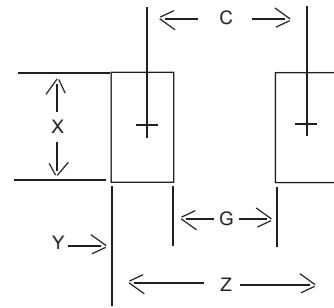
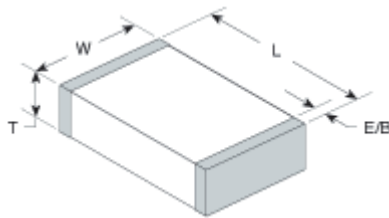


## Surface Mount Ceramic Capacitors Specifications



### Part Number Determination

| 500R15N101JV4T                                                                                                                                                                                                  |                                                                                                                                                                                    |                                                     |                                                                                                          |                                                                                                                                                                                                           |                                                           |                                                                                 |                                                                                                                                                                                                                                                    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|---------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 500                                                                                                                                                                                                             | R15                                                                                                                                                                                | N                                                   | 101                                                                                                      | J                                                                                                                                                                                                         | V                                                         | 4                                                                               | T                                                                                                                                                                                                                                                  |
| VOLTAGE                                                                                                                                                                                                         | CASE SIZE                                                                                                                                                                          | DIELECTRIC                                          | CAPACITANCE                                                                                              | TOLERANCE                                                                                                                                                                                                 | TERMINATION                                               | MARKING                                                                         | PACKAGING                                                                                                                                                                                                                                          |
| 100 = 10V<br>160 = 16V<br>250 = 25V<br>500 = 50V<br>101 = 100V<br>201 = 200V<br>251 = 250V<br>301 = 300V<br>501 = 500V<br>631 = 630V<br>102 = 1000V<br>202 = 2000V<br>302 = 3000V<br>402 = 4000V<br>502 = 5000V | R05 = 0201<br>R07 = 0402<br>A11 = 0405<br>R14 = 0603<br>R15 = 0805<br>A18 = 0612<br>R18 = 1206<br>S41 = 1210<br>R29 = 1808<br>S43 = 1812<br>S47 = 2220<br>S49 = 1825<br>S48 = 2225 | N = NPO<br>W = X7R<br>X = X5R<br>Y = Y5V<br>Z = Z5U | 2 significant digits<br>+ # of zeros<br>1R0 = 1.0pF<br>100 = 10pF<br>102 = 1,000pF<br>474 = 0.47 $\mu$ F | * B = $\pm 0.10$ pF<br>* C = $\pm 0.25$ pF<br>* D = $\pm 0.50$ pF<br>F = $\pm 1\%$<br>G = $\pm 2\%$<br>J = $\pm 5\%$<br>K = $\pm 10\%$<br>M = $\pm 20\%$<br>Z = $\pm 80$ -20%<br><br>* Values < 10pF only | V = Nickel<br>Barrier with<br>100% Tin<br>Plating (Matte) | 4 = Unmarked<br>*6 = EIA "J" Code<br><br>*Not available on<br>sizes 0201 & 0402 | U=Embossed Tape / 13" Reel<br>R= Punched Tape / 13" Reel<br>E=Embossed Tape / 7" Reel<br>T=Punched Tape / 7" Reel<br>None = Bulk Packaging<br><br>Size 0201 - 1206 tape<br>standard is Code "T"<br><br>Tape specifications conform<br>to EIA RS481 |



### Package Dimensions in(mm)

| Size Code | L                                      | W                                      | T Max.              | E/B                                    |
|-----------|----------------------------------------|----------------------------------------|---------------------|----------------------------------------|
| 0402      | 0.040 $\pm$ 0.004<br>(1.02 $\pm$ 0.10) | 0.020 $\pm$ 0.004<br>(0.51 $\pm$ 0.10) | 0.025<br>(0.64)     | 0.008 $\pm$ 0.004<br>(0.20 $\pm$ 1.0)  |
| 0603      | 0.063 $\pm$ 0.008<br>(1.60 $\pm$ 0.20) | 0.032 $\pm$ 0.008<br>(0.81 $\pm$ 0.20) | 0.035<br>(0.89)     | 0.10 $\pm$ 0.005<br>(0.25 $\pm$ 0.13)  |
| 0805      | 0.080 $\pm$ 0.010<br>(2.03 $\pm$ 0.25) | 0.050 $\pm$ 0.010<br>(1.27 $\pm$ 0.25) | 0.050<br>(1.27)     | 0.020 $\pm$ 0.010<br>(0.51 $\pm$ 0.25) |
| 1206      | 0.125 $\pm$ 0.010<br>(3.17 $\pm$ 0.25) | 0.062 $\pm$ 0.010<br>(1.57 $\pm$ 0.25) | 0.050<br>(1.27)     | 0.020 $\pm$ 0.010<br>(0.51 $\pm$ 0.25) |
| 1210      | .125 $\pm$ .010<br>(3.18 $\pm$ .25)    | .095 $\pm$ .010<br>(2.41 $\pm$ .25)    | .065 max.<br>(1.65) | .020 $\pm$ .010<br>(0.51 $\pm$ .25)    |
| 1812      | .175 $\pm$ .010<br>(4.45 $\pm$ .25)    | .125 $\pm$ .010<br>(3.17 $\pm$ .25)    | .085 max<br>(2.16)  | .025 $\pm$ .015<br>(.064 $\pm$ .38)    |
| 1825      | .180 $\pm$ .010<br>(4.57 $\pm$ .25)    | .250 $\pm$ .040<br>(6.35 $\pm$ .25)    | .140 max<br>(3.56)  | .025 $\pm$ .015<br>(.064 $\pm$ .38)    |
| 2225      | .225 $\pm$ .010<br>(5.72 $\pm$ .25)    | .255 $\pm$ .015<br>(6.48 $\pm$ .38)    | .150 max<br>(3.81)  | .025 $\pm$ .015<br>(.064 $\pm$ .38)    |

### Land Pattern

| Size Code   | Z               | G    | X    | Y(ref) | C(ref) |
|-------------|-----------------|------|------|--------|--------|
| 0402 reflow | 2.40            | 0.40 | 1.30 | 1.00   | 1.40   |
| 0603 reflow | 2.80            | 0.60 | 1.00 | 1.10   | 1.70   |
| 0603 wave   | 3.18            | 0.68 | 0.80 | 1.25   | 1.93   |
| 0805 reflow | 3.20            | 0.60 | 1.50 | 1.30   | 1.90   |
| 0805 wave   | 3.70            | 0.70 | 1.10 | 1.50   | 2.20   |
| 1206 reflow | 4.40            | 1.20 | 1.80 | 1.60   | 2.80   |
| 1206 wave   | 4.90            | 1.50 | 1.50 | 1.40   | 3.20   |
| 1210 reflow | 4.40            | 1.20 | 2.70 | 1.60   | 2.80   |
| 1210 wave   | 4.90            | 1.50 | 2.00 | 1.70   | 3.20   |
| 1808 reflow | 5.80            | 2.50 | 2.70 | 1.70   | 4.20   |
| 1808 wave   | n/a             | n/a  | n/a  | n/a    | n/a    |
| 1812 reflow | 5.80            | 2.00 | 3.40 | 1.90   | 3.90   |
| 1812 wave   | 6.30            | 2.30 | 2.60 | 2.00   | 4.30   |
| 1825 reflow | 5.80            | 2.20 | 0.90 | 1.60   | 1.60   |
| 1825 wave   | Not Recommended |      |      |        |        |

### Electrical Characteristics

| Dielectric | Dissipation Factor                              | Temperature Characteristic  | Operating Temperature Range           | Insulation Resistance                                                                                                                        |
|------------|-------------------------------------------------|-----------------------------|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| NPO        | 0.1% max                                        | 0 $\pm$ 30ppm/ $^{\circ}$ C | -55 $^{\circ}$ C to +125 $^{\circ}$ C | IR @ 25 $^{\circ}$ C, WDC = 1000 $\Omega$ F or 100G $\Omega$ whichever is less<br>IR @ 125 $^{\circ}$ C, WDC = 10% of 25 $^{\circ}$ C rating |
| X7R        | 50V=2.5% max<br>125V=3.0% max<br>116V=3.5% max  | $\pm 15\%$                  | -55 $^{\circ}$ C to +125 $^{\circ}$ C |                                                                                                                                              |
| X5R        | 25V: 3.0% max<br>16V: 3.5% max<br>10V: 5.0% max |                             | -55 $^{\circ}$ C to +85 $^{\circ}$ C  |                                                                                                                                              |
| Z5U        | 25V=4.0% max<br>16V=5.0% max                    | +22% to -56%                | +10 to +85 $^{\circ}$ C               | IR @ 25 $^{\circ}$ C, WDC = 100 $\Omega$ F or 100G $\Omega$ whichever is less                                                                |
| Y5V        | 25V=4.0% max<br>16V=5.0% max<br>10V=9.0% max    | +22% to -82%                | -30 to +85 $^{\circ}$ C               | IR @ 25 $^{\circ}$ C, WDC = 100 $\Omega$ F or 100G $\Omega$ whichever is less                                                                |

**Mfg Specs**

- Go to [www.garrettelec.com](http://www.garrettelec.com)
- Enter part number or find by description
- Select "S", select "manufacturer's specifications"