

Chip Tantalum Capacitor Data Sheet (TCC Series)



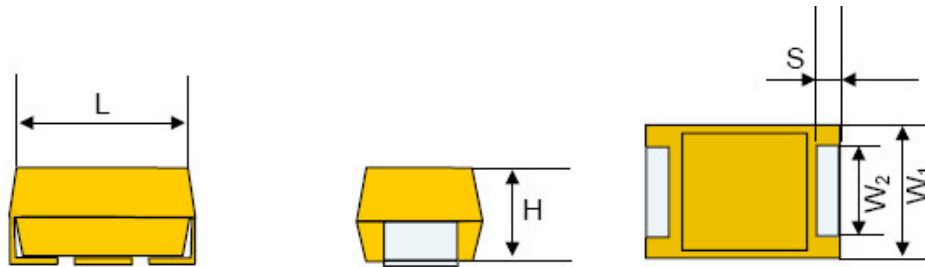
Features

Solid tantalum chip capacitors designed and manufactured with the demanding requirements of surface mount technology in mind. There are A, B, C, D four case codes. They have lower ESR Compared with the dipped tantalum capacitors. The product compatible with automatic pick and place equipment. Suitable for military equipment and computer .ceil telephone and other electronic products. Meets the requirements of EIA 535BAAC and QC300801 .Q/YHC.45-01 standard. .Q/YHC.45-01 standard. .Q/YHC.45-01 standard. .Q/YHC.45-01 standard.

General Characteristics

- Operating temperature: -55. ~ +125.(above 85.,use derated voltage).
- Capacitance Tolerance: $\pm 20\%$, $\pm 10\%$.
- Capacitance Range: 0.1 μ F~100 μ F.
- Voltage Rating: 4V~35V.
- DC leakage current(20): $I_0 = 0.01CRUR$ or 0.5 μ A(whichever is greater) .
- Dissipation factor (20.): see table 1.
- Temperature performance: see table 1.
- Climatic category: 55/125/21.
- Life test: 2000 hours.
- Reliability: 2% per 1000h at 85. with 0.1O/V series impedance 60% confidence level.

Outline Drawings



Case Size	EIA Size	L ± 0.2	W1 ± 0.2	H ± 0.2	S ± 0.2	W2 ± 0.1
S		2.0 ± 0.2	1.20 ± 0.2	1.20 ± 0.2	0.5 ± 0.3	1.2 ± 0.1
A	3216	3.2 ± 0.2	1.6 ± 0.2	1.6 ± 0.2	0.8 ± 0.3	1.2 ± 0.1
B	3528	3.5 ± 0.2	2.8 ± 0.2	1.9 ± 0.2	0.8 ± 0.3	2.2 ± 0.1
C	6032	6.0 ± 0.3	3.2 ± 0.3	2.5 ± 0.3	1.3 ± 0.3	2.2 ± 0.1
D	7343	7.3 ± 0.3	4.3 ± 0.3	2.8 ± 0.3	1.3 ± 0.3	2.4 ± 0.1
E		7.3 ± 0.3	4.3 ± 0.3	4.0 ± 0.3	1.3 ± 0.3	2.4 ± 0.1

Temperature Characteristics Table 2

Capacitance(μ F)	Cap. Change			DF Max.				DCL Max.	
	-55.	+85.	+125.	-55.	+20.	+85.	+125.	+85.	+125.
=1.0	-10	+10	+12	6	4	6	6	10I0	12I0
1.568				10	6	10	10		
100-470				12	8	12	12		

How To Order (NTC 105 M 035 B T)

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NTC	105	M	035	B	T
Type	Capacitance	Tolerance	DC Voltage	Case Size	Packagin
Chip Tantalum Capacitors	105 10X105(pF)This is expressed in picofarads. The first two digits are the significant figures. The third is the number of zeros to follow.	K=±10% M=±20%	Rated voltage 4V=004 6.3V=006 10V=010 16V=016 25V=025 35V=035 50V=050		T= Tape and reel B=bulk pack

Rated Voltage, Voltage Derating, Surge Voltage and Normal Capacitance

Rated Voltage (V)	4	6.3	10	16	20	25	35	50
Voltage Derating (V)	2.5	4	6.3	10	13	16	23	33
Surge Voltage (V+85.)	5	8	13	20	26	32	46	65
Surge Voltage (V+125.)	3.4	5	9	12	16	20	26	38
Capacitance (uF)	Case Size (Standard /Extended)							
0.1					S		A	A
0.15					S		A	B/A
0.22					S		A	B
0.33					S		A	B
0.47				S	S	A	B/A	C
0.68			S	S	A/S	A	B	C
1		A/S	A/S	A/S	A	B/A	B	C
1.5	S	A/S	A/S	A/S	B/A	B	C/B	D/C
2.2	S	A/S	A/S	B/A	B/A	B	C	D
3.3	A/S	A/S	B/A	B/A	C/B	C	D/C	D
4.7	A/S	B/A	B/A	B/A	D/C	C	D/C	E
6.8	B/A	B/A	B/A	C/B	D/C	D/C	D	
10	B/A	B/A	B/A	C/B	D	D/C	D	
15	B/A	C/B	C/B	C	D	D	E	
22	C/B	C/B	C/B	D/C	D	D	E	
33	C/B	D/C	D/C	D/C	D	E		
47	D/C	D/C	D/C	D/C	E/D			
68	D/C	D/C	D					
100	D/C	D/C	D					
150	D/C	D	E					
220	E	E	E					
330	E	E	E					
470	E							

ESR Of Capacitor Table 3

Rated Voltage (V)	4	6.3	10	16	20	25	35	50
Cap. (uF)	Case Size (Standard /Extended)							
0.1					25		24	22
0.15					25		21	17/25
0.22					25		18	14
0.33					25		15	12
0.47				25	25	14	10/12	8
0.68			30	25	12/25	10	8	7
1		14/25	13/25	11/20	9	7/8	6.5	5.5
1.5	30	12/25	10	8/12	5/6.5	5	4.5/5.2	
2.2	25	9/20	7	5.5/6.5	3.5/5.3	4.5	3.5	
3.3	9/20	7/12	5.0/5.5	4.5/5	2.5/3	2.8	2.0/2.5	
4.7	7.5	5/6	4/5	3.5/4	2.5/2.8	2.4	1.5/2.2	
6.8	6/6.5	4/5	3/4	2.5/3.5	1.8/2	1.4/2	1.3	
10	4/6	3/4	2.5/3	2/2.8	1.3	1.2/1.8	1	
15	3.5/4	2.5/3.2	2.2/2.8	1.8	1.1	1	0.9	
22	2.5/3.2	2/2.5	1.8/2.4	1.1/1.6	0.9	0.9	0.9	
33	2.2/2.8	1.3/1.8	1.1/1.6	0.9/1.5	0.9	0.9		
47	1.3/1.8	1.1/1.6	0.9/1.2	0.9/1.4	0.9/0.9			
68	1.1/1.6	0.9/1.6	0.9	0.9	0.9			
100	0.9/1.3	0.9/1.4	0.9	0.9				
150	0.9	0.9	0.9	0.9				
220	0.9	0.9	0.9	0.9				
330	0.9	0.9	0.9					
470	0.9							

Component Characteristics**Capacitance**

Capacitance is measured at 120HZ, less than 1.0 volts rms, at 25°C.

Capacitance increases with increasing temperature.

DC leakage current (DCL)

DC leakage current is the current that, after a five minute charging period, flows through a capacitor when voltage is measured

At 25°C With full rated DC voltage applied to the capacitor through a 1000-ohm resistor in series with the capacitor. DC current

Increases with increasing temperature.

DC leakage current (DCL)

Dissipation factor is measured at 120HZ up to 1.0-volt rms maximum.

DF increases with increasing frequency.

Temperature stability

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Step No	TEMP.	CAPACITANCE	DCL	DF
1	+25°C	Within specified tolerance	Within original limit	Within original limit
2	-55°C	Within -10% initial value	N/A	Within original limit
3	+25°C	Within -5% initial value	Within original limit	Within original limit
4	+85°C	Within -10% initial value	Within 10X original limit	See table 1
5	+125°C	Within -12% initial value	Within 12X original	See table 1
6	+25°C	Within -5% initial value	Within original limit	Within original limit

Temperature cycle

-55°C, room temperature, 125°C, 5 cycles 30min, Post test performance:

- Capacitance---within $\pm 5\%$ initial value
- DC Leakage---within initial limit
- DF--- within initial limit

Life test

2000 hours, +85°C, rated voltage or 2000 hours, +125°C, 2/3 rated voltage, post test performance:

- .. Capacitance---within $\pm 10\%$ initial value
- DC Leakage---within 200% initial limit
- DF--- within 150% initial limit

Surge voltage 85°C,

1.15 rated voltage measurement is done after 1000 cycles of 0.5 minutes on 5.5 minutes off with 1000 Ω of series resistance.

Post test performance:

- Capacitance---within $\pm 10\%$ initial value
- Leakage---within initial limit
- DF--- within initial limit

Solvent resistance

Solution: isopropyl alcohol, solution temp: 20-25°C. The specimen shall be completely immersed in the solution for 1 min. and the

marking shall be rubbed with a brush 10 times. The above cycle will be applied 3 times and then the marking shall be examined

visually. post test performance:

- Capacitance---within initial limit
- DC Leakage---within initial limit
- DF--- within initial limit
- physical---Marking must be legible

Solderability

Solder temperature: $230 \pm 5^\circ\text{C}$, immersion times (solder): 3 ± 0.5 sec, Immersion in flux 5-10 sec, The specimen shall be immersed

completely, post test performance: The dipped portion of the termination is at least 95% covered by a new solder coating.