

CA45H Series

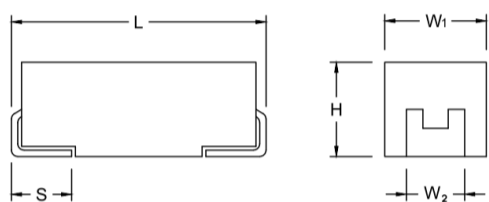
High Temperature

Features

- Epoxy molded encapsulation, Chip, Easy for integration, Polarized;
- High Temperature to 150°C, Small in size, Light in weight, Stable in electrical & storage performances, Long life-span, High reliability;
- Typical applications include decoupling and filtering in industrial and automotive end applications such as DC/DC converters, portable electronics, telecommunications, and control units, and control units operating at temperatures up to 150°C;
- Operative Standard: QJ/PWV326-2010;



Dimensions (mm)



Case Code	EIA Code	EIA Metric	L	W ₁	H	W ₂	S
A	1206	3216-16	3.20±0.20	1.60±0.20	1.60±0.20	0.80±0.20	1.20±0.20
B	1210	3528-19	3.50±0.20	2.80±0.20	1.90±0.20	0.80±0.20	2.20±0.20
C	2312	6032-25	6.00±0.20	3.20±0.20	2.50±0.20	1.30±0.20	2.20±0.20
D	2917	7343-28	7.30±0.20	4.30±0.20	2.80±0.20	1.30±0.20	2.40±0.20
E	2917	7343-43	7.30±0.40	4.30±0.40	4.10±0.40	1.30±0.20	2.40±0.20

How to order

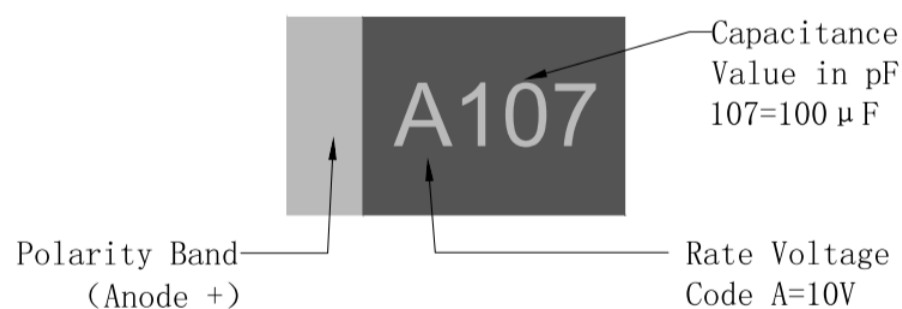
CA45H	-	D	010	M	107	A	T
Type	Separator	Case Size	Rated DC voltage	Tolerance	Capacitance Code	Temperature	Package
		See table above	004=4Vdc; 6R3=6.3Vdc 010=10Vdc; 016=16Vdc; 020=20Vdc; 025=25Vdc; 035=35Vdc; 050=50Vdc;	K=±10% M=±20%	pF code: 1st two digits present significant figure 3rd digit represents multiplier (number of zeros to follow)	A=150°C	T=Reel B=Bulk

Environmental Compliance

RoHS Compliant (6/6) according to Directive 2002/95/EC when ordered with 100%Sn solder, Gold plated or Non-magnetic 100% Sn solder.



Marking



Technical Specifications

Technical Data		All technical data relate to an ambient temperature of +25°C							
Capacitance Range		0.47μF ~220μF							
Capacitance Tolerance		±10%; ±20%;							
Rated Voltage (VR)	≤+85°C:	4	6.3	10	16	20	25	35	50
Category Voltage(VC)	≤+150°C:	2.7	4	6.3	10	15	17	23	33
Surge Voltage (VS)	≤+85°C:	5.2	8	13	20	26	32	46	65
Surge Voltage (VS)	≤+150°C:	3.4	5	8	13	16	20	28	40
Temperature Range		-55°C to +150°C							
Termination Finished		Sn Plating (standard), Gold and SnPb Plating upon request							

**CAPACITANCE AND RATED VOLTAGE RANGE
(LETTER DENOTES CASE SIZE)**

Rated Voltage (V)	4	6.3	10	16	20	25	35	50
Capacitance (μF)	Case Code							
0.47						A	A/B	C
0.68					A	A	A/B	C
1				A	A	A/B	A/B	C
1.5			A	A	A	B	B/C	C/D
2.2		A	A	A	A/B	B	C	C/D
3.3		A	A	A/B	B	B/C	C	D
4.7		A	A/B	A/B	B/C	B/C	C/D	D
6.8		A/B	A/B	A/B/C	C	C/D	C/D	D/E
10		A/B	B/C	B/C	C	C/D	D	E
15		B/C	B/C	B/C	C/D	C/D	D/E	
22		B/C	B/C	C/D	C/D	D	D/E	
33		B/C	C/D	C/D	D	D	E	
47		B/C/D	C/D	C/D	D/E	E	E	
68		B/C/D	C/D	D	E			
100		D	D	E				
150	D	D	E					
220			E					

RATING & PART NUMBER REFERENCE

Rated Voltage	Category Voltage	CAP	Case Code	Part number	Max.DCL @+25C°	Max.DF @+25C°,100Hz	Max.ESR @+25C°,100kHz	100kHz RMS Current (mA)			TEMP C°	MSL
								+25C°	+85C°	+150C°		
V	V	μF			μA	%	mΩ					
4	2.7	150	D	CA45H-D004#157AT	6.0	6	0.6	418	251	125	150	1
6.3	4.2	2.2	A	CA45H-A6R3#225AT	0.5	6	8	90	54	27	150	1
6.3	4.2	3.3	A	CA45H-A6R3#335AT	0.5	6	8	90	54	27	150	1
6.3	4.2	4.7	A	CA45H-A6R3#475AT	0.5	6	8	90	54	27	150	1
6.3	4.2	6.8	A	CA45H-A6R3#685AT	0.5	6	8	90	54	27	150	1
6.3	4.2	6.8	B	CA45H-B6R3#685AT	0.5	4.5	2.7	167	100	50	150	1
6.3	4.2	10	A	CA45H-A6R3#106AT	0.6	6	8	90	54	27	150	1
6.3	4.2	10	B	CA45H-B6R3#106AT	0.6	4.5	2.1	189	113	57	150	1
6.3	4.2	15	B	CA45H-B6R3#156AT	0.9	6	5	122	73	37	150	1
6.3	4.2	15	C	CA45H-C6R3#156AT	0.9	4.5	1.7	230	138	69	150	1
6.3	4.2	22	B	CA45H-B6R3#226AT	1.4	6	5	122	73	37	150	1
6.3	4.2	22	C	CA45H-C6R3#226AT	1.4	4.5	1.3	263	158	79	150	1
6.3	4.2	33	B	CA45H-B6R3#336AT	2.1	6	3.5	146	88	44	150	1
6.3	4.2	33	C	CA45H-C6R3#336AT	2.1	4.5	1.1	286	172	86	150	1
6.3	4.2	47	B	CA45H-B6R3#476AT	3.0	6	3	158	95	47	150	1
6.3	4.2	47	C	CA45H-C6R3#476AT	3.0	6	2	212	127	64	150	1
6.3	4.2	47	D	CA45H-D6R3#476AT	3.0	4.5	0.8	362	217	109	150	1
6.3	4.2	68	B	CA45H-B6R3#686AT	4.3	6	4.2	134	80	40	150	1
6.3	4.2	68	C	CA45H-C6R3#686AT	4.3	6	2	212	127	64	150	1
6.3	4.2	68	D	CA45H-D6R3#686AT	4.3	4.5	0.6	418	251	125	150	1
6.3	4.2	100	D	CA45H-D6R3#107AT	6.3	6	0.6	418	251	125	150	1
6.3	4.2	150	D	CA45H-D6R3#157AT	9.5	6	0.5	458	275	137	150	1
10	6.7	1.5	A	CA45H-A010#155AT	0.5	6	8	90	54	27	150	1
10	6.7	2.2	A	CA45H-A010#225AT	0.5	6	8	90	54	27	150	1
10	6.7	3.3	A	CA45H-A010#335AT	0.5	6	9	85	51	25	150	1
10	6.7	4.7	A	CA45H-A010#475AT	0.5	6	8	90	54	27	150	1
10	6.7	4.7	B	CA45H-B010#475AT	0.5	4.5	2.7	167	100	50	150	1
10	6.7	6.8	A	CA45H-A010#685AT	0.7	6	8	90	54	27	150	1
10	6.7	6.8	B	CA45H-B010#685AT	0.7	4.5	2.1	189	113	57	150	1
10	6.7	10	B	CA45H-B010#106AT	1.0	6	6	112	67	34	150	1
10	6.7	10	C	CA45H-C010#106AT	1.0	4.5	1.7	230	138	69	150	1
10	6.7	15	B	CA45H-B010#156AT	1.5	6	5	122	73	37	150	1
10	6.7	15	C	CA45H-C010#156AT	1.5	4.5	1.8	224	134	67	150	1
10	6.7	22	B	CA45H-B010#226AT	2.2	6	5	122	73	37	150	1
10	6.7	22	C	CA45H-C010#226AT	2.2	6	1.6	237	142	71	150	1
10	6.7	33	C	CA45H-C010#336AT	3.3	6	2.5	190	114	57	150	1
10	6.7	33	D	CA45H-D010#336AT	3.3	6	1.1	309	185	93	150	1
10	6.7	47	C	CA45H-C010#476AT	4.7	6	2	212	127	64	150	1
10	6.7	47	D	CA45H-D010#476AT	4.7	6	0.9	342	205	102	150	1
10	6.7	68	C	CA45H-C010#686AT	6.8	6	2	212	127	64	150	1
10	6.7	68	D	CA45H-D010#686AT	6.8	6	1.5	265	159	79	150	1
10	6.7	100	D	CA45H-D010#107AT	10.0	8	1.2	296	177	89	150	1
10	6.7	150	E	CA45H-E010#157AT	15.0	8	0.8	395	237	119	150	1
10	6.7	220	E	CA45H-E010#227AT	22.0	8	1	354	212	106	150	1
16	10.7	1	A	CA45H-A016#105AT	0.5	4	10	81	48	24	150	1
16	10.7	1.5	A	CA45H-A016#155AT	0.5	6	8	90	54	27	150	1
16	10.7	2.2	A	CA45H-A016#225AT	0.5	6	8	90	54	27	150	1
16	10.7	3.3	A	CA45H-A016#335AT	0.5	6	9	85	51	25	150	1
16	10.7	3.3	B	CA45H-B016#335AT	0.5	6	5.5	117	70	35	150	1
16	10.7	4.7	A	CA45H-A016#475AT	0.8	6	8	90	54	27	150	1
16	10.7	4.7	B	CA45H-B016#475AT	0.8	6	4	137	82	41	150	1
16	10.7	6.8	A	CA45H-A016#685AT	1.1	4.5	2.6	158	95	47	150	1
16	10.7	6.8	B	CA45H-B016#685AT	1.1	6	6	112	67	34	150	1

- # To complete part number , insert K for ±10% or M for ±20% .Designates capacitance tolerance.
- Please do not use multimeter through the measuring procedures.
- Capacitance and DF measured at :100Hz, U_r=2.2⁻1.0V, U_r~1.0⁻0.5V, Frequency=100Hz.Test only applied in series equivalent circuit.
- Voltage derating is applied at +150C°. (The DCL parameter should be read after 5 minutes when it connected to the circuit) .
- Special size and demand could consult with us.

RATING & PART NUMBER REFERENCE

Rated Voltage	Category Voltage	CAP	Case Code	Part number	Max.DCL @+25C°	Max.DF @+25C°,100Hz	Max.ESR @+25C°,100kHz	100kHz RMS Current (mA)			TEMP C°	MSL
								+25C°	+85C°	150C°		
V	V	μF			μA	%	mΩ				C°	
16	10.7	6.8	C	CA45H-C016#685AT	1.1	4.5	1.7	230	138	69	150	1
16	10.7	10	B	CA45H-B016#106AT	1.6	6	6	112	67	34	150	1
16	10.7	10	C	CA45H-C016#106AT	1.6	4.5	1.4	254	152	76	150	1
16	10.7	15	B	CA45H-B016#156AT	2.4	6	5	122	73	37	150	1
16	10.7	15	C	CA45H-C016#156AT	2.4	6	1.8	224	134	67	150	1
16	10.7	22	C	CA45H-C016#226AT	3.5	6	3	173	104	52	150	1
16	10.7	22	D	CA45H-D016#226AT	3.5	4.5	0.8	362	217	109	150	1
16	10.7	33	C	CA45H-C016#336AT	5.3	6	2.5	190	114	57	150	1
16	10.7	33	D	CA45H-D016#336AT	5.3	6	0.9	342	205	102	150	1
16	10.7	47	C	CA45H-C016#476AT	7.5	6	2	212	127	64	150	1
16	10.7	47	D	CA45H-D016#476AT	7.5	6	1.5	265	159	79	150	1
16	10.7	68	D	CA45H-D016#686AT	10.9	6	1.5	265	159	79	150	1
16	10.7	100	E	CA45H-E016#107AT	16.0	8	0.8	395	237	119	150	1
20	13.3	0.68	A	CA45H-A020#684AT	0.5	3	7.8	91	55	27	150	1
20	13.3	1	A	CA45H-A020#105AT	0.5	4	10	81	48	24	150	1
20	13.3	1.5	A	CA45H-A020#155AT	0.5	6	16	64	38	19	150	1
20	13.3	2.2	A	CA45H-A020#225AT	0.5	6	12	74	44	22	150	1
20	13.3	2.2	B	CA45H-B020#225AT	0.5	6	5	122	73	37	150	1
20	13.3	3.3	B	CA45H-B020#335AT	0.7	6	4	137	82	41	150	1
20	13.3	4.7	B	CA45H-B020#475AT	0.9	6	6	112	67	34	150	1
20	13.3	4.7	C	CA45H-C020#475AT	0.9	6	3	173	104	52	150	1
20	13.3	6.8	C	CA45H-C020#685AT	1.4	6	2.4	194	116	58	150	1
20	13.3	10	C	CA45H-C020#106AT	2.0	6	4	150	90	45	150	1
20	13.3	15	C	CA45H-C020#156AT	3.0	6	4	150	90	45	150	1
20	13.3	15	D	CA45H-D020#156AT	3.0	6	1.1	309	185	93	150	1
20	13.3	22	C	CA45H-C020#226AT	4.4	6	3	173	104	52	150	1
20	13.3	22	D	CA45H-D020#226AT	4.4	6	0.9	342	205	102	150	1
20	13.3	33	D	CA45H-D020#336AT	6.6	6	1.5	265	159	79	150	1
20	13.3	47	D	CA45H-D020#476AT	9.4	6	1.5	265	159	79	150	1
20	13.3	47	E	CA45H-E020#476AT	9.4	6	0.8	395	237	119	150	1
20	13.3	68	E	CA45H-E020#686AT	13.6	6	0.8	395	237	119	150	1
25	16.7	0.47	A	CA45H-A025#474AT	0.5	4	14	68	41	20	150	1
25	16.7	0.68	A	CA45H-A025#684AT	0.5	4	17	62	37	19	150	1
25	16.7	1	A	CA45H-A025#105AT	0.5	4	16	64	38	19	150	1
25	16.7	1	B	CA45H-B025#105AT	0.5	4	6.5	107	64	32	150	1
25	16.7	1.5	B	CA45H-B025#155AT	0.5	6	6.5	107	64	32	150	1
25	16.7	2.2	B	CA45H-B025#225AT	0.6	6	8	97	58	29	150	1
25	16.7	3.3	B	CA45H-B025#335AT	0.8	6	7	104	62	31	150	1
25	16.7	3.3	C	CA45H-C025#335AT	0.8	6	4	150	90	45	150	1
25	16.7	4.7	B	CA45H-B025#475AT	1.2	6	6	112	67	34	150	1
25	16.7	4.7	C	CA45H-C025#475AT	1.2	6	2.5	190	114	57	150	1
25	16.7	6.8	C	CA45H-C025#685AT	1.7	6	3	173	104	52	150	1
25	16.7	6.8	D	CA45H-D025#685AT	1.7	4.5	1.1	309	185	93	150	1
25	16.7	10	C	CA45H-C025#106AT	2.5	6	4	150	90	45	150	1
25	16.7	10	D	CA45H-D025#106AT	2.5	6	1.2	296	177	89	150	1
25	16.7	15	C	CA45H-C025#156AT	3.8	6	4	150	90	45	150	1
25	16.7	15	D	CA45H-D025#156AT	3.8	6	1	324	194	97	150	1
25	16.7	22	D	CA45H-D025#226AT	5.5	6	1.8	242	145	72	150	1
25	16.7	33	D	CA45H-D025#336AT	8.3	6	1.5	265	159	79	150	1
25	16.7	47	E	CA45H-E025#476AT	11.8	6	1.2	323	194	97	150	1
35	23.3	0.47	A	CA45H-A035#474AT	0.5	4	18	60	36	18	150	1
35	23.3	0.47	B	CA45H-B035#474AT	0.5	3	8	97	58	29	150	1
35	23.3	0.68	A	CA45H-A035#684AT	0.5	4	17	62	37	19	150	1

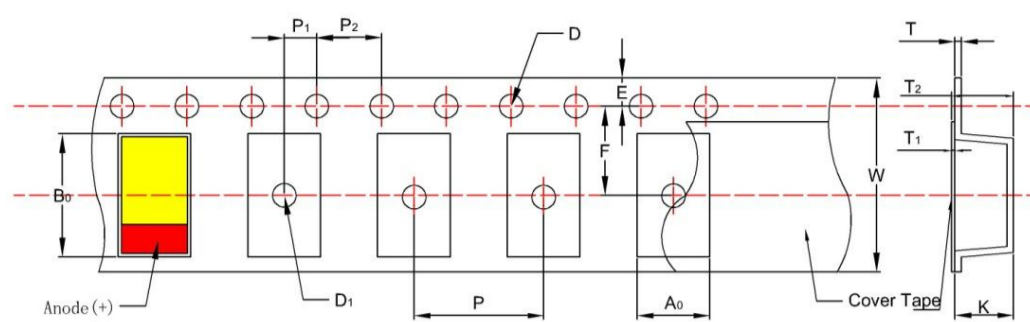
- # To complete part number , insert K for ±10% or M for ±20% .Designates capacitance tolerance.
- Please do not use multimeter through the measuring procedures.
- Capacitance and DF measured at :100Hz, U₊=2.2°-1.0V, U₋=1.0°-0.5V, Frequency=100Hz.Test only applied in series equivalent circuit.
- Voltage derating is applied at +150C°. (The DCL parameter should be read after 5 minutes when it connected to the circuit) .
- Special size and demand could consult with us.

RATING & PART NUMBER REFERENCE

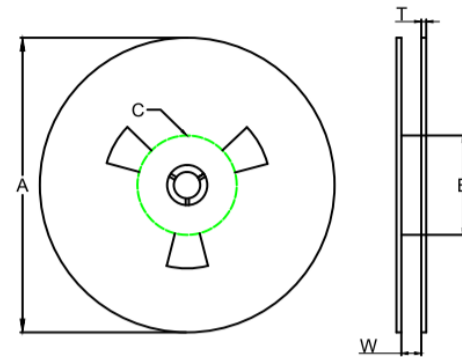
Rated Voltage	Category Voltage	CAP	Case Code	Part number	Max.DCL @+25C°	Max.DF @+25C°,100Hz	Max.ESR @+25C°,100kHz	100kHz RMS Current (mA)			TEMP C°	MSL
								+25C°	+85C°	+150C°		
V	V	μF			μA	%	mΩ					
35	23.3	0.68	B	CA45H-B035#684AT	0.5	3	5.5	117	70	35	150	1
35	23.3	1	A	CA45H-A035#105AT	0.5	4	10	81	48	24	150	1
35	23.3	1	B	CA45H-B035#105AT	0.5	4	6.5	107	64	32	150	1
35	23.3	1.5	B	CA45H-B035#155AT	0.5	6	12	79	47	24	150	1
35	23.3	1.5	C	CA45H-C035#155AT	0.5	6	4.5	141	85	42	150	1
35	23.3	2.2	C	CA45H-C035#225AT	0.8	6	3.5	160	96	48	150	1
35	23.3	3.3	C	CA45H-C035#335AT	1.2	6	2.5	190	114	57	150	1
35	23.3	4.7	C	CA45H-C035#475AT	1.6	6	5	134	80	40	150	1
35	23.3	4.7	D	CA45H-D035#475AT	1.6	6	1.5	265	159	79	150	1
35	23.3	6.8	C	CA45H-C035#685AT	2.4	6	3	173	104	52	150	1
35	23.3	6.8	D	CA45H-D035#685AT	2.4	6	1.3	284	171	85	150	1
35	23.3	10	D	CA45H-D035#106AT	3.5	6	1.1	309	185	93	150	1
35	23.3	15	D	CA45H-D035#156AT	5.3	6	2	229	137	69	150	1
35	23.3	15	E	CA45H-E035#156AT	5.3	6	1.1	337	202	101	150	1
35	23.3	22	D	CA45H-D035#226AT	7.7	6	0.7	387	232	116	150	1
35	23.3	22	E	CA45H-E035#226AT	7.7	6	1	354	212	106	150	1
35	23.3	33	E	CA45H-E035#336AT	11.6	6	0.5	500	300	150	150	1
35	23.3	47	E	CA45H-E035#476AT	16.5	6	0.5	500	300	150	150	1
50	33.3	0.47	C	CA45H-C050#474AT	0.5	3	6.5	118	71	35	150	1
50	33.3	0.68	C	CA45H-C050#684AT	0.5	3	5.5	128	77	38	150	1
50	33.3	1	C	CA45H-C050#105AT	0.5	4	6	122	73	37	150	1
50	33.3	1.5	C	CA45H-C050#155AT	0.8	6	8	106	64	32	150	1
50	33.3	1.5	D	CA45H-D050#155AT	0.8	4.5	2.8	194	116	58	150	1
50	33.3	2.2	C	CA45H-C050#225AT	1.1	6	7	113	68	34	150	1
50	33.3	2.2	D	CA45H-D050#225AT	1.1	4.5	2	229	137	69	150	1
50	33.3	3.3	D	CA45H-D050#335AT	1.7	6	2	229	137	69	150	1
50	33.3	4.7	D	CA45H-D050#475AT	2.4	6	1.5	265	159	79	150	1
50	33.3	6.8	D	CA45H-D050#685AT	3.4	6	0.7	387	232	116	150	1
50	33.3	6.8	E	CA45H-E050#685AT	3.4	6	1.5	289	173	87	150	1
50	33.3	10	E	CA45H-E050#106AT	5.0	6	1.8	264	158	79	150	1

- # To complete part number , insert K for ±10% or M for ±20% .Designates capacitance tolerance.
- Please do not use multimeter through the measuring procedures.
- Capacitance and DF measured at :100Hz, U_~=2.2°-1.0V, U_~=1.0°-0.5V, Frequency=100Hz.Test only applied in series equivalent circuit.
- Voltage derating is applied at +150C°. (The DCL parameter should be read after 5 minutes when it connected to the circuit) .
- Special size and demand could consult with us.

Packaging



Embossed (Plastic) Carrier Tape Dimensions



Reel Dimensions

Diagram of Taping Dimensions

Case	A ₀ ±0.10	B ₀ ±0.10	K±0.10	W±0.30	E±0.10	F±0.05	P±0.10	P ₁ ±0.05	P ₂ ±0.10	D+0.20	D ₁ +0.25
A	1.83	3.57	1.65	8	1.75	3.5	4	2	4	1.5	1
B	3.15	3.77	2.22	8	1.75	3.5	4	2	4	1.5	1
C	3.45	6.4	2.92	12	1.75	5.5	8	2	4	1.5	1.5
D	4.48	7.62	3.22	12	1.75	5.5	8	2	4	1.5	1.5
E	4.5	7.5	4.5	12	1.75	5.5	8	2	4	1.5	1.5

±0.2mm over 10 sprocket hole spaces

Reel Dimensions

Reel Size	Tape Wide	A	B	C	W	T
180mm (7")	8mm	178±2.00	50 min	13.0±0.50	8.4+1.5/-0	1.50±0.50
180mm (7")	12mm	178±2.00	50 min	13.0±0.50	12.4+1.5/-0	1.50±0.50

Packaging Quantity

Case size	A	B	C	D	E
Quantity (pcs / plate)	2000	2000	500	500	400

A.C. OPERATION, RIPPLE VOLTAGE AND RIPPLE CURRENT

In an a.c. application heat is generated within the capacitor by both the a.c. component of the signal (which will depend upon the signal form, amplitude and frequency), and by the d.c. leakage. For practical purposes the second factor is insignificant. The actual power dissipated in the capacitor is calculated using the formula:

$$P = I^2 R$$

and rearranged to $I = \text{SQRT} (P/R)$ (Eq. 1)

where I = rms ripple current, amperes

R = equivalent series resistance, ohms

U = rms ripple voltage, volts

P = power dissipated, watts

Z = impedance, ohms, at frequency under consideration

Maximum a.c. ripple voltage (U_{max}). From the Ohms' law equation:

$$U_{max} = IR \text{(Eq. 2)}$$

Where P is the maximum permissible power dissipated as listed for the product under consideration (see tables).

However care must be taken to ensure that:

1. The d.c. working voltage of the capacitor must not be exceeded by the sum of the positive peak of the applied a.c. voltage and the d.c. bias voltage.
2. The sum of the applied d.c. bias voltage and the negative peak of the a.c. voltage must not allow a voltage reversal in excess of the "Reverse Voltage" .

Historical ripple calculations.

Previous ripple current and voltage values were calculated using an empirically derived power dissipation required to give a 10°C (30°C for polymer) rise of the capacitors body temperature from room temperature, usually in free air. These values are shown in Table below "Power Dissipation Ratings" . Equation 1 then allows the maximum ripple current to be established, and Equation 2, the maximum ripple voltage.

Power Dissipation Ratings (In Free Air)

Case Size	A	B	C	D	E
Max. Power Dissipation @+25C° (Watts)	0.065	0.075	0.090	0.105	0.125

Land Dimension /Courttyard

Case code	Metric Size Code	Density Level A: Maximum (Most) Land Protrusion (mm)					Density Level B : Median (Nominal) Land Protrusion (mm)					Density Level C: Minimum (Least) Land Protrusion (mm)				
		W	L	S	V1	V2	W	L	S	V1	V2	W	L	S	V1	V2
A	3216-18	1.35	2.20	0.62	6.02	2.8	1.23	1.8	0.82	4.92	2.3	1.13	1.42	0.98	4.06	2.04
B	3528-21	2.35	2.21	0.92	6.32	4.0	2.23	1.8	1.12	5.22	3.5	2.13	1.42	1.28	4.36	3.24
C	6032-25	2.35	2.77	2.37	8.92	4.5	2.23	2.37	2.57	7.82	4	2.13	1.99	2.73	6.96	3.74
D	7343-31	2.55	2.77	3.67	10.22	5.6	2.43	2.37	3.87	9.12	5.1	2.33	1.99	4.03	8.26	4.84
E	7343-43	2.55	2.77	3.67	10.22	5.6	2.43	2.37	3.87	9.12	5.1	2.33	1.99	4.03	8.26	4.84

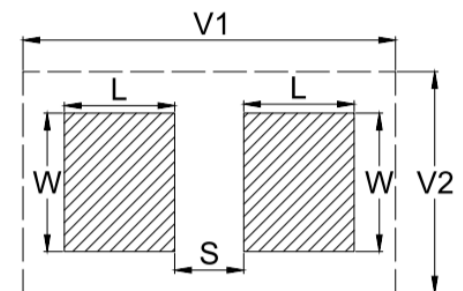
Density Level A: For low-density product applications. Recommended for wave solder applications and provides a wider process window for reflow solder processes.

Density Level B: For products with a moderate level of component density. Provides a robust solder attachment condition for reflow solder processes.

Density Level C: For high component density product applications. Before adapting the minimum land pattern variations the user should perform qualification testing based on the conditions outlined in IPC standard 7351 (IPC-7351).

1 Height of these chips may create problems in wave soldering.

2 Land pattern geometry is too small for silkscreen outline.



Surface Mount Footprints

Soldering Process

XIANGYEE tantalum capacitors are compatible with wave (single or dual), convection, IR, or vapor phase reflow techniques. Preheating of these components is recommended to avoid extreme thermal stress.

XIANGYEE's recommended profile conditions for convection and IR reflow reflect the profile conditions of the IPC/J-STD-020D standard for moisture sensitivity testing. The devices can safely withstand a maximum of three reflow passes at these conditions.

Hand soldering should be performed with care due to the difficulty in process control. If performed, care should be taken to avoid contact of the soldering iron to the molded case. The iron should be used to heat the solder pad, applying solder between the pad and the termination, until reflow occurs. Once reflow occurs, the iron should be removed immediately. "Wiping" the edges of a chip and heating the top surface is not recommended.

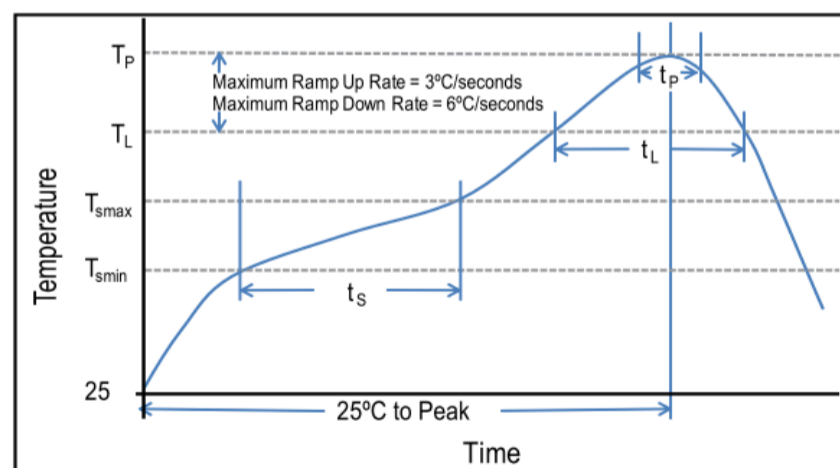
During typical reflow operations, a slight darkening of the gold-colored epoxy may be observed. This slight darkening is normal and not harmful to the product. Marking permanency is not affected by this change.

Profile Feature	SnPb Assembly	Pb-Free Assembly
Preheat/Soak		
Temperature Minimum (T _{min})	100°C	150°C
Temperature Maximum (T _{max})	150°C	200°C
Time (ts) from T _{min} to T _{max}	60 – 120 seconds	60 – 120 seconds
Ramp-up Rate (T _i to T _p)	3°C/seconds maximum	3°C/seconds maximum
Liquidous Temperature (T _L)	183°C	217°C
Time Above Liquidous (t _L)	60 – 150 seconds	60 – 150 seconds
Peak Temperature (T _p)	220°C* , 235°C**	250°C* , 260°C**
Time within 5°C of Maximum Peak Temperature (t _P)	20 seconds maximum	30 seconds maximum
Ramp-down Rate (T _p to T _L)	6°C/seconds maximum	6°C/seconds maximum
Time 25°C to Peak Temperature	6 minutes maximum	8 minutes maximum

Note: All temperatures refer to the center of the package, measured on the package body surface that is facing up during assembly reflow.

*Case Size D, E

**Case Size A, B, C



Recommended Reflow Profile

Storage

Tantalum dielectric chip capacitors are unaffected by the following storage condition for 2 years:

Temperature: -10°C – +40°C Humidity: 60% RH maximum

Atmospheric pressure: 860 mbar ~ 1060mbar

Tantalum capacitors exhibit a very low random failure rate after long periods of storage and apart from this there are no known modes of failure under normal storage conditions. All capacitors will withstand any environmental conditions within their ratings for the periods given in the detail specifications. Storage for longer periods under high humidity conditions may affect the leakage current of resin protected capacitors. Solderability of solder coated surfaces may be affected by storage of excess of 2 years.