

**HIGH RELIABILITY EXTENDED RANGE  
SURFACE MOUNT CERAMIC CHIP CAPACITORS  
FOR SPACE APPLICATIONS  
SR#M123A SERIES**



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

# SR#M123A SERIES SURFACE MOUNT CERAMIC CHIP CAPACITORS

FORMERLY “#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. Most parts from the SR#M123A series do not meet the MIL-PRF-123 design requirements for dielectric thickness. All parts are manufactured with **PRECIOUS METAL ELECTRODES**.

**NASA S31P829 SPECIFICATION**

Most of these chips are available per this most popular NASA drawing. Please click on the NASA S31P829 link on Presidio's website:  
<https://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.

### NON-DESTRUCTIVE INSPECTION — CODE A

Non-Destructive Inspection is performed on 100% of the parts. X-Ray inspection is used for size 0201. Ultrasonic Inspection is used for sizes larger than 0603. X-Ray or Ultrasonic Inspection is used for sizes larger than 0201 up to and including size 0603.

**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
Below 16V	N/A	7.5%
16V	0.15%	5%
25V	0.15%	4%
50V	0.15%	3.5%
100V+	0.15%	2.5%

\* For 10V rating or lower, 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.

**PART NUMBER EXAMPLE**

**SR0402X7R104KENT91(D)#M123A**

PART DESCRIPTION: SR, 0402, X7R, 0.1µF, ±10%, 10V, Plated SnPb Over Ni Termination, Tape & Reel, Design-In Code (D) for Arizona, Screened Similar to MIL-PRF-123 Group A and Group B with 100% Ultrasonic Inspection.

**C OF C AND DATA PACK INCLUDED WITH THE PARTS.**

## HOW TO ORDER

See Back Page for Design-In Codes

**EXAMPLE: SR0402X7R104KENT91(D)#M123A**

SR	0402	X7R	104	K	E	NT9	1	(D)	#M123	A
<b>Prefix</b>	<b>Size</b>	<b>Dielectric</b>	<b>Capacitance Code</b>	<b>Tolerance Code</b>	<b>Voltage Code</b>	<b>Termination Code</b>	<b>Packaging Code</b>	<b>Design-In Code</b>	<b>Suffix</b>	<b>Non-Destructive Inspection</b>
SR	See Page 3 (Other Sizes Available)	X7R NPO (Other Dielectrics Available)	Two significant figures followed by the number of zeros. Example: R05 = 0.05pF OR1 = 0.1 pF 1R0 = 1.0 pF 100 = 10 pF 101 = 100 pF 102 = 1000 pF 103 = .01 µF 104 = .10 µF 105 = 1.0 µF	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 = 5 VDC E = 10 VDC F = 12 VDC G = 16 VDC 1 = 25 VDC 2 = 50 VDC 3 = 100 VDC 4 = 200 VDC  <b>Other Voltages Available</b> Examples: 63, 75, 150, 250 VDC, etc.	NT9 = <b>Plated SnPb over Ni</b> Min 4% Pb P = <b>PdAg</b> (Thick Film) H = <b>100% Au</b> (Thick Film) NG* = <b>Plated Au over Ni</b>  P & H are non-magnetic * for legacy parts	1 = Reel, 7", plastic tape, unmarked 2 = Reel, 7", plastic tape, marked 5 = Waffle, unmarked 6 = Waffle, marked	See Back Page (Optional)	#M123	A = 100%

SIZE	L inches (mm)	W inches (mm)	THICKNESS MAX (T) inches (mm)	METALIZATION BAND (M.B.) inches (mm)	VWDC	SR#M123A (Maximum Capacitance)		Available as S-311		Available as M32535
						NPO	X7R	NPO	X7R	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	Consult Factory	0.01 µF 1/	No	No	Yes
						10 V	390 pF	0.10 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	200 pF	0.033 µF	No	0.010 µF max.	Yes
					25 V	120 pF	0.033 µF	Yes	4700 pF max.	Yes
					50 V	100 pF	4700 pF	Yes	3900 pF max.	Yes
					100 V	39 pF	4700 pF	Yes	1200 pF max.	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	10 V	1200 pF	0.047 µF	No	No	N/A
					16 V	560 pF	0.022 µF	No	Yes	N/A
					25 V	390 pF	0.015 µF	Yes	Yes	N/A
					50 V	330 pF	0.012 µF	Yes	Yes	N/A
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	100 V	68 pF	2200 pF	Yes	Yes	N/A
					10 V	2700 pF	0.082 µF	No	No	N/A
					16 V	1800 pF	0.082 µF	No	Yes	N/A
					25 V	1500 pF	0.047 µF	Yes	Yes	N/A
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	50 V	N/A	0.10 µF	N/A	Yes	N/A
					16 V	N/A	0.10 µF	N/A	Yes	Yes
					25 V	N/A	0.022 µF	N/A	Yes	N/A
					10 V	2200 pF	0.22 µF	No	Yes	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	16 V	1000 pF	0.22 µF	No	0.010 µF max.	Yes
					25 V	680 pF	0.18 µF	Yes	0.027 µF	Yes
					50 V	560 pF	0.022 µF	Yes	Yes	0.018 µF max.
					100 V	100 pF	0.018 µF	Yes	3300 pF max.	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	N/A	0.12 µF	N/A	Yes	N/A
					16 V	N/A	0.10 µF	N/A	Yes	N/A
					25 V	N/A	0.047 µF	N/A	Yes	N/A
					10 V	4700 pF	1.0 µF 1/	No	Yes	0.10 µF max.
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)	16 V	3300 pF	0.22 µF	No	Yes	0.10 µF max.
					25 V	2700 pF	0.10 µF	Yes	Yes	Yes
					50 V	2200 pF	0.10 µF	Yes	Yes	Yes
					100 V	560 pF	0.10 µF	Yes	0.022 µF max.	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	N/A	0.27 µF	N/A	Yes	N/A
					25 V	N/A	0.22 µF	N/A	Yes	N/A
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	0.012 µF	1.8 µF 1/	No	Yes	Pending
					16 V	8200 pF	0.39 µF	No	Yes	Pending
					25 V	6800 pF	0.27 µF	Yes	Yes	Pending
					50 V	5600 pF	0.22 µF	Yes	Yes	Pending
					100 V	1500 pF	0.10 µF	Yes	Yes	Pending
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)	200 V	820 pF	0.027 µF	No	No	N/A
					10 V	0.018 µF	2.7 µF 1/	No	Yes	Pending
					16 V	0.012 µF	0.68 µF	No	Yes	Pending
					25 V	0.010 µF	0.47 µF	Yes	Yes	Pending
					50 V	8200 pF	0.39 µF	Yes	Yes	Pending
					100 V	3900 pF	0.15 µF	Yes	Yes	Pending
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	N/A	0.68 µF	N/A	Yes	N/A
					25 V	N/A	0.47 µF	N/A	Yes	N/A
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	0.027 µF	1.2 µF	No	Yes	Pending
					25 V	0.022 µF	1.0 µF	Yes	Yes	Pending
					50 V	0.015 µF	0.68 µF	Yes	Yes	Pending
					100 V	6800 pF	0.27 µF	Yes	Yes	Pending
					200 V	3300 pF	0.12 µF	No	No	N/A
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	N/A	4.7 µF 1/	No	Yes	Pending
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	0.068 µF	3.3 µF	No	Yes	N/A
					25 V	0.056 µF	2.2 µF	Yes	Yes	N/A
					50 V	0.039 µF	2.2 µF	Yes	No	N/A
					100 V	0.018 µF	0.68 µF	Yes	Yes	N/A
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)	200 V	8200 pF	0.27 µF	No	No	N/A
					16 V	0.082 µF	3.9 µF	No	Yes	Pending
					25 V	0.068 µF	3.3 µF	Yes	Yes	Pending
					50 V	0.056 µF	2.2 µF	Yes	Yes	Pending
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)	100 V	0.027 µF	1.0 µF	Yes	Yes	Pending
					200 V	0.012 µF	0.47 µF	No	No	N/A

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

