

Chip tantalum capacitors

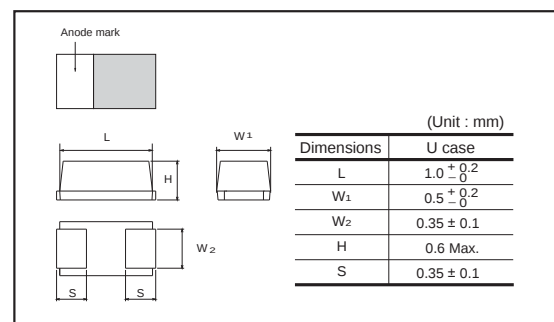
(Bottom surface electrode type)

TCT Series U Case

●Features (U)

- 1) Ultra-compact package
60% smaller footprint and 70% smaller volume than our conventional 1608(0603)-sized TCM series capacitors.
- 2) High capacitance : 1.0 μ F to 4.7 μ F (15 μ F Under development)
Ideal for coupling and noise reduction in audio circuits
- 3) High productivity, high reliability
Featuring the popular underside electrode configuration
- 4) Environmentally friendly halogen-free package

●Dimensions (Unit : mm)



●Part No. Explanation



① Series name
TCT

② Case style
U

③ Rated voltage

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

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 : Reel width : 8mm
R : Positive electrode on the side opposite to sprocket hole

● Rated table

(μF)	Rated voltage (V)				
	2.5 0E	4 0G	6.3 0J	10 1A	16 1C
1.0 (105)			U		*U
1.5 (155)				*U	
2.2 (225)			U	*U	
3.3 (335)				*U	
4.7 (475)		U	*U	*U	
6.8 (685)		*U	*U		
10 (106)		*U			
15 (156)	*U				
22 (226)					

Remark) Case size codes (U) 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 : Due to the small size of U case, a voltage code is used as shown below.
 (3) Visual typical example (1) voltage code (2) capacitance code

Voltage Code	Rated DC Voltage (V)
e	2.5
g	4
j	6.3
A	10
C	16

Capacitance Code	Nominal Capacitance (μF)
A	1.0
E	1.5
J	2.2
N	3.3
S	4.7
W	6.8
a	10
e	15

[U case] note 1) $\frac{g}{(1)} \frac{S}{(2)}$



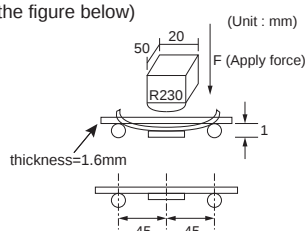
manufacture code

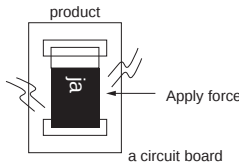
note 2) voltage code and capacitance code are variable with parts number

● 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 (VDC)	2.5 4 6.3 10 16	at 85°C
Category voltage (VDC)	1.6 2.5 4 6.3 10	at 125°C
Surge voltage (VDC)	3.2 5.0 8 13 20	at 85°C
DC Leakage current	Shall be satisfied the voltage 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 +1.5 to 2V.DC Measuring circuit : DC Equivalent series circuit
Tangent of loss angle (Df, tan δ)	Shall be satisfied the voltage 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 +1.5 to 2V.DC Measuring circuit : DC Equivalent series circuit
Impedance	Shall be satisfied the voltage 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

Item	Performance		Test conditions (based on JIS C 5101-1 and JIS C 5101-3)															
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 200% of initial limit																
	ΔC / C	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 ±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 1000% of initial limit																
	ΔC / C	Within ±20% of initial value																
	Df (tan δ)	Less than 300% of initial limit																
Temperature Stability	Temp.	-55°C	As per 4.29 JIS C 5101-1 As per 4.13 JIS C 5101-3															
	ΔC / C	Within 0/-30% of initial value																
	Df (tan δ)	Shall be satisfied the voltage on " Standard list "																
	L.C.	-																
	Temp.	+85°C																
	ΔC / 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																
	ΔC / 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 4.26JIS C 5101-1 As per 4.14JIS C 5101-3 Apply the specified surge voltage via the serial resistance of 1kΩ 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																
	ΔC / 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 1000+36/0 h without discontinuation via the serial resistance of 3&Ω 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																
	ΔC / C	Within +20/-30% of initial value																
	Df (tan δ)	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) 50 20 R230 F (Apply force) 1 thickness=1.6mm 45 45 (Unit : mm)															
	Appearance	There should be no significant abnormality.																



Item		Performance	Test conditions (JIS C 5101-1 and JIS C 5101-3)
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. 
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, TCT series

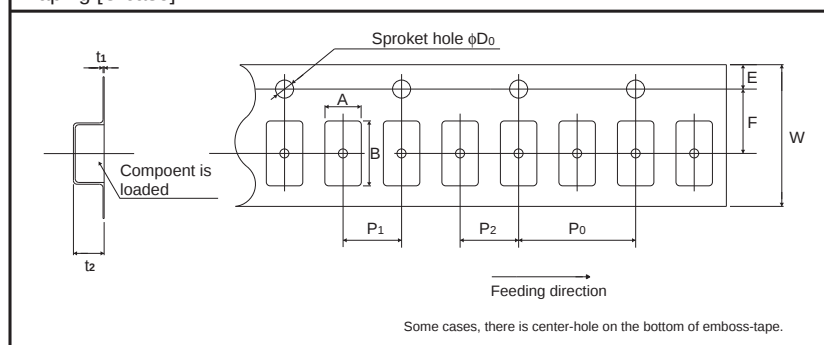
Part No.	Rated voltage 85°C	Category voltage 125°C	Surge voltage 85°C	Cap. 120Hz	Tolerance	Leakage current 25°C	Df 120Hz (%)			IMP 100kHz
	(V)	(V)	(V)	(μF)	(%)	1WV.5min (μA)	-55°C	25°C 85°C	125°C	(Ω)
* TCT U 0E 156 M8R	2.5	1.6	3.2	15	±20	7.5	90	50	60	25
TCT U 0G 475 M8R	4	2.5	5	4.7	±20	1.9	35	20	25	20
* TCT U 0G 685 M8R	4	2.5	5	6.8	±20	2.8	90	50	60	25
* TCT U 0G 106 M8R	4	2.5	5	10	±20	8	90	50	60	25
TCT U 0J 105 M8R	6.3	4	8	1	±20	0.7	35	20	25	20
TCT U 0J 225 M8R	6.3	4	8	2.2	±20	1.4	35	20	25	20
* TCT U 0J 475 M8R	6.3	4	8	4.7	±20	3	90	50	60	25
* TCT U 0J 685 M8R	6.3	4	8	6.8	±20	8.6	90	50	60	25
* TCT U 1A 155 M8R	10	6.3	13	1.5	±20	1.6	90	50	60	25
* TCT U 1A 225 M8R	10	6.3	13	2.2	±20	2.2	90	50	60	25
* TCT U 1A 335 M8R	10	6.3	13	3.3	±20	3.3	90	50	60	25
* TCT U 1A 475 M8R	10	6.3	13	4.7	±20	9.4	90	50	60	25
* TCT U 1C 105 M8R	16	10	20	1.0	±20	1.6	90	50	60	25

* =Under development

● Packaging specifications

Case code	A $\pm$ 0.1	B $\pm$ 0.1	W $\pm$ 0.2	E $\pm$ 0.1	F $\pm$ 0.05	P ₁ $\pm$ 0.1	P ₂ $\pm$ 0.1	P ₀ $\pm$ 0.1	D ₀	t ₁ $\pm$ 0.05	t ₂ $\pm$ 0.1
U	0.75	1.25	8.0	1.75	3.5	2.0	2.0	4.0	ϕ 1.55	0.20	0.60

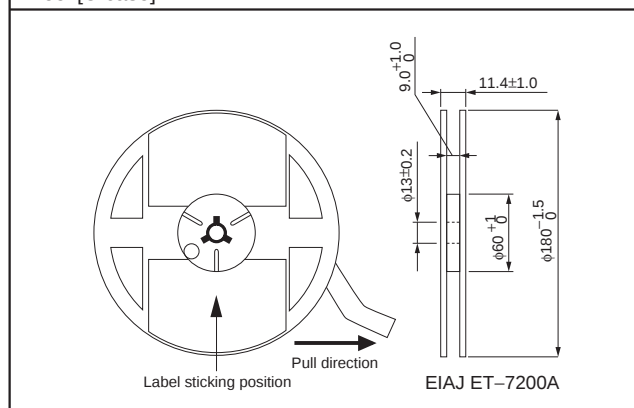
Taping [U case]



● Packaging style

Case code	Packaging	Packaging style		Symbol	Basic ordering units
U case	Taping	plastic taping	ϕ 180mm Reel	R	10,000pcs

Reel [U case]



Notes

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