

TANTALUM ELECTROLYTIC CAPACITORS

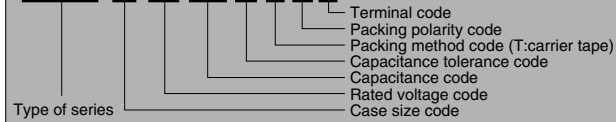
TMCM Series (Miniaturized Tantalum Chip Capacitors with Extended Capacitance Range)

Features

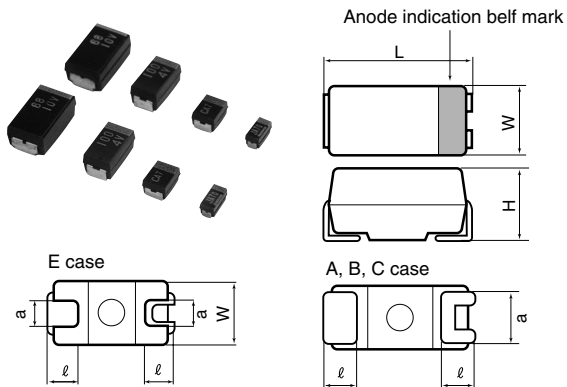
- A model type miniaturized chip capacitor developed on the basis of TMCS production technology ideal for high density component mounting applied in AV equipment.
- Super compact : Reduced size 1/2 to 1/3 in comparison with TMCS.

Product symbol : (Example) TMCM Series A case 7V 10 μ F \pm 20%

TMCM A 0J 106 M T R F



Outline of drawings and dimensions



Dimensions (Unit : mm)

Case code	Case size				
	L \pm 0.2	W \pm 0.2	H \pm 0.2	ϕ \pm 0.3	a \pm 0.2
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 \pm 0.3	2.8	1.3	2.4

Standard value and case size

Capacitance	Code	Rated voltage (V.DC)							
		2.5	4	6.3 (7)	10	16	20	25	35
μ F		0E	0G	0J	1A	1C	1D	1E	1V
0.47	474								A
0.68	684							A	A
1.0	105							A	A
1.5	155							A	B
2.2	225						A	A,B	B
3.3	335					A	A	B	B
4.7	475				A	A	A,B	B	C
6.8	685				A	A	B	C	C
10	106				A	A,B	B,C	C	C,E
15	156		A		A	A,B	C	C,E	E
22	226		A	A	A,B	B,C	C,E	E	E
33	336	A	A	A	B	B,C	(C)E	E	
47	476	A	A	A,B	B,C	C,E	E		
68	686	A,B	A,B	B,C	B,C	E	(E)		
100	107	(A)B,C	(A)B,C	B,C	C	E			
150	157	B,C	B,C	C	E				
220	227	B,C	B,C	C,E	E				
330	337	C,E	C,E	E	(E)				
470	477	E	E	E					

(): Under Developing

For ratings not covered the table, consult Hitachi AIC.

Product specifications	TMCM	Test conditions JIS C5101-3-1998																																								
Operating temperature range	-55°C ~ +125°C																																									
Rated voltage	DC2.5 ~ 35V	85°C																																								
Surge voltage	DC3.2 ~ 45V	85°C																																								
Derated voltage	DC1.6 ~ 22V	125°C																																								
Capacitance	0.47 ~ 470 μ F																																									
Capacitance tolerance	\pm 10% or 20%	Paragraph 7.8, 120 Hz																																								
Leakage current	Refer to table standard product table	Paragraph 7.7, in 5 minutes after the rated voltage is applied.																																								
tan δ	Refer to table standard product table	Paragraph 7.9, 120Hz																																								
Surge withstanding voltage	Δ C/C \pm 5% or less tan δ Specified initial value or less LC Specified initial value or less	Paragraph 7.14																																								
Temperature characteristics	<table border="1"> <thead> <tr> <th></th> <th>Specified initial value</th> <th>-55</th> <th>85</th> <th>125</th> </tr> </thead> <tbody> <tr> <td>Δ C/C</td> <td>-</td> <td>-10 - 0%</td> <td>0 - +10%</td> <td>0 - +12%</td> </tr> <tr> <td>tanδ</td> <td>0.04</td> <td>0.09</td> <td>0.07</td> <td>0.09</td> </tr> <tr> <td rowspan="5">Leakage current or less</td> <td>0.06</td> <td>0.10</td> <td>0.08</td> <td>0.10</td> </tr> <tr> <td>0.08</td> <td>0.12</td> <td>0.10</td> <td>0.12</td> </tr> <tr> <td>0.10</td> <td>0.14</td> <td>0.12</td> <td>0.14</td> </tr> <tr> <td>0.12</td> <td>0.16</td> <td>0.14</td> <td>0.16</td> </tr> <tr> <td>0.16</td> <td>0.20</td> <td>0.18</td> <td>0.20</td> </tr> <tr> <td>0.18</td> <td>0.34</td> <td>0.20</td> <td>0.22</td> </tr> </tbody> </table>		Specified initial value	-55	85	125	Δ C/C	-	-10 - 0%	0 - +10%	0 - +12%	tan δ	0.04	0.09	0.07	0.09	Leakage current or less	0.06	0.10	0.08	0.10	0.08	0.12	0.10	0.12	0.10	0.14	0.12	0.14	0.12	0.16	0.14	0.16	0.16	0.20	0.18	0.20	0.18	0.34	0.20	0.22	Paragraph 7.12
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0.18	0.34	0.20	0.22																																							
Solder heat resistance	Δ C/C \pm 5% or less tan δ Specified initial value or less LC Specified initial value or less	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 leaving	Δ C/C \pm 10% or less tan δ Specified initial value or less LC Specified initial value or less	Paragraph 9.5, 40°C 90 ~ 95%RH, 500h																																								
High-temperature load	Δ C/C \pm 10% or less tan δ Specified initial value or less LC 125% Specified initial value or less	Paragraph 9.10, 85°C The rated voltage is applied for 2000 hours.																																								
Thermal shock	Δ C/C \pm 10% or less tan δ Specified initial value or less LC 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 20 times running.																																								
Moisture resistance load	Δ C/C \pm 10% or less tan δ 150% Specified initial value or less LC 200% Specified initial value or less	40°C, humidity 90 to 95%RH The rated voltage is applied for 500 hours.																																								
Failure rate	1% / 1000h	85°C. The rated voltage is applied (through a protective resistor of 1 Ω /V).																																								

TANTALUM ELECTROLYTIC CAPACITORS

Standard product tables - TCMC series

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Rated voltage V. DC	Capacitance μF	tanδ	Leakage current μA	Case code	Product name
2.5	33	0.08	0.8	A	TMCMA0E336
	47	0.12	1.2	A	TMCMA0E476
		0.18	1.7	A	TMCMA0E686
	68	0.08	1.7	B	TMCMB0E686
		(0.18)	(5.0)	(A)	TMCMA0E107
	100	0.12	2.5	B	TMCMB0E107
		0.08	2.5	C	TMCMB0E107
		0.08	3.8	B	TMCMB0E157
	150	0.08	3.8	C	TMCMC0E157
		0.08	3.8	E	TMCME0E157
		0.18	5.5	B	TMCMB0E227
	220	0.08	5.5	C	TMCMC0E227
		0.08	5.5	E	TMCME0E227
		0.18	8.3	C	TMCME0E337
	330	0.10	8.3	E	TMCME0E337
		0.10	11.8	E	TMCME0E477
4	15	0.08	0.6	A	TMCMA0G156
	22	0.08	0.9	A	TMCMA0G226
	33	0.08	1.3	A	TMCMA0G336
	47	0.12	1.9	A	TMCMA0G476
	68	0.12	5.4	A	TMCMA0G686
		0.08	2.7	B	TMCMB0G686
	100	0.12	4.0	B	TMCMB0G107
		0.08	4.0	C	TMCMC0G107
	150	0.18	6.0	B	TMCMB0G157
		0.08	6.0	C	TMCMC0G157
	220	0.18	17.6	B	TMCMB0G227
		0.12	8.8	C	TMCMC0G227
	330	0.18	13.2	C	TMCMC0G337
		0.10	13.2	E	TMCME0G337
	470	0.10	18.8	E	TMCME0G477
	6.3 (7)	22	0.08	1.5	A
33		0.10	2.3	A	TMCMA0J336
		0.12	5.9	A	TMCMA0J476
47		0.08	3.3	B	TMCMB0J476
		0.10	4.8	B	TMCMB0J686
68		0.08	4.8	C	TMCMC0J686
		0.12	7.0	B	TMCMB0J107
100		0.08	7.0	C	TMCMC0J107
		0.10	10.5	C	TMCMC0J157
220		0.18	15.4	C	TMCMC0J227
		0.08	15.4	E	TMCME0J227
330		0.10	23.1	E	TMCME0J337
470	0.20	32.9	E	TMCME0J477	
10	4.7	0.06	0.5	A	TMCMA1A475
	6.8	0.06	0.7	A	TMCMA1A685
	10	0.08	1.0	A	TMCMA1A106
	15	0.08	1.5	A	TMCMA1A156
		0.12	4.4	A	TMCMA1A226
	22	0.08	2.2	B	TMCMB1A226
		0.08	3.3	B	TMCMB1A336
	47	0.10	4.7	B	TMCMB1A476
		0.08	4.7	C	TMCMC1A476
	68	0.08	6.8	C	TMCMC1A686
	100	0.10	10.0	C	TMCMC1A107
	220	0.08	22.0	E	TMCME1A227

Rated voltage V. DC	Capacitance μF	tanδ	Leakage current μA	Case code	Product name	
16	3.3	0.06	0.5	A	TMCMA1C335	
	4.7	0.06	0.8	A	TMCMA1C475	
		0.06	1.1	A	TMCMA1C685	
	6.8	0.08	1.6	A	TMCMA1C106	
		0.08	1.6	B	TMCMB1C106	
	10	0.08	2.4	B	TMCMB1C156	
	15	0.08	3.5	B	TMCMB1C226	
		0.08	3.5	C	TMCMC1C226	
	22	0.08	5.3	C	TMCMC1C336	
		0.08	7.5	C	TMCMC1C476	
	47	0.08	7.5	E	TMCME1C476	
		0.08	10.9	E	TMCME1C686	
	100	0.08	16.0	E	TMCME1C107	
	20	2.2	0.06	0.5	A	TMCMA1D225
		3.3	0.06	0.7	A	TMCMA1D335
			0.06	0.9	A	TMCMA1D475
4.7		0.06	0.9	B	TMCMB1D475	
		0.06	1.4	B	TMCMB1D685	
6.8		0.08	2.0	B	TMCMB1D106	
		0.08	2.0	C	TMCMC1D106	
22		0.08	4.4	C	TMCMC1D226	
		0.08	4.4	E	TMCME1D226	
47		0.08	9.4	E	TMCME1D476	
25	0.68	0.04	0.5	A	TMCMA1E684	
	1.0	0.04	0.5	A	TMCMA1E105	
	1.5	0.06	0.5	A	TMCMA1E155	
	2.2	0.06	0.6	B	TMCMB1E225	
	3.3	0.06	0.8	B	TMCMB1E335	
	4.7	0.06	1.2	B	TMCMB1E475	
	6.8	0.06	1.7	C	TMCMC1E685	
		0.08	2.5	C	TMCMC1E106	
	10	0.08	3.8	C	TMCMC1E156	
		0.08	3.8	E	TMCME1E156	
	22	0.08	5.5	E	TMCME1E226	
	33	0.08	8.3	E	TMCME1E336	
35	0.47	0.04	0.5	A	TMCMA1V474	
	0.68	0.04	0.5	A	TMCMA1V684	
	1.0	0.04	0.5	A	TMCMA1V105	
	1.5	0.06	0.5	B	TMCMB1V155	
	2.2	0.06	0.8	B	TMCMB1V225	
	3.3	0.06	1.2	B	TMCMB1V335	
	4.7	0.06	1.6	C	TMCMC1V475	
		0.06	2.4	C	TMCMC1V685	
	6.8	0.08	3.5	C	TMCMC1V106	
		0.08	3.5	E	TMCME1V106	
	15	0.08	5.3	E	TMCME1V156	
	22	0.08	7.7	E	TMCME1V226	

Lot indication

Year	Month											
	1	2	3	4	5	6	7	8	9	10	11	12
2002	N	P	Q	R	S	T	U	V	W	X	Y	Z
2003	a	b	c	d	e	f	g	h	j	k	l	m
2004	n	p	q	r	s	t	u	v	w	x	y	z
2005	A	B	C	D	E	F	G	H	J	K	L	M

Marking indication TCMC series

	TCMC * △△□□□○○○	TCMC * △△□□□○○○F
A, B case	<p>Simplified code of rated voltage (G : 4V) Anode indication belt mark Lot indication (for manufacturing in January, 2001) Simplified code of nominal capacitance (A7 : 10μF) *The simplified code is subject to JIS C 5143, paragraph 10 and EIAJ RC-3813, paragraph 7.</p>	<p>Anode indication belt mark Simplified code of rated voltage (G : 4V) Lot indication (for manufacturing in January, 2001) Simplified code of nominal capacitance (A7 : 10μF) *The simplified code is subject to JIS C 5143, paragraph 10 and EIAJ RC-3813, paragraph 7.</p>
C, E case	<p>Nominal capacitance Value (15μF) Anode indication belt mark Lot indication (for manufacturing in January, 2001) Rated voltage (16V)</p>	<p>Anode indication belt mark Nominal capacitance Value (15μF) Lot indication (for manufacturing in January, 2001) Rated voltage (16V)</p>