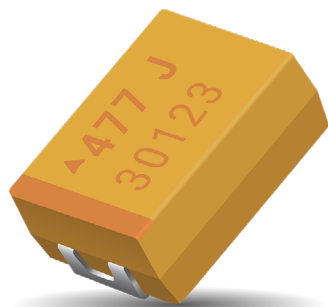


TPM Multianode

Tantalum Ultra Low ESR Capacitor



FEATURES

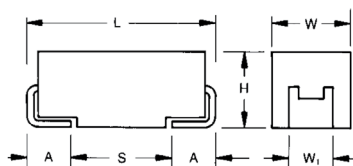
- Multi-anode Construction
- Super Low ESR
- 100% Surge Current Tested
- CV Range: 10-2200 μ F / 2.5-50V
- 5 Case Sizes Available
- "Mirror" Multi-anode Construction Used with D, Y Case Capacitors Reduces ESL to Half



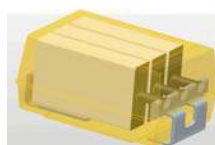
*SnPb termination option is not
RoHS compliant.*

APPLICATIONS

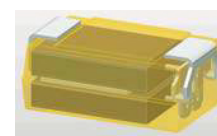
- High Power DC/DC General Applications



MULTIANODE CONSTRUCTION



MULTIANODE TPM D, Y LOW SELF INDUCTANCE CONSTRUCTION "MIRROR" DESIGN



MARKING

D, E, U, V, Y CASE

CASE DIMENSIONS:

millimeters (inches)

Code	EIA Code	EIA Metric	L $\pm$ 0.20 (0.008)	W $\pm$ 0.20 (0.008) -0.10 (0.004)	H $\pm$ 0.20 (0.008) -0.10 (0.004)	W $\pm$ 0.20 (0.008)	A $\pm$ 0.30 (0.012) -0.20 (0.008)	S Min.
D	2917	7343-31	7.30 (0.287)	4.30 (0.169)	2.90 (0.114)	2.40 (0.094)	1.30 (0.051)	4.40 (0.173)
E	2917	7343-43	7.30 (0.287)	4.30 (0.169)	4.10 (0.162)	2.40 (0.094)	1.30 (0.051)	4.40 (0.173)
U	2924	7361-43	7.30 (0.287)	6.10 (0.240)	4.10 (0.162)	3.10 (0.122)	1.30 (0.051)	4.40 (0.173)
V	2924	7361-38	7.30 (0.287)	6.10 (0.240)	3.55 (0.140)	3.10 (0.122)	1.30 (0.051)	4.40 (0.173)
Y	2917	7343-20	7.30 (0.287)	4.30 (0.169)	2.00 (0.079) max	2.40 (0.094)	1.30 (0.051)	4.40 (0.173)

W1 dimension applies to the termination width for A dimensional area only.

HOW TO ORDER

TPM

Type

E

Case Size
See table above

108

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

M

Tolerance
K = $\pm$ 10%
M = $\pm$ 20%

004

Rated DC Voltage
002=2.5Vdc
004=4Vdc
006=6.3Vdc
010=10Vdc
016=16Vdc
020=20Vdc
025=25Vdc
035=35Vdc
050=50Vdc

R

Packaging
R = Pure Tin 7" Reel
S = Pure Tin 13" Reel
H = Tin Lead 7" Reel
K = Tin Lead 13" Reel
H, K = Non RoHS
H, K = Please Contact
Manufacturer

0018

ESR in m Ω

TECHNICAL SPECIFICATIONS

Technical Data:		All technical data relate to an ambient temperature of +25°C									
Capacitance Range:		10 μ F to 2200 μ F									
Capacitance Tolerance:		$\pm$ 10%, $\pm$ 20%									
Rated Voltage (V _R)	$\leq$ +85°C:	2.5	4	6.3	10	16	20	25	35	50	
Category Voltage (V _C)	$\leq$ +125°C:	1.7	2.7	4	7	10	13	17	23	33	
Surge Voltage (V _S)	$\leq$ +85°C:	3.3	5.2	8	13	20	26	32	46	65	
Surge Voltage (V _S)	$\leq$ +125°C:	2.2	3.4	5	8	13	16	20	28	40	
Temperature Range:		-55°C to +125°C									
Reliability:		1% per 1000 hours at 85°C, V _R with 0.1 Ω /V series impedance, 60% confidence level									

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.

TPM Multianode

Tantalum Ultra Low ESR Capacitor



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*002R0012	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

TPM Multianode

Tantalum Ultra Low ESR Capacitor



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



The Important Information/Disclaimer is incorporated in the catalog where these specifications came from or available online at www.kyocera-avx.com/disclaimer/ by reference and should be reviewed in full before placing any order.

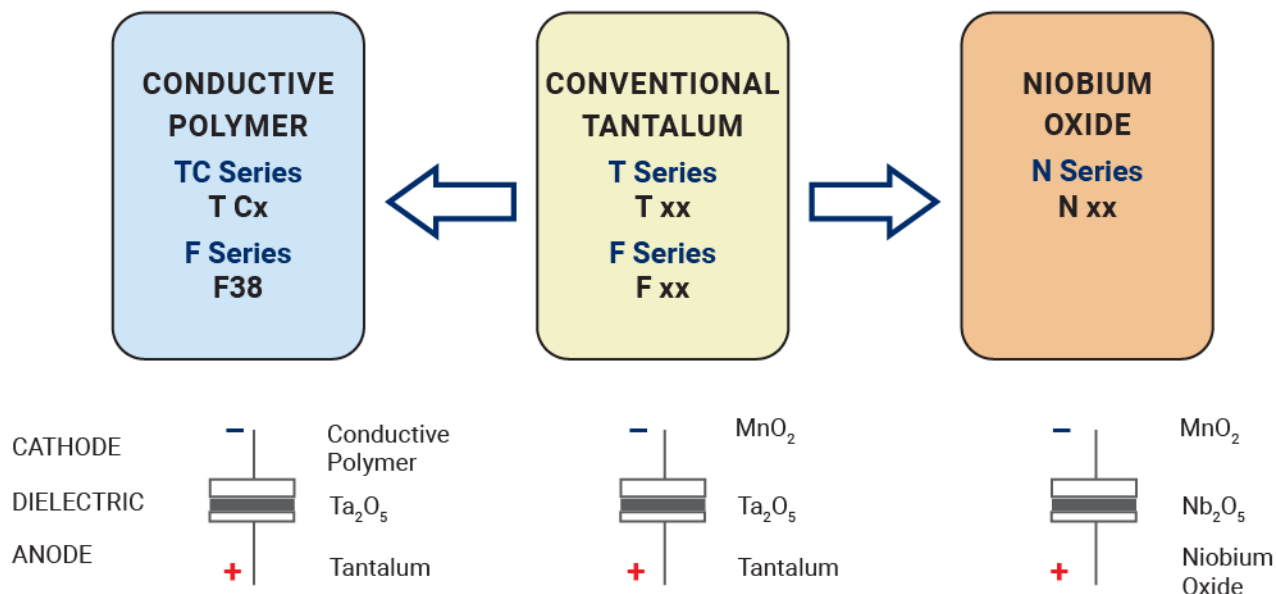
TDS-PTNO-0039 | Rev 1

– POLYMER, TANTALUM AND NIOBIUM OXIDE CAPACITORS –

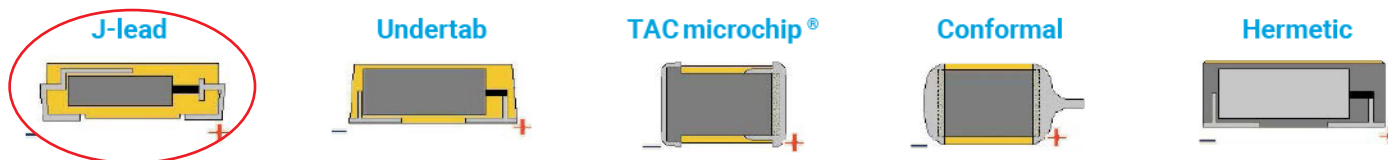
TPM Multianode

Tantalum Ultra Low ESR Capacitor

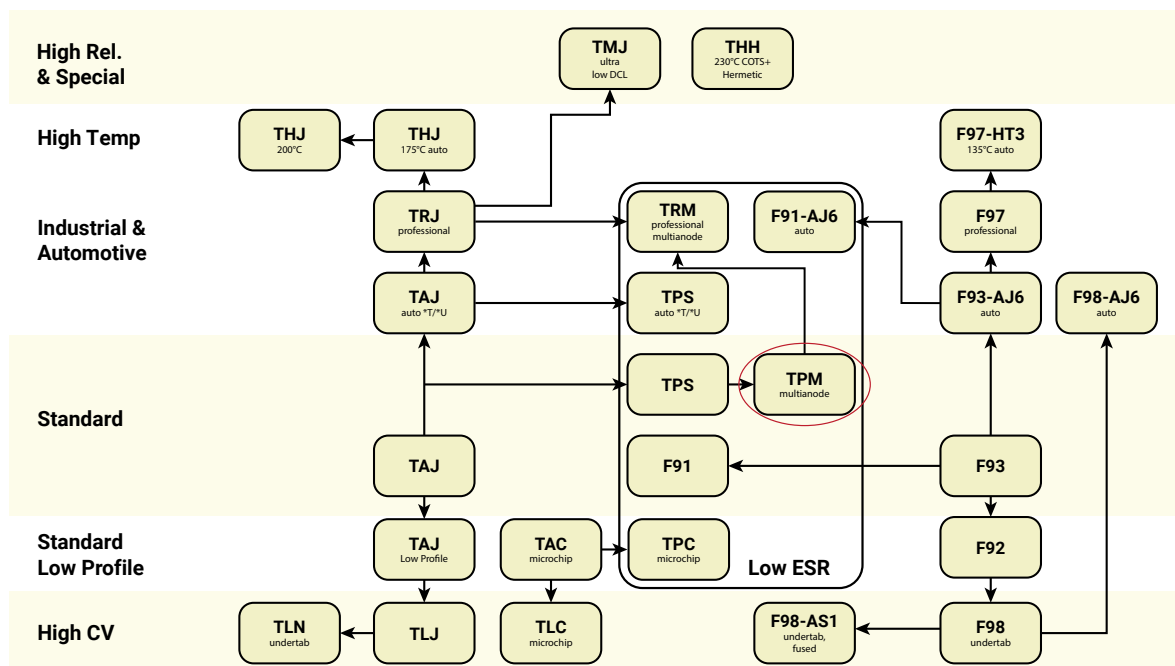
SOLID ELECTROLYTIC CAPACITOR ROADMAP



FIVE CAPACITOR CONSTRUCTION STYLES



SERIES LINE UP : CONVENTIONAL SMD MnO_2



Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

KYOCERA AVX:

TPME157K016R0040	TPME107K020R0035	TPME337M010R0035	TPME476K035R0055	TPME477M006R0030
TPME107M020R0035	TPME686M025R0055	TPME337M010H0035	TPME226M035R0060	TPME336M035R0050
TPME477M006R0018	TPME477K006R0018	TPME107K020H0035	TPME157K016H0040	TPME107M020H0035
TPME477K006H0030	TPME476K035H0055	TPME477M006H0030	TPME107K020H0045	TPME477K006R0030
TPME108K004R0018	TPME108M004R0018	TPME687K006R0023	TPME106M050S0120	TPME477K006S0030
TPME686M025S0055	TPME108K004H0023	TPME228M002R0018	TPME477M010H0023	TPME337K010H0035-X
TPME686K025H0055-X	TPME687K004H0023-X	TPMD227K010R0035	TPMD227M010R0035	TPMD337K006R0025
TPMD337K006R0035	TPMD337M006R0025	TPMD337M006R0035	TPMD687K004R0025	TPMD687M004R0025
TPMD108K002R0025	TPMD108M002R0025	TPMD337K004R0025	TPMD337K004R0035	TPMD337K010R0035
TPMD337M004R0025	TPMD337M004R0035	TPMD337M010R0035	TPMD477K004R0025	TPMD477K004R0035
TPMD477K006R0030	TPMD477M004R0025	TPMD477M004R0035	TPMD477M006R0030	TPME106K050R0120
TPME158K002R0015	TPME226K035R0060	TPME227K016R0025	TPME227K016R0040	TPME227M016R0025
TPME227M016R0040	TPME336K035R0050	TPME337K010R0023	TPME337K010R0035	TPME476K035R0065
TPME476M035R0065	TPME477K006R0023	TPME477K010R0023	TPME477M010R0023	TPME477M010R0030
TPME686K025R0045	TPME686K025R0055	TPME686M025R0045	TPME687K004R0023	TPME687K006R0018
TPME687M004R0018	TPME687M004R0023	TPME687M006R0023	TPMD108K004R0025	TPME477K010H0023
TPME687K006H0023	TPME108M004H0018	TPME108K004H0018	TPME107K020R0045	TPME107M020R0045
TPME157M016R0040	TPME158M002R0015	TPME226M035R0100	TPME336M035R0065	TPME337K010S0035
TPME337M010R0023	TPME477M006R0023	TPMV108M004R0018	TPMV108M004S0018	TPMV687K006R0023
TPMV687M006R0023	TPME227K016H0025	TPME106M050H0120	TPME157K020H0035	TPME157M020H0035