SPACE SERIES 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 S311P829 SPECIFICATION

Most of these chips are available per this most popular NASA drawing. Please click on the NASA S311P829 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.

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.

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 Similiar to MIL-PRF-123 Group A and Group B with 100% Ultrasonic Inspection.

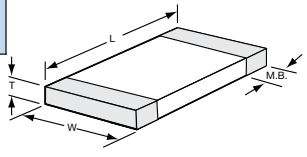
C OF C AND DATA PACK INCLUDED WITH THE PARTS.

HOW TO ORDER

See Website for Design-In Codes

EXAMPLE: SR0402X7R104KENT91(D)#M123A

SR	0402	X7R	104	K	E	NT9	1	(D)	#M123	A
Prefix	**Size**	**Dielectric**	**Capacitance Code**	**Tolerance Code**	**Voltage Code**	**Termination Code**	**Packaging Code**	**Design-In Code**	**Suffix**	**Ultrasonic Inspection**
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 0R1 = 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	NPO: 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 ALL: 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 **Other Voltages Available** Examples: 63, 75, 150, 250 VDC, etc.	NT9 = **Plated SnPb over Ni** Min 4% Pb P = **PdAg** (Thick Film) H = **100% Au** (Thick Film) NG* = **Plated Au over Ni** 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%



DATA SHEET FOR SR#M123A SERIES

FOR SPACE 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	Consult Factory	0.01 µF 1/	No
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	10 V	390 pF	0.10 µF 1/	No
					16 V	200 pF	0.01 µF	No
					25 V	120 pF	4700 pF	Yes
					50 V	100 pF	3900 pF	Yes
					100 V	39 pF	1200 pF	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	0.022 µF	No
					16 V	560 pF	0.022 µF	No
					25 V	390 pF	0.015 µF	Yes
					50 V	330 pF	0.012 µF	Yes
					100 V	68 pF	2200 pF	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	10 V	2700 pF	0.082 µF	No
					16 V	1800 pF	0.082 µF	No
					25 V	1500 pF	0.047 µF	Yes
					50 V	1200 pF	0.039 µF	Yes
					100 V	180 pF	6800 pF	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**	**N/A**	**0.10 µF**	Yes
					16 V		**0.10 µF**	Yes
					25 V		**0.022 µF**	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	2200 pF	0.22 µF	No
					16 V	1000 pF	0.10 µF	No
					25 V	680 pF	0.027 µF	Yes
					50 V	560 pF	0.022 µF	Yes
					100 V	100 pF	3300 pF	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**	Yes
					16 V		**0.10 µF**	Yes
					25 V		**0.047 µF**	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	4700 pF	1.0 µF 1/	No
					16 V	3300 pF	0.22 µF	No
					25 V	2700 pF	0.10 µF	Yes
					50 V	2200 pF	0.10 µF	Yes
					100 V	560 pF	0.022 µF	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**	Yes
					25 V		**0.22 µF**	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	0.012 µF	1.8 µF 1/	No
					16 V	8200 pF	0.39 µF	No
					25 V	6800 pF	0.27 µF	Yes
					50 V	5600 pF	0.22 µF	Yes
					100 V	1500 pF	0.10 µF	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	0.018 µF	2.7 µF 1/	No
					16 V	0.012 µF	0.68 µF	No
					25 V	0.010 µF	0.47 µF	Yes
					50 V	8200 pF	0.39 µF	Yes
					100 V	3900 pF	0.15 µF	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**	**N/A**	**0.68 µF**	Yes
					25 V		**0.47 µF**	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	0.027 µF	1.2 µF	No
					25 V	0.022 µF	1.0 µF	Yes
					50 V	0.015 µF	0.68 µF	Yes
					100 V	6800 pF	0.27 µF	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	N/A	4.7 µF 1/	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	0.068 µF	3.3 µF	No
					25 V	0.056 µF	2.2 µF	Yes
					50 V	0.039 µF	2.2 µF	No
					100 V	0.018 µF	0.68 µF	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	0.082 µF	3.9 µF	No
					25 V	0.068 µF	3.3 µF	Yes
					50 V	0.056 µF	2.2 µF	Yes
					100 V	0.027 µF	1.0 µF	Yes

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