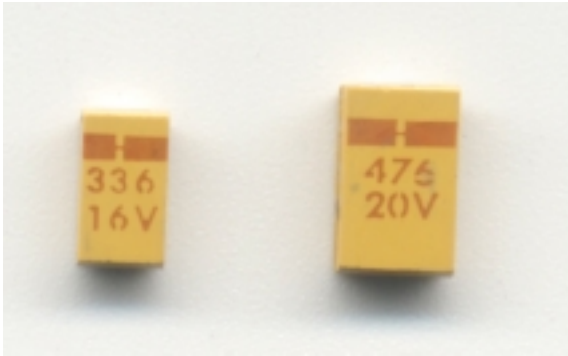


# CA45 Chip Tantalum Capacitors.



## TYPE CA45 Chip Tantalum Capacitors Solid-Electrolyte TANTALUM Capacitors Surface mount



Solid tantalum chip capacitors designed and manufactured with the demanding requirements of surface mount technology in mind. There are S、A、B、C、D、E six 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, cell telephone and other electronic products. Meets the requirements of EIA 535BAAC and QC300801 Equal to kemet T491 and vishay 293D

### PERFORMANCE CHARACTERISTICS

**Operating Temperature:** - 55°C to + 85°C. (To + 125°C with voltage derating.)

**Capacitance Tolerance:** At 100 Hz, + 25°C. ± 20%, ± 10% standard. ± 5%, special order.

**Dissipation Factor:** At 100 Hz, + 25°C. Dissipation factor, as determined from the expression  $2\pi fRC$ , shall not exceed the values listed in the Standard Ratings Tables

### DC Leakage Current (DCL Max.):

Leakage current shall not exceed the values listed in the Standard Ratings Tables.

**Climatic category:** 55/125/21.

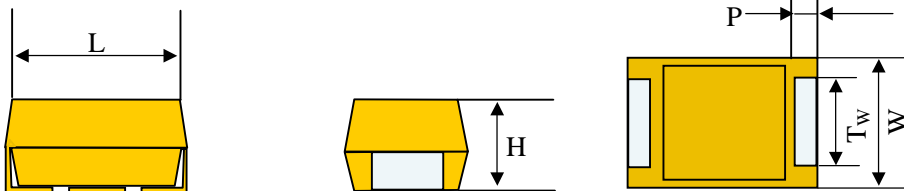
**Life Test:** 2000 hours.

**Reliability:** 2% per 1000h at 85°C with 0.1 Ω/V series impedance 60% confidence level

### TEMPERATURE PERFORMANCE

Capacitance (uF)	Capacitance change(%)			Max D.F.(%)				Max DCL (uA)	
	-55 °C	+85 °C	+125 °C	-55 °C	+25 °C	+85 °C	+125 °C	+85 °C	+125 °C
1.0				4	4	6	6	10I <sub>0</sub>	12I <sub>0</sub>
1.5~68	-10	+10	±12	6	6	8	8		
100				8	8	10	10		

### DRAWING AND DIMENSIONS(UNIT MM)



CASE CODE	EIA/IECQ	L	W	H	P	T <sub>w</sub>
P	2012	2.0±0.2	1.2±0.2	1.2±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	7343H	7.3±0.3	4.3±0.3	4.0±0.3	1.3±0.3	2.4±0.1

# CA45 Chip Tantalum Capacitors.

## MARKING SPECIFICATION

S A SIZE

16V105



Capacitance code in pF

DC working voltage

(G:4V J:6.3V A:10V C:16V D:20V E:25V V:35V H:50V)

Polarity

S A SIZE

16V105



A=1 E=1.5 J=2.2 N=3.3 S=4.7 W=6.8

Capacitance code in Pf( $10^4=4$   $10^5=5$   $10^6=6$   $10^7=7$ )

DC working voltage

(G:4V J:6.3V A:10V C:16V D:20V E:25V V:35V H:50V)

Polarity

B、C、D SIZE

16V476



Capacitance code in pF

DC working voltage

Polarity

## STANDARD RATING

CAPACITANCE uF	CASE SIZE	PART NUMBER	DC LEAKAGE uA At 25°C MAX	DF % MAX at 120HZ 25°C	ESR 100KHZ Ω at 25°C MAX
4 Volt Rating at +85°C (2.5Volt Rating at +125°C)					
2.2	S	CA45225M004S	0.5	6	15.0
2.2	A	CA45225M004A	0.5	6	8.0
3.3	S	CA45335M004S	0.5	6	15.0
3.3	A	CA45335M004A	0.5	6	8.0
4.7	S	CA45475M004S	0.5	6	15.0
4.7	A	CA45475M004A	0.5	6	8.0
6.8	A	CA45685M004A	0.5	6	6.0

## CA45 Chip Tantalum Capacitors.

STANDARD RATING					
CAPACITANCE uF	CASE SIZE	PART NUMBER	DC LEAKAGE uA At 25°C MAX	DF % MAX at 120HZ 25°C	ESR 100KHZ Ω at 25°C MAX
4 Volt Rating at +85°C (2.5Volt Rating at +125°C)					
10	A	CA45106M004A	0.5	6	6.0
15	A	CA45156M004A	0.6	6	4.0
15	B	CA45156M004B	0.6	6	3.5
22	A	CA45226M004A	0.9	6	4.0
22	B	CA45226M004B	0.9	6	3.5
33	B	CA45336M004B	1.3	6	3.5
33	C	CA45336M004C	1.3	6	1.8
47	B	CA45476M004B	1.9	6	3.0
47	C	CA45476M004C	1.9	6	1.8
68	C	CA45686M004C	2.7	6	1.2
100	C	CA45107M004C	4.0	8	1.2
150	D	CA45157M004D	6.0	8	0.8
150	E	CA45157M004E	6.0	8	0.7
220	D	CA45227M004D	8.8	8	0.7
220	E	CA45227M004E	8.8	8	0.7
330	E	CA45337M004E	13.2	8	0.7
6 Volt Rating at +85°C(4 Volt Rating at +125°C)					
1	S	CA45105M006S	0.5	4	15.0
1	A	CA45105M006A	0.5	4	10.0
1.5	S	CA45155M006S	0.5	6	15.0
1.5	A	CA45155M006A	0.5	6	8.0
2.2	S	CA45225M006S	0.5	6	15.0
2.2	A	CA45225M006A	0.5	6	8.0
3.3	S	CA45335M006S	0.5	6	15.0
3.3	A	CA45335M006A	0.5	6	8.0
4.7	A	CA45475M006A	0.5	6	6.0
6.8	A	CA45685M006A	0.5	6	6.0
6.8	B	CA45685M006B	0.5	6	3.5
10	A	CA45106M006A	0.6	6	4.0
10	B	CA45106M006B	0.6	6	3.5
15	A	CA45156M006A	0.9	6	4.0
15	B	CA45156M006B	0.9	6	3.5
22	A	CA45226M006A	1.3	6	4.0
22	B	CA45226M006B	1.3	6	3.5
33	B	CA45336M006B	2.0	6	3.0

# CA45 Chip Tantalum Capacitors.

STANDARD RATING					
CAPACITANCE uF	CASE SIZE	PART NUMBER	DC LEAKAGE uA At 25°C MAX	DF % MAX at 120HZ 25°C	ESR 100KHZ Ω at 25°C MAX
47	B	CA45476M006B	2.8	6	3.5
47	C	CA45476M006C	2.8	6	1.6
68	C	CA45686M006C	4.1	6	1.2
68	D	CA45686M006D	4.1	6	0.8
100	C	CA45107M006C	6.0	8	1.2
100	D	CA45107M006D	6.0	8	0.8
150	D	CA45157M006D	9.0	8	0.7
150	E	CA45157M006E	9.0	8	0.7
220	D	CA45227M006D	13.2	8	0.7
220	E	CA45227M006E	13.2	8	0.7
330	E	CA45337M006E	19.8	8	0.7
10 Volt Rating at +85°C (6.3 Volt Rating at +125°C)					
1	S	CA45105M010S	0.5	4	15.0
1	A	CA45105M010A	0.5	4	8.0
1.5	S	CA45155M010S	0.5	6	15.0
1.5	A	CA45155M010A	0.5	6	8.0
2.2	S	CA45225M010S	0.5	6	15.0
2.2	A	CA45225M010A	0.5	6	8.0
3.3	A	CA45335M010A	0.5	6	6.0
4.7	A	CA45475M010A	0.5	6	6.0
6.8	A	CA45685M010A	0.7	6	6.0
6.8	B	CA45685M010B	0.7	6	3.5
10	A	CA45106M010A	1.0	6	3.5
10	B	CA45106M010B	1.0	6	1.8
15	B	CA45156M010B	1.5	6	3.5
22	B	CA45226M010B	2.2	6	3.0
22	C	CA45226M010C	2.2	6	1.8
33	C	CA45336M010C	3.3	6	1.8
47	C	CA45476M010C	4.7	6	1.2
47	D	CA45476M010D	4.7	6	0.8
68	C	CA45686M010C	6.8	6	1.2
68	D	CA45686M010D	6.8	6	0.8
100	C	CA45107M010C	10.0	8	1.2
100	D	CA45107M010D	10.0	8	0.7
150	D	CA45157M010D	15.0	8	0.7
150	E	CA45157M010E	15.0	8	0.7
220	E	CA45227M010E	22.0	8	0.5

## CA45 Chip Tantalum Capacitors.

STANDARD RATING					
CAPACITANCE uF	CASE SIZE	PART NUMBER	DC LEAKAGE uA At 25°C MAX	DF % MAX at 120HZ 25°C	ESR 100KHZ Ω at 25°C MAX
16 Volt Rating at +85°C(10 Volt Rating at +125°C)					
0.47	S	CA45474M016S	0.5	4	15.0
0.68	S	CA45684M016S	0.5	4	15.0
0.68	A	CA45684M016A	0.5	4	10.0
1.0	S	CA45105M016S	0.5	4	15.0
1.0	A	CA45105M016A	0.5	4	10.0
1.5	S	CA45155M016S	0.5	6	15.0
1.5	A	CA45155M016A	0.5	6	8.0
2.2	A	CA45225M016A	0.5	6	6.0
2.2	B	CA45225M016B	0.5	6	6.0
3.3	A	CA45335M016A	0.5	6	6.0
3.3	B	CA45335M016B	0.5	6	3.5
4.7	B	CA45475M016B	0.8	6	3.5
4.7	C	CA45475M016C	0.8	6	3.5
6.8	B	CA45685M016B	1.1	6	3.5
10	B	CA45106M016B	1.6	6	3.5
10	C	CA45106M016C	1.6	6	1.8
15	C	CA45156M016C	2.4	6	1.8
22	C	CA45226M016C	3.5	6	1.8
33	C	CA45336M016C	5.3	6	1.8
33	D	CA45336M016D	5.3	6	0.8
47	C	CA45476M016C	7.5	6	1.2
47	D	CA45476M016D	7.5	6	0.8
68	D	CA45686M016D	10.9	6	0.7
100	D	CA45107M016D	16.0	8	0.7
20 Volt Rating at +85°C(13 Volt Rating at +125°C)					
0.47	S	CA45474M020S	0.5	4	18.0
0.68	S	CA45684M020S	0.5	4	18.0
0.68	A	CA45684M020A	0.5	4	12.0
1	A	CA45105M020A	0.5	4	10.0
1.5	A	CA45155M020A	0.5	6	8.0
1.5	B	CA45155M020B	0.5	6	8.0
2.2	A	CA45225M020A	0.5	6	7.0
2.2	B	CA45225M020B	0.5	6	3.5
3.3	A	CA45335M020A	0.7	6	7.0
3.3	B	CA45335M020B	0.7	6	3.5

# CA45 Chip Tantalum Capacitors.

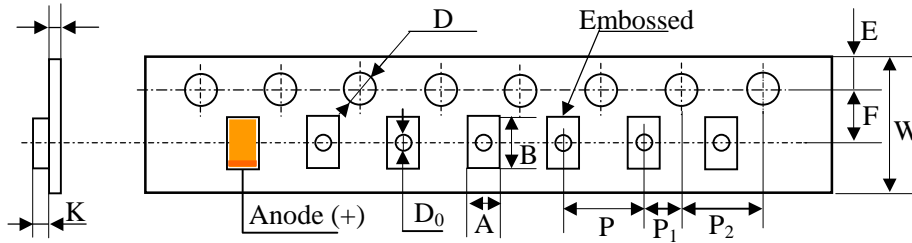
STANDARD RATING					
CAPACITANCE μF	CASE SIZE	PART NUMBER	DC LEAKAGE μA At 25°C MAX	DF % MAX at 120HZ 25°C	ESR 100KHZ Ω at 25°C MAX
4.7	B	CA45475M020B	0.9	6	3.5
4.7	C	CA45475M020C	0.9	6	2.4
6.8	B	CA45685M020B	1.4	6	3.5
6.8	C	CA45685M020C	1.4	6	1.9
10	C	CA45106M020C	2.0	6	1.8
15	C	CA45156M020C	3.0	6	1.7
22	C	CA45226M020C	4.4	6	1.2
22	D	CA45226M020D	4.4	6	0.8
33	C	CA45336M020C	6.6	6	1.2
33	D	CA45336M020D	6.6	6	0.8
47	D	CA45476M020D	9.4	6	0.7
100	E	CA45107M020E	20.0	8	0.5
25 Volt Rating at +85°C(16 Volt Rating at +125°C)					
0.33	S	CA45334M025S	0.5	4	18.0
0.33	A	CA45334M025A	0.5	4	15.0
0.47	S	CA45474M025S	0.5	4	18.0
0.47	A	CA44745M025A	0.5	4	14.0
0.68	A	CA45684M025A	0.5	4	10.0
1.0	A	CA45105M025A	0.5	4	8.0
1.5	B	CA45155M025B	0.5	6	5.0
2.2	B	CA45225M025B	0.6	6	4.5
3.3	B	CA45335M025B	0.8	6	2.5
3.3	C	CA45335M025C	0.8	6	2.5
4.7	C	CA45475M025C	1.2	6	2.4
6.8	C	CA45685M025C	1.7	6	1.9
10	C	CA45106M025C	2.5	6	1.5
10	D	CA45106M025D	2.5	6	1.5
15	C	CA45156M025C	3.8	6	1.5
15	D	CA45156M025D	3.8	6	1.0
22	D	CA45226M025D	5.5	6	0.8
33	D	CA45336M025D	8.3	6	0.7
33	E	CA45336M025E	8.3	6	0.7
47	D	CA45476M025D	11.8	6	0.7
47	E	CA45476M025E	11.8	6	0.7
35 Volt Rating at +85°C(22 Volt Rating at +125°C)					
0.1	A	CA45104M035	0.5	4	20.0
0.15	A	CA45154M035	0.5	4	19.0

## CA45 Chip Tantalum Capacitors.

STANDARD RATING					
CAPACITANCE μF	CASE SIZE	PART NUMBER	DC LEAKAGE μA At 25°C MAX	DF % MAX at 120HZ 25°C	ESR 100KHZ Ω at 25°C MAX
35 Volt Rating at +85°C(22 Volt Rating at +125°C)					
0.22	A	CA45224M035A	0.5	4	18.0
0.33	A	CA45334M035A	0.5	4	15.0
0.47	A	CA45474M035A	0.5	4	14.0
0.47	B	CA45474M035B	0.5	4	8.0
0.68	A	CA45684M035A	0.5	4	10.0
0.68	B	CA45684M035B	0.5	4	6.5
1.0	B	CA45105M035B	0.5	4	5.0
1.5	B	CA45155M035B	0.5	6	5.0
1.5	C	CA45155M035C	0.5	6	4.5
2.2	C	CA45225M035C	0.8	6	3.5
3.3	C	CA45335M035C	1.2	6	2.5
4.7	C	CA45475M035C	1.6	6	2.5
4.7	D	CA45475M035D	1.6	6	1.5
6.8	C	CA45685M035C	2.4	6	2.0
6.8	D	CA45685M035D	2.4	6	1.3
10	D	CA45106M035D	3.5	6	1.0
50 Volt Rating at +85°C(35 Volt Rating at +125°C)					
0.1	A	CA45104M050A	0.5	4	20.0
0.15	A	CA45154M050A	0.5	4	19.0
0.22	B	CA45224M050B	0.5	4	14.0
0.33	B	CA45334M050B	0.5	4	10.0
0.47	C	CA45474M050C	0.5	4	8.0
0.68	C	CA45684M050C	0.5	4	7.0
1.0	C	CA45105M050C	0.5	4	5.5
1.5	D	CA45155M050D	0.8	6	3.5
2.2	D	CA45225M050D	1.1	6	2.5
3.3	D	CA45335M050D	1.7	6	2.0
4.7	E	CA45475M050E	2.4	6	1.5

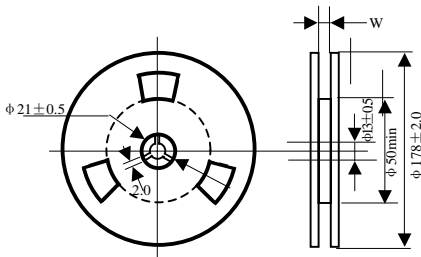
# CA45 Chip Tantalum Capacitors.

## Carrier tape dimension and Reel specification



UNIT (mm)

Case Code	W 3	F ±0.1	E ±0.1	P ±0.1	P1 ±0.1	P2 ±0.1	D +0.1	D <sub>0</sub> min	T ±0.03	A ±0.2	B ±0.2	K ±0.2
A	8	3.5	1.75	4	2	4	φ 1.5	φ 1.0	0.2	1.9	3.5	1.9
B	8	3.5	1.75	4	2	4	φ 1.5	φ 1.0	0.3	3.3	3.8	2.1
C	12	5.5	1.75	8	2	4	φ 1.5	φ 1.5	0.3	3.7	6.4	3.0
D	12	5.5	1.75	8	2	4	φ 1.5	φ 1.5	0.3	4.8	7.7	3.3



Case size	W	Qty/reel (178mm)
A, B	8.4+1.5	2000
C, D	12.4+2	500

## Carrier tape dimension and Reel specification

**CA45**

**106**

**M**

**035**

**D**

**TAPE**

**Capacitance**

**Tolerance**

**DC voltage**

**Case Size**

105 10X10<sup>5</sup>(pF)

This is expressed in picofarads. The first two digits are the significant figures. The third is the number of zeros to follow.

M= ± 20%

K= ± 10%

J= ± 5%

Rated Voltage

4V=004

6.3V=006 25V=025

10V=010 35V=035

16V=016 50V=050