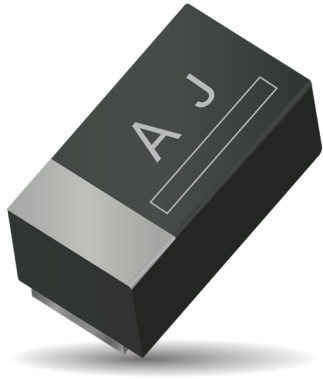


TCS Series

Chip Tantalum Capacitors (Extra Large Capacitance)



FEATURES

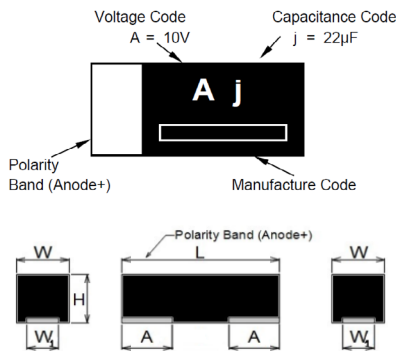
- Ta-MnO₂ technology
- Low DCL
- High CV
- Parameters stability over voltage and time
- Undertab LF

APPLICATIONS

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



MARKING



CASE DIMENSIONS:

millimeters (inches)

Code	EIA Code	EIA Metric	L+0.20-0.00 (0.008)	W±0.10 (0.004)	H+0.20-0.00 (0.008)	W±0.10 (0.004)	A±0.10 (0.004)
M	0603	1608-10	1.60 (0.063)	0.85 (0.033)	0.80 (0.031)	0.55 (0.022)	0.50 (0.020)
P	0805	2012-12	2.00±0.20 (0.079±0.008)	1.25±0.20 (0.049±0.008)	1.20 (0.047) max.	0.85±0.20 (0.033±0.008)	0.50 (0.020)
PS	0805	2012-09	2.00±0.20 (0.079±0.008)	1.25±0.20 (0.049±0.008)	0.90 (0.035) max.	0.85±0.20 (0.033±0.008)	0.50 (0.020)

HOW TO ORDER

TCS

Type

M

Case Size
See table above

1A

Rated DC Voltage
0G = 4Vdc
0J = 6.3Vdc
1A = 10Vdc
1C = 16Vdc
1D = 20Vdc

226

Capacitance Code
pF code: 1st two digits
represent significant figures,
3rd digit represents multiplier
(number of zeros to follow)

M

Tolerance
M = ±20%

8R

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 +25°C
Capacitance Range:	10µF to 220µF
Capacitance Tolerance:	±20%
Leakage Current DCL:	Please see the ratings and part number reference table below
Temperature Range:	-55°C to +125°C

TCS Series

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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
TCSP1A476M8R-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 +25°C.

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.

TCS Series

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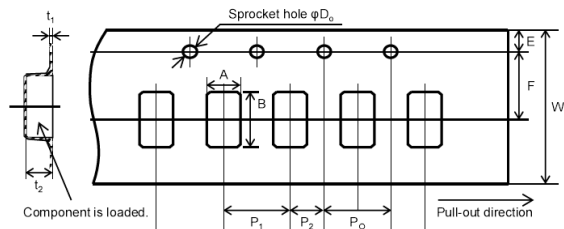
QUALIFICATION TABLE

TEST	TCS series (Temperature range -55°C to +125°C)				
	Condition		Characteristics		
Endurance	Apply rated voltage (U_r) at 85°C for 1000hrs through a serial resistance of $\leq 3.0\Omega$.		Visual examination	no visible damage	
			DCL	2x initial limit	
			$\Delta C/C$	within $\pm 20\%$ of initial value (M, PS case), $\pm 30\%$ (P case)	
			DF	2x initial limit	
Humidity	Store at $60\pm 2^\circ\text{C}$, 90-95% relative humidity for 500 hours.		Visual examination	no visible damage	
			DCL	2x initial limit	
			$\Delta C/C$	within $\pm 30\%$ of initial value (M, P case), $\pm 20\%$ (PS)	
			DF	2x initial limit	
Temperature Stability	Step	Temperature $^\circ\text{C}$	Duration(min)		
	1	-55	15	DCL	-55°C: n/a, +85°C: 10xIL*, +125°C: 12.5xIL*
	2	+85	15	$\Delta C/C$	0/-30% (M case), +15/-50% (P case), 0/-15% (PS case)
	3	+125	15		+15/-5% (M, P case), +15/0% (PS case), +20/-5% ((M, P case), +20/0% (PS case)
Surge Voltage	Apply 1.3x rated voltage (U_r) at $85\pm 2^\circ\text{C}$ for 1000 cycles, duration 6 min (30 sec charge, 5 min 30 sec discharge) through a charge / discharge resistance of 1000 Ω .		Visual examination	no visible damage	
			DCL	2x initial limit	
			$\Delta C/C$	$\pm 30\%$ of initial limit (M, P case), $\pm 20\%$ (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	
			$\Delta C/C$	within $\pm 5\%$ of initial value	
			DF	initial limit	

*Initial Limit

For use outside of recommended conditions and special request, please contact KYOCERA AVX.

PACKAGING SPECIFICATIONS

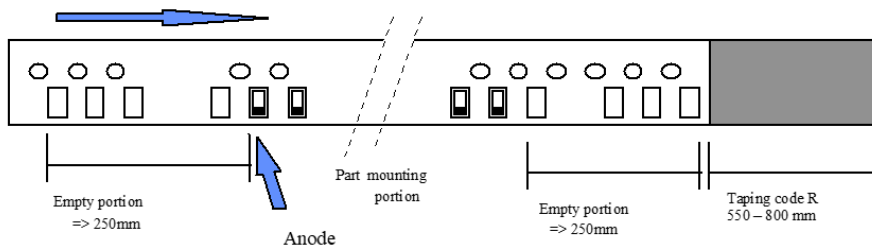


Unit (mm)

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 $\pm 0.10/0$	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	$\phi 1.50$	0.20	1.00	3,000 pcs
P	1.55	2.30	8.00	1.75	3.50	4.00	2.00	4.00	$\phi 1.55\pm 0.05$	0.25	1.32	3,000 pcs
PS	1.60	2.40	8.00	1.75	3.50	4.00	2.00	4.00	$\phi 1.50$	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).

Pull-out direction



End

Beginning

TCS Series

Chip Tantalum Capacitors (Extra Large Capacitance)

REEL DIMENSIONS

