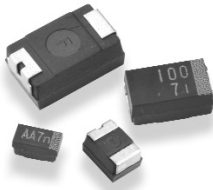


## Type TYTM Series

### Type TYTM Series



The TYT series of moulded solid Tantalum chip capacitors is designed for high solder heat resistance and ease of automatic placement. The product is provided with both excellent frequency and impedance characteristics.

The four different product types cover the majority of requirements for this product series.

TYTS series is the standard type used in many industries and TYTM series extends this product range by applying advanced manufacturing technology, thereby allowing reduced sizes and extended value range.

TYTP series allows even further miniaturisation offering many values in an 0805 package size.

The series is completed with the TYTR series which offers a comprehensive range of low ESR products.

### Key Features

- Excellent Frequency Characteristics
- Excellent Impedance Characteristics
- Super Compact Size
- A, B, C & D Case Sizes
- 2.5V to 50V Ratings
- 10% or 20% Tolerance
- RoHS Compliant

### Product Specifications

Product Specifications						Test Conditions JIS C5101-3(1998)		
<b>Operating Temperature Range:</b> -55°C ~ +125°C								
<b>Rated Voltage:</b>		DC2.5 ~ 50V			85°C			
<b>Surge Voltage:</b>		DC3.2 ~ 65V			85°C			
<b>Derated Voltage:</b>		DC1.6 ~ 33V			125°C			
<b>Capacitance:</b>		0.1 ~ 470µF						
<b>Capacitance Tolerance:</b>		±10% or 20%			Measuring Frequency: 120Hz ±10%, Measurement Circuit: Equivalent Series Circuit: Measuring voltage max.: 0.5Vrms, +1.5Vdc.			
<b>Leakage Current:</b>		Refer to standard product table			Series Protective Resistor: 1000Ω Measuring Voltage: Rated voltage Measuring Time: 5 minutes			
<b>Surge Withstanding Voltage:</b>		ΔC/C ±5% or less tanδ Specified initial value or less LC Specified initial value or less						
<b>Temp. Characteristics:</b>		Specified initial value	-55°C	+85°C	+125°C			
	ΔC/C	—	-10~0%	0~+10%	0~+12%	Step	Temp.°C	Duration
	tanδ Value shown table or less	0.04	<10V 12%	<10V 12%	<10V 15%	1	+25±2	—
		0.06	≥10V 15%	≥10V 15%	≥10V 15%	2	-55±2	30 min.
		0.08				3	+25±2	30 min.
	LC	0.01CV or 0.5µA or less	—	0.1CV or 5µA or less	0.12CV or 6.0µA or less	4	+85±2	30 min.
						5	+125±2	30 min.
						6	+25±2	—
<b>Solder Heat Resistance:</b>		ΔC/C ±5% or less tanδ Specified initial value or less LC Specified initial value or less			Conditioning of Solder Dip: Solder Temperature: 260 ±5°C Dip Duration: 5±0.5s Depth of Immersion: Under Surface 10mm			
<b>Moisture Resistance:</b>		ΔC/C ±10% or less tanδ Specified initial value or less LC Specified initial value or less			40°C 90 ~ 95% RH, 56 Days			
<b>High-Temperature Load:</b>		ΔC/C ±10% or less tanδ Specified initial value or less LC 125% Specified initial value or less			85°C The rated voltage is applied for 2000 hours.			
<b>Thermal Shock:</b>		ΔC/C ±10% 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 30 mins running			
<b>Moisture Resistance Load:</b>		ΔC/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.			
<b>Failure Rate:</b>		1% / 2000h			85°C The rated voltage is applied (through a protective resistor of 1Ω/V).			

## Type TYTM Series

### Product Availability Chart

Capacitance		Rated voltage (V.DC)								
		2.5	4.0	6.3	10	16	20	25	35	50
µF	Code									
0.1	104								A	A
0.15	154								A	A,B
0.22	224								A	B
0.33	334								A	B
0.47	474							A	A,B	B,C
0.68	684						A	A	A	B,C
1.0	105			A	A	A	A	A	A,B	C
1.5	155			A	A	A	A,B	A,B	B,C	C,D
2.2	225			A	A	A	A,B	B	B,C	C,D
3.3	335		A	A	A	A,B	A,B	B	B,C,D	D
4.7	475		A	A	A	A,B	A,B	B,C	C,D	D
6.8	685	A	A	A	A,B	A,B	B,C	C	C,D	D
10	106	A	A	A,B	A,B	A,B,C	B,C	C,D	C,D	
15	156	A	A,B	A,B	A,B,C	B,C	C	C,D	D	
22	226	A	A,B	A,B	B,C	B,C,D	C,D	D	D	
33	336	B	B,C	B,C	B,C,D	C,D	C,D	D		
47	476	B	B,C	B,C	B,C,D	C,D	D	D		
68	686	B,C	B,C	B,C,D	C,D	D				
100	107	B,C	B,C,D	B,C,D	C,D	D				
150	157	C,D	C,D	C,D	D					
220	227	C,D	C,D	D	D					
330	337	D	D	D						
470	477	D	D	D						

### Standard Product Table

Rated Voltage V.DC	Capacitance		Case Code	DC Leakage Current mA*	Dissipation Factor (%)*	ESR (Ω)	Part Number**
	µF	Code					
2.5	6.8	685	A	0.5	6	6.5	TYTMA0E685(x)TRF
2.5	10	106	A	0.5	6	6.0	TYTMA0E106(x)TRF
2.5	15	156	A	0.5	6	4.0	TYTMA0E156(x)TRF
2.5	22	226	A	0.6	6	3.2	TYTMA0E226(x)TRF
2.5	22	226	B	0.6	6	2.5	TYTMB0E226(x)TRF
2.5	33	336	B	0.8	6	2.8	TYTMB0E336(x)TRF
2.5	47	476	B	1.2	6	1.8	TYTMB0E476(x)TRF
2.5	68	686	B	1.7	6	2.5	TYTMB0E686(x)TRF
2.5	68	686	C	1.7	6	1.6	TYTMC0E686(x)TRF
2.5	100	107	B	2.5	8	2.5	TYTMB0E107(x)TRF
2.5	100	107	C	2.5	8	1.3	TYTMC0E107(x)TRF
2.5	150	157	C	3.8	8	1.2	TYTMC0E157(x)TRF
2.5	150	157	D	3.8	8	0.9	TYTMD0E157(x)TRF
2.5	220	227	C	5.5	8	1.2	TYTMC0E227(x)TRF
2.5	220	227	D	5.5	8	0.9	TYTMD0E227(x)TRF
2.5	330	337	D	8.3	8	0.9	TYTMD0E337(x)TRF
2.5	470	477	D	11.8	8	0.9	TYTMD0E477(x)TRF
4.0	3.3	335	A	0.5	6	9.0	TYTMA0G335(x)TRF
4.0	4.7	475	A	0.5	6	7.5	TYTMA0G475(x)TRF
4.0	6.8	685	A	0.5	6	6.5	TYTMA0G685(x)TRF
4.0	10	106	A	0.5	6	6.0	TYTMA0G106(x)TRF
4.0	15	156	A	0.6	6	4.0	TYTMA0G156(x)TRF
4.0	15	156	B	0.6	6	3.5	TYTMB0G156(x)TRF
4.0	22	226	A	0.9	6	3.5	TYTMA0G226(x)TRF
4.0	22	226	B	0.9	6	3.2	TYTMB0G226(x)TRF
4.0	33	336	B	1.3	6	2.8	TYTMB0G336(x)TRF
4.0	33	336	C	1.3	6	2.2	TYTMC0G336(x)TRF
4.0	47	476	B	1.9	6	2.2	TYTMB0G476(x)TRF
4.0	47	476	C	1.9	6	1.8	TYTMC0G476(x)TRF
4.0	68	686	B	2.7	6	3.5	TYTMB0G686(x)TRF
4.0	68	686	C	2.7	6	1.6	TYTMC0G686(x)TRF
4.0	100	107	B	4.0	8	2.5	TYTMB0G107(x)TRF

## Type TYTM Series

### Standard Product Table (continued)

Rated Voltage V.DC	Capacitance		Case Code	DC Leakage Current mA*	Dissipation Factor (%)*	ESR (Ω)	Part Number**
	μF	Code					
4.0	100	107	C	4.0	8	1.3	TYTMC0G107(x)TRF
4.0	100	107	D	4.0	8	0.9	TYTMD0G107(x)TRF
4.0	150	157	C	6.0	8	0.9	TYTMC0G157(x)TRF
4.0	150	157	D	6.0	8	0.9	TYTMD0G157(x)TRF
4.0	220	227	C	8.8	8	1.2	TYTMC0G227(x)TRF
4.0	220	227	D	8.8	8	0.9	TYTMD0G227(x)TRF
4.0	330	337	D	13.2	8	0.9	TYTMD0G337(x)TRF
4.0	470	477	D	18.8	8	0.9	TYTMD0G477(x)TRF
6.3	1.0	105	A	0.5	4	14	TYTMA0J105(x)TRF
6.3	1.5	155	A	0.5	6	12	TYTMA0J155(x)TRF
6.3	2.2	225	A	0.5	6	9.0	TYTMA0J225(x)TRF
6.3	3.3	335	A	0.5	6	7.0	TYTMA0J335(x)TRF
6.3	4.7	475	A	0.5	6	6.0	TYTMA0J475(x)TRF
6.3	6.8	685	A	0.5	6	5.0	TYTMA0J685(x)TRF
6.3	10	106	A	0.6	6	4.0	TYTMA0J106(x)TRF
6.3	10	106	B	0.6	6	3.0	TYTMB0J106(x)TRF
6.3	15	156	A	0.9	6	4.0	TYTMA0J156(x)TRF
6.3	15	156	B	0.9	6	3.3	TYTMB0J156(x)TRF
6.3	22	226	A	1.4	6	3.5	TYTMA0J226(x)TRF
6.3	22	226	B	1.4	6	2.5	TYTMB0J226(x)TRF
6.3	33	336	B	2.1	6	2.0	TYTMB0J336(x)TRF
6.3	33	336	C	2.1	6	1.8	TYTMC0J336(x)TRF
6.3	47	476	B	3.0	6	2.0	TYTMB0J476(x)TRF
6.3	47	476	C	3.0	6	1.6	TYTMC0J476(x)TRF
6.3	68	686	B	4.3	6	1.0	TYTMB0J686(x)TRF
6.3	68	686	C	4.3	6	1.6	TYTMC0J686(x)TRF
6.3	68	686	D	4.3	6	0.9	TYTMD0J686(x)TRF
6.3	100	107	B	6.3	8	1.4	TYTMB0J107(x)TRF
6.3	100	107	C	6.3	8	1.4	TYTMC0J107(x)TRF
6.3	100	107	D	6.3	8	0.9	TYTMD0J107(x)TRF
6.3	150	157	C	9.5	8	1.2	TYTMC0J157(x)TRF
6.3	150	157	D	9.5	8	0.9	TYTMD0J157(x)TRF
6.3	220	227	D	13.9	8	0.7	TYTMD0J227(x)TRF
6.3	330	337	D	20.8	8	0.5	TYTMD0J337(x)TRF
6.3	470	477	D	28.2	12	0.4	TYTMD0J477(x)TRF
10	1.0	105	A	0.5	4	13	TYTMA1A105(x)TRF
10	1.5	155	A	0.5	6	10	TYTMA1A155(x)TRF
10	2.2	225	A	0.5	6	7.0	TYTMA1A225(x)TRF
10	3.3	335	A	0.5	6	5.5	TYTMA1A335(x)TRF
10	4.7	475	A	0.5	6	5.0	TYTMA1A475(x)TRF
10	6.8	685	A	0.7	6	4.0	TYTMA1A685(x)TRF
10	6.8	685	B	0.7	6	3.0	TYTMB1A685(x)TRF
10	10	106	A	1.0	6	3.0	TYTMA1A106(x)TRF
10	10	106	B	1.0	6	2.5	TYTMB1A106(x)TRF
10	15	156	A	1.5	6	6.0	TYTMA1A156(x)TRF
10	15	156	B	1.5	6	2.8	TYTMB1A156(x)TRF
10	15	156	C	1.5	6	2.2	TYTMC1A156(x)TRF
10	22	226	B	2.2	6	2.4	TYTMB1A226(x)TRF
10	22	226	C	2.2	6	1.8	TYTMC1A226(x)TRF
10	33	336	B	3.3	6	1.6	TYTMB1A336(x)TRF
10	33	336	C	3.3	6	1.6	TYTMC1A336(x)TRF
10	33	336	D	3.3	6	1.1	TYTMD1A336(x)TRF
10	47	476	B	4.7	6	1.0	TYTMB1A476(x)TRF
10	47	476	C	4.7	6	1.2	TYTMC1A476(x)TRF
10	47	476	D	4.7	6	0.9	TYTMD1A476(x)TRF
10	68	686	C	6.8	6	1.2	TYTMC1A686(x)TRF
10	68	686	D	6.8	6	0.9	TYTMD1A686(x)TRF
10	100	107	C	10	8	1.3	TYTMC1A107(x)TRF
10	100	107	D	10	8	0.9	TYTMD1A107(x)TRF
10	150	157	D	15	8	0.7	TYTMD1A157(x)TRF
10	220	227	D	22	8	0.5	TYTMD1A227(x)TRF

## Type TYTM Series

### Standard Product Table (continued)

Rated Voltage V.DC	Capacitance		Case Code	DC Leakage Current mA*	Dissipation Factor (%)*	ESR (Ω)	Part Number**
	μF	Code					
16	1.0	105	A	0.5	4	11	TYTMA1C105(x)TRF
16	1.5	155	A	0.5	6	8.0	TYTMA1C155(x)TRF
16	2.2	225	A	0.5	6	6.5	TYTMA1C225(x)TRF
16	3.3	335	A	0.5	6	6.0	TYTMA1C335(x)TRF
16	3.3	335	B	0.5	6	5.0	TYTMB1C335(x)TRF
16	4.7	475	A	0.8	6	4.0	TYTMA1C475(x)TRF
16	4.7	475	B	0.8	6	3.5	TYTMB1C475(x)TRF
16	6.8	685	A	1.1	6	5.0	TYTMA1C685(x)TRF
16	6.8	685	B	1.1	6	3.5	TYTMB1C685(x)TRF
16	10	106	A	1.6	6	5.0	TYTMA1C106(x)TRF
16	10	106	B	1.6	6	2.8	TYTMB1C106(x)TRF
16	10	106	C	1.6	6	2.0	TYTMC1C106(x)TRF
16	15	156	B	2.4	6	3.0	TYTMB1C156(x)TRF
16	15	156	C	2.4	6	1.8	TYTMC1C156(x)TRF
16	22	226	B	3.5	6	2.2	TYTMB1C226(x)TRF
16	22	226	C	3.5	6	1.6	TYTMC1C226(x)TRF
16	22	226	D	3.5	6	1.1	TYTMD1C226(x)TRF
16	33	336	C	5.3	6	1.5	TYTMC1C336(x)TRF
16	33	336	D	5.3	6	0.9	TYTMD1C336(x)TRF
16	47	476	C	7.5	6	1.4	TYTMC1C476(x)TRF
16	47	476	D	7.5	6	0.9	TYTMD1C476(x)TRF
16	68	686	D	10.9	6	0.9	TYTMD1C686(x)TRF
16	100	107	D	16	8	0.9	TYTMD1C107(x)TRF
20	0.68	684	A	0.5	4	12	TYTMA1D684(x)TRF
20	1.0	105	A	0.5	4	9.0	TYTMA1D105(x)TRF
20	1.5	155	A	0.5	6	6.5	TYTMA1D155(x)TRF
20	1.5	155	B	0.5	6	5.0	TYTMB1D155(x)TRF
20	2.2	225	A	0.5	6	5.3	TYTMA1D225(x)TRF
20	2.2	225	B	0.5	6	3.5	TYTMB1D225(x)TRF
20	3.3	335	A	0.7	6	7.0	TYTMA1D335(x)TRF
20	3.3	335	B	0.7	6	3.0	TYTMB1D335(x)TRF
20	4.7	475	A	0.9	6	6.0	TYTMA1D475(x)TRF
20	4.7	475	B	0.9	6	3.0	TYTMB1D475(x)TRF
20	6.8	685	B	1.4	6	3.5	TYTMB1D685(x)TRF
20	6.8	685	C	1.4	6	2.0	TYTMC1D685(x)TRF
20	10	106	B	2.0	6	3.0	TYTMB1D106(x)TRF
20	10	106	C	2.0	6	1.8	TYTMC1D106(x)TRF
20	15	156	C	3.0	6	1.7	TYTMC1D156(x)TRF
20	22	226	C	4.4	6	0.9	TYTMC1D226(x)TRF
20	22	226	D	4.4	6	0.9	TYTMD1D226(x)TRF
20	33	336	C	6.6	6	0.9	TYTMC1D336(x)TRF
20	33	336	D	6.6	6	0.9	TYTMD1D336(x)TRF
20	47	476	D	9.4	6	0.7	TYTMD1D476(x)TRF
25	0.47	474	A	0.5	4	14	TYTMA1E474(x)TRF
25	0.68	684	A	0.5	4	10	TYTMA1E684(x)TRF
25	1.0	105	A	0.5	4	8.0	TYTMA1E105(x)TRF
25	1.5	155	A	0.5	6	10	TYTMA1E155(x)TRF
25	1.5	155	B	0.5	6	5.0	TYTMB1E155(x)TRF
25	2.2	225	B	0.6	6	4.5	TYTMB1E225(x)TRF
25	3.3	335	B	0.8	6	4.0	TYTMB1E335(x)TRF
25	4.7	475	B	1.2	6	3.5	TYTMB1E475(x)TRF
25	4.7	475	C	1.2	6	2.4	TYTMC1E475(x)TRF
25	6.8	685	C	1.7	6	2.0	TYTMC1E685(x)TRF
25	10	106	C	2.5	6	1.8	TYTMC1E106(x)TRF
25	10	106	D	2.5	6	1.2	TYTMD1E106(x)TRF
25	15	156	C	3.8	6	1.2	TYTMC1E156(x)TRF
25	15	156	D	3.8	6	1.0	TYTMD1E156(x)TRF
25	22	226	D	5.5	6	0.9	TYTMD1E226(x)TRF
25	33	336	D	8.3	6	0.7	TYTMD1E336(x)TRF

## Type TYTM Series

### Standard Product Table (continued)

Rated Voltage V.DC	Capacitance		Case Code	DC Leakage Current mA*	Dissipation Factor (%)*	ESR (Ω)	Part Number**
	μF	Code					
25	47	476	D	11.8	6	0.7	TYTMD1E476(x)TRF
35	0.1	104	A	0.5	4	24	TYTMA1V104(x)TRF
35	0.15	154	A	0.5	4	21	TYTMA1V154(x)TRF
35	0.22	224	A	0.5	4	18	TYTMA1V224(x)TRF
35	0.33	334	A	0.5	4	15	TYTMA1V334(x)TRF
35	0.47	474	A	0.5	4	12	TYTMA1V474(x)TRF
35	0.47	474	B	0.5	4	10	TYTMB1V474(x)TRF
35	0.68	684	A	0.5	4	10	TYTMA1V684(x)TRF
35	1.0	105	A	0.5	4	10	TYTMA1V105(x)TRF
35	1.0	105	B	0.5	4	6.5	TYTMB1V105(x)TRF
35	1.5	155	B	0.5	6	5.2	TYTMB1V155(x)TRF
35	1.5	155	C	0.5	6	4.5	TYTMC1V155(x)TRF
35	2.2	225	B	0.8	6	4.0	TYTMB1V225(x)TRF
35	2.2	225	C	0.8	6	3.5	TYTMC1V225(x)TRF
35	3.3	335	B	1.2	6	3.0	TYTMB1V335(x)TRF
35	3.3	335	C	1.2	6	2.5	TYTMC1V335(x)TRF
35	3.3	335	D	1.2	6	2.0	TYTMD1V335(x)TRF
35	4.7	475	C	1.6	6	2.2	TYTMC1V475(x)TRF
35	4.7	475	D	1.6	6	1.5	TYTMD1V475(x)TRF
35	6.8	685	C	2.4	6	2.0	TYTMC1V685(x)TRF
35	6.8	685	D	2.4	6	1.3	TYTMD1V685(x)TRF
35	10	106	C	3.5	6	1.2	TYTMC1V106(x)TRF
35	10	106	D	3.5	6	1.0	TYTMD1V106(x)TRF
35	15	156	D	5.3	6	0.8	TYTMD1V156(x)TRF
35	22	226	D	7.7	6	0.7	TYTMD1V226(x)TRF
50	0.1	104	A	0.5	4	22	TYTMA1H104(x)TRF
50	0.15	154	A	0.5	4	17	TYTMA1H154(x)TRF
50	0.15	154	B	0.5	4	15	TYTMB1H154(x)TRF
50	0.22	224	B	0.5	4	14	TYTMB1H224(x)TRF
50	0.33	334	B	0.5	4	12	TYTMB1H334(x)TRF
50	0.47	474	B	0.5	4	9.0	TYTMB1H474(x)TRF
50	0.47	474	C	0.5	4	8.0	TYTMC1H474(x)TRF
50	0.68	684	B	0.5	4	8.0	TYTMB1H684(x)TRF
50	0.68	684	C	0.5	4	7.0	TYTMC1H684(x)TRF
50	1.0	105	C	0.5	4	5.5	TYTMC1H105(x)TRF
50	1.5	155	C	0.8	6	4.5	TYTMC1H155(x)TRF
50	1.5	155	D	0.8	6	4.0	TYTMD1H155(x)TRF
50	2.2	225	C	1.1	6	3.5	TYTMC1H225(x)TRF
50	2.2	225	D	1.1	6	2.5	TYTMD1H225(x)TRF
50	3.3	335	D	1.7	6	2.0	TYTMD1H335(x)TRF
50	4.7	475	D	2.4	6	1.5	TYTMD1H475(x)TRF
50	6.8	685	D	3.4	6	0.9	TYTMD1H685(x)TRF

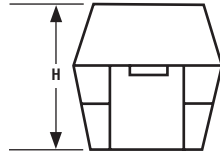
\*DCL and DF measured at 20°C

\*\* (x) = tolerance where K = 10%, M = 20%

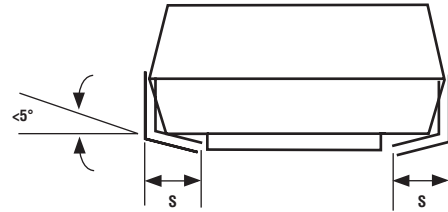
## Type TYTM Series

### Dimensions

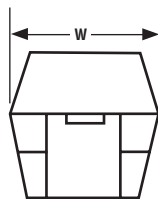
Anode (+) End View



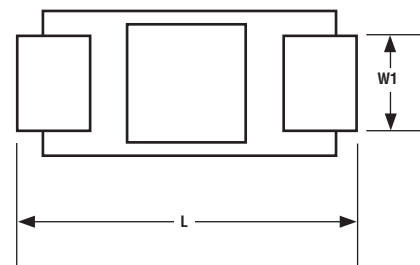
Side View



Cathode (-) End View



Bottom View



Case Code	Dimensions (mm)				
	L	W	H	S	W1
A	3.2±0.2	1.6±0.2	1.6±0.2	0.8±0.3	1.2±0.1
B	3.5±0.2	2.8±0.2	1.9±0.2	0.8±0.3	2.2±0.1
C	6.0±0.2	3.2±0.2	2.5±0.2	1.3±0.2	2.2±0.0
D	7.3±0.2	4.3±0.2	2.8±0.2	1.3±0.2	2.4±0.0

### How to Order

TYTM	A	0E	105	K	TRF
Series	Case Code	Voltage Code	Capacitance	Tolerance	Packaging
TYTM	A, B, C or D	0E (2.5V) 0G (4.0V) 0J (6.3V) 1A (10V) 1C (16V) 1D (20V) 1E (25V) 1V (35V) 1H (50V)	eg. 105	K (10%) M (20%)	TRF = 7" Reels (A and B Case 2000) (C & D Case 500)