

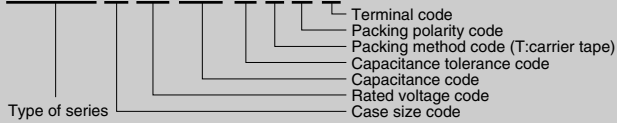
## TMCTX Series (Tantalum Chip Capacitors with Internal Fuse)

### Features

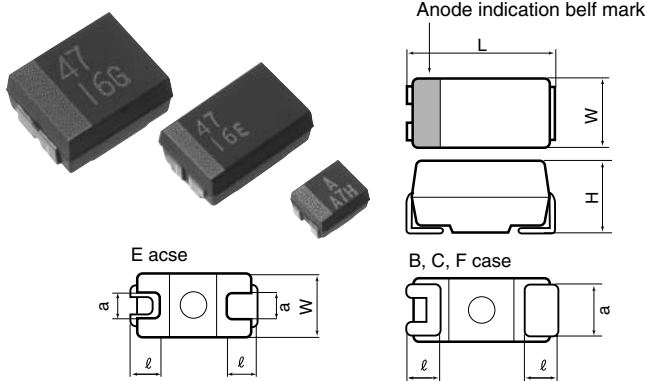
- Protective-device-incorporated chip tantalum capacitor which is obtained by adding a thermal fuse to the TMC type.
  - High heat resistance: Withstands infra-red-reflow and solder dip and high reliability.
  - Prevention of fire or smoke with the work of internal fuse.
- Fusing characteristics:
- B, C cases: Open in less than 100 sec at 1.5 A or in less than 5 sec at 5 A.
  - E, F cases: Open in less than 5 sec at 5 A.

Product symbol : (Example) TMCTX Series C case 16V 10 $\mu$ F  $\pm$ 20%

**TMCTX C 1C 106 M T R F**



### Outline of drawings and dimensions



### Dimensions (Unit : mm)

Case code	Case size				
	L <sup>+0.2</sup>	W <sup>+0.2</sup>	H <sup>+0.2</sup>	$\ell$ <sup>+0.3</sup>	a <sup>+0.2</sup>
B	3.5	2.8	1.9	0.8	2.0
C	5.8	3.2	2.5	1.3	2.4
E	7.3	4.3 <sup>+0.3</sup>	2.8	1.3	2.4
F	7.3	5.8 <sup>+0.3</sup>	3.5	1.3	3.5

### Standard value and case size

Capacitance		Rated voltage (V.DC)				
		10	16	20	25	35
$\mu$ F	Code	1A	1C	1D	1E	1V
1.0	105					B
1.5	155				B	C
2.2	225			B	B	C
3.3	335		B	B	B	C
4.7	475	B	B	B	C	
6.8	685	B	B	C	C	E
10	106	B	C	C	E	F
15	156	C	C	E	F	
22	226	C	E	E,F		
33	336	E	E,F	E,F		
47	476	E,F	E,F			
68	686	E,F				

Product specifications	TMCTX	Test conditions JIS C5101-1:1998																								
Operating temperature range	-55°C ~ +125°C																									
Rated voltage	DC10 ~ 35V	85°C																								
Surge voltage	DC13 ~ 45V	85°C																								
Derated voltage	DC6.3 ~ 22V	125°C																								
Capacitance	1 ~ 68 $\mu$ F																									
Capacitance tolerance	$\pm$ 10% or 20%	Paragraph 4.7, 120 Hz																								
Leakage current	0.01CV or 0.5 $\mu$ A, whichever is larger or less	Paragraph 4.9, in 5 minutes after the rated voltage is applied.																								
tan $\delta$	1.0 or less 0.04 or less 1.5 ~ 22 0.05 or less 33 or more 0.06 or less	Paragraph 4.8, 120Hz																								
Surge withstanding voltage	$\Delta$ C/C $\pm$ 5% or less tan $\delta$ Specified initial value or less LC Specified initial value or less	Paragraph 4.26																								
Temperature characteristics	<table border="1"> <thead> <tr> <th>Specified initial value</th> <th>-55</th> <th>85</th> <th>125</th> </tr> </thead> <tbody> <tr> <td><math>\Delta</math>C/C</td> <td>-</td> <td>-12 ~ 0%</td> <td>0 ~ +10%</td> <td>0 ~ +12%</td> </tr> <tr> <td>tan<math>\delta</math></td> <td>0.04</td> <td>0.09</td> <td>0.07</td> <td>0.09</td> </tr> <tr> <td>Max.storability or less</td> <td>0.05</td> <td>0.10</td> <td>0.08</td> <td>0.10</td> </tr> <tr> <td>LC</td> <td>0.01CV or 0.5<math>\mu</math>A or less</td> <td>-</td> <td>0.1CV or 5<math>\mu</math>A or less</td> <td>0.125CV or 6.25<math>\mu</math>A or less</td> </tr> </tbody> </table>	Specified initial value	-55	85	125	$\Delta$ C/C	-	-12 ~ 0%	0 ~ +10%	0 ~ +12%	tan $\delta$	0.04	0.09	0.07	0.09	Max.storability or less	0.05	0.10	0.08	0.10	LC	0.01CV or 0.5 $\mu$ A or less	-	0.1CV or 5 $\mu$ A or less	0.125CV or 6.25 $\mu$ A or less	Paragraph 4.24
Specified initial value	-55	85	125																							
$\Delta$ C/C	-	-12 ~ 0%	0 ~ +10%	0 ~ +12%																						
tan $\delta$	0.04	0.09	0.07	0.09																						
Max.storability or less	0.05	0.10	0.08	0.10																						
LC	0.01CV or 0.5 $\mu$ A or less	-	0.1CV or 5 $\mu$ A or less	0.125CV or 6.25 $\mu$ A or less																						
Solder heat resistance	$\Delta$ C/C $\pm$ 5% or less tan $\delta$ Specified initial value or less LC Specified initial value or less	Solder Dip 260 $\pm$ 5°C B case C,E,F case 10 $\pm$ 1 sec. 5 $\pm$ 0.5 sec. Reflow-260°C 10 $\pm$ 1 sec.																								
Moisture resistance no load	$\Delta$ C/C $\pm$ 10% or less tan $\delta$ Specified initial value or less LC Specified initial value or less	Paragraph 4.22, 40°C 90 ~ 95%RH,500hrs																								
High-temperature load	$\Delta$ C/C $\pm$ 10% or less tan $\delta$ 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	$\Delta$ C/C $\pm$ 10% or less tan $\delta$ 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 20 times running.																								
Moisture resistance load	$\Delta$ C/C $\pm$ 10% or less tan $\delta$ 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% / 1000hrs	85°C. The rated voltage is applied (through a protective resistor of 1 $\Omega$ /V).																								

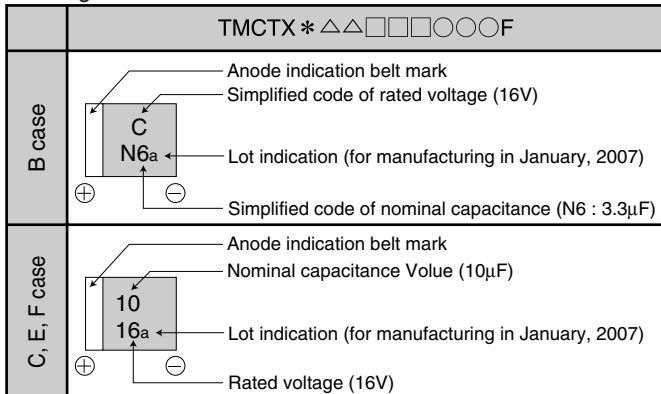
\*This catalog is designed for providing general information. Please inquire of our Sales Department to confirm specifications prior to use.

## Standard product tables - TMCTX series

Standard product table - TMCTX series

Rated voltage V. DC	Capacitance μF	tanδ	Leakage current μA	Case code	Product name	
10	4.7	0.05	0.5	B	TMCTXB1A475	
	6.8	0.05	0.7	B	TMCTXB1A685	
	10	0.05	1.0	B	TMCTXB1A106	
	15	0.05	1.5	C	TMCTXC1A156	
	22	0.05	2.2	C	TMCTXC1A226	
	33	0.06	3.3	E	TMCTXE1A336	
	47	0.06	4.7	E	E	TMCTXE1A476
		0.06	4.7	F	F	TMCTXF1A476
	68	0.06	6.8	E	E	TMCTXE1A686
		0.06	6.8	F	F	TMCTXF1A686
16	3.3	0.05	0.5	B	TMCTXB1C335	
	4.7	0.05	0.8	B	TMCTXB1C475	
	6.8	0.05	1.1	B	TMCTXB1C685	
	10	0.05	1.6	C	TMCTXC1C106	
	15	0.05	2.4	C	TMCTXC1C156	
	22	0.05	3.5	E	TMCTXE1C226	
	33	0.06	5.3	E	E	TMCTXE1C336
		0.06	5.3	F	F	TMCTXF1C336
	47	0.06	7.5	E	E	TMCTXE1C476
		0.06	7.5	F	F	TMCTXF1C476
20	2.2	0.05	0.5	B	TMCTXB1D225	
	3.3	0.05	0.7	B	TMCTXB1D335	
	4.7	0.05	0.9	B	TMCTXB1D475	
	6.8	0.05	1.4	C	TMCTXC1D685	
	10	0.05	2.0	C	TMCTXC1D106	
	15	0.05	3.0	E	TMCTXE1D156	
	22	0.05	4.4	E	E	TMCTXE1D226
		0.05	4.4	F	F	TMCTXF1D226
	33	0.06	6.6	E	E	TMCTXE1D336
		0.06	6.6	F	F	TMCTXF1D336
25	1.5	0.05	0.5	B	TMCTXB1E155	
	2.2	0.05	0.6	B	TMCTXB1E225	
	3.3	0.05	0.8	B	TMCTXB1E335	
	4.7	0.05	1.2	C	TMCTXC1E475	
	6.8	0.05	1.7	C	TMCTXC1E685	
	10	0.05	2.5	E	TMCTXE1E106	
	15	0.05	3.8	F	TMCTXF1E156	
35	1.0	0.04	0.5	B	TMCTXB1V105	
	1.5	0.05	0.5	C	TMCTXC1V155	
	2.2	0.05	0.8	C	TMCTXC1V225	
	3.3	0.05	1.2	C	TMCTXC1V335	
	6.8	0.05	2.4	E	TMCTXE1V685	
	10	0.05	3.5	F	TMCTXF1V106	

### Marking indication



### 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	J	K	L	M
2010	N	P	Q	R	S	T	U	V	W	X	Y	Z