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: Multilaver 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

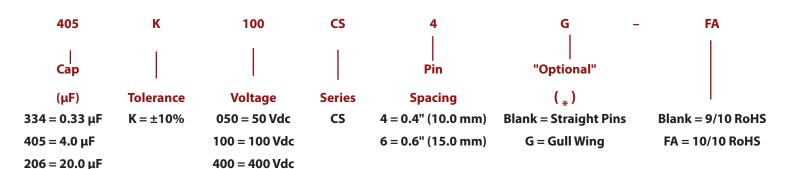
Total Self Inductance (L): <6 nH typical (CS6)

< 4 nH typical (CS4)

Lead Material: Tinned copper alloy frame

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

Part Numbering System

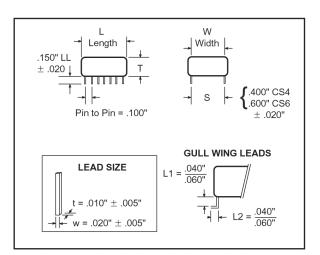


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Capacitor Outline Drawing

Test Method and Performance

Accelerated Dry Life



Temperature: +85 °C ±5 °C
Applied Voltage: 1.25 x rated voltage
Test Duration: 1000 hours performance

Requirements

Test Conditions

Capacitance: Change of ≤5.0% Dissipation Factor: ≤1.0% @ 1 kHz

Insulation Resistance: \geq 1K M Ω • μ F, need not exceed 1 K M Ω

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 \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 °C, 5 sec. SMD Reflow Soldering Temperature: 220 °C, 30 sec.

Performance Requirements

Capacitance: Change of $\leq 2\%$

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 | Cap | DC | $ESR\Omega$ | RMS Current | W Max. | | T Max. | | L Max. | | Nom. L.S. | | Leads | Tube |
|-------------|---------------|---------|-------------|-------------|--------|--------|--------|-------|--------|--------|-----------|------|----------|----------|
| Part Number | (μ F) | Voltage | @ 500 kHz | @ 500 kHz | Inches | (mm) | Inches | (mm) | Inches | (mm) | Inches | (mm) | Per Side | 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 Vd | c | | | | | | | |
| 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 Vd | c | | | | | | | |
| 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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334K400CS6G-FA 106K050CS4G-FA 405K100CS4G-FA 405K100CS4G 105K500CS6-FA 474K400CS6-FA
106K100CS4-FA 205K100CS4G 474K500CS6G 105K400CS6-FA 105K500CS6G-FA 405K100CS4-FA
685K100CS4G-FA 475K100CS4G-FA 685K100CS4G 105K250CS6 105K250CS6G-FA 475K100CS4-FA
474K500CS6-FA 206K050CS4-FA 205K100CS4-FA 105K400CS6G-FA 334K400CS6-FA 685K100CS4-FA
105K250CS6G 474K400CS6G-FA 106K050CS4-FA 106K100CS4G-FA 205K100CS4G-FA 474K500CS6G-FA
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205K100CS4 105K400CS6G 106K050CS4 334K400CS6G 474K400CS6G 105K500CS6 106K100CS4
474K400CS6