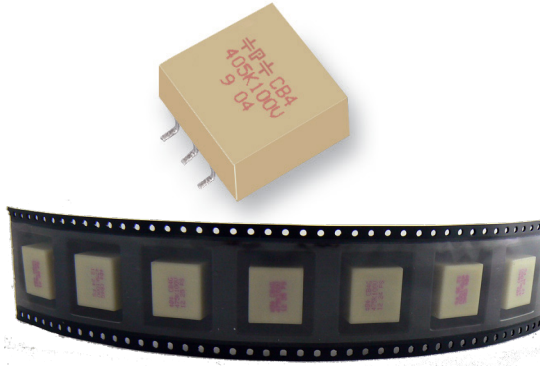


Type CB Capstick High Frequency Switching Power Supply Capacitor



The CB style capstick capacitor is constructed non-inductively with metallized polyester dielectric. The low inductance and low ESR construction makes it ideal for high frequency switching power supplies. CB type capacitors can be used with pick and place assembly and the -FS parts are fully RoHS compliant and capable of high temperature lead free soldering.

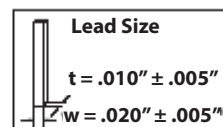
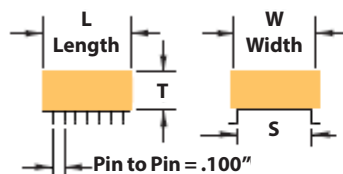
- Low Impedance construction
- Self healing
- Low ESR/ESL
- Flat Surface for pick and place
- Surface mount
- High Ripple current/High capacitance

Specifications

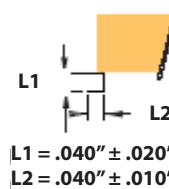
Capacitance Range (at 1 kHz)	0.47 μ F to 10 μ F
Capacitance Tolerance	Standard: $\pm 10\%$ (K)
Voltage Range	100, 500 Vdc
Dissipation Factor (at 1kHz/+25 °C)	$\leq 1.0\%$
Insulation Resistance	$\geq 1,000$ Megohms x μ F Need not exceed 1,000 Megohms Test Voltage for 100 Vdc rating : 10 Vdc Test Voltage for 500 Vdc rating : 100 Vdc
Dielectric Strength	1.3 x rated VDC for 2 seconds max.
Self Inductance (typical)	CB4 : < 4 nh
Temperature Range	100Vdc: -55 °C to +125 °C (derate voltage 1.25% / °C above +85 °C) 500Vdc: -55 °C to +125°C (no derating)
Life Test	Apply 1.25 x the rated DC voltage for 1000 hours at +85 °C. After the test, the capacitance, DF, and IR will meet the following: Capacitance Change: $\leq 5.0\%$ DF: will meet the initial specification Insulation Resistance: will meet the initial specification
Moisture Test	Subject the capacitor to +85 °C / 85% RH for 21 days without voltage. After the test, the capacitance, DF, and IR will meet the following: Capacitance Change: $\leq 7.0\%$ DF : will meet the initial specification Insulation Resistance: $\geq 30\%$ of the initial limit
Long Term Stability	After 2 years of storage in a standard environment. Capacitance Change: $\leq 2.0\%$
Vibration	Mil Std 202 Method 204D
Solder Resistance	-G : Peak reflow +220 °C, 30 sec. -G-FA: Peak reflow +220 °C, 30 sec. -G-FS: Peak reflow +245 °C, 30 sec. Capacitance Change : $\leq 2.0\%$

RoHS Compliant

Outline Drawing



Gull Wing Leads



Type CB Capstick High Frequency Switching Power Supply Capacitor

Ratings

CDE Part Number	Capacitance (μF)	Dimensions (in.)				Dimensions (mm)				# Leads per side	ESR @ 500kHz (Ω)
		W Max.	T Max.	L Max.	S ± .020	W Max.	T Max.	L Max.	S ± .51		
100 Vdc / 80 Vac											
405K100CB4G	4.0	0.500	0.250	0.450	0.400	12.7	6.3	11.4	10.16	3	0.007
475K100CB4G	4.7	0.500	0.250	0.525	0.400	12.7	6.3	13.3	10.16	3	0.006
106K100CB4G	10.0	0.500	0.250	0.995	0.400	12.7	6.3	25.3	10.16	7	0.003
405K100CB4G-FA	4.0	0.500	0.250	0.450	0.400	12.7	6.3	11.4	10.16	3	0.007
475K100CB4G-FA	4.7	0.500	0.250	0.525	0.400	12.7	6.3	13.3	10.16	3	0.006
106K100CB4G-FA	10.0	0.500	0.250	0.995	0.400	12.7	6.3	25.3	10.16	7	0.003
405K100CB4G-FS	4.0	0.500	0.350	0.525	0.400	12.7	8.89	13.3	10.16	3	0.007
475K100CB4G-FS	4.7	0.500	0.350	0.525	0.400	12.7	8.89	13.3	10.16	3	0.006
106K100CB4G-FS	10.0	0.500	0.350	0.995	0.400	12.7	8.89	25.3	10.16	7	0.003
500 Vdc / 250 Vac											
474K500CB6G-FS	0.47	0.700	0.460	0.625	0.600	17.78	11.68	15.88	15.24	4	0.011

* Highlighted items stocked in cut-tape quantities 10 pcs mults.

Part Numbering System

405 Capacitance 405 = 4.0 μF	K Tolerance K = ±10%	100 Voltage 100 = 100 Vdc	CB Type	4G Case Size 4 = 0.4" Lead Spacing	-FA RoHS -FA = 10/10 Compliant w Sn plated lead frame -FS = 10/10 Compliant w Sn plated lead frame (high temp. soldering) (Blank = 9/10 compliant w SnPb lead frame finish)	-CT Indicates Cut-Tape
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Type CB Performance Characteristics

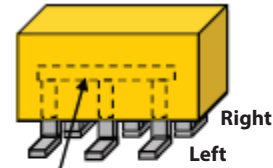
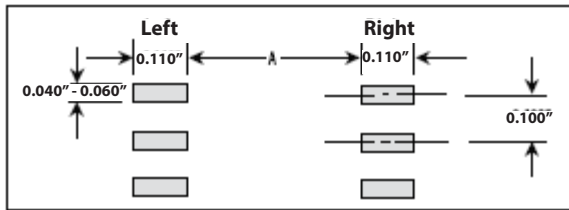
(-55 °C to +85 °C)

Maximum RMS Current (Amps) vs Frequency						
μF	Vdc	1kHz	10kHz	100kHz	500kHz	1MHz
0.047	500	0.8	1.9	3.9	6.2	7.1
4.0	100	1.9	4.2	10.2	11.5	12.0
4.7	100	2.0	4.5	10.8	12.2	12.6
10.0	100	4.3	9.9	14.1	15.3	15.6

Maximum RMS Voltage vs Frequency						
μF	Vdc	1kHz	10kHz	100kHz	500kHz	1MHz
0.047	500	250	64	13.1	4.2	2.4
4.0	100	35	18	4.2	1	0.4
4.7	100	35	18	3.7	0.8	0.3
10.0	100	35	18	2.2	0.5	0.3

Type CB Capstick High Frequency Switching Power Supply Capacitor

Land Pattern



Note: All left side capacitor leads are joined in common internal to the capacitor and all right side capacitor leads are also joined in common internal to the capacitor

Part Number	A (in.)	A (mm)	# of leads per side
405K100CB4G, -FA, -FS	0.365"	9.27	3
475K100CB4G, -FA, -FS	0.365"	9.27	3
106K100CB4G, -FA, -FS	0.365"	9.27	7
474K500CB6G-FS	0.565"	14.35	4

Construction

Non-inductive metallized polyester dielectric (PET) with aluminum metallization. Case is UL94V-0 rated premolded shell. Lead frame is tinned Cu alloy.

- G: SnPb leadframe finish
- G-FA: Sn leadframe finish
- G-FS: Sn leadframe finish

Packaging

Tape and Reel. 13" reel with 250pcs/reel. Dry packed with desiccant in moisture barrier bag. IPC/Jedec J-STD-20 MSL 4.

Markings

Logo, type, capacitance code, tolerance code, voltage, and date code.

Soldering

Pre-Conditioning: If needed, in packaging at +50 °C for 48 hours, or out of packaging at +85 °C for 12 hours at < 5%RH.

Solder Paste thickness: 8 to 10 mils.

Reflow Soldering:

Ramp up rate: 3 °C/second max.

(-G and -G-FA)

Preheat: 100 °C to 150 °C for 60 to 120 seconds

Soldering Time: Maximum of 90 seconds at or above +183 °C

Peak Reflow temperature: 220 °C

Time within 5 °C of peak: 30 seconds

Time from +25 °C to peak: 360 seconds

(-G-FS)

Preheat: 150 °C to 200 °C for 60 to 180 seconds

Soldering Time: Maximum of 90 seconds at or above +217 °C

Peak Reflow temperature: 245 °C

Time within 5 °C of peak: 30 seconds

Time from +25 °C to peak: 480 seconds

Ramp down rate: 6 °C/second max.

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