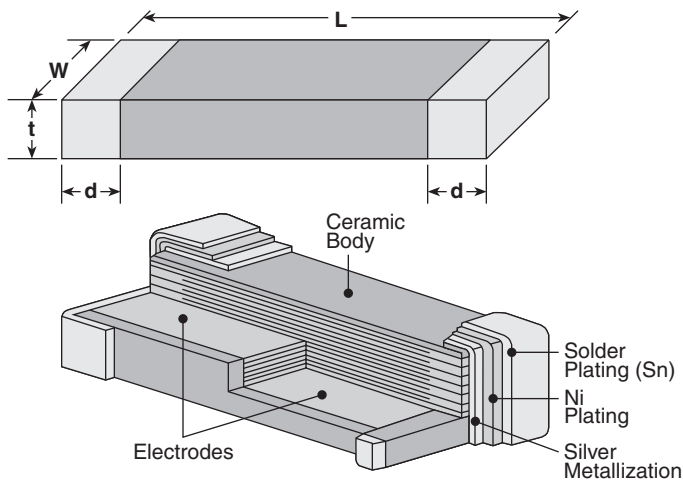


### features

- High Q factor
- Low T.C.C.
- Available in high capacitance values (up to 100  $\mu$ F)

### dimensions and construction



| Case Size | Dimensions inches (mm)              |                                      |                |                                      |
|-----------|-------------------------------------|--------------------------------------|----------------|--------------------------------------|
|           | L                                   | W                                    | t (Max.)       | d                                    |
| 0402      | .039 $\pm$ .004<br>(1.0 $\pm$ 0.1)  | .02 $\pm$ .004<br>(0.5 $\pm$ 0.1)    | .021<br>(0.55) | .01 $\pm$ .006<br>(0.25 $\pm$ 0.15)  |
| 0603      | .063 $\pm$ .006<br>(1.6 $\pm$ 0.15) | .032 $\pm$ .006<br>(0.81 $\pm$ 0.15) | .035<br>(0.9)  | .014 $\pm$ .006<br>(0.35 $\pm$ 0.15) |
| 0805      | .079 $\pm$ .008<br>(2.01 $\pm$ 0.2) | .049 $\pm$ .008<br>(1.25 $\pm$ 0.2)  | .051<br>(1.3)  | .02 $\pm$ .01<br>(0.50 $\pm$ 0.25)   |
| 1206      | .126 $\pm$ .008<br>(3.2 $\pm$ 0.2)  | .063 $\pm$ .008<br>(1.6 $\pm$ 0.2)   | .059<br>(1.5)  | .02 $\pm$ .01<br>(0.5 $\pm$ 0.25)    |
| 1210      | .126 $\pm$ .008<br>(3.2 $\pm$ 0.2)  | .098 $\pm$ .008<br>(2.5 $\pm$ 0.2)   | .067<br>(1.7)  | .02 $\pm$ .01<br>(0.5 $\pm$ 0.25)    |
| 1812      | .177 $\pm$ .012<br>(4.5 $\pm$ 0.3)  | .126 $\pm$ .008<br>(3.2 $\pm$ 0.2)   | .067<br>(1.7)  | .024 $\pm$ .014<br>(0.61 $\pm$ 0.36) |
| 1825      | .177 $\pm$ .012<br>(4.5 $\pm$ 0.3)  | .252 $\pm$ .016<br>(6.4 $\pm$ 0.4)   | .067<br>(1.7)  | .024 $\pm$ .014<br>(0.61 $\pm$ 0.36) |
| 2220      | .224 $\pm$ .016<br>(5.7 $\pm$ 0.4)  | .197 $\pm$ .016<br>(5.0 $\pm$ 0.4)   | .087<br>(2.2)  | .025 $\pm$ .015<br>(0.64 $\pm$ 0.39) |

### ordering information

| Old Part # | 0805                            | NPO  | H  | T                    | T  | 101   | K  |
|------------|---------------------------------|--|--|----------------------|--|---|--|
| New Part # | NPO                             | 0805   | H  | T                    | TD   | 101   | K  |
|            | Dielectric                      | Size   | Voltage  | Termination Material | Packaging  | Capacitance   | Tolerance  |
|            | NPO<br>X5R<br>X7R<br>Y5V<br>Z5U | 0402<br>0603<br>0805<br>1206<br>1210<br>1812<br>1825<br>2220 | A = 10V<br>C = 16V<br>E = 25V<br>H = 50V<br>I = 100V<br>J = 200V<br>K = 6.3V | T: Sn                | TP: 7" 2mm pitch (0402 only)<br>TD: 7" paper tape<br>TE: 7" embossed plastic<br>TDB: 13" paper tape<br>TEB: 13" embossed plastic | NPO, X5R, X7R, Y5V:<br>2 significant digits + no. of zeros.<br>"R" indicates decimal point<br>Z5U:<br>2 significant digits + no. of zeros | B: $\pm$ 0.1pF<br>C: $\pm$ 0.25pF<br>D: $\pm$ 0.5pF<br>F: $\pm$ 1%<br>G: $\pm$ 2%<br>J: $\pm$ 5%<br>K: $\pm$ 10%<br>M: $\pm$ 20%<br>Z: +80, -20% |

For further information on packaging, please refer to Appendix B.

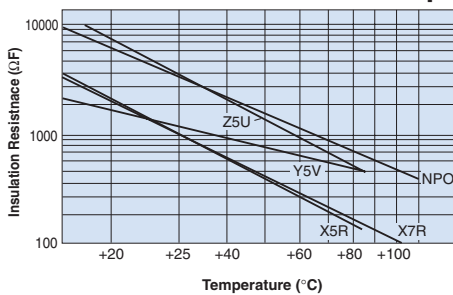
### applications and ratings

| Dielectric | Capacitance Range | Capacitance Tolerance*  | Voltage Ratings                          | Dissipation Factor   | T.C.C.            | Test Voltage   | Operating Temperature | Insulation Resistance                                       |
|------------|-------------------|---|--|--|-------------------|----------------|-----------------------|---|
| NPO        | 0.5pF - 0.033μF   | B: ±0.1pF (1.0pF ~ 8.2pF)<br>C: ±0.25pF (1.0pF ~ 8.2pF)<br>D: ±0.5pF (5.6pF ~ 8.2pF)<br>F: ±1%, G: ±2%<br>J: ±5%, K: ±10% | 16V<br>25V<br>50V<br>100V<br>200V        | For Values >30pF: 0.1% max., ≤30pF: Q = 400 + 20 x C<br>DF = 1/Q<br>C is in pF | 0 ± 30 ppm/°C     | 1.0 ± 0.2 Vrms | -55°C to +125°C       | +25°C 100,000MΩ min. or 1000 MΩ - μF min. whichever is less |
| X5R        | 0.068μF - 100μF   | K: ±10%   | 6.3V<br>10V                              | 6.3 = 7.3%<br>10 = 5.0%  | ±15% (0 VDC)      | 1.0 ± 0.2 Vrms | -55°C to +85°C        | +25°C 100,000MΩ min. or 500 MΩ - μF min. whichever is less  |
| X7R        | 100pF - 1.0μF     | K: ±10%   | 10V<br>16V<br>25V<br>50V<br>100V<br>200V | For 50 & 100 volts<br>2.5% max.<br>25 = 3.0%<br>16 = 3.5%                      | ±15% (0 VDC)      | 1.0 ± 0.2 Vrms | -55°C to +125°C       | +25°C 100,000MΩ min. or 1000 MΩ - μF min. whichever is less |
| Y5V        | 2200pF - 4.7μF    | Z: +80, -20%  | 10V<br>16V<br>25V<br>50V                 | 16V & 25V = 7.0%<br>50V = 5.0%   | +22% to -82% max. | 1.0 ± 0.2 Vrms | -55°C to +125°C       | +25°C 10,000MΩ min. or 1000 MΩ - μF min. whichever is less  |
| Z5U        | 0.01μF - 1.0μF    | M: ±20%<br>Z: +80, -20%   | 25V<br>50V                               | 4.0% max.  | +22% to -56% max. | 0.5 ± 0.2 Vrms | -55°C to +125°C       | +25°C 10,000MΩ min. or 1000 MΩ - μF min. whichever is less  |

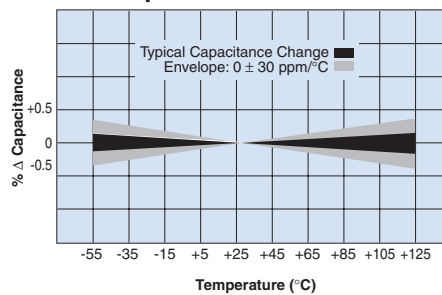
\* Special tolerances available, please consult factory.

### environmental applications

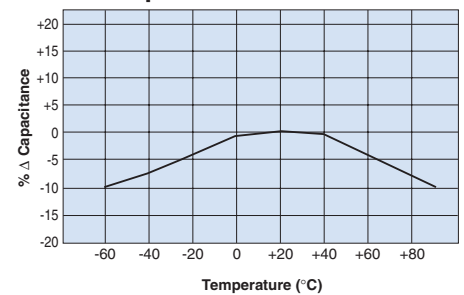
#### Insulation Resistance vs Temp.



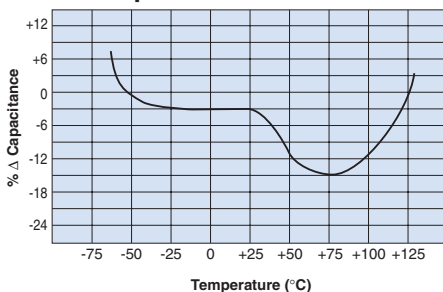
#### NPO - Temperature Coefficient



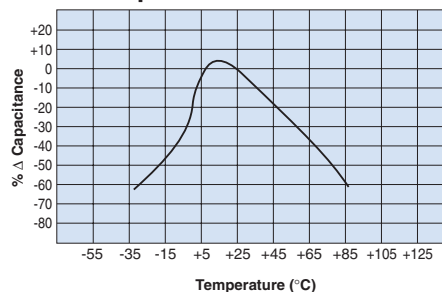
#### X5R - Temperature Coefficient



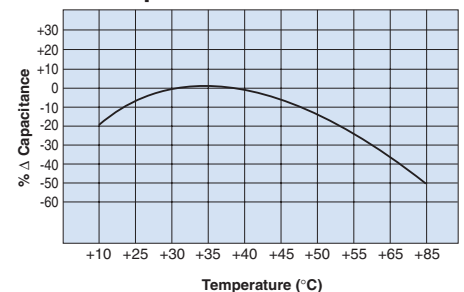
#### X7R - Temperature Coefficient



#### Y5V - Temperature Coefficient



#### Z5U - Temperature Coefficient



## NPO capacitance voltage availability

| Size                     |                          |       |      | 0402* |    |    | 0603* |     | 0805 |     |     | 1206 |    |     |     | 1210 |     |     |
|--------------------------|--------------------------|-------|------|-------|----|----|-------|-----|------|-----|-----|------|----|-----|-----|------|-----|-----|
| Capacitance values<br>pF | Capacitance values<br>µF | Code  | WVDC | 16    | 25 | 50 | 50    | 100 | 50   | 100 | 200 | 25   | 50 | 100 | 200 | 50   | 200 | 500 |
| 0.47                     |                          | R47   |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 0.56                     |                          | R56   |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 0.68                     |                          | R68   |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 0.82                     |                          | R82   |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 1                        |                          | 1R0   |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 1.2                      |                          | 1R2PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 1.5                      |                          | 1R5PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 1.8                      |                          | 1R8PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 2.2                      |                          | 2R2PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 2.7                      |                          | 2R7PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 3.3                      |                          | 3R3PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 3.9                      |                          | 3R9PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 4.7                      |                          | 4R7PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 5.6                      |                          | 5R6PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 6.8                      |                          | 6R8PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 8.2                      |                          | 8R2PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 10                       |                          | 100PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 12                       |                          | 120PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 15                       |                          | 150PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 18                       |                          | 180PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 22                       |                          | 220PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 27                       |                          | 270PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 33                       |                          | 330PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 39                       |                          | 390PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 47                       |                          | 470PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 56                       |                          | 560PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 68                       |                          | 680PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 82                       |                          | 820PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 100                      | .0001                    | 101PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 120                      | .00012                   | 121PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 150                      | .00015                   | 151PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 180                      | .00018                   | 181PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 220                      | .00022                   | 221PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 270                      | .00027                   | 271PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 330                      | .00033                   | 331PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 390                      | .00039                   | 391PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 470                      | .00047                   | 471PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 560                      | .00056                   | 561PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 680                      | .00068                   | 681PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 820                      | .00082                   | 821PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 1000                     | .0010                    | 102PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 1200                     | .0012                    | 122PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 1500                     | .0015                    | 152PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 1800                     | .0018                    | 182PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 2200                     | .0022                    | 222PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 2700                     | .0027                    | 272PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 3300                     | .0033                    | 332PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 3900                     | .0039                    | 392PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 4700                     | .0047                    | 472PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 5600                     | .0056                    | 562PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 6800                     | .0068                    | 682PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 8200                     | .0082                    | 822PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 10000                    | .010                     | 103PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 12000                    | .012                     | 123PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 15000                    | .015                     | 153PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 18000                    | .018                     | 183PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 22000                    | .022                     | 223PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 27000                    | .027                     | 273PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 33000                    | .033                     | 333PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |
| 39000                    | .039                     | 393PF |      |       |    |    |       |     |      |     |     |      |    |     |     |      |     |     |

\* IR and vapor phase solder only recommended

Capacitance tolerance available:

R47 ~ 8R2 = C: ±0.25 pF, 5R6 ~ 8R2 = D ±0.5 pF, 10 ~ 393 = J ±5%, F ±1%, G ±2%

## X5R capacitance voltage availability

| Size                           | 0402 |    |    | 0603 |    |    |    | 0805 |    |    |    | 1206 |    |    |    | 1210 |    |    |    | 1812 |    |    |    | 2220 |    |    |    |     |  |
|--------------------------------|------|----|----|------|----|----|----|------|----|----|----|------|----|----|----|------|----|----|----|------|----|----|----|------|----|----|----|-----|--|
| Capacitance values<br>pF<br>μF | 6.3  | 10 | 16 | 6.3  | 10 | 16 | 25 | 6.3  | 10 | 16 | 25 | 6.3  | 10 | 16 | 25 | 6.3  | 10 | 16 | 25 | 6.3  | 10 | 16 | 25 | 6.3  | 10 | 16 | 25 | 6.3 |  |
| 100                            |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 150                            |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 220                            |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 330                            |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 470                            |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 680                            |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 1000                           |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 1200                           |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 1500                           |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 1800                           |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 2200                           |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 2700                           |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 3300                           |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 3900                           |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 4700                           |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 5600                           |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 6800                           |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 8200                           |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 0.010                          |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 0.012                          |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 0.015                          |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 0.018                          |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 0.022                          |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 0.027                          |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 0.033                          |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 0.039                          |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 0.047                          |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 0.056                          |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 0.068                          |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 0.082                          |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 0.10                           |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 0.12                           |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 0.15                           |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 0.18                           |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 0.22                           |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 0.27                           |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 0.33                           |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 0.47                           |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 0.56                           |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 0.68                           |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 0.82                           |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 1.0                            |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 1.2                            |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 1.5                            |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 1.8                            |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 2.2                            |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 3.3                            |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 4.7                            |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 6.8                            |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 10                             |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 22                             |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 47                             |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |
| 100                            |      |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |     |  |

Capacitance tolerance available: ±10%

capacitors

## X7R capacitance voltage availability

| Size    | 0402* |    |    | 0603* |    |    |    | 0805 |    |    |    | 1206 |     |     |    | 1210 |    |    |     |     |    |     |     |  |
|---------|-------|----|----|-------|----|----|----|------|----|----|----|------|-----|-----|----|------|----|----|-----|-----|----|-----|-----|--|
|         | 16    | 25 | 50 | 10    | 16 | 25 | 50 | 100  | 10 | 16 | 25 | 50   | 100 | 200 | 10 | 16   | 25 | 50 | 100 | 200 | 50 | 100 | 200 |  |
| 100     |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 120     |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 150     |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 180     |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 220     |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 270     |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 330     |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 390     |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 470     |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 560     |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 680     |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 820     |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 1000    |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 1200    |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 1500    |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 1800    |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 2200    |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 2700    |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 3300    |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 3900    |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 4700    |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 5600    |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 6800    |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 8200    |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 10000   |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 12000   |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 15000   |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 18000   |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 22000   |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 27000   |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 33000   |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 39000   |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 47000   |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 56000   |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 68000   |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 82000   |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 100000  |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 120000  |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 150000  |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 180000  |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 220000  |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 270000  |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 330000  |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 390000  |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 470000  |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 560000  |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 680000  |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 1000000 |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 1200000 |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 1500000 |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 1800000 |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |
| 2200000 |       |    |    |       |    |    |    |      |    |    |    |      |     |     |    |      |    |    |     |     |    |     |     |  |

\* IR and vapor phase solder only recommended

Capacitance tolerance available: ±10%

## Y5V capacitance voltage availability

| Size     | Capacitance values |       |      | 0402* |    | 0603* |    |    | 0805 |    |    |    | 1206 |    |    |    | 1210 |    |  |
|----------|--------------------|-------|------|-------|----|-------|----|----|------|----|----|----|------|----|----|----|------|----|--|
|          | pF                 | µF    | Code | 16    | 50 | 10    | 16 | 25 | 50   | 10 | 16 | 25 | 50   | 10 | 16 | 25 | 50   | 25 |  |
| 2200     | .0022              | 222PF |      |       |    |       |    |    |      |    |    |    |      |    |    |    |      |    |  |
| 2700     | .0027              | 272PF |      |       |    |       |    |    |      |    |    |    |      |    |    |    |      |    |  |
| 3300     | .0033              | 332PF |      |       |    |       |    |    |      |    |    |    |      |    |    |    |      |    |  |
| 3900     | .0039              | 392PF |      |       |    |       |    |    |      |    |    |    |      |    |    |    |      |    |  |
| 4700     | .0047              | 472PF |      |       |    |       |    |    |      |    |    |    |      |    |    |    |      |    |  |
| 5600     | .0056              | 562PF |      |       |    |       |    |    |      |    |    |    |      |    |    |    |      |    |  |
| 6800     | .0068              | 682PF |      |       |    |       |    |    |      |    |    |    |      |    |    |    |      |    |  |
| 8200     | .0082              | 822PF |      |       |    |       |    |    |      |    |    |    |      |    |    |    |      |    |  |
| 10000    | .010               | 103PF |      |       |    |       |    |    |      |    |    |    |      |    |    |    |      |    |  |
| 12000    | .012               | 123PF |      |       |    |       |    |    |      |    |    |    |      |    |    |    |      |    |  |
| 15000    | .015               | 153PF |      |       |    |       |    |    |      |    |    |    |      |    |    |    |      |    |  |
| 18000    | .018               | 183PF |      |       |    |       |    |    |      |    |    |    |      |    |    |    |      |    |  |
| 22000    | .022               | 223PF |      |       |    |       |    |    |      |    |    |    |      |    |    |    |      |    |  |
| 27000    | .027               | 273PF |      |       |    |       |    |    |      |    |    |    |      |    |    |    |      |    |  |
| 33000    | .033               | 333PF |      |       |    |       |    |    |      |    |    |    |      |    |    |    |      |    |  |
| 39000    | .039               | 393PF |      |       |    |       |    |    |      |    |    |    |      |    |    |    |      |    |  |
| 47000    | .047               | 473PF |      |       |    |       |    |    |      |    |    |    |      |    |    |    |      |    |  |
| 56000    | .056               | 563PF |      |       |    |       |    |    |      |    |    |    |      |    |    |    |      |    |  |
| 68000    | .068               | 683PF |      |       |    |       |    |    |      |    |    |    |      |    |    |    |      |    |  |
| 82000    | .082               | 823PF |      |       |    |       |    |    |      |    |    |    |      |    |    |    |      |    |  |
| 100000   | .100               | 104PF |      |       |    |       |    |    |      |    |    |    |      |    |    |    |      |    |  |
| 120000   | .120               | 124PF |      |       |    |       |    |    |      |    |    |    |      |    |    |    |      |    |  |
| 150000   | .150               | 154PF |      |       |    |       |    |    |      |    |    |    |      |    |    |    |      |    |  |
| 180000   | .180               | 184PF |      |       |    |       |    |    |      |    |    |    |      |    |    |    |      |    |  |
| 220000   | .220               | 224PF |      |       |    |       |    |    |      |    |    |    |      |    |    |    |      |    |  |
| 270000   | .270               | 274PF |      |       |    |       |    |    |      |    |    |    |      |    |    |    |      |    |  |
| 330000   | .330               | 334PF |      |       |    |       |    |    |      |    |    |    |      |    |    |    |      |    |  |
| 390000   | .390               | 394PF |      |       |    |       |    |    |      |    |    |    |      |    |    |    |      |    |  |
| 470000   | .470               | 474PF |      |       |    |       |    |    |      |    |    |    |      |    |    |    |      |    |  |
| 560000   | .560               | 564PF |      |       |    |       |    |    |      |    |    |    |      |    |    |    |      |    |  |
| 680000   | .680               | 684PF |      |       |    |       |    |    |      |    |    |    |      |    |    |    |      |    |  |
| 820000   | .820               | 824PF |      |       |    |       |    |    |      |    |    |    |      |    |    |    |      |    |  |
| 1000000  | 1.0                | 105PF |      |       |    |       |    |    |      |    |    |    |      |    |    |    |      |    |  |
| 1200000  | 1.2                | 125PF |      |       |    |       |    |    |      |    |    |    |      |    |    |    |      |    |  |
| 1500000  | 1.5                | 155PF |      |       |    |       |    |    |      |    |    |    |      |    |    |    |      |    |  |
| 1800000  | 1.8                | 185PF |      |       |    |       |    |    |      |    |    |    |      |    |    |    |      |    |  |
| 2200000  | 2.2                | 225PF |      |       |    |       |    |    |      |    |    |    |      |    |    |    |      |    |  |
| 2700000  | 2.7                | 275PF |      |       |    |       |    |    |      |    |    |    |      |    |    |    |      |    |  |
| 3300000  | 3.3                | 335PF |      |       |    |       |    |    |      |    |    |    |      |    |    |    |      |    |  |
| 3900000  | 3.9                | 395PF |      |       |    |       |    |    |      |    |    |    |      |    |    |    |      |    |  |
| 4700000  | 4.7                | 475PF |      |       |    |       |    |    |      |    |    |    |      |    |    |    |      |    |  |
| 5600000  | 5.6                | 565PF |      |       |    |       |    |    |      |    |    |    |      |    |    |    |      |    |  |
| 6800000  | 6.8                | 685PF |      |       |    |       |    |    |      |    |    |    |      |    |    |    |      |    |  |
| 10000000 | 10                 | 106PF |      |       |    |       |    |    |      |    |    |    |      |    |    |    |      |    |  |

\* IR and vapor phase solder only recommended

Capacitance tolerance available: +80, -20%

## Z5U capacitance voltage availability

| Size                                   | 0603* |    | 0805 | 1206 | 1210 |
|--|-------|----|------|------|------|
| Capacitance values<br>pF    μF    Code | 25    | 50 | 50   | 50   | 50   |
| 2200 .0022 222PF                       |       |    |      |      |      |
| 2700 .0027 272PF                       |       |    |      |      |      |
| 3300 .0033 332PF                       |       |    |      |      |      |
| 3900 .0039 392PF                       |       |    |      |      |      |
| 4700 .0047 472PF                       |       |    |      |      |      |
| 5600 .0056 562PF                       |       |    |      |      |      |
| 6800 .0068 682PF                       |       |    |      |      |      |
| 8200 .0082 822PF                       |       |    |      |      |      |
| 10000 .010 103PF                       |       |    |      |      |      |
| 12000 .012 123PF                       |       |    |      |      |      |
| 15000 .015 153PF                       |       |    |      |      |      |
| 18000 .018 183PF                       |       |    |      |      |      |
| 22000 .022 223PF                       |       |    |      |      |      |
| 27000 .027 273PF                       |       |    |      |      |      |
| 33000 .033 333PF                       |       |    |      |      |      |
| 39000 .039 393PF                       |       |    |      |      |      |
| 47000 .047 473PF                       |       |    |      |      |      |
| 56000 .056 563PF                       |       |    |      |      |      |
| 68000 .068 683PF                       |       |    |      |      |      |
| 82000 .082 823PF                       |       |    |      |      |      |
| 100000 .100 104PF                      |       |    |      |      |      |
| 120000 .120 124PF                      |       |    |      |      |      |
| 150000 .150 154PF                      |       |    |      |      |      |
| 180000 .180 184PF                      |       |    |      |      |      |
| 220000 .220 224PF                      |       |    |      |      |      |
| 270000 .270 274PF                      |       |    |      |      |      |
| 330000 .330 334PF                      |       |    |      |      |      |
| 390000 .390 394PF                      |       |    |      |      |      |
| 470000 .470 474PF                      |       |    |      |      |      |
| 560000 .560 564PF                      |       |    |      |      |      |
| 680000 .680 684PF                      |       |    |      |      |      |
| 820000 .820 824PF                      |       |    |      |      |      |
| 1000000 1.0 105PF                      |       |    |      |      |      |
| 1500000 1.5 155PF                      |       |    |      |      |      |

capacitors

\* IR and vapor phase solder only recommended

Capacitance tolerance: +80, -20%