

TC Series

Chip Tantalum Capacitors (Large Capacitance)



FEATURES

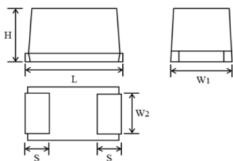
- Ta-MnO₂ technology
- Low DCL
- Parameters stability over voltage and time
- Undertab and J-lead LF

APPLICATIONS

- DC/DC
- Industrial
- Telecom
- IoT
- Home applications
- Sensors



UNDERTAB M CASE

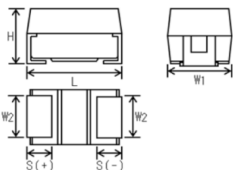


CASE DIMENSIONS:

millimeters

Code	EIA Code	EIA Metric	L±0.1	W1±0.1	H±0.1	W2±0.1	S±0.1
M	0603	1608-09	1.6	0.85	0.8	0.55	0.5

J-LEAD A, P CASE

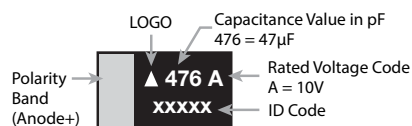


CASE DIMENSIONS:

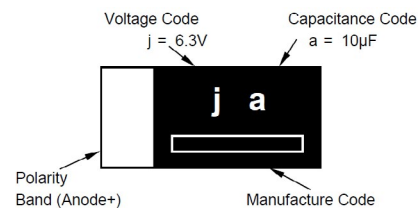
millimeters

Code	EIA Code	EIA Metric	L±0.2	W1±0.2	H±0.2	W2±0.2	S±0.3
A	1206	3216-18	3.2	1.6	1.6	1.2	0.8
P	0805	2012-12	2.0	1.25	1.20 max.	0.9	0.45

MARKING A CASE



M, P CASE



HOW TO ORDER

TC
Type

M
Case Size
See table
above

0J
Rated DC Voltage
0G = 4Vdc
0J = 6.3Vdc
1A = 10Vdc
1C = 16Vdc
1D = 20Vdc
1E = 25Vdc
1H = 50Vdc

475
Capacitance Code
pF code: 1st two digits
represent significant figures,
3rd digit represents multiplier
(number of zeros to follow)

M
Tolerance
K = ±10%
M = ±20%

8R
Packaging
8 = Tape width
R = Positive electrode
on the side opposite to
sprocket hole

□□□
Discrimination code

TC Series

Chip Tantalum Capacitors (Large Capacitance)



TECHNICAL SPECIFICATIONS

Technical Data:	All technical data relate to an ambient temperature of +25°C
Capacitance Range:	0.15µF to 100µF
Capacitance Tolerance:	±20%
Leakage Current DCL:	Please see the ratings and part number reference table below
Temperature Range:	-55°C to +125°C

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)	25V(E)	50V(H)	
0.15	154							A	E
1.0	105			P	A,M,P	A	A,M,P		A
1.5	155				A				E
2.2	225		P	A,M,P	A,M				J
3.3	335			A,P	A		A		N
4.7	475		A,M,P	A,M,P	A	A	A		S
6.8	685		P	A	A				W
10	106	A,M,P	A,M,P	A*,M,P	A*				a
15	156		P	A					e
22	226	A,M, P	A,M,P	A	A				j
33	336	A	A,M	A					n
47	476	A	A						s
68	686	A							w
100	107	A							ā

Released ratings (*K tolerance is also available)

Note: Voltage ratings are minimum values. KYOCERA AVX reserves the right to supply higher voltage 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
4 Volt								
TCA0G106M8R	A	10	4	125	0.5	8	4.2	1
TCM0G106M8R	M	10	4	125	0.5	20	9	1
TCP0G106M8R	P	10	4	125	0.5	20	9.3	1
TCA0G226M8R	A	22	4	125	0.9	8	3	1
TCM0G226M8R	M	22	4	125	0.9	20	9	1
TCP0G226M8R	P	22	4	125	0.9	20	7.7	1
TCA0G336M8R	A	33	4	125	1.3	10	3.5	1
TCA0G476M8R	A	47	4	125	1.9	12	3.2	1
TCA0G686M8R	A	68	4	125	2.7	18	3	1
TCA0G107M8R	A	100	4	125	4.0	30	3	1
TCA0G107M8R-02	A	100	4	125	3.8	30	4	1
6.3 Volt								
TCP0J225M8R	P	2.2	6.3	125	0.5	20	17.5	1
TCA0J475M8R	A	4.7	6.3	125	0.5	8	4.9	1
TCM0J475M8R	M	4.7	6.3	125	0.5	20	9	1
TCP0J475M8R	P	4.7	6.3	125	0.5	20	11.8	1
TCP0J685M8R	P	6.8	6.3	125	0.5	20	9.3	1
TCA0J106M8R	A	10	6.3	125	0.6	8	4	1
TCM0J106M8R	M	10	6.3	125	0.6	20	9	1
TCM0J106M8R-02	M	10	6.3	125	0.6	20	9	1
TCM0J106M8R-CA2	M	10	6.3	125	0.3	20	8	1
TCP0J106M8R	P	10	6.3	125	0.6	20	8.3	1
TCP0J106M8R-02	P	10	6.3	125	0.1	20	6	1
TCP0J106M8R-Y1	P	10	6.3	125	0.6	20	8.3	1
TCP0J156M8R	P	15	6.3	125	0.9	20	7.7	1
TCA0J226M8R	A	22	6.3	125	1.4	10	3.5	1
TCM0J226M8R-CA2	M	22	6.3	125	6.9	20	8	1
TCM0J226M8R-EV2	M	22	6.3	125	13.0	30	9	1
TCM0J226M8R-V1	M	22	6.3	125	13.0	30	9	1
TCP0J226M8R	P	22	6.3	125	1.4	25	5	1
TCP0J226M8R-02	P	22	6.3	125	1.4	25	5	1

TC Series

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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
TCA0J336M8R	A	33	6.3	125	2.1	12	3.2	1
TCA0J336M8R-E1	A	33	6.3	125	2.1	12	3.2	1
TCM0J336M8R-V1	M	33	6.3	125	208.0	30	9	1
TCA0J476M8R	A	47	6.3	125	3.0	18	3.2	1
TCA0J476M8R-02	A	47	6.3	125	3.0	18	3.2	1
TCA0J476M8R-E1	A	47	6.3	125	3.0	18	3.2	1
10 Volt								
TCP1A105M8R	P	1.0	10	125	0.5	10	17.5	1
TCA1A225M8R	A	2.2	10	125	0.5	6	5.6	1
TCM1A225M8R	M	2.2	10	125	0.5	20	13.5	1
TCP1A225M8R	P	2.2	10	125	0.5	20	14.4	1
TCA1A335M8R	A	3.3	10	125	0.5	8	4.9	1
TCP1A335M8R	P	3.3	10	125	0.5	20	11.8	1
TCA1A475M8R	A	4.7	10	125	0.5	8	4.2	1
TCM1A475M8R	M	4.7	10	125	0.5	20	9	1
TCM1A475M8R-E1	M	4.7	10	125	0.5	20	9	1
TCP1A475M8R	P	4.7	10	125	0.5	20	9.3	1
TCA1A685M8R	A	6.8	10	125	0.7	8	4	1
TCA1A106*8R	A	10	10	125	1.0	8	3	1
TCM1A106M8R	M	10	10	125	10.0	20	9	1
TCM1A106M8R-02	M	10	10	125	10.0	20	9	1
TCM1A106M8R-CA2	M	10	10	125	2.0	20	8	1
TCP1A106M8R	P	10	10	125	1.0	20	7.7	1
TCP1A106M8R-02	P	10	10	125	1.0	20	7.7	1
TCA1A156M8R	A	15	10	125	1.5	10	3.5	1
TCA1A226M8R	A	22	10	125	2.2	12	3.2	1
TCA1A336M8R	A	33	10	125	3.3	8	1.7	1
16 Volt								
TCA1C105M8R	A	1.0	16	125	0.5	6	7	1
TCM1C105M8R	M	1.0	16	125	0.5	10	15	1
TCM1C105M8R-02	M	1.0	16	125	0.5	10	15	1
TCP1C105M8R	P	1.0	16	125	0.5	10	16.1	1
TCA1C155M8R	A	1.5	16	125	0.5	6	5.6	1
TCA1C225M8R	A	2.2	16	125	0.5	6	4.9	1
TCM1C225M8R	M	2.2	16	125	0.5	20	13.5	1
TCM1C225M8R-CA2	M	2.2	16	125	0.5	20	13.5	1
TCA1C335M8R	A	3.3	16	125	0.5	6	4.8	1
TCA1C475M8R	A	4.7	16	125	0.8	6	3.9	1
TCA1C685M8R	A	6.8	16	125	1.1	6	3.8	1
TCA1C106*8R	A	10	16	125	1.6	8	3.5	1
TCA1C106K8R-02	A	10	16	125	1.6	8	3.5	1
TCA1C106M8R-02	A	10	16	125	1.3	8	2.6	1
TCA1C226M8R	A	22	16	125	3.5	30	2.3	1
20 Volt								
TCA1D105M8R	A	1.0	20	125	0.5	6	7	1
TCA1D475M8R	A	4.7	20	125	0.9	6	3.9	1
25 Volt								
TCA1E105M8R	A	1.0	25	125	0.5	6	7	1
TCM1E105M8R	M	1.0	25	125	0.5	10	10	1
TCP1E105M8R	P	1.0	25	125	0.6	20	9.3	1
TCA1E335M8R	A	3.3	25	125	0.8	6	4.8	1
TCA1E475M8R	A	4.7	25	125	1.2	8	3.4	1
50 Volt								
TCA1H154M8R	A	0.15	50	125	0.5	4	15	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.

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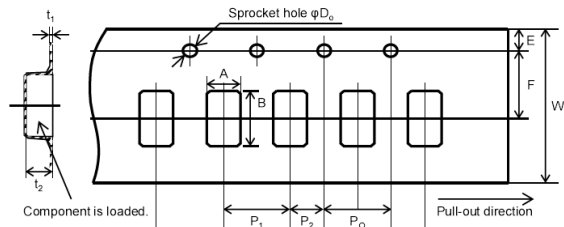
QUALIFICATION TABLE

TEST	TC series (Temperature range -55°C to +125°C)						
	Condition			Characteristics			
Endurance	Apply rated voltage (U_r) at 85°C for 1000hrs (for M and P case) 2000hrs (for A case) through a serial resistance of $\leq 3.0\Omega$.			Visual examination	no visible damage		
				DCL	2x initial limit		
				$\Delta C/C$	within $\pm 30\%$ of initial value (M case), $\pm 20\%$ (A,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 case), $\pm 20\%$ (A,P case)		
				DF	2x initial limit		
Temperature Stability	Step	Temperature $^\circ\text{C}$	Duration(min)		-55 $^\circ\text{C}$	+85 $^\circ\text{C}$	+125 $^\circ\text{C}$
	1	-55	15				
	2	+85	15				
	3	+125	15				
				DCL	n/a	10xIL*	12.5xIL*
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		
				$\Delta C/C$	$\pm 20\%$ 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		
				$\Delta C/C$	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

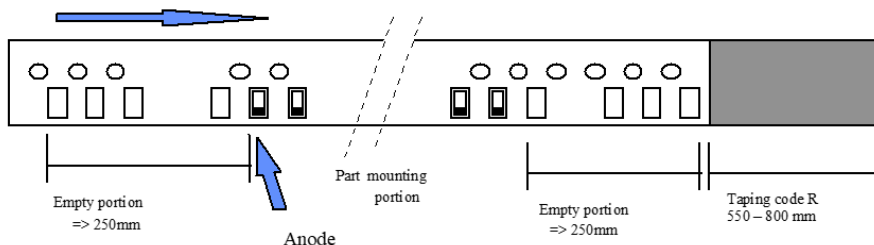


Unit (mm)

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
A	1.83	3.57	8.00	1.75	3.50	4.00	2.00	4.00	$\phi 1.50$	0.17	1.87	2,000 pcs
M	1.00	1.85	8.00	1.75	3.50	4.00	2.00	4.00	$\phi 1.50$	0.20	1.00	4,000 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

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

REEL DIMENSIONS A CASE

