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

Features

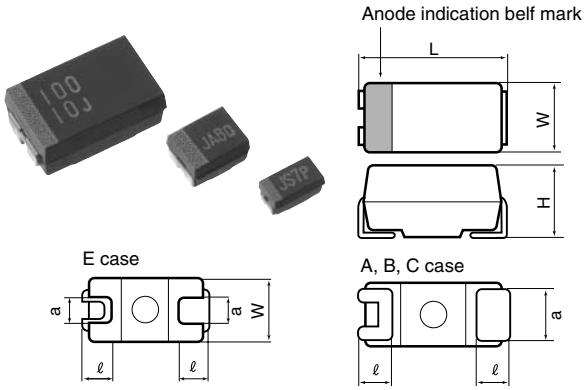
- A model type miniaturized chip capacitor developed on the basis of TMCS production technology ideal for high density component mounting applied in AV equipment.
- Super compact : Reduced size 1/2 to 1/3 in comparison with TMCS.

Product symbol : (Example) TMCM Series A case 7V 10μF ±20%

TMCM A 0J 106 M T R F

- F — Terminal code
- R — Packing polarity code
- T — Packing method code (T:carrier tape)
- M — Capacitance tolerance code (M : ± 20%)
- 106 — Capacitance code
- 0J — Rated voltage code
- A — Case size code
- TMCM — Type of series

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
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
μF	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 ~ 470μF	
Capacitance tolerance	±10% or 20%	Paragraph 4.7, 120 Hz
Leakage current	Refer to table standard porduct table	Paragraph 4.9, in 5 minutes after the rated voltage is applied.
tanδ	Refer to table standard porduct table	Paragraph 4.8, 120Hz
Surge withstanding voltage	△C/C ±5% or less tanδ Specified initial value or less LC Specified initial value or less	Paragraph 4.26
Temperature characteristics	(see nested table)	Paragraph 4.24
Solder heat resistance	△C/C ±5% or less tanδ Specified initial value or less LC Specified initial value or less	Solder Dip 260±5°C A, B case C, E case 10±1 sec. 5±0.5 sec. Reflow–260°C 10±1 sec.
Moisture resistance no load	△C/C ±10% or less tanδ Specified initial value or less LC Specified initial value or less	Paragraph 4.22, 40°C 90 ~ 95%RH,500hours
High-temperature load	△C/C ±10% or less tanδ 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	△C/C ±10% or less tanδ 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	△C/C ±10% or less tanδ 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).

Temperature characteristics nested table:

	Specified initial value	–55	85	125
△C/C	–	-10 ~ 0%	0 ~ +10%	0 ~ +12%
tanδ	0.04	0.09	0.07	0.09
Value shown table 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
	0.30	0.60	0.30	0.40
LC	Refer to standard product table	–	1000% or less specified initial value or less	1250% or less specified initial value or less

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

Standard product tables - TMCM series

Standard product table - TMCM 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
	150	0.30	7.5	A	TMCMA0E157
		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
	100	0.30	8.0	A	TMCMA0G107
		0.12	4.0	B	TMCMB0G107
		0.08	4.0	C	TMCMC0G107
		0.08	4.0	E	TMCME0G107
	150	0.30	60.0	A	TMCMA0G157
		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

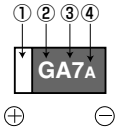
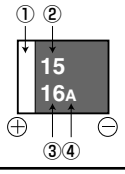
Standard product table - TMCM series

Rated voltage V. DC	Capacitance μF	tanδ	Leakage current μA	Case code	Product name
20	2.2	0.06	0.5	A	TMCMA1D225
	3.3	0.06	0.7	A	TMCMA1D335
		0.06	0.7	B	TMCMB1D335
	4.7	0.06	0.9	A	TMCMA1D475
		0.06	0.9	B	TMCMB1D475
	6.8	0.06	1.4	B	TMCMB1D685
	10	0.08	2.0	B	TMCMB1D106
		0.08	2.0	C	TMCMC1D106
	15	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
	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	0.08	1.7	B	TMCMB1E685
		0.06	1.7	C	TMCMC1E685
	10	0.08	2.5	C	TMCMC1E106
	15	0.08	3.8	C	TMCMC1E156
		0.08	3.8	E	TMCME1E156
	22	0.08	5.5	C	TMCMC1E226
		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	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
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
2011	a	b	c	d	e	f	g	h	j	k	l	m
2012	n	p	q	r	s	t	u	v	w	x	y	z

Marking indication TMCM series

	TMCM＊△△□□□○○○F
A, B case	 ①Anode indication belt mark ②Simplified code of rated voltage (G : 4V) ③Simplified code of nominal capacitance (A7 : 10μF) ④Lot indication (A:for manufacturing in January, 2009)
C, E case	 ①Anode indication belt mark ②Nominal capacitance Volue (15μF) ③Rated voltage (16V) ④Lot indication (A:for manufacturing in January, 2009)