TMCH Series (High Reliability Tantalum Chip Capacitors)

Features

- A moulded type chip capacitor developed on the basis of TMC production technology especially for car electronics applications. Also usable for use in office automation and other computer-based equipment which is required to offer high reliability.
- High heat resistance and high reliability: Improved over the predecessor in high-temperature (125°C) reliability, moisture resistance, and temperature cycling test resistance.

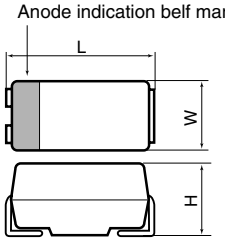
Product symbol : (Example) TMCH Series A case 16V 1µF ±20%

TMCH A 1C 105 M T R F

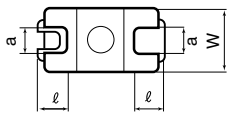
- F — Terminal code
- R — Packing polarity code
- T — Packing method code (T:carrier tape)
- M — Capacitance tolerance code (M : ±20%)
- 105 — Capacitance code
- 1C — Rated voltage code
- A — Case size code
- TMCH — Type of series

Outline of drawings and dimensions

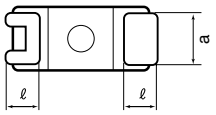




E case



A,B, C case



※Please see the page of TMCP Series, about details information of P case.

Dimensions (Unit : mm)

Case code	Case size				
	L±0.2	W±0.2	H±0.2	ℓ ±0.3	a±0.2
P	2.0	1.25	1.2	0.5	0.9
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)						
		4	7	10	16	20	25	35
µF	Code	0G	0J	1A	1C	1D	1E	1V
0.10	104							A
0.15	154							A
0.22	224							A
0.33	334					P		A
0.47	474				P		A	A,B
0.68	684				P	A	A	A,B
1.0	105				P,A	A		A,B
1.5	155			P,A	A	A	B	B,C
2.2	225		A	P,A	A	A,B	B	B,C
3.3	335	A	A	P,A	A,B	B	B	B,C
4.7	475	A	A	P,A,B	A,B	B	B,C	C,E
6.8	685		P,A,B	B	B	B,C	C	C,E
10	106	B	P,B	**A**,B	B,C	C	C,E	E
15	156	B	B	B,C	C	C,E	E	E
22	226		B,C	C	C,E	E	E	
33	336	C	C	C,E	C,E	E		
47	476	C	C,E	C,E	**C**,E			
68	686	E	E	**C**,E				
100	107	E	E					

( ) brackets ; in development.

Product specifications	TMCH	P case and the other (Bold - type indication)	Test conditions JIS C5101-1:1998
Operating temperature range	–55°C ~ +125°C		
Rated voltage	DC4 ~ 35V		85°C
Surge voltage	DC5 ~ 45V		85°C
Derated voltage	DC2.5 ~ 22V		125°C
Capacitance	0.1 ~ 100µF		
Capacitance tolerance	±10% or 20%		Paragraph 4.7, 120 Hz
Leakage current	Refer to Standard product table		Paragraph 4.9, in 5 minutes after the rated voltage is applied.
tanδ	Refer to Standard product table		Paragraph 4.8, 120Hz
Surge withstanding voltage	△C/C ±5% or less tan δ Specified initial value or less LC Specified initial value or less	△C/C ±10% or less tan δ Specified initial value or less LC Specified initial value or less	Paragraph 4.26
Temperature characteristics	Specified initial value: △C/C —; tan δ 0.04 / 0.04 / 0.05 / 0.05; Value shown table or less 0.06 / 0.06 / 0.07 / 0.07; 0.08 / 0.08 / 0.10 / 0.12; LC 0.005CV or 0.25µA or less / — / 0.05CV or 2.5µA or less / 0.125CV or 3.12µA or less −55: −10~0%; 85: 0~+10%; 125: 0~+12%	Specified initial value: △C/C —; tan δ 0.06 / 0.10 / 0.08 / 0.10; Value shown table or less 0.08 / 0.10 / 0.10 / 0.12; LC 0.005CV or 0.25µA or less / — / 0.05CV or 2.5µA or less / 0.125CV or 3.12µA or less −55: −20~0%; 85: 0~+10%; 125: 0~+12%	Paragraph 4.24
Solder heat resistance	△C/C ±5% or less tan δ Specified initial value or less LC Specified initial value or less	△C/C ±5% or less tan δ 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 ±5% or less tan δ 150% Specified initial value or less LC 200% Specified initial value or less	△C/C ±10% or less tan δ 200% Specified initial value or less LC 500% Specified initial value or less	Paragraph 4.22, 85°C 85%RH,1000hrs
High-temperature load	△C/C ±10% or less tan δ Specified initial value or less LC 125% Specified initial value or less	△C/C ±20% 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	△C/C ±5% or less tan δ Specified initial value or less LC 200% Specified initial value or less	△C/C ±20% or less tan δ Specified initial value or less LC 200% 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 1000 times running.
Moisture resistance load	△C/C ±5% or less tan δ 150% Specified initial value or less LC 200% Specified initial value or less	△C/C ±12% or less tan δ 200% Specified initial value or less LC 500% Specified initial value or less	65°C, humidity 90 to 95%RH The rated voltage is applied for 500 hrs.
High temperature load	△C/C ±10% or less tan δ 150% Specified initial value or less LC 200% Specified initial value or less	△C/C ±10% or less tan δ 200% Specified initial value or less LC 500% Specified initial value or less	(At 150˚C with no load)
Failure rate	0.5% / 1000hrs	0.5% / 1000hrs	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.

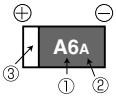
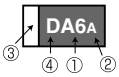
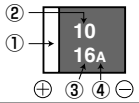
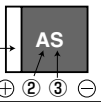
Standard product tables - TMCH series

Standard product table - TMCH series

Rated voltage V. DC	Capacitance μF	tanδ	Leakage current μA	Case code	Product name
4	3.3	0.06	0.25	A	TMCHA0G335
	4.7	0.06	0.25	A	TMCHA0G475
	10	0.06	0.25	B	TMCHB0G106
	15	0.06	0.30	B	TMCHB0G156
	33	0.06	0.66	C	TMCHC0G336
	47	0.06	0.94	C	TMCHC0G476
	68	0.06	1.36	E	TMCHE0G686
	100	0.06	2.00	E	TMCHE0G107
7（6.3）	2.2	0.06	0.25	A	TMCHA0J225
	3.3	0.06	0.25	A	TMCHA0J335
	4.7	0.06	0.25	A	TMCHA0J475
	6.8	0.06	0.25	P	TMCHP0J685
		0.06	0.25	A	TMCHA0J685
		0.06	0.25	B	TMCHB0J685
	10	0.08	0.31	P	TMCHP0J106
		0.06	0.35	B	TMCHB0J106
	15	0.06	0.52	B	TMCHB0J156
	22	0.06	0.77	B	TMCHB0J226
		0.06	0.77	C	TMCHC0J226
	33	0.06	1.15	C	TMCHC0J336
	47	0.06	1.64	C	TMCHC0J476
		0.06	1.64	E	TMCHE0J476
	68	0.04	2.38	E	TMCHE0J686
	100	0.06	3.50	E	TMCHE0J107
10	1.5	0.08	0.25	P	TMCHP1A155
		0.06	0.25	A	TMCHA1A155
	2.2	0.08	0.25	P	TMCHP1A225
		0.06	0.25	A	TMCHA1A225
	3.3	0.08	0.25	P	TMCHP1A335
		0.06	0.25	A	TMCHA1A335
	4.7	0.08	0.25	P	TMCHP1A475
		0.06	0.25	A	TMCHA1A475
		0.06	0.25	B	TMCHB1A475
	6.8	0.06	0.34	B	TMCHB1A685
	10	0.08	0.50	A	TMCHA1A106
		0.06	0.50	B	TMCHB1A106
	15	0.06	0.75	B	TMCHB1A156
		0.06	0.75	C	TMCHC1A156
	22	0.06	1.10	C	TMCHC1A226
	33	0.06	1.65	C	TMCHC1A336
		0.06	1.65	E	TMCHE1A336
	47	0.08	2.35	C	TMCHC1A476
		0.06	2.35	E	TMCHE1A476
	68	0.08	3.40	C	TMCHC1A686
		0.08	3.40	E	TMCHE1A686
16	0.47	0.06	0.25	P	TMCHP1C474
	0.68	0.06	0.25	P	TMCHP1C684
	1.0	0.06	0.25	P	TMCHP1C105
		0.04	0.25	A	TMCHA1C105
	1.5	0.06	0.25	A	TMCHA1C155
	2.2	0.06	0.25	A	TMCHA1C225
	3.3	0.08	0.26	P	TMCHP1C335
		0.06	0.26	A	TMCHA1C335
		0.06	0.26	B	TMCHB1C335
	4.7	0.06	0.37	A	TMCHA1C475
		0.06	0.37	B	TMCHB1C475
	6.8	0.06	0.54	B	TMCHB1C685
	10	0.06	0.80	B	TMCHB1C106
		0.06	0.80	C	TMCHC1C106
	15	0.06	1.20	C	TMCHC1C156
	22	0.06	1.76	C	TMCHC1C226
		0.06	1.76	E	TMCHE1C226
	33	0.08	2.64	C	TMCHC1C336
		0.06	2.64	E	TMCHE1C336
	47	0.08	3.76	C	TMCHC1C476
		0.08	3.76	E	TMCHE1C476
20	0.33	0.06	0.25	P	TMCHP1D334
	0.68	0.04	0.25	A	TMCHA1D684
	1.0	0.04	0.25	A	TMCHA1D105
	1.5	0.06	0.25	A	TMCHA1D155
	2.2	0.06	0.25	A	TMCHA1D225
		0.06	0.25	B	TMCHB1D225
	3.3	0.06	0.33	B	TMCHB1D335
	4.7	0.06	0.47	B	TMCHB1D475

Rated voltage V. DC	Capacitance μF	tanδ	Leakage current μA	Case code	Product name
20	6.8	0.06	0.68	B	TMCHB1D685
		0.06	0.68	C	TMCHC1D685
	10	0.06	1.00	C	TMCHC1D106
	15	0.06	1.50	C	TMCHC1D156
		0.06	1.50	E	TMCHE1D156
	22	0.06	2.20	E	TMCHE1D226
	33	0.06	3.30	E	TMCHE1D336
25	0.47	0.04	0.25	A	TMCHA1E474
	0.68	0.04	0.25	A	TMCHA1E684
	1.5	0.06	0.25	B	TMCHB1E155
	2.2	0.06	0.27	B	TMCHB1E225
	3.3	0.06	0.41	B	TMCHB1E335
	4.7	0.06	0.58	B	TMCHB1E475
		0.06	0.58	C	TMCHC1E475
	6.8	0.06	0.85	C	TMCHC1E685
	10	0.06	1.25	C	TMCHC1E106
		0.06	1.25	E	TMCHE1E106
	15	0.06	1.87	E	TMCHE1E156
	22	0.06	2.75	E	TMCHE1E226
35	0.1	0.04	0.25	A	TMCHA1V104
	0.15	0.04	0.25	A	TMCHA1V154
	0.22	0.04	0.25	A	TMCHA1V224
	0.33	0.04	0.25	A	TMCHA1V334
	0.47	0.04	0.25	A	TMCHA1V474
		0.04	0.25	B	TMCHB1V474
	0.68	0.04	0.25	A	TMCHA1V684
		0.04	0.25	B	TMCHB1V684
	1.0	0.04	0.25	A	TMCHA1V105
		0.04	0.25	B	TMCHB1V105
	1.5	0.06	0.26	B	TMCHB1V155
		0.06	0.26	C	TMCHC1V155
	2.2	0.06	0.38	B	TMCHB1V225
		0.06	0.38	C	TMCHC1V225
	3.3	0.06	0.57	B	TMCHB1V335
		0.06	0.57	C	TMCHC1V335
	4.7	0.06	0.82	C	TMCHC1V475
		0.06	0.82	E	TMCHE1V475
	6.8	0.06	1.19	C	TMCHC1V685
		0.06	1.19	E	TMCHE1V685
	10	0.06	1.75	E	TMCHE1V106
	15	0.06	2.62	E	TMCHE1V156

Marking indication

	TMCH ✻ △△□□□○○○F
A, B case	16V1μF A case  ① Simplified code of nominal capacitance (A6 : 1μF) ② Lot indication (A:for manufacturing in January, 2009) 20V1μF A case  ③ Anode indication belt mark ④ Simplified code of rated voltage (D : 20V) ✻When the capacitance code is the same in the same case, use the voltage code for the higher rated voltage.
C, E case	 ①Anode indication belt mark ②Nominal capacitance Volue (10μF) ③Rated voltage (16V) ④Lot indication (A:for manufacturing in January, 2009)
P case	10V4.7μF  ①Anode indication belt mark ②Simplified code of rated voltage (A:10V) ③Simplified code of nominal capacitance(S:4.7μ)

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