

TANTALUM ELECTROLYTIC CAPACITORS

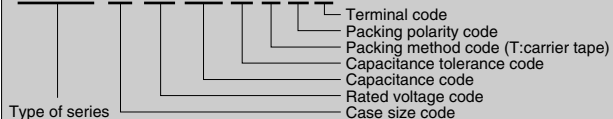
TMCM Series (Miniaturized Tantalum Chip Capacitors with Extended Capacitance Range)

Features

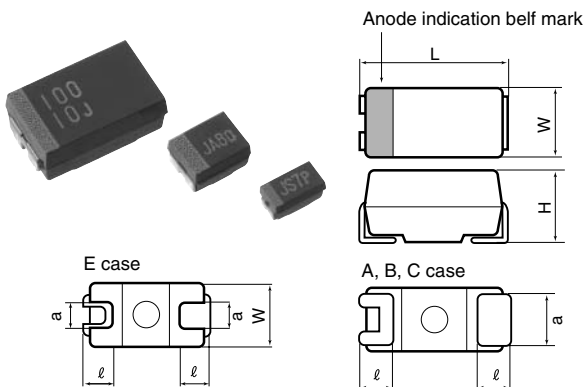
- A model type miniaturized chip capacitor developed on the basis of TMCS production technology ideal for high density component mounting applied in AV equipment.
- Super compact : Reduced size 1/2 to 1/3 in comparison with TMCS.

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	ℓ \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 $^{+0.3}$	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	A,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,B	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		Specified initial value	-55	85	125	Paragraph 4.24
Δ C/C	-	-10 - 0%	0 - +10%	0 - +12%		
tan δ	0.04	0.09	0.07	0.09		
Maximum life 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	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
		0.08	0.6	A	TMCMA0E226
	22	0.08	0.6	B	TMCMB0E226
		0.08	0.8	A	TMCMA0E336
	33	0.08	0.8	B	TMCMB0E336
		0.12	1.2	A	TMCMA0E476
	47	0.08	1.2	B	TMCMB0E476
		0.18	1.7	A	TMCMA0E686
	68	0.08	1.7	B	TMCMB0E686
		0.08	1.7	C	TMCMC0E686
		0.18	5.0	A	TMCMA0E107
	100	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
	150	0.18	18.9	B	TMCMB0J157
		0.10	10.5	C	TMCMC0J157
		0.08	10.5	E	TMCME0J157
	220	0.30	27.7	B	TMCMB0J227
		0.18	15.4	C	TMCMC0J227
		0.10	15.4	E	TMCME0J227
	330	0.30	23.1	C	TMCMC0J337
0.10		23.1	E	TMCME0J337	
470	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
	47	0.20	9.4	A	TMCMA1A476
		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	
150	0.18	15.0	C	TMCMC1A157	
	0.08	15.0	E	TMCME1A157	
220	0.12	22.0	E	TMCME1A227	
330	0.30	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
	33	0.12	5.3	B	TMCMB1C336
0.08		5.3	C	TMCMC1C336	
0.08		5.3	E	TMCME1C336	
47	0.20	7.5	B	TMCMB1C476	
	0.08	7.5	C	TMCMC1C476	
	0.08	7.5	E	TMCME1C476	
68	0.20	10.9	C	TMCMC1C686	
	0.08	10.9	E	TMCME1C686	
100	0.20	16.0	C	TMCMC1C107	
	0.08	16.0	E	TMCME1C107	
20	1	0.04	0.5	A	TMCMA1D105
	1.5	0.06	0.5	A	TMCMA1D155

TANTALUM ELECTROLYTIC CAPACITORS

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	TMCMA1E684
	1	0.04	0.5	A	TMCMA1E105
	1.5	0.06	0.5	A	TMCMA1E155
		0.06	0.6	A	TMCMA1E225
	2.2	0.06	0.6	B	TMCMB1E225
		0.06	0.8	A	TMCMA1E335
	3.3	0.06	0.8	B	TMCMB1E335
		0.08	1.2	A	TMCMA1E475
	4.7	0.06	1.2	B	TMCMB1E475
		0.08	1.7	B	TMCMB1E685
	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
	15	0.08	5.5	C	TMCMC1E226
		0.08	5.5	E	TMCME1E226
22	0.08	8.3	E	TMCME1E336	
47	0.08	11.8	E	TMCME1E476	
35	0.47	0.04	0.5	A	TMCMA1V474
	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	0.08	0.8	A	TMCMA1V225
		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

TCMC * △ □ □ □ ○ ○ ○ F	
A, B case	<p>Anode indication belt mark Simplified code of rated voltage (G : 4V) Lot indication (n: for manufacturing in January, 2008) Simplified code of nominal capacitance (A7 : 10μF)</p>
C, E case	<p>Anode indication belt mark Nominal capacitance Value (15μF) Lot indication (n: for manufacturing in January, 2008) Rated voltage (16V)</p>