

## SURFACEMOUNT CERAMIC MLCC's (10 - 200 VOLTS DC )

|                                                                                        |     | Capacitance Value | 0.5 pF | 1.0-9.9 pF | 10 pF | 12 pF | 15 pF | 18 pF | 22 pF | 27 pF | 33 pF | 39 pF | 47 pF | 56 pF | 68 pF | 82 pF | 100 pF | 120 pF | 150 pF | 180 pF | 220 pF | 270 pF | 330 pF | 390 pF | 470 pF | 560 pF | 680 pF | 820 pF | 1000 pF | 1200 pF | 1500 pF | 1800 pF | 2200 pF | 2700 pF | 3300 pF | 3900 pF | 4700 pF | 5600 pF |    |   |   |
|----------------------------------------------------------------------------------------|-----|-------------------|--------|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----|---|---|
| <b>R07 / 0402</b><br>L .040 ± .004"<br>W .020 ± .004"<br>T .025" Max<br>E/B .010" Typ. | NPO |                   |        |            | •     | •     | •     | •     | •     | •     | •     | •     | •     | •     | •     | •     | •      | •      | •      | •      | •      | •      | •      | •      | •      | •      | •      | •      | •       | •       | •       | •       | •       | •       | •       | •       | •       | •       | •  | • |   |
|                                                                                        | X7R |                   |        |            |       |       |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        | •      | •      | •      | •      | •       | •       | •       | •       | •       | •       | •       | •       | •       | •       | •  | • |   |
|                                                                                        | Z5U |                   |        |            |       |       |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |        |        |         |         |         |         |         |         |         |         |         |         |    |   |   |
|                                                                                        | Y5V |                   |        |            |       |       |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |        |        |         |         |         |         |         |         |         |         |         |         |    |   |   |
| <b>R14 / 0603</b><br>L .063 ± .010"<br>W .032 ± .010"<br>T .035" Max<br>E/B .015" Typ. | NPO |                   | •      | •          | •     | •     | •     | •     | •     | •     | •     | •     | •     | •     | •     | •     | •      | •      | •      | •      | •      | •      | •      | •      | •      | •      | •      | •      | •       | •       | •       | •       | •       | •       | •       | •       | •       | •       | •  | • | • |
|                                                                                        | X7R |                   |        |            |       |       |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        | •      | •      | •      | •       | •       | •       | •       | •       | •       | •       | •       | •       | •       | •  | • | • |
|                                                                                        | Z5U |                   |        |            |       |       |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |        |        |         |         |         |         |         |         |         |         |         |         |    |   |   |
|                                                                                        | Y5V |                   |        |            |       |       |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |        |        |         |         |         |         |         |         |         |         |         |         |    |   |   |
| <b>R15 / 0805</b><br>L .080 ± .010"<br>W .050 ± .010"<br>T .051" Max<br>E/B .020" Typ. | NPO |                   |        |            |       |       |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |        |        |         |         |         |         |         |         |         |         |         |         |    |   |   |
|                                                                                        | NPO |                   | •      | •          | •     | •     | •     | •     | •     | •     | •     | •     | •     | •     | •     | •     | •      | •      | •      | •      | •      | •      | •      | •      | •      | •      | •      | •      | •       | •       | •       | •       | •       | •       | •       | •       | •       | •       | •  | • |   |
|                                                                                        | X7R |                   |        |            |       |       |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        | •      | •      | •      | •       | •       | •       | •       | •       | •       | •       | •       | •       | •       | •  | • | • |
|                                                                                        | X7R |                   |        |            |       |       |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        | •      | •      | •      | •       | •       | •       | •       | •       | •       | •       | •       | •       | •       | •  | • |   |
|                                                                                        | X5R |                   |        |            |       |       |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |        |        |         |         |         |         |         |         |         |         |         |         |    |   |   |
|                                                                                        | Z5U |                   |        |            |       |       |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |        |        |         |         |         |         |         |         |         |         |         |         |    |   |   |
|                                                                                        | Y5V |                   |        |            |       |       |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |        |        |         |         |         |         |         |         |         |         |         |         |    |   |   |
| <b>R18 / 1206</b><br>L .125 ± .010"<br>W .062 ± .010"<br>T .070" Max<br>E/B .020" Typ. | NPO |                   |        |            |       |       |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |        |        |         |         |         |         |         |         |         |         |         |         |    |   |   |
|                                                                                        | NPO |                   | •      | •          | •     | •     | •     | •     | •     | •     | •     | •     | •     | •     | •     | •     | •      | •      | •      | •      | •      | •      | •      | •      | •      | •      | •      | •      | •       | •       | •       | •       | •       | •       | •       | •       | •       | •       | •  | • |   |
|                                                                                        | X7R |                   |        |            |       |       |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |        |        |         |         |         |         |         |         |         |         |         |         |    |   |   |
|                                                                                        | X7R |                   |        |            |       |       |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |        |        |         |         |         |         |         |         |         |         |         |         |    |   |   |
|                                                                                        | X5R |                   |        |            |       |       |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |        |        |         |         |         |         |         |         |         |         |         |         |    |   |   |
|                                                                                        | Z5U |                   |        |            |       |       |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |        |        |         |         |         |         |         |         |         |         |         |         |    |   |   |
|                                                                                        | Y5V |                   |        |            |       |       |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |        |        |         |         |         |         |         |         |         |         |         |         |    |   |   |
| <b>S41 / 1210</b><br>L .125 ± .010"<br>W .095 ± .010"<br>T .070" Max<br>E/B .020" Typ. | NPO |                   |        |            |       |       |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |        |        |         |         |         |         |         |         |         |         |         |         |    |   |   |
|                                                                                        | NPO |                   |        |            |       |       |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |        |        |         |         |         |         |         |         |         |         |         |         |    |   |   |
|                                                                                        | X7R |                   |        |            |       |       |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |        |        |         |         |         |         |         |         |         |         |         |         |    |   |   |
|                                                                                        | X7R |                   |        |            |       |       |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |        |        |         |         |         |         |         |         |         |         |         |         |    |   |   |
|                                                                                        | Z5U |                   |        |            |       |       |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |        |        |         |         |         |         |         |         |         |         |         |         |    |   |   |
|                                                                                        | Y5V |                   |        |            |       |       |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |        |        |         |         |         |         |         |         |         |         |         |         |    |   |   |
| <b>S43 / 1812</b><br>L .175 ± .010"<br>W .125 ± .010"<br>T .085" Max<br>E/B .020" Typ. | NPO |                   |        |            |       |       |       |       |       |       |       |       |       |       |       |       |        |        |        |        |        |        |        |        |        |        |        |        |         |         |         |         |         |         |         |         |         |         | </ |   |   |

Notes: • Indicates popular values. Complete Electrical & Mechanical Characteristics may be found at [www.johanson-caps.com](http://www.johanson-caps.com)

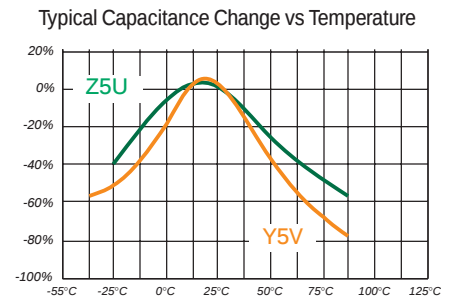
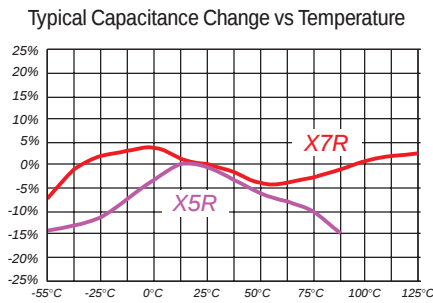
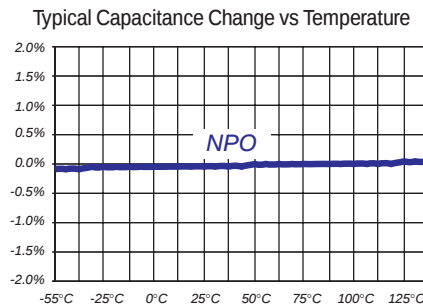
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For other size/voltage/capacitance combinations please contact the factory

## CERAMIC DIELECTRIC CHARACTERISTICS

| SPECIFICATION                    | NPO                         | X7R                                                           | X5R                                                           | Z5U                                      | Y5V - Tanceram®                                               |
|----------------------------------|-----------------------------|---------------------------------------------------------------|---------------------------------------------------------------|------------------------------------------|---------------------------------------------------------------|
| Temperature Coefficient:         | 0 ± 30 ppm/°C               | ± 15%                                                         | ± 15%                                                         | + 22% - 56%                              | + 22% - 82%                                                   |
| Temperature Range:               | -55 to +125°C               | -55 to +125°C                                                 | -55 to +85°C                                                  | +10 to +85°C                             | -30 to 85°C                                                   |
| Dissipation Factor, Max.:        | All Rated<br>Voltages: 0.1% | For ≥ 50 WVDC: 2.5%<br>For 25 WVDC: 3.0%<br>For 16 WVDC: 3.5% | For ≥ 25 WVDC: 3.0%<br>For 16 WVDC: 3.5%<br>For 10 WVDC: 5.0% | For ≥ 25 WVDC: 4.0%<br>For 16 WVDC: 5.0% | For ≥ 25 WVDC: 5.0%<br>For 16 WVDC: 7.0%<br>For 10 WVDC: 9.0% |
| Ageing, Typical per decade hr:   | None                        | 2.5%                                                          | 2.5%                                                          | 5.0%                                     | 7.0%                                                          |
| Insulation Resistance, Min. (1): | 1000ΩF or 100 GΩ            | 1000ΩF or 100 GΩ                                              | 1000ΩF or 100GΩ                                               | 100ΩF or 10 GΩ                           | 100 ΩF or 10 GΩ                                               |
| Dielectric Strength, Min. (2):   | 2.5 X WVDC                  | 2.5 X WVDC                                                    | 2.5 X WVDC                                                    | 2.5 X WVDC                               | 2.5 X WVDC                                                    |

Test Notes: 25°C, WVDC., Test Freq. = 1KHz ±50Hz, 1.0±0.2 VRMS, (1Mhz ±50kHz, 1.0±0.2 VRMS For NPO Values ≤ 100 pF), (1) whichever less, (2) 50 mA Max



## How To ORDER

| 500                                                                                                                                                                                | R15                                                                                                                          | N                                                                        | 101                                                                                                                                                                       | J                                                                                                                                                                                     | V                                        | 4                                                                                          | E                                                                                                                                                                                                        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>VOLTAGE</b><br>100 = 10 V<br>160 = 16 V<br>250 = 25 V<br>500 = 50 V<br>101 = 100 V<br>201 = 200 V<br>251 = 250 V<br>501 = 500 V<br>102 = 1000 V<br>202 = 2000 V<br>302 = 3000 V | <b>CASE SIZE</b><br>R07=0402<br>R14=0603<br>R15=0805<br>R18=1206<br>S41=1210<br>R29=1808<br>S43=1812<br>S49=1825<br>S48=2225 | <b>DIELECTRIC</b><br>N = NPO<br>W = X7R<br>X = X5R<br>Z = Z5U<br>Y = Y5V | <b>CAPACITANCE</b><br>1st two digits are significant; third digit denotes number of zeros, R = decimal.<br>1R0 = 1.0 pF<br>100 = 10 pF<br>102 = 1,000 pF<br>474 = 0.47 μF | <b>TOLERANCE</b><br>* B = ± 0.10 pF<br>* C = ± 0.25 pF<br>* D = ± 0.50 pF<br>F = ± 1 %<br>G = ± 2 %<br>J = ± 5 %<br>K = ± 10 %<br>M = ± 20 %<br>Z = +80 -20 %<br>*Values < 10 pF only | <b>TERMINATION</b><br>V = Nickel Barrier | <b>MARKING</b><br>4 = Unmarked<br>6 = EIA "J" Code*<br>*Not available on 0402 & 0603 sizes | <b>TAPE MODIFIER</b><br>Tape Tape Reel<br>Code Type Size<br>U Embossed 13"<br>R Punched 7"<br>E Embossed 7"<br>T Punched 7"<br>Z Embossed 5"<br>Y Punched 5"<br>Tape specifications conform to EIA RS481 |

Part number written: 500R15N101JV4E