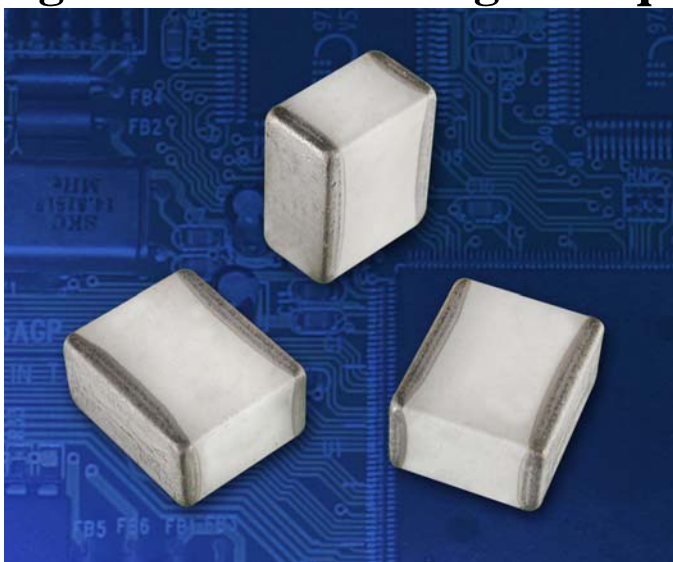




Silver Series

High Performance High Frequency Ceramic Capacitor



Features

- JTI's Silver (Ag) electrode system provides Higher-Q/Lower Loss than the competitor's palladium electrode
- RoHS Green
- Gold, Non-Magnetic and Sn/Pb terminations available
- COG (NPO)
- EIA Marking available

Applications

- Base stations
- Amplitude Modulators
- Power amplifiers
- Antenna matching
- Power Matching

Electrical Characteristics

Dielectric	COG/NPO		
Capacitance and Voltage Range (EIA)	<u>Size</u>	<u>Cap Range</u>	<u>Voltage Range</u>
	S42	0.5 to 1000 pF	50 to 1000V (see catalog)
	S48	1 to 2200 pF	300 to 2500V
	S58	1 to 5100 pF	500 to 5000V
Capacitance Tolerance	A, B, C, D, F, G, J, K, M		
Test Parameters	1-100 MHz \pm 50 kHz @ 1.0 \pm 0.2 VRMS, 25°C		
Temperature Coefficient	0% \pm 30 ppm/°C		
Quality Factor	Q > 1,000 at 1 MHz \pm 50 kHz, 25°C, 1.0 \pm 0.2 VRMS		
Insulation Resistance	> 1,000 GOhm		
Operating Environment Range	-55 to 125°C		
Storage Environment Range	Tape & Reel: -5 to 40°C & 15 to 75% RH		
Breakdown Voltage	> 2.5 x WVDC Min., 25°C, 50 mA Max		



How to Order: 501S42E1R0BV4E

501	S42	E	1R0	B	V	4	E
VOLTAGE 1 st two digits are significant: third digit denotes number of zeros to follow eg: 501 = 500V	CASE S42 S48 S58	DIELECTRIC High Q NPO	CAPACITANCE 1 st two digits are significant: third digit denotes number of zeros to follow eg: 101 = 100pF R denotes decimal eg: 1R0 = 1pF	TOLERANCE *A = 0.05pF *B = 0.1pF *C = 0.25pF *D = 0.5pF F = 1% G = 2% J = 5% K = 10% M = 20%	TERMINATION V = Ni/Sn Plated C = Cu/SnPb G = Ni/Au U = Cu/Sn T = Ni/Sn/Pb Plated (all non-magnetic) 1 = Microstrip 2 = Axial Ribbon 3 = Axial Wire 4 = Radial Ribbon 5 = Radial Wire	TAPE CODE E = Embossed 7" 1,000 Pcs Z = Embossed 5" 200 Pcs	

* Available below 10pF

"Termination"

MARKING CODES
 3 = Cap & Tolerance
 4 = Unmarked
 6 = EIA Marking

Mechanical Characteristics

	Length "L"	Width "W"	Thickness "T"	End Band "EB"
S42	0.110" + 0.020/-0.010"	0.110" ± 0.015"	0.102" Max.	0.015" ± 0.010"
S48	0.230" + 0.020/-0.010"	0.25" ± 0.015"	0.165" Max	.040" Max
S58	0.380" + 0.015/-0.010"	0.380" ± 0.015"	0.170" Max	.040" Max

JTI Contact Information

JTI Sales Contacts:

Factory Sales Contact: Jayne Pompey, Inside Sales Supervisor, 805-389-1166

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Jayne will provide the appropriate outside sales contacts.

JTI Technical Contacts:

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JTI Marketing Contact:

Scott Horton, VP Sales & Marketing, shorton@johansontechnology.com

Functional Specifications

NO.	ITEM	PERFORMANCE	TEST CONDITION		
1	Appearance	No abnormal exterior appearance.	Through Microscope (30x) or Automatic Vision Inspection System		
2	Insulation Resistance	$> 1,000 \text{ g}\Omega$	Rated voltage shall be applied. Measurement time is 5 seconds maximum.		
3	Withstanding Voltage	No dielectric breakdown or mechanical breakdown.	250 % of the rated voltage for 5 seconds at 25°C, 50 mA MAX.		
4	Capacitance	Within the specified tolerance.	Frequency	Temp	Voltage
			1 MHz \pm 50 kHz	25°C	1.0 \pm 0.2 VRMS
	Q	$Q > 1,000$ ($DF_{\max} = 0.1\%$)	Frequency	Temp	Voltage
			1 MHz \pm 50 kHz	25°C	1.0 \pm 0.2 VRMS
6	Adhesive Strength of Termination	Termination should not pull off and ceramic should remain undamaged	Linear pull force exerted on axial leads soldered to each terminal. -5.5 lbs. Minimum		
7	PCB Deflection	Visual Criteria – No mechanical damage shall occur	Glass Epoxy PCB \rightarrow 0.5 mm Deflection		
8	Solderability	<p>More than 90% of the terminal surface is to be soldered newly so the metal parts do not come out or dissolve.</p> <p>Wetting force of $2/3 F_{\max}$ must be achieved in 1.0 s or less.</p> <p>Capacitance Change Criteria – Change of capacitance within $\pm 2\%$ or $\pm 0.5 \text{ pF}$ whichever is larger.</p>	<p>Solder Temperature: $240 \pm 5^\circ\text{C}$ Dip Time: 5 seconds Solder: SN 62 Flux: Rosin Pre-heating: 120 to 150°C for 60 seconds</p> <p>Flux: Actiec 5 or equivalent Solder Temperature: 235°C</p>		

NO.	ITEM		PERFORMANCE	TEST CONDITION
9	Resistance to soldering heat	Appearance	No Mechanical Damage	Solder Dip Criteria: Solder Temperature of $260 \pm 5^{\circ}\text{C}$ Solder dip duration: 10 ± 1 Second Each termination shall be fully preheated and immersed as follows: Step 1.) $80 - 100^{\circ}\text{C}$ for 60 Seconds Step 2.) $150 - 180^{\circ}\text{C}$ for 60 Seconds Measurements are completed at room temp. after cooling for 24 ± 2 Hrs
		Capacitance	Capacitance change within $\pm 2.5\%$ or $\pm 0.25\text{pF}$ whichever is larger	
		Q	$Q > 500$	
		Insulation resistance	$> 1,000 \text{ g}\Omega$	
		Breakdown Voltage	$> 2.5 \times \text{WVDC Min., } 25^{\circ}\text{C, } 50 \text{ mA Maximum}$	
10	Vibration Test	Appearance	No Mechanical Damage	The capacitor shall be subjected to a harmonic motion having a total amplitude of 1.5 mm. The entire frequency range from 10 to 55 Hz and a return to 10 Hz shall be traversed in one minute. The cycle shall be performed for 2 hours in each perpendicular direction for a total of 6 hours.
		Capacitance	Within $\pm 2.5\%$ or $\pm 0.25\text{pF}$ whichever is larger	
		Q	$Q > 1,000$	
		Insulation Resistance	$> 1,000 \text{ g}\Omega$	
		Voltage Breakdown	$> 2.5 \times \text{WVDC Min., } 25^{\circ}\text{C, } 50 \text{ mA Maximum}$	
11	Humidity (Steady State)	Appearance	No Mechanical Damage	Temperature: $40 \pm 2^{\circ}\text{C}$ Relative Humidity: 90 to 95 % Test Time: $500 +12 / -0$ Hr. Measured at room temperature after cooling for 24 ± 2 Hr.
		Capacitance	Within $\pm 5\%$ or $\pm 0.5\text{pF}$ whichever is larger	
		Q	$Q > 300$	
		Insulation Resistance	$> 100 \text{ g}\Omega$	
		Voltage Breakdown	$> 2.5 \times \text{WVDC Min., } 25^{\circ}\text{C, } 50 \text{ mA Maximum}$	
12	Moisture Resistance	Appearance	No Mechanical Damage	Applied Voltage: 1.5 Volts Temperature: $85 \pm 2^{\circ}\text{C}$ Relative Humidity: 85 % Test Time: $240 +12 / -0$ Hr. Current Applied: 50 mA max. Measured at room temperature after cooling for 24 ± 2 Hr. MSL: 1
		Capacitance	Within $\pm 7.5\%$ or $\pm 0.75 \text{ pF}$ whichever is larger	
		Q	$Q > 300$	
		Insulation Resistance	Minimum Insulation Resistance: 100Ω	
		Voltage Breakdown	$> 2.5 \times \text{WVDC Min., } 25^{\circ}\text{C, } 50 \text{ mA Maximum}$	

NO.	ITEM		PERFORMANCE	TEST CONDITION
13	High Temperature Resistance	Appearance	No Mechanical Damage	Applied Voltage: 200% of Rated Voltage Test Time: 1000 +48 / -0 Hr. Current Applied: 50 mA MAX. Temperature: 125 ± 3°C
		Capacitance	Within ± 3% or ± 0.3pF Whichever is larger	
		Q	Q > 500	
		Insulation Resistance	Minimum Insulation Resistance: 100 gΩ	
		Voltage Breakdown	> 2.5 x WVDC Min., 25°C, 50 mA Maximum	
14	Temperature Cycling	Appearance	No Mechanical Damage	Capacitors shall be subjected to five (5) cycles of temp cycle profile: <i>Step 1.)</i> Minimum rated temperature +0 / -3°C for 30 minutes <i>Step 2.)</i> 25°C for 2-3 minutes <i>Step 3.)</i> Maximum rated temperature +3/ -0° for 30 minutes <i>Step 4.)</i> 25°C for 2-3 minutes Measurements shall be made after the capacitors cool for 24 ± 2 hours.
		Capacitance	Within ± 2.5% or ± 0.25 pF whichever is larger	
		Q	Q > 1,000	
		Insulation Resistance	To satisfy the initial criteria (1,000 gΩ)	
		Voltage Breakdown	> 2.5 x WVDC Min., 25°C, 50 mA Maximum	
15	Reflow soldering requirements		To withstand the reflow soldering profile 3-times and meet sec. 1 - 5 & 13	See reflow soldering profile and specifications (3x).
16	Underfiller curing profile		To withstand the reflow soldering profile 2 times (2x) followed by a minimum of 5 minutes at temperature, and meet sec. 1 - 5 & 13	See reflow soldering profile and specifications (2x). Temperature: 150 ± 10°C Time at temp.: 5 min
17	Manual hot gas soldering requirements		To withstand hot gas soldering for rework at the specified temperature, air velocity, and time, and, meet the requirements of sec. 1 - 5 & 13	Max Air Temperature: 260 °C Max Air Velocity: 10 m/s Max Exposure Time: 30 s
18	Manual soldering using soldering iron requirements		To withstand manual soldering using soldering iron for rework at the specified temperature and time, and, meet the requirements of sec. 1 - 5 & 13	Tip Diameter: To fit application Max Tip Temperature: 260 ± 10°C Max Exposure Time: 3 seconds