



**CAK45 SMD Tantalum Capacitor  
(Military Standard)**

**1, Brief Introduction**

This capacitor is mould pressing chip solid tantalum electrolytic capacitor, Small size and light. Long life, polarized, **high reliability and keep good performance after storing.**

Suit for communication equipment, satellite, guided missile, radar etc..

The part meets the state military standard GJB2283-95 and details standard ZZR-Q/PWV2003-2006.

**2, General Characteristics**

Operating temperature: -55°C ~ +125°C (above 85°C,use derated voltage)

Capacitance Tolerance: M=±20%, K=±10%,

DC leakage current(20°C): $I_o \leq 0.01C_R U_R$  or 0.5μA (whichever is greater )

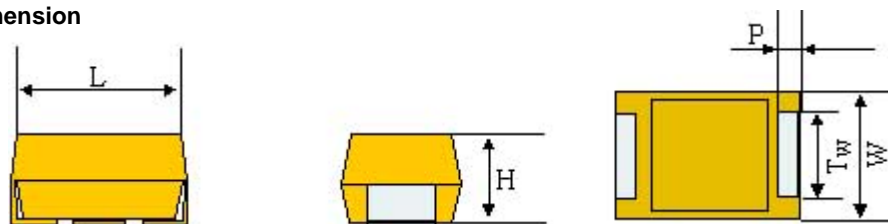
Size dimension: see table1

Dissipation factor (20°C): see table 2

Temperature performance: see table 2.

**3, Drawing and Case Dimension**

Unit(mm)



**Table1 Case Dimension**

Code	EIA Code	L	W	H	P	Tw
A	3216	3.2±0.2	1.6±0.2	1.6±0.2	0.8±0.2	1.2±0.2
B	3528	3.5±0.2	2.8±0.2	1.9±0.2	0.8±0.2	2.2±0.2
C	6032	6.0±0.2	3.2±0.2	2.5±0.2	1.3±0.2	2.2±0.2
D	7343	7.3±0.2	4.3±0.2	2.8±0.2	1.3±0.2	2.4±0.2
E	7343	7.3±0.2	4.3±0.2	4.1±0.2	1.3±0.2	2.4±0.2
V	7361	7.3±0.2	6.1±0.2	3.6±0.2	1.35±0.2	2.4±0.2

**Table 2 Temperature performance**

Capacitance (CR) uF	Capacitance change (%)			Max.					
				DF (%)				DCL (μA)	
	-55°C	+85°C	+125°C	-55°C	+25°C	+85°C	+125°C	+85°C	+125°C
≤1.0	±10	±10	±12	6	4	6	6	10I <sub>o</sub>	12.5I <sub>o</sub>
1.5~68				8	6	8	8		
100~220				10	8	10	10		
>220				12	10	12	12		



4, Rated Voltage, derated voltage, surge voltage and case code

Table 3

Rated Voltage		4V	6.3V	10V	16V	20V	25V	35V	40	50V
Derated Voltage		2.7	4	7	10	15	17	23	25	33
Surge Voltage		5	8	13	20	26	32	46	50	65
uF	code	Case size								
0.1	104							A	A	A
0.15	154							A	A	B/A
0.22	224							A	A	B/A
0.33	334						A	A	B/A	B/A
0.47	474					A	A	B/A	B/A	C/B
0.68	684				A	A	B/A	B/A	C/B	C/B
1.0	105			B/A	B/A	B/A	B/A	B/A	C/B	C/B
1.5	155		A	A	B/A	B/A	B/A	C/B	C/B	D/C
2.2	225	A	A	B/A	B/A	B/A	C/B	C/B	D/C	D/C
3.3	335	A	B/A	B/A	B/A	C/B/A	C/B	D/C	D/C	E/D/C
4.7	475	B/A	B/A	B/A	C/B/A	C/B	D/C/B	D/C	D/C	E/D
6.8	685	B/A	B/A	C/B/A	C/B/A	D/C/B	D/C/B	E/D/C	D	E/D
10	106	B/A	C/B/A	C/B/A	C/B/A	D/C/B	D/C/B	E/D/C	E/D	V/E/C
15	156	C/B/A	C/B/A	C/B	E/D/C	D/C	D/C	E/D	E	E
22	226	C/B/A	D/C/B/A	D/C/B	E/D/C	E/D/C	E/D/C	V/E/D		
33	336	E/D/C	E/D/C	E/D/C	E/D/C	E/D/C	E/D	V/E		
47	476	D/C/B	D/C/B	E/D/C	E/D/C	E/D	V/E/D			
68	686	D/C/B	D/C	E/D/C	E/D	V/E/D	V/E			
100	107	D/C	E/D/C	E/D/C	E/D	V/E				
150	157	E/D/C	E/D/C	E/D	V/E	E				
220	227	E/D/C	V/E/D	V/E/D	V					
330	337	V/E/D	V/E/D	V/E/D	V/E					
470	477	V/E/D	E	E						
680	687	E	E							



5, ESR (Equivalent Series Resistance)

Table 4

Rated Voltage	4V	6.3V	10V	16V	20V	25V	35(32)V	40V	50V
uF	ESR Ω (100KHz case size)								
0.1							A:24.0	A:23.0	A:22.0
0.15							A:21.0	A:19.0	B:15.0
									A:17.0
0.22							A:18.0	A:16.0	B:14.0
									A:18.0
0.33						A:15.0	A:15.0	B:14.0	B:12.0
								A:14.0	A:12.0
0.47					A:14.0	A:14.0	B:10.0	B:9.0	C:8.0
							A:12.0	A:9.0	B:9.5
0.68				A:12.0	A:12.0	B:7.5	B:8.0	C:7.5	C:7.0
						A:10.0	A:8.0	B:7.5	B:8.0
1.0			B:6.5	B:6.5	B:9.0	B:6.5	B:4.0	C:6.0	C:5.5
			A:10.0	A:10.0	A:10.0	A:8.0	A:8.0	B:6.5	B:7.0
1.5		A:8.0	A:8.0	B:8.0	B:6.0	B:5.0	C:4.5	C:4.5	D:4.0
				A:8.0	A:8.0	A:7.5	B:5.2	B:4.5	C:4.5
2.2	A:8.0	A:8.0	B:6.0	B:5.5	B:3.5	C:4.5	C:3.5	D:3.0	D:2.5
			A:8.0	A:6.5	A:5.3	B:5.0	B:4.2	C:3.2	C:3.0
3.3	A:8.0	B:7.0	B:5.0	B:4.5	C:3.5	C:3.5	D:2.5	D:2.0	D:2.0
		A:8.0	A:5.5	A:5.0	B:4.0	B:4.0	C:2.5	C:2.4	
					A:5.0				
4.7	B:6.0	B:5.5	B:4.5	C:3.5	C:2.5	D:2.4	D:1.5	D:1.5	D:1.4
	A:8.0	A:6.0	A:5.0	B:3.5	B:3.0	C:2.8	C:2.2	C:2.0	
				A:4.0		B:3.5			
6.8	B:5.5	B:4.5	C:3.5	C:2.5	D:1.4	D:1.4	E:0.9	D:1.2	E:0.9
	A:6.0	A:6.0	B:3.5	B:3.5	C:2.0	C:2.0	D:1.3		D:1.0
			A:4.0	A:4.0	B:2.4	B:3.0	C:1.8		
10	B:4.0	C:3.0	C:3.0	C:2.0	D:1.2	D:1.2	E:0.9	E:1.0	V/E:1.0
	A:6.0	B:3.5	B:3.5	B:2.5	C:1.8	C:1.8	D:1.0	D:1.0	D:1.0
		A:6.0	A:4.0	A:4.0	B:2.0	B:2.8	C:1.6		
15	C:3.5	C:3.0	C:2.5	D:1.8	D:1.0	D:0.9	E:0.9	E:0.9	E:0.9
	B:4.0	B:3.3	B:3.5	C:1.8	C:1.7	C:1.7	D:0.9		
		A:5.0		B:2.5					



Rated Voltage	4V	6.3V	10V	16V	20V	25V	35(32)V	40V	50V
uF	ESR Ω (100KHz case size)								
22	C:2.5	D:2.0	D:1.6	E:1.0	E:0.9	E:0.9	V/E:0.9		
	B:3.2	C:2.0	C:2.0	D:1.8	D:0.9	D:0.9	D:0.9		
		B:3.5	B:3.5	C:1.1	C:1.6	C:1.5			
33		A:5.0							
	D:2.2	D:1.6	D:1.1	E:0.9	E:0.9	E:0.9	V/E:0.9		
	C:2.8	C:1.8	C:1.6	D:0.9	D:0.9	D:0.9			
47	B:3.2	B:3.5	B:3.5	C:1.5	C:1.6				
	D:1.6	D:1.1	E:0.9	E:0.9	E:0.9	V/E:0.9			
	C:1.8	C:1.6	D:0.9	D:0.9	D:0.9	D:0.9			
68	B:2.6	B:2.6	C:1.6	C:1.4					
	D:1.1	D:0.9	E:0.9	E:0.9	V/E:0.9	V/E:0.9			
	C:1.5	C:1.5	D:0.9	D:0.9	D:0.9				
100			C:1.3						
	D:0.9	E:0.9	E:0.9	E:0.9	V/E:0.9				
	C:1.5	D:1.4	D:0.9	D:0.9					
150		C:1.5	C:1.2						
	E:0.9	E:0.9	E:0.9	V/E:0.9	E:0.9				
	D:0.9	D:0.9	D:0.9						
220	C:1.1	C:1.1							
	E:0.15	V/E:0.2	V/E:0.2	V/E:0.2	V:0.18				
	D:0.3	D:0.5	D:0.5						
330	V/E:0.2	V/E:0.2	V/E:0.18	V/E:0.8					
	D:0.5	D:0.5	D:0.5						
470	V/E:0.15	E:0.5	E:0.5						
	D:0.3								
680	E:0.25	E:0.5							

**6 How to order**

(Part No. CAK45-105M035AT)

CAK45	105	M	035	A	T
Type	Capacitance	Tolerance	DC voltage	Case Size	Packaging
Chip Tantalum Capacitor (Military standard)	105: $10 \times 10^5$ (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 20V=020 25V=025 35V=035 50V=050	A:3.2*1.6 B:3.5*2.8 C:6.0*3.2 D:7.3*4.3 E:7.3*4.3 V:7.3*6.1	T= Tape and reel B=bulk pack

**Notes:**

- 1、Tantalum capacitors can't be measured by multimeter (Easily cause irreversible damage and lead to reject)
- 2、Capacitance, DF measure frequency: 100Hz,  $U_1=2.2_{-1.0}^0V$ ,  $U_2=1.0_{-0.5}^0V$ (effective value)
- 3、Measure leakage current above 85°C, please use derated voltage.
- 4、Special size and big capacitance products, please negotiate with us