

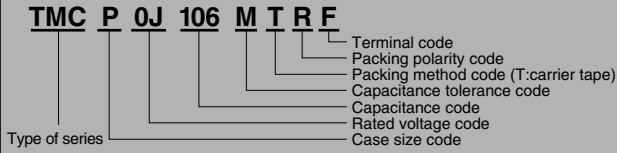
# TANTALUM ELECTROLYTIC CAPACITORS

## TMCP Series (0805 Size Tantalum Chip Capacitors)

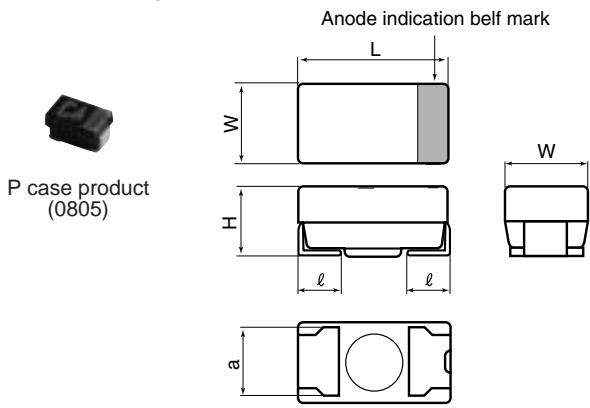
### Features

- Rendered even smaller-sized thanks to the accumulated technological knowhow (reduced to about 1/3 the cubic volume of the TMCS type).
- Suitable for high-density packaging essential to Audio Visual and other equipment downsizing.

Product symbol : (Example) TMC Series P case 6.3V 10 $\mu$ F  $\pm$ 20%



### Outline of drawings and dimensions



### Dimensions (Unit : mm)

Case code	Case size				
	L $\pm$ 0.2	W $\pm$ 0.2	H <sup>MAX</sup>	l $\pm$ 0.2	a $\pm$ 0.1
P	2.0	1.25	1.2	0.5	0.9

### Standard value and case size

Capacitance		Rated voltage (V.DC)						
		2.5	4	6.3	10	16	20	
$\mu$ F	Code	0E	0G	0J	1A	1C	1D	
0.10	104							P
0.15	154							P
0.22	224							P
0.33	334							P
0.47	474							P
0.68	684							P
1.0	105					P	P	
1.5	155				P			
2.2	225				P			
3.3	335				P			
4.7	475			P	P			
6.8	685			P				
10	106			P	P			
15	156	P	P	P				
22	226	P	P	P				
33	336	P	P					

For ratings not covered the table, consult Hitachi AIC.

Product specifications	TMCP	Test conditions JIS C5101-3-1998																																												
Operating temperature range	-55°C ~ +125°C																																													
Rated voltage	DC2.5 ~ 20V	85°C																																												
Surge voltage	DC3.2 ~ 26V	85°C																																												
Derated voltage	DC1.6 ~ 13V	125°C																																												
Capacitance	0.1 ~ 33 $\mu$ F																																													
Capacitance tolerance	$\pm$ 10% or 20%	Paragraph 7.8, 120 Hz																																												
Leakage current	Refer to table standard product table	Paragraph 7.7, in 5 minutes after the rated voltage is applied.																																												
tan $\delta$	Refer to table standard product table	Paragraph 7.9, 120Hz																																												
Surge withstanding voltage	$\Delta$ C/C $\pm$ 10% or less tan $\delta$ Specified initial value or less LC Specified initial value or less	Paragraph 7.14																																												
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>0.06</td> <td>0.10</td> <td>0.08</td> <td>0.10</td> </tr> <tr> <td>leakage rate or less</td> <td>0.08</td> <td>0.12</td> <td>0.10</td> <td>0.12</td> </tr> <tr> <td></td> <td>0.10</td> <td>0.14</td> <td>0.12</td> <td>0.14</td> </tr> <tr> <td></td> <td>0.12</td> <td>0.16</td> <td>0.14</td> <td>0.16</td> </tr> <tr> <td></td> <td>0.20</td> <td>0.24</td> <td>0.22</td> <td>0.24</td> </tr> <tr> <td></td> <td>0.30</td> <td>0.60</td> <td>0.30</td> <td>0.40</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 $\delta$	0.06	0.10	0.08	0.10	leakage rate or less	0.08	0.12	0.10	0.12		0.10	0.14	0.12	0.14		0.12	0.16	0.14	0.16		0.20	0.24	0.22	0.24		0.30	0.60	0.30	0.40	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 7.12
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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 10 $\pm$ 1 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 9.5, 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 9.10, 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 5 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).																																												

## Standard product tables - TMCP series

Standard product table - TMCP series

Rated voltage V. DC	Capacitance $\mu\text{F}$	$\tan\delta$	Leakage current $\mu\text{A}$	Case code	Product name
2.5	15	0.08	0.5	P	TMCP0E156
	22	0.10	0.6	P	TMCP0E226
	33	0.20	0.8	P	TMCP0E336
4	15	0.08	0.6	P	TMCP0G156
	22	0.10	0.9	P	TMCP0G226
	33	0.30	13.2	P	TMCP0G336
6.3	4.7	0.08	0.5	P	TMCP0J475
	6.8	0.08	0.5	P	TMCP0J685
	10	0.08	0.7	P	TMCP0J106
	15	0.12	1.9	P	TMCP0J156
	22	0.30	13.9	P	TMCP0J226
10	1.5	0.08	0.5	P	TMCP1A335
	2.2	0.08	0.5	P	TMCP1A475
	3.3	0.08	0.5	P	TMCP1A475
	4.7	0.08	0.5	P	TMCP1A475
	10	0.20	10.0	P	TMCP1A106
16	1.0	0.06	0.5	P	TMCP1C105
20	0.1	0.06	0.5	P	TMCP1D104
	0.15	0.06	0.5	P	TMCP1D154
	0.22	0.06	0.5	P	TMCP1D224
	0.33	0.06	0.5	P	TMCP1D334
	0.47	0.06	0.5	P	TMCP1D474
	0.68	0.06	0.5	P	TMCP1D684
	1	0.08	0.5	P	TMCP1D105

### Marking indication

TMCP * $\triangle\triangle\square\square\square\square\circ\circ\circ$	TMCP * $\triangle\triangle\square\square\square\square\circ\circ\circ\circ\text{F}$
<p>(Example 1) 6.3V1<math>\mu\text{F}</math></p> <p>                     Anode indication belt mark                      Simplified code of nominal capacitance (A6 : 1<math>\mu\text{F}</math>)                 </p> <p>(Example 2) 10V1<math>\mu\text{F}</math></p> <p>                     Anode indication belt mark                      Simplified code of nominal capacitance (A : 1<math>\mu\text{F}</math>)                      Simplified code of rated voltage (A : 10V)                 </p>	<p>(Example 1) 6.3V1<math>\mu\text{F}</math></p> <p>                     Anode indication belt mark                      Simplified code of nominal capacitance (A6 : 1<math>\mu\text{F}</math>)                 </p> <p>(Example 2) 10V1<math>\mu\text{F}</math></p> <p>                     Anode indication belt mark                      Simplified code of nominal capacitance (A : 1<math>\mu\text{F}</math>)                      Simplified code of rated voltage (A : 10V)                 </p>

When the capacitance code is the same, use the voltage code for the higher rated voltage.

When indicating both rated voltage and nominal capacitance by code, omit the multiplier of the capacitance code.