

**HIGH RELIABILITY EXTENDED RANGE  
CHIP CAPACITORS FOR SPACE**

**NEW  
HIGH CAP  
VALUES**



**100% Screened &  
Inspected to  
MIL-PRF-123 Including  
0201 & 0402  
SIZES**

# HIGH RELIABILITY EXTENDED RANGE CHIP CAPACITORS

## FORMERLY THE PRESIDIO COMPONENTS, INC. “#M123” DRAWING

For space flight applications that require the highest level of reliability, Presidio recommends its high reliability extended range chip capacitors. Tested to the requirements of MIL-PRF-123, Presidio manufactures these chips on the same manufacturing line as its military products. Please note these capacitors are NOT MIL-qualified. Unless noted in the data sheet, the parts do meet the MIL-PRF-123 design requirements for dielectric thickness and electrode composition. All parts are manufactured with **PRECIOUS METAL ELECTRODES**.

**NASA S-311 SPECIFICATION**

Most of these chips are qualified to the NASA S-311 drawing. For more information click on the NASA S-311-P-829 link on Presidio's website:  
[www.presidiocomponents.com](http://www.presidiocomponents.com)

### QUALITY ASSURANCE PROVISIONS

Every lot undergoes the following inspection and tests.

**DESTRUCTIVE PHYSICAL ANALYSIS (DPA)** — A representative sample is pulled from each lot and examined per EIA RS469 and to verify adherence to Presidio's design criteria. Sample size is per MIL-PRF-123.

**ULTRASONIC INSPECTION** —

**Code A:** Ultrasonic inspection is performed on 100% of the parts, except for Case Code 0201 where real time X-Ray is used instead.  
**Code B:** No Ultrasonic inspection or real time X-Ray is performed.

**THERMAL SHOCK** — All parts are temperature cycled for 20 cycles to MIL-STD-202 Method 107, Condition A, except that max temperature is 125°C.

**VOLTAGE CONDITIONING** — All parts receive a voltage conditioning at 2X rated voltage and 125°C for a minimum of 168 hours and a maximum of 264 hours. Voltage Conditioning may be terminated at any time between 168 and 264 hour time interval that failures are less than .1% or 1 piece during the last 48 hours of the test. Method follows MIL-PRF-123. Resistors, instead of fuses are acceptable.

**INSULATION RESISTANCE (IR @ 125°C)** — All parts are tested at 125°C and Rated Voltage in accordance with Method 302 of MIL-STD-202. The minimum IR required is 10,000 Megohms or 100 Megohm-Microfarads.

**DIELECTRIC WITHSTANDING VOLTAGE (DWV)** — All parts are tested at 2.5X rated voltage in accordance with Method 301 of MIL-STD-202.

**INSULATION RESISTANCE (IR @ 25°C)** — All parts are tested at 25°C and Rated Voltage in accordance with Method 302 of MIL-STD-202. The minimum IR required is 100,000 Megohms or 1,000 Megohm-Microfarads.

**CAPACITANCE** — All parts are tested at 25°C and 1VACRMS in accordance with Method 305 of MIL-STD-202.

**DISSIPATION FACTOR (DF)** — See following table:

VOLTAGE RATING	NPO	X7R
5/6.3/10	N/A	7.5%
16	0.15%	5%
25	0.15%	4%
50	0.15%	3.5%
100	0.15%	2.5%

\* For 10V high cap values see note 1/ on page 3

**PERCENT DEFECTIVE ALLOWED (PDA)** — The cumulative PDA after Voltage Conditioning is 5%. Pieces rejected as out of tolerance for capacitance or visual screening will be removed from the lot but not counted in the PDA calculation.

**VISUAL** — A 100% inspection is performed IAW MIL-PRF-123 Appendix B.

**MECHANICAL** — Level 1 AQL 1% in accordance with MIL-PRF-123.

**THERMAL SHOCK AND LIFE TEST** — A sample is pulled from each lot. 100 Thermal shock cycles are performed and Life Test is performed for 1000 hours at 2X rated voltage and 125°C. Sample size and method follows MIL-PRF-123.

**HUMIDITY, STEADY STATE, LOW VOLTAGE** — A sample of 12 pieces is pulled from each lot and tested per MIL-PRF-123.

**MARKING (Optional for sizes 0805 and larger only)** — Parts will not be marked unless marking is specified on the PO. If marking is specified, a color letter will be used per Presidio's chip marking system.

### STANDARD PACKAGING

Product will be packaged in individual waffle trays. Tape and reel option is available.

### DATA PACKAGE

Data will be sent with each shipment including:

- CERTIFICATE of COMPLIANCE
- DPA REPORT
- GROUP A & B ATTRIBUTE DATA SHEET
- LIFE TEST AND HUMIDITY VARIABLES DATA SHEET.

Group B required for flight parts. Parts for engineering models may be subject to lesser screening requirements.

**EXAMPLE PART NUMBER**

## SR0805X7R103K2P5(L)#M123A

PART DESCRIPTION: SR, 0805, X7R, 10nF, ±10%, 50VDC, PdAg Termination, Waffle Pack, Design-In Code (L) for Vermont, Screened per MIL-PRF-123, with 100% Ultrasonic Inspection.

See Back Page for Design-In Codes

**EXAMPLE: SR0805X7R103K2P5(L)#M123A**

### HOW TO ORDER

<b>SR</b>	<b>0805</b>	<b>X7R</b>	<b>103</b>	<b>K</b>	<b>2</b>	<b>P</b>	<b>5</b>	<b>(L)</b>	<b>#M123</b>	<b>A</b>
<b>Prefix</b> SR	<b>Size Code</b> See Page 3 For Sizes Other Sizes Available	<b>Dielectric</b> X7R NPO UP	<b>Capacitance Code</b> Two significant figures followed by the number of zeros. Example: 0R1 = 0.1 pF R10 = 1.0 pF 100 = 10 pF 101 = 100 pF 102 = 1000 pF 103 = .01 μF 104 = .10 μF 105 = 1.0 μF	<b>Tolerance Code</b> A = ± .05pF < 10pF B = ± .10pF < 10pF C = ± .25pF < 10pF D = ± .50pF < 10pF E = ± 0.5% ≥ 10pF F = ± 1% ≥ 10pF G = ± 2% ≥ 10pF J = ± 5% ≥ 10pF K = ± 10% L = -10% / +20% M = ± 20%	<b>Voltage Code</b> B = 5 VDC E = 10 VDC F = 12 VDC G = 16 VDC 1 = 25 VDC 2 = 50 VDC 3 = 100 VDC Other Voltages Available Examples: 63, 75, 150, 250 VDC, etc.	<b>Termination Code</b> P = Palladium Silver NT9 = Ni/Sn/Pb Min 4% Pb NG = Nickel Gold* H = Thick Film Gold  * H termination may be substituted for NG at factory's choice	<b>Packaging Code</b> 1 = Reel, 7", plastic tape, unmarked 2 = Reel, 7", plastic tape, marked 5 = Waffle, unmarked 6 = Waffle, marked	<b>Design-In Code</b> See Back Page	<b>Special Code</b> #M123	<b>Ultrasonic Inspection</b> A = 100% B = None See Above

# HIGH RELIABILITY EXTENDED RANGE CHIP CAPACITORS

FOR SPACE FLIGHT APPLICATIONS

SIZE	L inches (mm)	W inches (mm)	THICKNESS MAX (T) inches (mm)	METALIZATION BAND (M.B.) inches (mm)	WVDC	DIELECTRIC (MAXIMUM CAPACITANCE)				Available as S-311
						NPO		X7R		
0201	0.024 (0.61) ± 0.003 (0.08)	0.011 (0.28) ± 0.001 (0.03)	0.013 (0.33)	.004 (0.10) min. band .008 (0.20) min. space	10 V	<b>New!</b>		0.01 µF 1/	No	No
					10 V	<b>New!</b>		0.1 µF 1/	No	Yes
0402	0.040 (1.02) ± 0.006 (0.15)	0.020 (0.51) ± 0.004 (0.10)	0.024 (0.61)	.004 (0.10) min. band .015 (0.38) min. space	16 V			0.01 µF	No	Yes
					25 V	120 pF	No	4700 pF	No	Yes
					50 V	100 pF	No	3900 pF	Yes	Yes
					100 V	39 pF	Yes	1200 pF	Yes	Yes
0403	0.040 (1.02) ± 0.010 (0.25)	0.030 (0.76) ± 0.010 (0.25)	0.030 (0.76)	.004 (0.10) min. band .015 (0.38) min. space	16 V			0.022 µF	No	Yes
					25 V	390 pF	No	0.015 µF	No	Yes
					50 V	330 pF	No	0.012 µF	Yes	Yes
					100 V	68 pF	Yes	2200 pF	Yes	Yes
0504	0.050 (1.27) ± 0.010 (0.25)	0.040 (1.02) ± 0.010 (0.25)	0.040 (1.02)	.005 (0.13) min. band .015 (0.38) min. space	16 V			0.082 µF	No	Yes
					25 V	1500 pF	No	0.047 µF	No	Yes
					50 V	1200 pF	No	0.039 µF	Yes	Yes
					100 V	180 pF	Yes	6800 pF	Yes	Yes
Low Inductance 0306	0.032 (0.81) ± 0.006 (0.15)	0.063 (1.60) ± 0.006 (0.15)	0.033 (0.84) See Note 2/	.005 (0.13) min. band .010 (0.25) min. space	5 V			0.10 µF	No	Yes
					16 V			0.10 µF	No	Yes
					25 V			0.022 µF	No	Yes
0603	0.063 (1.60) ± 0.006 (0.15)	0.032 (0.81) ± 0.006 (0.15)	0.035 (0.89)	.005 (0.13) min. band .025 (0.64) min. space	10 V			0.22 µF	No	Yes
					16 V			0.10 µF	No	Yes
					25 V	680 pF	No	0.027 µF	No	Yes
					50 V	560 pF	No	0.022 µF	Yes	Yes
Low Inductance 0508	0.050 (1.27) ± 0.010 (0.25)	0.080 (2.03) ± 0.010 (0.25)	0.045 (1.14) See Note 3/	.005 (0.13) min. band .020 (0.51) min. space	10 V			0.12 µF	No	Yes
					16 V			0.10 µF	No	Yes
					25 V			0.047 µF	No	Yes
0805	0.080 (2.03) ± 0.010 (0.25)	0.050 (1.27) ± 0.010 (0.25)	0.055 (1.40)	0.020 (0.51) ± 0.010 (0.25)	10 V	<b>New!</b>		1.00 µF 1/	No	Yes
					16 V			0.22 µF	No	Yes
					25 V	2700 pF	No	0.10 µF	No	Yes
					50 V	2200 pF	No	0.10 µF	Yes	Yes
					100 V	560 pF	Yes	0.022 µF	Yes	Yes
Low Inductance 0612	0.063 (1.60) ± 0.010 (0.25)	0.126 (3.20) ± 0.010 (0.25)	0.055 (1.40)	.005 (0.13) min. band .025 (0.64) min. space	16 V			0.27 µF	No	Yes
					25 V			0.22 µF	No	Yes
1206	0.126 (3.20) ± 0.008 (0.20)	0.063 (1.60) ± 0.008 (0.20)	0.060 (1.52)	0.020 (0.51) ± 0.010 (0.25)	10 V	<b>New!</b>		1.8 µF 1/	No	Yes
					16 V			0.39 µF	No	Yes
					25 V	6800 pF	No	0.27 µF	No	Yes
					50 V	5600 pF	No	0.22 µF	Yes	Yes
					100 V	1500 pF	Yes	0.10 µF	Yes	Yes
1209	0.125 (3.18) ± 0.010 (0.25)	0.095 (2.41) ± 0.010 (0.25)	0.065 (1.65)	0.020 (0.51) ± 0.010 (0.25)	10 V	<b>New!</b>		2.7 µF 1/	No	Yes
					16 V			0.68 µF	No	Yes
					25 V	0.010 µF	No	0.47 µF	No	Yes
					50 V	8200 pF	No	0.39 µF	Yes	Yes
					100 V	3900 pF	Yes	0.15 µF	Yes	Yes
Low Inductance 0912	0.095 (2.41) ± 0.010 (0.25)	0.126 (3.20) ± 0.010 (0.25)	0.065 (1.65)	.005 (0.13) min. band .025 (0.64) min. space	16 V			0.68 µF	No	Yes
					25 V			0.47 µF	No	Yes
1712	0.175 (4.45) ± 0.015 (0.38)	0.125 (3.18) ± 0.010 (0.25)	0.065 (1.65)	0.020 (0.51) ± 0.010 (0.25)	16 V			1.2 µF	No	Yes
					25 V	0.022 µF	No	1.0 µF	No	Yes
					50 V	0.015 µF	No	0.68 µF	Yes	Yes
					100 V	6800 pF	Yes	0.27 µF	Yes	Yes
1812	0.180 (4.572) ± 0.015 (0.38)	0.125 (3.18) ± 0.015 (0.38)	0.080 (2.03)	0.020 (0.51) ± 0.010 (0.25)	10 V	<b>New!</b>		4.7 µF 1/	No	Yes
1725	0.180 (4.45) ± 0.015 (0.38)	0.250 (6.35) ± 0.018 (0.46)	0.065 (1.65) *0.080 (2.03) For max cap value	0.020 (0.51) ± 0.010 (0.25)	16 V			3.3 µF	No	Yes
					25 V	0.056 µF	No	2.2 µF	No	Yes
					50 V	0.039 µF	No	2.2 µF	Yes	No
					100 V	0.018 µF	Yes	0.68 µF	Yes	Yes
2225	0.220 (5.59) ± 0.015 (0.38)	0.250 (6.35) ± 0.018 (0.46)	0.080 (2.03)	0.020 (0.51) ± 0.010 (0.25)	16 V			3.9 µF	No	Yes
					25 V	0.068 µF	No	3.3 µF	No	Yes
					50 V	0.056 µF	No	2.2 µF	Yes	Yes
					100 V	0.027 µF	Yes	1.0 µF	Yes	Yes

MIL-PRF-123 MINIMUM DIELECTRIC THICKNESS COMPLIANT:

0.8 mils for 50V  
1.0 mils for 100 V

YES/NO

YES/NO

1/ The capacitance values in this category may have DF readings up to 7.5%. 2/ Also available as 0.024 Max Thickness 3/ Also available as 0.020 Max Thickness

# A WORD TO THE DESIGN ENGINEER

After the design work is done, outsourcing manufacturing on a global basis is a management option. At Presidio Components, we are striving for complete customer satisfaction which includes “after” service for all of our products.

For quick traceability, if needed, we added a “Design-In” locator code. Please select your location from the list below and add the appropriate code at the end of the part number. If you need assistance give us a call at **(858) 578-9390** or email us at **info@presidiocomponents.com**.

## UNITED STATES

USA	Code	USA	Code
Alabama	G	Nebraska	P
Alaska	P	Nevada, North	B
Arizona	D	Nevada, South	C
Arkansas	P	New Hampshire	L
California, North	B	New Jersey	J
California, South	C	New Mexico	D
Colorado	E	New York, Metro	J
Connecticut	L	New York, Upstate	K
Delaware	I	North Carolina	G
District of Columbia	H	North Dakota	O
Florida	G	Ohio	M
Georgia	G	Oklahoma	P
Hawaii	P	Oregon	A
Idaho	A	Pennsylvania	I
Illinois	N	Rhode Island	L
Indiana	M	South Carolina	G
Iowa	O	South Dakota	O
Kansas	P	Tennessee	G
Kentucky	M	Texas	F
Louisiana	P	Utah	E
Maine	L	Vermont	H
Maryland	H	Virginia	A
Massachusetts	L	Washington	P
Michigan	N	West Virginia	N
Minnesota	O	Wisconsin, East	O
Mississippi	G	Wisconsin, West	E
Missouri	N	Wyoming	
Montana	A		

## OUTSIDE THE UNITED STATES

Americas	Code	Europe	Code
Canada	R	Austria	3
Mexico	R	Belgium	1
Caribbean	R	Denmark	5
Central America	R	Finland	5
South America	R	France	2
		Germany	3
		Ireland	6
		Italy	4
		Luxembourg	1
		Netherlands	1
		Norway	5
		Sweden	5
		Switzerland	3
		United Kingdom	6
		Other European Countries	7
		Other	
		India	Z
		Israel	8
		Rest of World	9

**PART NUMBER EXAMPLE:  
SR0805X7R103K2P5(L)#M123A**

**PART DESCRIPTION: SR, 0805, X7R, 10nF, ±10%, 50VDC, PdAg Termination, Waffle Pack, Design-In Code (L) for Vermont, Screened per MIL-PRF-123, with 100% Ultrasonic Inspection.**

## MAIN PRODUCT CATALOGS

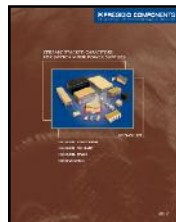
*Click Catalog Cover to Visit Product Page on Website*



**SURFACE MOUNT CERAMIC CHIP CAPACITORS**



**HIGH RELIABILITY EXTENDED RANGE CHIPS FOR SPACE**



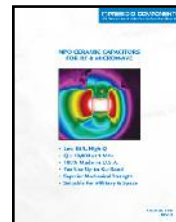
**CERAMIC STACKED CAPACITORS FOR SMPS**



**HIGH TEMPERATURE CERAMIC CAPACITORS**



**CERAMIC CAPACITORS FOR RF ENGINEERS**



**HIGH Q NPO CERAMIC CAPACITORS FOR RV & MICROWAVE**



**HIGH VOLTAGE RADIAL LEADED & MIL-PRF-49467 CERAMIC CAPACITORS**

**PRESIDIO COMPONENTS, INC.**

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