

TANTALUM ELECTROLYTIC CAPACITORS

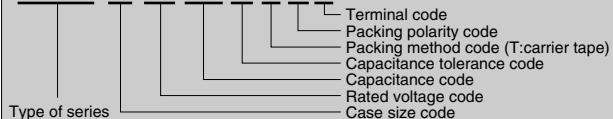
TMCM Series (Miniaturized Tantalum Chip Capacitors with Extended Capacitance Range)

Features

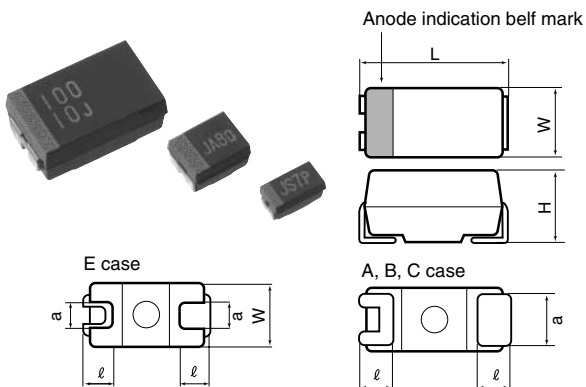
- A model type miniaturized chip capacitor developed on the basis of TMCS production technology ideal for high density component mounting applied in AV equipment.
- Super compact : Reduced size 1/2 to 1/3 in comparison with TMCS.

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

For ratings not covered the table, consult Hitachi AIC.

Product specifications	TMCM	Test conditions JIS C5101-1:1998																																																
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 4.7, 120 Hz																																																
Leakage current	Refer to table standard product table	Paragraph 4.9, in 5 minutes after the rated voltage is applied.																																																
tan δ	Refer to table standard product table	Paragraph 4.8, 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 4.26																																																
Temperature characteristics	<table border="1"> <thead> <tr> <th>Storage rate</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="7">Moisture resistance 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> <tr> <td>0.20</td> <td>0.36</td> <td>0.22</td> <td>0.24</td> </tr> <tr> <td>LC</td> <td>Refer to standard product table</td> <td>-</td> <td>100% or less specified initial value or less</td> <td>1250% or less specified initial value or less</td> </tr> </tbody> </table>	Storage rate	-55	85	125	Δ C/C	-	-10 ~ 0%	0 ~ +10%	0 ~ +12%	tan δ	0.04	0.09	0.07	0.09	Moisture resistance 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	0.20	0.36	0.22	0.24	LC	Refer to standard product table	-	100% or less specified initial value or less	1250% or less specified initial value or less	Paragraph 4.24
Storage rate	-55	85	125																																															
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LC	Refer to standard product table	-	100% or less specified initial value or less	1250% or less specified initial value 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	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 10% or less tan δ Specified initial value or less LC Specified initial value or less	Paragraph 4.22, 40°C 90 ~ 95%RH, 500hours																																																
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 4.23, 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 5 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% / 1000hours	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.

Standard product tables - TCMC series

Standard product table - TCMC series

Rated voltage V. DC	Capacitance μF	tanδ	Leakage current μA	Case code	Product name	
2.5	6.8	0.06	0.5	A	TMCMA0E685	
	10	0.08	0.5	A	TMCMA0E106	
	15	0.08	0.5	A	TMCMA0E156	
	22	0.08	0.6	A	TMCMA0E226	
		0.08	0.6	B	TMCMB0E226	
	33	0.08	0.8	A	TMCMA0E336	
		0.08	0.8	B	TMCMB0E336	
	47	0.12	1.2	A	TMCMA0E476	
		0.08	1.2	B	TMCMB0E476	
	68	0.18	1.7	A	TMCMA0E686	
		0.08	1.7	B	TMCMB0E686	
		0.08	1.7	C	TMCMC0E686	
	100	0.18	5.0	A	TMCMA0E107	
		0.12	2.5	B	TMCMB0E107	
		0.08	2.5	C	TMCMC0E107	
		0.30	7.5	A	TMCMA0E157	
	150	0.18	3.8	B	TMCMB0E157	
		0.08	3.8	C	TMCMC0E157	
		0.08	3.8	E	TMCME0E157	
	220	0.30	27.5	A	TMCMA0E227	
		0.18	5.5	B	TMCMB0E227	
		0.08	5.5	C	TMCMC0E227	
		0.08	5.5	E	TMCME0E227	
	330	0.30	16.5	B	TMCMB0E337	
		0.18	8.3	C	TMCMC0E337	
		0.10	8.3	E	TMCME0E337	
	470	0.30	58.8	B	TMCMB0E477	
		0.18	11.8	C	TMCMC0E477	
		0.10	11.8	E	TMCME0E477	
	4	4.7	0.06	0.5	A	TMCMA0G475
		6.8	0.06	0.5	A	TMCMA0G685
		10	0.08	0.5	A	TMCMA0G106
		15	0.08	0.6	A	TMCMA0G156
			0.08	0.6	B	TMCMB0G156
		22	0.08	0.9	A	TMCMA0G226
			0.08	0.9	B	TMCMB0G226
33		0.08	1.3	A	TMCMA0G336	
		0.08	1.3	B	TMCMB0G336	
47		0.12	1.9	A	TMCMA0G476	
		0.08	1.9	B	TMCMB0G476	
		0.08	1.9	C	TMCMC0G476	
68		0.12	5.4	A	TMCMA0G686	
		0.08	2.7	B	TMCMB0G686	
		0.08	2.7	C	TMCMC0G686	
		0.30	8.0	A	TMCMA0G107	
100		0.12	4.0	B	TMCMB0G107	
		0.08	4.0	C	TMCMC0G107	
		0.08	4.0	E	TMCME0G107	
		0.30	60.0	A	TMCMA0G157	
150		0.18	6.0	B	TMCMB0G157	
		0.08	6.0	C	TMCMC0G157	
		0.08	6.0	E	TMCME0G157	
220		0.30	88.0	A	TMCMA0G227	
		0.18	17.6	B	TMCMB0G227	
		0.12	8.8	C	TMCMC0G227	
		0.08	8.8	E	TMCME0G227	
330		0.30	26.4	B	TMCMB0G337	
		0.18	13.2	C	TMCMC0G337	
		0.10	13.2	E	TMCME0G337	
470		0.10	18.8	E	TMCME0G477	
6.3 (7)		3.3	0.06	0.5	A	TMCMA0J335
		4.7	0.06	0.5	A	TMCMA0J475
		6.8	0.06	0.5	A	TMCMA0J685
		10	0.08	0.7	A	TMCMA0J106
			0.08	0.7	B	TMCMB0J106
	15	0.08	1.1	A	TMCMA0J156	
		0.08	1.1	B	TMCMB0J156	
	22	0.08	1.5	A	TMCMA0J226	
		0.08	1.5	B	TMCMB0J226	
	33	0.10	2.3	A	TMCMA0J336	
		0.08	2.3	B	TMCMB0J336	
		0.08	2.3	C	TMCMC0J336	
	47	0.12	5.9	A	TMCMA0J476	
		0.08	3.3	B	TMCMB0J476	

Rated voltage V. DC	Capacitance μF	tanδ	Leakage current μA	Case code	Product name
6.3 (7)	47	0.08	3.3	C	TMCMC0J476
	68	0.18	8.6	A	TMCMA0J686
		0.10	4.8	B	TMCMB0J686
		0.08	4.8	C	TMCMC0J686
		0.08	4.8	E	TMCME0J686
	100	0.30	31.5	A	TMCMA0J107
		0.12	7.0	B	TMCMB0J107
		0.08	7.0	C	TMCMC0J107
		0.08	7.0	E	TMCME0J107
		0.18	18.9	B	TMCMB0J157
	150	0.10	10.5	C	TMCMC0J157
		0.08	10.5	E	TMCME0J157
		0.30	27.7	B	TMCMB0J227
	220	0.18	15.4	C	TMCMC0J227
		0.10	15.4	E	TMCME0J227
		0.30	23.1	C	TMCMC0J337
330	0.10	23.1	E	TMCME0J337	
	0.20	32.9	E	TMCME0J477	
10	2.2	0.06	0.5	A	TMCMA1A225
	3.3	0.06	0.5	A	TMCMA1A335
	4.7	0.06	0.5	A	TMCMA1A475
	6.8	0.06	0.7	A	TMCMA1A685
		0.06	0.7	B	TMCMB1A685
	10	0.08	1.0	A	TMCMA1A106
		0.08	1.0	B	TMCMB1A106
	15	0.08	1.5	A	TMCMA1A156
		0.08	1.5	B	TMCMB1A156
	22	0.12	4.4	A	TMCMA1A226
		0.08	2.2	B	TMCMB1A226
		0.08	2.2	C	TMCMC1A226
	33	0.18	6.6	A	TMCMA1A336
		0.08	3.3	B	TMCMB1A336
		0.08	3.3	C	TMCMC1A336
		0.20	9.4	A	TMCMA1A476
	47	0.10	4.7	B	TMCMB1A476
		0.08	4.7	C	TMCMC1A476
		0.08	4.7	E	TMCME1A476
	68	0.18	6.8	B	TMCMB1A686
0.08		6.8	C	TMCMC1A686	
0.08		6.8	E	TMCME1A686	
100	0.30	20.0	B	TMCMB1A107	
	0.10	10.0	C	TMCMC1A107	
	0.08	10.0	E	TMCME1A107	
	0.18	15.0	C	TMCMC1A157	
150	0.08	15.0	E	TMCME1A157	
	0.20	22.0	E	TMCME1A227	
330	0.20	33.0	E	TMCME1A337	
16	1.5	0.06	0.5	A	TMCMA1C155
	2.2	0.06	0.5	A	TMCMA1C225
	3.3	0.06	0.5	A	TMCMA1C335
	4.7	0.06	0.8	A	TMCMA1C475
		0.06	0.8	B	TMCMB1C475
	6.8	0.06	1.1	A	TMCMA1C685
		0.06	1.1	B	TMCMB1C685
	10	0.08	1.6	A	TMCMA1C106
		0.08	1.6	B	TMCMB1C106
	15	0.12	2.4	A	TMCMA1C156
		0.08	2.4	B	TMCMB1C156
		0.08	2.4	C	TMCMC1C156
	22	0.16	7.0	A	TMCMA1C226
		0.08	3.5	B	TMCMB1C226
		0.08	3.5	C	TMCMC1C226
		0.12	5.3	B	TMCMB1C336
	33	0.08	5.3	C	TMCMC1C336
		0.08	5.3	E	TMCME1C336
		0.20	7.5	B	TMCMB1C476
	47	0.08	7.5	C	TMCMC1C476
0.08		7.5	E	TMCME1C476	
0.20		10.9	C	TMCMC1C686	
68	0.08	10.9	E	TMCME1C686	
	0.20	16.0	C	TMCMC1C107	
100	0.08	16.0	E	TMCME1C107	
	1	0.04	0.5	A	TMCMA1D105
20	1.5	0.06	0.5	A	TMCMA1D155

Standard product table - TCMC series

Rated voltage V. DC	Capacitance μF	tanδ	Leakage current μA	Case code	Product name
20	2.2	0.06	0.5	A	TMCMA1D225
		0.06	0.7	A	TMCMA1D335
	3.3	0.06	0.7	B	TMCMB1D335
		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	3.0	B	TMCMB1D156
		0.08	3.0	C	TMCMC1D156
	22	0.08	4.4	B	TMCMB1D226
		0.08	4.4	C	TMCMC1D226
		0.08	4.4	E	TMCME1D226
	33	0.08	6.6	C	TMCMC1D336
		0.08	6.6	E	TMCME1D336
	47	0.08	9.4	E	TMCME1D476
	68	0.08	13.6	E	TMCME1D686
	25	0.68	0.04	0.5	A
1		0.04	0.5	A	TMCMA1E105
1.5		0.06	0.5	A	TMCMA1E155
2.2		0.06	0.6	A	TMCMA1E225
		0.06	0.6	B	TMCMB1E225
3.3		0.06	0.8	A	TMCMA1E335
		0.06	0.8	B	TMCMB1E335
4.7		0.08	1.2	A	TMCMA1E475
		0.06	1.2	B	TMCMB1E475
6.8		0.06	1.7	C	TMCMC1E685
10		0.08	2.5	C	TMCMC1E106
		0.08	3.8	C	TMCMC1E156
15		0.08	3.8	E	TMCME1E156
		0.08	5.5	C	TMCMC1E226
22		0.08	5.5	E	TMCME1E226
33		0.08	8.3	E	TMCME1E336
47		0.08	11.8	E	TMCME1E476
35		0.47	0.04	0.5	A
	0.68	0.04	0.5	A	TMCMA1V684
	1	0.04	0.5	A	TMCMA1V105
	1.5	0.06	0.5	A	TMCMA1V155
		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
	6.8	0.06	2.4	C	TMCMC1V685
	10	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
2007	a	b	c	d	e	f	g	h	j	k	l	m
2008	n	p	q	r	s	t	u	v	w	x	y	z
2009	A	B	C	D	E	F	G	H	J	K	L	M
2010	N	P	Q	R	S	T	U	V	W	X	Y	Z

Marking indication TCMC series

