br><u>ct</u><br><u>ct</u><br><u>ct</u><br><u>ct</u><br><u>ct</u><br><u>ct</u> | d         |

|                    |                            |                           | Reference only   | -   |
|--------------------|----------------------------|---------------------------|--|---|
| No.                | Item                       |                           | Specification  | Test method   |
| 9                  | Robustness of terminations | Tensile                   | Lead wire should not cut off.<br>Capacitor should not be broken. | Fix the body of capacitor, a tensile weight gradually to each lead wire in the radial direction of capacitor up to 10N and keep it for $10\pm1$ s.  |
|                    |                            | Bending                   |  | With the termination in its normal position, the capacitor is held by its body in such a manner that the axis of the termination is vertical; a mass applying a force of 5N is then suspended from the end of the termination.<br>The body of the capacitor is then inclined, within a period of 2 to 3 s, through an angle of approximately 90° in the vertical plane and then returned to its initial position over the same period of time; this operation constitutes one bend.<br>One bend immediately followed by a second bend |
| 10                 | Vibration                  | Appearance                | No marked defect.  | in the opposite direction.<br>The capacitor should be firmly soldered to the  |
| 10                 | resistance                 | Capacitance               | Within the specified tolerance.                                  | supporting lead wire and vibration which is 10 to   |
|                    |                            | D.F.                      | 2.5% max.  | 55Hz in the vibration frequency range,1.5mm in  |
|                    |                            |                           |  | total amplitude, and about 1min in the rate of vibration change from 10Hz to 55Hz and back to 10Hz is applied for a total of 6 h; 2 h each in 3 mutually perpendicular directions.  |
| 11                 | Solderability of leads     | 5                         | Lead wire should be soldered                                     | The lead wire of a capacitor should be dipped into a  |
|                    | -                          |                           | With uniformly coated on the                                     | ethanol solution of 25wt% rosin and then into   |
|                    |                            |                           | axial direction over 3/4 of the                                  | molten solder for $2\pm0.5$ s. In both cases the depth of   |
|                    |                            |                           | circumferential direction.                                       | dipping is up to about 1.5 to 2.0mm from the root of  |
|                    |                            |                           |  | lead wires.<br>Temp. of solder:   |
|                    |                            |                           |  | 245±5°C Lead Free Solder (Sn-3Ag-0.5Cu)   |
| 12                 | Soldering effect           | Appeorance                | No marked defect.  | 235±5°C H63 Eutectic Solder   |
| 12                 | (Non-preheat)              | Appearance<br>Capacitance | Within ±10%  | Solder temperature: 350±10°C or 260±5°C<br>Immersion time : 3.5±0.5 s   |
|                    | (iteli preneat)            | change                    |  | (In case of $260\pm5^{\circ}$ C : $10\pm1$ s)   |
|                    |                            | I.R.                      | 1000MΩ min.  | The depth of immersion is up to about   |
|                    |                            | Dielectric                | Per item 3   | 1.5 to 2.0mm from the root of lead wires.   |
|                    |                            | strength                  |  | Thermal Capacitor<br>insulating   |
|                    |                            |                           |  | 1.5<br>1.5<br>1.5<br>1.6<br>1.6<br>Noiten<br>solder   |
|                    |                            |                           |  | Pre-treatment : Capacitor should be stored at<br>85±2°C for 1 h, then placed at<br>*1room condition for 24±2 h  |
|                    |                            |                           |  | before initial measurements.<br>Post-treatment: Capacitor should be stored for 1 to   |
|                    |                            |                           |  | 2 h at *1room condition.  |
| 13                 | Soldering effect           | Appearance                | No marked defect.  | First the capacitor should be stored at 120+0/-5°C  |
|                    | (On-preheat)               | Capacitance<br>change     | Within ±10%  | for 60+0/-5 s.<br>Then, as in figure, the lead wires should be  |
|                    |                            | I.R.                      | 1 000MΩ min.   | immersed solder of 260+0/-5°C up to 1.5 to 2.0mm from   |
|                    |                            | Dielectric                | Per item 3   | the root of terminal for 7.5+0/-1 s.  |
|                    |                            | strength                  |  | Thermal Capacitor   |
|                    |                            |                           |  | insulating<br>1.5<br>1.5<br>to 2.0mm<br><br>Molten<br>solder  |
|                    |                            |                           |  | Pre-treatment : Capacitor should be stored at<br>85±2°C for 1 h, then placed at<br>* <sup>1</sup> room condition for 24±2 h   |
|                    |                            |                           |  | before initial measurements.<br>Post-treatment : Capacitor should be stored for 1 to  |
| * <sup>1</sup> "ro | l<br>om condition" Tempera | l<br>ature: 15 to 35°C,   | Relative humidity: 45 to 75%, Atmos                              | 2 h at *1room condition.<br>spheric pressure: 86 to 106kPa  |
|                    |                            |                           |  |   |
|                    |                            |                           |  |   |
|                    |                            |                           |  |   |
|                    |                            |                           |  |   |

|        |                       |                    | Reference only                       |  |
|--------|-----------------------|--------------------|--------------------------------------|--|
| No.    | Item                  |                    | Specification                        | Test method  |
| 14     | Flame test            |                    | The capacitor flame discontinue      | The capacitor should be subjected to applied flame   |
|        |                       |                    | as follows.                          | for 15 s. and then removed for 15 s until 5 cycle.   |
|        |                       |                    |                                      | <u></u>  |
|        |                       |                    | Cycle Time                           | 19 Capacitor   |
|        |                       |                    |                                      | 1 Flame  |
|        |                       |                    | 1 to 4 30 s max.                     | A A A A A A A A A A A A A A A A A A A  |
|        |                       |                    | 5 60 s max.                          |  |
|        |                       |                    |                                      | Gas Burner   |
|        |                       |                    |                                      |  |
| 15     | Passive flammability  |                    | The burning time should not be       | The capacitor under test should be held in the flame                                       |
|        |                       |                    | exceeded the time 30 s.              | in the position which best promotes burning.   |
|        |                       |                    | The tissue paper should not          | Time of exposure to flame is for 30 s.   |
|        |                       |                    | ignite.                              | Length of flame : 12±1mm   |
|        |                       |                    |                                      | Gas burner : Length 35mm min.  |
|        |                       |                    |                                      | Inside Dia. 0.5±0.1mm  |
|        |                       |                    |                                      | Outside Dia. 0.9mm max.  |
|        |                       |                    |                                      | Gas : Butane gas Purity 95% min.   |
|        |                       |                    |                                      |  |
|        |                       |                    |                                      | Capacitor  |
|        |                       |                    |                                      | About 8mm  |
|        |                       |                    |                                      | $\wedge$   |
|        |                       |                    |                                      | Gas burner Flame 200±5mm   |
|        |                       |                    |                                      |  |
|        |                       |                    |                                      |  |
|        |                       |                    |                                      | Tissue   |
|        |                       |                    |                                      | About 10mm thick board   |
| 16     | Humidity              | Annon              | No marked defect.                    | Pot the conscitut for 500 (40 h at 40 (000 in 00 h)  |
| 10     |                       | Appearance         |                                      | Set the capacitor for 500±12 h at 40±2°C in 90 to  |
|        | (Under steady         | Capacitance        | Char. B: Within ±10%                 | 95% relative humidity.   |
|        | state)                | change             | Char. E : Within ±15%                |  |
|        |                       | D.F.               | 5.0% max.                            | Post-treatment : Capacitor should be stored for 1 to 2 h at * <sup>1</sup> room condition. |
|        |                       |                    |                                      | 2 n at room condition.   |
|        |                       | I.R.               | 3000MΩ min.                          | 1  |
|        |                       | Dielectric         | Per item 3                           | -  |
|        |                       | strength           |                                      |  |
| 17     | Humidity loading      | Appearance         | No marked defect.                    | Apply the rated voltage for 500±12 h at 40±2°C in  |
| .,     | Turnany localing      | Capacitance        | Char. B : Within ±10%                | 90 to 95% relative humidity.   |
|        |                       | change             | Char. E : Within $\pm 15\%$          |  |
|        |                       | D.F.               | 5.0% max.                            | Post-treatment: Capacitor should be stored for 1 to  |
|        |                       | D.I.               | 5.070 max.                           | $2 \text{ h at }^{1}$ room condition.  |
|        |                       | I.R.               | 3000MΩ min.                          |  |
|        |                       | Dielectric         | Per item 3                           | 4  |
|        |                       | strength           | Fer item 5                           |  |
| *1 "** | m andition" Tompor    |                    | Deletive humidity 45 to 75% Atmos    | haria prosourou 96 to 106kDo   |
| "" "ro | om condition" Tempera | ature: 15 to 35°C, | Relative humidity: 45 to 75%, Atmosp | oneric pressure: 86 to 106KPa  |
| 1      |                       |                    |                                      |  |
| 1      |                       |                    |                                      |  |
|        |                       |                    |                                      |  |
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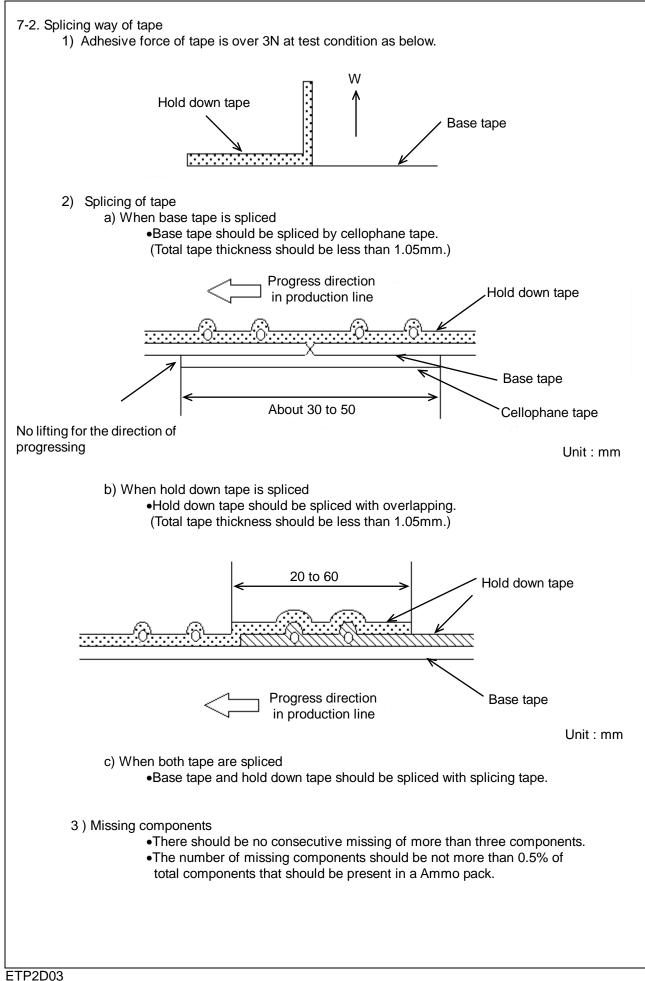
|                 |  | Specification   |  |  |  |  | nethod  |  |
|-----------------|--|---|--|--|--|--|---|--|
| Life            | Appearance<br>Capacitance                  | No marked defect.<br>Within ±20%  | Ead  | ch inc   | dividual   | capacitor sh   |   |  |
|                 | change<br>I.R.                             | 3000MΩ min.   | 8k\<br>are   | V imp<br>è appli   | ulses fo<br>ied to lif   | or three time<br>e test.   | s. Then th  | e capacitors   |
|                 | Dielectric                                 | Per item 3  |  |  |  |  | ront time (T1)  | = 1.7 <i>µ</i> s=1.67T   |
|                 | Strength                                   |   |  | 90   | , <u> </u>   |  |   | $\mu c (T2) = 50 \mu s$  |
|                 |  |   |  | 30<br>0 —  |  | 2  | t   |  |
|                 |  |   | for<br>The<br>of 1<br>Thi  | a per<br>e air i<br>125+2<br>rough   | acitors a<br>riod of 1<br>n the ov<br>2/-0 °C,<br>nout the   | are placed ir<br>000 h.<br>/en is mainta<br>and relative<br>test, the cap  | ained at a<br>humidity<br>pacitors ar   | temperature<br>of 50% max<br>e subjected   |
|                 |  |   | of r   | mains  | s freque   | ncy, except  | that once   | each hour  |
|                 |  |   | Pos  | st-trea  | atment :   |  |   |  |
| Temperature and | Appearance                                 | No marked defect.   |  |  |  | hould be sub   | ojected to  | 5 temperature  |
| immersion cycle | Capacitance change                         | Char. B :Within ±10%<br>Char. E :Within ±20%  |  |  |  |  | o 2 immer   | sion cycles.   |
|                 | D.F.                                       | 5.0% max.   | <te< td=""><td>empe</td><td></td><td>-</td><td>(10)</td><td></td></te<>  | empe   |  | -  | (10)  |  |
|                 |  |   |  | -  |  |  |   | Time<br>30 min   |
|                 | I.R.                                       | 3000MΩ min.   |  |  | 2  | Room te  | emp.  | 3 min  |
|                 |  | Per item 3  |  | _  |  |  |   | 30 min<br>3 min  |
|                 | en en gan                                  |   |  | L  | 4  | Roomite  |   | ycle time : 5 cycl   |
|                 |  |   | <lm< td=""><td>nmers</td><td>sion cyc</td><td>:le&gt;</td><td></td><td></td></lm<>   | nmers  | sion cyc   | :le>   |   |  |
|                 |  |   | S  | Step   | Temp   | erature(°C)  | Time  | Immersion<br>water   |
|                 |  |   |  | 1  | +6   | 5+5/-0   | 15 min  | Clean<br>water   |
|                 |  |   |  | 2  |  | 0±3  | 15 min  | Salt<br>water  |
|                 |  |   |  |  |  | 85±2°C fo<br>*1room co   | should be<br>or 1 h, the<br>ondition fo   | n placed at<br>r 24±2 h.   |
|                 | 454.0500                                   |   |  |  |  | 24 h at *1   | <sup>I</sup> room con   |  |
|                 |  |   |  |  |  |  |   |  |
|                 | Life<br>Temperature and<br>immersion cycle | Capacitance<br>change         I.R.         Dielectric<br>strength         Temperature and<br>immersion cycle         Appearance<br>Capacitance<br>change         D.F.         I.R.         Dielectric<br>strength | Life         Appearance<br>Capacitance<br>change         No marked defect.           I.R.         3000MΩ min.         Dielectric<br>strength         Per item 3           Temperature and<br>immersion cycle         Appearance         No marked defect.           Capacitance<br>change         No marked defect.         Char. B : Within ±10%<br>Char. E : Within ±20%           D.F.         5.0% max.         I.R.           I.R.         3000MΩ min.         Dielectric<br>strength | Item         Specification           Life         Appearance         No marked defect.         Ea           Capacitance         Within ±20%         Ba           I.R.         3000MΩ min.         Ba           Dielectric         Per item 3         Th           from         Appearance         No marked defect.         Th           memory         Appearance         No marked defect.         Th           of a         Fa         Appearance         No marked defect.         Th           of a         Char. B         : Within ±10%         Cyd         Cyd           Temperature and immersion cycle         Appearance         No marked defect.         Th           D.F.         5.0% max.         I.R.         3000MΩ min.         Cyd           D.F.         5.0% max.         I.R.         3000MΩ min.         P           Dielectric         Strength         Per item 3         Char. E         P           I.R.         3000MΩ min.         Fi         P         P           Dielectric         Strength         Per item 3         P         P | Item         Specification           Life         Appearance         No marked defect.         Impulse           Capacitance         Within ±20%         Back im           I.R.         3000MΩ min.         are appl           Dielectric         Per item 3         1%           strength         Per item 3         1%           The cap         Appearance         No marked defect.         The cap           The cap         Appearance         No marked defect.         The cap           The cap         Char. B         Within ±10%         char.es           The cap         Char. B         Within ±20%         Char.es           D.F.         5.0% max.         Char.es         Capacitance           I.R.         3000MΩ min.         []         []           Dielectric         Strength         Per item 3            I.R.         3000MΩ min.         []         []           I         I         2            Pre-trea         Step         1         2 | Item         Specification           Life         Appearance         No marked defect.         Impulse voltage<br>Each individual<br>8kV impulses for<br>are applied to lif           1.R.         3000M2 min.         Dielectric<br>strength         Per item 3         Impulse voltage           1.B.         3000M2 min.         Per item 3         Impulse voltage         Impulse voltage           1.B.         3000M2 min.         Per item 3         Impulse voltage         Impulse voltage           1.B.         Appearance         No marked defect.         The capacitors<br>for a period of 1<br>The air in the co<br>of 125+2/-0 °C,<br>Throughout the<br>to a AC5100/tr.         The capacitors<br>for a period of 1<br>The air in the co<br>of 125+2/-0 °C,<br>Throughout the<br>to a AC5100/tr.           Temperature and<br>immersion cycle         Appearance         No marked defect.         The capacitors<br>change           D.F.         5.0% max.         Step         Impulse voltage           1.R.         3000M2 min.         Impulse voltage         Impulse vol | Item         Appearance<br>Capacitance<br>change         No marked defect.         Impulse voltage<br>Each individual capacitor st<br>BkV impulses for three time<br>are applied to life test.           Dielectric<br>strength         Per item 3         The capacitors are placed in<br>for a period of 1000 h.<br>The air in the over is maint<br>of 125+2/0 °C, and relative<br>to a AC510V(rn, s)-c50/600<br>of mains frequency, except<br>the voltage is increased to A           Temperature and<br>immersion cycle         Appearance<br>change         No marked defect.<br>Char. B : Within ±10%<br>Char. E : Within ±20%         The capacitors are placed in<br>for a period of 1000 h.<br>The air in the over is maints<br>of 25+2/-0 °C, and relative<br>to a AC510V(rn, s)-c50/600<br>of mains frequency, except<br>the voltage is increased to A           Temperature and<br>immersion cycle         Appearance<br>change         No marked defect.<br>Char. B : Within ±10%<br>Char. E : Within ±20%         The capacitor should be su<br>cycles, then consecutively to<br>a 42510V(rn, a)-c50/600<br>of mains frequency.           1.R.         3000MΩ min.         The capacitor should be su<br>cycles, then consecutively to<br>a 4125+2<br>d Room te           1.R.         3000MΩ min.         Esp Temperature cycle>           1.R.         3000MΩ min.         Esp Temperature(°C)<br>1 465+5/0<br>2 0±3           1.R.         3000MΩ min.         Esp Temperature(°C)<br>1 465+5/0<br>2 0±3 | Item         Specification         Test method           Life         Appearance         No marked defect.         Impulse voltage         Each individual capacitor should be si<br>8KV impulses for three times. Then th<br>are applied to life test.           Dielectric<br>strength         Per item 3         3000MΩ min.         Impulse voltage         Foot imp (1)<br>immersion 4ka           The capacitors are placed in a circula<br>of 252-20°C, and relative humidity.<br>Throughout the test.         Impulse for three times. Then th<br>are applied to life test.           Temperature and<br>immersion cycle         Appearance         No marked defect.         The capacitors are placed in a circula<br>for a period of 1000 h.<br>The ari in the oven is maintained at a<br>of 252-20°C, and relative humidity.<br>Throughout the test, the capacitors are<br>to a ACG10V(rm.s).+50(KDV-z altern<br>of mains frequency, except that once<br>the voltage is increased to AC1000V(           Temperature and<br>immersion cycle         Appearance<br>Char. B : Within ±10%<br>Char. E : Within ±10%<br>Char. E : Within ±20%<br>D.F.         The capacitor should be subjected to<br>char. B : Within ±20%<br>Char. E : Within ±20%<br>Commersion cycles         Step Temperature(°C)<br>Interperature(°C)<br>Interperature(°C)<br>Interperature(°C)<br>Interperature(°C)<br>Interperature(°C)<br>Interperature(°C)<br>Interperature(°C)<br>Interperature(°C)<br>Interperature(°C)<br>Interperature(°C)<br>Interperature(°C)<br>Interperature(°C)<br>Interperature(°C)<br>Interperature(°C)<br>Interperature(°C)<br>Interperature(°C)<br>Interperature(°C)<br>Interperature(°C)<br>Interperature(°C)<br>Interperature(°C)<br>Interperature(°C)<br>Interperature(°C)<br>Interperature(°C)<br>Interperature(°C)<br>Interperature(°C)<br>Interper |





Unit : mm

|   | T                   |                                   |  |  |  |
|---|---------------------|-----------------------------------|--|--|--|
| Item  | Code                | Dimensions                        | Remarks                                |  |  |
| Pitch of component                                | Р                   | 25.4±2.0                          |  |  |  |
| Pitch of sprocket hole                            | P0                  | 12.7±0.3                          |  |  |  |
| Lead spacing                                      | F                   | 10.0±1.0                          |  |  |  |
| Length from hole center to lead                   | P1                  | 7.7±1.5                           |  |  |  |
| Body diameter                                     | D                   | Please refer to [ P               | Part number list ].                    |  |  |
| Deviation along tape, left or right               | ΔS                  | 0±2.0                             | They include deviation by lead bend .  |  |  |
| Carrier tape width                                | W                   | 18.0±0.5                          |  |  |  |
| Position of sprocket hole                         | W1                  | 9.0±0.5                           | Deviation of tape width direction      |  |  |
| Lead distance between reference and bottom planes | HO                  | 18.0± <sup>2.0</sup> <sub>0</sub> |  |  |  |
| Protrusion length                                 | Q                   | +0.5~-1.0                         |  |  |  |
| Diameter of sprocket hole                         | φD0                 | 4.0±0.1                           |  |  |  |
| Lead diameter                                     | φd                  | 0.60±0.05                         |  |  |  |
| Total tape thickness                              | t1                  | 0.6±0.3                           | <b>-</b>                               |  |  |
| Total thickness, tape and lead wire               | t2                  | 1.5 max.                          | They include hold down tape thickness. |  |  |
| Deviation across tape, front                      | ∆h1                 | 2.0 max.                          |  |  |  |
| Deviation across tape, rear                       |                     |                                   |  |  |  |
| Portion to cut in case of defect                  | L                   | 0<br>11.0±1.0                     |  |  |  |
| Hold down tape width                              | W0                  | 11.5 min.                         |  |  |  |
| Hold down tape position                           | W2                  | 1.5±1.5                           |  |  |  |
| Coating extension on lead                         | е                   | Up to the end of crimp            |  |  |  |
| Body thickness                                    | Part number list ]. |                                   |  |  |  |



#### EU RoHS and Halogen Free

This products of the following crresponds to EU RoHS and Halogen Free

(1) RoHS

EU RoHs 2011/65/EC compliance

maximum concentration values tolerated by weight in homogeneous materials •1000 ppm maximum Lead

- •1000 ppm maximum Mercury
- •100 ppm maximum Cadmium
- •1000 ppm maximum Hexavalent chromium
- •1000 ppm maximum Polybrominated biphenyls (PBB)
- •1000 ppm maximum Polybrominated diphenyl ethers (PBDE)

### (2) Halogen-Free

The International Electrochemical Commission's (IEC) Definition of Halogen-Free (IEC 61249-2-21) compliance

- •900 ppm maximum chlorine
- •900 ppm maximum bromine
- •1500 ppm maximum total chlorine and bromine

# **Mouser Electronics**

Authorized Distributor

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# Murata:

| DE1B3KX331KB4BP01F DE1E3KX222MN4AP01F DE1B3KX101KA4BP01F DE1B3KX151KN4AP01F  |
|--|
| DE1E3KX152MA4BP01F DE1B3KX681KA4BP01F DE1E3KX222MA4BP01F DE1E3KX102MB4BP01F  |
| DE1E3KX152MB4BP01F DE1B3KX681KB4BP01F DE1B3KX331KN4AP01F DE1B3KX331KA4BP01F  |
| DE1E3KX472MA4BP01F DE1E3KX102MN4AP01F DE1E3KX152MN4AP01F DE1E3KX222MB4BP01F  |
| DE1B3KX101KN4AP01F_DE1B3KX471KA4BP01F_DE1B3KX681KN4AP01F_DE1E3KX332MB4BP01F  |
| DE1E3KX332MN4AP01F DE1B3KX471KB4BP01F DE1E3KX332MA4BP01F DE1B3KX221KA4BP01F  |
| DE1B3KX101KB4BP01F DE1B3KX471KN4AP01F DE1B3KX221KB4BP01F DE1E3KX472MB4BP01F  |
| DE1B3KX221KN4AP01F_DE1B3KX151KA4BP01F_DE1B3KX151KB4BP01F_DE1E3KX472MN4AP01F_ |
| DE1E3KX102MA4BP01F DE1E3KX102MJ4BP01F DE1B3KX151KJ4BP01F DE1E3KX472MJ4BP01F  |
| DE1B3KX681KJ4BP01F DE1B3KX221KJ4BP01F DE1E3KX332MJ4BP01F DE1E3KX222MJ4BP01F  |
| DE1B3KX331KJ4BP01F DE1B3KX101KJ4BP01F DE1E3KX152MJ4BP01F DE1B3KX471KJ4BP01F  |