

Type CS (Capstick®) Metallized Polymer Network

Radial Multi-pin Metallized Polymer Network for DC to DC Converters



The Type CS multi-pin metallized polymer network is ideal for the low ESR/ESL requirements in DC to DC converters and switching power supply applications. This unique, robust, capacitor design offers high ripple current capability and high capacitance in a small package. It is available with straight pins on 0.10" centers for through-hole mounting or with gull wing leads for surface mount assembly. Type CS (Capstick®) is encapsulated in a rugged conformal coating and is packaged in anti-static tubes for easy handling.

Highlights

- ◆ Rugged conformal coated case meets UL94V-0
- ◆ Low ESR/ESL
- ◆ High ripple current
- ◆ High capacitance in a small package
- ◆ Non-inductive design
- ◆ Non-polar
- ◆ Surface mount or through hole assembly
- ◆ Multi-pin leads on 0.10" centers

Specifications

RoHS Compliant

Capacitance Range: 0.33 μ F to 20.0 μ F

Voltage Range: 50 Vdc, 100 Vdc, 250 Vdc, 400 Vdc, 500 Vdc

Capacitance Tolerance: $\pm 10\%$

Operating Temperature Range for 50, 100 and 250 Vdc: -55°C to $+125^{\circ}\text{C}$ (with 50% Vdc derating $>85^{\circ}\text{C}$)

Operating Temperature Range for 400 and 500 Vdc: -55°C to $+125^{\circ}\text{C}$ with no derating

Construction: Multilayer metallized polymer dielectric

Temperature Coefficient: $+6\%$ from -55°C to $+85^{\circ}\text{C}$

Dielectric Withstand Voltage: 1.3 x rated voltage: 50/100/250/500 Vdc

1.6 x rated voltage: 400 Vdc

Dissipation Factor (DF): $\leq 1.0\%$ @ 1 kHz

Total Self Inductance (L): <6 nH typical (CS6)

< 4 nH typical (CS4)

Lead Material: Tinned copper alloy frame

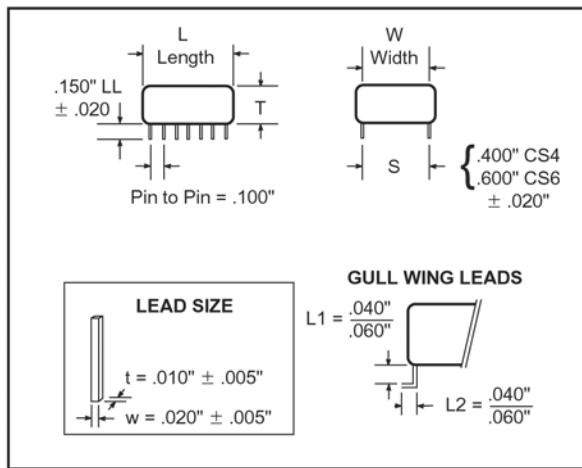
Insulation Resistance: $\geq 1000 \text{ M}\Omega \cdot \mu\text{F}$ - need not exceed 1000 $\text{M}\Omega$

Part Numbering System

405	K	100	CS	4	G	-	FA
Cap				Pin	"Optional"		
(μ F)	Tolerance	Voltage	Series	Spacing	($*$)		
334 = 0.33 μ F	K = $\pm 10\%$	050 = 50 Vdc	CS	4 = 0.4" (10.0 mm)	Blank = Straight Pins	Blank = 5/6 RoHS	
405 = 4.0 μ F		100 = 100 Vdc		6 = 0.6" (15.0 mm)	G = Gull Wing		FA = 6/6 RoHS
206 = 20.0 μ F		400 = 400 Vdc					

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Capacitor Outline Drawing



Test Method and Performance

Accelerated Dry Life	
Test Conditions	
Temperature: +85 °C ±5 °C	Applied Voltage: 1.25 x rated voltage
Test Duration: 1000 hours performance	
Requirements	
Capacitance : Change of ≤5.0%	Dissipation Factor: ≤1.0% @ 1 kHz
Insulation Resistance: ≥1K MΩ • μF, need not exceed 1 K MΩ	
Humidity	
Test Conditions	
Temperature: +85 °C ±2.0 °C	Applied Voltage: Zero voltage
Humidity: 85% ±2% RH	
Test Duration: 21 days	
Performance Requirements	
Capacitance Change of ≤7.0%	Dissipation Factor ≤1.0% @ 1 kHz
Insulation Resistance ≥ 30% of limit value	
Soldering	
Test Conditions	
Thru Hole Soldering Temperature: 260 °C, 5 sec.	SMD Reflow Soldering Temperature: 220 °C, 30 sec.
Performance Requirements	
Capacitance: Change of ≤ 2%	
Capacitance Drift: ≤2.0% over 2 years between 0 °C and 35 °C and a RH of between 35% and 65%	
Vibration	
Conforms to MIL-STD-202 Method 204D	

Note: The 400 Vdc rating can handle a 450 Vdc surge and is built to a 640 Vdc high potential.

Ratings

RoHS Compliant

Catalog Part Number	Cap (μF)	DC Voltage	ESR Ω @ 500 kHz	RMS Current @ 500 kHz	W Max. Inches (mm)	T Max. Inches (mm)	L Max. Inches (mm)	Nom. L.S. Inches (mm)	Leads Per Side	Tube Quantity
50 Vdc										
106K050CS4*	10.00	50	0.0030	15.3	0.5 (12.7)	0.32 (8.1)	0.620 (15.7)	0.4 (10)	5	32
206K050CS4*	20.00	50	0.0025	17.8	0.5 (12.7)	0.32 (8.1)	1.150 (29.2)	0.4 (10)	9	16
100 Vdc										
205K100CS4*	2.00	100	0.009	8.3	0.5 (12.7)	0.25 (6.4)	0.450 (11.4)	0.4 (10)	3	44
405K100CS4*	4.00	100	0.007	11.5	0.5 (12.7)	0.25 (6.4)	0.450 (11.4)	0.4 (10)	3	44
475K100CS4*	4.70	100	0.006	12.2	0.5 (12.7)	0.25 (6.4)	0.525 (13.3)	0.4 (10)	3	38
685K100CS4*	6.80	100	0.005	13.7	0.5 (12.7)	0.25 (6.4)	0.700 (17.8)	0.4 (10)	5	35
106K100CS4*	10.00	100	0.003	15.3	0.5 (12.7)	0.25 (6.4)	0.995 (25.3)	0.4 (10)	7	20
250 Vdc										
105K250CS6*	1.00	250	0.012	5.2	0.7 (17.8)	0.30 (7.6)	0.440 (11.2)	0.6 (15)	3	44
400 Vdc										
334K400CS6*	0.33	400	0.012	6.0	0.7 (17.8)	0.32 (8.1)	0.435 (11.0)	0.6 (15)	3	44
474K400CS6*	0.47	400	0.011	6.2	0.7 (17.8)	0.32 (8.1)	0.460 (11.7)	0.6 (15)	3	42
105K400CS6*	1.00	400	0.008	9.5	0.7 (17.8)	0.32 (8.1)	0.880 (22.4)	0.6 (15)	7	22
500 Vdc										
474K500CS6*	0.47	500	0.011	6.2	0.7 (17.8)	0.32 (8.1)	0.625 (15.9)	0.6 (15)	4	32
105K500CS6*	1.00	500	0.008	9.5	0.7 (17.8)	0.32 (8.1)	1.135 (28.8)	0.6 (15)	8	16

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