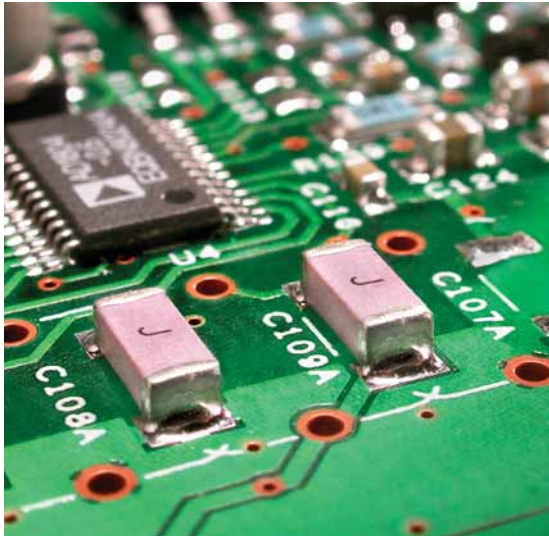


SAFETY CERTIFIED CAPACITORS

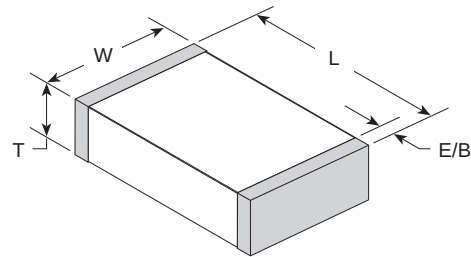


Johanson Dielectrics Type SC ceramic chip capacitors are designed for AC voltage surge and lightning protection in line-to-ground interface applications in computer network, modem, facsimile and other equipment.

Johanson's safety capacitor offering includes four different case sizes and NPO and X7R dielectric materials.

These devices are surface mount ready with barrier terminations and tape and reel packaging.

Additional information on capacitor safety ratings may be found below. Specific certification details may be found under each product listing on the facing page.



SAFETY RATING	VOLTAGE RATING	WITHSTANDING VOLTAGE	IMPULSE VOLTAGE	CASE SIZE	JOHANSON ORDERING P/N
X2/Y3	250 VAC	1,500 VAC	2,500 V	1808	302R29____V_E-****-SC
Y3	250 VAC	1,500 VAC	N/A	1812	302S43____V_E-****-SC
X1/Y2	250 VAC	1,500 VAC	5,000 V	1808	502R29____V_E-****-SC
Y2	250 VAC	1,500 VAC	5,000 V	2211	502R30____V_E-****-SC
X1/Y2	250 VAC	1,500 VAC	5,000 V	2220	502S47____V3E-****-SC

X Capacitors are defined as suitable for use in situations where failure of the capacitor would not lead to danger of electric shock.

Y Capacitors are defined as suitable for use in situations where failure of the capacitor could lead to danger of electric shock.

NOW AVAILABLE with Polyterm® soft termination option for demanding environments & processes. Visit our website for full details.

HOW TO ORDER SAFETY CERTIFIED

302	R29	N	101	K	V	3	E	- **** -	SC					
IMPULSE VOLTAGE 302 = 3000V 502 = 5000V	SIZE See Size Chart	DIELECTRIC N = NPO W = X7R	CAPACITANCE 1st two digits are significant; third digit denotes number of zeros; 101 = 100 pF	TOLERANCE NPO: J = ± 5% K = ± 10% X7R: K = ± 10% M = ± 20%	TERMINATION V = Ni barrier w/ 100% Sn Plating	MARKING 3 = Special (J) 4 = No marking	TAPE MODIFIER <table border="1" style="width: 100%; font-size: small;"> <tr> <th>Code</th> <th>Tape</th> <th>Reel</th> </tr> <tr> <td>E</td> <td>Embossed</td> <td>7"</td> </tr> </table> Tape specifications conform to EIA RS481	Code	Tape	Reel	E	Embossed	7"	TYPE SC = Safety Certified
Code	Tape	Reel												
E	Embossed	7"												

P/N written: 302R29N101KV3E-****-SC

SAFETY CERTIFIED CAPACITORS

			5 pF	10 pF	12 pF	15 pF	18 pF	22 pF	27 pF	33 pF	47 pF	56 pF	68 pF	100 pF	120 pF	150 pF	180 pF	220 pF	270 pF	330 pF	470 pF	560 pF	680 pF	1000 pF	1200 pF	1500 pF	1800 pF	2200 pF	2700 pF	3300 pF	4700 pF
R29 / 1808  X2/Y3	INCHES	(mm)																													
	L	.180 ±.010	(4.57 ±.25)																												
	W	.080 ±.010	(2.03 ±.25)																												
	T	.080 Max.	(2.03)																												
	E/B	.020 ±.010	(0.51±.25)																												
C	.125 Max.	(3.18)																													

The diagram shows two overlapping regions: a blue region labeled 'NPO' and a green region labeled 'X7R'. The blue region covers the range from 5 pF to 330 pF. The green region covers the range from 150 pF to 1500 pF. The intersection of these two regions is the recommended range for X7R dielectric material, which is from 150 pF to 330 pF.

STANDARDS: EN132400:1994+A1, IEC 60384-14:1993+A1, EN 60950:1992+A1+A2+A3+A4+A11 • UL 1950, Third Edition

CERTIFICATIONS: TUV Rheinland T72051130 & T72041946 • UL File E212609 • Semko 0026092-1 & 0003222-1

				5 pF	10 pF	12 pF	15 pF	18 pF	22 pF	27 pF	33 pF	47 pF	56 pF	68 pF	100 pF	120 pF	150 pF	180 pF	220 pF	270 pF	330 pF	470 pF	560 pF	680 pF	1000 pF	1200 pF	1500 pF	1800 pF	2200 pF	2700 pF	3300 pF	4700 pF
S43 / 1812		INCHES	(mm)																													
	L	.175 ±.010	(4.45 ±.25)																													
	W	.125 ±.010	(3.17 ±.25)																													
	T	.115 Max.	(2.92)																													
Y3	E/B	.025 ±.015	(0.64±.38)																													

STANDARDS: EN132400:1994+A1, IEC 60384-14:1993+A1, EN 60950:1992+A1+A2+A3+A4+A11

CERTIFICATIONS: TUV Rheinland T72041946

R29 / 1808

INCHES (mm)

L	.189 ±.010	(4.80 ±.25)
W	.080 ±.010	(2.03 ±.25)
T	.085 Max.	(2.16)
E/B	.012 ±.005	(0.30±.13)

X1/Y2

Capacitance Range: 5 pF to 4700 pF

DIELECTRIC: NPO (blue), X7R (green)

STANDARDS: EN132400:1994+A2, IEC 60384-14:1993+A1 / UL60950-01, First Edition

CERTIFICATIONS: TUV Rheinland T72041313 & T72041314 / UL File E212609-A1-UL-1

R30 / 2211

	INCHES	(mm)
L	.225 ±.016	(5.72 ±.40)
W	.110 ±.010	(2.80 ±.25)
T	.115 Max.	(2.92)
E/B	.020 ±.010	(0.51±.25)

Y2

DIELECTRIC

- NPO (Blue)
- X7R (Green)

Tolerance Chart (Capacitance vs. Dielectric)

Capacitance (pF)	Dielectric
5 pF	NPO
10 pF	NPO
12 pF	NPO
15 pF	NPO
18 pF	NPO
22 pF	NPO
27 pF	NPO
33 pF	NPO
47 pF	NPO
56 pF	NPO
68 pF	NPO
100 pF	NPO
120 pF	NPO
150 pF	NPO
180 pF	NPO
220 pF	NPO
270 pF	NPO
330 pF	NPO
470 pF	NPO
560 pF	NPO
680 pF	NPO
1000 pF	NPO
1200 pF	NPO
1500 pF	NPO
1800 pF	NPO
2200 pF	NPO
2700 pF	NPO
3300 pF	NPO
4700 pF	NPO

STANDARDS: EN132400:1994+A2, IEC 60384-14:1993+A1 • UL60950-01, First Edition

CERTIFICATIONS: TUV Rheinland T72041313 & T72041314 • UL File: E212609-A1-UL-1

			5 pF	10 pF	12 pF	15 pF	18 pF	22 pF	27 pF	33 pF	47 pF	56 pF	68 pF	100 pF	120 pF	150 pF	180 pF	220 pF	270 pF	330 pF	470 pF	560 pF	680 pF	1000 pF	1200 pF	1500 pF	1800 pF	2200 pF	2700 pF	3300 pF	4700 pF
S47 / 2220		INCHES	(mm)	DIELECTRIC X7R																											
	L	.225 ±.010	(5.72 ±.25)																												
	W	.200 ±.010	(5.08 ±.25)																												
	T	.150 Max.	(3.81)																												
X1/Y2	E/B	.025 ±.015	(0.64±.38)																												

STANDARDS: EN132400:1994+A2, IEC 60384-14:1993+A • UL60950-01, 3rd Edition

CERTIFICATIONS: TUV Rheinland 2272848 • UL File: E212609-A1-UL-1