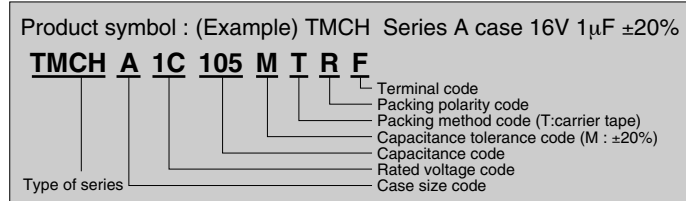


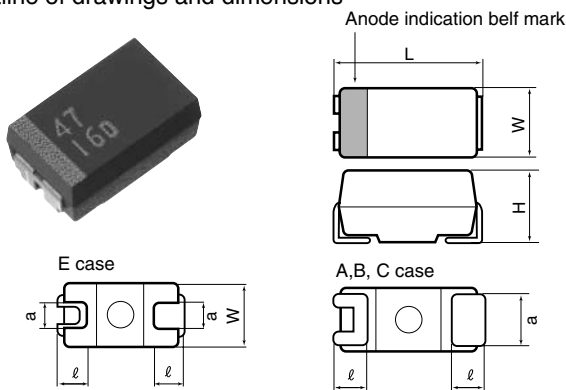
TMCH Series (High Reliability Tantalum Chip Capacitors)

Features

- A moulded type chip capacitor developed on the basis of TMC production technology especially for car electronics applications. Also usable for use in office automation and other computer-based equipment which is required to offer high reliability.
- High heat resistance and high reliability: Improved over the predecessor in high-temperature (125°C) reliability, moisture resistance, and temperature cycling test resistance.



Outline of drawings and dimensions



Dimensions

(Unit : mm)

Case code	Case size				
	L ^{+0.2}	W ^{+0.2}	H ^{+0.2}	l ^{+0.3}	a ^{+0.2}
P	2.0	1.25	1.2	0.5	0.9
A	3.2	1.6	1.6	0.7	1.2
B	3.5	2.8	1.9	0.8	2.2
C	5.8	3.2	2.5	1.3	2.2
E	7.3	4.3 ^{+0.3}	2.8	1.3	2.4

※Please see the page of TMCP Series, about details information of P case.

Standard value and case size

Capacitance μ F	Code	Rated voltage (V.DC)						
		4	7	10	16	20	25	35
		0G	0J	1A	1C	1D	1E	1V
0.10	104							A
0.15	154							A
0.22	224							A
0.33	334					P		A
0.47	474				P		A	A,B
0.68	684				P	A	A	A,B
1.0	105				P,A	A		A,B
1.5	155			P,A	A	A	B	B,C
2.2	225		A	P,A	A	A,B	B	B,C
3.3	335	A	A	P,A	A,B	B	B	B,C
4.7	475	A	A	P,A,B	A,B	B	B,C	C,E
6.8	685		P,A,B	B	B	B,C	C	C,E
10	106	B	P,B	A,B	B,C	C	C,E	E
15	156	B	B	B,C	C	C,E	E	E
22	226		B,C	C	C,E	E	E	
33	336	C	C	C,E	C,E	E		
47	476	C	C,E	C,E	C,E			
68	686	E	E	C,E				
100	107	E	E					

Product specifications	TMCH	P case and the other (Bold - type indication)	Test conditions JIS C5101-1:1998																																						
	Operating temperature range	-55°C ~ +125°C																																							
Rated voltage	DC4 ~ 35V		85°C																																						
Surge voltage	DC5 ~ 45V		85°C																																						
Derated voltage	DC2.5 ~ 22V		125°C																																						
Capacitance	0.1 ~ 100 μ F																																								
Capacitance tolerance	\pm 10% or 20%		Paragraph 4.7, 120 Hz																																						
Leakage current	Refer to Standard product table		Paragraph 4.9, in 5 minutes after the rated voltage is applied.																																						
tan δ	Refer to Standard product table		Paragraph 4.8, 120Hz																																						
Temperature characteristics	<table border="1"> <thead> <tr> <th rowspan="2">ΔC/C</th> <th colspan="3">Initial value</th> <th rowspan="2">ΔC/C</th> <th colspan="3">Initial value</th> </tr> <tr> <th>-55</th> <th>85</th> <th>125</th> <th>-55</th> <th>85</th> <th>125</th> </tr> </thead> <tbody> <tr> <td>tan δ</td> <td>0.04</td> <td>0.04</td> <td>0.05</td> <td>0.06</td> <td>0.06</td> <td>0.10</td> <td>0.08</td> </tr> <tr> <td>Value shown table or less</td> <td>0.06</td> <td>0.06</td> <td>0.07</td> <td>0.08</td> <td>0.10</td> <td>0.10</td> <td>0.12</td> </tr> <tr> <td>LC</td> <td>0.005CV or 0.25μA or less</td> <td>0.005CV or 2.5μA or less</td> <td>0.125CV or 3.12μA or less</td> <td>0.005CV or 0.25μA or less</td> <td>0.005CV or 2.5μA or less</td> <td>0.125CV or 3.12μA or less</td> <td></td> </tr> </tbody> </table>		Δ C/C	Initial value			Δ C/C	Initial value			-55	85	125	-55	85	125	tan δ	0.04	0.04	0.05	0.06	0.06	0.10	0.08	Value shown table or less	0.06	0.06	0.07	0.08	0.10	0.10	0.12	LC	0.005CV or 0.25 μ A or less	0.005CV or 2.5 μ A or less	0.125CV or 3.12 μ A or less	0.005CV or 0.25 μ A or less	0.005CV or 2.5 μ A or less	0.125CV or 3.12 μ A or less		Paragraph 4.24
	Δ C/C	Initial value			Δ C/C	Initial value																																			
-55		85	125	-55		85	125																																		
tan δ	0.04	0.04	0.05	0.06	0.06	0.10	0.08																																		
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LC	0.005CV or 0.25 μ A or less	0.005CV or 2.5 μ A or less	0.125CV or 3.12 μ A or less	0.005CV or 0.25 μ A or less	0.005CV or 2.5 μ A or less	0.125CV or 3.12 μ A or less																																			
Solder heat resistance	Δ C/C \pm 5% or less tan δ Specified initial value or less LC Specified initial value or less	Δ C/C \pm 5% or less tan δ Specified initial value or less LC Specified initial value or less	Solder Dip 260 \pm 5°C A, B case C, E case 10 \pm 1 sec. 5 \pm 0.5 sec. Reflow-260°C 10 \pm 1 sec.																																						
Moisture resistance no load	Δ C/C \pm 5% or less tan δ 150% Specified initial value or less LC 200% Specified initial value or less	Δ C/C \pm 10% or less tan δ 200% Specified initial value or less LC 500% Specified initial value or less	Paragraph 4.22, 85°C 85%RH,1000hrs																																						
High-temperature load	Δ C/C \pm 10% or less tan δ Specified initial value or less LC 125% Specified initial value or less	Δ C/C \pm 20% or less tan δ Specified initial value or less LC 125% Specified initial value or less	Paragraph 4.23, 85°C The rated voltage is applied for 2000 hours.																																						
Thermal shock	Δ C/C \pm 5% or less tan δ Specified initial value or less LC 200% Specified initial value or less	Δ C/C \pm 20% or less tan δ Specified initial value or less LC 200% Specified initial value or less	Leave at -55°C, normal temperature, 125°C, and normal temperature for 30 min., 3 min., 30 min., and 3 min. Repeat this operation 1000 times running.																																						
Moisture resistance load	Δ C/C \pm 5% or less tan δ 150% Specified initial value or less LC 200% Specified initial value or less	Δ C/C \pm 12% or less tan δ 200% Specified initial value or less LC 500% Specified initial value or less	65°C, humidity 90 to 95%RH The rated voltage is applied for 500 hrs.																																						
High temperature load	Δ C/C \pm 10% or less tan δ 150% Specified initial value or less LC 200% Specified initial value or less	Δ C/C \pm 10% or less tan δ 200% Specified initial value or less LC 500% Specified initial value or less	(At 150°C with no load)																																						
Failure rate	0.5% / 1000hrs	0.5% / 1000hrs	85°C. The rated voltage is applied (through a protective resistor of 1 Ω /V).																																						

※This catalog is designed for providing general information. Please inquire of our Sales Department to confirm specifications prior to use.

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