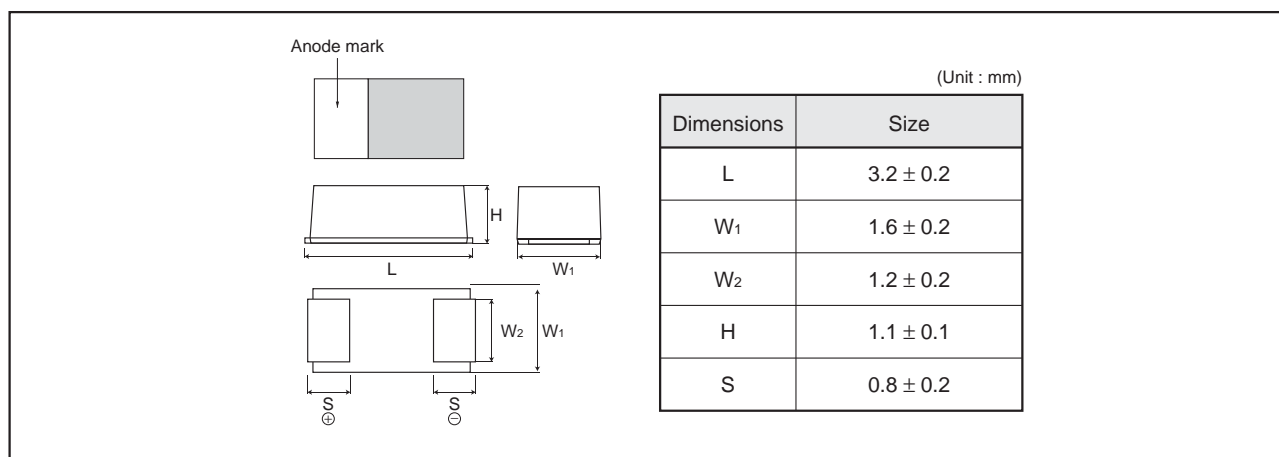


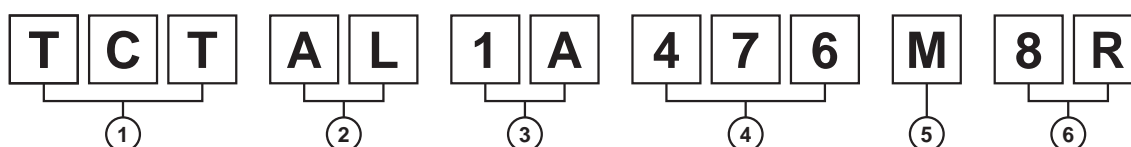
●Features

- 1) Bottom electrode configuration results in significantly greater compactness.
- 2) Fillet formation enables easy visibility after mounting.
- 3) Ideal for noise removal on power supply lines with limited space.
- 4) Eco-friendly halogen-free products.

●Dimensions



●Part No. Explanation



① Series name

TCT

② Case style

AL : 3216-12 (1206) size

③ Rated voltage

Rated voltage (V)	2.5	4	6.3	10	16	20	25	35
CODE	0E	0G	0J	1A	1C	1D	1E	1V

④ Nominal capacitance

Nominal capacitance in pF in 3 digits:
2 significant figures followed by the figure
representing the number of 0's.

⑤ Capacitance tolerance

M : $\pm 20\%$

⑥ Taping

8 : Tape width

R : Positive electrode on the side opposite to sprocket hole

*This specification has possibility of charge, due to underdevelopment product.
Please ask for latest specification to our sales.

●Rated table

(ESR : mΩ)

Capacitance (μF)	Rated voltage (V.DC)							
	2.5	4	6.3	10	16	20	25	35
1.0 (105)								☆AL
1.5 (155)								☆AL
2.2 (225)								☆AL
3.3 (335)								AL
4.7 (475)							AL	
10 (106)						AL		
15 (156)					AL	☆AL		
22 (226)					AL	AL		
33 (336)				AL	AL			
47 (476)				AL				
100 (107)		AL	AL	AL				
150 (157)		AL	AL					
220 (227)	AL	AL	AL					
330 (337)	AL							

Remark) Case size codes (AL) in the above show products line-up.

☆ Under development

●Marking

The indications listed below should be given on the surface of a capacitor.

- (1) Polarity : The polarity should be shown by □ bar. (on the anode side)
 (2) Rated DC voltage : A voltage code is shown as below table.
 (3) Capacitance : A capacitance code is shown as below table.

Voltage Code	Rated DC Voltage (V)
e	2.5
g	4
j	6.3
A	10
C	16
D	20
E	25
V	35

Capacitance Code	Nominal Capacitance (μF)
A	1.0
J	2.2
N	3.3
S	4.7
a	10
e	15
j	22
n	33
s	47
ā	100
ē	150
j̄	220
n̄	330

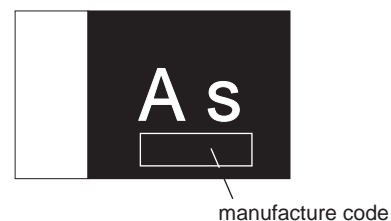
Visual typical example

voltage code and capacitance code are variable with parts number.

[AL case]

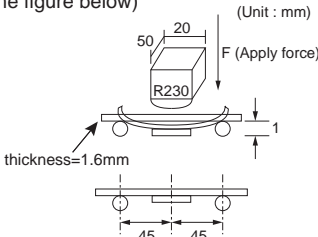
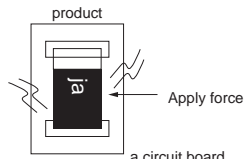
EX.) $\frac{A}{(1)} \frac{s}{(2)}$

(1) voltage code (2) capacitance code



●Characteristics

Item		Performance								Test conditions (based on JIS C 5101-1 and JIS C 5101-3)															
Operating Temperature		-55°C to +125°C								Voltage reduction when temperature exceeds +85°C															
Maximum operating temperature with no voltage derating		+85°C																							
Rated voltage (V.DC)		2.5	4	6.3	10	16	20	25	35	at 85°C															
Category voltage (V.DC)		1.6	2.5	4	6.3	10	13	16	22	at 125°C															
Surge voltage (V.DC)		3.2	5.0	8	13	20	26	32	44	at 85°C															
DC Leakage current		Shall be satisfied the value on " Standard list "								As per 4.9 JIS C 5101-1 As per 4.5.1 JIS C 5101-3 Voltage : Rated voltage for 5min															
Capacitance tolerance		Shall be satisfied allowance range. ±20%								As per 4.7 JIS C 5101-1 As per 4.5.2 JIS C 5101-3 Measuring frequency : 120±12Hz Measuring voltage : 0.5Vrms +1.5V.DC Measuring circuit : DC Equivalent series circuit															
Tangent of loss angle (Df, tan δ)		Shall be satisfied the value on " Standard list "								As per 4.8 JIS C 5101-1 As per 4.5.3 JIS C 5101-3 Measuring frequency : 120±12Hz Measuring voltage : 0.5Vrms +1.5V.DC Measuring circuit : DC Equivalent series circuit															
Impedance		Shall be satisfied the value on " Standard list "								As per 4.10 JIS C 5101-1 As per 4.5.4 JIS C 5101-3 Measuring frequency : 100±10kHz Measuring voltage : 0.5Vrms or less Measuring circuit : DC Equivalent series circuit															
Resistance to Soldering heat	Appearance	There should be no significant abnormality. The indications should be clear.								As per 4.14 JIS C 5101-1 As per 4.6 JIS C 5101-3 Dip in the solder bath Solder temp : 260±5°C Duration : 5±0.5s Repetition : 1 After the specimens, leave it at room temperature for over 24h and then measure the sample.															
	L.C.	Less than initial limit																							
	ΔC / C	Within ±20% of initial value AL0E337 : Within +20/-30% of initial value AL0J157 : Within +20/-30% of initial value AL0J227 : Within +20/-30% of initial value AL1A107 : Within +20/-30% of initial value																							
	Df (tan δ)	Less than 200% of initial limit																							
Temperature cycle	Appearance	There should be no significant abnormality. The indications should be clear.								As per 4.16 JIS C 5101-1 As per 4.10 JIS C 5101-3 Repetition : 5 cycles (1 cycle : steps 1 to 4) without discontinuation. <table><tr><td></td><td>Temp.</td><td>Time</td></tr><tr><td>1</td><td>-55±3°C</td><td>30±3min.</td></tr><tr><td>2</td><td>Room temp.</td><td>3min. or less</td></tr><tr><td>3</td><td>125±2°C</td><td>30±3min.</td></tr><tr><td>4</td><td>Room temp.</td><td>3min. or less</td></tr></table> After the specimens, leave it at room temperature for over 24h and then measure the sample.		Temp.	Time	1	-55±3°C	30±3min.	2	Room temp.	3min. or less	3	125±2°C	30±3min.	4	Room temp.	3min. or less
		Temp.	Time																						
	1	-55±3°C	30±3min.																						
	2	Room temp.	3min. or less																						
3	125±2°C	30±3min.																							
4	Room temp.	3min. or less																							
L.C.	Less than 200% of initial limit																								
ΔC / C	Within ±20% of initial value AL0E337 : Within ±30% of initial value AL0J157 : Within ±30% of initial value AL0J227 : Within ±30% of initial value AL1A107 : Within ±30% of initial value																								
Df (tan δ)	Less than 200% of initial limit																								
Moisture resistance	Appearance	There should be no significant abnormality. The indications should be clear.								As per 4.22 JIS C 5101-1 As per 4.12 JIS C 5101-3 After leaving the sample under such atmospheric condition that the temperature and humidity are 60±2°C and 90 to 95% RH, respectively, for 500±12h leave it at room temperature for over 24h and then measure the sample.															
	L.C.	Less than 200% of initial limit																							
	ΔC / C	Within ±20% of initial value																							
	Df (tan δ)	Less than 200% of initial limit AL0E337 : Less than 300% of initial limit AL0J157 : Less than 300% of initial limit AL0J227 : Less than 300% of initial limit AL1A107 : Less than 300% of initial limit																							

Item		Performance	Test conditions (based on JIS C 5101-1 and JIS C 5101-3)
Temperature Stability	Temp.	-55°C	As per 4.29 JIS C 5101-1 As per 4.13 JIS C 5101-3
	$\Delta C / C$	Within 0/-15% of initial value	
	Df (tan δ)	Shall be satisfied the voltage on " Standard list "	
	L.C.	-	
	Temp.	+85°C	
	$\Delta C / C$	Within +15/0% of initial value	
	Df (tan δ)	Shall be satisfied the voltage on " Standard list "	
	L.C.	Less than 1000% of initial limit	
	Temp.	+125°C	
	$\Delta C / C$	Within +20/0% of initial value	
	Df (tan δ)	Shall be satisfied the voltage on " Standard list "	
	L.C.	Less than 1250% of initial limit	
Surge voltage	Appearance	There should be no significant abnormality.	As per 4.26 JIS C 5101-1 As per 4.14 JIS C 5101-3 Apply the specified surge voltage every 5±0.5 min. for 30±5 s. each time in the atmospheric condition of 85±2°C. Repeat this procedure 1,000 times. After the specimens, leave it at room temperature for over 24h and then measure the sample.
	L.C.	Less than 200% of initial value	
	$\Delta C / C$	Within ±20% of initial value	
	Df (tan δ)	Less than 200% of initial limit	
Loading at High temperature	Appearance	There should be no significant abnormality.	As per 4.23 JIS C 5101-1 As per 4.15 JIS C 5101-3 After applying the rated voltage for 2000±72/0 h without discontinuation via the serial resistance of 3Ω or less at a temperature of 85±2°C, leave the sample at room temperature / humidity for over 24h and measure the value.
	L.C.	Less than 200% of initial limit	
	$\Delta C / C$	Within ±20% of initial value AL0E337 : Within +20/-30% of initial value AL0J157 : Within +20/-30% of initial value AL0J227 : Within +20/-30% of initial value AL1A107 : Within +20/-30% of initial value	
	Df (tan δ)	Less than 200% of initial limit AL0E337 : Less than 300% of initial limit AL0J157 : Less than 300% of initial limit AL0J227 : Less than 300% of initial limit AL1A107 : Less than 300% of initial limit	
Terminal strength	Capacitance	The measured value should be stable.	As per 4.35 JIS C 5101-1 As per 4.9 JIS C 5101-3 A force is applied to the terminal until it bends to 1mm and by a prescribed tool maintain the condition for 5s. (See the figure below)
	Appearance	There should be no significant abnormality.	
			 <p>(Unit : mm)</p> <p>thickness=1.6mm</p>
Adhesiveness		The terminal should not come off.	As per 4.34 JIS C 5101-1 As per 4.8 JIS C 5101-3 Apply force of 5N in the two directions shown in the figure below for 10±1s after mounting the terminal on a circuit board. 

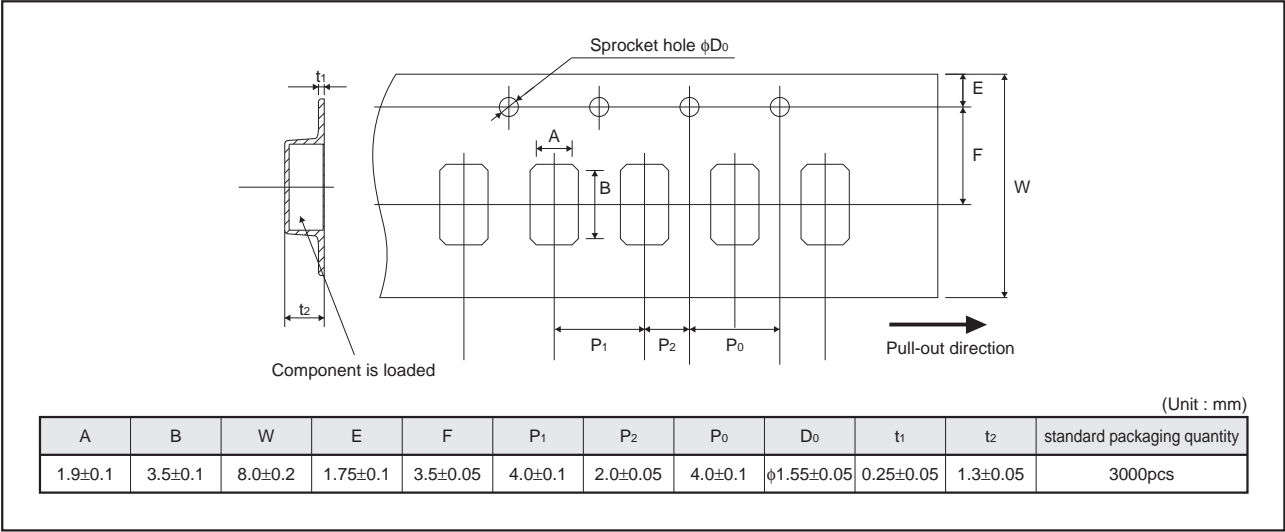
Item		Performance	Test conditions (JIS C 5101-1 and JIS C 5101-3)
Dimensions		Refer to "External dimensions"	Measure using a caliper of JIS B 7507 Class 2 or higher grade.
Resistance to solvents		The indication should be clear	As per 4.32 JIS C 5101-1 As per 4.18 JIS C 5101-3 Dip in the isopropyl alcohol for 30±5s, at room temperature.
Solderability		3/4 or more surface area of the solder coated terminal dipped in the soldering bath should be covered with the new solder.	As per 4.15.2 JIS C 5101-1 As per 4.7 JIS C 5101-3 Dip speed=25±2.5mm / s Pre-treatment (accelerated aging): Leave the sample on the boiling distilled water for 1 h. Solder temp. : 245±5°C Duration : 3±0.5s Solder : M705 Flux : Rosin 25% IPA 75%
Vibration	Capacitance	Measure value should not fluctuate during the measurement.	As per 4.17 JIS C 5101-1 Frequency : 10 to 55 to 10Hz/min. Amplitude : 1.5mm Time : 2h each in X and Y directions Mounting : The terminal is soldered on a print circuit board.
	Appearance	There should be no significant abnormality.	

●Standard products list

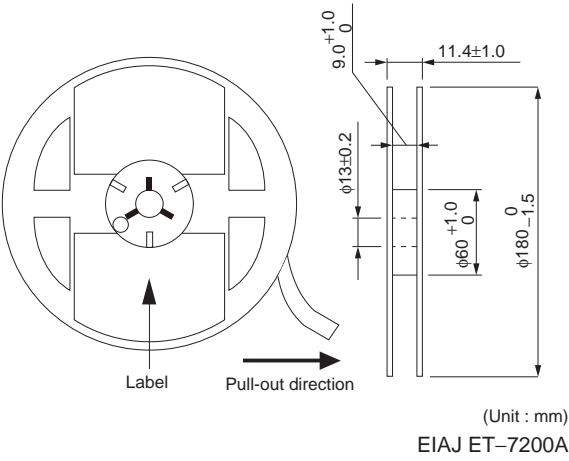
Part No.	Rated voltage 85°C (V)	Category voltage 125°C (V)	Surge voltage 85°C (V)	Cap. 120Hz (μF)	Tolerance (%)	Leakage current 25°C 1WV,5min (μA)	Df 120Hz (%)			Impedance 100kHz (Ω)
							-55°C	25°C 85°C	125°C	
TCT AL 0E 227 M8R	2.5	1.6	3.3	220	± 20	5.5	35	20	25	2.5
TCT AL 0E 337 M8R	2.5	1.6	3.3	330	± 20	16.5	80	30	40	2.5
TCT AL 0G 107 M8R	4	2.5	5.2	100	± 20	4	35	20	25	3
TCT AL 0G 157 M8R	4	2.5	5.2	150	± 20	6	35	20	25	2.7
TCT AL 0G 227 M8R	4	2.5	5.2	220	± 20	8.8	35	20	25	2.5
TCT AL 0J 107 M8R	6.3	4	8	100	± 20	6.3	34	18	24	3
TCT AL 0J 157 M8R	6.3	4	8	150	± 20	94.5	80	30	40	2.7
TCT AL 0J 227 M8R	6.3	4	8	220	± 20	280	80	30	40	2.5
TCT AL 1A 336 M8R	10	6.3	13	33	± 20	3.3	35	15	20	4
TCT AL 1A 476 M8R	10	6.3	13	47	± 20	4.7	35	20	25	4
TCT AL 1A 107 M8R	10	6.3	13	100	± 20	50	80	30	40	2.5
TCT AL 1C 156 M8R	16	10	20	15	± 20	2.4	30	15	20	4
TCT AL 1C 226 M8R	16	10	20	22	± 20	3.6	35	20	25	4
TCT AL 1C 336 M8R	16	10	20	33	± 20	5.3	35	20	25	4
TCT AL 1D 106 M8R	20	13	26	10	± 20	2	30	15	20	8
* TCT AL 1D 156 M8R	20	13	26	15	± 20	3	30	15	20	4
TCT AL 1D 226 M8R	20	13	26	22	± 20	4.4	35	20	25	4
TCT AL 1E 475 M8R	25	16	33	4.7	± 20	1.2	30	15	20	8
* TCT AL 1V 105 M8R	35	22	45	1	± 20	0.5	30	15	20	8
* TCT AL 1V 155 M8R	35	22	45	1.5	± 20	0.5	30	15	20	8
* TCT AL 1V 225 M8R	35	22	45	2.2	± 20	0.8	30	15	20	8
TCT AL 1V 335 M8R	35	22	45	3.3	± 20	1.2	30	15	20	8

* = Under development

●Packaging specifications



●Reel dimensions



Notes

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