

PRODUCT SPECIFICATION

PRODUCT: CERAMIC DISC CAPACITOR

**TYPE: 50V, 100V, 500V, 1KV, 2KV, TEMPERATURE
COMPENSATING CAPACITOR**

CUSTOMER: _____

DOC. NO.: POE-D01-00-E-16

Ver.: 16

APPROVED BY CUSTOMER

VENDOR :

WALSIN TECHNOLOGY CORPORATION

566-1, KAO SHI ROAD, YANG-MEI
TAO-YUAN, TAIWAN

PAN OVERSEAS (GUANGZHOU) ELECTRONIC CO.,LTD.

NO.277,HONG MING ROAD,EASTERN SECTION,
GUANG ZHOU ECONOMIC AND TECHNOLOGY
DEVELOPMENT ZONE,CHINA

MAKER : PAN OVERSEAS (GUANGZHOU) ELECTRONIC CO.,LTD.

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GUANG ZHOU ECONOMIC AND TECHNOLOGY
DEVELOPMENT ZONE,CHINA



| | | |
|---|-----------------|--------------------------|
| 50V, 100V, 500V, 1KV, 2KV TEMPERATURE COMPENSATING CERAMIC DISC CAPACITOR | POE-D01-00-E-16 | Ver: 16 Page: 3 of 19 |
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| Date | Version | Description | page | | | | | | | | | | | | | | | | |
|---------------|---------------|--|-----------|---------------|-----|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| 2016/5/3 | 13 | 1. Revised diameter as below : | 9 | | | | | | | | | | | | | | | | |
| | | <table border="1"> <thead> <tr> <th>Before</th> <th>Now</th> </tr> </thead> <tbody> <tr> <td>SL202181J100*</td> <td>SL202181J080*</td> </tr> <tr> <td>SL202201J100*</td> <td>SL202201J080*</td> </tr> <tr> <td>SL202221J100*</td> <td>SL202221J080*</td> </tr> <tr> <td>SL202241J100*</td> <td>SL202241J080*</td> </tr> <tr> <td>SL202271J100*</td> <td>SL202271J080*</td> </tr> <tr> <td>SL202301J120*</td> <td>SL202301J110*</td> </tr> <tr> <td>SL202331J120*</td> <td>SL202331J110*</td> </tr> </tbody> </table> | | Before | Now | SL202181J100* | SL202181J080* | SL202201J100* | SL202201J080* | SL202221J100* | SL202221J080* | SL202241J100* | SL202241J080* | SL202271J100* | SL202271J080* | SL202301J120* | SL202301J110* | SL202331J120* | SL202331J110* |
| | | Before | | Now | | | | | | | | | | | | | | | |
| | | SL202181J100* | | SL202181J080* | | | | | | | | | | | | | | | |
| | | SL202201J100* | | SL202201J080* | | | | | | | | | | | | | | | |
| | | SL202221J100* | | SL202221J080* | | | | | | | | | | | | | | | |
| | | SL202241J100* | | SL202241J080* | | | | | | | | | | | | | | | |
| | | SL202271J100* | | SL202271J080* | | | | | | | | | | | | | | | |
| SL202301J120* | SL202301J110* | | | | | | | | | | | | | | | | | | |
| SL202331J120* | SL202331J110* | | | | | | | | | | | | | | | | | | |
| 2016/11/3 | 14 | 1. Delete "CH" series. | 5,8,12~13 | | | | | | | | | | | | | | | | |
| 2016/12/21 | 15 | 1. Revised the product diameter for SL 50V~500V | 8 | | | | | | | | | | | | | | | | |
| 2017/9/27 | 16 | 1. Delete 8pF~12pF (Code of diameter dimension is 040) for P/N SL 50V&100V. | 8 | | | | | | | | | | | | | | | | |
| | | 2. Delete 8pF~15pF (Code of diameter dimension is 050) for P/N SL 500V. | | | | | | | | | | | | | | | | | |
| | | 3. Delete 10pF~12pF (Code of diameter dimension is 050) for P/N SL 1KV. | | | | | | | | | | | | | | | | | |



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| 50V, 100V, 500V, 1KV, 2KV TEMPERATURE COMPENSATING CERAMIC DISC CAPACITOR | POE-D01-00-E-16 | Ver: 16 Page: 4 of 19 |
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| 50V, 100V, 500V, 1KV, 2KV TEMPERATURE COMPENSATING CERAMIC DISC CAPACITOR | POE-D01-00-E-16 | Ver: 16 Page: 5 of 19 |
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1. Part number for SAP system(total eighteen code) :

SL 102 470 J 050 B 20 C 5 H
 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

① Temperature characteristic :

SL: +350~-1000ppm/°C

② Rated voltage (Vdc) :

| Voltage | 50V | 100V | 500V | 1000V | 2000V |
|---------|-----|------|------|-------|-------|
| Code | 500 | 101 | 501 | 102 | 202 |

③ Capacitance(pF) :

| Capacitors (pF) | 47 | 100 | 330 | 470 | 820 |
|-----------------|-----|-----|-----|-----|-----|
| Code | 470 | 101 | 331 | 471 | 821 |

④ Capacitance tolerance : D: ±0.5pF (For6~10pF) 、J: ±5% (For above 10pF)

⑤ Nominal body diameter dimension :

| Diameter size | 4mm | 5mm | 6mm | 7mm | 8mm | 9mm | 10mm | 11mm | 12mm |
|---------------|-----|-----|-----|-----|-----|-----|------|------|------|
| Code | 040 | 050 | 060 | 070 | 080 | 090 | 100 | 110 | 120 |

⑥ Code of lead type : Please refer to Item “2.Mechanical”.

⑦ Packing mode and lead’s length (identified by 2-figure code)

| Taping Code | Description |
|-------------|-----------------------------------|
| AN | Ammo / Pitch of component:12.7 mm |

| Bulk Code | Description |
|-----------|-------------------------|
| 3E | Lead’s length L : 3.5mm |
| 04 | Lead’s length L : 4mm |
| 4E | Lead’s length L : 4.5mm |
| 20 | Lead’s length L : 20mm |

⑧ Length tolerance

| Code | Description |
|------|--|
| A | ±0.5 mm(Only for short kink lead code) |
| B | ±1.0 mm |
| C | Min. |
| D | Taping special purpose |

⑨ Pitch

| Code | Description | Code | Description |
|------|------------------------------|------|-------------|
| 5 | 5.0±0.8mm (For Bulk) | 7 | 7.5 ±1mm |
| 5 | 5.0+0.8mm-0.2mm (For Taping) | 0 | 10.0 ±1mm |
| 2 | 2.5 ±0.8 mm | | |

⑩ Coating code

| Code | Description |
|------|--|
| P | Phenolic resin -Pb free |
| A | Halogen free and Pb free, phenolic resin |
| B | Epoxy Resin , Pb free |
| H | Halogen free and Pb free , epoxy resin |

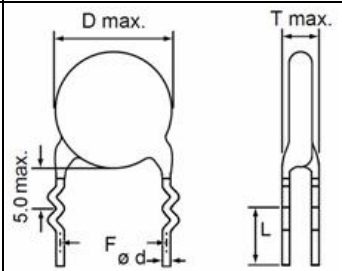
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2. Mechanical:

Available lead code: (unit: mm)

| Lead type | SAP P/N (13-17) digits | Pitch (F) | Lead length (L) | Available rated voltage | Packing | Lead configuration | |
|--|------------------------|-------------------------------------|--------------------------------|--------------------------|--------------------------------|--------------------|-----------|
| Lead style : B Straight long lead | B20C2 | 2.5 ± 0.8 | 20 MIN. | 50V&100V, 500V, 1KV,2KV | Bulk | | |
| | B20C5 | 5.0 ± 0.8 | 20 MIN. | | | | |
| | B20C6 | 6.4 ± 1.0 | 20 MIN. | | | | |
| | B20C0 | 10 ± 1.0 | 20 MIN. | | Tap. Ammo | | |
| | B20C7 | 7.5 ± 1.0 | 20 MIN. | | | | |
| | BAND5 | 5.0 ^{+0.8} _{-0.2} | Taping Spec. (Ref. to page.10) | | | | |
| BAND2 | 2.5 ± 0.8 | 50V&100V | | | | | |
| Lead style : L Straight short lead | L05B2 | 2.5 ± 0.8 | 5.0 ± 1.0 | 50V&100V, 500V, 1KV, 2KV | Bulk | | |
| | L05B5 | 5.0 ± 0.8 | 5.0 ± 1.0 | | | | |
| | L05B0 | 10 ± 1.0 | 5.0 ± 1.0 | | | | |
| | L05B6 | 6.4 ± 1.0 | 5.0 ± 1.0 | | | | |
| | L05B7 | 7.5 ± 1.0 | 5.0 ± 1.0 | | | | |
| | L4EB5 | 5.0 ± 0.8 | 4.5 ± 1.0 | | | | |
| | L4EB7 | 7.5 ± 1.0 | 4.5 ± 1.0 | | | | |
| L4EB0 | 10 ± 1.0 | 4.5 ± 1.0 | | | | | |
| Lead style : H Inside kink lead | H3EA5 | 5.0 ± 0.8 | 3.5 ± 0.5 | 50V&100V, 500V, 1KV | Bulk | | |
| | H04A5 | 5.0 ± 0.8 | 4.0 ± 0.5 | | | | |
| | H4EB5 | 5.0 ± 0.8 | 4.5 ± 1.0 | | | | |
| | H05B5 | 5.0 ± 0.8 | 5.0 ± 1.0 | | | | |
| | H20C5 | 5.0 ± 0.8 | 20 MIN. | | | | |
| | HAND5 | 5.0 ^{+0.8} _{-0.2} | Taping SPEC. (Ref. to page.10) | | | | |
| | H05B7 | 7.5 ± 1.0 | | | 5.0 ± 1.0 | | |
| | H05B0 | 10 ± 1.0 | 5.0 ± 1.0 | | 50V&100V, 500V, 1KV,2KV | | Bulk |
| | H20C0 | 10 ± 1.0 | 20 MIN. | | | | |
| | H04A7 | 7.5 ± 1.0 | 4.0 ± 0.5 | | | | |
| | H04A0 | 10 ± 1.0 | 4.0 ± 0.5 | | | | |
| | H3EA7 | 7.5 ± 1.0 | 3.5 ± 0.5 | | | | |
| | H3EA0 | 10 ± 1.0 | 3.5 ± 0.5 | | | | |
| | H4EB7 | 7.5 ± 1.0 | 4.5 ± 1.0 | | | | |
| H4EB0 | 10 ± 1.0 | 4.5 ± 1.0 | | | | | |
| Lead style : X Outside kink lead | X3EA5 | 5.0±0.8 | 3.5 ± 0.5 | 50V&100V, 500V, 1KV, 2KV | | Bulk | |
| | X3EA7 | 7.5±1.0 | | | | | |
| | X3EA0 | 10±1.0 | | | | | |
| | X04A5 | 5.0±0.8 | 4.0 ± 0.5 | | | | |
| | X04A7 | 7.5±1.0 | | | | | |
| | X04A0 | 10±1.0 | | | | | |
| | X05B5 | 5.0±0.8 | 5.0 ± 1.0 | | | | |
| | X05B7 | 7.5±1.0 | | | | | |
| X05B0 | 10±1.0 | | | | | | |
| Lead style : D Vertical kink short lead | D04A5 | 5.0±1.0 | 4.0 ± 0.5 | 50V&100V, 500V, 1KV, 2KV | Bulk | | |
| | D04A7 | 7.5±1.0 | | | | | |
| | D04A0 | 10±1.0 | | | | | |
| | D3EA5 | 5.0±0.8 | 3.5 ± 0.5 | | | | |
| | D3EA7 | 7.5±1.0 | | | | | |
| | D3EA0 | 10±1.0 | | | | | |
| | DAND5 | 5.0 ^{+0.8} _{-0.2} | | | Taping SPEC. (Ref. to page.10) | | Tap. Ammo |

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| Lead type | SAP P/N (13-17) digits | Lead length (L) | Available rated voltage | Packing | Lead configuration |
|---|------------------------|-----------------|-----------------------------|---------|---|
| Lead style : M Double outside kink lead | M05B5 | 5.0 ± 1.0 | 50V&100V, 500V, 1KV, 2KV | Bulk |  |
| | M05B7 | | | | |
| | M05B0 | | | | |
| | M04B5 | 4.0 ± 1.0 | | | |
| | M04B7 | | | | |
| | M04B0 | | | | |

※ Lead diameter $\phi = 0.55 \pm 0.05\text{mm}$

※ Phenolic resin coating for 50V/500V/1KV product; Epoxy resin coating for 1KV or 2KV product.

※ **e** (Coating **extension** on leads):

For straight lead style: 1.5mmMax when the rated voltage is 50Vdc & 100Vdc;

2.0mmMax when the rated voltage is 500Vdc and 1KVdc;

3.0mmMax when the rated voltage is 2KVdc.

For kink lead style: not exceed the kink.

※ When $D\phi \geq 11\text{mm}$, only for bulk, but $D\phi \leq 10\text{mm}$ can do Bulk or Taping.



3. Capacitance value vs. rated voltage, product diameter:

| T.C Rate voltage | SL | | | | | | | | | | | | | | | | | | | | |
|------------------------|----------------|-----|-----|-----|-----|------|------|----------------|-----|-----|-----|------|-------------------------------|-----|-----|-----|----------------|-----|-----|------|------|
| | 50V/100V | | | | | | | 500V | | | | | 1KV | | | | 2KV | | | | |
| Dφ | 040 | 050 | 060 | 070 | 080 | 090 | 100 | 050 | 060 | 070 | 080 | 100 | 050 | 060 | 070 | 080 | 060 | 070 | 080 | 110 | |
| D max. (mm) | 5.0 | 6.0 | 7.0 | 8.0 | 9.0 | 10.0 | 11.0 | 6.0 | 7.0 | 8.0 | 9.0 | 11.0 | 6.0 | 7.0 | 8.0 | 9.0 | 7.5 | 8.5 | 9.5 | 12.5 | |
| T max. (mm) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | |
| 2 | | | | | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | | | | | | | |
| 15 | 150 | | | | | | | | | | | | 150 | | | | 150 | | | | |
| 18 | 180 | | | | | | | 180 | | | | | 180 | | | | 180 | | | | |
| 20 | 200 | | | | | | | 200 | | | | | 200 | | | | 200 | | | | |
| 22 | 220 | | | | | | | 220 | | | | | 220 | | | | 220 | | | | |
| 24 | 240 | | | | | | | 240 | | | | | 240 | | | | 240 | | | | |
| 27 | 270 | | | | | | | 270 | | | | | 270 | | | | 270 | | | | |
| 30 | 300 | | | | | | | 300 | | | | | 300 | | | | 300 | | | | |
| 33 | 330 | | | | | | | 330 | | | | | 330 | | | | 330 | | | | |
| 36 | 360 | | | | | | | 360 | | | | | 360 | | | | 360 | | | | |
| 39 | 390 | | | | | | | 390 | | | | | 390 | | | | 390 | | | | |
| 47 | 470 | | | | | | | 470 | | | | | 470 | | | | 470 | | | | |
| 51 | 510 | | | | | | | 510 | | | | | 510 | | | | 510 | | | | |
| 56 | 560 | | | | | | | 560 | | | | | 560 | | | | 560 | | | | |
| 68 | 680 | | | | | | | 680 | | | | | 680 | | | | 680 | | | | |
| 75 | 750 | | | | | | | 750 | | | | | 750 | | | | 750 | | | | |
| 82 | 820 | | | | | | | 820 | | | | | 820 | | | | 820 | | | | |
| 100 | 101 | | | | | | | 101 | | | | | 101 | | | | 101 | | | | |
| 120 | | 121 | | | | | | | 121 | | | | | 121 | | | | 121 | | | |
| 150 | | 151 | | | | | | | 151 | | | | | 151 | | | | 151 | | | |
| 180 | | 181 | | | | | | | | 181 | | | | 181 | | | | 181 | | | |
| 200 | | | 201 | | | | | | | 201 | | | | | 201 | | | 201 | | | |
| 220 | | | 221 | | | | | | | 221 | | | | | 221 | | | 221 | | | |
| 240 | | | 241 | | | | | | | | 241 | | | | | | 241 | | | | |
| 270 | | | | 271 | | | | | | | 271 | | | | | | | 271 | | | |
| 300 | | | | 301 | | | | | | | 301 | | | | | | | | 301 | | |
| 330 | | | | 331 | | | | | | | 331 | | | | | | | | 331 | | |
| 360 | | | | 361 | | | | | | | | 361 | | | | | | | | | |
| 390 | | | | 391 | | | | | | | | 391 | | | | | | | | | |
| 470 | | | | | 471 | | | | | | | | | | | | | | | | |
| 500 | | | | | | 501 | | | | | | | | | | | | | | | |
| 510 | | | | | | 511 | | | | | | | | | | | | | | | |
| 560 | | | | | | 561 | | | | | | | | | | | | | | | |
| 680 | | | | | | | 681 | | | | | | | | | | | | | | |
| 750 | | | | | | | 751 | | | | | | | | | | | | | | |
| 820 | | | | | | | 821 | | | | | | | | | | | | | | |
| PACKING | TAPING or BULK | | | | | | | TAPING or BULK | | | | | TAPING or BULK | | | | TAPING or BULK | | | | BULK |
| COATING | Phenolic resin | | | | | | | Phenolic resin | | | | | Phenolic resin or Epoxy Resin | | | | Epoxy Resin | | | | |

4. Marking:

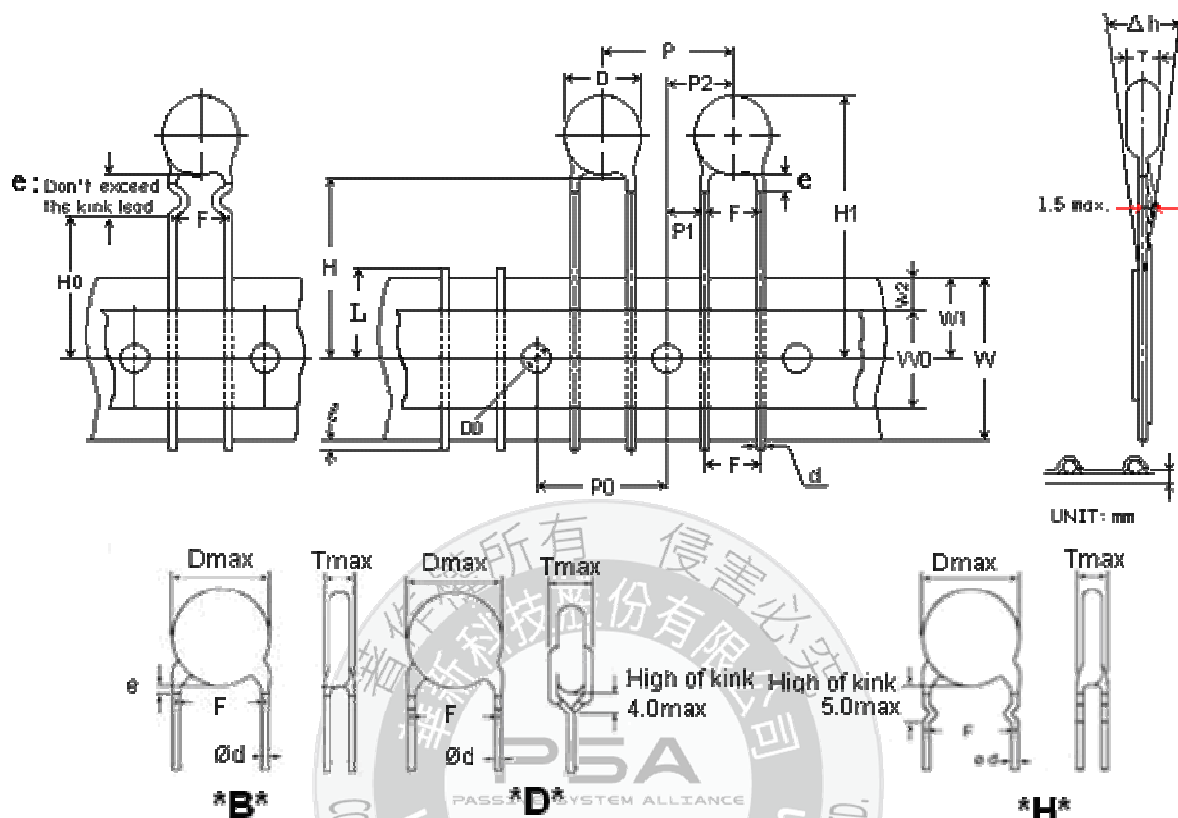
| | SL | |
|------------------------------------|--|---|
| Marking | | |
| Remarks | | |
| (1). Temp. char. | SL : No marking. | |
| (2). Rated capacitance | Identified by 3-Figure Code. Ex. 47pF→"47" , 470pF→"471" | |
| (3). Rated voltage | 50V&100V | Marked with code " _ " under the rated capacitance. |
| | 500V | No any marking under the rated capacitance. |
| | 1000V&2000V | Marked with code: 1000V→"1KV" , 2000V→"2KV" |
| (4). Capacitance tolerance | C: ±0.25pF (For below 5pF) · D: ±0.5pF (For6~10pF) · J: ±5% (For above 10pF) | |
| (5). Manufacturer's identification | Shall be marked as " UK ", but Dφ≤060 shall be omitted. | |
| (6). Halogen and Pb free | There is a " _ " marking under the code " V " when the coating resin is Halogen and Pb free Epoxy. | |

5. Taping specifications:

* Lead spacing: $F=5.0^{+0.8}_{-0.2}$ (mm)

● 12.7mm pitch/lead spacing 5.0mm taping

Lead code: *BAND5 & *DAND5 & *HAND5

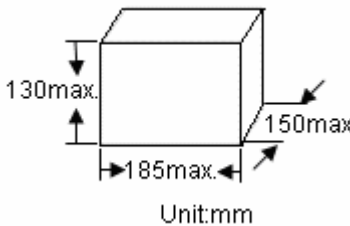
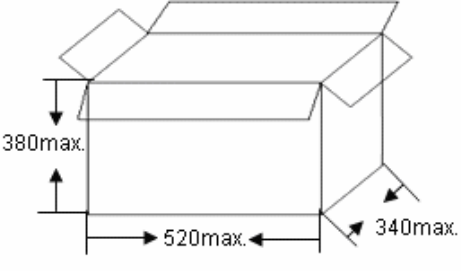
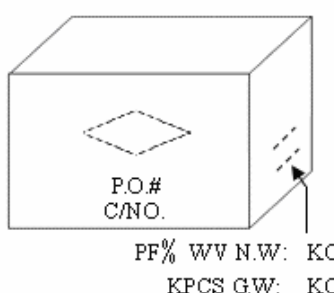
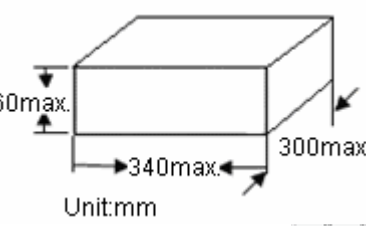
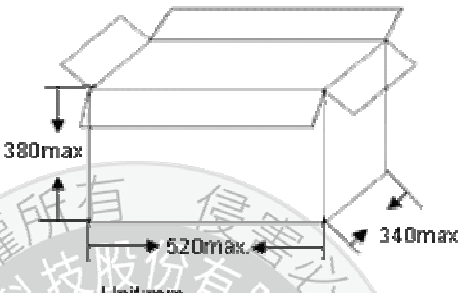
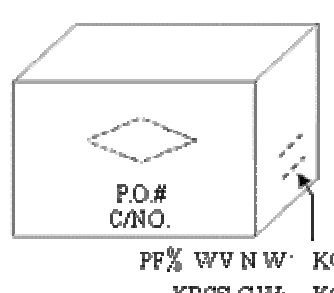


| Item | Symbol | Specification | | Remarks | |
|--------------------------------------|------------------------|---|------------|--|--|
| | | Value | Tolerance | | |
| Body diameter | D | * | max. | See Section“3. Capacitance value vs. rated voltage, product diameter”. | |
| Body thickness | T | * | max. | | |
| Lead-wire diameter | d | 0.55 | ±0.05 | | |
| Pitch of component | P | 12.7 | ±1.0 | | |
| Feed hole pitch | P0 | 12.7 | ±0.3 | Cumulative pitch error:1.0mm/20 pitch | |
| Feed hole center to lead | P1 | 3.85 | ±0.7 | To be measured at bottom of clinch | |
| Hole center to component center | P2 | 6.35 | ±1.3 | | |
| Lead-to-lead distance | F | 5.0 | +0.8,-0.2 | | |
| Component alignment, F-R | △h | 0 | ±2.0 | | |
| Tape width | W | 18.0 | +1.0,-0.5 | | |
| Hole-down tape width | W0 | 8.0 | min. | | |
| Hole position | W1 | 9.0 | +0.75,-0.5 | | |
| Hole-down tape position | W2 | 3.0 | max. | | |
| Height of component form tape center | For straight lead type | H | 20.0 | +1.0 -0.5 | |
| | For kinked lead type | H0 | 16.0 | ±0.5 | |
| Component height | H1 | 32.25 | max. | | |
| Lead-wire protrusion | l | 2.0 | max. | Or the end of lead wire may be inside the tape. | |
| Food hole diameter | D0 | 4.0 | ±0.2 | | |
| Total tape thickness | t | 0.7 | ±0.2 | Ground paper:0.5±0.1mm | |
| Length of sniped lead | L | 11.0 | max. | | |
| Coating rundown on leads | e | Please refer to page 6 “e(Coating extension on leads)”. | | | |

6. Packing Baggage :

| | | |
|---|-----------------|---------------------------|
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6.1 Packing size:

| Type | Box | Carton |
|-------------|---|---|
| Bulk |  <p>Unit:mm</p> |   <p>Unit:mm</p> <p>PF% WV N.W: KG KPCS GW: KG</p> |
| Ammo taping |  <p>Unit:mm</p> |   <p>Unit:mm</p> <p>PF% WV N.W: KG KPCS GW: KG</p> |

6.2 Packing quantity:

| Packing Type | The code of 14th to 15th in SAP P/N | | MPQ (Kpcs/Box) | Remark | |
|--------------|-------------------------------------|--------------------------------------|----------------|----------------|----------------|
| Taping | AN | | 2 | Phenolic resin | |
| | AN | | 1.5 | Epoxy resin | |
| Packing Type | Lead length | Size code of 10th to 12th in SAP P/N | MPQ (Kpcs/Bag) | Kpcs/Box | Remark |
| Bulk | Long lead (L ≥ 16mm) | 040~070 | 1 | 3 | Phenolic resin |
| | | 080~100 | 1 | 2 | Phenolic resin |
| | | 050~100 | 1 | 2 | Epoxy resin |
| | | 110~120 | 0.5 | 1.5 | |
| | Short lead (L < 16mm) | 040~060 | 1 | 6 | |
| | | 070~080 | 1 | 4 | |
| | | 090~100 | 1 | 3 | |
| | | 110~120 | 1 | 2 | |

| | | |
|---|-----------------|---------------------------|
| 50V, 100V, 500V, 1KV, 2KV TEMPERATURE COMPENSATING CERAMIC DISC CAPACITOR | POE-D01-00-E-16 | Ver: 16 Page: 11 of 19 |
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7. Specification and test method:

7.1 SCOPE: THIS SPECIFICATION APPLIES TO TEMPERATURE COMPENSATING CERAMIC DISC CAPACITOR.

7.2 TEST CONDITIONS :

UNLESS OTHERWISE SPECIFIED, ALL TESTS SHALL BE OPERATED AT THE STANDARD TEST CONDITIONS OF TEMPERATURE 5°C TO 35°C AND RELATIVE HUMIDITY 45% TO 85%. WHEN FAILS A TEST, RETEST BE OPERATED AT THE CONDITIONS OF TEMPERATURE 25°C ± 2°C, RELATIVE HUMIDITY OF 60% TO 70% AND BAROMETRIC PRESSURE 860 TO 1060 MBAR.

7.3 HANDLE PROCEDURE : TO AVOID UNEXPECT TESTING RESULTS FROM OCCURRING, THE TESTED CAPACITOR MUST BE KEPT AT ROOM TEMPERATURE FOR AT LEAST 30 MINUTES AND COMPLETELY DISCHARGED.

7.4 TEST ITEMS :

| ITEM | POST-TEST REQUIREMENTS | TESTING PROCEDURE |
|-------------------------------------|--|---|
| APPEARANCE STRUCTURE SIZE | NO ABNORMALITIES | AS SECTION 3. |
| MARKING | | AS STATED IN SECTION 4 |
| WITHSTAND VOLTAGE | BETWEEN TERMINALS: NO ABNORMALITIES | A. BELOW 1KV: 300% RATED VOLTAGE WITH 50mA MAX. CHARGING CURRENT FOR 1~5 SEC. B. 1KV & ABOVE: 200% RATED VOLTAGE WITH 50mA MAX. CHARGING CURRENT FOR 1~5 SEC. |
| | BETWEEN TERMINAL AND ENCLOSURE : NO ABNORMALITIES | SMALL METALLIC BALLS WITH 1mm DIAMETERS SHALL BE PUT ON A VESSEL AND THE TEST CAPACITOR SHALL BE SUBMERGED EXCEPT 2mm FROM THE TOP OF ITS COMPONENT BODY. THE TEST VOLTAGE SHALL BE APPLIED BETWEEN THE SHORT-CIRCUTED TERMINALS AND THE METALLIC BALLS. (APPLY 1.3KV DC OF RATED VOLTAGE BETWEEN TERMINALS AND ENCLOSURE FOR 1~5 SEC) |
| INSULATION RESISTANCE | 10000 MΩ MIN | INSULATION RESISTANCE SHALL BE MEASURED AT 60±5 SECONDS AFTER APPLIED VOLTAGE (RATED) RATED VOLTAGE: 50V=50V, 100V=100V, 500V & ABOVE=500V |
| CAPACITANCE | TOLERANCE : C : ±0.25PF D : ±0.50PF J : ±5% K : ±10% | TESTING FREQUENCY : 1 MHZ ± 20% TESTING VOLTAGE : 1.0 VRMS |
| OPERATING TEMPERATURE RANGE | -25°C ~ +125°C | |
| Q FACTOR | 30 PF & ABOVE | Q ≥ 1000 |
| | BELOW 30PF | Q ≥ 400+20×C |
| AS ABOVE STIPULATION OF CAPACITANCE | | |

| | | |
|---|-----------------|---------------------------|
| 50V, 100V, 500V, 1KV, 2KV TEMPERATURE COMPENSATING CERAMIC DISC CAPACITOR | POE-D01-00-E-16 | Ver: 16 Page: 12 of 19 |
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| ITEM | POST-TEST REQUIREMENTS | TESTING PROCEDURE | | | | | | | | | | | | |
|---|--|--|------|------|------|---|---|---|------------|------|------|------|------|------|
| TEMPERATURE CHARACTERISTIC | TEMPERATURE COEFFICIENT : SL :+350~-1000 ppm/°C FOR (+20°C~+85°C) | <p>ACCORDING TO STEP 1 TO 5 IN ORDER, MEASURED CAPACITANCE WHEN TEMPERATURE REACH BALANCE AND TEMPERATURE COEFFICIENT SHALL BE CALCULATED ON THE FOLLOWING FORMULA : PPM/°C =(C2-C1)×10E6/C1(T2-T1)</p> <table border="1"> <thead> <tr> <th>Step</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> </tr> </thead> <tbody> <tr> <td>Temp. (°C)</td> <td>25±2</td> <td>20±3</td> <td>25±2</td> <td>85±2</td> <td>25±2</td> </tr> </tbody> </table> <p>NOTE : C1 = CAPACITANCE AS STEP 3 C2 = CAPACITANCE AS STEP 2 OR 4 T1 = TEMPERATURE AS STEP 3 T2 = TEMPERATURE AS STEP 2 OR 4</p> | Step | 1 | 2 | 3 | 4 | 5 | Temp. (°C) | 25±2 | 20±3 | 25±2 | 85±2 | 25±2 |
| | Step | 1 | 2 | 3 | 4 | 5 | | | | | | | | |
| Temp. (°C) | 25±2 | 20±3 | 25±2 | 85±2 | 25±2 | | | | | | | | | |
| CAPACITANCE TOLERANCE : WITHIN ±0.2% OR ±0.05PF, WHICHEVER IS LARGE | <p>ACCORDING TO ABOVE STEP 1,3 & 5, CAPACITANCE TOLERANCE SHALL BE CALCULATED ON THE FOLLOWING FORMULA : $\Delta C\%=(G - S)/C1$ NOTE : G = GREATEST CAPACITANCE AS TESTING RESULT OF STEP 1,3 & 5 S = LEAST CAPACITANCE AS TESTING RESULT OF STEP 1,3 & 5 C1 = CAPACITANCE AS STEP 3</p> | | | | | | | | | | | | | |
| TERMINAL STRENGTH | TENSIBLE STRENGTH : NO BREAKDOWN | <p>WIRE DIA.0.5 M/M. LOADING WEIGHT 0.5 KGS, FOR 10±1 SECONDS. WIRE DIA.0.6 M/M. LOADING WEIGHT 1.0 KGS, FOR 10±1 SECONDS.</p> | | | | | | | | | | | | |
| | BENDING STRENGTH : NO BREAKDOWN | <p>WIRE DIA.0.5 mm, LOADING WEIGHT 0.25 KGS. WIRE DIA.0.6 mm, LOADING WEIGHT 0.5 KGS. (BENDING BACK AND FORTH 90 DEGREE TWICE)</p> | | | | | | | | | | | | |
| SOLDERING HEAT RESISTANCE | APPEARANCE : NO ABNORMALITIES | <p>LEAD WIRE OR TERMINALS SHALL BE IMMERSUED UP TO 2.0 M/M FORM BODY. (A) BODY DIA. ≤5.0mm: INTO THE MOLTEN SOLDER OF WHICH TEMPERATURE: 260(+5/-0)°C FOR 3.0±0.5 SECONDS. (B) BODY DIA. >5.0mm: INTO THE MOLTEN SOLDER OF WHICH TEMPERATURE 260(+5/-0)°C FOR 5~10 SECONDS. THEN LEAVE AT STANDARD TEST CONDITIONS FOR 1~2 HOURS, THEN MEASURED. ※WHEN SOLDERING CAPACITOR WITH A SOLDERING IRON, IT SHOULD BE PERFORMED IN FOLLOWING CONDITIONS. TEMPERATURE OF IRON-TIP: 350~400 °C SOLDERING IRON WATTAGE : 50W MAX. SOLDERING TIME : 3.5 SEC. MAX.</p> | | | | | | | | | | | | |
| | CAP.CHANGE : WITHIN ±2.5% OR ±0.25PF, WHICHEVER IS LARGE. | | | | | | | | | | | | | |
| | WITHSTAND VOLTAGE : (BETWEEN TERMINALS) NO ABNORMALITIES | | | | | | | | | | | | | |
| SOLDERABILITY | LEAD WIRE SHALL BE SOLDERED OVER 75% OF THE CIRCUMFERENTIAL DIRECTION. | <p>TO COMPLY WITH JIS-C-5102 8.4 SOLDER TEMPERATURE245±5°C AND DIPPING TIME 5±0.5 SECONDS FLUX : WEIGHT RATIO OF ROSIN 25%</p> | | | | | | | | | | | | |

| | | |
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| 50V, 100V, 500V, 1KV, 2KV TEMPERATURE COMPENSATING CERAMIC DISC CAPACITOR | POE-D01-00-E-16 | Ver: 16 Page: 13 of 19 |
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| ITEM | POST-TEST REQUIREMENTS | TESTING PROCEDURE |
|--------------------------|---|---|
| HUMIDITY CHARACTERISTIC | APPEARANCE : NO ABNORMALITIES | CAPACITORS SHALL BE SUBJECTED TO A RELATIVE HUMIDITY OF 90 ~ 95% AT 40 ± 2°C FOR 500(+24/-0) HOURS, THEN DRIED FOR 1~2 HOURS AND MEASURED. |
| | CAP. CHANGE : SL : WITHIN ±5% OR ±0.5PF, WHICHEVER IS LARGE | |
| | Q FACTOR : SL : LESS THAN 10PF ==> $Q \geq 200 + 10 \times C$ MORE THAN 10PF AND LESS THAN 30PF => $Q \geq 275 + 5 \times C / 2$ MORE THAN 30PF => $Q \geq 350$ | |
| | INSULATION RESISTANCE : 1000MΩ MIN. | |
| HUMIDITY LOADING | APPEARANCE : NO ABNORMALITIES | CAPACITORS SHALL BE SUBJECTED TO A RELATIVE HUMIDITY OF 90 ~ 95% AT 40±2°C FOR 500(+24/-0) HOURS WITH RATED VOLTAGE APPLIED (LESS THAN 50mA), THAN DRIED FOR 1~2 HOURS AND MEASURED. |
| | CAP.CHANGE : SL : WITHIN ±7.5% OR ±0.75PF, WHICHEVER IS LARGE | |
| | Q FACTOR : SL : LESS THAN 30PF => $Q \geq 100 + 10 \times C / 3$ MORE THAN 30PF => $Q \geq 200$ | |
| | INSULATION RESISTANCE : 500MΩ MIN. | |
| HIGH TEMPERATURE LOADING | APPEARANCE : NO ABNORMALITIES | CAPACITORS SHALL BE SUBJECTED TO A TEST OF: (A) BELOW 1KV: 200% RATED VOLTAGE WITH 50mA MAX. (B) 1KV & ABOVE: 150% RATED VOLTAGE WITH 50mA MAX. FOR 1000(+48/-0) HOURS AT 125°C ± 2°C (FOR CH & SL) AND THEN DRIED FOR 1~2 HOURS AND MEASURED. |
| | CAP. CHANGE : SL : WITHIN ±3% OR ±0.3PF, WHICHEVER IS LARGE | |
| | Q FACTOR : SL : LESS THAN 10PF => $Q \geq 200 + 10 \times C$ MORE THAN 10PF & LESS THAN 30PF => $Q \geq 275 + 5 \times C / 2$ MORE THAN 30PF => $Q \geq 350$ | |
| | INSULATION RESISTANCE : 1000MΩ MIN. | |

| | | |
|---|-----------------|---------------------------|
| 50V, 100V, 500V, 1KV, 2KV TEMPERATURE COMPENSATING CERAMIC DISC CAPACITOR | POE-D01-00-E-16 | Ver: 16 Page: 14 of 19 |
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| ITEM | POST-TEST REQUIREMENTS | TESTING PROCEDURE |
|---------------------|--|---|
| TEMPERATURE CYCLING | APPEARANCE : NO ABNORMALITIES | CAPACITORS SHALL BE SUBJECTED TO: -25±3°C (30±3min) → 25°C (3min) → 125±3°C (30±3min) → 25°C (3min) FOR 5 CYCLE. |
| | CAP. CHANGE : WITHIN ±5% OR ±0.5PF, WHICHEVER IS LARGE | |
| | D.F. C < 30pF : Q ≥ 275+(5/2)C C ≥ 30pF : Q ≥ 350 | |
| | INSULATION RESISTANCE : 1000 MΩ MIN. | |



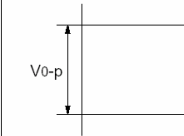
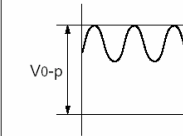
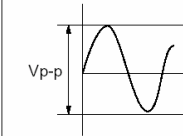
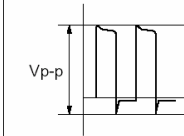
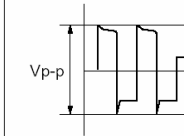
8. Cautions & notices:

8.1. Caution (Rating)

I. Operating Voltage

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

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

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

II. Operating Temperature and Self-generated Heat

Keep the surface temperature of a capacitor below the upper limit of its rated operating temperature range. Be sure to take into account the heat generated by the capacitor itself. When the capacitor is used in a high frequency current, pulse current or similar current, it may self-generate heat due to dielectric loss. The frequency of the applied sine wave voltage should be less than 100kHz. The applied voltage load (*) should be such that the capacitor's self-generated heat is within 20°C at an atmosphere temperature of 25°C. When measuring, use a thermocouple of small thermal capacity-K of $\phi 0.1\text{mm}$ in conditions where the capacitor is not affected by radiant heat from other components or surrounding ambient fluctuations.

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.)

III. Fail-Safe

When capacitor is 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.

8.2. Caution (Storage and operating condition)

I. 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 degrees centigrade and 15 to 85 % for 6 months maximum and use within the period after receiving the capacitors.

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.

8.3. Caution (Soldering and Mounting)

I. Vibration and impact

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

II. 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 degrees C. max.

Soldering iron wattage : 50W max.

Soldering time : 3.5 sec. max.

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.

8.4. Caution (Handling)

Vibration and impact

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

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

8.5. Notice

8.5.1. Notice (Soldering and Mounting)

Cleaning (ultrasonic cleaning)

To perform ultrasonic cleaning, observe the following conditions.

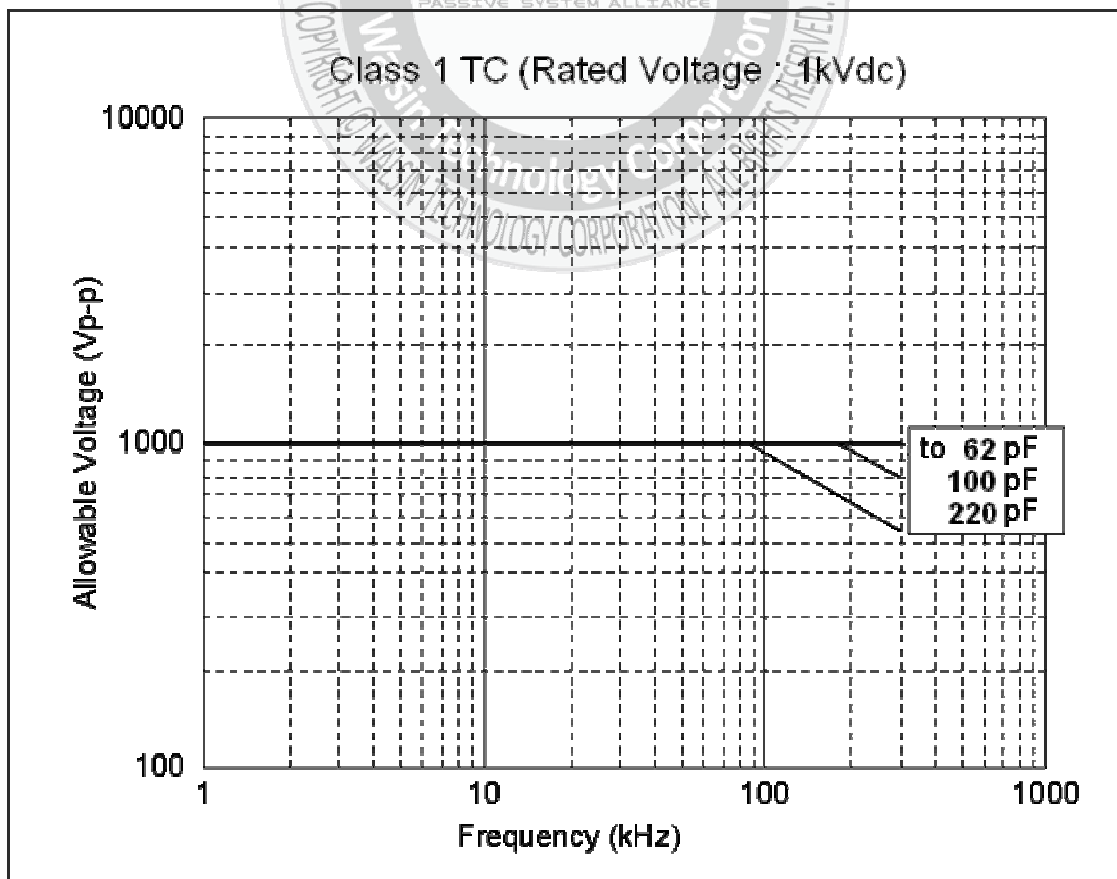
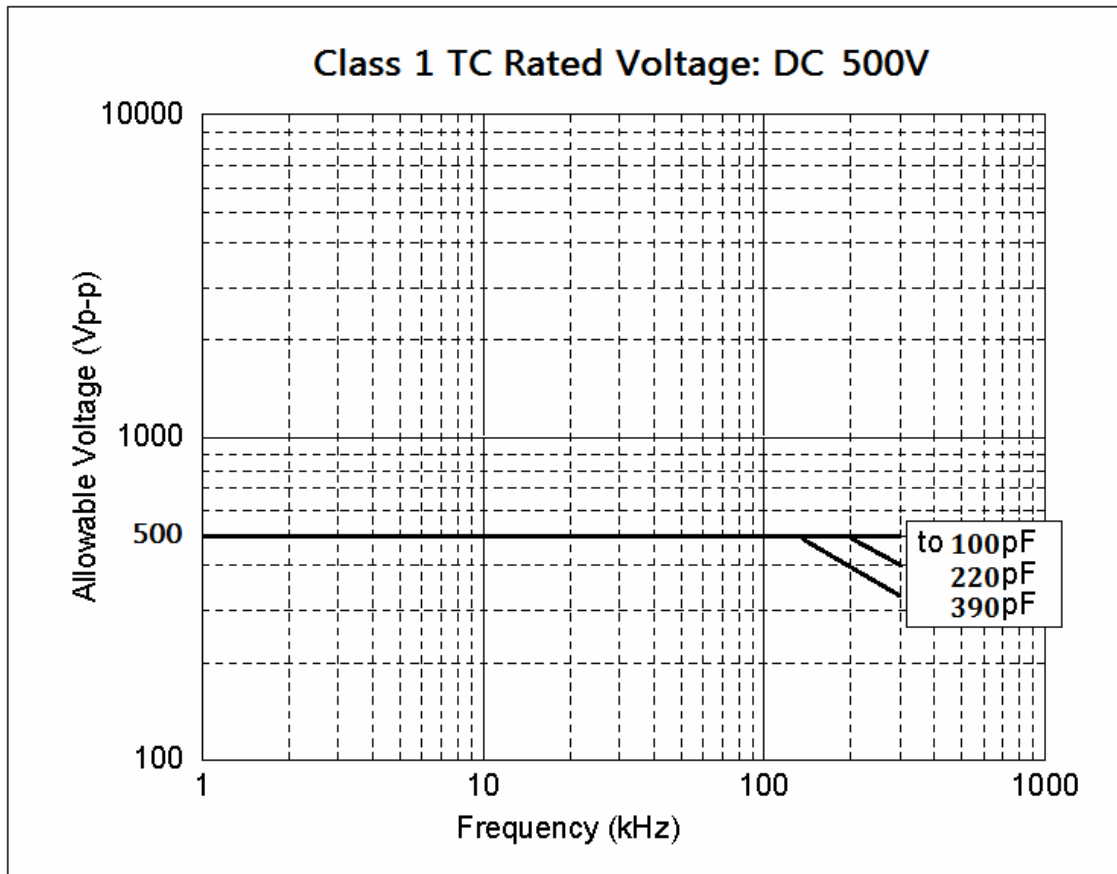
Rinse bath capacity : Output of 20 watts per liter or less.

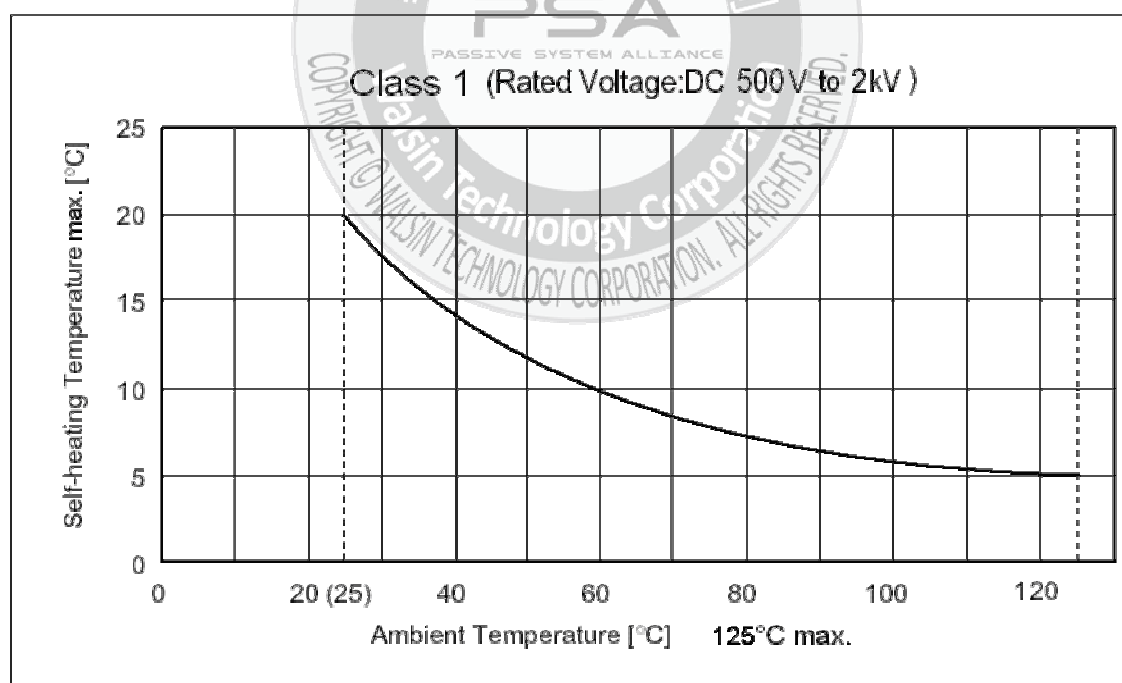
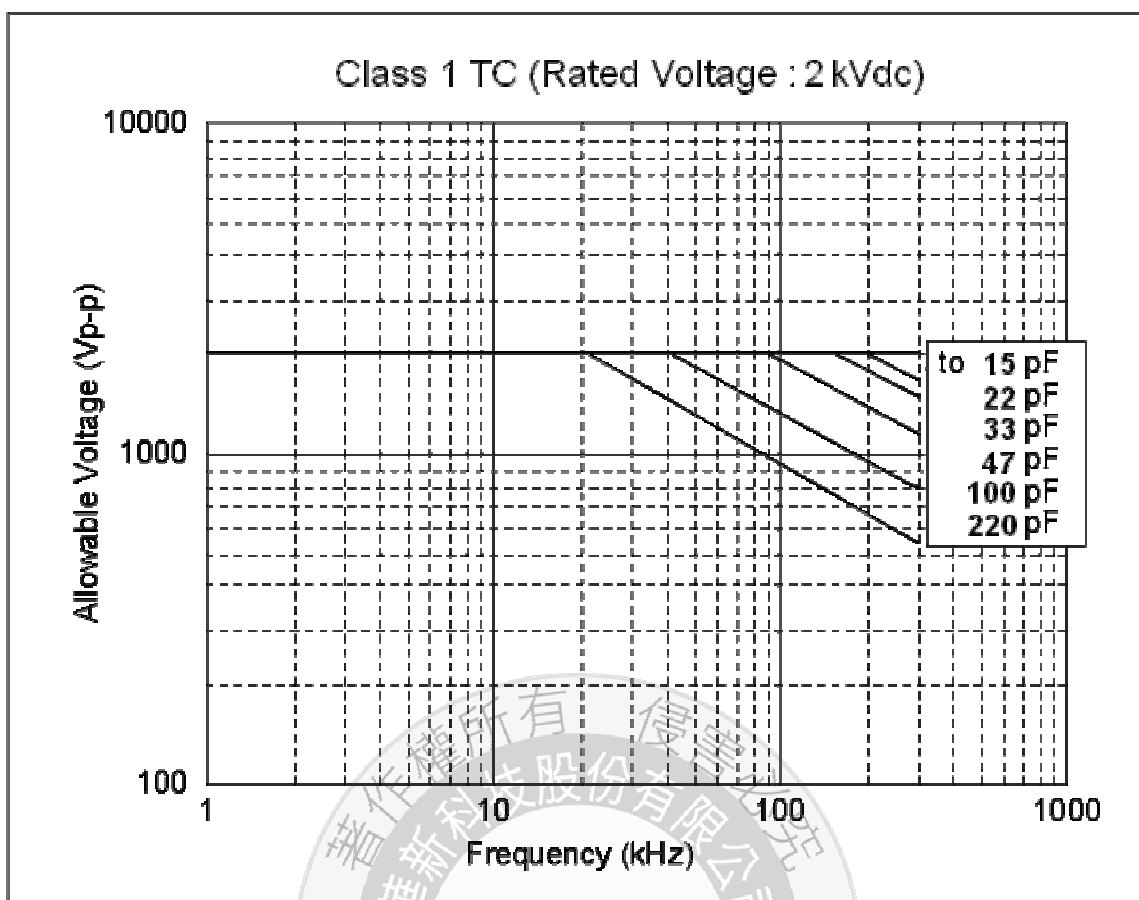
Rinsing time : 5 min. maximum.

Do not vibrate the PCB/PWB directly.

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

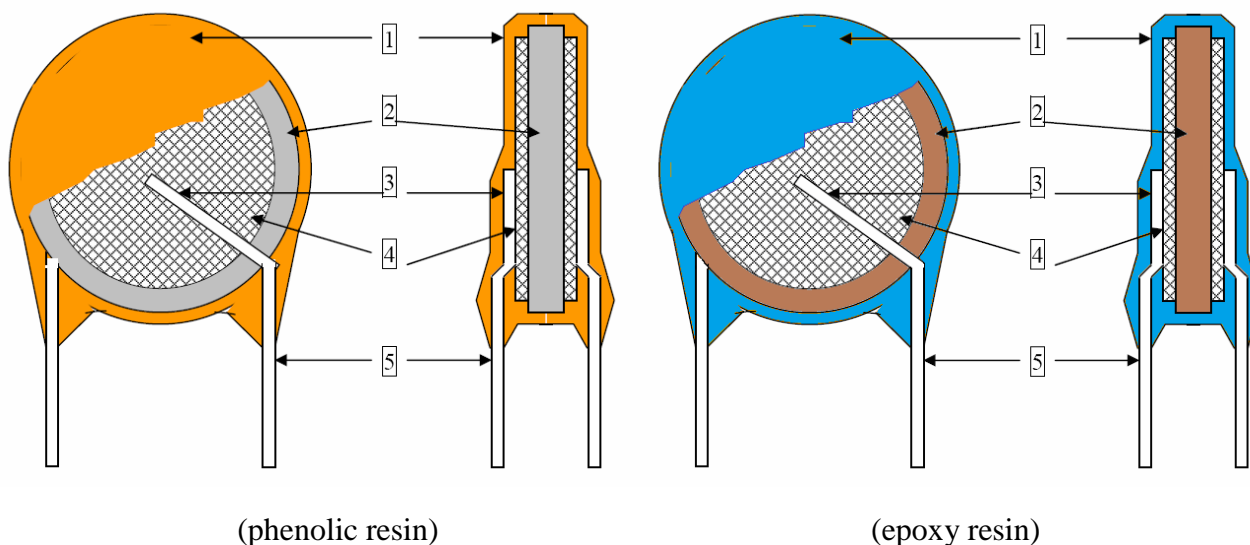
8.6. Ambient Temp of Allowable Voltage Graph (500Vdc to 2kVdc)





The ambient temperature and the surface temperature of capacitor must be 125°C or lower. (Including self-heating.)

9. Drawing of internal structure and material list:



| NO. | 部位 Part name | 材質 Material | 構成部份 Component | 供應商 Vendor |
|-----|--------------------|----------------------------------|---|----------------------------------|
| 1 | Insulation Coating | Phenolic resin Epoxy resin | Phenolic resin, Filler, Pigment Epoxy resin, SiO ₂ , TiO ₂ | Namics Kai Hua |
| 2 | Dielectric Element | Ceramic | BaTiO ₃ | Hua Xing Wang Feng Fenghua |
| 3 | Solder | Tin-silver | Sn97.5-Ag2.5 | Huajun Haili |
| 4 | Electrodes | Ag | Silver, Glass frit | Daejoo Xinguang |
| 5 | Leads wire | Tinned copper clad steel wire | Substrate metal: Fe&Cu Surface plating: Sn 100% | Hengtai Wuhu Taililai |

PRODUCT SPECIFICATION

PRODUCT: CERAMIC DISC CAPACITOR

TYPE: 3KV TEMPERATURE COMPENSATING CERAMIC CAPACITOR

CUSTOMER: _____

DOC. NO.: POE-D02-00-E-09

Ver.: 9

APPROVED BY CUSTOMER

VENDOR :

WALSIN TECHNOLOGY CORPORATION

566-1, KAO SHI ROAD, YANG-MEI
TAO-YUAN, TAIWAN

PAN OVERSEAS (GUANGZHOU) ELECTRONIC CO.,LTD.

NO.277,HONG MING ROAD,EASTERN SECTION,
GUANG ZHOU ECONOMIC AND TECHNOLOGY
DEVELOPMENT ZONE,CHINA

MAKER : PAN OVERSEAS (GUANGZHOU) ELECTRONIC CO.,LTD.

NO.277,HONG MING ROAD,EASTERN SECTION,
GUANG ZHOU ECONOMIC AND TECHNOLOGY
DEVELOPMENT ZONE,CHINA



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| 3KV TEMPERATURE COMPENSATING CERAMIC CAPACITOR | POE-D02-00-E-09 | Ver: 9 Page: 2 of 15 |
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Record of change

| Date | Version | Description | page |
|------------|---------|---|---------------------|
| 2008.6.3 | 1 | 1. F03-00-F-09 (before) → POE-F02-00-F-01 (1 st edition) | |
| 2008.8.22 | 2 | 1. Complete lead code 2. Add last SAP code “ H” for halogen and Pb free , epoxy resin.. 3. Remove F(PITCH)=5.0+/-0.8 mm for 3 KV (all lead type) | 5-16 2 ,10 15 |
| 2008.12.12 | 3 | 1. Complete the 13 th to 17 th codes of SAP P/N. 2. Page layout adjustment. 3. Added Marking when the coating resin is Halogen and Pb free Epoxy. | 4-5 |
| 2009/8/19 | 4. | 1. Change PSA & POE logo to Walsin & POE logo. 2. capacity list → product range | 6 |
| 2010/9/9 | 5 | 1. Review “but Dφ≤6.0 mm shall be omitted.” to “but when the code of body diameter dimension ≤060 shall be omitted.” 2. Add date code on marking (item 7~12). | 7 7 |
| 2013/5/6 | 6 | 1. Review the Lead diameter φ from 0.60 +/-0.06mm to 0.55+/-0.05mm 2. Review the Solderability temperature from 235±5℃ to 245±5℃ , solderability time from 2±0.5s to 5±0.5s. | 5,6,8 10 |
| 2013/10/18 | 7 | Review the packing specification | 11 |
| 2016/3/2 | 8 | 1. Review the Available lead code of Lead Configuration. 2. Delete the definition about “Old Part No.” 3. Delete 6pF~22pF (Code of diameter dimension is 060) , 24pF (Code of diameter dimension is 070), 27pF~30pF (Code of diameter dimension is 080) and 33pF (Code of diameter dimension is 090)for P/N CH 3KV. 4. Review 9. Drawing of internal structure and material list | 5 5,7 6 15 |
| 2016/11/3 | 9 | 1. Delete “CH” series. 2. Delete 5pF~8pF (Code of diameter dimension is 060) for P/N SL 3KV. | 4,6,7,10~13,15 6 |

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| 3KV TEMPERATURE COMPENSATING CERAMIC CAPACITOR | POE-D02-00-E-09 | Ver: 9 Page: 4 of 15 |
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1. Part number for SAP system :

SL 3 0 2 1 0 0 J 0 6 0 B 2 0 C 7 H
 (1) (2) (3) (4) (5) (6) (7) (8) (9) (10)

- (1)Temperature Characteristic : SL:+350~-1000ppm/°C
- (2)Rate Voltage(identified by 3-figure code) : 302=3KVDC
- (3)Rate Capacitance (identified by code) : ex. 100=10pF, 101=100pF
- (4)Tolerance of Capacitance : J= ±5%(For above 10pF)
- (5)Nominal body diameter dimension (Ref.to page.6 Dφ Code spec.) .
- (6)Lead Style : Refer to “2. Mechanical”.
- (7)Packing mode and lead length (identified by 2-figure code) :

| Taping Code | Description |
|-------------|-------------------------|
| AF | Box and Pitch : 15.0 mm |
| AM | Box and Pitch : 25.4 mm |

| Bulk Code | Description |
|-----------|----------------------|
| 3E | Lead length : 3.5mm |
| 04 | Lead length : 4.0mm |
| 4E | Lead length : 4.5mm |
| 20 | Lead length : 20.0mm |

- (8)Length tolerance :

| Code | Description |
|------|--------------------------------------|
| A | ±0.5 mm (only for kink lead type) |
| B | ±1.0 mm |
| C | MIN. |
| D | Taping special purpose |

- (9)Lead Pitch :

| Code | Description |
|------|-------------|
| 7 | 7.5±1 mm |
| 0 | 10±1 mm |

- (10)Epoxy Resin Code :

| Code | Description |
|------|-----------------------------------|
| B | Pb free, Epoxy Resin |
| H | Halogen and Pb free, epoxy resin. |

| | | |
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| 3KV TEMPERATURE COMPENSATING CERAMIC CAPACITOR | POE-D02-00-E-09 | Ver: 9 Page: 5 of 15 |
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2. Mechanical:

Available lead code (Epoxy Resin Coating)- (unit: mm)


| Lead type | SAP P/N (13-17)digits | Pitch (F) | Lead Length (L) | Packing | Lead Configuration |
|--|-----------------------|-----------------------------|-----------------------------|-----------|--------------------|
| Lead style : B Straight long lead | B20C7 | 7.5 ± 1.0 | 20 MIN. | Bulk | |
| | B20C0 | 10 ± 1.0 | 20 MIN. | | |
| | BAFD7 | 7.5 ± 1.0 | Refer to "5. Taping format" | Tap. Ammo | |
| | BAMD0 | 10 ± 1.0 | | | |
| Lead style : L Straight short lead | L03B7 | 7.5 ± 1.0 | 3.0 ± 1.0 | Bulk | |
| | L4EB7 | 7.5 ± 1.0 | 4.5 ± 1.0 | | |
| | L05B7 | 7.5 ± 1.0 | 5.0 ± 1.0 | | |
| | L10B7 | 7.5 ± 1.0 | 10.0 ± 1.0 | | |
| | L03B0 | 10 ± 1.0 | 3.0 ± 1.0 | | |
| | L4EB0 | 10 ± 1.0 | 4.5 ± 1.0 | | |
| | L05B0 | 10 ± 1.0 | 5.0 ± 1.0 | | |
| Lead style : X Outside kink lead | X3EA7 | 7.5 ± 1.0 | 3.5 ± 0.5 | Bulk | |
| | X04A7 | 7.5 ± 1.0 | 4.0 ± 0.5 | | |
| | X05B7 | 7.5 ± 1.0 | 5.0 ± 1.0 | | |
| | X3EA0 | 10 ± 1.0 | 3.5 ± 0.5 | | |
| | X04A0 | 10 ± 1.0 | 4.0 ± 0.5 | | |
| | X05B0 | 10 ± 1.0 | 5.0 ± 1.0 | | |
| | XAFD7 | 7.5 ± 1.0 | Refer to "5. Taping format" | Tap. Ammo | |
| | XAMD0 | 10 ± 1.0 | | | |
| Lead style : D Vertical kink short lead | D3EA7 | 7.5 ± 1.0 | 3.5 ± 0.5 | Bulk | |
| | D04A7 | 7.5 ± 1.0 | 4.0 ± 0.5 | | |
| | D3EA0 | 10 ± 1.0 | 3.5 ± 0.5 | | |
| | D04A0 | 10 ± 1.0 | 4.0 ± 0.5 | | |
| | DAFD7 | 7.5 ± 1.0 | Refer to "5. Taping format" | | |
| | DAMD0 | 10 ± 1.0 | | | |
| Lead style : H Inside kink lead | H3EA0 | 10.0±1.0 | 3.5±0.5 mm | Bulk | |
| | HAFD0 | Refer to "5. Taping format" | | Tap. Ammo | |
| | HAMD0 | | | | |
| Lead style : M Double outside kink lead | M04B7 | 7.5 ± 1.0 | 4.0 ± 1.0 | Bulk | |
| | M04B0 | 10 ± 1.0 | 4.0 ± 1.0 | | |

* Lead diameter Φd: 0.55+/-0.05mm

* e (Coating **extension** on leads): 3.0mmMax for straight lead lead style, not exceed the kink for kink lead.

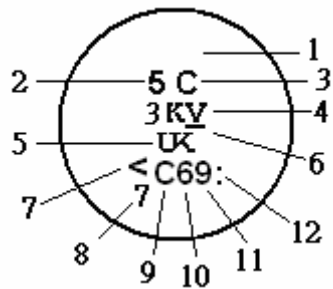
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|---|-----------------|-------------------------|
| 3KV TEMPERATURE COMPENSATING CERAMIC CAPACITOR | POE-D02-00-E-09 | Ver: 9 Page: 6 of 15 |
|---|-----------------|-------------------------|

3. Capacitance value vs. Rate voltage, product diameter :

| Manufacturing product range Cap. Value vs. Rate voltage, product diameter & type | | SL | | |
|---|--|------------|---|--|
| | | Photo |  | |
| T.C. | SL (CLASS I, Temperature:+20℃~+85℃, T.C.C.: +350 ~ -1000ppm) | | | |
| Rate voltage | 3KV | | | |
| Dφ(Code) | 060 | 070 | 080 | |
| D max. (mm) | 7.5 | 8.5 | 9.5 | |
| T max. (mm) | 5.0 | 5.0 | 5.0 | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 10 | 100 | | | |
| 12 | 120 | | | |
| 15 | 150 | | | |
| 18 | 180 | | | |
| 20 | 200 | | | |
| 22 | 220 | | | |
| 24 | 240 | | | |
| 27 | 270 | | | |
| 30 | 300 | | | |
| 33 | 330 | | | |
| 36 | 360 | | | |
| 39 | 390 | | | |
| 47 | | 470 | | |
| 51 | | 510 | | |
| 56 | | 560 | | |
| 62 | | 620 | | |
| 68 | | 680 | | |
| 75 | | | 750 | |
| 82 | | | 820 | |
| 100 | | | 101 | |
| φd (mm) | 0.5 ± 0.05 | | | |
| PACKING | TAPING or BULK | | | |
| COATING | Epoxy Resin | | | |

| | | |
|---|-----------------|-------------------------|
| 3KV TEMPERATURE COMPENSATING CERAMIC CAPACITOR | POE-D02-00-E-09 | Ver: 9 Page: 7 of 15 |
|---|-----------------|-------------------------|

4. Marking :



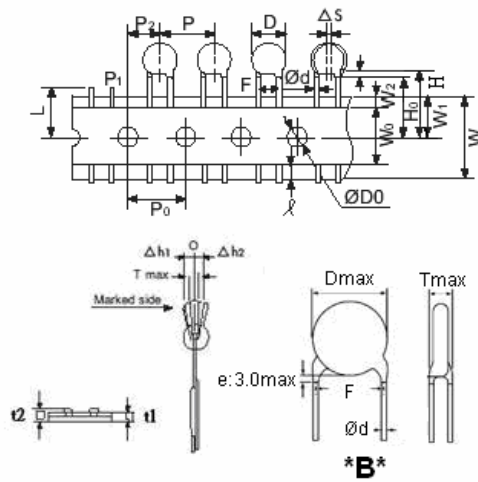
| 1. Temperature characteristic | 2. Nominal capacitance | 3. Capacitance tolerance | 4. Rated voltage | 5. Manufacturer's identification | 6. Halogen and Pb free |
|----------------------------------|---|----------------------------|--|---|--|
| SL : No marking | Identified by 3-figure code 1. when Cap.≥100pF Ex. 120pF →"121" 2. When Cap<100pF, marked actual Cap. value. Ex. 22pF→"22" | J: ±5% (For above 10pF) | 3000V : Be marked "3kV" | Shall be marked as "UK", but when the code of body diameter dimension ≤060 shall be omitted. | When the epoxy resin is Halogen and Pb free, there is a "-" marking. |
| Definition of date code marking: | | | | | |
| 7. Supplier of Epoxy | 8. No. of test equipment | 9. Factory of manufacture | 10. Year of manufacture | 11. Month of manufacture | 12. Week of manufacture by month |
| <:K-company , : P-company | 1~9: No.1~No.9, J: No.10, K: No.11, L: No.12 | C: Factory of POEGZ | 1: 2011, 2: 2012, 3: 2013, 4: 2014, 5: 2015, 6: 2016, 7: 2017,... | 1~9: January~September, O: October, N: November, D: December | week 1: - week 2: · week 3: : week 4: ' week 5: ; |

| | | |
|---|-----------------|-------------------------|
| 3KV TEMPERATURE COMPENSATING CERAMIC CAPACITOR | POE-D02-00-E-09 | Ver: 9 Page: 8 of 15 |
|---|-----------------|-------------------------|

5. Taping Format:

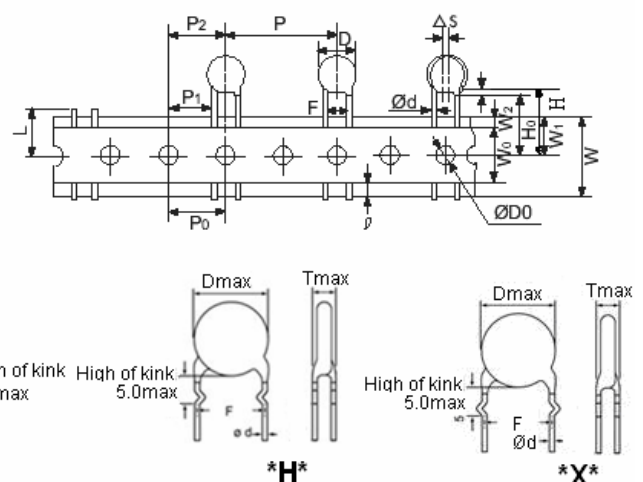
- 15mm pitch/lead spacing 7.5mm taping

Lead Code: ***BAFD7** & ***DAFD7** & ***HAFD7** & ***XAFD7**



- 25.4mm pitch/lead spacing 10.0mm taping

Lead Code: ***DAMD0** & ***XAMD0** & ***HAMD0** & ***BAMD0**



| POE Part Number | | *BAFD7 | *DAFD7 *HAFD7 *XAFD7 | *BAMD0 *DAMD0 *HAMD0 *XAMD0 |
|--|--------|---|---|--|
| Item | Symbol | Dimensions (mm) | Dimensions (mm) | Dimensions (mm) |
| Pitch of component | P | 15.0 | 15.0 | 25.4 |
| Pitch of sprocket | P0 | 15.0±0.3 | 15.0±0.3 | 12.7±0.3 |
| Lead spacing | F | 7.5±1.0 | 7.5±1.0 | 10.0±1.0 |
| Length from hole center to component center | P2 | 7.5±1.5 | 7.5±1.5 | 12.7 ± 1.5 |
| Length from hole center to lead | P1 | 3.75±1.0 | 3.75±1.0 | 7.7±1.5 |
| Body diameter | D | See the “3. Capacitance value vs. Rate voltage, product diameter” | | |
| Deviation along tape, left or right | ΔS | 0±2.0 | | |
| Carrier tape width | W | 18.0 +1/-0.5 | | |
| Position of sprocket hole | W1 | 9.0±0.5 | | |
| Lead distance between the kink and center of sprocket hole | H0 | 18.0+2.0/-0 | | 18.0+2.0/-0 For: *DAMD0 *HAMD0 *XAMD0 |
| Lead distance between the bottom of body and the center of sprocket hole | H | 20.0+1.5/-1.0 | --- | 20.0+1.5/-1.0 For: *BAMD0 |
| Protrusion length | ℓ | 2.0max (Or the end of lead wire may be inside the tape.) | | |
| Diameter of sprocket hole | D0 | 4.0±0.2 | | |
| Lead diameter | φd | 0.55 ±0.05 | | |
| Total tape thickness | t1 | 0.6±0.3 | | |
| Total thickness, tape and lead wire | t2 | 1.5 max. | | |
| Deviation across tape | Δh1 | 2.0 max. | | |
| | Δh2 | 2.0 max. | | |
| Portion to cut in case of defect | L | 11.0 max. | | |
| Hole-down tape width | W0 | 11.5min | | |
| Hole-down tape distortion | W2 | 1.5±1.5 | | |
| Coating extension on leads | e | 3.0 max for straight lead style; Not exceed the kink leads for kink lead. | | |
| Body thickness | T | See the “3. Capacitance value vs. Rate voltage, product diameter” | | |

| | | |
|---|-----------------|-------------------------|
| 3KV TEMPERATURE COMPENSATING CERAMIC CAPACITOR | POE-D02-00-E-09 | Ver: 9 Page: 9 of 15 |
|---|-----------------|-------------------------|

6. Specification and test method:

6.1 SCOPE: THIS SPECIFICATION APPLIES TO TEMPERATURE COMPENSATING CONSTANT, 3KV CERAMIC CAPACITOR.

6.2 TEST CONDITIONS:

UNLESS OTHERWISE SPECIFIED, ALL TESTS SHALL BE OPERATED AT THE STANDARD TEST CONDITIONS OF TEMPERATURE 5°C TO 35°C AND RELATIVE HUMIDITY 45% TO 85%. WHEN FAILS A TEST, RETEST BE OPERATED AT THE CONDITIONS OF TEMPERATURE 25°C ± 2°C, RELATIVE HUMIDITY OF 60% TO 70% AND BAROMETRIC PRESSURE 860 TO 1060 MBAR.

6.3 HANDLE PROCEDURE: TO AVOID UNEXPECT TESTING RESULTS FROM OCCURING, THE TESTED CAPACITOR MUST BE KEPT AT ROOM TEMPERATURE FOR AT LEAST 30 MINUTES AND COMPLETELY DISCHARGED.

6.4 TEST ITEMS:

| ITEM | POST-TEST REQUIREMENTS | TESTING PROCEDURE |
|------------------------------|---|---|
| APPEARANCE STRUCTURE SIZE | NO ABNORMALITIES | |
| MARKING | | AS STATED IN SECTION 4 |
| WITHSTAND VOLTAGEN | BETWEEN TERMINALS: NO ABNORMALITIES | 2 TIMES OF THE RATED VOLTAGE. TEST VOLTAGE : 6KVDC, 1~5 SEC, WITH 50mA MAX. CHARGING CURRENT |
| | BETWEEN TERMINAL AND ENCLOSURE : NO ABNORMALITIES | SMALL METALLIC BALLS WITH 1mm DIAMETERS SHALL BE PUT ON A VESSEL AND THE TEST CAPACITOR SHALL BE SUBMERGED EXCEPT 2mm FROM THE TOP OF ITS COMPONENT BODY. THE TEST VOLTAGE SHALL BE APPLIED BETWEEN THE SHORT-CIRCUITED TERMINALS AND THE METALLIC BALLS. (APPLY 1.3KV DC OF RATED VOLTAGE BETWEEN TERMINALS AND ENCLOSURE FOR 1~5 SEC) |
| INSULATION RESISTANCE | 10000 MΩ MIN | INSULATION RESISTANCE SHALL BE MEASURED AT 60±5 SECONDS AFTER RATED VOLTAGE APPLIED. RATED VOLTAGE : 500VDC |
| CAPACITANCE | TOLERANCE : J : ±5%, K : ±10% | TESTING FREQUENCY: 1MHZ ± 20 % TESTING TEMPERATURE: 25 ± 2°C TESTING VOLTAGE: 1.0 ± 0.2 VRMS |
| TEMPERATURE RANGE | OPERATING TEMPERATURE : -25°C ~ +125°C | |
| Q FACTOR) | 30PF & ABOVE ≥ 1000 | BELOW 30PF ≥ 400+20×C |
| TERMINAL STRENGTH | TENSIBLE STRENGTH: NO BREAKDOWN | WIRE DIA.0.5mm, LOADING WEIGHT 0.5KG FOR 10±1 SECONDS. WIRE DIA.0.6mm, LOADING WEIGHT 1.0KG FOR 10±1 SECONDS |
| | BENDING STRENGTH: NO BREAKDOWN | WIRE DIA.0.5mm, LOADING WEIGHT 0.25 KG. WIRE DIA.0.6mm, LOADING WEIGHT 0.5 KG. (BENDING BACK AND FORTH 90 DEGREE TWICE) |

| | | |
|---|-----------------|--------------------------|
| 3KV TEMPERATURE COMPENSATING CERAMIC CAPACITOR | POE-D02-00-E-09 | Ver: 9 Page: 10 of 15 |
|---|-----------------|--------------------------|

| ITEM | POST-TEST REQUIREMENTS | TESTING PROCEDURE |
|----------------------------|---|--|
| TEMPERATURE CHARACTERISTIC | TEMPERATURE COEFFICIENT: SL: +350 ~ -1000PPM/°C | ACCORDING TO STEP 1 TO 5 IN ORDER, MEASURED CAPACITANCE WHEN TEMPERATURE REACH BALANCE AND TEMPERATURE COEFFICIENT SHALL BE CALCULATED ON THE FOLLOWING FORMULA : $\text{PPM}/^{\circ}\text{C} = (\text{C2}-\text{C1}) \times 10\text{E}6 / \text{C1}(\text{T2}-\text{T1})$ STEP 1,3,5: 25°C STEP 4: 85°C STEP 2: CH:-25°C ; SL:20°C NOTE : C1 = CAPACITANCE AS STEP 3 C2 = CAPACITANCE AS STEP 2 OR 4 T1 = TEMPERATURE AS STEP 3 T2 = TEMPERATURE AS STEP 2 OR 4 |
| | CAPACITANCE TOLERANCE: SL: WITHIN ±0.2% OR ±0.05PF, WHICHEVER IS LARGE | ACCORDING TO ABOVE STEP 1,3 & 5, CAPACITANCE TOLERANCE SHALL BE CALCULATED ON THE FOLLOWING FORMULA : $\Delta\text{C}\% = (\text{G} - \text{S}) / \text{C1}$ NOTE: G = GREATEST CAPACITANCE AS TESTING RESULT OF STEP 1,3 & 5 S = LEAST CAPACITANCE AS TESTING RESULT OF STEP 1,3 & 5 C1 = CAPACITANCE AS STEP 3 |
| SOLDERING HEAT RESISTANCE | APPEARANCE: NO ABNORMALITIES | LEAD WIRE OR TERMINALS SHALL IMMERSE UP TO 2.0 M/M FORM BODY. INTO THE MOLTEN SOLDER OF WHICH TEMPERATURE: 260(+5/-0)°C FOR 5~10 SECONDS. THEN LEAVE AT STANDARD TEST CONDITIONS FOR 24±2 HOURS, THEN MEASURED. ※WHEN SOLDERING CAPACITOR WITH A SOLDERING IRON, IT SHOULD BE PERFORMED IN FOLLOWING CONDITIONS. TEMPERATURE OF IRON-TIP: 350~400 °C SOLDERING IRON WATTAGE : 50W MAX. SOLDERING TIME : 3.5 SEC. MAX. |
| | CAP.CHANGE: SL WITHIN ±2.5% OR ±0.25PF, WHICHEVER IS LARGE. | |
| | WITHSTAND VOLTAGE: (BETWEEN TERMINALS) NO ABNORMALITIES | |
| SOLDERABILITY | LEAD WIRE SHALL BE SOLDERED OVER 75% OF THE CIRCUMFERENTIAL DIRECTION. | TO COMPLY WITH JIS-C-5102 8.4 SOLDER TEMPERATURE 245±5°C AND DIPPING TIME 5±0.5 SECONDS FLUX : WEIGHT RATIO OF POSIN 25% |

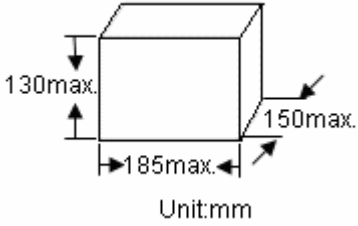
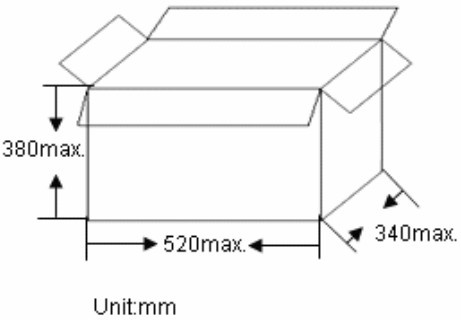
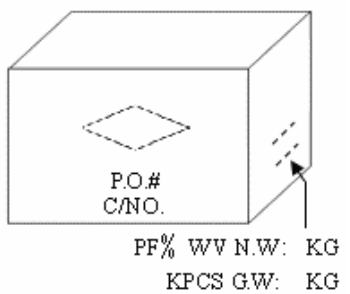
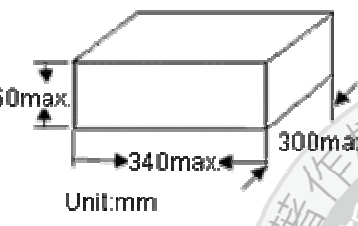
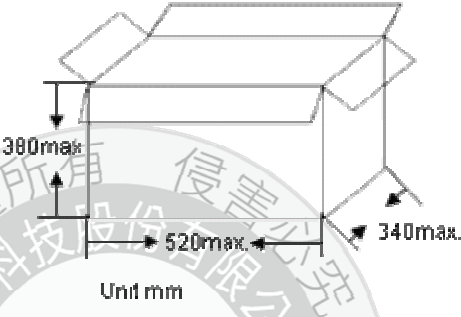
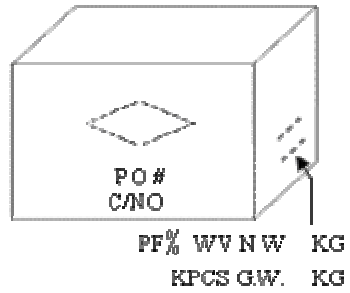
| | | |
|---|-----------------|--------------------------|
| 3KV TEMPERATURE COMPENSATING CERAMIC CAPACITOR | POE-D02-00-E-09 | Ver: 9 Page: 11 of 15 |
|---|-----------------|--------------------------|

| ITEM | POST-TEST REQUIREMENTS | TESTING PROCEDURE |
|--|--|---|
| HUMIDITY CHARACTERISTIC (STABLE SITUATION) | APPEARANCE: NO ABNORMALITIES | CAPACITORS SHALL BE SUBJECTED TO A RELATIVE HUMIDITY OF 90 ~ 95% AT 40±2°C FOR 500(+24/-0) HOURS. THEN DRIED FOR 1~2 HOURS AND MEASURED. |
| | CAP.CHANGE: SL WITHIN ±5% OR ±0.5PF, WHICHEVER IS LARGE. | |
| | Q FACTOR: SL LESS THAN 10PF => $Q \geq 200 + 10 \times C$ MORE THAN 10PF AND LESS THAN 30PF => $Q \geq 275 + 5 \times C/2$ MORE THAN 30PF => $Q \geq 350$ | |
| | INSULATION RESISTANCE: 1000MΩ MIN. | |
| HUMIDITY LOADING | APPEARANCE: NO ABNORMALITIES | CAPACITORS SHALL BE SUBJECTED TO A RELATIVE HUMIDITY OF 90 ~ 95% AT 40 ± 2°C FOR 500(+24/-0) HOURS WITH RATED VOLTAGE APPLIED WITH 50mA MAX. THEN DRIED FOR 1~2 HOURS AND MEASURED. |
| | CAP.CHANGE: SL WITHIN ±7.5% OR ±0.75PF, WHICHEVER IS LARGE. | |
| | Q FACTOR: SL LESS THAN 30PF => $Q \geq 100 + 10 \times C/3$ MORE THAN 30PF => $Q \geq 200$ | |
| | INSULATION RESISTANCE: 500 MΩ MIN | |
| HIGH TEMPERATURE LOADING | APPEARANCE : NO ABNORMALITIES | 150% RATED VOLTAGE WITH 50mA max. FOR 1000(+48/-0) HOURS AT 125±3°C AND THEN DRIED FOR 1~2 HOURS AND MEASURED. |
| | CAP.CHANGE : WITHIN ±3% OR ±0.3PF, WHICHEVER IS LARGE. | |
| | Q FACTOR : SL : LESS THAN 10PF ==> $Q \geq 200 + 10 \times C$ MORE THAN 10PF AND LESS THAN 30PF ==> $Q \geq 275 + 5 \times C/2$ MORE THAN 30PF ==> $Q \geq 350$ | |
| | INSULATION RESISTANCE: 1000 MΩ MIN. | |

| | | |
|---|-----------------|--------------------------|
| 3KV TEMPERATURE COMPENSATING CERAMIC CAPACITOR | POE-D02-00-E-09 | Ver: 9 Page: 12 of 15 |
|---|-----------------|--------------------------|

7.Packing Baggage :

7.1 Packing size:

| Type | Box | Carton | |
|-------------|---|--|---|
| Bulk |  <p>Unit:mm</p> |  <p>Unit:mm</p> |  <p>PF% WV N.W: KG KPCS G.W: KG</p> |
| Ammo taping |  <p>Unit:mm</p> |  <p>Unit:mm</p> |  <p>PF% WV N.W: KG KPCS G.W: KG</p> |

7.2 Packing quantity:

| Packing type | The code of 14th to15th in SAP P/N | MPQ (Kpcs/ Box) |
|--------------|------------------------------------|-----------------|
| Taping | AF | 1 |
| | AM | 0.5 |

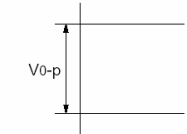
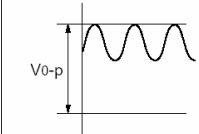
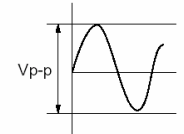
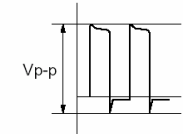
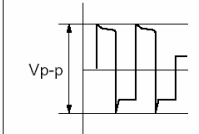
| Packing type | MPQ (Kpcs/Bag) |
|--------------|----------------|
| Bulk | 1 |

8. Notices:

8.1 Operating Voltage:

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

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

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

8.2 Operating Temperature and Self-generated Heat

Keep the surface temperature of a capacitor below the upper limit of its rated operating temperature range. Be sure to take into account the heat generated by the capacitor itself. When the capacitor is used in a high frequency current, pulse current or similar current, it may self-generate heat due to dielectric loss. The frequency of the applied sine wave voltage should be less than 100kHz. The applied voltage load (*) should be such that the capacitor's self-generated heat is within 20°C at an atmosphere temperature of 25°C. When measuring, use a thermocouple of small thermal capacity-K of $\phi 0.1\text{mm}$ in conditions where the capacitor is not affected by radiant heat from other components or surrounding ambient fluctuations.

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.)

8.3 Fail-Safe

When capacitor is 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.

8.4 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 -10 to 40 degrees centigrade and 15 to 85 % for 6 months maximum and use within the period after receiving the capacitors.

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.

8.5 Vibration and impact

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

8.6 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 degrees C. max.

Soldering iron wattage : 50W max.

Soldering time : 3.5 sec. max.

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.

8.7 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.

8.8 Rating

Capacitance change of capacitor

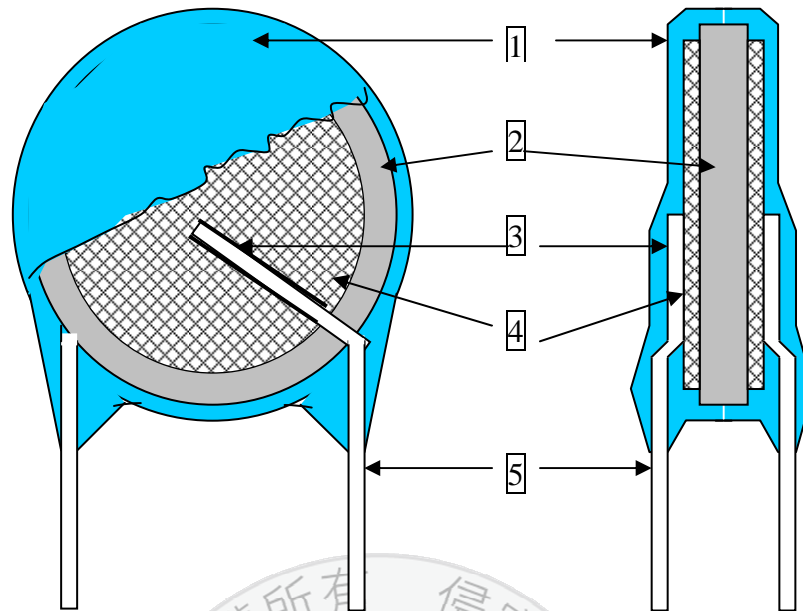
I. Class 1 series (Temp. Char. SL)

Capacitance might change a little depending on the surrounding temperature or an applied voltage.

Please contact us if you intend to use this product in a strict time constant circuit.

9.Drawing of internal structure and material list:

產品結構圖



Remarks :

| No. | Part name | Material | Model/Type | Component |
|-----|--------------------|-------------------------------|---|--|
| 1 | Insulation Coating | Epoxy polymer | 1.EF-150C 2.EF-150(HF) 3.PCE-210 2.PCE-300(HF) | Epoxy resin、Pigment (Blue / UL 94 V-0 /) The minimum thickness of coating (reinforced insulation) is 0.4mm |
| 2 | Dielectric Element | Ceramic | SL | BaTiO ₃ |
| 3 | Solder | Tin-silver | Sn96.5-Ag3-Cu0.5 | Sn96.5-Ag3-Cu0.5 |
| 4 | Electrodes | Ag | 1.SP-160PL 2.SP-260PL | Silver、Glass frit |
| 5 | Leads wire | Tinned copper clad steel wire | 0.55±0.05 mm | Substrate metal: Fe & Cu Surface plating: Sn 100%(3~7μm) |

PRODUCT SPECIFICATION

PRODUCT: CERAMIC DISC CAPACITOR

TYPE: 6KV TEMPERATURE COMPENSATING CERAMIC CAPACITOR

CUSTOMER: _____

DOC. NO.: POE-D03-00-E-09

Ver.: 9

APPROVED BY CUSTOMER

VENDOR :

WALSIN TECHNOLOGY CORPORATION

566-1, KAO SHI ROAD, YANG-MEI
TAO-YUAN, TAIWAN

PAN OVERSEAS (GUANGZHOU) ELECTRONIC CO.,LTD.

NO.277,HONG MING ROAD,EASTERN SECTION,
GUANG ZHOU ECONOMIC AND TECHNOLOGY
DEVELOPMENT ZONE,CHINA

MAKER : PAN OVERSEAS (GUANGZHOU) ELECTRONIC CO.,LTD.

NO.277,HONG MING ROAD,EASTERN SECTION,
GUANG ZHOU ECONOMIC AND TECHNOLOGY
DEVELOPMENT ZONE,CHINA



Record of change

| Date | Version | Description | page |
|------------|---------|--|-----------------------|
| 2008.6.3 | 1 | 1. D14-00-E-06 (before) → POE-D03-00-E-01(1 st edition) | |
| 2008.8.22 | 2 | 1. Complete lead code 3. Add last SAP code “ H” for halogen and Pb free , epoxy resin. | 5-6 2 |
| 2008.12.12 | 3 | 1. Complete the 13 th to 17 th codes of SAP P/N. 2. Page layout adjustment. 3. Added marking when the coating resin is Halogen and Pb free Epoxy. | 4-5 |
| 2009/8/19 | 4 | 1. Change PSA & POE logo to Walsin & POE logo. 2. Revised WITHSTAND VOLTAGEN and operating temperature from -25℃~+85℃ to -25℃~+125℃ 3. capacity list → product range | all 9 6 |
| 2010/9/9 | 5 | 1. Review “but Dφ≤6.0 mm shall be omitted.” to “but when the code of body diameter dimension ≤060 shall be omitted.” 2. Delete “1.5000V : Be marked “5kV”” 3. Add date code on marking (item 7~12). | 7 7 7 |
| 2013/5/6 | 6 | 1. Review the Lead diameter φ from 0.60 +/-0.06mm to 0.55+/-0.05mm 2. Review the Solderability temperature from 235±5℃ to 245±5.℃,Solderability time from 2 ±0.5s to 5±0.5s, | 5,6,8 10 |
| 2013/10/18 | 7 | Review the packing specification | 11 |
| 2016/3/2 | 8 | 1. Review the Available lead code of Lead Configuration. 2. Delete the definition about “Old Part No.” 3. Delete 6pF~18pF (Code of diameter dimension is 060) , 22pF~27pF (Code of diameter dimension is 080), 30pF~39pF (Code of diameter dimension is 090) and 47pF (Code of diameter dimension is 110)for P/N CH 6KV. 4. Review 9. Drawing of internal structure and material list | 5 5,6 6 15 |
| 2016/11/3 | 9 | 1. Delete “CH” series. 2. Delete 2pF~8pF (Code of diameter dimension is 060) for P/N SL 6KV. | 4,6,7,9~11,14,15 6 |

1. Part number for SAP system :

SL 602 050 C 060 B 20 C 7 H
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10)

- (1)Temperature Characteristic : SL:+350~-1000ppm/°C
- (2)Rate Voltage(identified by 3-figure code) : 602=6KVDC
- (3)Rate Capacitance (identified by code) : ex. 100=10pF, 101=100pF
- (4)Tolerance of Capacitance : J= ±5%(For above 10pF)
- (5)Nominal body diameter dimension (Ref. to page.6 Dφ Code spec.) .
- (6)Lead Style : Refer to “2. Mechanical”.
- (7)Packing mode and lead length (identified by 2-figure code) :

| Taping Code | Description |
|-------------|-------------------------|
| AF | Box and Pitch : 15.0 mm |
| AM | Box and Pitch : 25.4 mm |

| Bulk Code | Description |
|-----------|----------------------|
| 3E | Lead length : 3.5mm |
| 04 | Lead length : 4.0mm |
| 4E | Lead length : 4.5mm |
| 20 | Lead length : 20.0mm |

- (8)Length tolerance :

| Code | Description |
|------|--------------------------------------|
| A | ±0.5 mm (only for kink lead type) |
| B | ±1.0 mm |
| C | MIN. |
| D | Taping special purpose |

- (9)Lead Pitch :

| Code | Description |
|------|-------------|
| 7 | 7.5±1 mm |
| 0 | 10±1 mm |

- (10) Epoxy Resin Code :

| Code | Description |
|------|------------------------------------|
| B | Pb free, Epoxy Resin |
| H | Halogen and Pb free , epoxy resin. |

2. Mechanical:

Available lead code (Epoxy Resin Coating)- (unit: mm)

| Lead type | SAP P/N (13-17)digits | Pitch (F) | Lead Length (L) | Packing | Lead Configuration |
|--|--------------------------|-----------|-----------------------------|-----------|--------------------|
| Lead style : B Straight long lead | B20C7 | 7.5 ± 1.0 | 20 MIN. | Bulk | |
| | B20C0 | 10 ± 1.0 | 20 MIN. | | |
| | BAFD7 | 7.5 ± 1.0 | Refer to "5. Taping format" | Tap. Ammo | |
| | BAMD0 | 10 ± 1.0 | | | |
| Lead style : L Straight short lead | L03B7 | 7.5 ± 1.0 | 3.0 ± 1.0 | Bulk | |
| | L4EB7 | 7.5 ± 1.0 | 4.5 ± 1.0 | | |
| | L05B7 | 7.5 ± 1.0 | 5.0 ± 1.0 | | |
| | L10B7 | 7.5 ± 1.0 | 10.0 ± 1.0 | | |
| | L03B0 | 10 ± 1.0 | 3.0 ± 1.0 | | |
| | L4EB0 | 10 ± 1.0 | 4.5 ± 1.0 | | |
| | L05B0 | 10 ± 1.0 | 5.0 ± 1.0 | | |
| | L10B0 | 10 ± 1.0 | 10.0 ± 1.0 | | |
| Lead style : X Outside kink lead | X3EA7 | 7.5 ± 1.0 | 3.5 ± 0.5 | Bulk | |
| | X04A7 | 7.5 ± 1.0 | 4.0 ± 0.5 | | |
| | X05B7 | 7.5 ± 1.0 | 5.0 ± 1.0 | | |
| | X3EA0 | 10 ± 1.0 | 3.5 ± 0.5 | | |
| | X04A0 | 10 ± 1.0 | 4.0 ± 0.5 | Tap. Ammo | |
| | X05B0 | 10 ± 1.0 | 5.0 ± 1.0 | | |
| | XAFD7 | 7.5 ± 1.0 | Refer to "5. Taping format" | | |
| | XAMD0 | 10 ± 1.0 | | | |
| Lead style : D Vertical kink short lead | D3EA7 | 7.5 ± 1.0 | 3.5 ± 0.5 | Bulk | |
| | D04A7 | 7.5 ± 1.0 | 4.0 ± 0.5 | | |
| | D3EA0 | 10 ± 1.0 | 3.5 ± 0.5 | | |
| | D04A0 | 10 ± 1.0 | 4.0 ± 0.5 | | |
| | DAFD7 | 7.5 ± 1.0 | Refer to "5. Taping format" | Tap. Ammo | |
| | DAMD0 | 10 ± 1.0 | | | |
| Lead style : H Inside kink lead | H3EA0 | 10.0±1.0 | 3.5±0.5 mm | Bulk | |

* Lead diameter Φd : 0.55+/-0.05mm

* **e** (Coating **extension** on leads): 3.0mmMax for straight lead lead style, not exceed the kink for kink lead.

※When $D\phi \geq 11\text{mm}$, only for bulk, but $D\phi \leq 10\text{mm}$ can do Bulk or Taping.

6KV TEMPERATURE COMPENSATING CERAMIC CAPACITOR

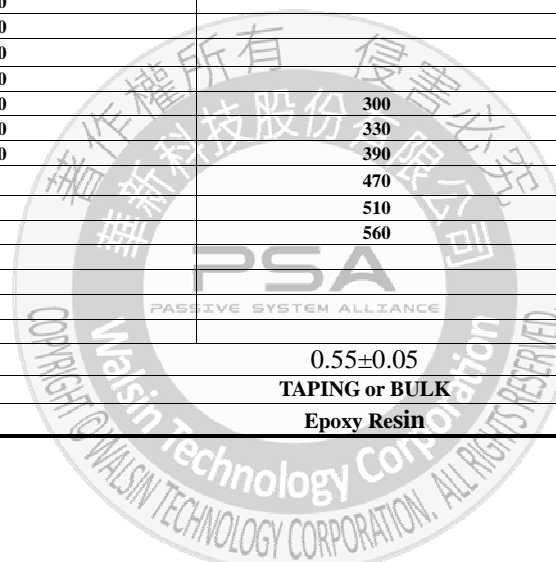
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3. Capacitance value vs. Rate voltage, product diameter :

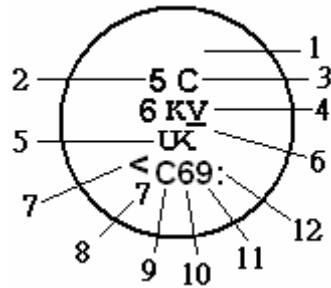
3.1 、 6KV:

| Manufacturing product range Cap. Value vs. Rate voltage, product diameter & type | | Photo | SL |
|---|---|------------|------------|
| T.C. | SL (CLASS I , Temperature:+20℃~+85℃, T.C.C.: +350 ~ -1000ppm) | | |
| Rate voltage | 6KV | | |
| Dφ(Code) | 060 | 080 | 090 |
| D max. (mm) | 7.5 | 9.5 | 10.5 |
| T max. (mm) | 5.0 | 5.0 | 5.0 |
| 2 | | | |
| 3 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 10 | 100 | | |
| 12 | 120 | | |
| 15 | 150 | | |
| 18 | 180 | | |
| 20 | 200 | | |
| 22 | 220 | | |
| 27 | 270 | | |
| 30 | 300 | 300 | |
| 33 | 330 | 330 | |
| 39 | 390 | 390 | |
| 47 | | 470 | 470 |
| 51 | | 510 | 510 |
| 56 | | 560 | 560 |
| 62 | | | |
| 68 | | | 680 |
| 82 | | | 820 |
| 100 | | | 101 |
| φd (mm) | 0.55±0.05 | | |
| PACKING | TAPING or BULK | | |
| COATING | Epoxy Resin | | |



| | | |
|---|-----------------|-----------------------|
| 6KV TEMPERATURE COMPENSATING CERAMIC CAPACITOR | POE-D03-00-E-09 | Ver: 9 Page: 7 /15 |
|---|-----------------|-----------------------|

4. Marking :

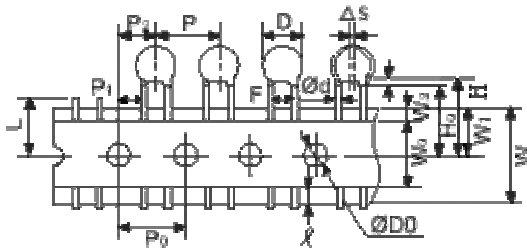


| 1. Temperature characteristic | 2. Nominal capacitance | 3. Capacitance tolerance | 4. Rated voltage | 5. Manufacturer's identification | 6. Halogen and Pb free |
|----------------------------------|---|-----------------------------|--|---|--|
| SL : No marking | 1. Identified by 3-figure code when Cap. ≥ 100pF Ex. 120pF → "121" 2. When Cap < 100pF, marked actual Cap. value Ex. 6pF → "6" | J: ±5% (For above 10pF) | 6000V : Be marked "6kV" | Shall be marked as "UK", but when the code of body diameter dimension ≤ 060 shall be omitted. | When the epoxy resin is Halogen and Pb free, there is a " _ " marking. |
| Definition of date code marking: | | | | | |
| 7. Supplier of Epoxy | 8. No. of test equipment | 9. Factory of manufacture | 10. Year of manufacture | 11. Month of manufacture | 12. Week of manufacture by month |
| <: K-company , : P-company | 1~9 : No. 1~No. 9, J : No. 10, K : No. 11, L : No. 12 | C : Factory of POEGZ | 1 : 2011, 2 : 2012, 3 : 2013, 4 : 2014, 5 : 2015, 6 : 2016, 7 : 2017, ... | 1~9 : January~September, O : October, N : November, D : December | week 1: - week 2: · week 3: : week 4: · week 5: ; |

5. Taping Format:

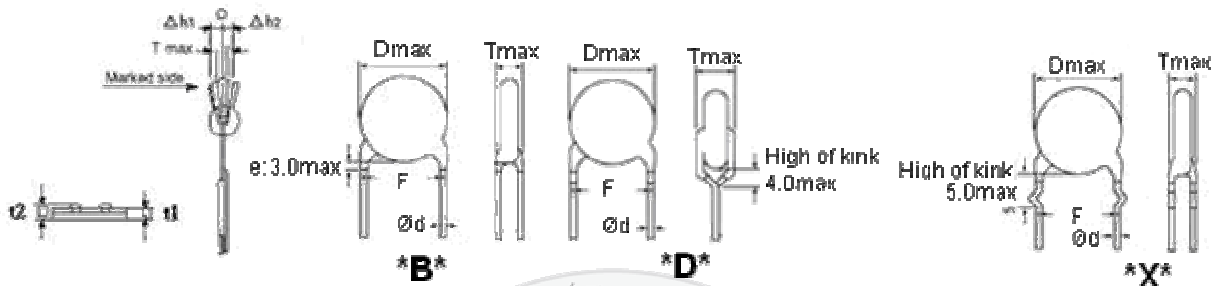
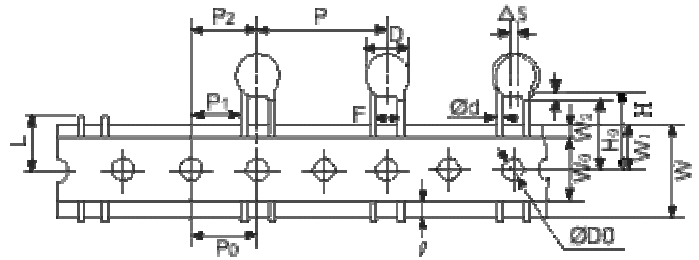
- 15mm pitch/lead spacing 7.5mm taping

Lead Code: ***BAFD7** & ***DAFD7** & ***XAFD7**



- 25.4mm pitch/lead spacing 10.0mm taping

Lead Code: ***DAMD0** & ***XAMD0** & ***BAMD0**



| POE Part Number | | *BAFD7 | *DAFD7 *XAFD7 | *BAMD0 *DAMD0 *XAMD0 |
|--|--------|---|------------------|---|
| Item | Symbol | Dimensions (mm) | Dimensions (mm) | Dimensions (mm) |
| Pitch of component | P | 15.0 | 15.0 | 25.4 |
| Pitch of sprocket | P0 | 15.0±0.3 | 15.0±0.3 | 12.7±0.3 |
| Lead spacing | F | 7.5±1.0 | 7.5±1.0 | 10.0±1.0 |
| Length from hole center to component center | P2 | 7.5±1.5 | 7.5±1.5 | 12.7 ± 1.5 |
| Length from hole center to lead | P1 | 3.75±1.0 | 3.75±1.0 | 7.7±1.5 |
| Body diameter | D | See the "3. Capacitance value vs. Rate voltage, product diameter" | | |
| Deviation along tape, left or right | ΔS | 0±2.0 | | |
| Carrier tape width | W | 18.0 +1/-0.5 | | |
| Position of sprocket hole | W1 | 9.0±0.5 | | |
| Lead distance between the kink and center of sprocket hole | H0 | --- | 18.0+2.0/-0 | 18.0+2.0/-0 For: *DAMD0 *XAMD0 |
| Lead distance between the bottom of body and the center of sprocket hole | H | 20.0+1.5/-1.0 | --- | 20.0+1.5/-1.0 For: *BAMD0 |
| Protrusion length | ℓ | 2.0max (Or the end of lead wire may be inside the tape.) | | |
| Diameter of sprocket hole | D0 | 4.0±0.2 | | |
| Lead diameter | φd | 0.55 ±0.05 | | |
| Total tape thickness | t1 | 0.6±0.3 | | |
| Total thickness, tape and lead wire | t2 | 1.5 max. | | |
| Deviation across tape | Δh1 | 2.0 max. | | |
| | Δh2 | 2.0 max. | | |
| Portion to cut in case of defect | L | 11.0 max. | | |
| Hole-down tape width | W0 | 11.5min | | |
| Hole-down tape distortion | W2 | 1.5±1.5 | | |
| Coating extension on leads | e | 3.0 max for straight lead style; Not exceed the kink leads for kink lead. | | |
| Body thickness | T | See the "3. Capacitance value vs. Rate voltage, product diameter" | | |

6. Specification and test method:

6.1 SCOPE: THIS SPECIFICATION APPLIES TO TEMPERATURE COMPENSATING CONSTANT, 3KV CERAMIC CAPACITOR.

6.2 TEST CONDITIONS:

UNLESS OTHERWISE SPECIFIED, ALL TESTS SHALL BE OPERATED AT THE STANDARD TEST CONDITIONS OF TEMPERATURE 5°C TO 35°C AND RELATIVE HUMIDITY 45% TO 85%. WHEN FAILS A TEST, RETEST BE OPERATED AT THE CONDITIONS OF TEMPERATURE 25°C ± 2°C, RELATIVE HUMIDITY OF 60% TO 70% AND BAROMETRIC PRESSURE 860 TO 1060 MBAR.

6.3 HANDLE PROCEDURE: TO AVOID UNEXPECT TESTING RESULTS FROM OCCURING, THE TESTED CAPACITOR MUST BE KEPT AT ROOM TEMPERATURE FOR AT LEAST 30 MINUTES AND COMPLETELY DISCHARGED.

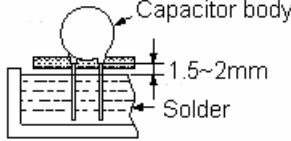
6.4 TEST ITEMS:

| ITEM | POST-TEST REQUIREMENTS | TESTING PROCEDURE |
|-----------------------------------|---|--|
| APPEARANCE STRUCTURE SIZE | NO ABNORMALITIES | AS STATED IN SECTION 3.1 & 3.2 |
| MARKING | | AS STATED IN SECTION 4 |
| WITHSTAND VOLTAGEN | BETWEEN TERMINALS: NO ABNORMALITIES | RATED VOLTAGE 6KVDC: 150% OF THE RATED VOLTAGE FOR 1 TO 5 SECONDS.(TEST VOLTAGE : 9000VDC, 1~5 SEC), WITH 50mA MAX. CHARGING CURRENT |
| | BETWEEN TERMINAL AND ENCLOSURE : NO ABNORMALITIES | SMALL METALLIC BALLS WITH 1mm DIAMETERS SHALL BE PUT ON A VESSEL AND THE TEST CAPACITOR SHALL BE SUBMERGED EXCEPT 2mm FROM THE TOP OF ITS COMPONENT BODY. THE TEST VOLTAGE SHALL BE APPLIED BETWEEN THE SHORT-CIRCUITED TERMINALS AND THE METALLIC BALLS. (APPLY 1.3KV DC OF RATED VOLTAGE BETWEEN TERMINALS AND ENCLOSURE FOR 1~5 SEC) |
| INSULATION RESISTANCE | 10000 MΩ MIN | INSULATION RESISTANCE SHALL BE MEASURED AT 60±5 SECONDS AFTER RATED VOLTAGE APPLIED. RATED VOLTAGE : 500VDC |
| CAPACITANCE | TOLERANCE : J : ±5% , K : ±10% | TESTING FREQUENCY: 1MHZ ± 20 % TESTING TEMPERATURE: 25 ± 2°C TESTING VOLTAGE: 1.0 ± 0.2 VRMS |
| OPERATING TEMPERATURE RANGE | WIDE OPERATING TEMPERATURE RANGE : -25°C TO +125°C (INCLUDING MAXIMUM TEMPERATURE RISE OF +20°C) | |
| Q FACTOR) | 30PF&Above | AS ABOVE STIPULATION OF CAPACITANCE |
| | Below 30PF | |
| | ≥ 1000 | ≥ 400+20× |
| TEMPERATURE CHARACTERISTIC | Temperature coefficient: SL: +350 ~ -1000ppm/°C (+20°C~+85°C) CAPACITANCE TOLERANCE: SL WITHIN ±0.2% OR ±0.05PF, WHICHEVER IS LARGE | ACCORDING TO STEP 1 TO 5 IN ORDER, MEASURED CAPACITANCE WHEN TEMPERATURE REACH BALANCE AND TEMPERATURE COEFFICIENT SHALL BE CALCULATED ON THE FOLLOWING FORMULA : PPM/°C =(C2-C1)×10E6/C1(T2-T1) STEP 1,3,5: 25°C STEP 4: 85°C STEP 2: -25°C , SL(+20°C) NOTE : C1 = CAPACITANCE AS STEP 3 C2 = CAPACITANCE AS STEP 2 OR 4 T1 = TEMPERATURE AS STEP 3 T2 = TEMPERATURE AS STEP 2 OR 4 ACCORDING TO ABOVE STEP 1,3 & 5, CAPACITANCE TOLERANCE SHALL BE CALCULATED ON THE FOLLOWING FORMULA : △ C % =(G - S)/C1 NOTE: G = GREATEST CAPACITANCE AS TESTING RESULT OF STEP 1,3 & 5 S = LEAST CAPACITANCE AS TESTING RESULT OF STEP 1,3 & 5 C1 = CAPACITANCE AS STEP 3 |

6KV TEMPERATURE COMPENSATING CERAMIC CAPACITOR

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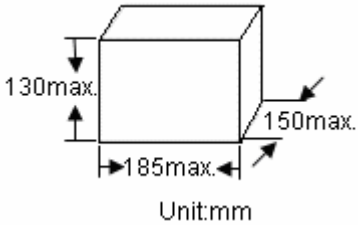
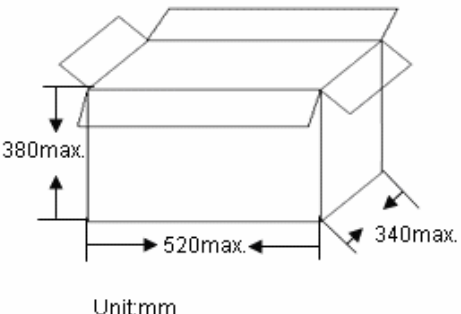
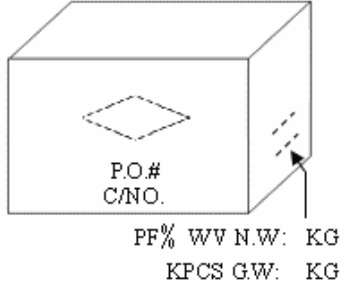
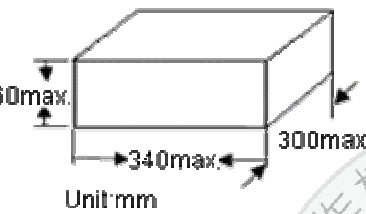

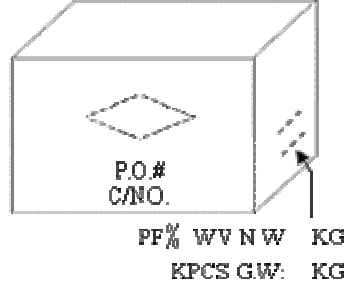
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| ITEM | POST-TEST REQUIREMENTS | TESTING PROCEDURE |
|--|---|--|
| TERMINAL STRENGTH | TENSIBLE STRENGTH: NO BREAKDOWN | WIRE DIA.0.6mm, LOADING WEIGHT 1.0KG FOR 10±1 SECONDS |
| | BENDING STRENGTH: NO BREAKDOWN | WIRE DIA.0.6mm, LOADING WEIGHT 0.5 KG. (BENDING BACK AND FORTH 90 DEGREE TWICE) |
| SOLDERING HEAT RESISTANCE | APPEARANCE: NO ABNORMALITIES | <p>AS SHOWN IN FIGURE, THE LEAD WIRES SHOULD BE IMMERSED IN THE MOLTEN SOLDER UP TO 1.5 TO 2.0mm FROM THE ROOT OF TERMINAL.</p>  <p>(A) BODY DIA. ≤ 6.3mm: INTO THE MOLTEN SOLDER OF WHICH TEMPERATURE: 270±5°C FOR 3±0.5 SECONDS.</p> <p>(B) BODY DIA. > 6.3mm: INTO THE MOLTEN SOLDER OF WHICH TEMPERATURE 350±10°C FOR 3±0.5 SECONDS THEN LEAVE AT STANDARD TEST CONDITIONS FOR 24±2 HOURS, THEN MEASURED.</p> |
| | CAP.CHANGE: SL WITHIN ±2.5% OR ±0.25PF, WHICHEVER IS LARGE. | |
| | WITHSTAND VOLTAGE: (BETWEEN TERMINALS) NO ABNORMALITIES | |
| SOLDERABILITY | LEAD WIRE SHALL BE SOLDERED OVER 75% OF THE CIRCUMFERENTIAL DIRECTION. | TO COMPLY WITH JIS-C-5102 8.4 SOLDER TEMPERATURE 245±5°C AND DIPPING TIME 5±0.5 SECONDS FLUX : WEIGHT RATIO OF POSIN 25% |
| HUMIDITY CHARACTERISTIC (STABLE SITUATION) | APPEARANCE: NO ABNORMALITIES | CAPACITORS SHALL BE SUBJECTED TO A RELATIVE HUMIDITY OF 90 ~ 95% AT 40±2°C FOR 500(+24/-0) HOURS. THEN DRIED FOR 1~2 HOURS AND MEASURED. |
| | CAP.CHANGE: SL WITHIN ±5% OR ±0.5PF, WHICHEVER IS LARGE. | |
| | Q FACTOR: SL LESS THAN 10PF => Q ≥ 200 + 10 × C MORE THAN 10PF AND LESS THAN 30PF => Q ≥ 275 +5 × C/2 MORE THAN 30PF => Q ≥ 350 | |
| | INSULATION RESISTANCE: 1000MΩ MIN. | |

| ITEM | POST-TEST REQUIREMENTS | TESTING PROCEDURE |
|---|--|--|
| <p>HUMIDITY LOADING</p> | <p>APPEARANCE: NO ABNORAMLITIES</p> | <p>CAPACITORS SHALL BE SUBJECTED TO A RELATIVE HUMIDITY OF 90 ~ 95% AT 40 ± 2°C FOR 500(+24/-0) HOURS WITH RATED VOLTAGE APPLIED WITH 50mA MAX. THEN DRIED FOR 1~2 HOURS AND MEASURED.</p> |
| | <p>CAP.CHANGE: SL WITHIN ±7.5 % OR ±0.75PF, WHICHEVER IS LARGE.</p> | |
| | <p>Q FACTOR: SL LESS THAN 30PF => Q ≥ 100 +10 × C/3 MORE THAN 30PF => Q ≥ 200</p> | |
| | <p>INSULATION RESISTANCE: 500 MΩ MIN</p> | |
| <p>HIGH TEMPERATURE LOADING</p> | <p>APPEARANCE : NO ABNORMALITIES</p> | <p>150% RATED VOLTAGE WITH 50mA max. FOR 1000(+48/-0) HOURS AT 125±2°C AND THEN DRIED FOR 1~2 HOURS AND MEASURED.</p> |
| | <p>CAP.CHANGE : WITHIN ±3 % OR ±0.3PF, WHICHEVER IS LARGE.</p> | |
| | <p>Q FACTOR: SL: LESS THAN 10PF => Q ≥ 200 + 10 × C MORE THAN 10PF AND LESS THAN 30PF => Q ≥ 275 +5 × C/2 MORE THAN 30PF => Q ≥ 350</p> | |
| | <p>INSULATION RESISTANCE: 1000 MΩ MIN.</p> | |

7.Packing Baggage :

7.1 Packing size:

| Type | Box | Carton |
|-------------|---|--|
| Bulk |  <p>Unit:mm</p> |  <p>Unit:mm</p>  <p>P.O.# C/NO. PF% WV N.W: KG KPCS G.W: KG</p> |
| Ammo taping |  <p>Unit:mm</p> |  <p>Unit:mm</p>  <p>P.O.# C/NO. PF% WV N.W: KG KPCS G.W: KG</p> |

7.2 Packing quantity:

| Packing type | The code of 14th to15th in SAP P/N | MPQ (Kpcs/ Box) |
|--------------|------------------------------------|-----------------|
| Taping | AF | 1 |
| | AM | 0.5 |

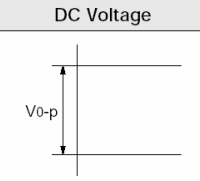
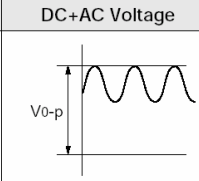
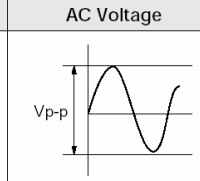
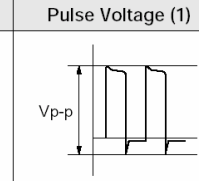
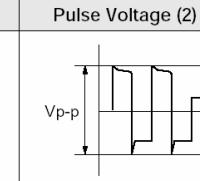
| Packing type | MPQ (Kpcs/Bag) |
|--------------|----------------|
| Bulk | 1 |

8. Notices:

8.1 Operating Voltage:

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

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

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

8.2 Operating Temperature and Self-generated Heat

Keep the surface temperature of a capacitor below the upper limit of its rated operating temperature range. Be sure to take into account the heat generated by the capacitor itself. When the capacitor is used in a high frequency current, pulse current or similar current, it may self-generate heat due to dielectric loss. The frequency of the applied sine wave voltage should be less than 100kHz. The applied voltage load (*) should be such that the capacitor's self-generated heat is within 20°C at an atmosphere temperature of 25°C. When measuring, use a thermocouple of small thermal capacity-K of $\phi 0.1\text{mm}$ in conditions where the capacitor is not affected by radiant heat from other components or surrounding ambient fluctuations.

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.)

8.3 Fail-Safe

When capacitor is 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.

8.4 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 -10 to 40 degrees centigrade and 15 to 85 % for 6 months maximum and use within the period after receiving the capacitors.

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.

8.5 Vibration and impact

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

8.6 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 degrees C. max.

Soldering iron wattage : 50W max.

Soldering time : 3.5 sec. max.

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.

8.7 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.

8.8 Rating

Capacitance change of capacitor

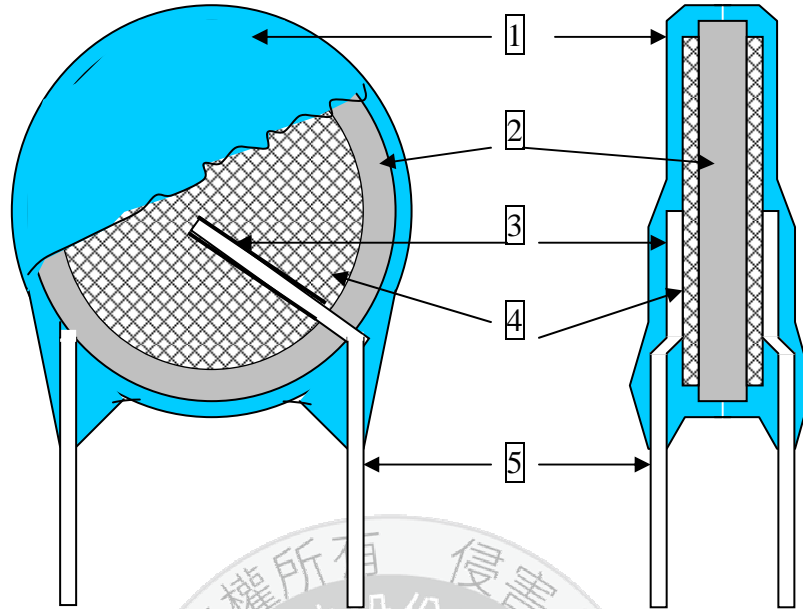
I. Class 1 series (Temp. Char. SL)

Capacitance might change a little depending on the surrounding temperature or an applied voltage.

Please contact us if you intend to use this product in a strict time constant circuit.

9.Drawing of internal structure and material list:

產品結構圖



Remarks :

| No. | Part name | Material | Model/Type | Component |
|-----|--------------------|-------------------------------|---|--|
| 1 | Insulation Coating | Epoxy polymer | 1.EE-150C 2.EF-150(HF) 3.PCE-210 2.PCE-300(HF) | Epoxy resin、Pigment (Blue / UL 94 V-0 /) The minimum thickness of coating (reinforced insulation) is 0.4mm |
| 2 | Dielectric Element | Ceramic | SL | BaTiO ₃ |
| 3 | Solder | Tin-silver | Sn96.5-Ag3-Cu0.5 | Sn96.5-Ag3-Cu0.5 |
| 4 | Electrodes | Ag | 1.SP-160PL 2.SP-260PL | Silver、Glass frit |
| 5 | Leads wire | Tinned copper clad steel wire | 0.55±0.05 mm | Substrate metal: Fe & Cu Surface plating: Sn 100%(3~7μm) |