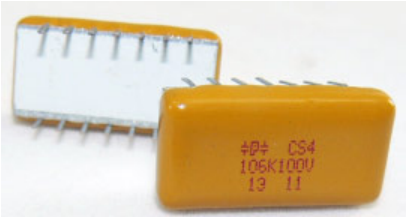
Type CS (Capstick®) Metallized Polymer Network

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:	**±10%**
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):	**≤1.0% @ 1 kHz**
Total Self Inductance (L):	**<6 nH typical (CS6)** **< 4 nH typical (CS4)**
Lead Material:	**Tinned copper alloy frame**
Insulation Resistance:	**≥1000 MΩ • µF - need not exceed 1000 MΩ**

Part Numbering System

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

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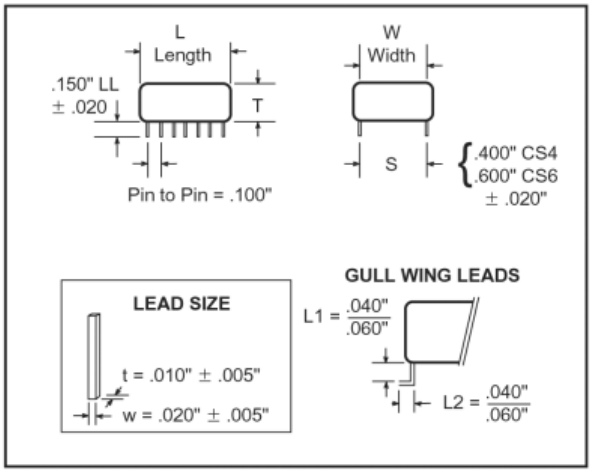
Capacitor Outline Drawing



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