

TANTALUM ELECTROLYTIC CAPACITORS

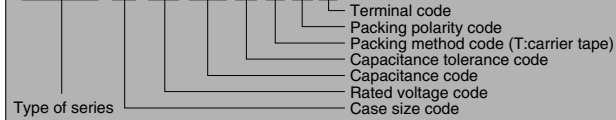
TMCM Series (Miniaturized Tantalum Chip Capacitors with Extended Capacitance Range)

Features

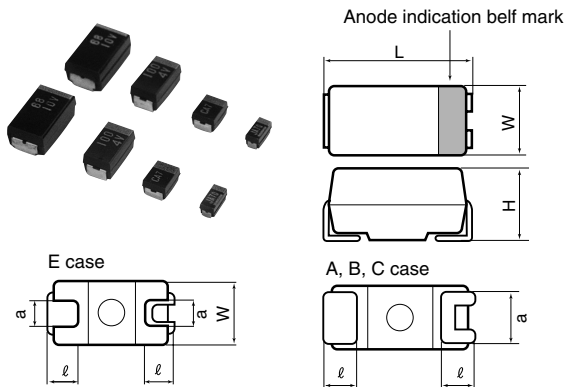
- A model type miniaturized chip capacitor developed on the basis of TMCS production technology ideal for high density component mounting applied in AV equipment.
- Super compact : Reduced size 1/2 to 1/3 in comparison with TMCS.

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></td> <td>0.18</td> <td>0.34</td> <td>0.20</td> <td>0.22</td> </tr> <tr> <td>LC</td> <td>0.01CV or 0.5μA or less</td> <td>-</td> <td>0.1CV or 5μA or less</td> <td>0.125CV or 6.25μA or less</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	LC	0.01CV or 0.5 μ A or less	-	0.1CV or 5 μ A or less	0.125CV or 6.25 μ A or less	Paragraph 7.12
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LC	0.01CV or 0.5 μ A or less	-	0.1CV or 5 μ A or less	0.125CV or 6.25 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	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
	68	0.08	16.0	E	TMCME1C107
		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
	10	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
		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
		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>*The simplified code is subject to JIS C 5143, paragraph 10 and EIAJ RC-3813, paragraph 7.</p>	<p>*The simplified code is subject to JIS C 5143, paragraph 10 and EIAJ RC-3813, paragraph 7.</p>
C, E case		