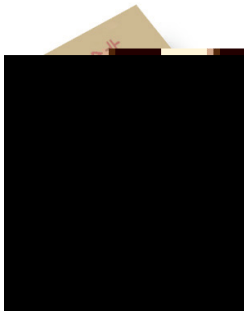
Type CB Capstick High Frequency Switching Power Supply Capacitor



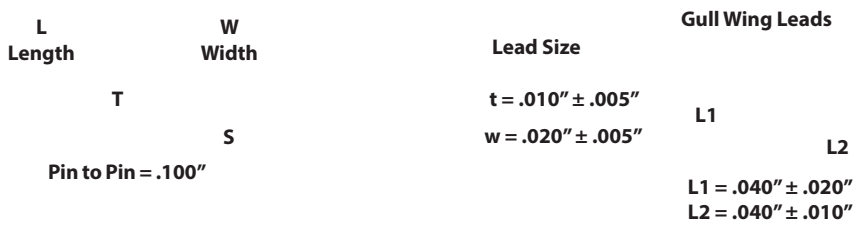
The CB style capstick capacitor is constructed non-inductively with metallized polyester dielectric. The low inductance and low ESR construction makes it ideal for high frequency switching power supplies. CB type capacitors can be used with pick and place assembly and the -FS parts are fully RoHS compliant 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 µF to 10 µF
Capacitance Tolerance	Standard: ±10 % (K)
Voltage Range	100, 500 Vdc
Dissipation Factor (at 1kHz/+25 °C)	≤ 1.0%
Insulation Resistance	≥1,000 Megohms x uF 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: ≤ 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 : ≤ 7.0% DF : will meet the initial specification Insulation Resistance: ≥ 30% of the initial limit
Long Term Stability	After 2 years of storage in a standard environment. Capacitance Change: ≤ 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 : ≤ 2.0%
Regulatory Information	

Outline Drawing



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	K	100	CB	4G	-FA	-CT
Capacitance	**Tolerance**	**Voltage**	**Type**	**Case Size**	**RoHS**	**Indicates Cut-Tape**
405 = 4.0 µF	K = ±10%	100 = 100 Vdc		4 = 0.4" Lead Spacing	-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)	

Type CB Performance Characteristics

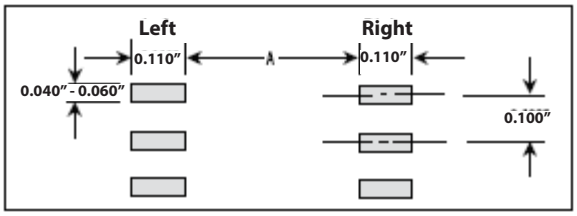
(-55 ºC to +85 ºC)

Maximum RMS Current (Amps) vs Frequency						
µF	Vdc	1kHz	10kHz	100kHz	500kHz	1MHz
0.47	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

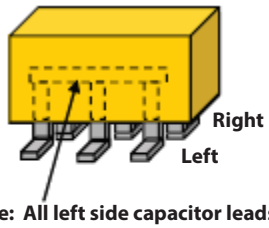
Maximum RMS Voltage vs Frequency						
µF	Vdc	1kHz	10kHz	100kHz	500kHz	1MHz
0.47	500	250	64	13.1	4.2	2.4
4.0	100	35	18	4.2	1	0.4
4.7	100	35	18	3.7	0.8	0.3
10.0	100	35	18	2.2	0.5	0.3

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Land Pattern



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



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

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.

Notice and Disclaimer: All product drawings, descriptions, specifications, statements, information and data (collectively, the "Information") in this datasheet or other publication are subject to change. The customer is responsible for checking, confirming and verifying the extent to which the Information contained in this datasheet or other publication is applicable to an order at the time the order is placed. All Information given herein is believed to be accurate and reliable, but it is presented without any guarantee, warranty, representation or responsibility of any kind, expressed or implied. Statements of suitability for certain applications are based on the knowledge that the Cornell Dubilier company providing such statements ("Cornell Dubilier") has of operating conditions that such Cornell Dubilier company regards as typical for such applications, but are not intended to constitute any guarantee, warranty or representation regarding any such matter – and Cornell Dubilier specifically and expressly disclaims any guarantee, warranty or representation concerning the suitability for a specific customer application, use, storage, transportation, or operating environment. The Information is intended for use only by customers who have the requisite experience and capability to determine the correct products for their application. Any technical advice inferred from this Information or otherwise provided by Cornell Dubilier with reference to the use of any Cornell Dubilier products is given gratis (unless otherwise specified by Cornell Dubilier), and Cornell Dubilier assumes no obligation or liability for the advice given or results obtained. Although Cornell Dubilier strives to apply the most stringent quality and safety standards regarding the design and manufacturing of its products, in light of the current state of the art, isolated component failures may still occur. Accordingly, customer applications which require a high degree of reliability or safety should employ suitable designs or other safeguards (such as installation of protective circuitry or redundancies or other appropriate protective measures) in order to ensure that the failure of an electrical component does not result in a risk of personal injury or property damage. Although all product-related warnings, cautions and notes must be observed, the customer should not assume that all safety measures are indicated in such warnings, cautions and notes, or that other safety measures may not be required.