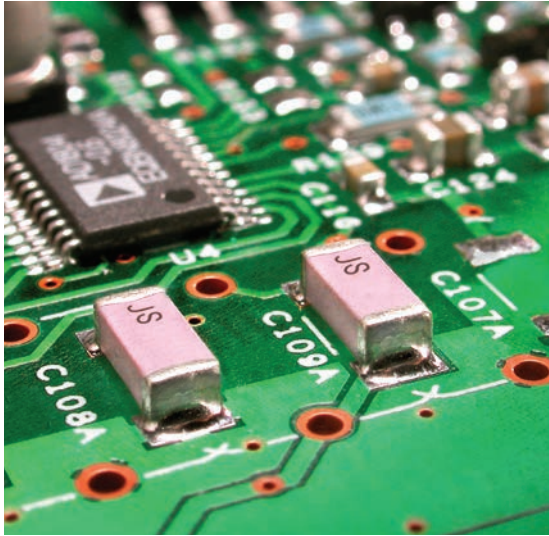


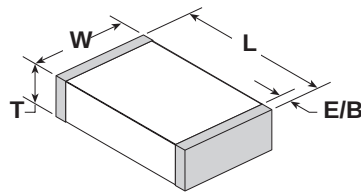


Johanson Dielectrics Type SC ceramic chip capacitors are designed for AC voltage surge and lightning protection in line-to-ground interface applications in computer networks, modem, facsimile and other equipment.

Johanson's safety capacitor offering includes four different case sizes in NP0 and X7R dielectric materials.

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

Information on capacitor safety ratings and certification details may be found below.



Polyterm® soft termination option for demanding environments & processes available on select parts, please contact the factory.

| SAFETY RATING                                                                                                                                    | VOLTAGE RATING | WITHSTANDING VOLTAGE | IMPULSE VOLTAGE | CASE SIZE | JOHANSON ORDERING P/N |
|--------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------|-----------------|-----------|-----------------------|
| X2                                                                                                                                               | 250 VAC        | 1,500 VAC            | 2,500 V         | 1808      | 302R29____V3E-****-SC |
| STANDARDS: IEC/EN 60384-14:2013 EN 60950 2006 • UL 60384-14, UL 60950-01 CERTIFICATIONS: TUV R 50227900 & T 72140662 • UL File E472557 & E212609 |                |                      |                 |           |                       |
| X2                                                                                                                                               | 250 VAC        | 1,500 VAC            | 2,500 V         | 1812      | 302S43____V3E-****-SC |
| STANDARDS: IEC/EN 60384-14:2013 EN 60950 2006 • UL 60384-14, UL 60950-01 CERTIFICATIONS: TUV R 50227900 & T 72140662 • UL File E472557 & E212609 |                |                      |                 |           |                       |
| X1/Y2                                                                                                                                            | 250 VAC        | 1,500 VAC            | 5,000 V         | 1808      | 502R29____V3E-****-SC |
| STANDARDS: IEC/EN 60384-14:2013 EN 60950 2006 • UL 60384-14, UL 60950-01 CERTIFICATIONS: TUV R 50227900 & T 72140662 • UL File E472557 & E212609 |                |                      |                 |           |                       |
| X2                                                                                                                                               | 250 VAC        | 1,500 VAC            | 2,500 V         | 1812      | 502S43____V3E-****-SC |
| STANDARDS: IEC/EN 60384-14:2013 EN 60950 2006 • UL 60384-14, UL 60950-01 CERTIFICATIONS: TUV R 50227900 & T 72140662 • UL File E472557 & E212609 |                |                      |                 |           |                       |
| X1/Y2                                                                                                                                            | 250 VAC        | 1,500 VAC            | 5,000 V         | 2211      | 502R30____V3E-****-SC |
| STANDARDS: IEC/EN 60384-14:2013 EN 60950 2006 • UL 60384-14, UL 60950-01 CERTIFICATIONS: TUV R 50227900 & T 72140662 • UL File E472557 & E212609 |                |                      |                 |           |                       |
| X1/Y2                                                                                                                                            | 250 VAC        | 1,500 VAC            | 5,000 V         | 2220      | 502S47____V3E-****-SC |
| STANDARDS: IEC/EN 60384-14:2013 EN 60950 2006 • UL 60384-14, UL 60950-01 CERTIFICATIONS: TUV R 50227900 & T 72140662 • UL File E472557 & E212609 |                |                      |                 |           |                       |

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.

## SAFETY CERTIFIED

| SAFETY CERTIFIED |                                                                                     |        |            |             |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |         |         |         |            |         |         |         |         |  |             |  |
|------------------|-------------------------------------------------------------------------------------|--------|------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|---------|------------|---------|---------|---------|---------|--|-------------|--|
|                  |                                                                                     | INCHES | (MM)       | 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       |    | L      | .185 ±.015 | (4.70 ±.38) |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |         |         |         |            |         |         |         |         |  |             |  |
|                  |                                                                                     | W      | .080 ±.010 |             |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |         |         |         |            |         |         |         |         |  | (2.03 ±.25) |  |
| X2               |    | T      | .085 Max.  | (2.16)      |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |         |         |         |            |         |         |         |         |  |             |  |
|                  |                                                                                     | E/B    | .020 ±.010 |             |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |         |         |         |            |         |         |         |         |  | (0.51±.25)  |  |
|                  |                                                                                     |        |            |             |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |         |         |         | DIELECTRIC |         |         |         |         |  |             |  |
|                  |                                                                                     |        |            |             |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |         |         |         | NP0        |         |         |         |         |  |             |  |
|                  |                                                                                     |        |            |             |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |         |         |         | X7R        |         |         |         |         |  |             |  |
|                  |                                                                                     |        |            |             |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |         |         |         |            |         |         |         |         |  |             |  |
| S43 / 1812       |    | L      | .175 ±.010 | (4.45 ±.25) |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |         |         |         |            |         |         |         |         |  |             |  |
|                  |                                                                                     | W      | .125 ±.010 |             |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |         |         |         |            |         |         |         |         |  | (3.18 ±.25) |  |
| X2               |    | T      | .115 Max.  | (2.92)      |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |         |         |         |            |         |         |         |         |  |             |  |
|                  |                                                                                     | E/B    | .025 ±.015 |             |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |         |         |         |            |         |         |         |         |  | (0.64±.38)  |  |
|                  |                                                                                     |        |            |             |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |         |         |         |            |         |         |         |         |  |             |  |
|                  |                                                                                     |        |            |             |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |         |         |         |            |         |         |         |         |  |             |  |
| R29 / 1808       |    | L      | .185 ±.015 | (4.70 ±.38) |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |         |         |         |            |         |         |         |         |  |             |  |
|                  |                                                                                     | W      | .080 ±.015 |             |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |         |         |         |            |         |         |         |         |  | (2.03 ±.38) |  |
| X1/Y2            |    | T      | .085 Max.  | (2.16)      |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |         |         |         |            |         |         |         |         |  |             |  |
|                  |                                                                                     | E/B    | .012 ±.015 |             |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |         |         |         |            |         |         |         |         |  | (0.30±.38)  |  |
|                  |                                                                                     |        |            |             |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |         |         |         |            |         |         |         |         |  |             |  |
|                  |                                                                                     |        |            |             |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |         |         |         |            |         |         |         |         |  |             |  |
| S43 / 1812       |    | L      | .175 ±.010 | (4.45 ±.25) |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |         |         |         |            |         |         |         |         |  |             |  |
|                  |                                                                                     | W      | .125 ±.010 |             |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |         |         |         |            |         |         |         |         |  | (3.18 ±.25) |  |
| X1/Y2            |    | T      | .115 Max.  | (2.92)      |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |         |         |         |            |         |         |         |         |  |             |  |
|                  |                                                                                     | E/B    | .025 ±.015 |             |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |         |         |         |            |         |         |         |         |  | (0.64±.38)  |  |
|                  |                                                                                     |        |            |             |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |         |         |         |            |         |         |         |         |  |             |  |
|                  |                                                                                     |        |            |             |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |         |         |         |            |         |         |         |         |  |             |  |
| R30 / 2211       |  | L      | .225 ±.016 | 5.72 ±.40)  |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |         |         |         |            |         |         |         |         |  |             |  |
|                  |                                                                                     | W      | .110 ±.010 |             |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |         |         |         |            |         |         |         |         |  | (2.80 ±.25) |  |
| X1/Y2            |  | T      | .115 Max.  | (2.92)      |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |         |         |         |            |         |         |         |         |  |             |  |
|                  |                                                                                     | E/B    | .020 ±.010 |             |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |         |         |         |            |         |         |         |         |  | (0.51±.25)  |  |
|                  |                                                                                     |        |            |             |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |         |         |         |            |         |         |         |         |  |             |  |
|                  |                                                                                     |        |            |             |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |         |         |         |            |         |         |         |         |  |             |  |
| S47 / 2220       |  | L      | .225 ±.015 | (5.72 ±.38) |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |         |         |         |            |         |         |         |         |  |             |  |
|                  |                                                                                     | W      | .200 ±.015 |             |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |         |         |         |            |         |         |         |         |  | (5.08 ±.38) |  |
| X1/Y2            |  | T      | .150 Max.  | (3.81)      |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |         |         |         |            |         |         |         |         |  |             |  |
|                  |                                                                                     | E/B    | .025 ±.015 |             |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |         |         |         |            |         |         |         |         |  | (0.64±.38)  |  |
|                  |                                                                                     |        |            |             |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |         |         |         |            |         |         |         |         |  |             |  |
|                  |                                                                                     |        |            |             |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |         |         |         |            |         |         |         |         |  |             |  |

## HOW TO ORDER AC SAFETY CAPACITORS

P/N written: 302R29W102MV3E-\*\*\*\*-SC

| 502                                                                | R29                                                      | W                  | 102                                                                                                                                         | M                                  | V                                                                                         | 3                           | E                                                                                     | ****-SC                  |
|--------------------------------------------------------------------|----------------------------------------------------------|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|-------------------------------------------------------------------------------------------|-----------------------------|---------------------------------------------------------------------------------------|--------------------------|
| VOLTAGE                                                            | SIZE                                                     | DIELECTRIC         | CAPACITANCE                                                                                                                                 | TOLERANCE                          | TERMINATION                                                                               | MARKING                     | PACKING                                                                               | TYPE                     |
| 302 = 250VAC<br>[2500V Impulse]<br>502 = 250VAC<br>[5000V Impulse] | R29=1808<br>R30=2211<br>S43=1812<br>S47=2220<br>AC2=2220 | N = NP0<br>W = X7R | 1st two digits are<br>significant; third digit<br>denotes number of<br>zeros, R = decimal.<br>102 = 1000 pF<br>104 = 0.10 µF<br>5R0 = 5.0pF | J = ± 5%<br>K = ± 10%<br>M = ± 20% | V = NI Barrier with<br>100% Sn Plating<br>(Matte)<br>F = Polyterm<br>flexible termination | 3 = Required<br>Safety Mark | E = Embossed 7"<br>U = Embossed 13"<br>No code = bulk<br>Tape specs.<br>per EIA RS481 | SC = Safety<br>Certified |



# Mouser Electronics

Authorized Distributor

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## Johanson:

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[502R29W221KV3ESC](#) [502R29N180JV3ESC](#) [302R29N101JV3ESC](#) [302R29N100JV3ESC](#) [502R29W102KV3ESC](#)  
[502R29W681KV3ESC](#) [302R29N330JV3ESC](#) [302R29W152KV3ESC](#) [502R30W222KV3ESC](#) [302R29W681KV3ESC](#)  
[502R29N330JV3ESC](#) [502R29N100KV3ESC](#) [502R30W102MV3ESC](#) [502R29W331KV3ESC](#) [302R29N101KV3ESC](#)  
[302R29N221JV3ESC](#) [302R29N100JV3E-\\*\\*\\*\\*-SC](#) [302R29N101JV3E-\\*\\*\\*\\*-SC](#) [302R29N101KV3E-\\*\\*\\*\\*-SC](#)  
[302R29N151JV3E-\\*\\*\\*\\*-SC](#) [302R29N221JV3E-\\*\\*\\*\\*-SC](#) [302R29N330JV3E-\\*\\*\\*\\*-SC](#) [302R29W102KV3E-\\*\\*\\*\\*-SC](#)  
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