

TPM Multianode

Tantalum Ultra Low ESR Capacitor



CAPACITANCE AND RATED VOLTAGE RANGE (LETTER DENOTES CASE SIZE)

Capacitance		Rated Voltage DC (V _R) to 85°C								
µF	Code	2.5V (e)	4V (G)	6.3V (J)	10V (A)	16V (C)	20V (D)	25V (E)	35V (V)	50V (T)
6.8	685									
10	106									D(140)/E(120)
15	156									E(75,100)
22	226								D(70) E(60,100)	E(75,100)
33	336							D(65)	E(50,65)	
47	476					D(100)	D(45,55)	D(55)/E(65)	E(55,65)	
68	686					D(40,50)		E(45,55)		
100	107				Y(45) ^(M)	D(40,50)	E(35,45)	E(45,60)		
150	157				Y(45) ^(M)	E(30,40)	E(35)			
220	227			Y(30) ^(M)	D(35)	E(25,40) U(30,40)				
330	337		D(25,35)	D(25,35)	D(35)/E(23,35)	E(50)				
470	477		D(25,35)	D(30) E(18,23,30)	E(23,30) U(23,30)					
680	687		D(25)/E(18,23)	E(18,23) U(18,23)/V(23)						
1000	108	D(25)	D(25,45) E(18,23) U(18,23)/V(18)	E(25) ^(M) /V(20) ^(M)						
1500	158	E(12,15,18) U(18,23)	E(15,18)							
2200	228	E(18) ^(M)								

Released ratings ^(M tolerance only), (ESR ratings in mOhms in parentheses)

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.

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RATINGS & PART NUMBER REFERENCE

Part Number	Case Size	Capacitance (μF)	Rated Voltage (V)	Rated Temperature (°C)	Category Voltage (V)	Category Temperature (°C)	DCL Max. (μA)	DF Max. (%)	ESR Max. @ 100kHz (mΩ)	100kHz RMS Current (A)			MSL
										25°C	85°C	125°C	
2.5 Volt @ 85°C													
TPMD108*002#0025	D	1000	2.5	85	1.7	125	25	8	25	3.194	2.874	1.277	3
TPME158*002#0012	E	1500	2.5	85	1.7	125	38	6	12	4.743	4.269	1.897	3
TPME158*002#0015	E	1500	2.5	85	1.7	125	38	6	15	4.243	3.818	1.697	3
TPME158*002#0018	E	1500	2.5	85	1.7	125	38	6	18	3.873	3.486	1.549	3
TPMU158*002R0018	U	1500	2.5	85	1.7	125	30	6	18	4.048	3.643	1.619	3
TPMU158*002R0023	U	1500	2.5	85	1.7	125	30	6	23	3.581	3.223	1.433	3
TPME228M002#0018	E	2200	2.5	85	1.7	125	44	10	18	3.873	3.486	1.549	3
4 Volt @ 85°C													
TPMD337*004#0025	D	330	4	85	2.7	125	13.2	8	25	3.194	2.874	1.277	3
TPMD337*004#0035	D	330	4	85	2.7	125	13.2	8	35	2.699	2.429	1.080	3
TPMD477*004#0025	D	470	4	85	2.7	125	18.8	8	25	3.194	2.874	1.277	3
TPMD477*004#0035	D	470	4	85	2.7	125	18.8	8	35	2.699	2.429	1.080	3
TPMD687*004#0025	D	680	4	85	2.7	125	27.2	8	25	3.194	2.874	1.277	3
TPME687*004#0018	E	680	4	85	2.7	125	27	6	18	3.873	3.486	1.549	3
TPME687*004#0023	E	680	4	85	2.7	125	27	6	23	3.426	3.084	1.370	3
TPMD108*004#0025	D	1000	4	85	2.7	125	40	8	25	3.194	2.874	1.277	3
TPMD108*004#0045	D	1000	4	85	2.7	125	40	8	45	2.380	2.142	0.952	3
TPME108*004#0018	E	1000	4	85	2.7	125	40	6	18	3.873	3.486	1.549	3
TPME108*004#0023	E	1000	4	85	2.7	125	40	6	23	3.426	3.084	1.370	3
TPMU108*004R0018	U	1000	4	85	2.7	125	40	6	18	4.048	3.643	1.619	3
TPMU108*004R0023	U	1000	4	85	2.7	125	40	6	23	3.581	3.223	1.433	3
TPMV108*004#0018	V	1000	4	85	2.7	125	40	6	18	3.979	3.581	1.592	3
TPME158*004#0015	E	1500	4	85	2.7	125	60	6	15	4.243	3.818	1.697	3
TPME158*004#0018	E	1500	4	85	2.7	125	60	6	18	3.873	3.486	1.549	3
6.3 Volt @ 85°C													
TPMY227M006#0030	Y	220	6.3	85	4	125	13.2	6	30	2.646	2.381	1.058	3
TPMD337*006#0025	D	330	6.3	85	4	125	19.8	8	25	3.194	2.874	1.277	3
TPMD337*006#0035	D	330	6.3	85	4	125	19.8	8	35	2.699	2.429	1.080	3
TPMD477*006#0030	D	470	6.3	85	4	125	28.2	8	30	2.915	2.624	1.166	3
TPME477*006#0018	E	470	6.3	85	4	125	28	6	18	3.873	3.486	1.549	3
TPME477*006#0023	E	470	6.3	85	4	125	28	6	23	3.426	3.084	1.370	3
TPME477*006#0030	E	470	6.3	85	4	125	28	6	30	3.000	2.700	1.200	3
TPME687*006#0018	E	680	6.3	85	4	125	41	6	18	3.873	3.486	1.549	3
TPME687*006#0023	E	680	6.3	85	4	125	41	6	23	3.426	3.084	1.370	3
TPMU687*006R0018	U	680	6.3	85	4	125	41	6	18	4.048	3.643	1.619	3
TPMU687*006R0023	U	680	6.3	85	4	125	41	6	23	3.581	3.223	1.433	3
TPMV687*006#0023	V	680	6.3	85	4	125	41	6	23	3.520	3.168	1.408	3
TPME108M006#0025	E	1000	6.3	85	4	125	63	8	25	3.286	2.958	1.315	3
TPMV108M006#0020	V	1000	6.3	85	4	125	63	8	20	3.775	3.397	1.510	3
10 Volt @ 85°C													
TPMY107M010#0045	Y	100	10	85	7	125	10	8	45	2.160	1.944	0.864	3
TPMY157M010#0045	Y	150	10	85	7	125	15	8	45	2.160	1.944	0.864	3
TPMD227*010#0035	D	220	10	85	7	125	22	8	35	2.699	2.429	1.080	3
TPMD337*010#0035	D	330	10	85	7	125	33	8	35	2.699	2.429	1.080	3
TPME337*010#0023	E	330	10	85	7	125	33	6	23	3.426	3.084	1.370	3
TPME337*010#0035	E	330	10	85	7	125	33	6	35	2.777	2.500	1.111	3
TPME477*010#0023	E	470	10	85	7	125	47	6	23	3.426	3.084	1.370	3
TPME477*010#0030	E	470	10	85	7	125	47	6	30	3.000	2.700	1.200	3
TPMU477*010R0023	U	470	10	85	7	125	47	8	23	3.581	3.223	1.433	3
TPMU477*010R0030	U	470	10	85	7	125	47	8	30	3.136	2.822	1.254	3
16 Volt @ 85°C													
TPMD476*016#0100	D	47	16	85	10	125	7.5	8	100	1.597	1.437	0.639	3
TPMD686*016#0040	D	68	16	85	10	125	10.9	8	40	2.525	2.272	1.010	3
TPMD686*016#0050	D	68	16	85	10	125	10.9	8	50	2.258	2.032	0.903	3
TPMD107*016#0040	D	100	16	85	10	125	16	8	40	2.525	2.272	1.010	3
TPMD107*016#0050	D	100	16	85	10	125	16	8	50	2.258	2.032	0.903	3
TPME157*016#0030	E	150	16	85	10	125	24	6	30	3.000	2.700	1.200	3
TPME157*016#0040	E	150	16	85	10	125	24	6	40	2.598	2.338	1.039	3
TPME227*016#0025	E	220	16	85	10	125	35	6	25	3.286	2.958	1.315	3
TPME227*016#0040	E	220	16	85	10	125	35	6	40	2.598	2.338	1.039	3
TPMU227*016R0030	U	220	16	85	10	125	35	8	30	3.136	2.822	1.254	3
TPMU227*016R0040	U	220	16	85	10	125	35	8	40	2.716	2.444	1.086	3
TPME337*016#0050	E	330	16	85	10	125	52.8	10	50	2.324	2.091	0.930	3
20 Volt @ 85°C													
TPMD476*020#0045	D	47	20	85	13	125	9.4	8	45	2.380	2.142	0.952	3
TPMD476*020#0055	D	47	20	85	13	125	9.4	8	55	2.153	1.938	0.861	3
TPME107*020#0035	E	100	20	85	13	125	20	6	35	2.777	2.500	1.111	3
TPME107*020#0045	E	100	20	85	13	125	20	6	45	2.449	2.205	0.980	3
TPME157*020#0035	E	150	20	85	13	125	30	10	35	2.777	2.500	1.111	3

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RATINGS & PART NUMBER REFERENCE

Part Number	Case Size	Capacitance (μF)	Rated Voltage (V)	Rated Temperature (°C)	Category Voltage (V)	Category Temperature (°C)	DCL Max. (μA)	DF Max. (%)	ESR Max. @ 100kHz (mΩ)	100kHz RMS Current (A)			MSL
										25°C	85°C	125°C	
25 Volt @ 85°C													
TPMD336*025#0065	D	33	25	85	17	125	8.3	8	65	1.981	1.783	0.792	3
TPMD476*025#0055	D	47	25	85	17	125	11.8	8	55	2.153	1.938	0.861	3
TPME476*025#0065	E	47	25	85	17	125	11.8	6	65	2.038	1.834	0.815	3
TPME686*025#0045	E	68	25	85	17	125	17	6	45	2.449	2.205	0.980	3
TPME686*025#0055	E	68	25	85	17	125	17	6	55	2.216	1.994	0.886	3
TPME107*025#0045	E	100	25	85	17	125	25	14	45	2.449	2.205	0.980	3
TPME107*025#0060	E	100	25	85	17	125	25	14	60	2.121	1.909	0.849	3
35 Volt @ 85°C													
TPMD226*035#0070	D	22	35	85	23	125	7.7	8	70	1.909	1.718	0.763	3
TPME226*035#0060	E	22	35	85	23	125	8	6	60	2.121	1.909	0.849	3
TPME226*035#0100	E	22	35	85	23	125	8	6	100	1.643	1.479	0.657	3
TPME336*035#0050	E	33	35	85	23	125	12	6	50	2.324	2.091	0.930	3
TPME336*035#0065	E	33	35	85	23	125	12	6	65	2.038	1.834	0.815	3
TPME476*035#0055	E	47	35	85	23	125	16	6	55	2.216	1.994	0.886	3
TPME476*035#0065	E	47	35	85	23	125	16	6	65	2.038	1.834	0.815	3
50 Volt @ 85°C													
TPMD106*050#0140	D	10	50	85	33	125	5	8	140	1.350	1.215	0.540	3
TPME106*050#0120	E	10	50	85	33	125	5	6	120	1.500	1.350	0.600	3
TPME156*050#0075	E	15	50	85	33	125	7.5	6	75	1.897	1.708	0.759	3
TPME156*050#0100	E	15	50	85	33	125	7.5	6	100	1.643	1.479	0.657	3
TPME226*050#0075	E	22	50	85	33	125	11	8	75	1.897	1.708	0.759	3
TPME226*050#0100	E	22	50	85	33	125	11	8	100	1.643	1.479	0.657	3

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, 0.5V RMS with a maximum DC bias of 2.2 volts.

DCL is measured at rated voltage after 5 minutes.

The EIA & CECC standards for low ESR Solid Tantalum Capacitors allow an ESR movement to 1.25 times catalogue limit post mounting.

For typical weight and composition see page 259.

NOTE: KYOCERA AVX reserves the right to supply higher voltage ratings or tighter tolerance part in the same case size, to the same reliability standards.

QUALIFICATION TABLE

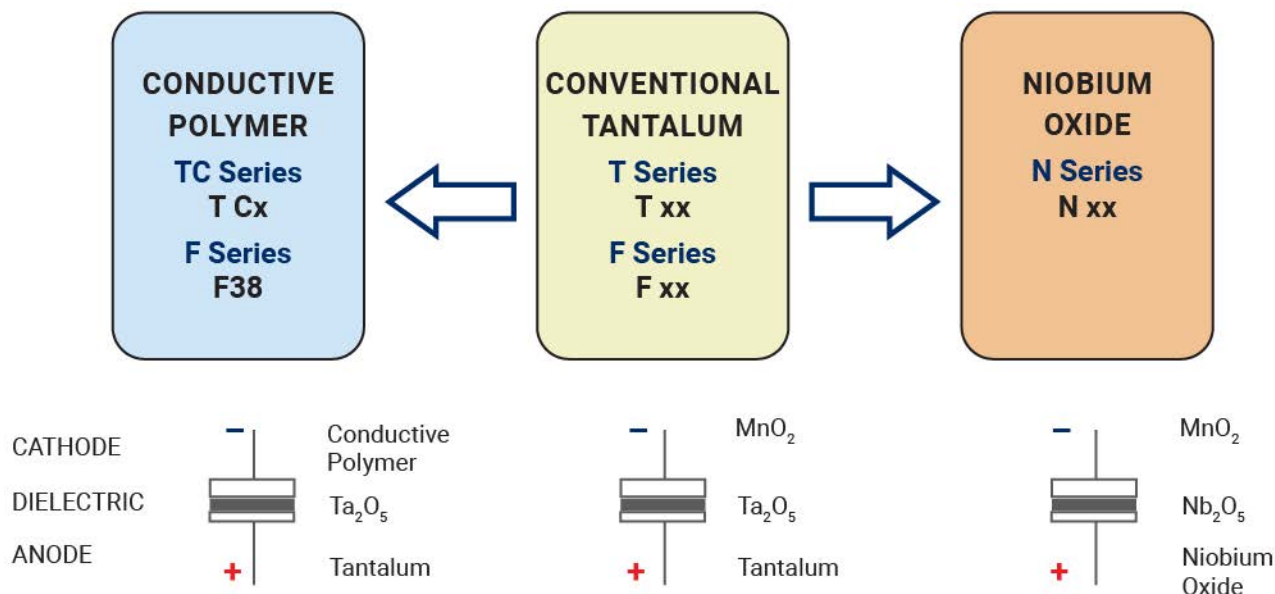
TEST	TPM series (Temperature range -55°C to +125°C)											
	Condition			Characteristics								
Endurance	Apply rated voltage (Ur) at 85°C and / or category-voltage (Uc) at 125°C for 2000 hours through a circuit impedance of ≤0.1Ω/V. Stabilize at room temperature for 1-2 hours before measuring.			Visual examination	no visible damage							
				DCL	initial limit							
				ΔC/C	within ±10% of initial value							
				DF	initial limit							
				ESR	1.25 x initial limit							
Humidity	Store at 65°C and 95% relative humidity for 500 hours, with no applied voltage. Stabilize at room temperature and humidity for 1-2 hours before measuring.			Visual examination	no visible damage							
				DCL	1.5 x initial limit							
				ΔC/C	within ±10% of initial value							
				DF	1.2 x initial limit							
				ESR	1.25 x initial limit							
Temperature Stability	Step	Temperature°C	Duration(min)		+20°C	-55°C	+20°C	+85°C	+125°C	+20°C		
	1	+20	15									
	2	-55	15	DCL	IL*	n/a	IL*	10 x IL*	12.5 x IL*	IL*		
	3	+20	15	ΔC/C	n/a	+0/-10%	±5%	+10/-0%	+12/-0%	±5%		
	4	+85	15	DF	IL*	1.5 x IL*	IL*	1.5 x IL*	2 x IL*	IL*		
	5	+125	15									
	6	+20	15	ESR	1.25xIL*	2.5xIL*	1.25xIL*	1.25xIL*	1.25xIL*	1.25xIL*		
Surge Voltage	Apply 1.3x category voltage (Uc) at 125°C for 1000 cycles of duration 6 min (30 sec charge, 5 min 30 sec discharge) through a charge / discharge resistance of 1000Ω			Visual examination	no visible damage							
				DCL	initial limit							
				ΔC/C	within ±5% of initial value							
				DF	initial limit							
				ESR	1.25 x initial limit							
Mechanical Shock	MIL-STD-202, Method 213, Condition C			Visual examination	no visible damage							
				DCL	initial limit							
				ΔC/C	within ±5% of initial value							
				DF	initial limit							
				ESR	initial limit							
Vibration	MIL-STD-202, Method 204, Condition D			Visual examination	no visible damage							
				DCL	initial limit							
				ΔC/C	within ±5% of initial value							
				DF	initial limit							
				ESR	initial limit							

*Initial Limit

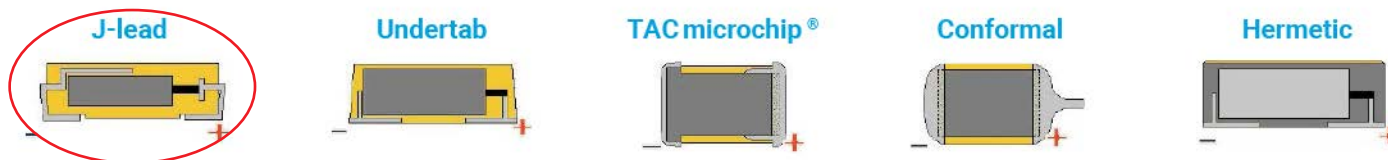
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Tantalum Ultra Low ESR Capacitor

SOLID ELECTROLYTIC CAPACITOR ROADMAP



FIVE CAPACITOR CONSTRUCTION STYLES



SERIES LINE UP : CONVENTIONAL SMD MnO₂

