

TANTALUM ELECTROLYTIC CAPACITORS

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.

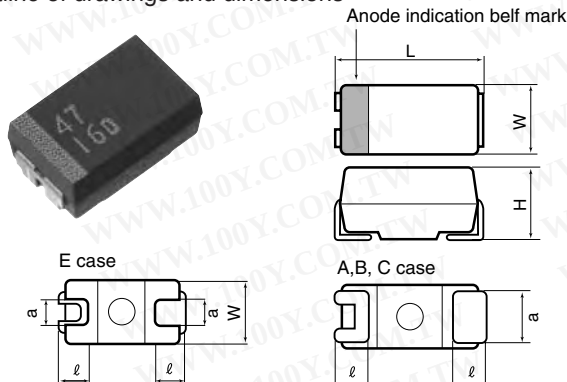
Product symbol : (Example) TMCH Series A case 16V 1μF ±20%.

TMCH A 1C 105 M T R F

Type of series

Terminal code
Packing polarity code
Packing method code (T:carrier tape)
Capacitance tolerance code
Capacitance code
Rated voltage code
Case size code

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}
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

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

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, (A) ,B	(A) ,B	B,C	C	(C) ,E	(C) ,E
15	156	B	B	B,C	C	C,E	E	E
22	226		B,C	C	C,E	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

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 4.8, in 5 minutes after the rated voltage is applied.
tanδ	Refer to Standard product table		Paragraph 4.8, 120Hz
Surge withstanding voltage	ΔC/C ±5% or less	ΔC/C ±10% or less	Paragraph 4.26
	tan δ Specified initial value or less	tan δ Specified initial value or less	
	LC Specified initial value or less	LC Specified initial value or less	
Temperature characteristics			Paragraph 4.24
Solder heat resistance	ΔC/C ±5% or less	ΔC/C ±5% 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.
	tan δ Specified initial value or less	tan δ Specified initial value or less	
	LC Specified initial value or less	LC Specified initial value or less	
Moisture resistance no load	ΔC/C ±5% or less	ΔC/C ±10% or less	Paragraph 4.22, 85°C 85%RH,1000hrs
	tan δ 150% Specified initial value or less	tan δ 200% Specified initial value or less	
	LC 200% Specified initial value or less	LC 500% Specified initial value or less	
High-temperature load	ΔC/C ±10% or less	ΔC/C ±20% or less	Paragraph 4.23, 85°C The rated voltage is applied for 2000 hours.
	tan δ Specified initial value or less	tan δ Specified initial value or less	
	LC 125% Specified initial value or less	LC 125% Specified initial value or less	
Thermal shock	ΔC/C ±5% or less	ΔC/C ±20% 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.
	tan δ Specified initial value or less	tan δ Specified initial value or less	
	LC 200% Specified initial value or less	LC 200% Specified initial value or less	
Moisture resistance load	ΔC/C ±5% or less	ΔC/C ±12% or less	65°C, humidity 90 to 95%RH The rated voltage is applied for 500 hrs.
	tan δ 150% Specified initial value or less	tan δ 200% Specified initial value or less	
	LC 200% Specified initial value or less	LC 500% Specified initial value or less	
High temperature load	ΔC/C ±10% or less	ΔC/C ±10% or less	(At 150°C with no load)
	tan δ 150% Specified initial value or less	tan δ 200% Specified initial value or less	
	LC 200% Specified initial value or less	LC 500% Specified initial value or less	
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.

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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	0.3	B	TMCHB0G156
	33	0.06	0.7	C	TMCHC0G336
	47	0.06	0.9	C	TMCHC0G476
	68	0.06	1.4	E	TMCHE0G686
100	0.06	2.0	E	TMCHE0G107	
7	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	0.32	P	TMCHP0J106
	(10)	(0.08)	(0.4)	(A)	(TMCHA0J106)
	10	0.06	0.4	B	TMCHB0J106
	15	0.06	0.5	B	TMCHB0J156
	22	0.06	0.8	B	TMCHB0J226
		0.06	0.8	C	TMCHC0J226
	33	0.06	1.2	C	TMCHC0J336
	47	0.06	1.7	C	TMCHC0J476
		0.06	1.7	E	TMCHE0J476
68	0.04	2.4	E	TMCHE0J686	
100	0.06	3.5	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	0.3	B	TMCHB1A685
	(10)	(0.08)	(0.5)	(A)	(TMCHA1A106)
	10	0.06	0.5	B	TMCHB1A106
	15	0.06	0.8	B	TMCHB1A156
		0.06	0.8	C	TMCHC1A156
	22	0.06	1.1	C	TMCHC1A226
	33	0.06	1.7	C	TMCHC1A336
		0.06	1.7	E	TMCHE1A336
	47	0.08	2.4	C	TMCHC1A476
		0.06	2.4	E	TMCHE1A476
	(68)	(0.08)	(3.4)	(C)	(TMCHC1A686)
	68	0.08	3.4	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
	1.0	0.04	0.25	A	TMCHA1C105
		0.06	0.25	A	TMCHA1C155
	2.2	0.06	0.25	A	TMCHA1C225
	3.3	0.08	0.3	P	TMCHP1C335
		0.06	0.3	A	TMCHA1C335
		0.06	0.3	B	TMCHB1C335
	4.7	0.06	0.4	A	TMCHA1C475
		0.06	0.4	B	TMCHB1C475
	6.8	0.06	0.6	B	TMCHB1C685
	10	0.06	0.8	B	TMCHB1C106
		0.06	0.8	C	TMCHC1C106
	15	0.06	1.2	C	TMCHC1C156
	22	0.06	1.8	C	TMCHC1C226
		0.06	1.8	E	TMCHE1C226
	33	0.08	2.6	C	TMCHC1C336
		0.06	2.6	E	TMCHE1C336
	47	0.08	3.8	C	TMCHC1C476
		0.08	3.8	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	0.30	B	TMCHB1D335	

Rated voltage V. DC	Capacitance μF	$\tan\delta$	Leakage current μA	Case code	Product name
20	4.7	0.06	0.5	B	TMCHB1D475
		0.06	0.7	B	TMCHB1D685
	6.8	0.06	0.70	C	TMCHC1D685
		0.06	1.00	C	TMCHC1D106
	10	0.06	1.5	C	TMCHC1D156
		0.06	1.5	E	TMCHE1D156
	22	0.06	2.2	E	TMCHE1D226
	33	0.06	3.3	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	0.3	B	TMCHB1E225
	3.3	0.06	0.4	B	TMCHB1E335
	4.7	0.06	0.6	B	TMCHB1E475
		0.06	0.6	C	TMCHC1E475
	6.8	0.06	0.9	C	TMCHC1E685
	(10)	(0.06)	(1.3)	(C)	(TMCHC1E106)
	10	0.06	1.3	E	TMCHE1E106
	15	0.06	1.9	E	TMCHE1E156
	22	0.06	2.8	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
		0.04	0.25	A	TMCHA1V474
	0.47	0.04	0.25	B	TMCHB1V474
		0.04	0.25	A	TMCHA1V684
	0.68	0.04	0.25	B	TMCHB1V684
		0.04	0.25	A	TMCHA1V105
	1.0	0.04	0.25	B	TMCHB1V105
		0.06	0.3	B	TMCHB1V155
	1.5	0.06	0.3	C	TMCHC1V155
		0.06	0.4	B	TMCHB1V225
	2.2	0.06	0.4	C	TMCHC1V225
		0.06	0.6	B	TMCHB1V335
	3.3	0.06	0.6	C	TMCHC1V335
		0.06	0.8	C	TMCHC1V475
	4.7	0.06	0.8	E	TMCHE1V475
		0.06	1.2	C	TMCHC1V685
	6.8	0.06	1.2	E	TMCHE1V685
	(10)	(0.08)	(1.8)	(C)	(TMCHC1V106)
	10	0.06	1.8	E	TMCHE1V106
	15	0.06	2.6	E	TMCHE1V156
	(22)	(0.08)	(3.9)	(E)	(TMCHE1V226)

Marking indication

	TMCH * △△□□○○○F
A, B case	16V1μF A case ① Simplified code of nominal capacitance (A6 : 1μF) ② Lot indication (for manufacturing in January, 2007) ③ Anode indication belt mark 20V1μF A case 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	Anode indication belt mark Nominal capacitance Value (10μF) Lot indication (for manufacturing in January, 2007) Rated voltage (16V)
P case	10V4.7μF Anode indication belt mark Simplified code of nominal capacitance (S : 4.7μ) Simplified code of rated voltage (A : 10V)

Lot indication

Month Year	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	I	J	K	L
2010	N	P	O	R	S	T	U	V	W	X	Y	Z