Solid Tantalum Surface Mount Chip Capacitors, Molded Case, 0805 Size

FEATURES

- Small size, suitable for high-density packaging
- Terminations: 100 % matte tin
- Compatible with “high volume” automatic pick and place equipment
- Moisture sensitivity level 1
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb-free

RoHS COMPLIANT

HALOGEN FREE Available

GREEN (5-2008) Available

PERFORMANCE / ELECTRICAL CHARACTERISTICS

Operating Temperature: -55 °C to +125 °C (above +85 °C, voltage derating is required)

Capacitance Range: 0.1 µF to 47 µF

Capacitance Tolerance: ± 10 %, ± 20 %

Voltage Rating: 2.5 V_{DC} to 25 V_{DC}

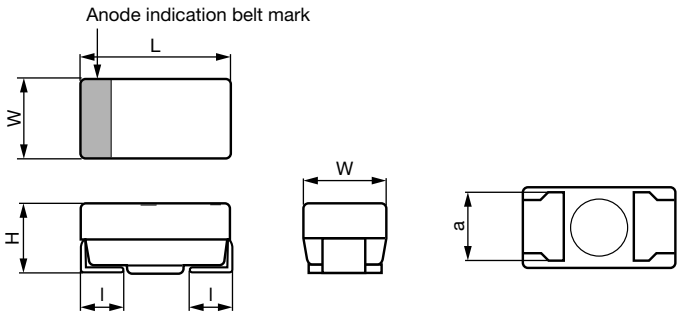
APPLICATIONS

- Industrial
- Audio and visual equipment
- General purpose

ORDERING INFORMATION

TMC	P	0J	107	M	TR	(2)	F
TYPE	CASE CODE	DC VOLTAGE RATING AT +85 °C	CAPACITANCE (µF)	CAPACITANCE TOLERANCE	PACKAGING POLARITY	OPTIONAL	TERMINAL CODE
	See Ratings and Case Codes table.	0E = 2.5 V 0G = 4.0 V 0J = 6.3 V 1A = 10 V 1C = 16 V 1D = 20 V 1E = 25 V	This is expressed in picofarads. The first two digits are the significant figures. The third is the number of zeros to follow.	K = ± 10 % M = ± 20 %	TR = 7" reel, cathodes close to perforation side	Halogen-free (special order)	F = lead (Pb)-free terminations

DIMENSIONS in inches [millimeters]



CASE CODE	EIA SIZE	L	W	H	l	a
P	2012-12	0.080 ± 0.008 [2.0 ± 0.2]	0.049 ± 0.008 [1.25 ± 0.2]	0.047 max. [1.2 max.]	0.020 ± 0.008 [0.5 ± 0.2]	0.035 ± 0.004 [0.9 ± 0.1]

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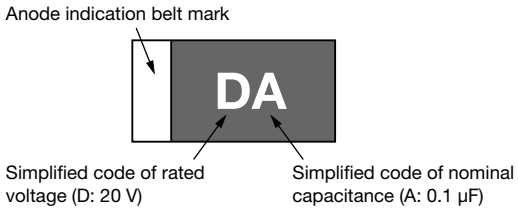
RATINGS AND CASE CODES

µF	2.5 V	4.0 V	6.3 V	10 V	16 V	20 V	25 V
0.10						P	P
0.15						P	
0.22						P	
0.33						P	
0.47						P	P
0.68						P	
1.0					P	P	P
1.5				P	P	P	
2.2				P	P	P	
3.3				P	P		
4.7			P	P	P		
6.8			P	P			
10			P	P			
15	P	P	P				
22	P	P	P				
33	P	P					
47	P	P					

MARKING



SIMPLIFIED VOLTAGE AND CAP CODES

µF	2.5	4.0	6.3	10	16	20	25
0.10						DA	E$\underline{A}$
0.15						DE	
0.22						DJ	
0.33						DN	
0.47						DS	ES
0.68						DW	
1.0					CA	D$\overline{A}$	EA
1.5				AE	CE	D$\overline{E}$	
2.2				AJ	CJ	D$\overline{J}$	
3.3				AN	CN		
4.7			JS	AS	CS		
6.8			JW	AW			
10			JA	aA			
15	eE	GE	jE				
22	eJ	gJ	jJ				
33	e$\overline{N}$	gN					
47	e$\overline{S}$	G$\overline{S}$					

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STANDARD RATINGS

CAPACITANCE (µF)	CASE CODE	PART NUMBER	MAX. DCL AT 25 °C (µA)	MAX. DF AT 25 °C, 120 Hz (%)	MAX. ESR AT +25 °C, 100 kHz (Ω)	MAX. RIPPLE, 100 kHz I_{RMS} (A)
2.5 V_{DC} AT +85 °C; 1.6 V_{DC} AT +125 °C						
15	P	TMCP0E156(1)TRF	0.5	8	4.0	0.126
22	P	TMCP0E226(1)TRF	0.6	10	4.0	0.126
33	P	TMCP0E336(1)TRF	0.8	20	4.0	0.126
47	P	TMCP0E476MTRF	11.8	30	6.0	0.103
4 V_{DC} AT +85 °C; 2.5 V_{DC} AT +125 °C						
15	P	TMCP0G156(1)TRF	0.6	8	4.0	0.126
22	P	TMCP0G226(1)TRF	0.9	10	4.0	0.126
33	P	TMCP0G336(1)TRF	13.2	30	5.9	0.104
47	P	TMCP0G476MTRF	18.8	30	6.0	0.103
6.3 V_{DC} AT +85 °C; 4 V_{DC} AT +125 °C						
4.7	P	TMCP0J475(1)TRF	0.5	8	4.0	0.126
6.8	P	TMCP0J685(1)TRF	0.5	8	4.0	0.126
10	P	TMCP0J106(1)TRF	0.7	8	5.3	0.110
15	P	TMCP0J156(1)TRF	1.0	12	5.9	0.104
22	P	TMCP0J226MTRF	13.9	30	5.9	0.104
10 V_{DC} AT +85 °C; 6.3 V_{DC} AT +125 °C						
1.5	P	TMCP1A155(1)TRF	0.5	8	11.0	0.076
2.2	P	TMCP1A225(1)TRF	0.5	8	8.8	0.085
3.3	P	TMCP1A335(1)TRF	0.5	8	7.7	0.091
4.7	P	TMCP1A475(1)TRF	0.5	8	4.0	0.126
6.8	P	TMCP1A685(1)TRF	0.7	20	4.0	0.126
10	P	TMCP1A106(1)TRF	10.0	20	5.9	0.104
16 V_{DC} AT +85 °C; 10 V_{DC} AT +125 °C						
1.0	P	TMCP1C105(1)TRF	0.5	6	9.9	0.080
1.5	P	TMCP1C155(1)TRF	0.5	8	11.0	0.076
2.2	P	TMCP1C225(1)TRF	0.5	8	8.8	0.085
3.3	P	TMCP1C335(1)TRF	0.6	8	8.8	0.085
4.7	P	TMCP1C475MTRF	0.8	8	8.8	0.085
20 V_{DC} AT +85 °C; 13 V_{DC} AT +125 °C						
0.10	P	TMCP1D104(1)TRF	0.5	6	33.0	0.044
0.15	P	TMCP1D154(1)TRF	0.5	6	27.5	0.048
0.22	P	TMCP1D224(1)TRF	0.5	6	27.5	0.048
0.33	P	TMCP1D334(1)TRF	0.5	6	22.0	0.054
0.47	P	TMCP1D474(1)TRF	0.5	6	22.0	0.054
0.68	P	TMCP1D684(1)TRF	0.5	6	16.5	0.062
1.0	P	TMCP1D105(1)TRF	0.5	6	11.0	0.076
1.5	P	TMCP1D155(1)TRF	0.5	8	11.0	0.076
2.2	P	TMCP1D225MTRF	0.5	8	8.8	0.085
25 V_{DC} AT +85 °C; 16 V_{DC} AT +125 °C						
0.10	P	TMCP1E104(1)TRF	0.5	6	33.0	0.044
0.47	P	TMCP1E474(1)TRF	0.5	6	22.0	0.054
1.0	P	TMCP1E105(1)TRF	0.5	6	11.0	0.076

Note

- Part number definition:
  (1) Tolerance: For 10 % tolerance, specify “K”; for 20 % tolerance, change to “M”

RECOMMENDED VOLTAGE DERATING GUIDELINES (for temperature below +85 °C)

CAPACITOR VOLTAGE RATING	OPERATING VOLTAGE
2.5	1.2
4.0	2.0
6.3	3.1
10	5.0
16	8.0
20	10.0
25	12.5

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POWER DISSIPATION

CASE CODE	MAXIMUM PERMISSIBLE POWER DISSIPATION AT +25 °C (W) IN FREE AIR
P	0.064

STANDARD PACKAGING QUANTITY

CASE CODE	UNITS PER 7" REEL
P	3000

PERFORMANCE CHARACTERISTICS

ITEM	CONDITION	POST TEST PERFORMANCE				
Temperature characteristics	Measure the specified characteristics in each stage		Specified initial value	-55 °C	+85 °C	+125 °C
		Capacitance change	-	-20 % to 0 %	0 % to +20 %	0 % to +20 %
		Dissipation factor (%)	6	10	8	10
			8	12	10	12
			10	14	12	14
			12	16	14	16
			20	24	22	24
			30	60	30	40
		Leakage current	Refer to Standard Ratings table	-	1000 % specified intial value or less	1250 % specified intial value or less
Solder heat resistance	Solder dip: 260 °C ± 5 °C 10 s ± 1 s Reflow: 260 °C 10 s ± 1 s	Capacitance change		Within ± 20 % of initial value		
		Dissipation factor		Initial specified value or less		
		Leakage current		Initial specified value or less		
Moisture resistance no load	Leave at 40 °C and 90 % to 95 % RH for 500 h	Capacitance change		Within ± 20 % of initial value		
		Dissipation factor		Shall not exceed 150 % of initial specified value		
		Leakage current		Initial specified value or less		
High temperature load	85 °C. The rated voltage is applied for 2000 h	Capacitance change		Within ± 20 % of initial value		
		Dissipation factor		Initial specified value or less		
		Leakage current		Shall not exceed 200 % of initial specified value		
Thermal shock	Leave at -55 °C, normal temperature, 125 °C, and normal temperature for 30 min, 3 min, 30 min, and 3 min. Repeat this operation 5 times running	Capacitance change		Within ± 20 % of initial value		
		Dissipation factor		Initial specified value or less		
		Leakage current		Initial specified value or less		
Moisture resistance load	Leave at 40 °C and 90 % to 95 % RH The rated voltage is applied for 500 h	Capacitance change		Within ± 20 % of initial value or less		
		Dissipation factor		Shall not exceed 150 % of initial specified value		
		Leakage current		Shall not exceed 200 % of initial specified value		
Failure rate	85 °C. The rated voltage is applied through a protective resistor of 1 Ω/V.	1 % / 1000 h				

Note

- Test conditions per JIS C5101-1

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