

# MIL-PRF-49470 ELECTRICAL & PERFORMANCE CHARACTERISTICS (ALL CHARACTERISTICS & TEST METHODS IAW MIL-PRF-49470)

## ELECTRICAL CHARACTERISTICS

Dielectric Type	Rated Voltage (V)	Temperature Coefficient (TC) from -55° to +125°C Bias = 0 Volt	Temperature Voltage Coefficient (VTC) from -55° to +125°C Bias = Rated Voltage
BP	ALL	± 30 PPM	± 30 PPM
BX	25/50/100	±15%	+15, -25%
BR	200	±15%	+15, -40%
BQ	500	±15%	+15, -50%

**Capacitance:** Measured at 1.0 volt (open circuit) and 1KHz. See tables on pages 2 through 5.

**Capacitance Tolerance:** J = ±5%, K = ±10%, M = ±20%. \*

**Dissipation Factor:** When tested at 1.0 volt (open circuit) and 1KHz, BP characteristic shall be .15% maximum and BX/BR/BQ characteristic shall be 2.5% maximum.

**Dielectric Withstanding Voltage:** Dielectric withstanding voltage will be tested at 250% of rated voltage except for 500V rated parts which will be tested at 150% of rated voltage.

**Insulation Resistance:**

At +25°C, rated voltage:  $10^{11} \Omega$  or 1000 M $\Omega$ - $\mu$ F, whichever is less.

At +125°C, rated voltage:  $10^{10} \Omega$  or 100 M $\Omega$ - $\mu$ F, whichever is less.

## PERFORMANCE CHARACTERISTICS AND TEST METHODS (M49470 PART NUMBERS)

**Operating Temperature Range:** The operating temperature range is -55°C to +125°C.

**Thermal Shock:** All parts are cycled between -55°C and +125°C, 5 times.

**Voltage Conditioning:** All parts are tested for 96 hours at 125°C and 200% of rated voltage except 500V rated parts are tested at 120% of rated voltage. The overall percent defective allowed (PDA) is 10%.

**Solderability:** Meets Mil-STD-202 and J-STD-001 requirements.

**Resistance to Soldering Heat:** Parts withstand 260°C for 10 seconds with no degradation in electrical performance or lead attachment.

**Terminal Strength:** Leads will withstand 5 pounds (4 pounds for case code 5) of applied force without rupturing.

**Moisture Resistance:** Periodically parts are tested for 20 cycles at 90% RH and between -10°C to +65°C. Bias is applied during the first 10 cycles.

**Life:** Not required for each lot. Every 3 months, a minimum of 12 pieces are tested for 1000 hours at +125°C and 200% of rated voltage, except 500V rated parts shall be tested at 120% of rated voltage.

**Barometric Pressure:** Parts will operate at rated voltage (80% of rated voltage for 500 volt parts) at reduced pressure up to 100,000 feet.

**Shock, Specified Pulse:** Parts remain operational during and after impacts of 100 G's.

**Vibration:** Parts remain operational during and after operating in high vibration environments of up to 20 G's.

**Marking:** Marking shall be in accordance with Mil-STD-1285 and Mil-PRF-49470. Minimum marking will be "JB", manufacturer's code (PCI), capacitance and tolerance, and date code. Full marking will be included on the package.

**Cage Code 60212:** Presidio Components, Inc.

## ADDITIONAL REQUIREMENTS (T49470 PART NUMBERS)

**Ultrasonic Imaging:** All parts are imaged during in-process testing to remove voids and delaminations IAW EIA 469.

**Destructive Physical Analysis:** A sample of chips is examined prior to assembly for defects in the microstructure. As part of Group A, an additional sample is examined for cracks or assembly defects.

**Thermal Shock:** Prior to voltage conditioning, all parts are cycled between -55°C and +125°C, 20 times. Prior to life test sample pieces receive 100 cycles under conditions outlined above.

**Voltage Conditioning:** All parts are tested for 168 - 264 hours at 125°C and 200% of rated voltage except 500V rated parts are tested at 120% of rated voltage. The overall percent defective allowed (PDA) is 5% for case codes 4 and 5 and 8% for all other case codes. The PDA in the last 48 hours of voltage conditioning is .5% for case codes 4 and 5, and 1% for all other case codes, or 1 piece whichever is greater.

**Life:** For qualification, parts are tested for 4000 hours at +125°C and 200% of rated voltage except 500V rated parts shall be tested at 120% of rated voltage. For each lot, 12 pieces are tested for a 1000 hours under conditions outlined above.

**Humidity, Steady State, Low Voltage:** Six pieces are tested from each lot at 1.3 volts, 85% RH and 85°C, to ensure the absence of low voltage failure mechanisms. These mechanisms include microcracking.

**Marking:** Parts will be marked as M49470 parts except "JB" is replaced with "JT".

\* Unless otherwise specified.

J Tolerance for BP only. Customer SCD takes precedence.

## MIL-PRF-49470 FREQUENCY RESPONSE CURVES

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All graphs in PDF format for easy viewing.  
Please Contact Factory for Additional Data.

10 $\mu$ F, 50 VOLT M49470X01106\_A  
PRESIDIO PN S405BX106\_2\_4

