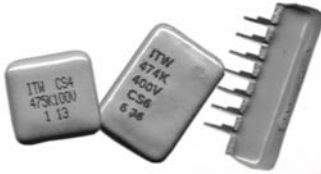


Type CS (Capstick®) Metallized Polymer Network

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 °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): | $\leq 1.0\%$ @ 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 $\text{M}\Omega$ |

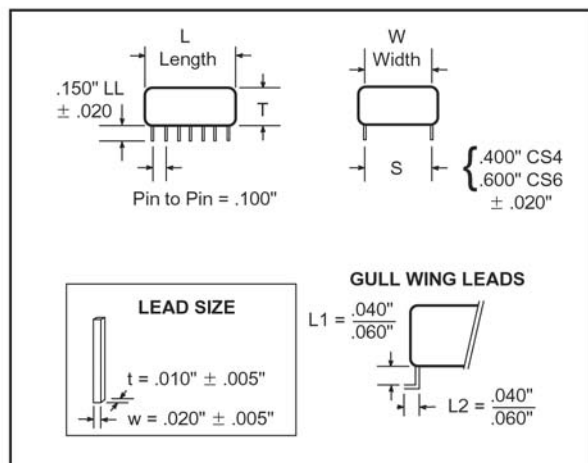
Part Numbering System

| | | | | | |
|----------------------------|------------------|----------------|---------------|--------------------|-----------------------|
| 405 | K | 100 | CS | 4 | G |
| | | | | | |
| Cap | | | | Pin | "Optional" |
| (μF) | 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 |
| 405 = 4.0 μ F | | 100 = 100 Vdc | | 6 = 0.6" (15.0 mm) | G = Gull Wing |
| 206 = 20.0 μ F | | 400 = 400 Vdc | | | |



Type CS (Capstick®) Metallized Polymer Network

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 | Soldering Temperature: +250 °C ±5 °C Soldering Duration: 5 sec ±1 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 |
| 156K050CS4* | 15.00 | 50 | 0.0027 | 16.7 | 0.5 (12.7) | 0.32 (8.1) | 0.880 (22.4) | 0.4 (10) | 7 | 22 |
| 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 | | | | | | | | | | |
| 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 |