

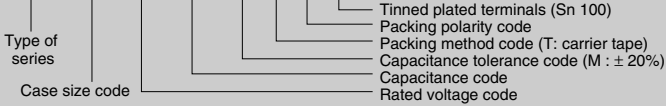
## TMF Series Chip Tantalum Capacitor With face down Terminals

### Features

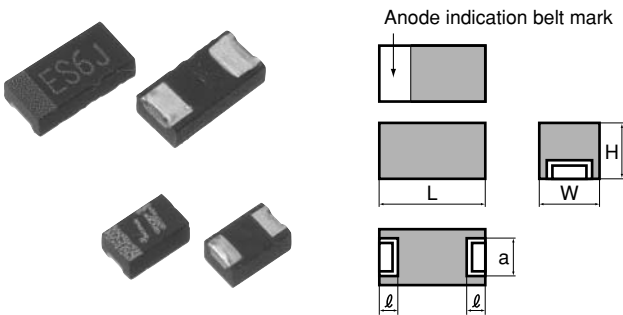
- A new, originally designed structure with reduced space requirement, resulting in the small size and large capacitance of units.
- Best suited for multi-media applications, such as cell phones, digital video cameras, etc.
- Environmentally friendly terminal plating -- lead-free (100% Sn) solder plating.

Product code : (Example) TMF Series LM case 6.3V 22 $\mu$ F $\pm$ 20%

**TMF LM OJ 226 M T R F**



### Outline of drawings and dimensions



### Dimensions

(Unit : mm)

Case code	Case size				
	L $\pm$ 0.1	W $\pm$ 0.1	H $\pm$ 0.1	l $\pm$ 0.1	a $\pm$ 0.1
LM	1.6	0.85	0.8	0.5	0.65
LP	2.0	1.25	0.9	0.5	0.90
LA	3.2	1.60	0.9	0.8	1.20

### Standard value and case size

Capacitance	$\mu$ F	Code	Rated voltage (V.DC)				
			2.5	4	6.3	10	16
			0E	0G	0J	1A	1C
1.0	105						
1.5	155						
2.2	225						LM
3.3	335						LM
4.7	475						LP
6.8	685					LM	LP
10	106					LM	LA
15	156					LM	LP
22	226			LM	LM	LP	
33	336	LM	LM	LP	LA		
47	476	LM	LP	LP	LA		
68	686	LP	LP	LA			
100	107	LP	LA	LA			
150	157	LA	LA				
220	227	LA					

Product specifications	TMF				Test conditions JIS C5101-1:1998														
	Operating temperature range	Rated voltage	Surge voltage	Derated voltage															
Operating temperature range	-55 $^{\circ}$ C $\sim$ +125 $^{\circ}$ C																		
Rated voltage	DC2.5 $\sim$ 16V				85 $^{\circ}$ C														
Surge voltage	DC3.2 $\sim$ 20V				85 $^{\circ}$ C														
Derated voltage	DC1.6 $\sim$ 10V				125 $^{\circ}$ C														
Capacitance	2.2 $\sim$ 220 $\mu$ F																		
Capacitance tolerance	$\pm$ 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.														
tan $\delta$	0.3 or less				Paragraph 4.8, 120Hz														
Surge withstanding voltage	$\Delta$ C/C $\pm$ 20% 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>-20<math>\sim</math>+20%</td> <td>0<math>\sim</math>+20%</td> <td>0<math>\sim</math>+20%</td> </tr> <tr> <td>tan <math>\delta</math></td> <td>0.3</td> <td>0.6</td> <td>0.3</td> <td>0.4</td> </tr> </tbody> </table> LC Refer to standard product table	Specified initial value	-55	85	125	$\Delta$ C/C	-	-20 $\sim$ +20%	0 $\sim$ +20%	0 $\sim$ +20%	tan $\delta$	0.3	0.6	0.3	0.4				Paragraph 4.24
Specified initial value	-55	85	125																
$\Delta$ C/C	-	-20 $\sim$ +20%	0 $\sim$ +20%	0 $\sim$ +20%															
tan $\delta$	0.3	0.6	0.3	0.4															
Solder heat resistance	$\Delta$ C/C $\pm$ 20% or less tan $\delta$ Specified initial value or less LC Specified initial value or less				Solder Dip 260 $\pm$ 5 $^{\circ}$ C 10 $\pm$ 1 sec. Reflow 260 $^{\circ}$ C 10 $\pm$ 1 sec.														
Moisture resistance no load	$\Delta$ C/C $\pm$ 20% or less tan $\delta$ 150% Specified initial value or less LC Specified initial value or less				Paragraph 4.22, 40 $^{\circ}$ C 90 ~ 95%RH,500hrs														
High-temperature load	$\Delta$ C/C $\pm$ 20% or less tan $\delta$ Specified initial value or less LC 200% Specified initial value or less				Paragraph 4.23, 85 $^{\circ}$ C The rated voltage is applied for 2000 hours.														
Thermal shock	$\Delta$ C/C $\pm$ 20% or less tan $\delta$ Specified initial value or less LC Specified initial value or less				Leave at -55 $^{\circ}$ C, normal temperature, 125 $^{\circ}$ C, and normal temperature for 30 min., 3 min., 30 min., and 3 min. Repeat this operation 5 times running.														
Failure rate	1%/1000hrs				85 $^{\circ}$ 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 - TMF series

Standard product tables - TMF series

Rated voltage V.DC	capacitance μF	tanδ	Leakage current μA	case code	Product name
2.5	33	0.30	8.2	LM	TMFLM0E336
	47	0.30	11.7	LM	TMFLM0E476
	68	0.30	17.0	LP	TMFLP0E686
	100	0.30	25.0	LP	TMFLP0E107
	150	0.30	37.5	LA	TMFLA0E157
	220	0.30	55.0	LA	TMFLA0E227
4	22	0.30	8.8	LM	TMFLM0G226
	33	0.30	13.2	LM	TMFLM0G336
	47	0.30	18.8	LP	TMFLP0G476
	68	0.30	27.2	LP	TMFLP0G686
	100	0.30	40.0	LA	TMFLA0G107
	150	0.30	60.0	LA	TMFLA0G157
6.3	15	0.30	9.4	LM	TMFLM0J156
	22	0.30	13.8	LM	TMFLM0J226
	33	0.30	20.7	LP	TMFLP0J336
	47	0.30	29.6	LP	TMFLP0J476
	68	0.30	42.8	LA	TMFLA0J686
	100	0.30	63.0	LA	TMFLA0J107
10	6.8	0.30	6.8	LM	TMFLM1A685
	10	0.30	10.0	LM	TMFLM1A106
	15	0.30	15.0	LP	TMFLP1A156
	22	0.30	22.0	LP	TMFLP1A226
	33	0.30	33.0	LA	TMFLA1A336
	47	0.30	47.0	LA	TMFLA1A476
16	2.2	0.30	3.5	LM	TMFLM1C225
	3.3	0.30	5.2	LM	TMFLM1C335
	4.7	0.30	7.5	LP	TMFLP1C475
	6.8	0.30	10.8	LP	TMFLP1C685
	10	0.30	16.0	LA	TMFLA1C106
	15	0.30	24.0	LA	TMFLA1C156

Marking indication TMF series

LM · LP case		① Anode indication belt mark ② Simplified code of rated voltage (J:6.3V) ③ Simplified code of nominal capacitance (A:10μF)
LA case		① Anode indication belt mark ② Simplified code of rated voltage (G:4V) ③ Simplified code of nominal capacitance (A8:100μF) ④ Lot indication (A:for manufacturing in January, 2009)

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