TCT Series

Chip Tantalum Capacitors (Large Capacitance)

FEATURES

- Ta-MnO_2 technology
- Low DCL
- High CV
- Parameters stability over voltage and time
- Undertab LF

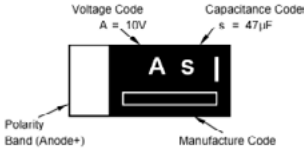
LEAD-FREE
LEAD-FREE COMPATIBLE COMPONENT

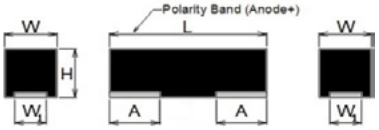
RoHS COMPLIANT

APPLICATIONS

- For high component density PCB design
- DC/DC
- Industrial
- Telecom
- IoT
- Home applications
- Sensors

MARKING





CASE DIMENSIONS:

millimeters (inches)

Code	EIA Code	EIA Metric	L±0.20 (0.008)	W±0.20 (0.008)	H±0.10 (0.004)	W_1±0.20 (0.008)	A±0.20 (0.008)
AL	1206	3216-12	3.20 (0.126)	1.60 (0.063)	1.10 (0.043)	1.20 (0.047)	0.80 (0.031)
AS	1206	3216-10	3.20 (0.126)	1.60 (0.063)	0.90 (0.035)	1.20 (0.047)	0.80 (0.031)
P	0805	2012-12	2.00 (0.079)	1.25 (0.049)	1.20 (0.047) max.	0.85 (0.033)	0.50 (0.020)
PL	0805	2012-10	2.00 (0.079)	1.25 (0.049)	0.90 (0.035)	0.85 (0.033)	0.50 (0.020)
U	0602	1005-055	1.00+0.20-0.00 (0.039+0.008-0.000)	0.50+0.20-0.00 (0.020+0.008-0.000)	0.55 (0.022) max.	0.35±0.10 (0.014±0.004)	0.35±0.10 (0.014±0.004)

HOW TO ORDER

TCT	U□	0G	475	M	8R	-	□□□
Type	**Case Size** See table above	**Rated DC Voltage** 0E = 2.5Vdc 0G = 4Vdc 0J = 6.3Vdc 1A = 10Vdc 1C = 16Vdc 1D = 20Vdc 1E = 25Vdc 1V = 35Vdc	**Capacitance Code** pF code: 1st two digits represent significant figures, 3rd digit represents multiplier (number of zeros to follow)	**Tolerance** M = ±20%	**Packaging** 8 = Tape width R = Positive electrode on the side opposite to sprocket hole		**Discrimination code**

TECHNICAL SPECIFICATIONS

Technical Data:	All technical data relate to an ambient temperature of +25ºC
Capacitance Range:	0.33µF to 220µF
Capacitance Tolerance:	±20%
Leakage Current DCL:	Please see the ratings and part number reference table below
Temperature Range:	-55ºC to +125°C

Note: Conductive Polymer Capacitors are designed to operate within the limits of the environmental conditions specified for each series. If operated continuously at their maximum temperature and / or humidity limit, or beyond these limits, capacitors may exhibit a parametric shift in capacitance and increases in ESR. These changes may occur earlier if the specified environmental conditions are exceeded. Similarly, their normal operational time period will be significantly extended if their general duty cycle includes operation below maximum temperature within humidity controlled environments. Careful attention should be paid to maximum temperature with associated high humidity environments as well as voltage derating, ripple current and current surges.
Please reference the KYOCERA AVX Conductive Polymer Capacitor Guidelines for more information or contact factory for application assistance.

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CAPACITANCE AND RATED VOLTAGE RANGE (LETTER DENOTES CASE SIZE)

Capacitance		Rated Voltage DC (V_R) @ 85°C								Cap Code
µF	Code	2.5V(e)	4V (g)	6.3V (j)	10V (A)	16V (C)	20V(D)	25V(E)	35(V)	
0.33	334						U			N
0.47	474			U						S
1.0	105			U					AS	A
2.2	225			U				P		J
3.3	335								AL	N
4.7	475		U	U				AL		S
10	106					P,PL	AL			a
15	156	U								e
22	226				P,PL	AL	AL			j
33	336				P	AL				n
47	476		P	AS,P,PL	AL,AS,P					s
100	107		P, PL	AL,AS	AL					ā
150	157			AL					-	ē
220	227		AL,AS	AL						j

Released ratings
Note: Voltage ratings are minimum values. KYOCERA AVX reserves the right to supply higher volage ratings in the same case size, to the same reliability standards.

RATINGS & PART NUMBER REFERENCE

Part No.	Case Size	Capacitance (µF)	Rated Voltage (V)	Maximum Operating Temp. (°C)	DCL Max. (µA)	DF Max. (%)	Impedance @100kHz (Ω)	MSL
2.5 Volt								
TCTU0E156M8R-V1	U	15	2.5	125	7.5	50	25	2
4 Volt								
TCTU0G475M8R	U	4.7	4	125	1.9	20	20	2
TCTP0G476M8R	P	47	4	125	1.9	20	4	1
TCTP0G107M8R-EV1	P	100	4	125	20.0	30	4	1
TCTPL0G107M8R-V1	PL	100	4	125	20.0	30	4	1
TCTAL0G227M8R-D	AL	220	4	125	20.0	20	2.5	1
TCTAS0G227M8R-V1	AS	220	4	125	88.0	30	2.5	2
6.3 Volt								
TCTU0J474K8R	U	0.47	6.3	125	0.5	20	35	2
TCTU0J105K8R	U	1	6.3	125	0.7	20	20	2
TCTU0J225M8R	U	2.2	6.3	125	1.4	20	20	2
TCTU0J475M8R-02	U	4.7	6.3	125	3.0	50	25	2
TCTAS0J476M8R	AS	47	6.3	125	6.0	20	4	1
TCTP0J476M8R	P	47	6.3	125	14.8	30	4	1
TCTPL0J476M8R	PL	47	6.3	125	14.8	30	4	1
TCTAL0J107M8R	AL	100	6.3	125	6.3	18	3	1
TCTAS0J107M8R	AS	100	6.3	125	31.5	18	3	2
TCTAL0J157M8R	AL	150	6.3	125	94.5	30	2.7	1
TCTAL0J227M8R-V1	AL	220	6.3	125	280.0	30	2.5	1
10 Volt								
TCTP1A226M8R	P	22	10	125	2.2	20	5	1
TCTPL1A226M8R	PL	22	10	125	11.0	20	5	1
TCTP1A336M8R	P	33	10	125	16.5	30	4	1
TCTAL1A476M8R	AL	47	10	125	4.7	20	4	1
TCTAS1A476M8R	AS	47	10	125	9.4	20	4	1
TCTP1A476M8R-EV1	P	47	10	125	23.5	30	4	1
TCTAL1A107M8R-V1	AL	100	10	125	50.0	30	2.5	1
16 Volt								
TCTP1C106M8R	P	10	16	125	1.6	20	6	1
TCTPL1C106M8R	PL	10	16	125	3.2	20	6	1
TCTAL1C226M8R	AL	22	16	125	3.6	20	4	1
TCTAL1C336M8R	AL	33	16	125	5.3	20	4	1
20 Volt								
TCTU1D334M8R	U	0.33	20	125	0.7	20	30	2
TCTAL1D106M8R	AL	10	20	125	2.0	15	8	2
TCTAL1D226M8R-V1	AL	22	20	125	4.4	20	4	1
25 Volt								
TCTP1E225M8R	P	2.2	25	125	0.6	20	8	1

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TCT Series

Chip Tantalum Capacitors (Large Capacitance)

RATINGS & PART NUMBER REFERENCE

Part No.	Case Size	Capacitance (µF)	Rated Voltage (V)	Maximum Operating Temp. (°C)	DCL Max. (µA)	DF Max. (%)	Impedance @100kHz (Ω)	MSL
TCTAL1E475M8R	AL	4.7	25	125	1.2	15	8	1
35 Volt								
TCTAS1V105M8R	AS	1.0	35	125	0.7	15	8	1
TCTAL1V335M8R	AL	3.3	35	125	1.2	15	8	1

Moisture Sensitivity Level (MSL) is defined according to J-STD-020.
All technical data relates to an ambient temperature of +25C.

Capacitance and DF are measured at 120Hz, 0.5RMS with DC bias of 1.5 volts.
DCL is measured at rated voltage after 5 minutes.
Impedance allowed to move up to 1.25 times catalog limit post mounting.

NOTE: KYOCERA AVX reserves the rights to supply higher voltage rating in the same case size, to the same reliability standards.

QUALIFICATION TABLE

<table>
<tr><th rowspan="2">TEST</th><th colspan="5">TCT series (Temperature range -55°C to +125°C)</th></tr>
<tr><th colspan="2">Condition</th><th colspan="3">Characteristics</th></tr>
<tr><td rowspan="3">Endurance</td><td colspan="2" rowspan="3">Apply rated voltage (Ur) at 85°C for 1000hrs through a serial resistence of ≤3.0Ω. Stabilize at room temperature for 24 hours before measuring.</td><td>Visual examination</td><td colspan="3">no visible damage</td></tr>
<tr><td>DCL</td><td colspan="3">2x initial limit</td></tr>
<tr><td>ΔC/C</td><td colspan="3">within +20/-30% of initial value (U case), ±20% (P, PL case) ±30% (AL, AS case)</td></tr>
<tr><td rowspan="4">Humidity</td><td colspan="2" rowspan="4">Store at 60±2°C, 90-95% relative humidity for 500+ 12/0 hours. Stabilize at room temperature and humidity for 24 hours before measuring.</td><td>DF</td><td colspan="3">2x initial limit (P, PL case), 3x (AL, AS, U case)</td></tr>
<tr><td>Visual examination</td><td colspan="3">no visible damage</td></tr>
<tr><td>DCL</td><td colspan="3">2x initial limit (P, PL, AL, AS case), 10x (U case)</td></tr>
<tr><td>ΔC/C</td><td colspan="3">within ±20% of initial value</td></tr>
<tr><td rowspan="5">Temperature Stability</td><td colspan="2" rowspan="5">Step | Temperature°C | Duration(min)
1 | -55 | 15
2 | +85 | 15
3 | +125 | 15</td><td>DF</td><td colspan="3">2x initial limit (P, PL case), 3x (AL, AS, U case)</td></tr>
<tr><td></td><td>-55°C</td><td>+85°C</td><td>+125°C</td></tr>
<tr><td>DCL</td><td>n/a</td><td>10xIL*</td><td>12.5xIL*</td></tr>
<tr><td>ΔC/C</td><td>0/-15% (P, PL, AL case)
0/-20% (AS case)
0/-30% (U case)</td><td>+15/0%</td><td>+20/0%</td></tr>
<tr><td>DF</td><td>IL*</td><td>IL*</td><td>IL*</td></tr>
<tr><td rowspan="4">Surge Voltage</td><td colspan="2" rowspan="4">Apply 1.3x rated voltage (Ur) at 85±2°C for 1000 cycles, 300sec charge and 30sec discharge resistance 1000Ω.</td><td>Visual examination</td><td colspan="3">no visible damage</td></tr>
<tr><td>DCL</td><td colspan="3">2x initial limit</td></tr>
<tr><td>ΔC/C</td><td colspan="3">±20% of initial limit</td></tr>
<tr><td>DF</td><td colspan="3">2x initial limit</td></tr>
<tr><td rowspan="4">Vibration</td><td colspan="2" rowspan="4">4.17 JIS C 5101-1
Frequency: 10 to 55 to 10Hz/min.
Amplitude: 1.5mm
Time: 2hours each in X and Y directions</td><td>Visual examination</td><td colspan="3">no visible damage</td></tr>
<tr><td>DCL</td><td colspan="3">initial limit</td></tr>
<tr><td>ΔC/C</td><td colspan="3">within ± 5% of initial value</td></tr>
<tr><td>DF</td><td colspan="3">initial limit</td></tr>
</table>

*Initial Limit
For use outside of recommended conditions and special request, please contact KYOCERA AVX.
Initial measurement max. 1hr after the removal from dry pack or after pretreatment at 85°C for 24 hours.

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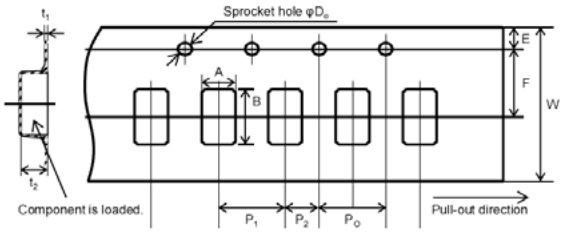
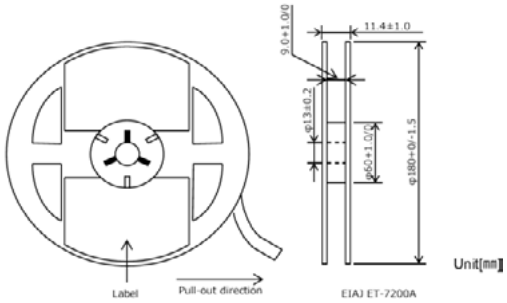
PACKAGING SPECIFICATIONS



Unit (mm)

Case	A±0.10	B±0.10	W±0.20	E±0.10	F±0.05	P1±0.10	P2±0.05	PO±0.10	DO+0.10/0	t1±0.05	t2±0.10	Standard packaging quantity
AL	1.90	3.50	8.00	1.75	3.50	4.00	2.00	4.00	φ1.55±0.05	0.25	1.30±0.05	3,000 pcs
AS	1.90	3.50	8.00	1.75	3.50	4.00	2.00	4.00	φ1.50	0.25	1.10	3,000 pcs
P	1.55	2.30	8.00	1.75	3.50	4.00	2.00	4.00	φ1.55±0.05	0.25	1.32	3,000 pcs
PL	1.60	2.40	8.00	1.75	3.50	4.00	2.00	4.00	φ1.50	0.25	1.05±0.05	3,000 pcs
U	0.75±0.05	1.40±0.05	8.00	1.75	3.50	2.00	2.00	4.00	φ1.50	0.20	0.65±0.05	10,000 pcs

REEL DIMENSIONS



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