

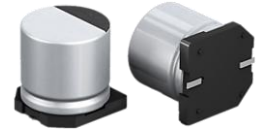
|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                   |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|
| SPECIFICATION SHEET NO.             | T0128- UE108M010HGKTA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                   |
| ORIGINAL MFG/PART NO.               | <b>Aillen</b> Aillen Capacitors/CAE108M1AHUEGJ2TR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                   |
| NEXTGEN PART CODE                   | UE108M010HGKTA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Indicate This Code For <a href="#">RFQ</a> /Order |
| DATE                                | Jan. 28, 2026                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                   |
| REVISION                            | A6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Updated With Most Recent Data                     |
| DESCRIPTION AND<br>MAIN PARAMETRICS | <p>Aluminum Electrolytic Capacitors (CAE), SMD Type, UE Series, 2 Pads</p> <p>Wide Temperature and Low Impedance</p> <p>Capacitance 1000μF, Tolerance ±20%, Voltage 10V</p> <p>Case size: Ø10.0*L10.2mm, Impedance (Ω/20°C,100KHz): 0.23Ω Max.</p> <p>Ripple Current (mA r.m.s./@+105°C, 100KHz): 360mA Max.</p> <p>Lifetime @105°C ±2: 2000 Hours Operating Temp. Range -55°C ~+105°C</p> <p>Package in Tape/Reel, 500pcs/Reel</p> <p>REACH/RoHS Compliant, RoHS Directive2011/65/EU with amendment (EU) 2015/863 &amp; Halogen Free</p> |                                                   |
| CUSTOMER                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                   |
| CUSTOMER PART NO.                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                   |
| CROSS REF. PART NO.                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                   |
| MEMO                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                   |

|                         |                                                                                     |                                                                                      |                                                                                       |
|-------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| VENDOR APPROVE          |                                                                                     |                                                                                      |                                                                                       |
| Issued/Checked/Approved |  |  |  |
| Date: Jan. 28, 2026     |                                                                                     |                                                                                      |                                                                                       |

|                  |
|------------------|
| CUSTOMER APPROVE |
|                  |
| Date:            |

## MAIN FEATURE

- Aluminum Electrolytic Capacitors Foil Type, Radial, Can – SMD
- Wide Temperature And Low Impedance Type
- High Stability And Reliability and Designed Capacitors Quality Meets IEC60384
- Operating Temperature Range: -55~+105°C
- Available For High Density Surface Mounting
- Max. Rated Voltage 100V
- Max. Rated Capacitance 1500μF
- Offer Quality Alternatives Parts For Major Brand KEMET/CHEMI-CON/NICHICON/RUBYCON and more
- Moisture Sensitivity Level (MSL) 1 (Unlimited)
- REACH/RoHS Compliant, RoHS Directive 2011/65/EU with amendment (EU) 2015/863 & Halogen Free



*Image shown is a representation only. Exact specifications should be obtained from the product dimension.*



## MAIN APPLICATION

- High-density Patch Assembly Electronic Circuit: Power Supply, Lighting, etc
- Industrial Equipment: Routers, Switches, Measuring Instruments, etc.
- Consumption Type Equipment: Amplifying Circuit Of Intelligent Loudspeaker, Smoothing Circuit, LED Lamp, etc.

## ELECTRICAL CHARACTERISTICS

- See Page 8 ~Page 16 For Different Part Number.
- Specification Are Subject To Change Without Notice Should A Safety Or Technical Concern Arise Regarding The Product, Please Be Sure To Contact Our Sales Team.
- All Products Parameters are Subject To NextGen Components' Final Confirmation.

## HOW TO ORDER

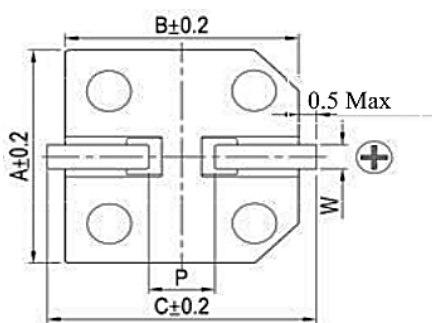
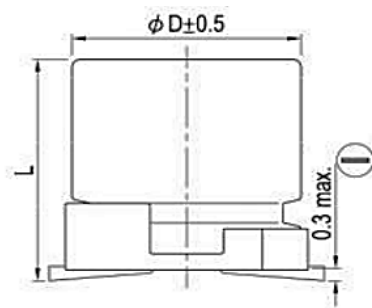
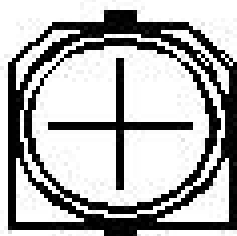
- Please Follow Up Part Code Guide And Indicate NextGen Order Part Code UE108M010HGKTA For RFQ/Order.

## PART CODE GUIDE

**RFQ**
[Request For Quotation](#)

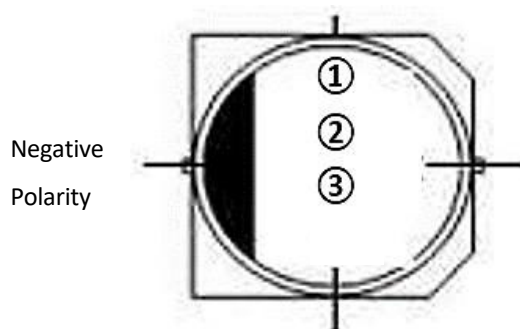
| CODE | NAME                       | KEY SPECIFICATION OPTION                                                                                                                                                                                        |
|------|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UE   | Product Index              | Aluminum Electrolytic Capacitors(CAE), V-Chip Type, Original MFG Series Number CDUE                                                                                                                             |
| 108  | Rated Capacitance          | 475: 4.7μF; 105: 1.0μF; 106: 10μF; 156: 15μF; 226: 22μF; 276: 27μF; 336: 33μF; 476: 47μF; 566: 56μF; 686: 68μF; 107: 100μF; 157: 150μF; 227: 220μF 337: 330μF; 477: 470μF; 687: 680μF; 108: 1000μF; 158: 1500μF |
| M    | Capacitance Tolerance      | M: ±20% (Standard)                                                                                                                                                                                              |
| 010  | Rated Voltage              | 6V3: 6.3V; 010: 10V; 016:16V; 025: 25V; 035: 35V; 050: 50V; 063: 63V; 080: 80V; 100: 100V                                                                                                                       |
| H    | Environmental Requirements | H: REACH/RoHS Compliant, RoHS Directive2011/65/EU with amendment (EU) 2015/863 & Halogen Free                                                                                                                   |
| G    | Case Diameter              | C: Ø4.0mm; D: Ø5.0mm; E: Ø6.3mm; F: Ø8.0mm; G: Ø10.0mm                                                                                                                                                          |
| K    | Case Length                | H: L5.4mm; I: L6.5mm; J: L7.7mm; K: L10.2mm                                                                                                                                                                     |
| T    | Package                    | T: Tape and Reel                                                                                                                                                                                                |
| A    | Internal Control Code      | Letter A~Z, a~z or digits (0~9)                                                                                                                                                                                 |
| XX   | Suffix                     | Blank: N/A<br>XX: Letter A~Z, a~z or digits (0~9) for Special/Custom Parameters                                                                                                                                 |

DIMENSION (Unit: mm )  $\varnothing D4.0 \sim \varnothing D6.3$  Non explosion proof valve;  $\varnothing D8.0 \sim \varnothing D10$  Explosion proof valve



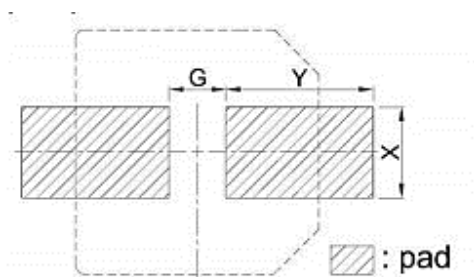
| $\varnothing D$ | 4.0       | 5.0       | 6.3       | 6.3       | 8.0       | 8.0       | 10.0      |
|-----------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Case L          | 5.4       | 5.4       | 5.4       | 7.7       | 6.5       | 10.2      | 10.2      |
| Tolerance @ L   | $\pm 0.5$ | $\pm 0.5$ | $\pm 0.5$ | $\pm 0.5$ | $\pm 0.5$ | $\pm 0.5$ | $\pm 0.5$ |
| A               | 4.3       | 5.3       | 6.6       | 6.6       | 8.3       | 8.3       | 10.3      |
| B               | 4.3       | 5.3       | 6.6       | 6.6       | 8.3       | 8.3       | 10.3      |
| C               | 5.1       | 6.1       | 7.3       | 7.3       | 9.2       | 9.2       | 11.2      |
| P               | 1.0       | 1.5       | 2.1       | 2.1       | 3.1       | 3.1       | 4.5       |
| W               | 0.5~0.9   | 0.5~0.9   | 0.5~0.9   | 0.5~0.9   | 0.8~1.1   | 0.8~1.1   | 0.8~1.1   |

## MARKING GUIDE – FOR DIFFERENT ONLY



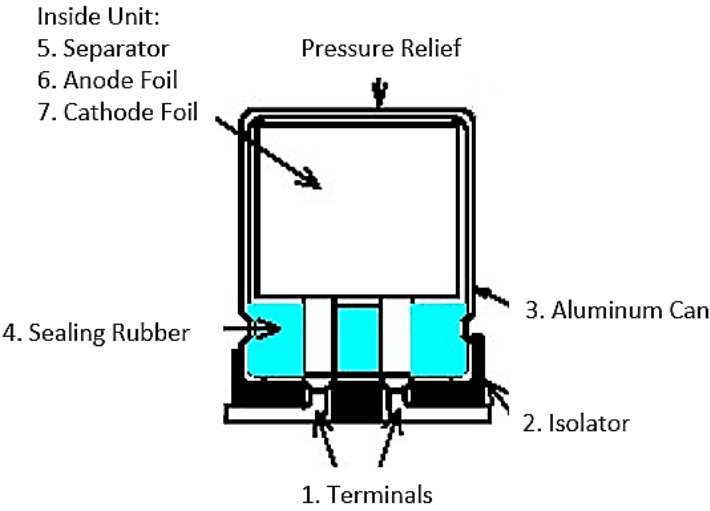
| SYMBOL | NAME              | VALUE  | MARKING |
|--------|-------------------|--------|---------|
| ①      | Rated Capacitance | 1000μF | 1000    |
| ②      | Rated Voltage     | 10V    | 10V     |
| ③      | Series Code       | UE     | UE      |

## RECOMMENDED LAND PATTERN (Unit: mm)



| DIAMETER SIZE | X   | Y   | G   |
|---------------|-----|-----|-----|
| Ø4            | 1.6 | 2.6 | 1.0 |
| Ø5            | 1.6 | 3.0 | 1.4 |
| Ø6.3          | 1.6 | 3.5 | 1.9 |
| Ø8            | 2.5 | 3.5 | 3.0 |
| Ø10           | 2.5 | 4.0 | 4.0 |

CONSTRUCTION – FOR REFERENCE ONLY



| NO. | PARTS          | MATERIAL                                  |
|-----|----------------|-------------------------------------------|
| 1   | Terminal       | Tinned Copper – Clad Steel Wire (Pb Free) |
| 2   | Isolator       | Thermo-plastic resin                      |
| 3   | Aluminum Can   | Aluminum                                  |
| 4   | Sealing Rubber | Synthetic rubber                          |
| 5   | Separator      | Manila hemp                               |
| 6   | Anode Foil     | High purity aluminum foil                 |
| 7   | Cathode Foil   | Aluminum foil                             |

## GENERAL ELECTRICAL CHARACTERISTICS – FOR DIFFERENT PART CODE

| PARAMETER                            | UNITS | VALUE      |
|--------------------------------------|-------|------------|
| Operating Junction Temperature Range | °C    | -55 ~ +105 |
| Storage Temperature Range            | °C    | -55 ~ +150 |
| Lifetime @105°C ±2                   | Hours | 2000       |

## FREQUENCY COEFFICIENT OF ALLOWABLE RIPPLE CURRENT

| Frequency   | 50Hz | 120Hz | 300Hz | 1KHz | ≥10KHz |
|-------------|------|-------|-------|------|--------|
| Coefficient | 0.64 | 0.70  | 0.75  | 0.85 | 1.00   |

## TEMPERATURE COEFFICIENT

| AMBIENT TEMPERATURE (°C) | 105 | 85  | ≤70 |
|--------------------------|-----|-----|-----|
| Coefficient              | 1   | 1.5 | 2   |

ELECTRICAL CHARACTERISTICS - Ta = 25°C, FOR DIFFERENT PART CODE

| NEXTGEN ORDER<br>PART CODE | RATE<br>VOL. | CAPACITOR<br>VALUE | MAX.DF<br>@20°C,<br>120HZ | MAX.<br>LEAKAGE<br>CURRENT | MAX.<br>IMPEDANCE<br>@20 °C<br>100KHZ | MAX.<br>RIPPLE<br>CURRENT<br>@ 105°C<br>100KHZ | CASE<br>SIZE<br>ØD X L |
|----------------------------|--------------|--------------------|---------------------------|----------------------------|---------------------------------------|------------------------------------------------|------------------------|
|                            | V            | µF                 | %                         | µA                         | Ω                                     | mA r.m.s                                       | mm                     |
| UE226M6V3HCHTA             | 6.3          | 22                 | 26                        | 3                          | 4.5                                   | 50                                             | 4x5.4                  |
| UE336M6V3HDHTA             | 6.3          | 33                 | 26                        | 3                          | 1.9                                   | 80                                             | 5x5.4                  |
| UE476M6V3HCHTA             | 6.3          | 47                 | 26                        | 3                          | 4.5                                   | 50                                             | 4x5.4                  |
| UE476M6V3HDHTA             | 6.3          | 47                 | 26                        | 3                          | 1.9                                   | 80                                             | 5x5.4                  |
| UE686M6V3HEHTA             | 6.3          | 68                 | 26                        | 4.284                      | 1.1                                   | 115                                            | 6.3x5.4                |
| UE107M6V3HDHTA             | 6.3          | 100                | 26                        | 6.3                        | 1.9                                   | 80                                             | 5x5.4                  |
| UE107M6V3HEHTA             | 6.3          | 100                | 26                        | 6.3                        | 1.1                                   | 115                                            | 6.3x5.4                |
| UE157M6V3HEHTA             | 6.3          | 150                | 26                        | 9.45                       | 1.1                                   | 115                                            | 6.3x5.4                |
| UE227M6V3HEHTA             | 6.3          | 220                | 26                        | 13.86                      | 1.1                                   | 115                                            | 6.3x5.4                |
| UE227M6V3HEJTA             | 6.3          | 220                | 26                        | 13.86                      | 0.85                                  | 150                                            | 6.3x7.7                |
| UE337M6V3HEJTA             | 6.3          | 330                | 26                        | 20.79                      | 0.85                                  | 150                                            | 6.3x7.7                |
| UE477M6V3HEJTA             | 6.3          | 470                | 26                        | 29.61                      | 0.85                                  | 150                                            | 6.3x7.7                |
| UE477M6V3HFKTA             | 6.3          | 470                | 26                        | 29.61                      | 0.43                                  | 240                                            | 8x10.2                 |
| UE108M6V3HGKTA             | 6.3          | 1000               | 26                        | 63                         | 0.23                                  | 360                                            | 10x10.2                |
| UE158M6V3HGKTA             | 6.3          | 1500               | 26                        | 94.5                       | 0.23                                  | 360                                            | 10x10.2                |
|                            |              |                    |                           |                            |                                       |                                                |                        |
|                            |              |                    |                           |                            |                                       |                                                |                        |
|                            |              |                    |                           |                            |                                       |                                                |                        |
|                            |              |                    |                           |                            |                                       |                                                |                        |
|                            |              |                    |                           |                            |                                       |                                                |                        |



ELECTRICAL CHARACTERISTICS - Ta = 25°C, FOR DIFFERENT PART CODE

| NEXTGEN ORDER<br>PART CODE | RATE<br>VOL. | CAPACITOR<br>VALUE | MAX.DF<br>@20°C,<br>120HZ | MAX.<br>LEAKAGE<br>CURRENT | MAX.<br>IMPEDANCE<br>@20 °C<br>100KHZ | MAX.<br>RIPPLE<br>CURRENT<br>@ 105°C<br>100KHZ | CASE<br>SIZE<br>ØD X L |
|----------------------------|--------------|--------------------|---------------------------|----------------------------|---------------------------------------|------------------------------------------------|------------------------|
|                            | V            | µF                 | %                         | µA                         | Ω                                     | mA r.m.s                                       | mm                     |
| UE226M010HCHTA             | 10           | 22                 | 20                        | 3                          | 4.5                                   | 50                                             | 4x5.4                  |
| UE336M010HDHTA             | 10           | 33                 | 20                        | 3.3                        | 1.9                                   | 80                                             | 5x5.4                  |
| UE476M010HEHTA             | 10           | 47                 | 20                        | 4.7                        | 1.1                                   | 115                                            | 6.3x5.4                |
| UE107M010HDHTA             | 10           | 100                | 20                        | 10                         | 1.9                                   | 80                                             | 5x5.4                  |
| UE107M010HEHTA             | 10           | 100                | 20                        | 10                         | 1.1                                   | 115                                            | 6.3x5.4                |
| UE157M010HEJTA             | 10           | 150                | 20                        | 15                         | 0.85                                  | 150                                            | 6.3x7.7                |
| UE227M010HEHTA             | 10           | 220                | 20                        | 22                         | 1.1                                   | 115                                            | 6.3x5.4                |
| UE227M010HEJTA             | 10           | 220                | 20                        | 22                         | 0.85                                  | 150                                            | 6.3x7.7                |
| UE227M010HFITA             | 10           | 220                | 20                        | 22                         | 0.85                                  | 150                                            | 8x6.5                  |
| UE337M010HEJTA             | 10           | 330                | 20                        | 33                         | 0.85                                  | 150                                            | 6.3x7.7                |
| UE337M010HFKTA             | 10           | 330                | 20                        | 33                         | 0.43                                  | 240                                            | 8x10.2                 |
| UE477M010HEJTA             | 10           | 470                | 20                        | 47                         | 0.85                                  | 150                                            | 6.3x7.7                |
| UE477M010HFKTA             | 10           | 470                | 20                        | 47                         | 0.43                                  | 240                                            | 8x10.2                 |
| UE108M010HGKTA             | 10           | 1000               | 20                        | 100                        | 0.23                                  | 360                                            | 10x10.2                |
|                            |              |                    |                           |                            |                                       |                                                |                        |
|                            |              |                    |                           |                            |                                       |                                                |                        |
|                            |              |                    |                           |                            |                                       |                                                |                        |
|                            |              |                    |                           |                            |                                       |                                                |                        |
|                            |              |                    |                           |                            |                                       |                                                |                        |
|                            |              |                    |                           |                            |                                       |                                                |                        |

ELECTRICAL CHARACTERISTICS - Ta = 25°C, FOR DIFFERENT PART CODE

| NEXTGEN ORDER<br>PART CODE | RATE<br>VOL. | CAPACITOR<br>VALUE | MAX.DF<br>@20°C,<br>120HZ | MAX.<br>LEAKAGE<br>CURRENT | MAX.<br>IMPEDANCE<br>@20 °C<br>100KHZ | MAX.<br>RIPPLE<br>CURRENT<br>@ 105°C<br>100KHZ | CASE<br>SIZE<br>ØD X L |
|----------------------------|--------------|--------------------|---------------------------|----------------------------|---------------------------------------|------------------------------------------------|------------------------|
|                            | V            | µF                 | %                         | µA                         | Ω                                     | mA r.m.s                                       | mm                     |
| UE475M016HCHTA             | 16           | 4.7                | 16                        | 3                          | 4                                     | 38                                             | 4x5.4                  |
| UE106M016HCHTA             | 16           | 10                 | 16                        | 3                          | 4.5                                   | 50                                             | 4x5.4                  |
| UE226M016HCHTA             | 16           | 22                 | 16                        | 3.52                       | 4.5                                   | 50                                             | 4x5.4                  |
| UE226M016HDHTA             | 16           | 22                 | 16                        | 3.52                       | 1.9                                   | 80                                             | 5x5.4                  |
| UE336M016HEHTA             | 16           | 33                 | 16                        | 5.28                       | 1.1                                   | 115                                            | 6.3x5.4                |
| UE476M016HDHTA             | 16           | 47                 | 16                        | 7.52                       | 1.9                                   | 80                                             | 5x5.4                  |
| UE476M016HEHTA             | 16           | 47                 | 16                        | 7.52                       | 1.1                                   | 115                                            | 6.3x5.4                |
| UE107M016HEHTA             | 16           | 100                | 16                        | 16                         | 1.1                                   | 115                                            | 6.3x5.4                |
| UE107M016HEJTA             | 16           | 100                | 16                        | 16                         | 0.85                                  | 150                                            | 6.3x7.7                |
| UE157M016HEJTA             | 16           | 150                | 16                        | 24                         | 0.85                                  | 150                                            | 6.3x7.7                |
| UE227M016HEJTA             | 16           | 220                | 16                        | 35.2                       | 0.85                                  | 150                                            | 6.3x7.7                |
| UE227M016HFKTA             | 16           | 220                | 16                        | 35.2                       | 0.43                                  | 240                                            | 8x10.2                 |
| UE337M016HFKTA             | 16           | 330                | 16                        | 52.8                       | 0.43                                  | 240                                            | 8x10.2                 |
| UE477M016HFKTA             | 16           | 470                | 16                        | 75.2                       | 0.43                                  | 240                                            | 8x10.2                 |
| UE477M016HGKTA             | 16           | 470                | 16                        | 75.2                       | 0.23                                  | 360                                            | 10x10.2                |
| UE567M016HGKTA             | 16           | 560                | 16                        | 89.6                       | 0.23                                  | 360                                            | 10x10.2                |
| UE108M016HGKTA             | 16           | 1000               | 16                        | 160                        | 0.23                                  | 360                                            | 10x10.2                |
|                            |              |                    |                           |                            |                                       |                                                |                        |
|                            |              |                    |                           |                            |                                       |                                                |                        |
|                            |              |                    |                           |                            |                                       |                                                |                        |

**ELECTRICAL CHARACTERISTICS - Ta = 25°C, FOR DIFFERENT PART CODE**

| NEXTGEN ORDER<br>PART CODE | RATE<br>VOL. | CAPACITOR<br>VALUE | MAX.DF<br>@20°C,<br>120HZ | MAX.<br>LEAKAGE<br>CURRENT | MAX.<br>IMPEDANCE<br>@20 °C<br>100KHZ | MAX.<br>RIPPLE<br>CURRENT<br>@ 105°C<br>100KHZ | CASE<br>SIZE<br>ØD X L |
|----------------------------|--------------|--------------------|---------------------------|----------------------------|---------------------------------------|------------------------------------------------|------------------------|
|                            | V            | µF                 | %                         | µA                         | Ω                                     | mA r.m.s                                       | mm                     |
| UE475M025HCHTA             | 25           | 4.7                | 14                        | 3                          | 4.5                                   | 50                                             | 4x5.4                  |
| UE106M025HCHTA             | 25           | 10                 | 14                        | 3                          | 4.5                                   | 50                                             | 4x5.4                  |
| UE106M025HDHTA             | 25           | 10                 | 14                        | 3                          | 1.9                                   | 80                                             | 5x5.4                  |
| UE226M025HDHTA             | 25           | 22                 | 14                        | 5.5                        | 1.9                                   | 80                                             | 5x5.4                  |
| UE226M025HEHTA             | 25           | 22                 | 14                        | 5.5                        | 1.1                                   | 115                                            | 6.3x5.4                |
| UE336M025HEHTA             | 25           | 33                 | 14                        | 8.25                       | 1.1                                   | 115                                            | 6.3x5.4                |
| UE476M025HEHTA             | 25           | 47                 | 14                        | 11.75                      | 1.1                                   | 115                                            | 6.3x5.4                |
| UE107M025HEHTA             | 25           | 100                | 14                        | 25                         | 1                                     | 140                                            | 6.3x5.4                |
| UE107M025HEJTA             | 25           | 100                | 14                        | 25                         | 0.85                                  | 150                                            | 6.3x7.7                |
| UE107M025HFITA             | 25           | 100                | 14                        | 25                         | 0.85                                  | 150                                            | 8x6.5                  |
| UE157M025HFKTA             | 25           | 150                | 14                        | 37.5                       | 0.43                                  | 240                                            | 8x10.2                 |
| UE227M025HFKTA             | 25           | 220                | 14                        | 55                         | 0.43                                  | 240                                            | 8x10.2                 |
| UE337M025HFKTA             | 25           | 330                | 14                        | 82.5                       | 0.43                                  | 240                                            | 8x10.2                 |
| UE337M025HGKTA             | 25           | 330                | 14                        | 82.5                       | 0.23                                  | 360                                            | 10x10.2                |
| UE477M025HGKTA             | 25           | 470                | 14                        | 117.5                      | 0.23                                  | 360                                            | 10x10.2                |
| UE567M025HGKTA             | 25           | 560                | 14                        | 140                        | 0.23                                  | 360                                            | 10x10.2                |
|                            |              |                    |                           |                            |                                       |                                                |                        |
|                            |              |                    |                           |                            |                                       |                                                |                        |
|                            |              |                    |                           |                            |                                       |                                                |                        |
|                            |              |                    |                           |                            |                                       |                                                |                        |
| 1/28/2026                  |              |                    |                           |                            |                                       |                                                | 11                     |

**ELECTRICAL CHARACTERISTICS - Ta = 25°C, FOR DIFFERENT PART CODE**

| NEXTGEN ORDER<br>PART CODE | RATE<br>VOL. | CAPACITOR<br>VALUE | MAX.DF<br>@20°C,<br>120HZ | MAX.<br>LEAKAGE<br>CURRENT | MAX.<br>IMPEDANCE<br>@20 °C<br>100KHZ | MAX.<br>RIPPLE<br>CURRENT<br>@ 105°C<br>100KHZ | CASE<br>SIZE<br>ØD X L |
|----------------------------|--------------|--------------------|---------------------------|----------------------------|---------------------------------------|------------------------------------------------|------------------------|
|                            | V            | µF                 | %                         | µA                         | Ω                                     | mA r.m.s                                       | mm                     |
| UE475M035HCHTA             | 35           | 4.7                | 12                        | 3                          | 4.5                                   | 50                                             | 4x5.4                  |
| UE106M035HDHTA             | 35           | 10                 | 12                        | 3.5                        | 1.9                                   | 80                                             | 5x5.4                  |
| UE226M035HEHTA             | 35           | 22                 | 12                        | 7.7                        | 1.1                                   | 115                                            | 6.3x5.4                |
| UE336M035HEHTA             | 35           | 33                 | 12                        | 11.55                      | 1.1                                   | 115                                            | 6.3x5.4                |
| UE476M035HEHTA             | 35           | 47                 | 12                        | 16.45                      | 1.1                                   | 115                                            | 6.3x5.4                |
| UE476M035HEJTA             | 35           | 47                 | 12                        | 16.45                      | 0.85                                  | 150                                            | 6.3x7.7                |
| UE476M035HFITA             | 35           | 47                 | 12                        | 16.45                      | 0.85                                  | 150                                            | 8x6.5                  |
| UE107M035HEHTA             | 35           | 100                | 12                        | 35                         | 1.1                                   | 115                                            | 6.3x5.4                |
| UE107M035HEJTA             | 35           | 100                | 12                        | 35                         | 0.85                                  | 150                                            | 6.3x7.7                |
| UE107M035HFKTA             | 35           | 100                | 12                        | 35                         | 0.43                                  | 240                                            | 8x10.2                 |
| UE157M035HGKTA             | 35           | 150                | 12                        | 52.5                       | 0.23                                  | 360                                            | 10x10.2                |
| UE227M035HFKTA             | 35           | 220                | 12                        | 77                         | 0.43                                  | 240                                            | 8x10.2                 |
| UE227M035HGKTA             | 35           | 220                | 12                        | 77                         | 0.23                                  | 360                                            | 10x10.2                |
| UE337M035HGKTA             | 35           | 330                | 12                        | 115.5                      | 0.23                                  | 360                                            | 10x10.2                |
| UE477M035HGKTA             | 35           | 470                | 12                        | 164.5                      | 0.23                                  | 360                                            | 10x10.2                |
|                            |              |                    |                           |                            |                                       |                                                |                        |
|                            |              |                    |                           |                            |                                       |                                                |                        |
|                            |              |                    |                           |                            |                                       |                                                |                        |
|                            |              |                    |                           |                            |                                       |                                                |                        |
|                            |              |                    |                           |                            |                                       |                                                |                        |

**ELECTRICAL CHARACTERISTICS - Ta = 25°C, FOR DIFFERENT PART CODE**

| NEXTGEN ORDER<br>PART CODE | RATE<br>VOL. | CAPACITOR<br>VALUE | MAX.DF<br>@20°C,<br>120HZ | MAX.<br>LEAKAGE<br>CURRENT | MAX.<br>IMPEDANCE<br>@20 °C<br>100KHZ | MAX.<br>RIPPLE<br>CURRENT<br>@ 105°C<br>100KHZ | CASE<br>SIZE<br>ØD X L |
|----------------------------|--------------|--------------------|---------------------------|----------------------------|---------------------------------------|------------------------------------------------|------------------------|
|                            | V            | µF                 | %                         | µA                         | Ω                                     | mA r.m.s                                       | mm                     |
| UE105M050HCHTA             | 50           | 1                  | 12                        | 3                          | 7.3                                   | 38                                             | 4x5.4                  |
| UE225M050HCHTA             | 50           | 2.2                | 12                        | 3                          | 7.3                                   | 38                                             | 4x5.4                  |
| UE335M050HCHTA             | 50           | 3.3                | 12                        | 3                          | 7.3                                   | 38                                             | 4x5.4                  |
| UE475M050HCHTA             | 50           | 4.7                | 12                        | 3                          | 7.3                                   | 38                                             | 4x5.4                  |
| UE106M050HDHTA             | 50           | 10                 | 12                        | 5                          | 3.8                                   | 53                                             | 5x5.4                  |
| UE106M050HEHTA             | 50           | 10                 | 12                        | 5                          | 2.2                                   | 103                                            | 6.3x5.4                |
| UE226M050HEHTA             | 50           | 22                 | 12                        | 11                         | 2.2                                   | 103                                            | 6.3x5.4                |
| UE336M050HEJTA             | 50           | 33                 | 12                        | 16.5                       | 1.7                                   | 116                                            | 6.3x7.7                |
| UE476M050HEJTA             | 50           | 47                 | 12                        | 23.5                       | 1.7                                   | 116                                            | 6.3x7.7                |
| UE107M050HFKTA             | 50           | 100                | 12                        | 50                         | 0.85                                  | 185                                            | 8x10.2                 |
| UE157M050HGKTA             | 50           | 150                | 12                        | 75                         | 0.45                                  | 418                                            | 10x10.2                |
| UE227M050HGKTA             | 50           | 220                | 12                        | 110                        | 0.45                                  | 418                                            | 10x10.2                |
|                            |              |                    |                           |                            |                                       |                                                |                        |
|                            |              |                    |                           |                            |                                       |                                                |                        |
|                            |              |                    |                           |                            |                                       |                                                |                        |
|                            |              |                    |                           |                            |                                       |                                                |                        |
|                            |              |                    |                           |                            |                                       |                                                |                        |
|                            |              |                    |                           |                            |                                       |                                                |                        |
|                            |              |                    |                           |                            |                                       |                                                |                        |
|                            |              |                    |                           |                            |                                       |                                                |                        |
|                            |              |                    |                           |                            |                                       |                                                |                        |

### ELECTRICAL CHARACTERISTICS - T<sub>a</sub> = 25°C, FOR DIFFERENT PART CODE

[illegible]

### ELECTRICAL CHARACTERISTICS - T<sub>a</sub> = 25°C, FOR DIFFERENT PART CODE

[illegible]

### ELECTRICAL CHARACTERISTICS - T<sub>a</sub> = 25°C, FOR DIFFERENT PART CODE

[illegible]



## CHARACTERISTICS

### Standard Atmospheric Conditions

The standard range of atmospheric conditions for making measurements/test as follows:

- Ambient temperature: 15°C to 35°C
- Relative humidity: 45% to 85%
- Air Pressure: 86kPa to 106kPa
- If there is any doubt about the results, measurement shall be made within the following conditions:
- Ambient temperature: 20°C  $\pm$  2°C
- Relative humidity: 60% to 70%
- Air Pressure: 86kPa to 106kPa
- As to the detailed information, please refer to following Table

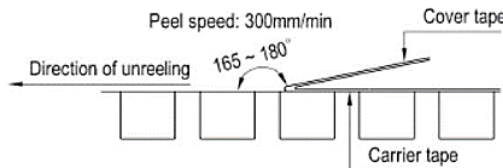
### Operating Temperature Range

The ambient temperature range at which the capacitor can be operated continuously at rated voltage is

-55°C to 105°C.

As to the detailed information, please refer to the mentioned table next pages.

| ITEM                                               | PERFORMANCE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                |      |      |      |      |      |      |    |     |                 |      |      |      |      |      |      |      |      |
|----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------|------|------|------|------|------|----|-----|-----------------|------|------|------|------|------|------|------|------|
| Nominal Capacitance<br>(Tolerance)                 | <Condition><br>Measuring Frequency : 120Hz± 12Hz<br>Measuring Voltage : Not more than 0.5V<br>Measuring Temperature : 20± 2°C<br><br><Criteria><br>Shall be within the specified capacitance tolerance                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                |      |      |      |      |      |      |    |     |                 |      |      |      |      |      |      |      |      |
| Leakage Current                                    | <Condition><br>After DC Voltage is applied to capacitors through the series protective resistor (1kΩ± 10Ω) so that terminal voltage may reach the reacted use voltage. The leakage current when measured in 2 minutes shall not exceed the values of the following equation.<br><br><Criteria><br>I (μA) ≤ 0.01 CV or 3 (μA), Whichever is greater<br>I: Leakage Current (μA)<br>C: Capacitance (μF)<br>V: Rated Working Voltage (V)                                                                                                                                                                                                                         |                |      |      |      |      |      |      |    |     |                 |      |      |      |      |      |      |      |      |
| tan δ                                              | <Condition><br>See Normal Capacitance, for measuring frequency, voltage and temperature.<br><br><Criteria><br>The tangent of the loss angle (tan δ) of the capacitors shall refer to the following table.<br>Measurements shall be made under the same conditions as those given for the measurement of the capacitance.<br><table><tr><td>W.V.</td><td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td><td>63</td><td>100</td></tr><tr><td>Tanδ</td><td>0.26</td><td>0.20</td><td>0.16</td><td>0.14</td><td>0.12</td><td>0.12</td><td>0.10</td><td>0.10</td></tr></table><br><br>Remark: Refer to this document for tan δ of other voltages. | W.V.           | 6.3  | 10   | 16   | 25   | 35   | 50   | 63 | 100 | Tanδ            | 0.26 | 0.20 | 0.16 | 0.14 | 0.12 | 0.12 | 0.10 | 0.10 |
| W.V.                                               | 6.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 10             | 16   | 25   | 35   | 50   | 63   | 100  |    |     |                 |      |      |      |      |      |      |      |      |
| Tanδ                                               | 0.26                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 0.20           | 0.16 | 0.14 | 0.12 | 0.12 | 0.10 | 0.10 |    |     |                 |      |      |      |      |      |      |      |      |
| Rated voltage<br>(WV)<br><br>Surge voltage<br>(SV) | <table><tr><td>W.V.<br/>(V.DC)</td><td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td><td>63</td><td>100</td></tr><tr><td>S.V.<br/>(V.DC.)</td><td>7.2</td><td>11.5</td><td>18.4</td><td>28.8</td><td>40.3</td><td>57.5</td><td>72.5</td><td>115</td></tr></table>                                                                                                                                                                                                                                                                                                                                                                           | W.V.<br>(V.DC) | 6.3  | 10   | 16   | 25   | 35   | 50   | 63 | 100 | S.V.<br>(V.DC.) | 7.2  | 11.5 | 18.4 | 28.8 | 40.3 | 57.5 | 72.5 | 115  |
| W.V.<br>(V.DC)                                     | 6.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 10             | 16   | 25   | 35   | 50   | 63   | 100  |    |     |                 |      |      |      |      |      |      |      |      |
| S.V.<br>(V.DC.)                                    | 7.2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 11.5           | 18.4 | 28.8 | 40.3 | 57.5 | 72.5 | 115  |    |     |                 |      |      |      |      |      |      |      |      |

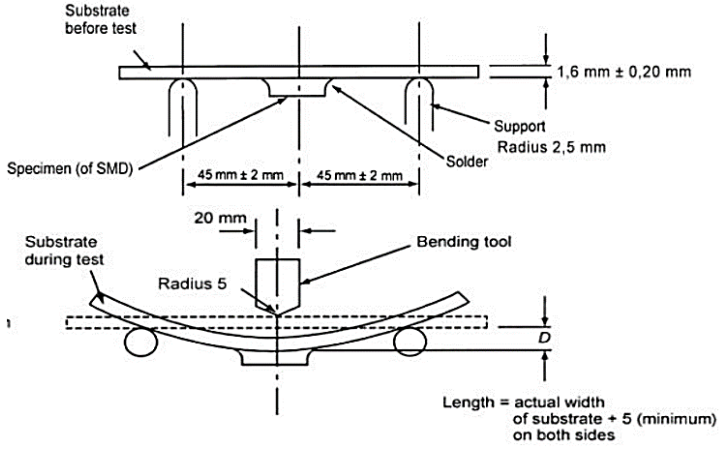
| ITEM                                               | PERFORMANCE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                   |                         |      |    |          |                                   |   |             |                                   |   |      |                                   |    |       |                                   |   |      |                                   |                   |  |     |    |    |    |          |     |                              |     |   |   |   |   |   |   |     |   |   |   |   |   |   |                              |     |    |   |   |   |   |   |     |    |   |   |   |   |   |
|----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-------------------------|------|----|----------|-----------------------------------|---|-------------|-----------------------------------|---|------|-----------------------------------|----|-------|-----------------------------------|---|------|-----------------------------------|-------------------|--|-----|----|----|----|----------|-----|------------------------------|-----|---|---|---|---|---|---|-----|---|---|---|---|---|---|------------------------------|-----|----|---|---|---|---|---|-----|----|---|---|---|---|---|
| Temperature<br><br>Characteristic IEC-60384-4 4.12 | <p>&lt;Condition&gt;.</p> <table><tr><th>Step.</th><th>Testing Temperature(°C)</th><th>Time</th></tr><tr><td>1</td><td>20±2</td><td>Time to reach thermal equilibrium</td></tr><tr><td>2</td><td>-55(-25) ±3</td><td>Time to reach thermal equilibrium</td></tr><tr><td>3</td><td>20±2</td><td>Time to reach thermal equilibrium</td></tr><tr><td>4.</td><td>105±2</td><td>Time to reach thermal equilibrium</td></tr><tr><td>5</td><td>20±2</td><td>Time to reach thermal equilibrium</td></tr></table> <p>&lt;Criteria&gt;</p> <p>a) At +105°C, capacitance shall be within ±20% of their origin at +20°C, measured capacitance, tan δ shall be within limit of tan δ. The leakage current value at +105°C shall not more than 8 times the specified value.</p> <p>b) At step 5, tan δ shall be within the limit of tan δ. The leakage current value shall not more than the specified value.</p> <p>c) At-55°C (-25°C), impedance (Z) ratio shall not exceed the value of the following table.</p> <table><tr><th colspan="2">Rated Voltage (V)</th><th>6.3</th><th>10</th><th>16</th><th>25</th><th>35/50/63</th><th>100</th></tr><tr><td rowspan="2">Z-25°C/<br/>Z+20°C<br/>(120Hz)</td><td>&lt;Φ8</td><td>4</td><td>3</td><td>2</td><td>2</td><td>2</td><td>3</td></tr><tr><td>≥Φ8</td><td>5</td><td>4</td><td>3</td><td>2</td><td>2</td><td>3</td></tr><tr><td rowspan="2">Z-55°C/<br/>Z+20°C<br/>(120Hz)</td><td>&lt;Φ8</td><td>12</td><td>8</td><td>4</td><td>4</td><td>3</td><td>4</td></tr><tr><td>≥Φ8</td><td>10</td><td>8</td><td>6</td><td>4</td><td>3</td><td>4</td></tr></table> <p>d) Capacitance tan δ and impedance shall be measured at 120Hz</p> | Step.                             | Testing Temperature(°C) | Time | 1  | 20±2     | Time to reach thermal equilibrium | 2 | -55(-25) ±3 | Time to reach thermal equilibrium | 3 | 20±2 | Time to reach thermal equilibrium | 4. | 105±2 | Time to reach thermal equilibrium | 5 | 20±2 | Time to reach thermal equilibrium | Rated Voltage (V) |  | 6.3 | 10 | 16 | 25 | 35/50/63 | 100 | Z-25°C/<br>Z+20°C<br>(120Hz) | <Φ8 | 4 | 3 | 2 | 2 | 2 | 3 | ≥Φ8 | 5 | 4 | 3 | 2 | 2 | 3 | Z-55°C/<br>Z+20°C<br>(120Hz) | <Φ8 | 12 | 8 | 4 | 4 | 3 | 4 | ≥Φ8 | 10 | 8 | 6 | 4 | 3 | 4 |
| Step.                                              | Testing Temperature(°C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Time                              |                         |      |    |          |                                   |   |             |                                   |   |      |                                   |    |       |                                   |   |      |                                   |                   |  |     |    |    |    |          |     |                              |     |   |   |   |   |   |   |     |   |   |   |   |   |   |                              |     |    |   |   |   |   |   |     |    |   |   |   |   |   |
| 1                                                  | 20±2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Time to reach thermal equilibrium |                         |      |    |          |                                   |   |             |                                   |   |      |                                   |    |       |                                   |   |      |                                   |                   |  |     |    |    |    |          |     |                              |     |   |   |   |   |   |   |     |   |   |   |   |   |   |                              |     |    |   |   |   |   |   |     |    |   |   |   |   |   |
| 2                                                  | -55(-25) ±3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Time to reach thermal equilibrium |                         |      |    |          |                                   |   |             |                                   |   |      |                                   |    |       |                                   |   |      |                                   |                   |  |     |    |    |    |          |     |                              |     |   |   |   |   |   |   |     |   |   |   |   |   |   |                              |     |    |   |   |   |   |   |     |    |   |   |   |   |   |
| 3                                                  | 20±2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Time to reach thermal equilibrium |                         |      |    |          |                                   |   |             |                                   |   |      |                                   |    |       |                                   |   |      |                                   |                   |  |     |    |    |    |          |     |                              |     |   |   |   |   |   |   |     |   |   |   |   |   |   |                              |     |    |   |   |   |   |   |     |    |   |   |   |   |   |
| 4.                                                 | 105±2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Time to reach thermal equilibrium |                         |      |    |          |                                   |   |             |                                   |   |      |                                   |    |       |                                   |   |      |                                   |                   |  |     |    |    |    |          |     |                              |     |   |   |   |   |   |   |     |   |   |   |   |   |   |                              |     |    |   |   |   |   |   |     |    |   |   |   |   |   |
| 5                                                  | 20±2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Time to reach thermal equilibrium |                         |      |    |          |                                   |   |             |                                   |   |      |                                   |    |       |                                   |   |      |                                   |                   |  |     |    |    |    |          |     |                              |     |   |   |   |   |   |   |     |   |   |   |   |   |   |                              |     |    |   |   |   |   |   |     |    |   |   |   |   |   |
| Rated Voltage (V)                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 6.3                               | 10                      | 16   | 25 | 35/50/63 | 100                               |   |             |                                   |   |      |                                   |    |       |                                   |   |      |                                   |                   |  |     |    |    |    |          |     |                              |     |   |   |   |   |   |   |     |   |   |   |   |   |   |                              |     |    |   |   |   |   |   |     |    |   |   |   |   |   |
| Z-25°C/<br>Z+20°C<br>(120Hz)                       | <Φ8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 4                                 | 3                       | 2    | 2  | 2        | 3                                 |   |             |                                   |   |      |                                   |    |       |                                   |   |      |                                   |                   |  |     |    |    |    |          |     |                              |     |   |   |   |   |   |   |     |   |   |   |   |   |   |                              |     |    |   |   |   |   |   |     |    |   |   |   |   |   |
|                                                    | ≥Φ8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 5                                 | 4                       | 3    | 2  | 2        | 3                                 |   |             |                                   |   |      |                                   |    |       |                                   |   |      |                                   |                   |  |     |    |    |    |          |     |                              |     |   |   |   |   |   |   |     |   |   |   |   |   |   |                              |     |    |   |   |   |   |   |     |    |   |   |   |   |   |
| Z-55°C/<br>Z+20°C<br>(120Hz)                       | <Φ8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 12                                | 8                       | 4    | 4  | 3        | 4                                 |   |             |                                   |   |      |                                   |    |       |                                   |   |      |                                   |                   |  |     |    |    |    |          |     |                              |     |   |   |   |   |   |   |     |   |   |   |   |   |   |                              |     |    |   |   |   |   |   |     |    |   |   |   |   |   |
|                                                    | ≥Φ8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 10                                | 8                       | 6    | 4  | 3        | 4                                 |   |             |                                   |   |      |                                   |    |       |                                   |   |      |                                   |                   |  |     |    |    |    |          |     |                              |     |   |   |   |   |   |   |     |   |   |   |   |   |   |                              |     |    |   |   |   |   |   |     |    |   |   |   |   |   |
| Sealing Tape<br><br>Reel Strength                  | <p>&lt;Condition&gt;</p> <p>Peel angle: 165 to 180°C referred to the surface on which the tape is glued.</p> <p>Peel speed: 300mm per minutes</p> <p>The peel strength must be 0.1 ~ 0.7N under these conditions.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                   |                         |      |    |          |                                   |   |             |                                   |   |      |                                   |    |       |                                   |   |      |                                   |                   |  |     |    |    |    |          |     |                              |     |   |   |   |   |   |   |     |   |   |   |   |   |   |                              |     |    |   |   |   |   |   |     |    |   |   |   |   |   |

| ITEM                                            | PERFORMANCE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                    |                                       |               |                                     |                 |                                           |            |                                                                                     |                    |                                             |
|-------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------------------------------------|---------------|-------------------------------------|-----------------|-------------------------------------------|------------|-------------------------------------------------------------------------------------|--------------------|---------------------------------------------|
| <p>Load Life Test</p> <p>IEC-60384- 4 4.13</p>  | <p>&lt;Condition&gt;</p> <p>The capacitor is stored at a temperature of <math>105^{\circ}\text{C} \pm 2</math> with rated voltage applied continuously for 2000+48/0 hours, Then the product should be tested after 16 hours recovering time at atmospheric conditions. The result should meet the following table:</p> <p>&lt;Criteria&gt;</p> <p>The characteristic shall meet the following requirements.</p> <table border="1"> <tr> <td>Capacitance Change</td><td><math>\pm 30\%</math> of initial measured value.</td></tr> <tr> <td><math>\tan \delta</math></td><td>300% or less of the specified value</td></tr> <tr> <td>Leakage current</td><td>Not more than the specified value.</td></tr> <tr> <td>Appearance</td><td>No leakage of electrolyte or swelling of the case.<br/>All markings shall be legible</td></tr> <tr> <td>Inner construction</td><td>No corrosion of tab terminals or electrodes</td></tr> </table> <p>Remarks: Prior to the measurement of the leakage current, the D.C. rated voltage shall be applied across the capacitor and its protective resistance (1k<math>\Omega</math>) for 30 mines after which it shall be discharged.</p>                                                                                                                                                                                             | Capacitance Change | $\pm 30\%$ of initial measured value. | $\tan \delta$ | 300% or less of the specified value | Leakage current | Not more than the specified value.        | Appearance | No leakage of electrolyte or swelling of the case.<br>All markings shall be legible | Inner construction | No corrosion of tab terminals or electrodes |
| Capacitance Change                              | $\pm 30\%$ of initial measured value.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                    |                                       |               |                                     |                 |                                           |            |                                                                                     |                    |                                             |
| $\tan \delta$                                   | 300% or less of the specified value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                    |                                       |               |                                     |                 |                                           |            |                                                                                     |                    |                                             |
| Leakage current                                 | Not more than the specified value.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                    |                                       |               |                                     |                 |                                           |            |                                                                                     |                    |                                             |
| Appearance                                      | No leakage of electrolyte or swelling of the case.<br>All markings shall be legible                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                    |                                       |               |                                     |                 |                                           |            |                                                                                     |                    |                                             |
| Inner construction                              | No corrosion of tab terminals or electrodes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                    |                                       |               |                                     |                 |                                           |            |                                                                                     |                    |                                             |
| <p>Shelf Life Test</p> <p>IEC-60384- 4 4.17</p> | <p>&lt;Condition&gt;</p> <p>The capacitors are then stored with no voltage applied at a temperature of <math>105 \pm 2^{\circ}\text{C}</math> for 1000+48/0 hours. Following this period the capacitors shall be removed from the test chamber and be allowed to stabilized at room temperature for 4~8 hours. Next they shall be connected to a series limiting resistor(1k<math>\pm</math>100<math>\Omega</math>) with D.C. rated voltage applied for 30min. After which the capacitors shall be discharged, and then, tested the characteristics.</p> <p>&lt;Criteria&gt; The characteristic shall meet the following requirements.</p> <table border="1"> <tr> <td>Capacitance Change</td><td><math>\pm 30\%</math> of initial measured value.</td></tr> <tr> <td><math>\tan \delta</math></td><td>300% or less of the specified value</td></tr> <tr> <td>Leakage current</td><td>Not more than 200% of the specified value</td></tr> <tr> <td>Appearance</td><td>No leakage of electrolyte or swelling of the case.<br/>All markings shall be legible</td></tr> <tr> <td>Inner construction</td><td>No corrosion of tab terminals or electrodes</td></tr> </table> <p>Remark:</p> <p>If the capacitors are stored more than 1 year, the leakage current may increase.</p> <p>Please apply voltage through about 1 K<math>\Omega</math> resistor, if necessary.</p> | Capacitance Change | $\pm 30\%$ of initial measured value. | $\tan \delta$ | 300% or less of the specified value | Leakage current | Not more than 200% of the specified value | Appearance | No leakage of electrolyte or swelling of the case.<br>All markings shall be legible | Inner construction | No corrosion of tab terminals or electrodes |
| Capacitance Change                              | $\pm 30\%$ of initial measured value.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                    |                                       |               |                                     |                 |                                           |            |                                                                                     |                    |                                             |
| $\tan \delta$                                   | 300% or less of the specified value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                    |                                       |               |                                     |                 |                                           |            |                                                                                     |                    |                                             |
| Leakage current                                 | Not more than 200% of the specified value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                    |                                       |               |                                     |                 |                                           |            |                                                                                     |                    |                                             |
| Appearance                                      | No leakage of electrolyte or swelling of the case.<br>All markings shall be legible                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                    |                                       |               |                                     |                 |                                           |            |                                                                                     |                    |                                             |
| Inner construction                              | No corrosion of tab terminals or electrodes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                    |                                       |               |                                     |                 |                                           |            |                                                                                     |                    |                                             |

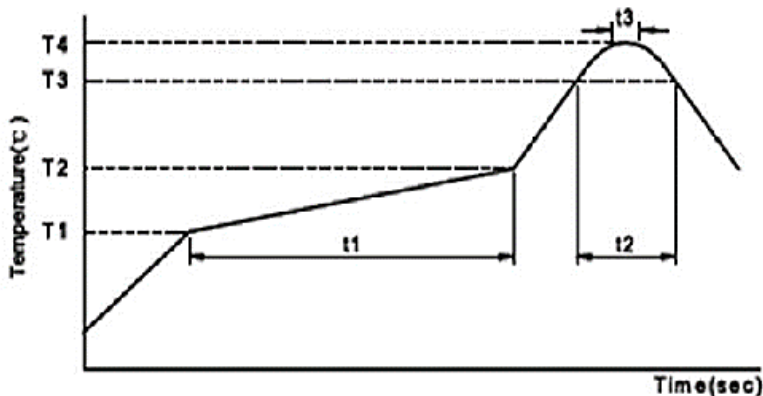
| ITEM                                          | PERFORMANCE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                 |                                   |                    |                                     |       |                                    |            |                                           |
|-----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------------|--------------------|-------------------------------------|-------|------------------------------------|------------|-------------------------------------------|
| <p>Surge Test</p> <p>IEC-60384- 4 4.9</p>     | <p>&lt;Condition&gt;</p> <p>Test temperature:15~35°C</p> <p>Series resistor: <math>R = \frac{100 \pm 50}{C}</math></p> <p>R: protective resistor (KΩ)</p> <p>C: nominal capacitance (μF) Test voltage: Surge voltage item 4.4</p> <p>No. of cycles: 1000cycles Each cycles lasts for <math>6 \pm 0.5</math>min</p> <p>“ON” for <math>30 \pm 5</math> s “OFF” for <math>5 \pm 0.5</math>min.</p> <table border="1"> <tr> <td>Leakage current</td><td>Not more than the specified value</td></tr> <tr> <td>Capacitance Change</td><td>Within <math>\pm 15\%</math> of initial value.</td></tr> <tr> <td>tan δ</td><td>Not more than the specified value.</td></tr> <tr> <td>Appearance</td><td>There shall be no leakage of electrolyte.</td></tr> </table> <p>Attention: This test simulates over voltage at abnormal situation and not be hypothesizing that over voltage is always applied.</p> | Leakage current | Not more than the specified value | Capacitance Change | Within $\pm 15\%$ of initial value. | tan δ | Not more than the specified value. | Appearance | There shall be no leakage of electrolyte. |
| Leakage current                               | Not more than the specified value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                 |                                   |                    |                                     |       |                                    |            |                                           |
| Capacitance Change                            | Within $\pm 15\%$ of initial value.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                 |                                   |                    |                                     |       |                                    |            |                                           |
| tan δ                                         | Not more than the specified value.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                 |                                   |                    |                                     |       |                                    |            |                                           |
| Appearance                                    | There shall be no leakage of electrolyte.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                 |                                   |                    |                                     |       |                                    |            |                                           |
| <p>Vibration Test</p> <p>IEC-60384- 4 4.8</p> | <p>&lt;Condition&gt;</p> <p>Fix it at the point 4 mm or less from body. For ones of 12.5 mm or more in diameter or 25 mm or Capacitance; Direction and during of vibration:3 orthogonal directions mutually each for 2 hours(total of 6 hours)</p> <p>Vibration frequency range : 10Hz ~ 55Hz</p> <p>Peak to peak amplitude : 1.5mm</p> <p>Sweep rate : 10Hz ~ 55Hz ~ 10Hz in about 1 minute</p> <p>&lt;Criteria&gt;</p> <p>The characteristic shall meet the following requirements.</p> <table border="1"> <tr> <td>Leakage current</td><td>Not more than the specified value</td></tr> <tr> <td>Capacitance Change</td><td>Within <math>\pm 10\%</math> of initial value.</td></tr> <tr> <td>tan δ</td><td>Not more than the specified value.</td></tr> <tr> <td>Appearance</td><td>There shall be no leakage of electrolyte.</td></tr> </table>                                              | Leakage current | Not more than the specified value | Capacitance Change | Within $\pm 10\%$ of initial value. | tan δ | Not more than the specified value. | Appearance | There shall be no leakage of electrolyte. |
| Leakage current                               | Not more than the specified value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                 |                                   |                    |                                     |       |                                    |            |                                           |
| Capacitance Change                            | Within $\pm 10\%$ of initial value.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                 |                                   |                    |                                     |       |                                    |            |                                           |
| tan δ                                         | Not more than the specified value.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                 |                                   |                    |                                     |       |                                    |            |                                           |
| Appearance                                    | There shall be no leakage of electrolyte.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                 |                                   |                    |                                     |       |                                    |            |                                           |

| ITEM                                                    | PERFORMANCE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                 |                                                |                    |                                     |               |                                           |            |                                           |
|---------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------------------------------------------------|--------------------|-------------------------------------|---------------|-------------------------------------------|------------|-------------------------------------------|
| <p>Solderability</p> <p>Test IEC-60384-4</p> <p>4.6</p> | <p>&lt;Condition&gt;</p> <p>The capacitor shall be tested under the following conditions:</p> <p>Soldering temperature: <math>245^{\circ}\text{C} \pm 3^{\circ}\text{C}</math></p> <p>Dipping depth: 2mm</p> <p>Dipping speed: <math>25 \pm 2.5\text{mm/s}</math></p> <p>Dipping time: <math>3 \pm 0.5\text{s}</math></p> <p>&lt;Criteria&gt;</p> <table border="1"> <tr> <td>Coating quality</td><td>A minimum of 95% of the surface being immersed</td></tr> </table>                                                                                                                                                                                                                                          | Coating quality | A minimum of 95% of the surface being immersed |                    |                                     |               |                                           |            |                                           |
| Coating quality                                         | A minimum of 95% of the surface being immersed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                 |                                                |                    |                                     |               |                                           |            |                                           |
| <p>Resistance to solder heat test</p>                   | <p>&lt;Condition&gt;</p> <p>After reflow soldering (item 4.18)</p> <p>The capacitor shall be left at room temperature for before measurement.</p> <p>&lt;Criteria&gt;</p> <p>The characteristic shall meet the following requirements.</p> <table border="1"> <tr> <td>Leakage current</td><td>Not more than the specified value</td></tr> <tr> <td>Capacitance Change</td><td>Within <math>\pm 10\%</math> of initial value.</td></tr> <tr> <td><math>\tan \delta</math></td><td>Not more than the specified value.</td></tr> <tr> <td>Appearance</td><td>There shall be no leakage of electrolyte.</td></tr> </table>                                                                                          | Leakage current | Not more than the specified value              | Capacitance Change | Within $\pm 10\%$ of initial value. | $\tan \delta$ | Not more than the specified value.        | Appearance | There shall be no leakage of electrolyte. |
| Leakage current                                         | Not more than the specified value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                 |                                                |                    |                                     |               |                                           |            |                                           |
| Capacitance Change                                      | Within $\pm 10\%$ of initial value.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                 |                                                |                    |                                     |               |                                           |            |                                           |
| $\tan \delta$                                           | Not more than the specified value.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                 |                                                |                    |                                     |               |                                           |            |                                           |
| Appearance                                              | There shall be no leakage of electrolyte.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                 |                                                |                    |                                     |               |                                           |            |                                           |
| <p>Damp heat test</p> <p>IEC60384-4</p> <p>4.12</p>     | <p>&lt;Condition&gt;</p> <p>Humidity Test:</p> <p>According to IEC60384-4 No.4.12 methods, capacitor shall be exposed for <math>1000 \pm 8</math> hours in an atmosphere of 90~95%R H .at <math>60 \pm 3^{\circ}\text{C}</math>, the characteristic change shall meet the following requirement.</p> <p>&lt;Criteria&gt;</p> <table border="1"> <tr> <td>Leakage current</td><td>Not more than the specified value</td></tr> <tr> <td>Capacitance Change</td><td>Within <math>\pm 20\%</math> of initial value.</td></tr> <tr> <td><math>\tan \delta</math></td><td>Not more than 120% of the specified value</td></tr> <tr> <td>Appearance</td><td>There shall be no leakage of electrolyte.</td></tr> </table> | Leakage current | Not more than the specified value              | Capacitance Change | Within $\pm 20\%$ of initial value. | $\tan \delta$ | Not more than 120% of the specified value | Appearance | There shall be no leakage of electrolyte. |
| Leakage current                                         | Not more than the specified value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                 |                                                |                    |                                     |               |                                           |            |                                           |
| Capacitance Change                                      | Within $\pm 20\%$ of initial value.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                 |                                                |                    |                                     |               |                                           |            |                                           |
| $\tan \delta$                                           | Not more than 120% of the specified value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                 |                                                |                    |                                     |               |                                           |            |                                           |
| Appearance                                              | There shall be no leakage of electrolyte.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                 |                                                |                    |                                     |               |                                           |            |                                           |

| ITEM                                          | PERFORMANCE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                 |                                   |                    |                                |       |                                    |            |                         |                |   |       |            |   |        |                |   |       |            |                                  |  |  |                    |                                |       |                                    |                 |                                    |            |                          |
|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------------|--------------------|--------------------------------|-------|------------------------------------|------------|-------------------------|----------------|---|-------|------------|---|--------|----------------|---|-------|------------|----------------------------------|--|--|--------------------|--------------------------------|-------|------------------------------------|-----------------|------------------------------------|------------|--------------------------|
| Change Of Temperature<br>Test IEC-60384-4 4.7 | <p>&lt;Condition&gt;</p> <p>Temperature cycle: According to IEC60384-4 No.4.7 methods, capacitor shall be placed in an oven, the condition according as below</p> <table><tr><th>No.</th><th>Temperature</th><th>Time</th></tr><tr><td>1</td><td>+25°C</td><td>≤3 Minutes</td></tr><tr><td>2</td><td>-55°C</td><td>30 ± 2 Minutes</td></tr><tr><td>3</td><td>+25°C</td><td>≤3 Minutes</td></tr><tr><td>4</td><td>+105°C</td><td>30 ± 2 Minutes</td></tr><tr><td>5</td><td>+25°C</td><td>≤3 Minutes</td></tr><tr><td colspan="3">1 to 5 = 1 cycle, Total 5 cycles</td></tr></table> <p>and then the capacitor shall be subjected to standard atmospheric conditions for 4 hours, after which measurements shall be made.</p> <p>&lt;Criteria&gt;</p> <p>The characteristic shall meet the following requirements.</p> <table><tr><td>Capacitance Change</td><td>Within ± 10% of initial value.</td></tr><tr><td>tan δ</td><td>Not more than the specified value.</td></tr><tr><td>Leakage current</td><td>Not more than the specified value.</td></tr><tr><td>Appearance</td><td>No broken and undamaged.</td></tr></table> | No.             | Temperature                       | Time               | 1                              | +25°C | ≤3 Minutes                         | 2          | -55°C                   | 30 ± 2 Minutes | 3 | +25°C | ≤3 Minutes | 4 | +105°C | 30 ± 2 Minutes | 5 | +25°C | ≤3 Minutes | 1 to 5 = 1 cycle, Total 5 cycles |  |  | Capacitance Change | Within ± 10% of initial value. | tan δ | Not more than the specified value. | Leakage current | Not more than the specified value. | Appearance | No broken and undamaged. |
| No.                                           | Temperature                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Time            |                                   |                    |                                |       |                                    |            |                         |                |   |       |            |   |        |                |   |       |            |                                  |  |  |                    |                                |       |                                    |                 |                                    |            |                          |
| 1                                             | +25°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | ≤3 Minutes      |                                   |                    |                                |       |                                    |            |                         |                |   |       |            |   |        |                |   |       |            |                                  |  |  |                    |                                |       |                                    |                 |                                    |            |                          |
| 2                                             | -55°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 30 ± 2 Minutes  |                                   |                    |                                |       |                                    |            |                         |                |   |       |            |   |        |                |   |       |            |                                  |  |  |                    |                                |       |                                    |                 |                                    |            |                          |
| 3                                             | +25°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | ≤3 Minutes      |                                   |                    |                                |       |                                    |            |                         |                |   |       |            |   |        |                |   |       |            |                                  |  |  |                    |                                |       |                                    |                 |                                    |            |                          |
| 4                                             | +105°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 30 ± 2 Minutes  |                                   |                    |                                |       |                                    |            |                         |                |   |       |            |   |        |                |   |       |            |                                  |  |  |                    |                                |       |                                    |                 |                                    |            |                          |
| 5                                             | +25°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | ≤3 Minutes      |                                   |                    |                                |       |                                    |            |                         |                |   |       |            |   |        |                |   |       |            |                                  |  |  |                    |                                |       |                                    |                 |                                    |            |                          |
| 1 to 5 = 1 cycle, Total 5 cycles              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                 |                                   |                    |                                |       |                                    |            |                         |                |   |       |            |   |        |                |   |       |            |                                  |  |  |                    |                                |       |                                    |                 |                                    |            |                          |
| Capacitance Change                            | Within ± 10% of initial value.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                 |                                   |                    |                                |       |                                    |            |                         |                |   |       |            |   |        |                |   |       |            |                                  |  |  |                    |                                |       |                                    |                 |                                    |            |                          |
| tan δ                                         | Not more than the specified value.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                 |                                   |                    |                                |       |                                    |            |                         |                |   |       |            |   |        |                |   |       |            |                                  |  |  |                    |                                |       |                                    |                 |                                    |            |                          |
| Leakage current                               | Not more than the specified value.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                 |                                   |                    |                                |       |                                    |            |                         |                |   |       |            |   |        |                |   |       |            |                                  |  |  |                    |                                |       |                                    |                 |                                    |            |                          |
| Appearance                                    | No broken and undamaged.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                 |                                   |                    |                                |       |                                    |            |                         |                |   |       |            |   |        |                |   |       |            |                                  |  |  |                    |                                |       |                                    |                 |                                    |            |                          |
| Low Temperature Test                          | <p>&lt;Condition&gt;</p> <p>Capacitors are placed at -55 ± 3°C for 96 ± 4 hours. And then the capacitor shall be subjected to standard atmospheric conditions for 4 hours, after which measurements shall be made.</p> <p>&lt;Criteria&gt;</p> <table><tr><td>Leakage current</td><td>Not more than the specified value</td></tr><tr><td>Capacitance Change</td><td>Within ± 10% of initial value.</td></tr><tr><td>tan δ</td><td>Not more than the specified value.</td></tr><tr><td>Appearance</td><td>No broken and undamaged</td></tr></table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Leakage current | Not more than the specified value | Capacitance Change | Within ± 10% of initial value. | tan δ | Not more than the specified value. | Appearance | No broken and undamaged |                |   |       |            |   |        |                |   |       |            |                                  |  |  |                    |                                |       |                                    |                 |                                    |            |                          |
| Leakage current                               | Not more than the specified value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                 |                                   |                    |                                |       |                                    |            |                         |                |   |       |            |   |        |                |   |       |            |                                  |  |  |                    |                                |       |                                    |                 |                                    |            |                          |
| Capacitance Change                            | Within ± 10% of initial value.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                 |                                   |                    |                                |       |                                    |            |                         |                |   |       |            |   |        |                |   |       |            |                                  |  |  |                    |                                |       |                                    |                 |                                    |            |                          |
| tan δ                                         | Not more than the specified value.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                 |                                   |                    |                                |       |                                    |            |                         |                |   |       |            |   |        |                |   |       |            |                                  |  |  |                    |                                |       |                                    |                 |                                    |            |                          |
| Appearance                                    | No broken and undamaged                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 |                                   |                    |                                |       |                                    |            |                         |                |   |       |            |   |        |                |   |       |            |                                  |  |  |                    |                                |       |                                    |                 |                                    |            |                          |

| ITEM                                          | PERFORMANCE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |               |                |              |   |
|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|----------------|--------------|---|
| <p>Vent Test</p> <p>IEC-60384-4 4.16</p>      | <p>&lt;Condition&gt;</p> <p>The following test only apply to those products with vent products at diameter <math>\geq \varnothing 8</math> with vent.</p> <p>D.C. test</p> <p>The capacitor is connected with its polarity reversed to a DC power source. Then a current selected from following table is applied.</p> <table border="1"> <tr> <th>Diameter (mm)</th><th>DC Current (A)</th></tr> <tr> <td>22.4 or less</td><td>1</td></tr> </table> <p>&lt;Criteria&gt;</p> <p>No emission of gas after 30 minutes of the voltage application also meets the specification. The vent shall operate with no dangerous conditions such as flames or dispersion of pieces of the capacitor and/or case.</p> | Diameter (mm) | DC Current (A) | 22.4 or less | 1 |
| Diameter (mm)                                 | DC Current (A)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |               |                |              |   |
| 22.4 or less                                  | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |               |                |              |   |
| <p>Mechanical</p> <p>Characteristics Test</p> | <p>&lt;Condition&gt;</p> <p>Bending Test: Apply pressure in the direction of the arrow at a rate of about 0.5 mm/s until bent width reaches 2 mm and hold for 60s. The board shall be the test board "B" as specified in JIS C 0051: 2002. If the land area differs, it shall be specified clearly in the next item.</p>  <p>&lt;Criteria&gt;</p> <p>Without mechanical damage such as breaks. Electrical characteristics shall be satisfied.</p> <p>If there are electrodes on both surfaces, above requirements shall be satisfied on whichever surface it may be fixated on.</p>                                   |               |                |              |   |



| ITEM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | PERFORMANCE        |                  |                |                      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|------------------|----------------|----------------------|
| Reflow Soldering<br><br>Temperature Profile                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Welding Method     | Reflow Soldering | Soldering Iron | Wave Soldering       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | The feasibility of | ○<br>Feasible    | ○<br>Feasible  | ✗<br>Is not workable |
| <p>Conditions for the use of lead-free reflow soldering.</p>  <p>1) Methods the following<br/>Reflow soldering: please follow the temperature condition during welding. If high temperature is used, please measure and inform the capacitor temperature and reflow soldering condition. The product size is larger and its rising temperature is slower. It is not necessary to adjust the temperature of the reflow solder in accordance with the size of the product. For example, the products of 4 and 10 will be installed in the PCB over tin furnace.</p> <p>2) Precautions for soldering tin: Related factors of reflow soldering temperature:<br/>Product size: The product size is larger and its temperature rises slowly.<br/>Product installation position: The temperature of PCB center is lower than that of PCB</p> <p>3) Reflow soldering<br/>If possible, avoid reflow soldering twice.<br/>If repeated reflux is unavoidable, measure and inform the first and second reflux temperature, and the time of reflow soldering</p> <p>4) Please do not 3 times of reflow soldering<br/>Please follow the following conditions when soldering tin soldering:<br/>Soldering iron maximum temperature: <math>350 \pm 5^{\circ}\text{C}</math>;<br/>Welding time: 3+1/-0S</p> |                    |                  |                |                      |

| ITEM                    | PERFORMANCE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                             |         |                                     |       |        |     |     |     |               |  |      |      |     |       |      |  |              |  |                      |        |        |       |        |  |            |                                             |         |  |  |  |  |  |                                |     |     |  |  |  |  |                     |                             |     |     |     |     |     |     |     |                                |    |    |    |    |    |    |    |                         |                             |     |     |  |     |     |  |     |                                |   |  |  |  |  |  |  |                   |  |   |    |  |  |  |  |  |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|---------|-------------------------------------|-------|--------|-----|-----|-----|---------------|--|------|------|-----|-------|------|--|--------------|--|----------------------|--------|--------|-------|--------|--|------------|---------------------------------------------|---------|--|--|--|--|--|--------------------------------|-----|-----|--|--|--|--|---------------------|-----------------------------|-----|-----|-----|-----|-----|-----|-----|--------------------------------|----|----|----|----|----|----|----|-------------------------|-----------------------------|-----|-----|--|-----|-----|--|-----|--------------------------------|---|--|--|--|--|--|--|-------------------|--|---|----|--|--|--|--|--|
| Reflow Soldering        | <p>Test Method And Peak Temperature Permissible Range</p> <table><tr><td colspan="2">Products category</td><td colspan="6">SMD aluminum electrolytic capacitor</td></tr><tr><td colspan="2">voltage ( V )</td><td>4~50</td><td>4~50</td><td>≥63</td><td>4~100</td><td colspan="2">≥160</td></tr><tr><td colspan="2">Product size</td><td>Φ4~6.3<br/>3×4.5<br/>L</td><td>Φ4~6.3</td><td>Φ4~6.3</td><td>Φ8~18</td><td colspan="2">≥Φ12.5</td></tr><tr><td rowspan="2">Preheating</td><td>TEM ( T<sub>1</sub>~T<sub>2</sub> , °C )</td><td colspan="6">150~180</td></tr><tr><td>Time ( t<sub>1</sub> ) Max, S</td><td>120</td><td colspan="5">180</td></tr><tr><td rowspan="2">The duration of the</td><td>TEM ( T<sub>3</sub> , °C )</td><td>230</td><td>217</td><td>230</td><td>217</td><td>217</td><td>230</td><td>217</td></tr><tr><td>Time ( t<sub>2</sub> ) Max, S</td><td>30</td><td>90</td><td>60</td><td>60</td><td>60</td><td>40</td><td>60</td></tr><tr><td rowspan="2">The highest temperature</td><td>TEM ( T<sub>4</sub> , °C )</td><td>250</td><td colspan="2">260</td><td>250</td><td colspan="2">250</td><td>240</td></tr><tr><td>Time ( t<sub>3</sub> ) Max, S</td><td colspan="7">5</td></tr><tr><td colspan="2">Return the number</td><td>1</td><td colspan="6">≤2</td></tr></table> <ul style="list-style-type: none"><li>• Please contact us if the conditions of use are higher than those listed above.</li><li>• When performing second reflow soldering, please make sure the temperature of capacitor has cooled to 5 ~ 35 °C.</li><li>• If the reflow condition is based on IPC/JEDEC(J-STD-020), please contact us.</li></ul> <p>OP-CAP Precautions:</p> <ul style="list-style-type: none"><li>• Reflow soldering will reduce the rated electrostatic capacity of the product, and it should be confirmed whether reflow soldering condition meets the specification of recommended reflow soldering.</li><li>• Although the actual reflow condition change is still based on the reflow soldering method, please note that the highest temperature and the electrode terminal at the bottom of the aluminum shell must not exceed the maximum temperature.</li><li>• OP-CAP products during the process of reflow heating temperature should increase to more than 200 °C</li><li>• If the reflow condition temperature or duration is greater than the above table, the OP-CAP product will be damaged. The electrostatic capacity of the product is reduced by about 50%, the leakage current is large (up to mA), and the outside of the capacitor is damaged.</li></ul> | Products category                           |         | SMD aluminum electrolytic capacitor |       |        |     |     |     | voltage ( V ) |  | 4~50 | 4~50 | ≥63 | 4~100 | ≥160 |  | Product size |  | Φ4~6.3<br>3×4.5<br>L | Φ4~6.3 | Φ4~6.3 | Φ8~18 | ≥Φ12.5 |  | Preheating | TEM ( T <sub>1</sub> ~T <sub>2</sub> , °C ) | 150~180 |  |  |  |  |  | Time ( t <sub>1</sub> ) Max, S | 120 | 180 |  |  |  |  | The duration of the | TEM ( T <sub>3</sub> , °C ) | 230 | 217 | 230 | 217 | 217 | 230 | 217 | Time ( t <sub>2</sub> ) Max, S | 30 | 90 | 60 | 60 | 60 | 40 | 60 | The highest temperature | TEM ( T <sub>4</sub> , °C ) | 250 | 260 |  | 250 | 250 |  | 240 | Time ( t <sub>3</sub> ) Max, S | 5 |  |  |  |  |  |  | Return the number |  | 1 | ≤2 |  |  |  |  |  |
| Products category       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | SMD aluminum electrolytic capacitor         |         |                                     |       |        |     |     |     |               |  |      |      |     |       |      |  |              |  |                      |        |        |       |        |  |            |                                             |         |  |  |  |  |  |                                |     |     |  |  |  |  |                     |                             |     |     |     |     |     |     |     |                                |    |    |    |    |    |    |    |                         |                             |     |     |  |     |     |  |     |                                |   |  |  |  |  |  |  |                   |  |   |    |  |  |  |  |  |
| voltage ( V )           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 4~50                                        | 4~50    | ≥63                                 | 4~100 | ≥160   |     |     |     |               |  |      |      |     |       |      |  |              |  |                      |        |        |       |        |  |            |                                             |         |  |  |  |  |  |                                |     |     |  |  |  |  |                     |                             |     |     |     |     |     |     |     |                                |    |    |    |    |    |    |    |                         |                             |     |     |  |     |     |  |     |                                |   |  |  |  |  |  |  |                   |  |   |    |  |  |  |  |  |
| Product size            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Φ4~6.3<br>3×4.5<br>L                        | Φ4~6.3  | Φ4~6.3                              | Φ8~18 | ≥Φ12.5 |     |     |     |               |  |      |      |     |       |      |  |              |  |                      |        |        |       |        |  |            |                                             |         |  |  |  |  |  |                                |     |     |  |  |  |  |                     |                             |     |     |     |     |     |     |     |                                |    |    |    |    |    |    |    |                         |                             |     |     |  |     |     |  |     |                                |   |  |  |  |  |  |  |                   |  |   |    |  |  |  |  |  |
| Preheating              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | TEM ( T <sub>1</sub> ~T <sub>2</sub> , °C ) | 150~180 |                                     |       |        |     |     |     |               |  |      |      |     |       |      |  |              |  |                      |        |        |       |        |  |            |                                             |         |  |  |  |  |  |                                |     |     |  |  |  |  |                     |                             |     |     |     |     |     |     |     |                                |    |    |    |    |    |    |    |                         |                             |     |     |  |     |     |  |     |                                |   |  |  |  |  |  |  |                   |  |   |    |  |  |  |  |  |
|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Time ( t <sub>1</sub> ) Max, S              | 120     | 180                                 |       |        |     |     |     |               |  |      |      |     |       |      |  |              |  |                      |        |        |       |        |  |            |                                             |         |  |  |  |  |  |                                |     |     |  |  |  |  |                     |                             |     |     |     |     |     |     |     |                                |    |    |    |    |    |    |    |                         |                             |     |     |  |     |     |  |     |                                |   |  |  |  |  |  |  |                   |  |   |    |  |  |  |  |  |
| The duration of the     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | TEM ( T <sub>3</sub> , °C )                 | 230     | 217                                 | 230   | 217    | 217 | 230 | 217 |               |  |      |      |     |       |      |  |              |  |                      |        |        |       |        |  |            |                                             |         |  |  |  |  |  |                                |     |     |  |  |  |  |                     |                             |     |     |     |     |     |     |     |                                |    |    |    |    |    |    |    |                         |                             |     |     |  |     |     |  |     |                                |   |  |  |  |  |  |  |                   |  |   |    |  |  |  |  |  |
|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Time ( t <sub>2</sub> ) Max, S              | 30      | 90                                  | 60    | 60     | 60  | 40  | 60  |               |  |      |      |     |       |      |  |              |  |                      |        |        |       |        |  |            |                                             |         |  |  |  |  |  |                                |     |     |  |  |  |  |                     |                             |     |     |     |     |     |     |     |                                |    |    |    |    |    |    |    |                         |                             |     |     |  |     |     |  |     |                                |   |  |  |  |  |  |  |                   |  |   |    |  |  |  |  |  |
| The highest temperature |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | TEM ( T <sub>4</sub> , °C )                 | 250     | 260                                 |       | 250    | 250 |     | 240 |               |  |      |      |     |       |      |  |              |  |                      |        |        |       |        |  |            |                                             |         |  |  |  |  |  |                                |     |     |  |  |  |  |                     |                             |     |     |     |     |     |     |     |                                |    |    |    |    |    |    |    |                         |                             |     |     |  |     |     |  |     |                                |   |  |  |  |  |  |  |                   |  |   |    |  |  |  |  |  |
|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Time ( t <sub>3</sub> ) Max, S              | 5       |                                     |       |        |     |     |     |               |  |      |      |     |       |      |  |              |  |                      |        |        |       |        |  |            |                                             |         |  |  |  |  |  |                                |     |     |  |  |  |  |                     |                             |     |     |     |     |     |     |     |                                |    |    |    |    |    |    |    |                         |                             |     |     |  |     |     |  |     |                                |   |  |  |  |  |  |  |                   |  |   |    |  |  |  |  |  |
| Return the number       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1                                           | ≤2      |                                     |       |        |     |     |     |               |  |      |      |     |       |      |  |              |  |                      |        |        |       |        |  |            |                                             |         |  |  |  |  |  |                                |     |     |  |  |  |  |                     |                             |     |     |     |     |     |     |     |                                |    |    |    |    |    |    |    |                         |                             |     |     |  |     |     |  |     |                                |   |  |  |  |  |  |  |                   |  |   |    |  |  |  |  |  |
| Temperature Profile     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                             |         |                                     |       |        |     |     |     |               |  |      |      |     |       |      |  |              |  |                      |        |        |       |        |  |            |                                             |         |  |  |  |  |  |                                |     |     |  |  |  |  |                     |                             |     |     |     |     |     |     |     |                                |    |    |    |    |    |    |    |                         |                             |     |     |  |     |     |  |     |                                |   |  |  |  |  |  |  |                   |  |   |    |  |  |  |  |  |
|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                             |         |                                     |       |        |     |     |     |               |  |      |      |     |       |      |  |              |  |                      |        |        |       |        |  |            |                                             |         |  |  |  |  |  |                                |     |     |  |  |  |  |                     |                             |     |     |     |     |     |     |     |                                |    |    |    |    |    |    |    |                         |                             |     |     |  |     |     |  |     |                                |   |  |  |  |  |  |  |                   |  |   |    |  |  |  |  |  |
|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                             |         |                                     |       |        |     |     |     |               |  |      |      |     |       |      |  |              |  |                      |        |        |       |        |  |            |                                             |         |  |  |  |  |  |                                |     |     |  |  |  |  |                     |                             |     |     |     |     |     |     |     |                                |    |    |    |    |    |    |    |                         |                             |     |     |  |     |     |  |     |                                |   |  |  |  |  |  |  |                   |  |   |    |  |  |  |  |  |
|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                             |         |                                     |       |        |     |     |     |               |  |      |      |     |       |      |  |              |  |                      |        |        |       |        |  |            |                                             |         |  |  |  |  |  |                                |     |     |  |  |  |  |                     |                             |     |     |     |     |     |     |     |                                |    |    |    |    |    |    |    |                         |                             |     |     |  |     |     |  |     |                                |   |  |  |  |  |  |  |                   |  |   |    |  |  |  |  |  |
|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                             |         |                                     |       |        |     |     |     |               |  |      |      |     |       |      |  |              |  |                      |        |        |       |        |  |            |                                             |         |  |  |  |  |  |                                |     |     |  |  |  |  |                     |                             |     |     |     |     |     |     |     |                                |    |    |    |    |    |    |    |                         |                             |     |     |  |     |     |  |     |                                |   |  |  |  |  |  |  |                   |  |   |    |  |  |  |  |  |
|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                             |         |                                     |       |        |     |     |     |               |  |      |      |     |       |      |  |              |  |                      |        |        |       |        |  |            |                                             |         |  |  |  |  |  |                                |     |     |  |  |  |  |                     |                             |     |     |     |     |     |     |     |                                |    |    |    |    |    |    |    |                         |                             |     |     |  |     |     |  |     |                                |   |  |  |  |  |  |  |                   |  |   |    |  |  |  |  |  |
|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                             |         |                                     |       |        |     |     |     |               |  |      |      |     |       |      |  |              |  |                      |        |        |       |        |  |            |                                             |         |  |  |  |  |  |                                |     |     |  |  |  |  |                     |                             |     |     |     |     |     |     |     |                                |    |    |    |    |    |    |    |                         |                             |     |     |  |     |     |  |     |                                |   |  |  |  |  |  |  |                   |  |   |    |  |  |  |  |  |
|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                             |         |                                     |       |        |     |     |     |               |  |      |      |     |       |      |  |              |  |                      |        |        |       |        |  |            |                                             |         |  |  |  |  |  |                                |     |     |  |  |  |  |                     |                             |     |     |     |     |     |     |     |                                |    |    |    |    |    |    |    |                         |                             |     |     |  |     |     |  |     |                                |   |  |  |  |  |  |  |                   |  |   |    |  |  |  |  |  |
|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                             |         |                                     |       |        |     |     |     |               |  |      |      |     |       |      |  |              |  |                      |        |        |       |        |  |            |                                             |         |  |  |  |  |  |                                |     |     |  |  |  |  |                     |                             |     |     |     |     |     |     |     |                                |    |    |    |    |    |    |    |                         |                             |     |     |  |     |     |  |     |                                |   |  |  |  |  |  |  |                   |  |   |    |  |  |  |  |  |

Recommended Land Size (see page 5)

TAPE (Unit: mm), Applicable standard JIS C0806 and IEC 60286.

Fig. 1 (Ø4)

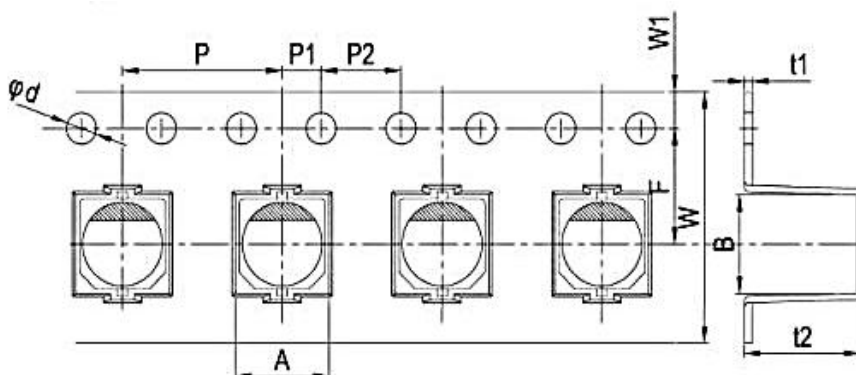
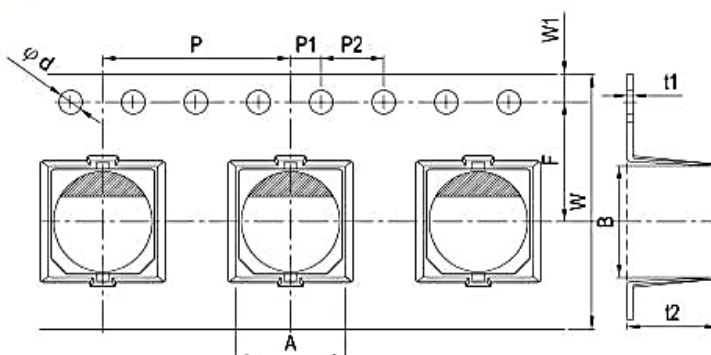
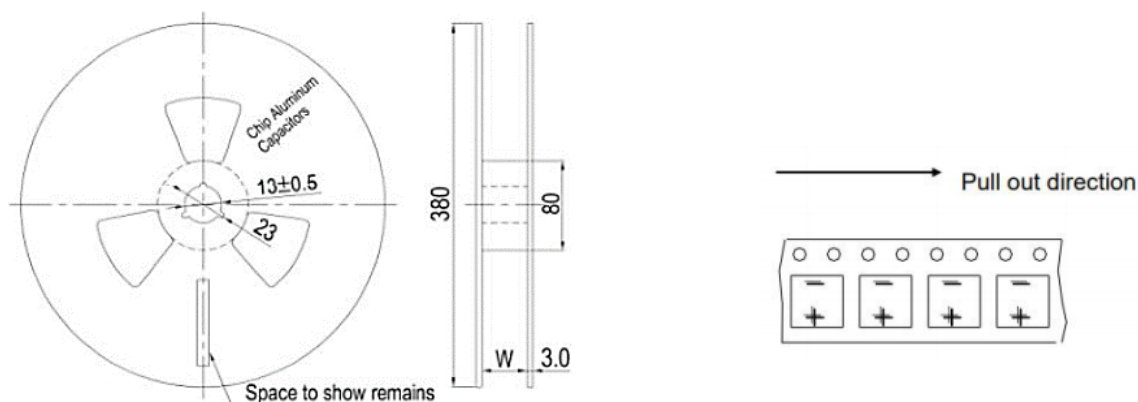


Fig. 2 (Ø5~Ø10)



| SIZE     | W  | P  | F    | A0   | B0   | t2   | Ød  | P1 | P2 | t1  | W1   | APPLICABLE |
|----------|----|----|------|------|------|------|-----|----|----|-----|------|------------|
| Ø4*5.4   | 12 | 8  | 5.5  | 4.7  | 4.7  | 5.8  | 1.5 | 2  | 4  | 0.4 | 1.75 | Fig.1-1    |
| Ø5*5.4   | 12 | 12 | 5.5  | 6.0  | 6.0  | 5.8  | 1.5 | 2  | 4  | 0.4 | 1.75 | Fig.1-2    |
| Ø6.3*5.4 | 16 | 12 | 7.5  | 7.0  | 7.0  | 5.8  | 1.5 | 2  | 4  | 0.4 | 1.75 | Fig.1-2    |
| Ø6.3*7.7 | 16 | 12 | 7.5  | 7.0  | 7.0  | 8.3  | 1.5 | 2  | 4  | 0.4 | 1.75 | Fig.1-2    |
| Ø8*6.5   | 16 | 12 | 7.5  | 8.7  | 8.7  | 6.8  | 1.5 | 2  | 4  | 0.4 | 1.75 | Fig.1-2    |
| Ø8*10.2  | 24 | 16 | 11.5 | 8.7  | 8.7  | 11.0 | 1.5 | 2  | 4  | 0.4 | 1.75 | Fig.1-2    |
| Ø10*10.2 | 24 | 16 | 11.5 | 10.7 | 10.7 | 11.0 | 1.5 | 2  | 4  | 0.4 | 1.75 | Fig.1-2    |

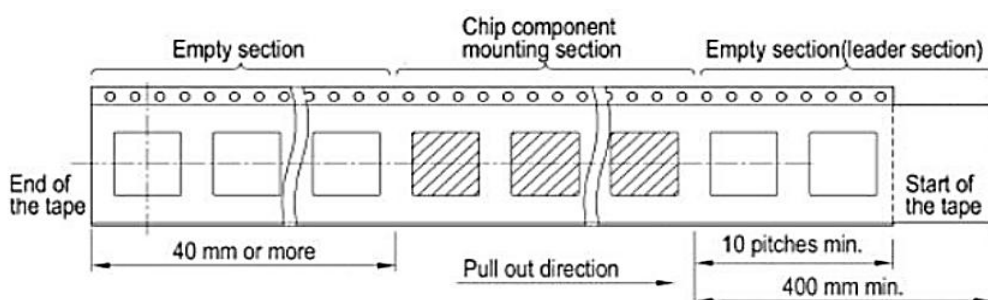
REEL (Unit: mm), Applicable standard JIS C0806 and IEC 60286.



| CASE SIZE      | Ø4   | Ø5   | Ø6.3 | Ø8x6.5 | Ø8x10.2 | Ø10 |
|----------------|------|------|------|--------|---------|-----|
| W (mm)         | 14   | 14   | 18   | 18     | 26      | 26  |
| Qty/Reel (pcs) | 2000 | 1000 | 1000 | 500    | 500     | 500 |

## PACKING METHOD

- Polarity: Anode on the opposite side of the feed hole
- The leader length of the tape shall not be less than 400mm including 10 or more embossed sections in which no parts are contained.
- The winding core is provided with an over 40mm long empty section



## APPLICATION GUIDELINE

### CIRCUIT DESIGN

1) Please make sure the environmental and mounting conditions to which the capacitor will be exposed are within the conditions specified in catalogue.

2) Operating temperature and applied ripple shall be within specification.

3) Appropriate capacitors which comply with the life requirement of the products should be selected when designing the circuit.

4) Aluminum electrolytic capacitors are polar. Make sure that no reverse voltage or AC voltage is applied to the capacitors. Please use bi-polar capacitors for a circuit that can possibly see reversed polarity.

Note: Even bi-polar capacitors cannot be used for AC voltage application.

5) Do not use aluminum electrolytic capacitors in a circuit that requires rapid and very frequent charge/ discharge.

In this type of circuit, it is necessary to use a special design capacitor with extended life characteristics.

6) Do not apply excess voltage.

(1) Please pay attention to that the peak voltage, which is DC voltage overlapped by ripple current, will not exceed the rated voltage.

(2) In the case where more than 2 aluminum electrolytic capacitors are used in series, please make sure that applied voltage will be lower than rated voltage and the voltage will be applied to each capacitor equally by using a balancing resistor in parallel with the capacitor.

7) Aluminum electrolytic capacitors shall not be used under the following environmental conditions:

(1) (a) Capacitors will be exposed to water (including condensation), brine or oil. (b) Ambient conditions that include toxic gases such as hydrogen sulfide, sulfurous acid, nitrous acid, chlorine, bromine, methyl bromide, ammonium, etc. (c) Ambient conditions that expose the capacitor to ozone, ultraviolet ray and radiation.

(2) Severe vibration and physical shock conditions that exceed specification.

Vibration test condition: 10-55-10Hz

Vibration frequency range : 10~55~10hz

Sweep rate : 10~55~10Hz/minute

Sweep method : logarithmic

Amplitude or acceleration : 1.5mm (max. Acceleration is 10G)

Direction of vibration : X, Y, Z direction

Testing time: 2 hours per each direction

Shock is not applicable normally.

If a particular condition is required, please contact our sales team.

8) The main chemical solution of the electrolyte and the separator paper used in the capacitors are combustible.

The electrolyte is conductive. When it comes in contact with the PC board, there is a possibility of pattern corrosion or short circuit between the circuit pattern, which could result in smoking or catching fire. Do not locate any circuit pattern beneath the capacitor end seal.

9) Do not design a circuit board that the heat generating components are placed near the aluminum electrolytic capacitor or on the reverse side of PC board, if that just under the capacitor.

10) Electrical characteristics may vary depending on changes in temperature and frequency. Please consider this variation when you design circuits.

11) When you install more than 2 capacitors in parallel, please consider the balance of current flowing into the capacitors.

12) While mounting capacitors on double-side PC board, the capacitors should be away from those unnecessary base plate holes and connection holes.

## MOUNTING

1) Once a capacitor has been assembled in the set and power applied, do not attempt to re-use the capacitor in other circuits or application.

2) Leakage current of the capacitors that have been stored for more than 2 years may increase. When leakage current has increased, please perform a voltage treatment using a 1kΩ resistor.

3) Please confirm specifications and polarity before installing capacitors on the PC board.

4) Do not drop capacitors on the floor, nor use a capacitor that was dropped.

5) Do not deform the capacitor during installation.

6) Please pay attention to the mechanical shock to the capacitor by suction nozzle of the automatic insertion machine or automatic mounter, or by product checker, or by centering mechanism.

#### REFLOW SOLDERING

1) Please follow "Reflow Soldering Conditions" when use the part.

2) When an infrared heater is used, please pay attention to the extent of heating since the absorption rate of infrared will vary due to difference in the color and size of the capacitor.

3) Do not tilt lay down or twist the capacitor body after the capacitor are soldered to the PC board.

4) Do not carry the PC board by grasping the soldered capacitor.

5) Please do not allow anything to touch the capacitor after soldering. If PC boards are stored in stack, please make sure the PC board or other components away from the capacitor.

6) The capacitors shall not be effected by any radiated heat from the soldered PC board or other components after soldering.

7) Cleaning:

(a) Do not clean capacitors with halogenated cleaning agent. However, if it is necessary to clean with halogenated cleaning agent, please contact our sales team.

(b) Recommended cleaning method

Applicable : Any type, any ratings

Cleaning conditions: Total cleaning time shall be within 2 minutes by immersion, ultrasonic or other methods.

Temperature of the cleaning agents shall be 40°C or below. After cleaning, capacitors should be dried by using hot air for the minimum 10 minutes along with the PC board mounted. Hot air temperature should be within the maximum operating temperature of the capacitor. Insufficient dryness after water rinse may cause appearance problems, such as bottom-plate bulge and etc.;

Avoid using ozone destructive substances as cleaning agents for protecting global environment.

#### IN THE EQUIPMENT

1) Do not directly touch terminal by hand.

2) Do not link positive terminal and negative terminal by conductor, nor spill conductible liquid such as alkaline or acidic solution on or near the capacitor.

3) Please make sure that the ambient conditions where the set is installed are free from spilling water or oil, direct sunlight, ultraviolet rays, radiation, poisonous gases, vibration or mechanical shock.

#### MAINTENANCE AND INSPECTION

Please periodically inspect the aluminum capacitors that are installed in industrial equipment. The following items should be checked:

Appearance: remarkable abnormality such as pressure relief vent opening, electrolyte leaking, etc.

Electrical characteristics: capacitance, dielectric loss tangent, leakage current and etc., which are specified in catalogue or alternate product specification.

#### IN AN EMERGENCY

1) If you see smoke due to operation of safety vent, please turn off the main switch or pull out the plug from the outlet.

2) If you breathe the gas or ingest the electrolyte, please wash out your mouth and throat with water immediately.

3) If your skin is exposed to the electrolyte, please wash it away using soap and water.

#### STORAGE

1) Do not keep capacitor in high temperature and high humidity atmosphere. Storage conditions should be:

Temperature: 5°C~ 35°C Humidity : lower than 75% Place : Indoor

2) Avoid ambient conditions where capacitors are covered with water, brine or oil.

3) A storage products for longer than 12 months is not recommended. Within other effects, the terminals may suffer degradation, resulting in bad solderability. All products shall be used within the period of 12 months based on the day of shipment

#### DISPOSAL

Please take either of the following methods in disposing capacitors.

1) Incinerate them after crushing capacitors or making a hole on the capacitor body.

2) If incineration is not applicable, hand them over to a waste disposal agent and have them buried in landfills.



## IMPORTANT NOTES AND DISCLAIMER

1. **ROHS COMPLIANCE:** The levels of RoHS restricted materials in this product are below the maximum concentration values (also referred to as the threshold limits) permitted for such substances, or are used in an exempted application, in accordance with EU RoHS Directive (EU) 2015/863 EC (RoHS3). RoHS Test Report for this product can be obtained at Download Center.
2. **REACH COMPLIANCE:** REACH substances of high concern (SVHCs) information is available for this product. Since the European Chemical Agency (ECHA) has published notice of their intent to frequently revise the SVHC listing for the foreseeable future, REACH Test Report for this product can be obtained at Download Center.
3. All Product parametric performance is indicated in the Electrical Characteristics for the listed herein test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.
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8. *NextGen* requires that customers first obtain an RMA (Returned Merchandise Authorization) number prior to returning any products. Returns must be made within 30 days of the date of invoice, be in the original packaging, unused and like-new condition. At the time of quoting or purchasing, a product may say that it is Non-Cancelable/ Non-Returnable (NCNR). These products are not returnable and not refundable.