TCT Series

Chip Tantalum Capacitors (Large Capacitance)



FEATURES

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

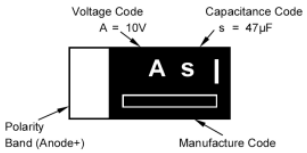
APPLICATIONS

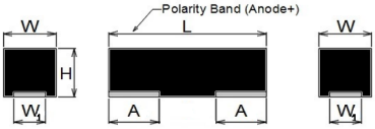
- For high component density PCB design
- DC/DC
- Industrial
- Telecom
- IoT
- Home applications
- Sensors

LEAD-FREE
LEAD-FREE COMPATIBLE COMPONENT

RoHS COMPLIANT

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	0402	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

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CAPACITANCE AND RATED VOLTAGE RANGE (LETTER DENOTES CASE SIZE)

Capacitance		Rated Voltage DC (V_R) @ 85ºC								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				AL				e
22	226				P,PL	AL	AL			j
33	336			P	AL,P	AL				n
47	476		P	AS,P,PL	AL,AS,P					s
68	686			AL						w
100	107		P, PL	AL,AS	AL				-	ā
150	157			AL						ē
220	227	AL	AL,AS	AL						j̄

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
TCTAL0E227M8R	AL	220	2.5	125	5.5	20	2.5	1
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-D2	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
TCTU0J105K8R-02	U	1	6.3	125	0.7	20	20	2
TCTU0J225M8R	U	2.2	6.3	125	1.4	20	20	2
TCTU0J225M8R-02	U	2.2	6.3	125	1.4	20	20	2
TCTU0J475M8R	U	4.7	6.3	125	3.0	50	25	2
TCTU0J475M8R-02	U	4.7	6.3	125	3.0	50	25	2
TCTP0J336M8R	P	33	6.3	125	2.1	20	4	1
TCTAS0J476M8R	AS	47	6.3	125	6.0	20	4	1
TCTAS0J476M8R-02	AS	47	6.3	125	6.0	20	4	1
TCTP0J476M8R	P	47	6.3	125	14.8	30	4	1
TCTP0J476M8R-02	P	47	6.3	125	14.8	30	4	1
TCTP0J476M8R-E1	P	47	6.3	125	14.8	30	4	1
TCTPL0J476M8R	PL	47	6.3	125	14.8	30	4	1
TCTAL0J686M8R	AL	68	6.3	125	4.3	20	4	1
TCTAL0J107M8R	AL	100	6.3	125	6.3	18	3	1
TCTAL0J107M8R-02	AL	100	6.3	125	6.3	18	3	1
TCTAL0J107M8R-E1	AL	100	6.3	125	6.3	18	3	1
TCTAL0J107M8R-H10	AL	100	6.3	125	6.3	18	3	2
TCTAL0J107M8R-Y2	AL	100	6.3	125	6.3	18	3	1
TCTAS0J107M8R	AS	100	6.3	125	15.8	18	3	2
TCTAS0J107M8R-CA2	AS	100	6.3	125	12.6	18	2	1
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
TCTAL0J227M8R-V2	AL	220	6.3	125	280.0	30	2.5	1
10 Volt								
TCTP1A226M8R	P	22	10	125	2.2	20	5	1
TCTP1A226M8R-02	P	22	10	125	2.2	20	5	1
TCTPL1A226M8R	PL	22	10	125	11.0	20	5	1
TCTPL1A226M8R-02	PL	22	10	125	11.0	20	5	1
TCTAL1A336M8R	AL	33	10	125	3.3	15	4	1

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
TCTP1A336M8R	P	33	10	125	16.5	30	4	1
TCTP1A336M8R-E2	P	33	10	125	16.5	30	4	1
TCTAL1A476M8R	AL	47	10	125	4.7	20	4	1
TCTAL1A476M8R-02	AL	47	10	125	4.7	20	4	1
TCTAL1A476M8R-CA2	AL	47	10	125	4.7	20	4	1
TCTAL1A476M8R-E1	AL	47	10	125	4.7	20	4	1
TCTAS1A476M8R	AS	47	10	125	9.4	20	4	1
TCTAS1A476M8R-CA2	AS	47	10	125	4.7	18	2.3	1
TCTP1A476M8R-EV1	P	47	10	125	23.5	30	4	1
TCTP1A476M8R-EV2	P	47	10	125	23.5	30	4	1
TCTAL1A107M8R-V1	AL	100	10	125	50.0	30	2.5	1
TCTAL1A107M8R-V2	AL	100	10	125	50.0	30	2.5	1
16 Volt								
TCTP1C106M8R	P	10	16	125	1.6	20	6	1
TCTP1C106M8R-E1	P	10	16	125	1.6	20	6	1
TCTP1C106M8R-K1	P	10	16	125	1.6	20	*	1
TCTPL1C106M8R	PL	10	16	125	3.2	20	6	1
TCTAL1C156M8R	AL	15	16	125	2.4	15	4	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
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

*ESR 6 Ω

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.

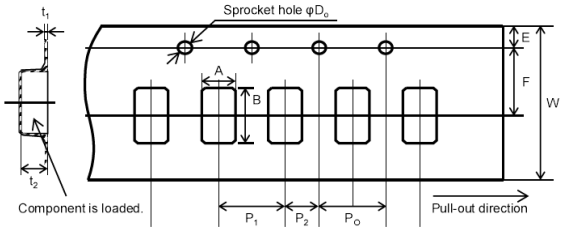
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QUALIFICATION TABLE

TEST	TCT series (Temperature range -55°C to +125°C)				
	Condition	Characteristics			
Endurance	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.	Visual examination	no visible damage		
		DCL	2x initial limit		
		ΔC/C	within +20/-30% of initial value (U case), ±20% (P, PL case) ±30% (AL, AS case)		
		DF	2x initial limit (P, PL case), 3x (AL, AS, U case)		
Humidity	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.	Visual examination	no visible damage		
		DCL	2x initial limit (P, PL, AL, AS case), 10x (U case)		
		ΔC/C	within ±20% of initial value		
		DF	2x initial limit (P, PL case), 3x (AL, AS, U case)		
Temperature Stability	Step 1: Temperature -55°C, Duration 15 min Step 2: Temperature +85, Duration 15 min Step 3: Temperature +125, Duration 15 min		-55°C	+85°C	+125°C
		DCL	n/a	10xIL*	12.5xIL*
		ΔC/C	0/-15% (P, PL, AL case) 0/-20% (AS case) 0/-30% (U case)	+15/0%	+20/0%
		DF	IL*	IL*	IL*
Surge Voltage	Apply 1.3x rated voltage (Ur) at 85±2°C for 1000 cycles, 300sec charge and 30sec discharge resistance 1000Ω.	Visual examination	no visible damage		
		DCL	2x initial limit		
		ΔC/C	±20% of initial limit		
		DF	2x initial limit		
Vibration	4.17 JIS C 5101-1 Frequency: 10 to 55 to 10Hz/min. Amplitude: 1.5mm Time: 2hours each in X and Y directions	Visual examination	no visible damage		
		DCL	initial limit		
		ΔC/C	within ± 5% of initial value		
		DF	initial limit		

*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.

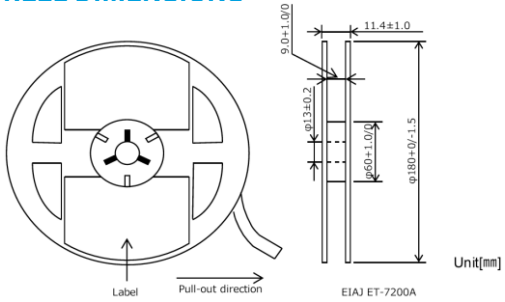
PACKAGING SPECIFICATIONS



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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