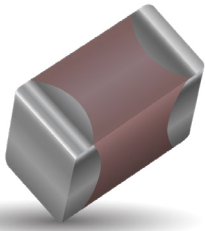


# X5R Dielectric

## General Specifications



### GENERAL DESCRIPTION

- General Purpose Dielectric for Ceramic Capacitors
- EIA Class II Dielectric
- Temperature variation of capacitance is within  $\pm 15\%$  from  $-55^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$
- Well suited for decoupling and filtering applications
- Available in High Capacitance values (up to  $100\mu\text{F}$ )

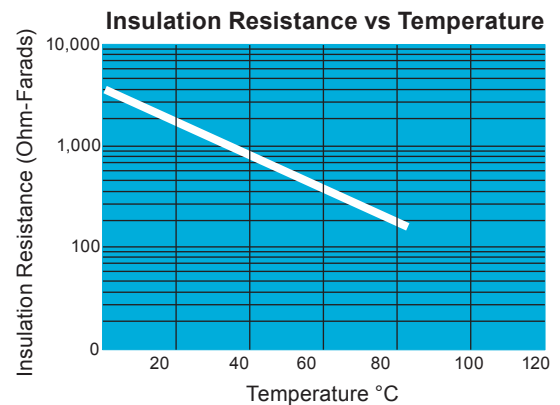
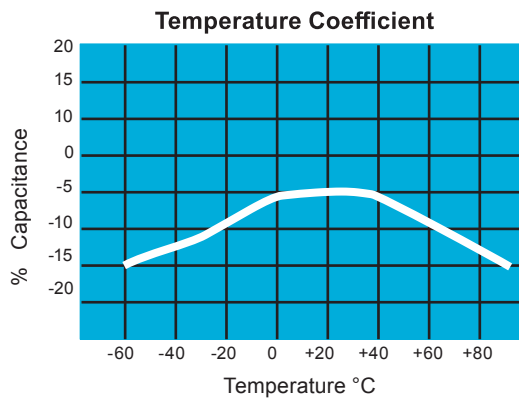
### PART NUMBER (SEE PAGE 4 FOR COMPLETE PART NUMBER EXPLANATION)

| 1210                     | 4              | D                 | 107                             | M                                | A                   | T                    | 2   | A                   |
|--------------------------|----------------|-------------------|---------------------------------|----------------------------------|---------------------|----------------------|---|---------------------|
| <b>Size</b><br>(L" x W") | <b>Voltage</b> | <b>Dielectric</b> | <b>Capacitance Code (In pF)</b> | <b>Capacitance Tolerance</b>     | <b>Failure Rate</b> | <b>Terminations</b>  | <b>Packaging</b>                                  | <b>Special Code</b> |
| 0101**                   | 4 = 4V         | D = X5R           | 2 Sig. Digits + Number of Zeros | K = $\pm 10\%$<br>M = $\pm 20\%$ | A = N/A             | T = Plated Ni and Sn | 2 = 7" Reel<br>4 = 13" Reel<br>U = 4mm TR (01005) | A = Std.            |
| 0201                     | 6 = 6.3V       |                   |                                 |                                  |                     |                      |   |                     |
| 0402                     | Z = 10V        |                   |                                 |                                  |                     |                      |   |                     |
| 0603                     | Y = 16V        |                   |                                 |                                  |                     |                      |   |                     |
| 0805                     | 3 = 25V        |                   |                                 |                                  |                     |                      |   |                     |
| 1206                     | D = 35V        |                   |                                 |                                  |                     |                      |   |                     |
| 1210                     | 5 = 50V        |                   |                                 |                                  |                     |                      |   |                     |
| 1812                     | 1 = 100V       |                   |                                 |                                  |                     |                      |   |                     |
| **EIA 01005              |                |                   |                                 |                                  |                     |                      |   |                     |



NOTE: Contact factory for availability of Tolerance Options for Specific Part Numbers.  
Contact factory for non-specified capacitance values.

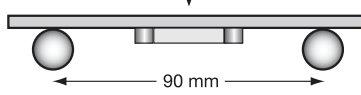
### TYPICAL ELECTRICAL CHARACTERISTICS



# X5R Dielectric

## Specifications and Test Methods



| Parameter/Test                 |                       | X5R Specification Limits  | Measuring Conditions  |                    |
|--------------------------------|-----------------------|---|---|--------------------|
| Operating Temperature Range    |                       | -55°C to +85°C  | Temperature Cycle Chamber   |                    |
| Capacitance                    |                       | Within specified tolerance  |   |                    |
| Dissipation Factor             |                       | $\leq 2.5\%$ for $\geq 50V$ DC rating<br>$\leq 12.5\%$ for 25V, 35V DC rating<br>$\leq 12.5\%$ Max. for 16V DC rating and lower<br>Contact Factory for DF by PN | Freq.: 1.0 kHz $\pm 10\%$<br>Voltage: 1.0Vrms $\pm .2V$<br>For Cap > 10 $\mu F$ , 0.5Vrms @ 120Hz   |                    |
| Insulation Resistance          |                       | 10,000M $\Omega$ or 500M $\Omega$ - $\mu F$ , whichever is less   | Charge device with rated voltage for 120 $\pm 5$ secs @ room temp/humidity  |                    |
| Dielectric Strength            |                       | No breakdown or visual defects  | Charge device with 250% of rated voltage for 1-5 seconds, w/charge and discharge current limited to 50 mA (max)   |                    |
| Resistance to Flexure Stresses | Appearance            | No defects  | Deflection: 2mm<br>Test Time: 30 seconds<br>1mm/sec<br>  |                    |
|                                | Capacitance Variation | $\leq \pm 12\%$   |   |                    |
|                                | Dissipation Factor    | Meets Initial Values (As Above)   |   |                    |
|                                | Insulation Resistance | $\geq$ Initial Value x 0.3  |   |                    |
| Solderability                  |                       | $\geq 95\%$ of each terminal should be covered with fresh solder  | Dip device in eutectic solder at 230 $\pm 5^\circ C$ for 5.0 $\pm 0.5$ seconds  |                    |
| Resistance to Solder Heat      | Appearance            | No defects, <25% leaching of either end terminal  | Dip device in eutectic solder at 260°C for 60seconds. Store at room temperature for 24 $\pm$ 2hours before measuring electrical properties.   |                    |
|                                | Capacitance Variation | $\leq \pm 7.5\%$  |   |                    |
|                                | Dissipation Factor    | Meets Initial Values (As Above)   |   |                    |
|                                | Insulation Resistance | Meets Initial Values (As Above)   |   |                    |
|                                | Dielectric Strength   | Meets Initial Values (As Above)   |   |                    |
| Thermal Shock                  | Appearance            | No visual defects   | Step 1: -55°C $\pm 2^\circ$   | 30 $\pm 3$ minutes |
|                                | Capacitance Variation | $\leq \pm 7.5\%$  | Step 2: Room Temp   | $\leq 3$ minutes   |
|                                | Dissipation Factor    | Meets Initial Values (As Above)   | Step 3: +85°C $\pm 2^\circ$   | 30 $\pm 3$ minutes |
|                                | Insulation Resistance | Meets Initial Values (As Above)   | Step 4: Room Temp   | $\leq 3$ minutes   |
|                                | Dielectric Strength   | Meets Initial Values (As Above)   | Repeat for 5 cycles and measure after 24 $\pm 2$ hours at room temperature  |                    |
| Load Life                      | Appearance            | No visual defects   | Charge device with 1.5X rated voltage in test chamber set at 85°C $\pm 2^\circ C$ for 1000 hours (+48, -0).<br><br>Note: Contact factory for *optional specification part numbers that are tested at < 1.5X rated voltage.<br><br>Remove from test chamber and stabilize at room temperature for 24 $\pm 2$ hours |                    |
|                                | Capacitance Variation | $\leq \pm 12.5\%$   |   |                    |
|                                | Dissipation Factor    | $\leq$ Initial Value x 2.0 (See Above)  |   |                    |
|                                | Insulation Resistance | $\geq$ Initial Value x 0.3 (See Above)  |   |                    |
|                                | Dielectric Strength   | Meets Initial Values (As Above)   |   |                    |
| Load Humidity                  | Appearance            | No visual defects   | Store in a test chamber set at 85°C $\pm 2^\circ C$ / 85% $\pm 5\%$ relative humidity for 1000 hours (+48, -0) with rated voltage applied.<br><br>Remove from chamber and stabilize at room temperature and humidity for 24 $\pm 2$ hours before measuring.   |                    |
|                                | Capacitance Variation | $\leq \pm 12.5\%$   |   |                    |
|                                | Dissipation Factor    | $\leq$ Initial Value x 2.0 (See Above)  |   |                    |
|                                | Insulation Resistance | $\geq$ Initial Value x 0.3 (See Above)  |   |                    |
|                                | Dielectric Strength   | Meets Initial Values (As Above)   |   |                    |

# X5R Dielectric Capacitance Range



## PREFERRED SIZES ARE SHADED

| Case Size    | 0101*                  |             | 0201                           |    |    |    | 0402                           |   |    |    |    | 0603                           |    |   |    |    | 0805                           |    |    |    |   |    |    |    |    |    |    |   |   |   |   |   |   |
|--------------|------------------------|-------------|--------------------------------|----|----|----|--------------------------------|---|----|----|----|--------------------------------|----|---|----|----|--------------------------------|----|----|----|---|----|----|----|----|----|----|---|---|---|---|---|---|
| Soldering    | Reflow Only            |             | Reflow Only                    |    |    |    | Reflow/Wave                    |   |    |    |    | Reflow/Wfeve                   |    |   |    |    | Reflow/Wfeve                   |    |    |    |   |    |    |    |    |    |    |   |   |   |   |   |   |
| Packaging    | Paper/Embossed         |             | All Paper                      |    |    |    | All Paper                      |   |    |    |    | All Paper                      |    |   |    |    | Paper/Embossed                 |    |    |    |   |    |    |    |    |    |    |   |   |   |   |   |   |
| (L) Length   | mm<br>(0.016 ± 0.0008) | 0.40 ± 0.02 | 0.60 ± 0.09<br>(0.024 ± 0.004) |    |    |    | 1.00 ± 0.15<br>(0.040 ± 0.006) |   |    |    |    | 1.60 ± 0.15<br>(0.063 ± 0.006) |    |   |    |    | 2.01 ± 0.20<br>(0.079 ± 0.008) |    |    |    |   |    |    |    |    |    |    |   |   |   |   |   |   |
| (W) Width    | mm<br>(0.008 ± 0.0008) | 0.20 ± 0.02 | 0.30 ± 0.09<br>(0.011 ± 0.004) |    |    |    | 0.50 ± 0.15<br>(0.020 ± 0.006) |   |    |    |    | 0.81 ± 0.15<br>(0.032 ± 0.006) |    |   |    |    | 1.25 ± 0.20<br>(0.049 ± 0.008) |    |    |    |   |    |    |    |    |    |    |   |   |   |   |   |   |
| (t) Terminal | mm<br>(0.004 ± 0.0016) | 0.10 ± 0.04 | 0.15 ± 0.05<br>(0.006 ± 0.002) |    |    |    | 0.25 ± 0.15<br>(0.010 ± 0.006) |   |    |    |    | 0.35 ± 0.15<br>(0.014 ± 0.006) |    |   |    |    | 0.50 ± 0.25<br>(0.020 ± 0.010) |    |    |    |   |    |    |    |    |    |    |   |   |   |   |   |   |
| Voltage:     | 63                     | 16          | 4                              | 63 | 10 | 16 | 25                             | 4 | 63 | 10 | 16 | 25                             | 50 | 4 | 63 | 10 | 16                             | 25 | 35 | 50 | 4 | 63 | 10 | 16 | 25 | 35 | 50 |   |   |   |   |   |   |
| Cap (pF)     | 100                    | 101         |                                |    |    |    | A                              |   |    |    |    |                                |    |   |    |    |                                |    |    |    |   |    |    |    |    |    |    |   |   |   |   |   |   |
|              | 150                    | 151         |                                |    |    |    | A                              |   |    |    |    |                                |    |   |    |    |                                |    |    |    |   |    |    |    |    |    |    |   |   |   |   |   |   |
|              | 220                    | 221         |                                |    |    |    | A                              |   |    |    |    |                                | C  |   |    |    |                                |    |    |    |   |    |    |    |    |    |    |   |   |   |   |   |   |
|              | 330                    | 331         |                                |    |    |    | A                              |   |    |    |    |                                | C  |   |    |    |                                |    |    |    |   |    |    |    |    |    |    |   |   |   |   |   |   |
|              | 470                    | 471         |                                |    |    |    | A                              |   |    |    |    |                                | C  |   |    |    |                                |    |    |    |   |    |    |    |    |    |    |   |   |   |   |   |   |
|              | 680                    | 681         |                                |    |    |    | A                              |   |    |    |    |                                | C  |   |    |    |                                |    |    |    |   |    |    |    |    |    |    |   |   |   |   |   |   |
|              | 1000                   | 102         |                                |    |    |    | A                              | A |    |    |    |                                | C  |   |    |    |                                |    |    |    |   |    |    |    |    |    |    |   |   |   |   |   |   |
|              | 1500                   | 152         | B                              | B  |    |    | A                              | A |    |    |    |                                | C  |   |    |    |                                |    |    |    |   |    |    |    |    |    |    |   |   |   |   |   |   |
|              | 2200                   | 222         | B                              | B  |    |    | A                              | A | A  |    |    |                                | C  |   |    |    |                                |    |    |    |   |    |    |    |    |    |    |   |   |   |   |   |   |
|              | 3300                   | 332         | B                              | B  |    |    | A                              | A | A  |    |    |                                | C  |   |    |    |                                |    |    |    |   |    |    |    |    |    |    |   |   |   |   |   |   |
|              | 4700                   | 472         | B                              | B  |    |    | A                              | A | A  |    |    |                                | C  |   |    |    |                                |    |    |    |   |    |    |    |    | G  |    |   |   |   |   |   |   |
|              | 6800                   | 682         | B                              | B  |    |    | A                              | A | A  |    |    |                                | C  |   |    |    |                                |    |    |    |   |    |    |    |    | G  |    |   |   |   |   |   |   |
| Cap (µF)     | 0.01                   | 103         | B                              | B  |    |    | A                              | A | A  |    |    |                                | C  |   |    |    |                                |    |    |    |   |    |    |    |    |    |    |   |   |   |   |   |   |
|              | 0.015                  | 150         | B                              |    |    |    |                                |   |    |    |    |                                | C  |   |    |    |                                |    |    |    |   |    |    |    |    |    |    |   |   |   |   |   |   |
|              | 0.022                  | 223         | B                              |    |    |    | A                              | A | A  | A  |    |                                | C  | C |    |    |                                |    |    |    |   |    |    |    |    |    | N  |   |   |   |   |   |   |
|              | 0.033                  | 333         | B                              |    |    |    |                                |   |    |    |    |                                | C  |   |    |    |                                |    |    |    |   |    |    |    |    |    | N  |   |   |   |   |   |   |
|              | 0.047                  | 473         | B                              |    |    |    | A                              | A | A  | A  |    |                                | C  | C |    |    |                                |    |    |    |   |    |    |    |    |    | N  |   |   |   |   |   |   |
|              | 0.068                  | 689         | B                              |    |    |    |                                |   |    |    |    |                                | C  |   |    |    |                                |    |    |    |   |    |    |    |    |    | N  |   |   |   |   |   |   |
|              | 0.1                    | 104         | B                              |    |    |    | A                              | A | A  | A  |    |                                | C  | C | C  | C  |                                |    |    |    |   |    |    |    |    | G  | G  | G |   |   |   |   |   |
|              | 0.15                   | 154         |                                |    |    |    |                                |   |    |    |    |                                | C  |   |    |    |                                |    |    |    |   |    |    |    |    | G  |    |   |   |   |   |   |   |
|              | 0.22                   | 224         | B                              |    |    |    | A                              | A | A  |    |    |                                | C  | C | C  | C  | C                              |    |    |    |   |    |    |    |    | G  | G  |   |   |   |   |   |   |
|              | 0.33                   | 334         |                                |    |    |    |                                |   |    |    |    |                                | C  |   |    |    |                                |    |    |    |   |    |    |    |    | G  | G  |   |   |   |   |   |   |
|              | 0.47                   | 474         | B                              |    |    |    | A                              | A |    |    |    |                                | C  | C | C  | C  | C                              | E  |    |    |   |    |    |    |    | G  | J  |   |   |   |   |   |   |
|              | 0.68                   | 684         |                                |    |    |    |                                |   |    |    |    |                                | C  |   |    |    |                                |    |    |    |   |    |    |    |    | G  |    |   |   |   |   |   |   |
|              | 1.0                    | 105         |                                |    |    |    | A                              | A | C  | C  |    |                                | C  | C | C  | C  | C                              | E  |    |    |   |    |    |    |    | G  | G  | G | G | J | G | G |   |
|              | 1.5                    | 155         |                                |    |    |    |                                |   |    |    |    |                                | C  |   |    |    |                                |    |    |    |   |    |    |    |    |    | G  | G | J | J | J | K | K |
|              | 2.2                    | 225         |                                |    |    |    | C                              | C | C  |    |    |                                | C  | C | C  | C  | C                              |    |    |    |   |    |    |    |    |    | G  | G | J | J | J | K | K |
|              | 3.3                    | 335         |                                |    |    |    |                                |   |    |    |    |                                | C  |   |    |    |                                |    |    |    |   |    |    |    |    |    | J  | J | J |   |   |   |   |
|              | 4.7                    | 475         |                                |    |    |    |                                |   |    |    |    |                                | E  | E | E  | E  |                                |    |    |    |   |    |    |    |    |    | J  | J | J | G | G |   |   |
|              | 10                     | 106         |                                |    |    |    |                                |   |    |    |    |                                | E  | E | E  |    |                                |    |    |    |   |    |    |    |    |    | J  | J | J |   |   |   |   |
|              | 22                     | 226         |                                |    |    |    |                                |   |    |    |    |                                | E  | E |    |    |                                |    |    |    |   |    |    |    |    |    | K  | K | K |   |   |   |   |
|              | 47                     | 476         |                                |    |    |    |                                |   |    |    |    |                                |    |   |    |    |                                |    |    |    |   |    |    |    |    |    | K  | K |   |   |   |   |   |
|              | 100                    | 107         |                                |    |    |    |                                |   |    |    |    |                                |    |   |    |    |                                |    |    |    |   |    |    |    |    |    | K  | K |   |   |   |   |   |
| Voltage:     | 63                     | 16          | 4                              | 63 | 10 | 16 | 25                             | 4 | 63 | 10 | 16 | 25                             | 50 | 4 | 63 | 10 | 16                             | 25 | 35 | 50 | 4 | 63 | 10 | 16 | 25 | 35 | 50 |   |   |   |   |   |   |

| Letter         | A               | B               | C               | E               | G               |                 | K               | M               | N               | P               | Q               | X               | Y               | Z               |
|----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Max. Thickness | 0.33<br>(0.013) | 0.22<br>(0.009) | 0.56<br>(0.022) | 0.71<br>(0.028) | 0.90<br>(0.035) | 0.94<br>(0.037) | 1.02<br>(0.040) | 1.27<br>(0.050) | 1.40<br>(0.055) | 1.52<br>(0.060) | 1.78<br>(0.070) | 2.29<br>(0.090) | 2.54<br>(0.100) | 2.79<br>(0.110) |
|                | PAPER           |                 |                 |                 |                 |                 | EMBOSSSED       |                 |                 |                 |                 |                 |                 |                 |

PAPER and EMBOSSSED available for 01005

NOTE: Contact factory for non-specified capacitance values

\*EIA 01005



# X5R Dielectric

## Capacitance Range



### PREFERRED SIZES ARE SHADED

| Case Size    |       |       | 1206                           |     |    |    |    |    |    | 1210                           |     |    |    |    |    |    | 1812                           |     |    |    |    |    |    |
|--------------|-------|-------|--------------------------------|-----|----|----|----|----|----|--------------------------------|-----|----|----|----|----|----|--------------------------------|-----|----|----|----|----|----|
| Soldering    |       |       | Reflow/Wave                    |     |    |    |    |    |    | Reflow Only                    |     |    |    |    |    |    | Reflow Only                    |     |    |    |    |    |    |
| Packaging    |       |       | Paper/Embossed                 |     |    |    |    |    |    | Paper/Embossed                 |     |    |    |    |    |    | All Embossed                   |     |    |    |    |    |    |
| (L) Length   | mm    | (in.) | 3.20 ± 0.40<br>(0.126 ± 0.016) |     |    |    |    |    |    | 3.20 ± 0.40<br>(0.126 ± 0.016) |     |    |    |    |    |    | 4.50 ± 0.30<br>(0.177 ± 0.012) |     |    |    |    |    |    |
| (W) Width    | mm    | (in.) | 1.60 ± 0.20<br>(0.063 ± 0.008) |     |    |    |    |    |    | 2.50 ± 0.30<br>(0.098 ± 0.012) |     |    |    |    |    |    | 3.20 ± 0.20<br>(0.126 ± 0.008) |     |    |    |    |    |    |
| (t) Terminal | mm    | (in.) | 0.50 ± 0.25<br>(0.020 ± 0.010) |     |    |    |    |    |    | 0.50 ± 0.25<br>(0.020 ± 0.010) |     |    |    |    |    |    | 0.61 ± 0.36<br>(0.024 ± 0.014) |     |    |    |    |    |    |
| Voltage:     |       |       | 4                              | 6.3 | 10 | 16 | 25 | 35 | 50 | 4                              | 6.3 | 10 | 16 | 25 | 35 | 50 | 4                              | 6.3 | 10 | 16 | 25 | 35 | 50 |
| Cap (pF)     | 100   | 101   |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |
|              | 150   | 151   |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |
|              | 220   | 221   |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |
|              | 330   | 331   |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |
|              | 470   | 471   |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |
|              | 680   | 681   |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |
|              | 1000  | 102   |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |
|              | 1500  | 152   |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |
|              | 2200  | 222   |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |
|              | 3300  | 332   |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |
|              | 4700  | 472   |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |
|              | 6800  | 682   |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |
| Cap (µF)     | 0.01  | 103   |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |
|              | 0.015 | 150   |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |
|              | 0.022 | 223   |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |
|              | 0.033 | 333   |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |
|              | 0.047 | 473   |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |
|              | 0.068 | 689   |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |
|              | 0.1   | 104   |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |
|              | 0.15  | 154   |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |
|              | 0.22  | 224   |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |
|              | 0.33  | 334   |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |
|              | 0.47  | 474   |                                |     |    |    | Q  | Q  |    |                                |     |    |    |    | X  | X  |                                |     |    |    |    |    |    |
|              | 0.68  | 684   |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |
|              | 1.0   | 105   |                                |     |    |    | Q  | Q  | Q  |                                |     |    |    |    | X  | X  | X                              |     |    |    |    |    |    |
|              | 1.5   | 155   |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |
|              | 2.2   | 225   |                                |     |    | Q  | Q  | Q  | Q  | Q                              |     |    |    |    | X  | Z  | Z                              |     |    |    |    |    |    |
|              | 3.3   | 335   |                                |     |    | Q  | Q  |    |    |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |
|              | 4.7   | 475   | X                              | X   | X  | X  | X  | X  | X  |                                |     |    | Z  | Z  | Z  | Z  | Z                              |     |    |    |    |    |    |
|              | 10    | 106   | X                              | X   | X  | X  | X  | X  | X  |                                | X   | X  | Z  | Z  | Z  | Z  | Z                              |     |    |    |    | Z  |    |
|              | 22    | 226   | X                              | X   | X  | X  | X  |    |    | Z                              | Z   | Z  | Z  | Z  |    |    | Z                              | Z   | Z  | Z  |    |    |    |
|              | 47    | 476   | X                              | X   | X  | X  |    |    |    | Z                              | Z   | Z  | Z  | Z  |    |    |                                |     |    |    |    |    |    |
|              | 100   | 107   | X                              | X   |    |    |    |    |    |                                |     |    |    |    |    |    |                                |     |    |    |    |    |    |
| Voltage:     |       |       | 4                              | 6.3 | 10 | 16 | 25 | 35 | 50 | 4                              | 6.3 | 10 | 16 | 25 | 35 | 50 | 4                              | 6.3 | 10 | 16 | 25 | 35 | 50 |
| Case Size    |       |       | 1206                           |     |    |    |    |    |    | 1210                           |     |    |    |    |    |    | 1812                           |     |    |    |    |    |    |

| Letter         | A               | B               | C               | E               | G               | J               | K               | M               | N               | P               | Q               | X               | Y               | Z               |
|----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Max. Thickness | 0.33<br>(0.013) | 0.22<br>(0.009) | 0.56<br>(0.022) | 0.71<br>(0.028) | 0.90<br>(0.035) | 0.94<br>(0.037) | 1.02<br>(0.040) | 1.27<br>(0.050) | 1.40<br>(0.055) | 1.52<br>(0.060) | 1.78<br>(0.070) | 2.29<br>(0.090) | 2.54<br>(0.100) | 2.79<br>(0.110) |
|                | PAPER           |                 |                 |                 |                 |                 | EMBOSED         |                 |                 |                 |                 |                 |                 |                 |

PAPER and EMBOSED available for 01005

NOTE: Contact factory for non-specified capacitance values  
\*EIA 01005