

SPECIFICATION SHEET NO.	T0128- UE477M016HGKTA	
ORIGINAL MFG/PART NO.	Aillen Aillen Capacitors/CAE477M1CHUEGJ2TR	
NEXTGEN PART CODE	UE477M016HGKTA	Indicate This Code For RFQ /Order
DATE	Jan. 28, 2026	
REVISION	A6	Updated With Most Recent Data
DESCRIPTION AND MAIN PARAMETRICS	<p>Aluminum Electrolytic Capacitors (CAE), SMD Type, UE Series, 2 Pads Wide Temperature and Low Impedance Capacitance 470μF, Tolerance \pm20%, Voltage 16V Case size: \varnothing10.0*L10.2mm, Impedance (Ω/20$^{\circ}$C,100KHz): 0.23Ω Max. Ripple Current (mA r.m.s./@+105$^{\circ}$C, 100KHz): 360mA Max. Lifetime @105$^{\circ}$C \pm2: 2000 Hours Operating Temp. Range -55$^{\circ}$C ~+105$^{\circ}$C Package in Tape/Reel, 500pcs/Reel REACH/RoHS Compliant, RoHS Directive2011/65/EU with amendment (EU) 2015/863 & 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

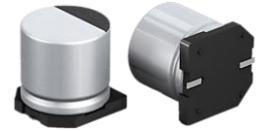


Image shown is a representation only. Exact specifications should be obtained from the product dimension.



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

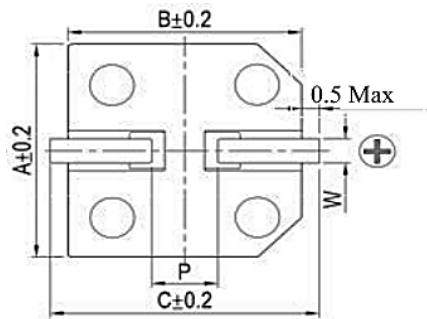
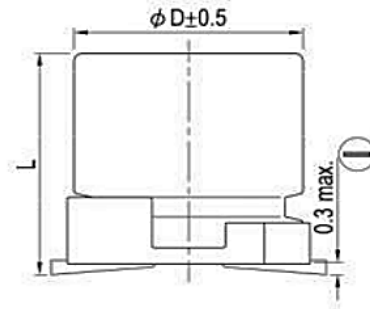
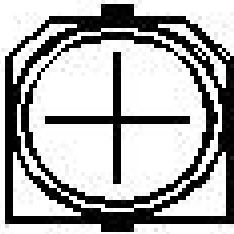
- Please Follow Up Part Code Guide And Indicate NextGen Order Part Code UE477M016HGKTA For RFQ/Order.

RFQ
Request For Quotation

PART CODE GUIDE

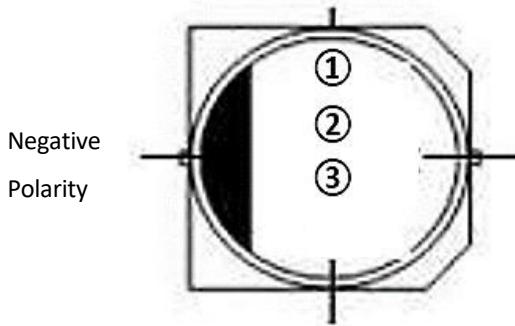
CODE	NAME	KEY SPECIFICATION OPTION
UE	Product Index	Aluminum Electrolytic Capacitors(CAE), V-Chip Type, Original MFG Series Number CDUE
477	Rated Capacitance	475: 4.7μF; 105: 1.0μF; 106: 10μF; 156: 15μF; 226: 22μF; 276: 27μF; 336: 33μF; 476: 47μF; 566: 56μF; 686: 68μF; 107: 100μF; 157: 150μF; 227: 220μF 337: 330μF; 477: 470μF; 687: 680μF; 108: 1000μF; 158: 1500μF
M	Capacitance Tolerance	M: ±20% (Standard)
016	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 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



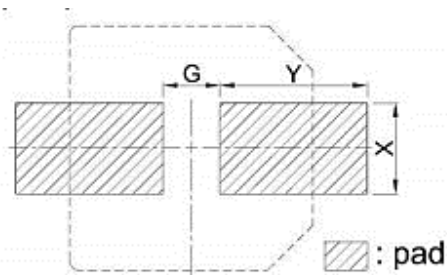
$\varnothing D$	4.0	5.0	6.3	6.3	8.0	8.0	10.0
Case L	5.4	5.4	5.4	7.7	6.5	10.2	10.2
Tolerance @ L	± 0.5	± 0.5	± 0.5	± 0.5	± 0.5	± 0.5	± 0.5
A	4.3	5.3	6.6	6.6	8.3	8.3	10.3
B	4.3	5.3	6.6	6.6	8.3	8.3	10.3
C	5.1	6.1	7.3	7.3	9.2	9.2	11.2
P	1.0	1.5	2.1	2.1	3.1	3.1	4.5
W	0.5~0.9	0.5~0.9	0.5~0.9	0.5~0.9	0.8~1.1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

MARKING GUIDE – FOR DIFFERENT ONLY



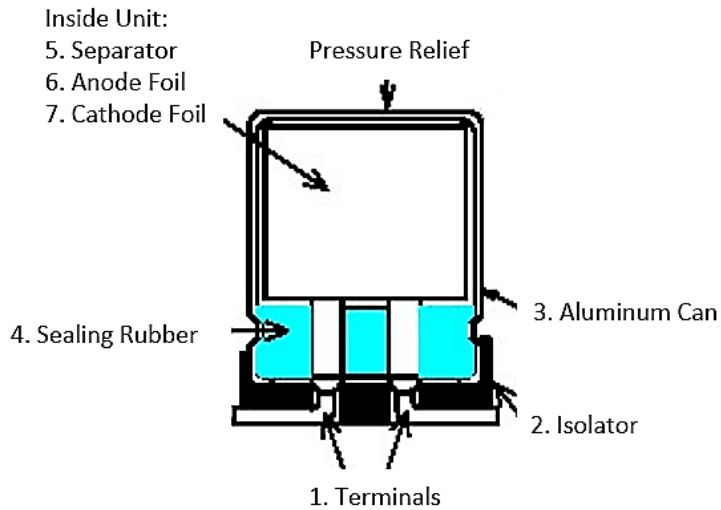
SYMBOL	NAME	VALUE	MARKING
①	Rated Capacitance	470 μ F	470
②	Rated Voltage	16V	16V
③	Series Code	UE	UE

RECOMMENDED LAND PATTERN (Unit: mm)



DIAMETER SIZE	X	Y	G
$\varnothing 4$	1.6	2.6	1.0
$\varnothing 5$	1.6	3.0	1.4
$\varnothing 6.3$	1.6	3.5	1.9
$\varnothing 8$	2.5	3.5	3.0
$\varnothing 10$	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 PART CODE	RATE VOL.	CAPACITOR VALUE	MAX.DF @20°C, 120HZ	MAX. LEAKAGE CURRENT	MAX. IMPEDANCE @20 °C 100KHZ	MAX. RIPPLE CURRENT @ 105°C 100KHZ	CASE SIZE 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 PART CODE	RATE VOL.	CAPACITOR VALUE	MAX.DF @20°C, 120HZ	MAX. LEAKAGE CURRENT	MAX. IMPEDANCE @20 °C 100KHZ	MAX. RIPPLE CURRENT @ 105°C 100KHZ	CASE SIZE 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 PART CODE	RATE VOL.	CAPACITOR VALUE	MAX.DF @20°C, 120HZ	MAX. LEAKAGE CURRENT	MAX. IMPEDANCE @20 °C 100KHZ	MAX. RIPPLE CURRENT @ 105°C 100KHZ	CASE SIZE 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 PART CODE	RATE VOL.	CAPACITOR VALUE	MAX.DF @20°C, 120HZ	MAX. LEAKAGE CURRENT	MAX. IMPEDANCE @20 °C 100KHZ	MAX. RIPPLE CURRENT @ 105°C 100KHZ	CASE SIZE 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 PART CODE	RATE VOL.	CAPACITOR VALUE	MAX.DF @20°C, 120HZ	MAX. LEAKAGE CURRENT	MAX. IMPEDANCE @20 °C 100KHZ	MAX. RIPPLE CURRENT @ 105°C 100KHZ	CASE SIZE 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 PART CODE	RATE VOL.	CAPACITOR VALUE	MAX.DF @20°C, 120HZ	MAX. LEAKAGE CURRENT	MAX. IMPEDANCE @20 °C 100KHZ	MAX. RIPPLE CURRENT @ 105°C 100KHZ	CASE SIZE 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 - Ta = 25°C, FOR DIFFERENT PART CODE

NEXTGEN ORDER PART CODE	RATE VOL.	CAPACITOR VALUE	MAX.DF @20°C, 120HZ	MAX. LEAKAGE CURRENT	MAX. IMPEDANCE @20 °C 100KHZ	MAX. RIPPLE CURRENT @ 105°C 100KHZ	CASE SIZE ØD X L
	V	μF	%	μA	Ω	mA r.m.s	mm
UE475M063HDHTA	63	4.7	10	3	3	50	5x5.4
UE106M063HEHTA	63	10	10	6.3	1.5	80	6.3x5.4
UE226M063HEJTA	63	22	10	13.86	1.2	120	6.3x7.7
UE336M063HFKTA	63	33	10	20.79	0.65	250	8x10.2
UE476M063HFKTA	63	47	10	29.61	0.65	250	8x10.2
UE686M063HFKTA	63	68	10	42.84	0.65	250	8x10.2
UE686M063HGKTA	63	68	10	42.84	0.35	400	10x10.2
UE107M063HGKTA	63	100	10	63	0.35	400	10x10.2
UE127M063HGKTA	63	120	10	75.6	0.35	400	10x10.2

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

NEXTGEN ORDER PART CODE	RATE VOL.	CAPACITOR VALUE	MAX.DF @20°C, 120HZ	MAX. LEAKAGE CURRENT	MAX. IMPEDANCE @20 °C 100KHZ	MAX. RIPPLE CURRENT @ 105°C 100KHZ	CASE SIZE ØD X L
	V	µF	%	µA	Ω	mA r.m.s	mm
UE106M080HFKTA	80	10	10	8.0	1.3	130	8x10.2
UE226M080HFKTA	80	22	10	17.6	1.3	130	8x10.2
UE276M080HFKTA	80	27	10	21.6	1.3	130	8x10.2
UE336M080HGKTA	80	33	10	26.4	0.7	200	10x10.2
UE476M080HGKTA	80	47	10	37.6	0.7	200	10x10.2
UE107M080HGKTA	80	100	10	80	0.7	200	10x10.2

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NEXTGEN ORDER PART CODE	RATE VOL.	CAPACITOR VALUE	MAX.DF @20°C, 120HZ	MAX. LEAKAGE CURRENT	MAX. IMPEDANCE @20 °C 100KHZ	MAX. RIPPLE CURRENT @ 105°C 100KHZ	CASE SIZE ØD X L
	V	µF	%	µA	Ω	mA r.m.s	mm
UE475M100HEJTA	100	4.7	10	4.7	3.8	115	6.3x7.7
UE106M100HFKTA	100	10	10	10	1.3	130	8x10.2
UE226M100HFKTA	100	22	10	22	1.3	130	8x10.2
UE276M100HFKTA	100	27	10	27	1.3	130	8x10.2
UE336M100HGKTA	100	33	10	33	0.7	200	10x10.2
UE476M100HGKTA	100	47	10	47	0.7	200	10x10.2

CHARACTERISTICS

Standard Atmospheric Conditions

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

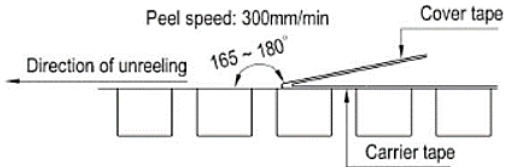
- Ambient temperature: 15 °C to 35 °C
- Relative humidity: 45% to 85%
- Air Pressure: 86kPa to 106kPa
- If there is any doubt about the results, measurement shall be made within the following conditions:
- Ambient temperature: 20 °C \pm 2 °C
- Relative humidity: 60% to 70%
- Air Pressure: 86kPa to 106kPa
- 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 (Tolerance)	<p><Condition></p> <p>Measuring Frequency : 120Hz ± 12Hz</p> <p>Measuring Voltage : Not more than 0.5V</p> <p>Measuring Temperature : 20 ± 2°C</p> <p><Criteria></p> <p>Shall be within the specified capacitance tolerance</p>																		
Leakage Current	<p><Condition></p> <p>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.</p> <p><Criteria></p> <p>$I (\mu A) \leq 0.01 CV$ or $3 (\mu A)$, Whichever is greater</p> <p>I: Leakage Current (μA)</p> <p>C: Capacitance (μF)</p> <p>V: Rated Working Voltage (V)</p>																		
tan δ	<p><Condition></p> <p>See Normal Capacitance, for measuring frequency, voltage and temperature.</p> <p><Criteria></p> <p>The tangent of the loss angle (tan δ) of the capacitors shall refer to the following table.</p> <p>Measurements shall be made under the same conditions as those given for the measurement of the capacitance.</p> <table border="1" data-bbox="416 1400 1275 1508"> <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> <p>Remark: Refer to this document for tan δ of other voltages.</p>	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 (WV) Surge voltage (SV)	<table border="1" data-bbox="416 1628 1275 1798"> <tr> <td>W.V. (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. (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. (V.DC)	6.3	10	16	25	35	50	63	100	S.V. (V.DC.)	7.2	11.5	18.4	28.8	40.3	57.5	72.5	115
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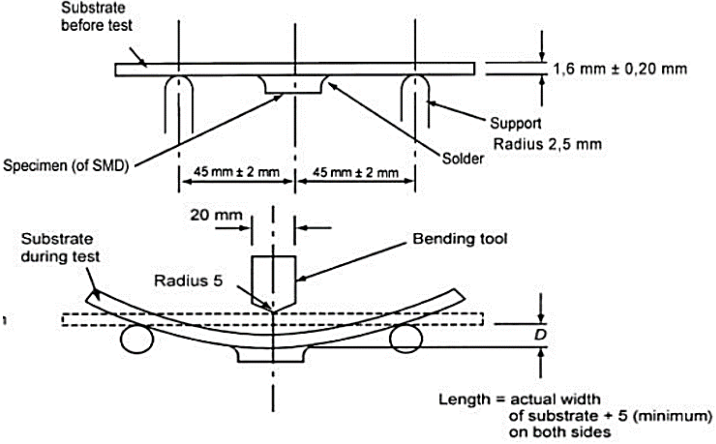
ITEM	PERFORMANCE																																																							
<p>Temperature Characteristic IEC-60384-4 4.12</p>	<p><Condition></p> <table border="1" data-bbox="401 381 1300 685"> <thead> <tr> <th>Step.</th> <th>Testing Temperature(°C)</th> <th>Time</th> </tr> </thead> <tbody> <tr> <td>1</td> <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> </tbody> </table> <p><Criteria></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 border="1" data-bbox="441 1089 1300 1373"> <thead> <tr> <th>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> </thead> <tbody> <tr> <td rowspan="2">Z-25°C/ Z+20°C (120Hz)</td> <td>< 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/ Z+20°C (120Hz)</td> <td>< 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> </tbody> </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/ Z+20°C (120Hz)	< Φ8	4	3	2	2	2	3	≥Φ8	5	4	3	2	2	3	Z-55°C/ Z+20°C (120Hz)	< Φ8	12	8	4	4	3	4	≥Φ8	10	8	6	4	3	4
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	≥Φ8	5	4	3	2	2	3																																																	
Z-55°C/ Z+20°C (120Hz)	< Φ8	12	8	4	4	3	4																																																	
	≥Φ8	10	8	6	4	3	4																																																	
<p>Sealing Tape Reel Strength</p>	<p><Condition></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> 																																																							

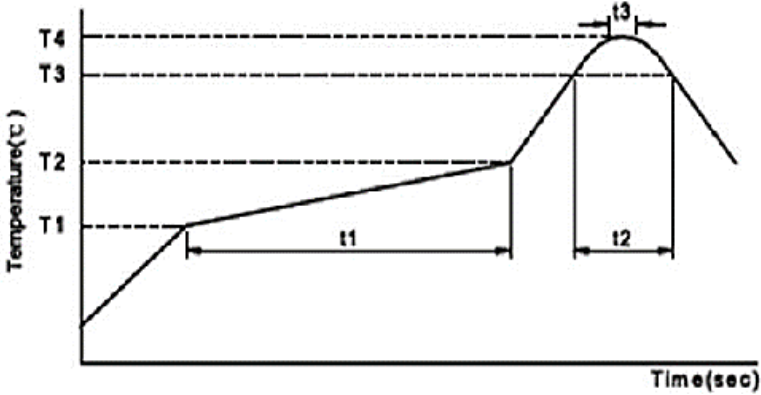
ITEM	PERFORMANCE										
<p>Load Life Test IEC-60384- 4 4.13</p>	<p><Condition> The capacitor is stored at a temperature of 105° C ±2 with rated voltage applied continuously for 2000+48/0 hours, Then the product should be tested after 16 hours recovering time at atmospheric conditions. The result should meet the following table: <Criteria> The characteristic shall meet the following requirements.</p> <table border="1" data-bbox="401 623 1278 909"> <tr> <td>Capacitance Change</td> <td>± 30% of initial measured value.</td> </tr> <tr> <td>tan δ</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. 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 (1kΩ) for 30 mines after which it shall be discharged.</p>	Capacitance Change	± 30% of initial measured value.	tan δ	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. All markings shall be legible	Inner construction	No corrosion of tab terminals or electrodes
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Appearance	No leakage of electrolyte or swelling of the case. All markings shall be legible										
Inner construction	No corrosion of tab terminals or electrodes										
<p>Shelf Life Test IEC-60384- 4 4.17</p>	<p><Condition> The capacitors are then stored with no voltage applied at a temperature of 105 ±2°C 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±100Ω) with D.C. rated voltage applied for 30min. After which the capacitors shall be discharged, and then, tested the characteristics. <Criteria> The characteristic shall meet the following requirements.</p> <table border="1" data-bbox="401 1514 1278 1800"> <tr> <td>Capacitance Change</td> <td>± 30% of initial measured value.</td> </tr> <tr> <td>tan δ</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. 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: If the capacitors are stored more than 1 year, the leakage current may increase. Please apply voltage through about 1 KΩ resistor, if necessary.</p>	Capacitance Change	± 30% of initial measured value.	tan δ	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. All markings shall be legible	Inner construction	No corrosion of tab terminals or electrodes
Capacitance Change	± 30% of initial measured value.										
tan δ	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. All markings shall be legible										
Inner construction	No corrosion of tab terminals or electrodes										

ITEM	PERFORMANCE								
<p>Surge Test IEC-60384- 4 4.9</p>	<p><Condition> Test temperature:15~35°C Series resistor: $R = \frac{100 \pm 50}{C}$ R: protective resistor (KΩ) C: nominal capacitance (μF) Test voltage: Surge voltage item 4.4 No. of cycles: 1000cycles Each cycles lasts for 6 ± 0.5min “ON” for 30 ± 5 s “OFF” for 5 ± 0.5min.</p> <table border="1" data-bbox="402 665 1283 870"> <tr> <td>Leakage current</td> <td>Not more than the specified value</td> </tr> <tr> <td>Capacitance Change</td> <td>Within $\pm 15\%$ 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 IEC-60384- 4 4.8</p>	<p><Condition> 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) Vibration frequency range : 10Hz ~ 55Hz Peak to peak amplitude : 1.5mm Sweep rate : 10Hz ~ 55Hz ~ 10Hz in about 1 minute <Criteria> The characteristic shall meet the following requirements.</p> <table border="1" data-bbox="402 1524 1283 1730"> <tr> <td>Leakage current</td> <td>Not more than the specified value</td> </tr> <tr> <td>Capacitance Change</td> <td>Within $\pm 10\%$ of initial value.</td> </tr> <tr> <td>tan δ</td> <td>Not more than the specified value.</td> </tr> <tr> <td>Appearance</td> <td>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								
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tan δ	Not more than the specified value.								
Appearance	There shall be no leakage of electrolyte.								

ITEM	PERFORMANCE								
<p>Solderability Test IEC-60384-4 4.6</p>	<p><Condition> The capacitor shall be tested under the following conditions: Soldering temperature: 245°C ± 3°C Dipping depth: 2mm Dipping speed: 25 ± 2.5mm/s Dipping time: 3 ± 0.5s <Criteria></p> <table border="1" data-bbox="395 671 1252 754"> <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><Condition> After reflow soldering (item 4.18) The capacitor shall be left at room temperature for before measurement. <Criteria> The characteristic shall meet the following requirements.</p> <table border="1" data-bbox="395 1073 1252 1276"> <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>There shall be no leakage of electrolyte.</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	There shall be no leakage of electrolyte.
Leakage current	Not more than the specified value								
Capacitance Change	Within ± 10% of initial value.								
tan δ	Not more than the specified value.								
Appearance	There shall be no leakage of electrolyte.								
<p>Damp heat test IEC60384-4 4.12</p>	<p><Condition> Humidity Test: According to IEC60384-4 No.4.12 methods, capacitor shall be exposed for 1000±8 hours in an atmosphere of 90~95%R H .at 60±3°C, the characteristic change shall meet the following requirement. <Criteria></p> <table border="1" data-bbox="395 1657 1252 1860"> <tr> <td>Leakage current</td> <td>Not more than the specified value</td> </tr> <tr> <td>Capacitance Change</td> <td>Within ± 20% of initial value.</td> </tr> <tr> <td>tan δ</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 ± 20% of initial value.	tan δ	Not more than 120% of the specified value	Appearance	There shall be no leakage of electrolyte.
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ITEM	PERFORMANCE																													
<p>Change Of Temperature Test IEC-60384-4 4.7</p>	<p><Condition> Temperature cycle: According to IEC60384-4 No.4.7 methods, capacitor shall be placed in an oven, the condition according as below</p> <table border="1" data-bbox="401 480 1305 837"> <thead> <tr> <th>No.</th> <th>Temperature</th> <th>Time</th> </tr> </thead> <tbody> <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" style="text-align: center;">1 to 5 = 1 cycle, Total 5 cycles</td> </tr> </tbody> </table> <p>and then the capacitor shall be subjected to standard atmospheric conditions for 4 hours, after which measurements shall be made.</p> <p><Criteria> The characteristic shall meet the following requirements.</p> <table border="1" data-bbox="401 1052 1300 1290"> <tbody> <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> </tbody> </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																												
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Leakage current	Not more than the specified value.																													
Appearance	No broken and undamaged.																													
<p>Low Temperature Test</p>	<p><Condition> 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><Criteria></p> <table border="1" data-bbox="401 1587 1280 1825"> <tbody> <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> </tbody> </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																					
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ITEM	PERFORMANCE				
<p>Vent Test IEC-60384-4 4.16</p>	<p><Condition></p> <p>The following test only apply to those products with vent products at diameter $\geq \varnothing 8$ 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" data-bbox="454 634 1168 737"> <thead> <tr> <th>Diameter (mm)</th> <th>DC Current (A)</th> </tr> </thead> <tbody> <tr> <td>22.4 or less</td> <td>1</td> </tr> </tbody> </table> <p><Criteria></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 Characteristics Test</p>	<p><Condition></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><Criteria></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 Temperature Profile	Welding Method	Reflow Soldering	Soldering Iron	Wave Soldering
	The feasibility of	○ Feasible	○ Feasible	⊗ Is not workable
Conditions for the use of lead-free reflow soldering.				
				
<p>1) Methods the following 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: Product size: The product size is larger and its temperature rises slowly. Product installation position: The temperature of PCB center is lower than that of PCB</p> <p>3) Reflow soldering If possible, avoid reflow soldering twice. 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 Please follow the following conditions when soldering tin soldering: Soldering iron maximum temperature: $350 \pm 5^{\circ}\text{C}$; Welding time: 3+1/-0S</p>				

ITEM	PERFORMANCE																																																																																				
Reflow Soldering Temperature Profile	<p data-bbox="391 333 983 362">Test Method And Peak Temperature Permissible Range</p> <table border="1" data-bbox="422 381 1276 779"> <thead> <tr> <th data-bbox="422 381 761 410">Products category</th> <th colspan="7" data-bbox="761 381 1276 410">SMD aluminum electrolytic capacitor</th> </tr> </thead> <tbody> <tr> <td data-bbox="422 410 761 439">voltage (V)</td> <td data-bbox="761 410 848 439">4~50</td> <td data-bbox="848 410 983 439">4~50</td> <td data-bbox="983 410 1053 439">≥63</td> <td data-bbox="1053 410 1189 439">4~100</td> <td data-bbox="1189 410 1276 439">≥160</td> <td colspan="2"></td> </tr> <tr> <td data-bbox="422 439 761 524">Product size</td> <td data-bbox="761 439 848 524">Φ4~6. 3×4.5 L</td> <td data-bbox="848 439 983 524">Φ4~6.3</td> <td data-bbox="983 439 1053 524">Φ4~ 6.3</td> <td data-bbox="1053 439 1189 524">Φ8~18</td> <td colspan="3" data-bbox="1189 439 1276 524">≥Φ 12.5</td> </tr> <tr> <td data-bbox="422 524 558 553" rowspan="2">Preheating</td> <td data-bbox="558 524 761 553">TEM (T₁~T₂ , °C)</td> <td colspan="7" data-bbox="761 524 1276 553">150~180</td> </tr> <tr> <td data-bbox="558 553 761 582">Time (t₁) Max, S</td> <td data-bbox="761 553 848 582">120</td> <td colspan="6" data-bbox="848 553 1276 582">180</td> </tr> <tr> <td data-bbox="422 582 558 611" rowspan="2">The duration of the</td> <td data-bbox="558 582 761 611">TEM (T₃ , °C)</td> <td data-bbox="761 582 848 611">230</td> <td data-bbox="848 582 918 611">217</td> <td data-bbox="918 582 988 611">230</td> <td data-bbox="988 582 1058 611">217</td> <td data-bbox="1058 582 1128 611">217</td> <td data-bbox="1128 582 1198 611">230</td> <td data-bbox="1198 582 1276 611">217</td> </tr> <tr> <td data-bbox="558 611 761 640">Time (t₂) Max, S</td> <td data-bbox="761 611 848 640">30</td> <td data-bbox="848 611 918 640">90</td> <td data-bbox="918 611 988 640">60</td> <td data-bbox="988 611 1058 640">60</td> <td data-bbox="1058 611 1128 640">60</td> <td data-bbox="1128 611 1198 640">40</td> <td data-bbox="1198 611 1276 640">60</td> </tr> <tr> <td data-bbox="422 640 558 669" rowspan="2">The highest temperature</td> <td data-bbox="558 640 761 669">TEM (T₄ , °C)</td> <td data-bbox="761 640 848 669">250</td> <td colspan="2" data-bbox="848 640 983 669">260</td> <td data-bbox="983 640 1053 669">250</td> <td colspan="2" data-bbox="1053 640 1189 669">250</td> <td data-bbox="1189 640 1276 669">240</td> </tr> <tr> <td data-bbox="558 669 761 698">Time (t₃) Max, S</td> <td colspan="7" data-bbox="761 669 1276 698">5</td> </tr> <tr> <td data-bbox="422 698 761 727">Return the number</td> <td data-bbox="761 698 848 727">1</td> <td colspan="7" data-bbox="848 698 1276 727">≤2</td> </tr> </tbody> </table> <ul data-bbox="391 812 1296 982" style="list-style-type: none"> • Please contact us if the conditions of use are higher than those listed above. • When performing second reflow soldering, please make sure the temperature of capacitor has cooled to 5 ~ 35 °C. • If the reflow condition is based on IPC/JEDEC(J-STD-020), please contact us. <p data-bbox="391 1050 615 1079">OP-CAP Precautions:</p> <ul data-bbox="391 1098 1319 1653" style="list-style-type: none"> • 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. • 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. • OP-CAP products during the process of reflow heating temperature should increase to more than 200 °C • 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. <p data-bbox="391 1719 796 1748">Recommended Land Size (see page 5)</p>	Products category	SMD aluminum electrolytic capacitor							voltage (V)	4~50	4~50	≥63	4~100	≥160			Product size	Φ4~6. 3×4.5 L	Φ4~6.3	Φ4~ 6.3	Φ8~18	≥Φ 12.5			Preheating	TEM (T ₁ ~T ₂ , °C)	150~180							Time (t ₁) Max, S	120	180						The duration of the	TEM (T ₃ , °C)	230	217	230	217	217	230	217	Time (t ₂) Max, S	30	90	60	60	60	40	60	The highest temperature	TEM (T ₄ , °C)	250	260		250	250		240	Time (t ₃) Max, S	5							Return the number	1	≤2						
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TAPE (Unit: mm), Applicable standard JIS C0806 and IEC 60286.

Fig. 1 (Ø4)

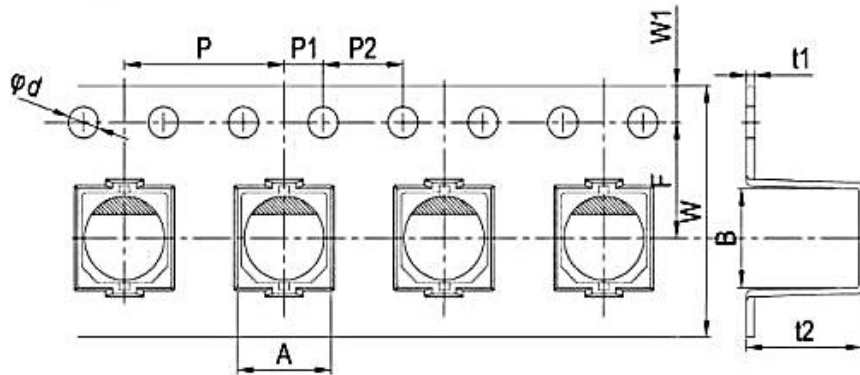
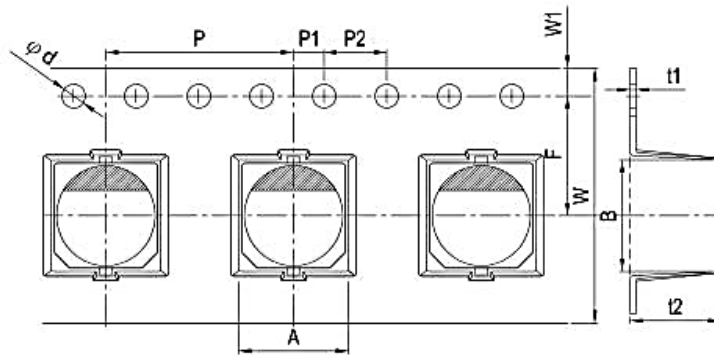
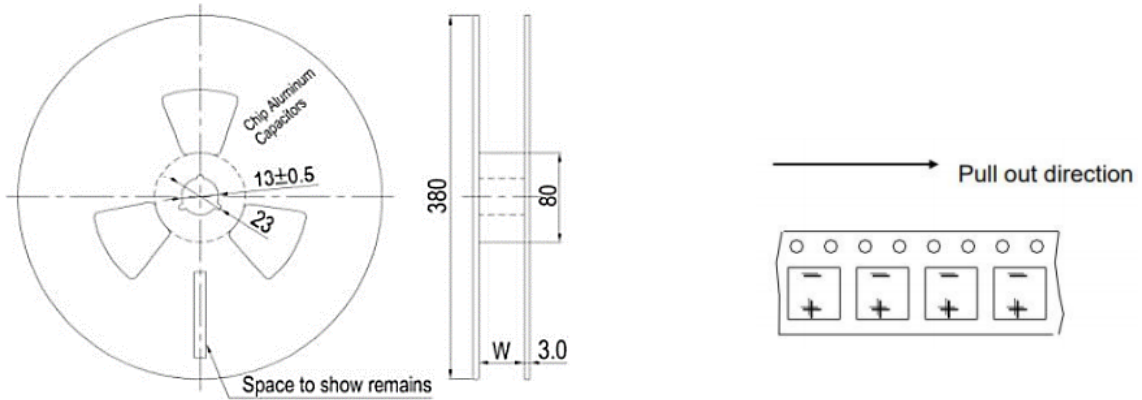


Fig. 2 (Ø5~Ø10)



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

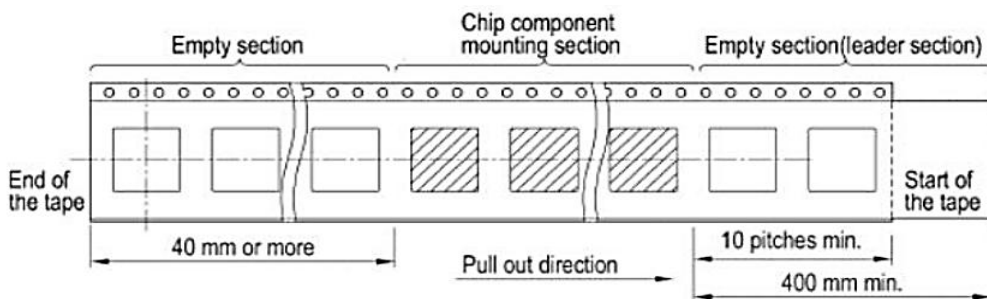
REEL (Unit: mm), Applicable standard JIS C0806 and IEC 60286.



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.