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}

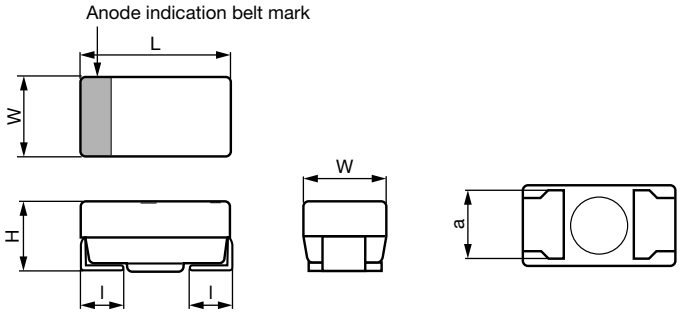
APPLICATIONS

- 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]

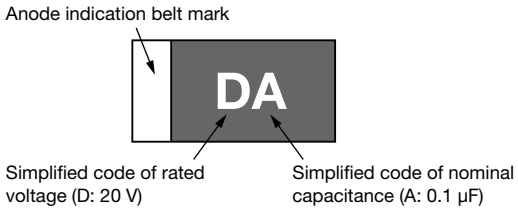
For technical questions, contact: polytech@vishay.com

THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

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	EA
0.15						DE	
0.22						DJ	
0.33						DN	
0.47						DS	ES
0.68						DW	
1.0					CA	DA	EA
1.5				AE	CE	DE	
2.2				AJ	CJ	DJ	
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	eN	gN					
47	eS	GS					

For technical questions, contact: polytech@vishay.com

THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

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

For technical questions, contact: polytech@vishay.com
THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

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

For technical questions, contact: polytech@vishay.com
THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and/or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.

Material Category Policy

Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as RoHS-Compliant fulfill the definitions and restrictions defined under Directive 2011/65/EU of The European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE) - recast, unless otherwise specified as non-compliant.

Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.

Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as Halogen-Free follow Halogen-Free requirements as per JEDEC JS709A standards. Please note that some Vishay documentation may still make reference to the IEC 61249-2-21 definition. We confirm that all the products identified as being compliant to IEC 61249-2-21 conform to JEDEC JS709A standards.