TCS Series

Chip Tantalum Capacitors (Extra Large Capacitance)



FEATURES

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

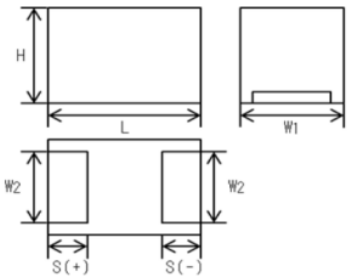
LEAD-FREE
LEAD-FREE COMPATIBLE COMPONENT

APPLICATIONS

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

RoHS COMPLIANT

MARKING



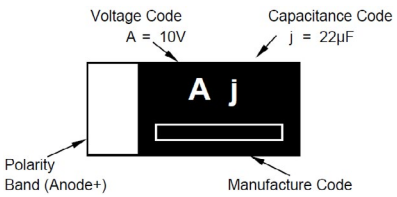
CASE DIMENSIONS:

millimeters

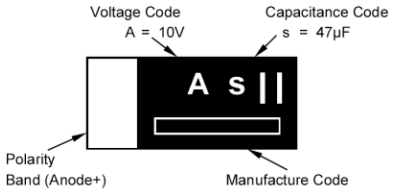
Code	EIA Code	EIA Metric	L+0.2-0	W_1±0.1	H+0.2-0	W_2±0.1	S±0.1
M	0603	1608-10	1.6	0.85	0.8	0.55	0.5
P	0805	2012-12	2.0±0.2	1.25±0.2	1.2 max.	0.85±0.2	0.5
PS	0805	2012-09	2.0±0.2	1.25±0.2	0.9 max.	0.85±0.2	0.5

MARKING

M, P CASE



PS CASE



HOW TO ORDER

TCS	M□	1A	226	M	8R	-	□□□
Type	**Case Size** See table above	**Rated DC Voltage** 0G = 4Vdc 0J = 6.3Vdc 1A = 10Vdc 1C = 16Vdc 1D = 20Vdc	**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:	10µF 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) @ 85°C					Cap Code
µF	Code	4V(g)	6.3V(j)	10V (A)	16V (C)	20V(D)	
10	106				M	P	a
22	226			M			j
47	476		M	P, PS			s
100	107	M	P				ā
150	157		P				ē
220	227	P					j̄

Released ratings
Note: Voltage ratings are minimum values. KYOCERA AVX reserves the right to supply higher 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. (%)	ESR @100kHz (Ω)	MSL
4 Volt								
TCSM0G107M8R-AV1	M	100	4	125	80.0	40	2	2
TCSM0G107M8R-V1	M	100	4	125	80.0	40	4	2
TCSP0G227M8R-V1	P	220	4	125	88.0	40	3	2
6.3 Volt								
TCSM0J476M8R-V1	M	47	6.3	125	29.7	40	4	2
TCSP0J107M8R-V1	P	100	6.3	125	63.0	40	3	2
TCSP0J157M8R-V1	P	150	6.3	125	95.0	40	3	2
10 Volt								
TCSM1A226M8R	M	22	10	125	11.0	30	5	2
TCSM1A226M8R-02	M	22	10	125	11.0	30	5	2
TCSP1A476M8R	P	47	10	125	24.0	30	4	2
TCSPS1A476M8R-V1	PS	47	10	125	23.5	30	*	2
16 Volt								
TCSM1C106M8R	M	10	16	125	8.0	20	6	2
20 Volt								
TCSP1D106M8R	P	10	20	125	10.0	20	6	2

*Impedance 4Ω
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.
ESR 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.

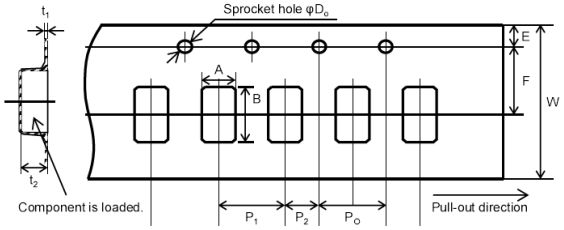
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QUALIFICATION TABLE

TEST	TCS 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.			Visual examination	no visible damage		
				DCL	2x initial limit		
				ΔC/C	within ±20% of initial value (M, PS case), ±30% (P case)		
				DF	2x initial limit		
Humidity	Store at 60±2°C, 90-95% relative humidity for 500 hours.			Visual examination	no visible damage		
				DCL	2x initial limit		
				ΔC/C	within ±30% of initial value (M, P case), ±20% (PS)		
				DF	2x initial limit		
Temperature Stability	Step	Temperature°C	Duration(min)		-55°C	+85°C	+125°C
	1	-55	15	DCL	n/a	10xIL*	12.5xIL*
	2	+85	15	ΔC/C	0/-30% (M case) +15/-50% (P case) 0/-15% (PS case)	+15/-5% (M, P case) +15/0% (PS case)	+20/-5% ((M, P case) +20/0% (PS case)
	3	+125	15	DF	IL*	IL*	IL*
Surge Voltage	Apply 1.3x rated voltage (Ur) at 85±2°C for 1000 cycles, duration 6 min (30 sec charge, 5 min 30 sec discharge) through a charge / discharge resistance of 1000Ω.			Visual examination	no visible damage		
				DCL	2x initial limit		
				ΔC/C	±30% of initial limit (M, P case), ±20% (PS)		
				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.

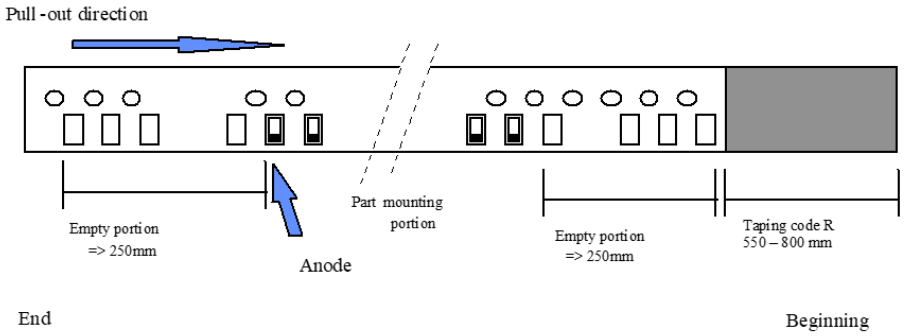
PACKAGING SPECIFICATIONS



Unit (mm)

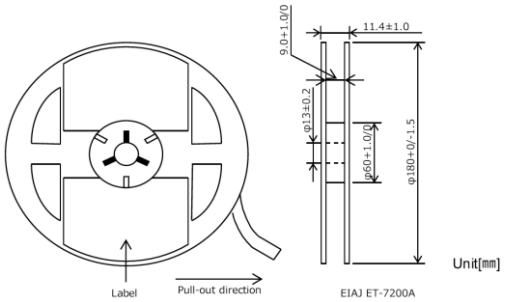
Case	A±0.10	B±0.10	W±0.20	E±0.10	F±0.05	P1±0.10	P2±0.05	PO±0.10	DO+0.10/0	t1±0.05	t2±0.10	Standard packaging quantity
M	1.15	2.00	8.00	1.75	3.50	4.00	2.00	4.00	φ1.50	0.20	1.00	3,000 pcs
P	1.55	2.30	8.00	1.75	3.50	4.00	2.00	4.00	φ1.55±0.05	0.25	1.32	3,000 pcs
PS	1.60	2.40	8.00	1.75	3.50	4.00	2.00	4.00	φ1.50	0.25	1.05±0.05	3,000 pcs

Polarity of parts: as indicated in the drawing below, the anodes (+) are at the right with respect to the direction of the tape pull out (on the opposite side to the feeding holes).



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REEL DIMENSIONS



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