

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

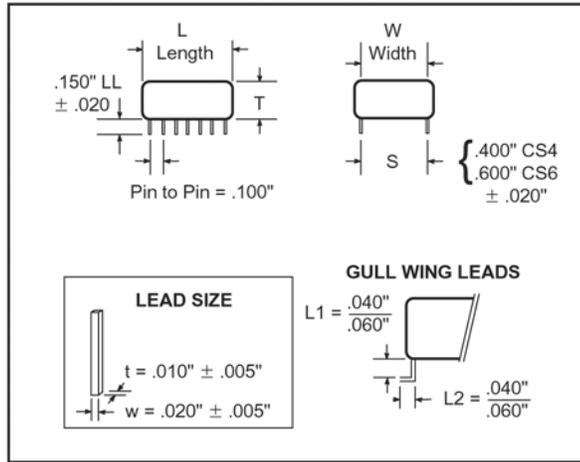
Capacitance Range:	0.33 μF to 20.0 μF
Voltage Range:	50 Vdc, 100 Vdc, 250 Vdc, 400 Vdc, 500 Vdc
Capacitance Tolerance:	\pm10%
Operating Temperature Range for 50, 100 and 250 Vdc:	-55 °C to +125 °C (with 50% Vdc derating >85 °C)
Operating Temperature Range for 400 and 500 Vdc:	-55 °C to +125 °C with no derating
Construction:	Multilayer metallized polymer dielectric
Temperature Coefficient:	+6% from -55 °C to +85 °C
Dielectric Withstand Voltage:	1.3 x rated voltage: 50/100/250/500 Vdc 1.6 x rated voltage: 400 Vdc
Dissipation Factor (DF):	\leq1.0% @ 1 kHz
Total Self Inductance (L):	<6 nH typical (CS6) < 4 nH typical (CS4)
Lead Material:	Tinned copper alloy frame
Insulation Resistance:	\geq1000 MΩ \cdot μF - need not exceed 1000 MΩ

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: $+85\text{ }^\circ\text{C} \pm 5\text{ }^\circ\text{C}$ Applied Voltage: 1.25 x rated voltage Test Duration: 1000 hours performance
Requirements	Capacitance: Change of $\leq 5.0\%$ Dissipation Factor: $\leq 1.0\%$ @ 1 kHz Insulation Resistance: $\geq 1\text{K M}\Omega \cdot \mu\text{F}$, need not exceed 1 K M Ω
Humidity	
Test Conditions	Temperature: $+85\text{ }^\circ\text{C} \pm 2.0\text{ }^\circ\text{C}$ Applied Voltage: Zero voltage Humidity: $85\% \pm 2\%$ RH Test Duration: 21 days
Performance Requirements	Capacitance Change of $\leq 7.0\%$ Dissipation Factor $\leq 1.0\%$ @ 1 kHz Insulation Resistance $\geq 30\%$ of limit value
Soldering	
Test Conditions	Thru Hole Soldering Temperature: $260\text{ }^\circ\text{C}$, 5 sec. SMD Reflow Soldering Temperature: $220\text{ }^\circ\text{C}$, 30 sec.
Performance Requirements	Capacitance: Change of $\leq 2\%$
Capacitance Drift:	$\leq 2.0\%$ over 2 years between $0\text{ }^\circ\text{C}$ and $35\text{ }^\circ\text{C}$ 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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