



TANTALUM CHIP CAPACITORS

T Y P E T C C

FEATURES

- Meets or exceeds EIA and IECQ standards (QC300801/US0001, IS - 28)
- Capacitance range: 0.1 μ F to 680 μ F
- Precision molded case with flat surfaces for vacuum pick-up
- Soldering temperature up to 260° C
- Laser marking and bold videcon – readable polarity stripe
- Date coding
- Compliant terminations
- Glue pad on underside for bonding to circuit board prior to soldering
- Encapsulant material satisfies the UL 94 VO flammability classification
- Packaged taped and reeled per EIA – 481

DIMENSIONS

Millimeters (Inches)

Case Size	EIA Code	L \pm 0.2 (\pm 0.008)	W1 \pm 0.2 (\pm 0.008)	W2 \pm 0.1 (\pm 0.004)	H \pm 0.2 (\pm 0.008)	P \pm 0.3 (\pm 0.012)
A	3216	3.2 (.126)	1.6 (.063)	1.2 (.047)	1.6 (.063)	0.8 (.031)
B	3528	3.5 (.138)	2.8 (.110)	2.2 (.087)	1.9 (.075)	0.8 (.031)
C	6032	6.0 (.236)	3.2 (.126)	2.2 (.087)	2.5 (.098)	1.3 (.051)
D	7343	7.3 (.287)	4.3 (.169)	2.4 (.094)	2.8 (.110)	1.3 (.051)
H	7343H	7.3 (.287)	4.3 (.169)	2.4 (.094)	4.1 (.162)	1.3 (.051)

GENERAL SPECIFICATIONS

Capacitance Range	0.1 - 680 μ F @ 25° C and 120 Hz @ 1 Volt rms.								
Capacitance Tolerances	+/-20% E.I.A. standard, +/-10%								
Working Voltage	Rated	Derated (DC)	Surge Voltage (DC)						
	-55° C to 85° C	125° C	85° C	125° C					
	4.0	2.7	5.0	3.4					
	6.0	4.0	8.0	5.0					
	10.0	7.0	13.0	9.0					
	16.0	10.0	20.0	12.0					
	20.0	13.0	26.0	16.0					
	25.0	17.0	32.0	20.0					
	35.0	23.0	46.0	26.0					
50.0	33.0	65.0	38.0						
Dissipation Factor	Capacitance Range	Maximum DF %							
		-55° C	+25° C	+85° C	+125° C				
	0.1 thru 1.0 μ F	6.0	4.0	6.0	6.0				
1.5 thru 680 μ F	8.0	6.0	6.0	6.0					
DC Leakage Current	At	DCL shall not exceed —		But needs not be less than —					
	+25° C	0.01 μ A / μ FV		0.5 μ A					
	+85° C	0.10 μ A / μ FV		5.0 μ A					
	+125° C	0.125 μ A / μ FV		6.0 μ A					
Surge Voltage VDC	Surge voltage includes the sum of peak AC ripple, DC bias and any transients.								
Rated Voltage	Rated voltage	4	6.3	10	16	20	25	35	50
	\leq 85° C	5.2	8	13	20	26	33	46	65
	\leq 125° C	3.5	5	9	12	16	21	28	40
(2/3 x Vr derating factor included for 125° C)									
Reverse Voltage	0.15 Vr @ 25° C		0.05 Vr @ 85° C						
	0.10 Vr @ 55° C		0.01 Vr @ 125° C						
	or 1 volt, whichever is greater								

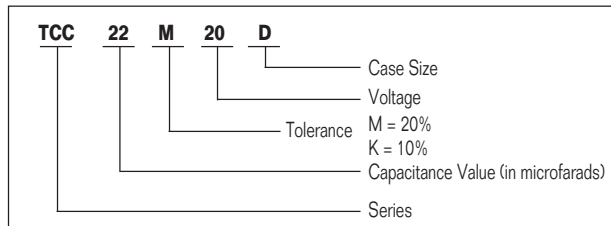
STANDARD PRODUCTS TABLE

WVDC Cap (μ F)	4	6.3	10	16	20	25	35	50
	0.1							A
0.15							A	A, B
0.22							A	A, B
0.33							A	A, B
0.47						A	A, B	B, C
0.68					A	A	A, B	C
1				A	A	A	A, B	C
1.5			A	A	A	A, B	A, B, C	C, D
2.2		A	A	A, B	A, B	A, B	B, C	C, D
3.3	A	A	A	A, B	A, B	B, C	B, C, D	D
4.7	A	A	A, B	A, B	A, B, C	B, C	B, C, D	D
6.8	A	A, B	A, B	A, B	B, C	B, C, D	C, D	D
10	B	A, B	A, B	A, B, C	B, C	C, D	C, D	H
15	B	A, B, C	B, C	B, C	B, C, D	C, D	C, D	
22	A, B, C	A, B, C	B, C	B, C, D	B, C, D	C, D	D, H	
33	A, B, C	B, C	B, C, D	B, C, D	C, D	D, H	D, H	
47	B, C	C, D	B, C, D	C, D	D, H	D, H	H	
68	B, C, D	C, D	C, D	C, D	D, H	H		
100	B, C, D	C, D	C, D	D, H	D, H			
150	C, D	C, D	D, H	D, H				
220	C, D	C, D, H	D, H	H				
330	H	D, H	D, H					
470	H	D, H	H					
680	H	H						

Note: HIGHER VOLTAGE RATINGS and/or tighter capacitance tolerance product may be substituted within the same case size at SMEC's option. Such substitutions will IMPROVE OPERATING RELIABILITY. Voltage substitutions will be marked with the higher voltage rating.

TANTALUM CHIP CAPACITORS — TYPE TCC

ORDERING INFORMATION



TAPE PACKAGING

Size	Qty/Reel
A, B	2,000
C, D	500
H	400

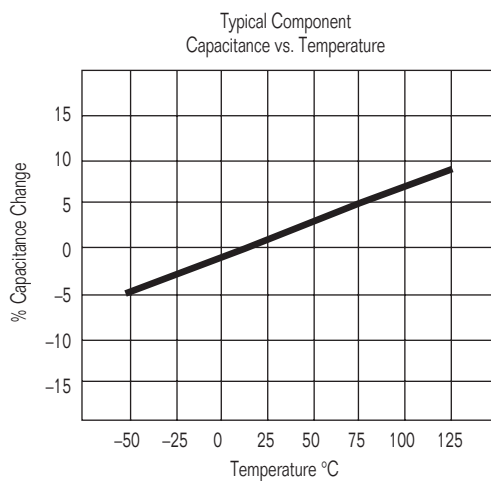
PERFORMANCE

Life test: Capacitors are subjected to 85° C at rated voltage and 125° C at 2/3x rated voltage for 2000 hours with 3 ohms circuit impedance. The capacitors shall meet the following limits after 1 to 2 hour recovery time.

Capacitance change	within ± 10% of the initial value
Tan δ (DF)	less than the initial value
DC leakage current	less than the initial value

Humidity test: Capacitors are subjected to damp heat at steady state 40° C with 95% relative humidity. The capacitors shall meet the following limits after a 1 to 2 hour recovery time.

Capacitance change	within ± 5% of the initial value
Tan δ (DF)	less than 1.2 x the initial value
DC leakage current	less than the initial value



- **Capacitance tolerances** E.I.A. standard ±20% and ±10%.
Tolerance is the permissible variation of the actual value of capacitance from the rated value.
- **Stability** $\frac{\Delta C}{C} \leq 12\%$ over the operating temperature range
- **Environmental Classification** 55/125/56 (IEC 68-2)

Thermal shock: Capacitors are subjected to 5 cycles of 30 minutes at -55° C followed by 30 minutes at 125° C. The capacitors shall meet the following limits after a 1 to 2 hour recovery time.

Capacitance change	less than ± 5% of the initial value
Tan δ (DF)	less than the initial value
DC leakage current	less than the initial value

Resistance to Soldering Heat: Capacitors shall be capable of withstanding the following soldering temperatures.

- Wave soldering + 260° C for 5 seconds recommended, 10 seconds allowable.
- IR reflow + 30° C for 30 seconds.
- Vapor phase reflow + 215° C for 2 minutes.

The capacitors shall meet the following limits after soldering.

Capacitance change	within ± 5% of the initial value
Tan δ (DF)	within the initial value
DC leakage current	within the initial value

