Conrad Electronic SE, Klaus-Conrad-Str. 1, D-92240 Hirschau

Item no.: 2755979, 2755980, 2755981, 2755982, 2755983, 2755984, 2755985, 2755986, 2755987, 2755988, 2755989, 2755990

Data Sheet

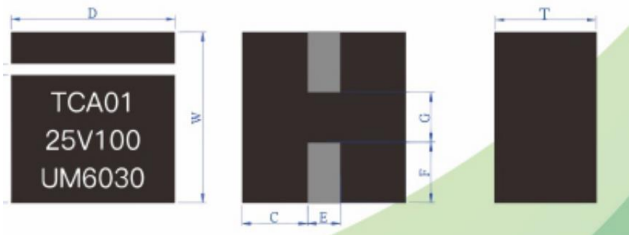
Aluminum Polymer Capacitor, 4.0 & 3.0 Height, Molded SMD, Low Profile, High CV



Dimensions & Standard Ratings

BN	VDC	Rated Capacitance (µF)	Case size L x W x H (mm)	ESR 100 kHz 20 °C (mΩ)	RC 100 kHz 105 °C (mA)	LC 20 °C 2 Minutes (µA)
2755979	6.3	330	6.5 x 6.5 x 4.0	20	2400	415
2755980	12	220	6.5 x 6.5 x 4.0	32	2100	528
2755981	16	180	6.5 x 6.5 x 4.0	32	1900	576
2755982	25	100	6.5 x 6.5 x 4.0	40	1900	500
2755983	35	56	6.5 x 6.5 x 4.0	50	1100	392
2755984	6.3	220	6.5 x 6.5 x 3.0	25	2000	277
2755985	12	180	6.5 x 6.5 x 3.0	35	1600	432
2755986	16	150	6.5 x 6.5 x 3.0	35	1400	480
2755987	25	100	6.5 x 6.5 x 3.0	50	1100	500
2755988	35	47	6.5 x 6.5 x 3.0	55	1000	329
2755989	16	68	5.0 x 5.0 x 3.0	65	950	217
2755990	25	47	5.0 x 5.0 x 3.0	65	950	235

Drawing (Unit: mm)



Dimensions	D	W	T	A	B	C	E	F	G
6.5 x 6.5 x 4.0	6.5±0.1	6.5±0.1	4.0 Max	4.88	0.40	2.60	1.30	2.30	1.90
6.5 x 6.5 x 3.0	6.5±0.1	6.5±0.1	3.0 Max	4.88	0.40	2.60	1.30	2.30	1.90
5.0 x 5.0 x 3.0	5.0±0.1	5.0±0.1	3.0 Max	3.38	0.40	1.85	1.30	1.75	1.50

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Technical Data

Items	Characteristics		
Operation Temp. Range	-55 ~ +105 °C		
Rated Voltage Range	6.3 ~ 35 V		
Capacitance Range	4.00 mm height: 56 ~ 330 µF / 3.00 mm height: 47 ~ 220 µF		
Capacitance Tolerance	±20% at 120 Hz, 20 °C		
Leakage Current (*1)	≤ Specified value (Rated voltage applied for 2 minutes at 20 °C)		
Dissipation Factor (tan d)	0.12 max (at 20 °C, 120 Hz)		
ESR (*2)	≤ Specified value at 100 kHz, 20 °C		
Temperature Characteristics (Max. Imp. Ratio)	Measurement frequency: 100 kHz		
	Impedance Ratio ZT/Z20 (max.)	Z(+105 °C) / Z(20 °C)	≤1.25
		Z(-55 °C) / Z(20 °C)	≤1.25
Damp Heat (Steady State)	The following specifications shall be satisfied when the capacitors are restored to 20 °C after exposing them for 500 hours at 60 °C, 90 to 95% RH without voltage applied.		
	Capacitance Change	Within ±20% of initial measured value (*3)	
	Dissipation Factor	150% or less of initial specified value	
	ESR (*2)	150% or less of initial specified value	
	Leakage Current	Initial specified value or less	
Endurance	After 2000 hours application of the rated voltage at 105 °C, the characteristics meet the requirements listed below.		
	Capacitance Change	Within ±20% of initial measured value (*3)	
	Dissipation Factor	150% or less of initial specified value	
	ESR (*2)	150% or less of initial specified value	
	Leakage Current	Initial specified value or less	
Resistance to Soldering Heat	After reflow soldering and restored to room temperature, the characteristics meet the requirements listed below.		
	Capacitance Change	Within ±10% of initial measured value (*3)	
	Dissipation Factor	130% or less of initial specified value	
	ESR (*2)	130% or less of initial specified value	
	Leakage Current	Initial specified value or less	
Marking	Laser print on the case top		

(*1) If any doubt arises, measure the leakage current after the voltage treatment of applying DC rated voltage continuously to the capacitor for 120 minutes at 105 °C.
(*2) Should be measured at both of the terminal ends closest where the terminals protrude through the molded case.
(*3) The cap. value before the test of resistance to soldering heat.

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Test Method & Performance

Test environmental conditions:

Ambient temperature: 20±2 °C / Relative humidity: 60 ~ 70% / Air pressure: 86 ~ 106 kPa

No.	Item	Test condition	Specification
1	Rated voltage		See specification table
2	Capacitance (Tolerance)	Measuring frequency: 120 Hz±20% Measuring voltage: 0.5 Vrms max. +1.5 to 2.0 VDC Measuring circuit: Series Equivalent circuit	See specification table (M: ±20%)
3	Tan δ	Measuring frequency: 120 Hz±20% Measuring voltage: 0.5 Vrms max. +1.5 to 2.0 VDC Measuring circuit: Series Equivalent circuit	See specification table
4	ESR	Measuring frequency: 100 kHz±20% Measuring voltage: 0.5 Vrms max. +1.5 to 2.0 VDC Measuring circuit: Series Equivalent circuit	See specification table
5	Leakage Current	C=Rated capacitance (μF), V=Rated voltage (VDC), Voltage applied for 2 minutes at 20 °C	I=0.2 Cv (after 2 minutes) See characteristic table
6	Surge voltage (Rated voltage x 1.15(V))	The following specifications shall be satisfied when the capacitors are restored to +20 °C after the surge voltage is applied at a cycle of 360 seconds which consists charge for 30±5 seconds and discharge for 330 seconds, for 1000 cycles at 105±2 °C. Protective resistor and discharge resistor: 1 kΩ	No visible damage Leakage current ≤ specified value Capacitance change: within ±20% of initial value tan δ ≤ 150% of specified value ESR ≤ 150% of specified value
7	Temperature characteristics	Step / Temperature (°C) / Measure items 1 / +20±2 / Impedance (at 100 kHz±20%) 2 / -25±3 / Impedance (at 100 kHz±20%) 3 / -55±3 / Impedance (at 100 kHz±20%)	Impedance ratio of the -25 °C and -55 °C values to the +20 °C values shall be not exceed the values as below $Z_{-25\,°C}/Z_{+20\,°C}$ 1.15 $Z_{-55\,°C}/Z_{+20\,°C}$ 1.25
8	Damp heat (steay state)	Temperature: 60±2 °C Relative humidity: 90% ~ 95% RH Duration: 500 hours	No visible damage Leakage current ≤ initial specified value Capacitance change: within ±20% of initial value tan δ ≤ 150% of initial specified value ESR ≤ 150% of initial specified value
9	Endurance	Temperature: 105±2 °C Applied voltage: rated voltage Duration: 2,000 +20/-0 hours *The capacitors shall be stored under standard atmospheric conditions for 1 to 2 hours, after which measurement shall be made.	No visible damage Leakage current ≤ initial specified value Capacitance change: within ±20% of initial value tan δ ≤ 150% of initial specified value ESR ≤ 150% of initial specified value
10	Capacitance (Tolerance)	Peak Temperature / 250 °C / 260 °C Preheat / 150 °C ~ 180 °C 90±3 seconds 200 °C over time(Max.) / 60 seconds / 60 seconds 220 °C over time(Max.) / 50 seconds / 50 seconds 230 °C over time(Max.) / 40 seconds / 40 seconds Reflow number / Twice or less / Only 1 time	No visible damage Leakage current ≤ initial specified value Capacitance change: within ±10% of initial value tan δ ≤ 130% of initial specified value ESR ≤ 130% of initial specified value

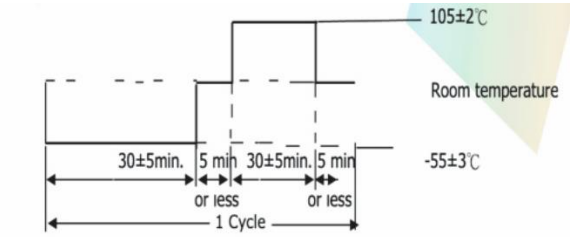
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11. Rapid change of temperature

Applied voltage: No load

Cycle number: 5 Cycles

Test diagram: Fig. 1



Performance: After 5 cycles, the capacitors shall meet the following specification.

Item	Performance
Capacitance change	Within ±10% of initial capacitance
Tan δ	Less than or equal to the initial specified value
Leakage current	Less than or equal to the initial specified value

12. Solderability

Temperature: 245±5 °C

Duration: 5±0.5 seconds

Direction: X, Y, Z (3 axes)

Flux: Rosin (J1S K 5902) // Ethanol (J1S K8101); About 25 wt. %

Performance: At least 95% of surface area of the dipped portion of the terminal shall be covered with new solder.

13. Resistance to soldering heat

Test condition:

13.1 Soldering bath method

Temperature: 260±10 °C

Duration: 10±1 seconds

*Heat protector (t= 1.6 mm glass-epoxy board)

13.2 Solder iron methhod

Temperature: 400±10 °C

Duration: 3±1 seconds

*Heat protector (t= 1.6 mm glass-epoxy board)

Performance: The capacitors shall meet the following specification after A or B test.

Item	Performance
Capacitance change	Within ±10% of initial capacitance
Tan δ	Tan δ ≤ 1.3 times of initial specified value

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14. Vibration

Frequency: 10 to 55 Hz (1 minute interval / 10 → 55 → 10 Hz)

Amplitude: 0.75 mm (Total excursion 1.5 mm)

Direction: X, Y, Z (3 Axes)

Duration: 2 hours / axial (Total 6 hours)

Performance: The capacitance change is within ±5% of the initial measured value.

15. Assured failure rate

The failure rate of 0.5% / 1000 hours (with a 60% reliability standard) based on J1S C 5003.

16. Cleaning

Concerning about HCFC, higher alcohol system, petroleum system, terpene system, water system with surface active agent and other solvents the washing way (separateness or combinations) by soak, ultrasonic wave, boil, vapor etc. is confirmed under the maker's recommendation. Please contact us if you require further details.

17. Storage

17.1 Do not store capacitors at a high temperature and high humidity. Store the capacitors indoors at a temperature of +5 to +35 °C and a humidity less than 75% RH.

(Table-1)

SMD	Before unsealing	After unsealing
	Within 24 months after delivery	Within 6 months after delivery

17.2 Store the capacitors in places free from water, oil or salt water.

17.3 Store the capacitors in places free from toxic gasses
(hydrogen sulfide, sulfurous acid, nitrous acid, chlorine, ammonium, etc.)

17.4 Store the capacitors in place out of ozone, ultraviolet rays or radiation.

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18. Operating Precautions

This capacitor is the aluminum solid capacitors with Conductive Polymer electrolyte.

Please note the following points in order to take full advantage of products performance, with most stable quality.

18.1 Polarity

Solid aluminum electrolytic capacitor is a polarized capacitor including positive and negative electrodes.

Do not reverse the polarity when using. If it is used with the polarities reversed, increased leakage current or decreased life span may result.

18.2 Prohibited circuits

Since problems can be expected due to leakage current increasing during soldering and other processes, the capacitor cannot be used in the following circuits.

a) High impedance circuits

b) Coupling circuits

c) Time constant circuits

*In addition to the leakage current fluctuation above, the operational conditions such as characteristics at high and low temperature, damp heat and endurance stipulated in the specifications will affect the capacitance. The fluctuation of the capacitance may cause problem if it is used as a time constant capacitor, which is extremely sensitive to the fluctuation of the capacitance. Do not used it as a time constant capacitor.

d) Circuits to get bad influence by big leakage current

Additionally, please contact usage of two or more capacitors in series for voltage proof.

18.3 Overvoltage prohibited during design

Overvoltage exceeding the rated voltage may not be applied even for an instant as it may cause a short circuit.

18.4 Sudden charge and discharge restricted

Sudden charge and discharge restricted (for maintenance of high-proof reliability).

A protection circuit is recommended for when a sudden charge or discharge causes excessive rush current because this is a main cause of short circuits and large leakage current.

Use protection circuits under the following both cases:

a) The rush current exceeds 10 A.

b) The rush current exceeds 10x the maximum allowable ripple current of capacitor.

Be sure to insert a protection resistor of about 1 KW for charge and discharge when measuring the leakage current.

18.5 Operating environmental restrictions

Do not use the capacitor in the following environments.

a) Places where water, salt water or oil can directly fall on it, and places where condensation may form.

b) Places filled with noxious gas (hydrogen sulfide, sulfurous acid, nitrous acid, chlorine, ammonia, etc.).

c) Places susceptible to ozone, ultraviolet rays and radiation.

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18.6 Mounting precautions

a) Considerations when soldering

The soldering conditions are to be within the range prescribed in specifications.

If the specifications are not followed, there is a possibility of the cosmetic defection, the intensive increase of leakage current, and the capacitance reduction.

b) Things to be noted before mounting

b-1) Do not reuse capacitor that have been assembled in a set and energized. Excluding capacitor that have been removed for measuring electrical characteristics during a periodic inspection, this capacitor cannot be reused.

b-2) Leakage current may increase when capacitors are stored for a long period of time.

In this case, apply rated voltage for 2 hours at 105 °C with load of 1 KW resistor.

c) Flow soldering

Do not use flow soldering for SMD type.

d) Reflow soldering

d-1) Set the soldering conditions (soldering temperature, terminal submersion time)

so that they fall within the stipulated range in the specifications. The leakage current value after soldering may increase a little (from a few µA to several mA) depending on the soldering conditions (preheating and solder temperature and time, PCB material and thickness, etc.). The leakage current can be reduced through self-repair by applying voltage.

d-2) Reflow soldering may reduce the capacitance of products after soldering even when the soldering conditions are within the required value.

e) Handling after soldering

Do not tilt, bend or twist the capacitor after it.

18.7 Disposal

Conducting polymer capacitor comprises solid organic compounds, various metals, rubber, etc.

Treat it as industrial waste when disposing of it. In case of disposing a large amount of capacitors, the company can dispose on behalf.

18.8 Consideration when using in industrial equipment

To ensure reliability when the capacitor is used in industrial equipment, design must allow for its capacitance, impedance, and other characterisitics.

18.9 Using in equipment regarding human life

In case of using in equipment regarding human life (e.g. Space equipment, aeronautic equipment and atomic equipment etc.), be sure to talk over the matter with supplier.

Don't use without recognition document of our company.

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18.10 Hazardous substances for environmental care

a) Substances destroying ozone layer
Substances (class one and two) destroying the ozone layer are not contained in this kind of capacitor.
It is not used in manufacturing process of the capacitor.

b) Bromine materials for flame-retardant conducting polymer capacitor does not contain bromine materials of PBBOs or PBBs as the flame-retardant.

18.11 Others

Design circuits after checking the following items

a) Electric characteristics are affected by temperature and frequency fluctuations.
Design circuits after checking the following items.

b) When mounting an capacitor on a double-sided PC board, extra PC board holes and the through holes for connecting the front and back of the PCB must not exist underneath the capacitor.

Precautions with completed board

a) Do not touch the lead terminas of capacitor directly.

b) Do not use electric conductors to cause short circuits between the capacitor lead terminals.
Do not subject the capacitor to conductive solutions such as acids and alkaline water solutions.

c) Check the installation environment of the board the capacitor is installed in.

d) Age the board at conditions that fall below the capacitors ratings.

e) It is recommended that the board be used at room temperature and in ordinary humidity.

Note:

In case of some problems concerning industrial possessive rights of third party by using this product.
We don't take responsibility except for what to be directly conceded with structure processes capacitor.
Please design with safety measures taking into consideration any social damage, such as personal or fire accident when using this product.
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