

TANTALUM ELECTROLYTIC CAPACITORS

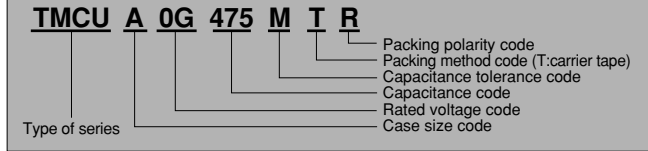
TMCU Series (Ultra Flat Low Profile Tantalum Chip Capacitors)

Low profile tantalum chip capacitors developed to meet the growing needs for flat capacitors where height is critical.

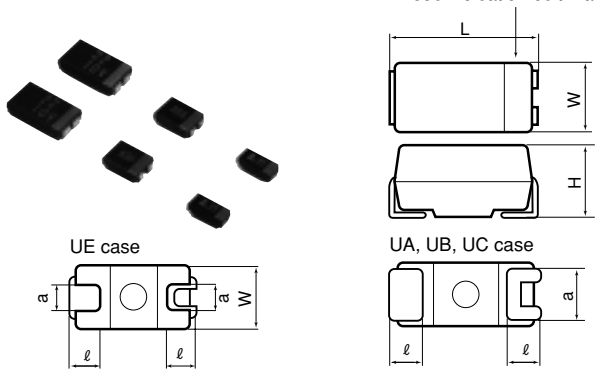
Features

- Small and low profile:
Obtained by thinning the TMCS type.

Product symbol : (Example) TMCU Series A case 4V 4.7 μ F \pm 20%



Outline of drawings and dimensions



Dimensions (Unit : mm)

Case code	Case size				
	L \pm 0.2	W \pm 0.2	H ^{MAX}	l \pm 0.3	a \pm 0.2
UA	3.2	1.6	1.2	0.7	1.0
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	Code	Rated voltage (V.DC)								
		2.5	4	7	10	16	20	25	35	
μ F		0E	0G	0J	1A	1C	1D	1E	1V	
0.10	104							UA	UA	UA
0.15	154							UA	UA	UA
0.22	224							UA	UA	UA
0.33	334							UA	UA	
0.47	474							UA	UA	
0.68	684							UA	UA	
1.0	105				UA	UA	UA,UB			
1.5	155			UA	UA	UA	UB			
2.2	225		UA	UA	UA	UA,UB	UB			
3.3	335	UA	UA	UA	UA,UB	UA,UB	UC			
4.7	475	UA	UA	UA,UB	UA,UB	UB	UC			
6.8	685	UA	UA,UB	UA,UB	UA,UB	UB,UC	UC			
10	106	UA,UB	UA,UB	UA,UB	UA,UB,UC	UB,UC				
15	156	UA,UB	UA,UB	UA,UB,UC	UB,UC	UC				
22	226	UA,UB,UC	UA,UB,UC	UB,UC	UB,UC					
33	336	UB,UC	UB,UC	UB,UC	UC					
47	476	UB,UC	UB,UC	UC			UE			
68	686	UB,UC	UC							
100	107						UE			
150	157						UE			
220	227		UE							

Product specifications	TMCU	Test conditions JIS C5102-1994																																		
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	0.1~220 μ F																																			
Capacitance tolerance	\pm 10% or 20%	Paragraph 7.8, 120 Hz																																		
Leakage current	0.01 CV or 0.5 μ A, whichever is larger or less.	Paragraph 7.7, in 5 minutes after the rated voltage is applied.																																		
tan δ	1.0 or less 0.04 or less \times 2 1.5~6.8 0.06 or less 10~68 0.08 or less 100~220 0.12 or less	Paragraph 7.9, 120Hz																																		
Surge withstanding voltage	Δ C/C \pm 5% or less tan δ 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>ΔC/C</td> <td>-</td> <td>-12~0%</td> <td>0~+10%</td> <td>0~+12%</td> </tr> <tr> <td>tan δ</td> <td>0.04</td> <td>0.05</td> <td>0.04</td> <td>0.05</td> </tr> <tr> <td>or less</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>0.1</td> <td>0.12</td> </tr> <tr> <td></td> <td>0.1</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> </tbody> </table> LC 0.01CV or 0.5 μ A or less - 0.1CV or 5 μ A or less 0.125CV or 6.25 μ A or less	Specified initial value	-55	85	125	Δ C/C	-	-12~0%	0~+10%	0~+12%	tan δ	0.04	0.05	0.04	0.05	or less	0.06	0.08	0.06	0.06	or less	0.08	0.12	0.1	0.12		0.1	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%																																
tan δ	0.04	0.05	0.04	0.05																																
or less	0.06	0.08	0.06	0.06																																
or less	0.08	0.12	0.1	0.12																																
	0.1	0.14	0.12	0.14																																
	0.12	0.16	0.14	0.16																																
Solder heat resistance	Δ C/C \pm 5% or less tan δ Specified initial value or less LC Specified initial value or less	Dip 260 \pm 5°C UA,UB case UC case 10 \pm 1sec. 5 \pm 0.5sec. Reflow -260°C 10 \pm 1sec.																																		
Moisture resistance leaving	Δ C/C \pm 10% or less tan δ 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 \pm 10% or less tan δ 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 \pm 5% or less tan δ 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 \pm 10% or less tan δ 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 1 Ω /V).																																		

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Product name	tan δ
UB7V22 μ F, UB7V33 μ F, UB10V15 μ F, UB10V22 μ F	0.1
UB2.5V33 μ F, UB2.5V47 μ F, UB2.5V68 μ F, UB4V33 μ F, UB4V47 μ F	0.12

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Standard product tables - TMCU series

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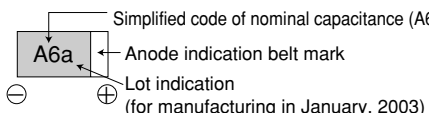
Rated voltage V . DC	Capacitance μ F	$\tan \delta$	Leakage current μ A	Case code	Product name
2.5	3.3	0.06	0.5	UA	TMCUA0E335
	4.7	0.06	0.5	UA	TMCUA0E475
	6.8	0.06	0.5	UA	TMCUA0E685
	10	0.08	0.5	UA	TMCUA0E106
	10	0.08	0.5	UB	TMCUB0E106
	15	0.08	0.5	UA	TMCUA0E156
	15	0.08	0.5	UB	TMCUB0E156
	22	0.08	0.6	UA	TMCUA0E226
	22	0.08	0.6	UB	TMCUB0E226
	22	0.08	0.6	UC	TMCUC0E226
	33	0.12	0.8	UB	TMCUB0E336
	33	0.08	0.8	UC	TMCUC0E336
	47	0.12	1.2	UB	TMCUB0E476
	47	0.08	1.2	UC	TMCUC0E476
	68	0.12	1.7	UB	TMCUB0E686
68	0.08	1.7	UC	TMCUC0E686	
4	2.2	0.06	0.5	UA	TMCUA0G225
	3.3	0.06	0.5	UA	TMCUA0G335
	4.7	0.06	0.5	UA	TMCUA0G475
	6.8	0.06	0.5	UA	TMCUA0G685
	6.8	0.06	0.5	UB	TMCUB0G685
	10	0.08	0.5	UA	TMCUA0G106
	10	0.08	0.5	UB	TMCUB0G106
	15	0.08	0.6	UA	TMCUA0G156
	15	0.08	0.6	UB	TMCUB0G156
	22	0.08	0.9	UA	TMCUA0G226
	22	0.08	0.9	UB	TMCUB0G226
	22	0.08	0.9	UC	TMCUC0G226
	33	0.12	1.3	UB	TMCUB0G336
	33	0.08	1.3	UC	TMCUC0G336
	47	0.12	1.9	UB	TMCUB0G476
47	0.08	1.9	UC	TMCUC0G476	
68	0.08	2.7	UC	TMCUC0G686	
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
	4.7	0.06	0.5	UB	TMCUB0J475
	6.8	0.06	0.5	UA	TMCUA0J685
	6.8	0.06	0.5	UB	TMCUB0J685
	10	0.08	0.7	UA	TMCUA0J106
	10	0.08	0.7	UB	TMCUB0J106
	15	0.08	1.1	UA	TMCUA0J156
	15	0.08	1.1	UB	TMCUB0J156
	15	0.08	1.1	UC	TMCUC0J156
	22	0.10	1.5	UB	TMCUB0J226
	22	0.08	1.5	UC	TMCUC0J226
	33	0.10	2.3	UB	TMCUB0J336
33	0.08	2.3	UC	TMCUC0J336	
47	0.08	3.3	UC	TMCUC0J476	
150	0.12	10.5	UE	TMCUE0J157	

Rated voltage V . DC	Capacitance μ F	$\tan \delta$	Leakage current μ A	Case code	Product name
10	1.0	0.04	0.5	UA	TMCUA1A105
	1.5	0.06	0.5	UA	TMCUA1A155
	2.2	0.06	0.5	UA	TMCUA1A225
	3.3	0.06	0.5	UA	TMCUA1A335
	3.3	0.06	0.5	UB	TMCUB1A335
	4.7	0.06	0.5	UA	TMCUA1A475
	4.7	0.06	0.5	UB	TMCUB1A475
	6.8	0.06	0.7	UA	TMCUA1A685
	6.8	0.06	0.7	UB	TMCUB1A685
	10	0.08	1.0	UA	TMCUA1A106
	10	0.08	1.0	UB	TMCUB1A106
	10	0.08	1.0	UC	TMCUC1A106
	15	0.10	1.5	UB	TMCUB1A156
	15	0.08	1.5	UC	TMCUC1A156
	22	0.10	2.2	UB	TMCUB1A226
	22	0.08	2.2	UC	TMCUC1A226
	33	0.08	3.3	UC	TMCUC1A336
	100	0.12	10.0	UE	TMCUE1A107
16	0.68	0.04	0.5	UA	TMCUA1C684
	1.0	0.04	0.5	UA	TMCUA1C105
	1.5	0.06	0.5	UA	TMCUA1C155
	2.2	0.06	0.5	UA	TMCUA1C225
	2.2	0.06	0.5	UB	TMCUB1C225
	3.3	0.06	0.5	UA	TMCUA1C335
	3.3	0.06	0.5	UB	TMCUB1C335
	4.7	0.06	0.8	UB	TMCUB1C475
	6.8	0.06	1.1	UB	TMCUB1C685
	6.8	0.06	1.1	UC	TMCUC1C685
	10	0.08	1.6	UB	TMCUB1C106
	10	0.08	1.6	UC	TMCUC1C106
	15	0.08	2.4	UC	TMCUC1C156
	47	0.08	7.52	UE	TMCUE1C476
	20	0.1	0.04	0.5	UA
0.15		0.04	0.5	UA	TMCUA1D154
0.22		0.04	0.5	UA	TMCUA1D224
0.33		0.04	0.5	UA	TMCUA1D334
0.47		0.04	0.5	UA	TMCUA1D474
0.68		0.04	0.5	UA	TMCUA1D684
1.0		0.04	0.5	UA	TMCUA1D105
1.0		0.04	0.5	UB	TMCUB1D105
1.5		0.06	0.5	UB	TMCUB1D155
2.2		0.06	0.5	UB	TMCUB1D225
3.3	0.06	0.7	UC	TMCUC1D335	
4.7	0.06	0.9	UC	TMCUC1D475	
6.8	0.06	1.4	UC	TMCUC1D685	
25	0.1	0.04	0.5	UA	TMCUA1E104
	0.15	0.04	0.5	UA	TMCUA1E154
	0.22	0.04	0.5	UA	TMCUA1E224
	0.33	0.04	0.5	UA	TMCUA1E334
	0.47	0.04	0.5	UA	TMCUA1E474
35	0.1	0.04	0.5	UA	TMCUA1V104
	0.15	0.04	0.5	UA	TMCUA1V154
	0.22	0.04	0.5	UA	TMCUA1V224

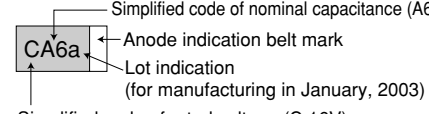
Seal indication

UA, UB case

(Example1) 10V1 μ F
UA case



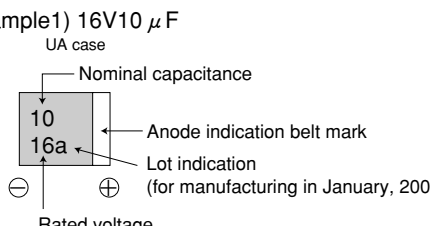
(Example2) 16V1 μ F
UA case



* 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 5143, paragraph 10 and EIAJ RC-3813, paragraph 7.1.

UC, UE case

(Example1) 16V10 μ F
UA case



Lot indication

Year \ Month	1	2	3	4	5	6	7	8	9	10	11	12
2000	n	p	q	r	s	t	u	v	w	x	y	z
2001	A	B	C	D	E	F	G	H	J	K	L	M
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