

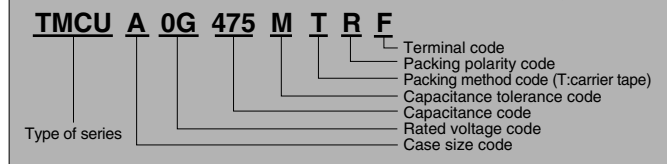
TANTALUM ELECTROLYTIC CAPACITORS

TMCU Series (Ultra Flat Low Profile Tantalum Chip Capacitors)

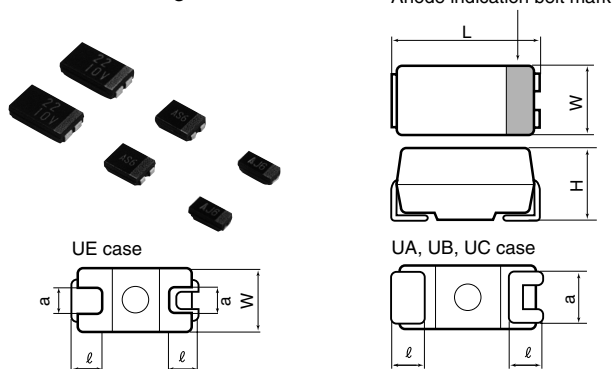
Features

- Low profile tantalum chip capacitors developed to meet the growing needs for flat capacitors where height is critical.
- Small and low profile:
Obtained by thinning the TMCS type.

Product symbol : (Example) TMCU Series A case 4V 4.7μF ±20%



Outline of drawings and dimensions



Dimensions (Unit : mm)

Case code	Case size				
	L ^{+0.2}	W ^{+0.2}	H ^{MAX}	ℓ ^{+0.3}	a ^{+0.2}
UA	3.2	1.6	1.2	0.7	1.2
UB	3.5	2.8	1.2	0.7	1.8
UC	5.8	3.2	1.5	1.1	2.2
UE	7.3	4.3	1.9	1.3	2.4

Standard value and case size

Capacitance		Rated voltage (V.DC)							
μF	Code	2.5	4	6.3 (7)	10	16	20	25	35
0.10	104	0E	0G	0J	1A	1C	1D	1E	1V
0.15	154								UA
0.22	224								UA
0.33	334							UA	
0.47	474							UA	
0.68	684							UA	
1.0	105						UA,UB		UB
1.5	155					UA	UA,UB	UB	UB,UC
2.2	225					UA,UB	UB	UB,UC	UB,UC
3.3	335					UA,UB	UC	UB,UC	
4.7	475				UA	UA,UB	UB,UC	UB,UC	
6.8	685				UA	UB,UC	UB,UC	UC	
10	106			UA	UA	UB,UC	UC		
15	156	UA	UA	UA	(UA),UB	UC	(UE)		
22	226	UA	UA	UA,UB	UB,UC	(UC)	(UE)		
33	336	UA,UB	UA,UB	(UA),UB	(UB),UC				
47	476	UA,UB	UA,UB	UB,UC	UC	UE			
68	686	UB,UC	UB,UC	UC	UC				
100	107	UB,UC	UB,UC	UC	UE				
150	157	UC	(UC)	UE					
220	227	UE	UE	(UE)					
330	337								

(): Under Developing

For ratings not covered in the table, consult Hitachi AIC.

Product specifications	TMCU	Test conditions JIS C5101-3-1998																																		
Operating temperature range	-55°C ~ +125°C																																			
Rated voltage	DC2.5 ~ 35V	85°C																																		
Surge voltage	DC3.2 ~ 45V	85°C																																		
Derated voltage	DC1.6 ~ 22V	125°C																																		
Capacitance	0.1 ~ 330μF																																			
Capacitance tolerance	±10% or 20%	Paragraph 7.8, 120 Hz																																		
Leakage current	Refer to standard product table	Paragraph 7.7, in 5 minutes after the rated voltage is applied.																																		
tanδ	Refer to standard product table	Paragraph 7.9, 120Hz																																		
Surge withstanding voltage	Δ C/C ±5% or less tanδ Specified initial value or less LC Specified initial value or less	Paragraph 7.14																																		
Temperature characteristics	<table border="1"> <tr> <td>Specified initial value</td> <td>-55</td> <td>85</td> <td>125</td> </tr> <tr> <td>Δ C/C</td> <td>-</td> <td>-12 ~ 0%</td> <td>0 ~ +10%</td> <td>0 ~ +12%</td> </tr> <tr> <td>tanδ</td> <td>0.04</td> <td>0.05</td> <td>0.04</td> <td>0.05</td> </tr> <tr> <td>Reference table</td> <td>0.06</td> <td>0.08</td> <td>0.06</td> <td>0.06</td> </tr> <tr> <td>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> </table>	Specified initial value	-55	85	125	Δ C/C	-	-12 ~ 0%	0 ~ +10%	0 ~ +12%	tanδ	0.04	0.05	0.04	0.05	Reference table	0.06	0.08	0.06	0.06	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	Paragraph 7.12
	Specified initial value	-55	85	125																																
	Δ C/C	-	-12 ~ 0%	0 ~ +10%	0 ~ +12%																															
	tanδ	0.04	0.05	0.04	0.05																															
	Reference table	0.06	0.08	0.06	0.06																															
	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																																
LC	0.01CV or 0.5μA or less	-	0.1CV or 5μA or less	0.125CV or 6.25μA or less																																
Solder heat resistance	Δ C/C ±5% or less tanδ Specified initial value or less LC Specified initial value or less	Dip 260±5°C UA, UB case 10±1 sec. UC, UE case 5±0.5 sec. Reflow-260°C 10±1 sec.																																		
Moisture resistance leaving	Δ C/C ±10% or less tanδ Specified initial value or less LC Specified initial value or less	Paragraph 9.5, 40°C 90 ~ 95%RH,500h																																		
High-temperature load	Δ C/C ±10% or less tanδ 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	Δ C/C ±5% or less tanδ 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	Δ C/C ±10% or less tanδ 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% / 1000h	85°C. The rated voltage is applied (through a protective resistor of 1Ω/V).																																		

TANTALUM ELECTROLYTIC CAPACITORS

Standard product tables - TMCU series

Standard product table - TMCU series

Rated voltage V. DC	Capacitance μ F	tan δ	Leakage current μ A	Case code	Product name	
2.5	15	0.08	0.5	UA	TMCUA0E156	
	22	0.08	0.6	UA	TMCUA0E226	
		0.12	1.7	UA	TMCUA0E336	
	33	0.12	0.8	UB	TMCUB0E336	
		0.18	2.4	UA	(TMCUA0E476)	
	47	0.12	1.2	UB	TMCUB0E476	
		0.12	1.7	UB	TMCUB0E686	
	68	0.08	1.7	UC	TMCUC0E686	
		0.2	5.0	UB	(TMCUB0E107)	
	100	0.18	2.5	UC	TMCUC0E107	
		0.18	3.8	UC	TMCUC0E157	
	220	0.12	5.5	UE	TMCUE0E227	
	4	15	0.08	0.6	UA	TMCUA0G156
		22	0.08	0.9	UA	TMCUA0G226
0.12			2.6	UA	TMCUA0G226	
33		0.12	1.3	UB	TMCUB0G336	
		(0.18)	2.4	(UA)	TMCUA0G476	
47		0.12	1.9	UB	TMCUB0G476	
		0.15	2.7	UB	TMCUB0G686	
68		0.08	2.7	UC	TMCUC0G686	
		0.20	8.0	UB	TMCUB0G107	
100		0.18	4.0	UC	TMCUC0G107	
		(0.18)	(6.0)	(UC)	(TMCUC0G157)	
220		0.12	8.8	UE	TMCUE0G227	
7		1.5	0.06	0.5	UA	TMCUA0J155
		2.2	0.06	0.5	UA	TMCUA0J225
	3.3	0.06	0.5	UA	TMCUA0J335	
	4.7	0.06	0.5	UA	TMCUA0J475	
		0.06	0.5	UB	TMCUB0J475	
	6.8	0.06	0.5	UA	TMCUA0J685	
		0.08	0.7	UA	TMCUA0J106	
	15	0.08	1.1	UA	TMCUA0J156	
		0.12	2.8	UA	TMCUA0J226	
	22	0.10	1.4	UB	TMCUB0J226	
		(0.18)	(4.2)	UA	TMCUA0J336	
	33	0.10	2.3	UB	TMCUB0J336	
		0.08	3.3	UC	TMCUC0J476	
	68	0.12	4.8	UC	TMCUC0J686	
100	(0.18)	(7.0)	(UC)	(TMCUC0J107)		
150	0.12	10.5	UE	TMCUE0J157		
220	(0.18)	(15.4)	(UE)	(TMCUE0J227)		
10	4.7	0.06	0.5	UA	TMCUA1A475	
	6.8	0.06	0.7	UA	TMCUA1A685	
	10	0.08	1.0	UA	TMCUA1A106	
		(0.12)	(3)	UA	TMCUA1A156	
	15	0.10	1.5	UB	TMCUB1A156	
		0.10	2.2	UB	TMCUB1A226	
	22	0.08	2.2	UC	TMCUC1A226	
		(0.12)	(6.6)	(UB)	TMCUB1A336	
	33	0.08	3.3	UC	TMCUC1A336	
		0.12	4.7	UC	TMCUC1A476	
	68	(0.12)	(6.8)	(UC)	TMCUC1A336	
	100	0.12	10.0	UE	TMCUE1A107	

Rated voltage V. DC	Capacitance μ F	tan δ	Leakage current μ A	Case code	Product name	
16	1.5	0.06	0.5	UA	TMCUA1C155	
		0.06	0.5	UA	TMCUA1C225	
	2.2	0.06	0.5	UB	TMCUB1C225	
		0.06	0.5	UA	TMCUA1C335	
	3.3	0.06	0.5	UB	TMCUB1C335	
		0.08	0.8	UA	TMCUA1C475	
	4.7	0.06	0.8	UB	TMCUB1C475	
		0.06	1.1	UB	TMCUB1C685	
	6.8	0.06	1.1	UC	TMCUC1C685	
		0.08	1.6	UB	TMCUB1C106	
	10	0.08	1.6	UC	TMCUC1C106	
		0.08	2.4	UC	TMCUC1C156	
	22	(0.08)	(3.5)	(UC)	TMCUC1C226	
	47	0.08	7.52	UE	TMCUE1C476	
20	0.68	0.04	0.5	UA	TMCUA1D684	
		0.04	0.5	UA	TMCUA1D105	
	1.0	0.04	0.5	UB	TMCUB1D105	
		0.06	0.5	UA	TMCUA1D155	
	1.5	0.06	0.5	UB	TMCUB1D155	
		0.06	0.5	UB	TMCUB1D225	
	2.2	0.06	0.7	UC	TMCUC1D335	
		0.06	0.9	UB	TMCUB1D475	
	3.3	0.06	0.9	UC	TMCUC1D475	
		0.06	1.4	UB	TMCUB1D685	
	4.7	0.06	1.4	UC	TMCUC1D685	
		0.08	2.0	UC	TMCUC1D106	
	10	(0.08)	(3.0)	(UE)	TMCUC1D156	
		(0.08)	(4.4)	(UE)	TMCUE1D226	
25	0.33	0.04	0.5	UA	TMCUA1E334	
		0.04	0.5	UA	TMCUA1E474	
	0.47	0.04	0.5	UA	TMCUA1E474	
		0.06	0.4	UB	TMCUB1E155	
	1.5	0.06	0.6	UB	TMCUB1E225	
		0.06	0.6	UC	TMCUC1E225	
	2.2	0.06	0.8	UB	TMCUB1E335	
		0.06	0.8	UC	TMCUC1E335	
	3.3	0.06	1.2	UB	TMCUB1E475	
		0.06	1.2	UC	TMCUC1E475	
	4.7	0.06	1.7	UC	TMCUC1E685	
		0.06	1.7	UC	TMCUC1E685	
	35	0.1	0.04	0.5	UA	TMCUA1V104
			0.04	0.5	UA	TMCUA1V154
0.15		0.04	0.5	UA	TMCUA1V154	
		0.04	0.5	UA	TMCUA1V224	
1.0		0.06	0.4	UB	TMCUB1V105	
		0.06	0.5	UB	TMCUB1V155	
1.5		0.06	0.5	UC	TMCUC1V155	
		0.06	0.8	UB	TMCUB1V225	
2.2		0.06	0.8	UC	TMCUC1V225	
		0.06	0.8	UC	TMCUC1V225	

Lot indication

Year	Month	Lot											
		1	2	3	4	5	6	7	8	9	10	11	12
2002		N	P	Q	R	S	T	U	V	W	X	Y	Z
2003		a	b	c	d	e	f	g	h	j	k	l	m
2004		n	p	q	r	s	t	u	v	w	x	y	z
2005		A	B	C	D	E	F	G	H	J	K	L	M

Marking indication

	TMCU * \triangle \square \square \square \square \square \square \square	TMCU * \triangle \square \square \square \square \square \square \square F
UA, UB case	<p>① Simplified code of nominal capacitance (A6 : 1μF) ② Lot indication (for manufacturing in January, 2001) ③ Anode indication belt mark ④ Simplified code of rated voltage (C : 16V)</p>	<p>① Simplified code of nominal capacitance (A6 : 1μF) ② Lot indication (for manufacturing in January, 2001) ③ Anode indication belt mark ④ Simplified code of rated voltage (C : 16V)</p>
UC, UE case	<p>Nominal capacitance Value (10μF) Anode indication belt mark Lot indication (for manufacturing in January, 2001) Rated voltage (16V)</p>	<p>Nominal capacitance Value (10μF) Lot indication (for manufacturing in January, 2001) Rated voltage (16V)</p>
<p>*When the capacitance code is the same in the same case, use the voltage code for the higher rated voltage. *The simplified code is subject to JIS C 5101-1(1998), paragraph 10 and EIAJ RC-3813, paragraph 7.</p>		<p>*When the capacitance code is the same in the same case, use the voltage code for the higher rated voltage. *The simplified code is subject to JIS C 5101-1(1998), paragraph 10 and EIAJ RC-3813, paragraph 7.</p>