

## Surface Mount Multilayer Ceramic Chip Capacitors for Non-Magnetic Applications



### FEATURES

- Specialty: Non-magnetic MLCCs
- Manufactured with non-magnetic materials
- Safety screened for magnetic properties
- C0G (NP0) and X7R/X5R dielectrics offered
- Wide range of case sizes, voltage ratings and capacitance values
- Allowed assembly methods are conductive epoxy bonding and IR reflow
- Wet built process
- Reliable Noble Metal Electrode (NME) system
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**

### APPLICATIONS

- Magnetic Resonance Imaging (MRI)
- Medical test and diagnostic equipment
- High Rel medical systems
- High Rel aviation systems
- Laboratory analysis systems
- Navigation and electronic test equipment
- Audio amplifiers

### ELECTRICAL SPECIFICATIONS

#### NON-MAGNETIC C0G (NP0)

##### GENERAL SPECIFICATION

###### Note

Electrical characteristics at + 25 °C unless otherwise specified

**Operating Temperature:** - 55 °C to + 125 °C

**Capacitance Range:** 0.5 pF to 56 nF

**Voltage Range:** 10 V<sub>DC</sub> to 3000 V<sub>DC</sub>

##### Temperature Coefficient of Capacitance (TCC):

0 ppm/°C ± 30 ppm/°C from - 55 °C to + 125 °C

##### Dissipation Factor (DF):

0.1 % maximum at 1.0 V<sub>RMS</sub> and

1 MHz for values ≤ 1000 pF

0.1 % maximum at 1.0 V<sub>RMS</sub> and

1 kHz for values > 1000 pF

##### Insulating Resistance:

At + 25 °C 100 000 MΩ min. or 1000 ΩF whichever is less

At + 125 °C 10 000 MΩ min. or 100 ΩF whichever is less

**Aging:** 0 % maximum per decade

##### Dielectric Strength Test:

Performed per method 103 of EIA 198-2-E.

Applied test voltages

≤ 200 V<sub>DC</sub>-rated: 250 % of rated voltage

500 V<sub>DC</sub>-rated: 200 % of rated voltage

630 V<sub>DC</sub>, 1000 V<sub>DC</sub>-rated: 150 % of rated voltage

1500 V<sub>DC</sub> to 3000 V<sub>DC</sub>-rated: 120 % of rated voltage

#### NON-MAGNETIC X7R/X5R

##### GENERAL SPECIFICATION

###### Note

Electrical characteristics at + 25 °C unless otherwise specified

**Operating Temperature:** - 55 °C to + 125 °C

**Capacitance Range:** 100 pF to 6.8 μF

**Voltage Range:** 6.3 V<sub>DC</sub> to 3000 V<sub>DC</sub>

##### Temperature Coefficient of Capacitance (TCC):

X5R: ± 15 % from - 55 °C to + 85 °C, with 0 V<sub>DC</sub> applied

X7R: ± 15 % from - 55 °C to + 125 °C, with 0 V<sub>DC</sub> applied

##### Dissipation Factor (DF):

≤ 6.3 V, 10 V ratings: 5 % maximum at 1.0 V<sub>RMS</sub> and 1 kHz

16 V, 25 V ratings: 3.5 % maximum at 1.0 V<sub>RMS</sub> and 1 kHz

≥ 50 V ratings: 2.5 % maximum at 1.0 V<sub>RMS</sub> and 1 kHz

##### Insulating Resistance:

At + 25 °C 100 000 MΩ min. or 1000 ΩF whichever is less

At + 125 °C 10 000 MΩ min. or 100 ΩF whichever is less

**Aging Rate:** 1 % maximum per decade

##### Dielectric Strength Test:

Performed per method 103 of EIA 198-2-E.

Applied test voltages

≤ 200 V<sub>DC</sub>-rated: 250 % of rated voltage

500 V<sub>DC</sub>-rated: min. 150 % of rated voltage

630 V<sub>DC</sub>, 1000 V<sub>DC</sub>-rated: 150 % of rated voltage

1500 V<sub>DC</sub>, 3000 V<sub>DC</sub>-rated: 120 % of rated voltage



| QUICK REFERENCE DATA |      |                     |             |         |
|----------------------|------|---------------------|-------------|---------|
| DIELECTRIC           | CASE | MAXIMUM VOLTAGE (V) | CAPACITANCE |         |
|                      |      |                     | MINIMUM     | MAXIMUM |
| C0G (NP0)            | 0402 | 100                 | 0.5 pF      | 180 pF  |
|                      | 0603 | 200                 | 0.5 pF      | 1.8 nF  |
|                      | 0805 | 500                 | 0.5 pF      | 3.3 nF  |
|                      | 1206 | 600                 | 0.5 pF      | 10 nF   |
|                      | 1210 | 500                 | 0.5 pF      | 12 nF   |
|                      | 1808 | 3000                | 10 pF       | 10 nF   |
|                      | 1812 | 3000                | 10 pF       | 22 nF   |
|                      | 1825 | 1000                | 15 pF       | 39 nF   |
|                      | 2220 | 1000                | 100 pF      | 47 nF   |
|                      | 2225 | 1000                | 120 pF      | 56 nF   |
| X5R                  | 0402 | 16                  | 27 nF       | 100 nF  |
|                      | 0603 | 6.3                 | 120 nF      | 150 nF  |
| X7R                  | 0402 | 100                 | 100 pF      | 22 nF   |
|                      | 0603 | 100                 | 270 pF      | 100 nF  |
|                      | 0805 | 200                 | 390 pF      | 390 nF  |
|                      | 1206 | 500                 | 680 pF      | 1.0 μF  |
|                      | 1210 | 500                 | 1.0 nF      | 1.0 μF  |
|                      | 1808 | 3000                | 220 pF      | 270 nF  |
|                      | 1812 | 3000                | 270 pF      | 1.0 μF  |
|                      | 1825 | 1000                | 10 nF       | 2.7 μF  |
|                      | 2220 | 3000                | 1.0 nF      | 2.2 μF  |
|                      | 2225 | 2000                | 5.6 nF      | 4.7 μF  |
|                      | 3640 | 500                 | 15 nF       | 6.8 μF  |

**Note**

- Detail ratings see "Selection Chart"

| ORDERING INFORMATION   |  |  |  |                     |  |                 |  |
|--|--|--|--|---------------------|--|-----------------|--|
| VJ0603   | Y  | 102  | K  | N                   | A  | A               | O  |
| CASE CODE  | DIELECTRIC                                   | CAPACITANCE NOMINAL CODE   | CAPACITANCE TOLERANCE  | TERMINATION         | DC VOLTAGE RATING <sup>(1)</sup>   | MARKING         | PACKAGING  |
| 0402<br>0603<br>0805<br>1206<br>1210<br>1808<br>1812<br>1825<br>2220<br>2225<br>3640 | A = COG<br>Y = X7R<br>G = X5R <sup>(2)</sup> | Expressed in picofarads (pF). The first two digits are significant, the third is a multiplier. An "R" indicates a decimal point.<br><b>Examples</b><br>102 = 1000 pF<br>1R0 = 1.0 pF | COG(NP0):<br>< 10 pF<br>C = ± 0.25 pF<br>D = 0.5 pF<br>≥ 10 pF<br>F = ± 1 %<br>G = ± 2 %<br>J = ± 5 %<br>K = ± 10 %<br>X5R/X7R:<br>J = ± 5 %<br>K = ± 10 %<br>M = ± 20 % | N =<br>Non-magnetic | Q = 10 V<br>J = 16 V<br>X = 25 V<br>A = 50 V<br>K = 75 V<br>B = 100 V<br>C = 200 V<br>E = 500 V<br>L = 630 V<br>G = 1000 V<br>R = 1500 V<br>F = 2000 V<br>H = 3000 V | A =<br>Unmarked | T = 7" reel/plastic tape<br>R = 11 1/4"/13" reel/plastic tape<br>O = 7" reel/flamed paper tape<br>I = 11 1/4"/13" reel/flamed paper tape<br>J = 7" reel (low quantity) |

### Notes

- <sup>(1)</sup> DC voltage rating should not be exceeded in application  
<sup>(2)</sup> Selected values for X5R, see dielectric selection chart

| DIMENSIONS in inches (millimeters) |        |   |                                 |                       |                  |                 |
|------------------------------------|--------|---|---------------------------------|-----------------------|------------------|-----------------|
|                                    |        |   |                                 |                       |                  |                 |
| CASE CODE                          | STYLE  | LENGTH (L)                                    | WIDTH (W)                       | MAXIMUM THICKNESS (T) | TERMINATIONS (P) |                 |
|                                    |        |   |                                 |                       | MINIMUM          | MAXIMUM         |
| 0402                               | VJ0402 | 0.040 + 0.006/- 0.004<br>(1.00 + 0.15/- 0.10) | 0.020 ± 0.004<br>(0.50 ± 0.10)  | 0.024<br>(0.60)       | 0.004<br>(0.10)  | 0.016<br>(0.41) |
| 0603                               | VJ0603 | 0.063 ± 0.006<br>(1.60 ± 0.15)                | 0.031 ± 0.006<br>(0.80 ± 0.15)  | 0.038<br>(0.92)       | 0.012<br>(0.30)  | 0.018<br>(0.46) |
| 0805                               | VJ0805 | 0.079 ± 0.008<br>(2.00 ± 0.20)                | 0.049 ± 0.008<br>(1.25 ± 0.20)  | 0.057<br>(1.45)       | 0.010<br>(0.25)  | 0.028<br>(0.71) |
| 1206                               | VJ1206 | 0.126 ± 0.010<br>(3.20 ± 0.25)                | 0.063 ± 0.010<br>(1.60 ± 0.25)  | 0.067<br>(1.70)       | 0.010<br>(0.25)  | 0.028<br>(0.71) |
| 1210                               | VJ1210 | 0.126 ± 0.010<br>(3.20 ± 0.25)                | 0.098 ± 0.010<br>(2.50 ± 0.25)  | 0.067<br>(1.70)       | 0.010<br>(0.25)  | 0.028<br>(0.71) |
| 1808                               | VJ1808 | 0.177 ± 0.012<br>(4.50 ± 0.30)                | 0.080 ± 0.010<br>(2.03 ± 0.25)  | 0.067<br>(1.70)       | 0.010<br>(0.25)  | 0.030<br>(0.76) |
| 1812                               | VJ1812 | 0.177 ± 0.012<br>(4.50 ± 0.30)                | 0.126 ± 0.010<br>(3.20 ± 0.25)  | 0.086<br>(2.18)       | 0.010<br>(0.25)  | 0.030<br>(0.76) |
| 1825                               | VJ1825 | 0.177 ± 0.012<br>(4.50 ± 0.30)                | 0.252 ± 0.010<br>(6.40 ± 0.25)  | 0.086<br>(2.18)       | 0.010<br>(0.25)  | 0.030<br>(0.76) |
| 2220                               | VJ2220 | 0.220 ± 0.008<br>(5.59 ± 0.20)                | 0.200 ± 0.010<br>(5.08 ± 0.25)  | 0.086<br>(2.18)       | 0.010<br>(0.25)  | 0.030<br>(0.76) |
| 2225                               | VJ2225 | 0.220 ± 0.010<br>(5.59 ± 0.25)                | 0.250 ± 0.010<br>(6.35 ± 0.25)  | 0.086<br>(2.18)       | 0.010<br>(0.25)  | 0.030<br>(0.76) |
| 3640                               | VJ3640 | 0.360 ± 0.015<br>(9.14 ± 0.38)                | 0.400 ± 0.015<br>(10.20 ± 0.38) | 0.086<br>(2.18)       | 0.010<br>(0.25)  | 0.030<br>(0.76) |



| SELECTION CHART            |        |           |    |    |    |     |        |    |    |    |     |     |        |    |    |    |     |     |     |
|----------------------------|--------|-----------|----|----|----|-----|--------|----|----|----|-----|-----|--------|----|----|----|-----|-----|-----|
| DIELECTRIC                 |        | C0G (NP0) |    |    |    |     |        |    |    |    |     |     |        |    |    |    |     |     |     |
| STYLE                      |        | VJ0402    |    |    |    |     | VJ0603 |    |    |    |     |     | VJ0805 |    |    |    |     |     |     |
| CASE CODE                  |        | 0402      |    |    |    |     | 0603   |    |    |    |     |     | 0805   |    |    |    |     |     |     |
| VOLTAGE (V <sub>DC</sub> ) |        | 10        | 16 | 25 | 50 | 100 | 10     | 16 | 25 | 50 | 100 | 200 | 10     | 16 | 25 | 50 | 100 | 200 | 500 |
| VOLTAGE CODE               |        | Q         | J  | X  | A  | B   | Q      | J  | X  | A  | B   | C   | Q      | J  | X  | A  | B   | C   | E   |
| CAP. CODE                  | CAP.   |           |    |    |    |     |        |    |    |    |     |     |        |    |    |    |     |     |     |
| 0R5                        | 0.5 pF | ••        | •• | •• | •• | ••  | ••     | •• | •• | •• | ••  | ••  | •      | •  | •  | •  | •   | •   | •   |
| 1R0                        | 1.0 pF | ••        | •• | •• | •• | ••  | ••     | •• | •• | •• | ••  | ••  | •      | •  | •  | •  | •   | •   | •   |
| 1R2                        | 1.2 pF | ••        | •• | •• | •• | ••  | ••     | •• | •• | •• | ••  | ••  | •      | •  | •  | •  | •   | •   | •   |
| 1R5                        | 1.5 pF | ••        | •• | •• | •• | ••  | ••     | •• | •• | •• | ••  | ••  | •      | •  | •  | •  | •   | •   | •   |
| 1R8                        | 1.8 pF | ••        | •• | •• | •• | ••  | ••     | •• | •• | •• | ••  | ••  | •      | •  | •  | •  | •   | •   | •   |
| 2R2                        | 2.2 pF | ••        | •• | •• | •• | ••  | ••     | •• | •• | •• | ••  | ••  | •      | •  | •  | •  | •   | •   | •   |
| 2R7                        | 2.7 pF | ••        | •• | •• | •• | ••  | ••     | •• | •• | •• | ••  | ••  | •      | •  | •  | •  | •   | •   | •   |
| 3R3                        | 3.3 pF | ••        | •• | •• | •• | ••  | ••     | •• | •• | •• | ••  | ••  | •      | •  | •  | •  | •   | •   | •   |
| 3R9                        | 3.9 pF | ••        | •• | •• | •• | ••  | ••     | •• | •• | •• | ••  | ••  | •      | •  | •  | •  | •   | •   | •   |
| 4R7                        | 4.7 pF | ••        | •• | •• | •• | ••  | ••     | •• | •• | •• | ••  | ••  | •      | •  | •  | •  | •   | •   | •   |
| 5R6                        | 5.6 pF | ••        | •• | •• | •• | ••  | ••     | •• | •• | •• | ••  | ••  | •      | •  | •  | •  | •   | •   | •   |
| 6R8                        | 6.8 pF | ••        | •• | •• | •• | ••  | ••     | •• | •• | •• | ••  | ••  | •      | •  | •  | •  | •   | •   | •   |
| 8R2                        | 8.2 pF | ••        | •• | •• | •• | ••  | ••     | •• | •• | •• | ••  | ••  | •      | •  | •  | •  | •   | •   | •   |
| 100                        | 10 pF  | ••        | •• | •• | •• | ••  | ••     | •• | •• | •• | ••  | ••  | •      | •  | •  | •  | •   | •   | •   |
| 120                        | 12 pF  | ••        | •• | •• | •• | ••  | ••     | •• | •• | •• | ••  | ••  | •      | •  | •  | •  | •   | •   | •   |
| 150                        | 15 pF  | ••        | •• | •• | •• | ••  | ••     | •• | •• | •• | ••  | ••  | •      | •  | •  | •  | •   | •   | •   |
| 180                        | 18 pF  | ••        | •• | •• | •• | ••  | ••     | •• | •• | •• | ••  | ••  | •      | •  | •  | •  | •   | •   | •   |
| 220                        | 22 pF  | ••        | •• | •• | •• | ••  | ••     | •• | •• | •• | ••  | ••  | •      | •  | •  | •  | •   | •   | •   |
| 270                        | 27 pF  | ••        | •• | •• | •• | ••  | ••     | •• | •• | •• | ••  | ••  | •      | •  | •  | •  | •   | •   | •   |
| 330                        | 33 pF  | ••        | •• | •• | •• | ••  | ••     | •• | •• | •• | ••  | ••  | •      | •  | •  | •  | •   | •   | •   |
| 390                        | 39 pF  | ••        | •• | •• | •• | ••  | ••     | •• | •• | •• | ••  | ••  | •      | •  | •  | •  | •   | •   | •   |
| 470                        | 47 pF  | ••        | •• | •• | •• | ••  | ••     | •• | •• | •• | ••  | ••  | •      | •  | •  | •  | •   | •   | •   |
| 560                        | 56 pF  | ••        | •• | •• | •• | ••  | ••     | •• | •• | •• | ••  | ••  | •      | •  | •  | •  | •   | •   | •   |
| 680                        | 68 pF  | ••        | •• | •• | •• | ••  | ••     | •• | •• | •• | ••  | ••  | •      | •  | •  | •  | •   | •   | •   |
| 820                        | 82 pF  | ••        | •• | •• | •• | ••  | ••     | •• | •• | •• | ••  | ••  | •      | •  | •  | •  | •   | •   | •   |
| 101                        | 100 pF | ••        | •• | •• | •• | ••  | ••     | •• | •• | •• | ••  | ••  | •      | •  | •  | •  | •   | •   | •   |
| 121                        | 120 pF | ••        | •• | •• | •• | ••  | ••     | •• | •• | •• | ••  | ••  | •      | •  | •  | •  | •   | •   | •   |
| 151                        | 150 pF | ••        | •• | •• | •• | ••  | ••     | •• | •• | •• | ••  | ••  | •      | •  | •  | •  | •   | •   | •   |
| 181                        | 180 pF | ••        | •• | •• | •• | ••  | ••     | •• | •• | •• | ••  | ••  | •      | •  | •  | •  | •   | •   | •   |
| 221                        | 220 pF |           |    |    |    |     | ••     | •• | •• | •• | ••  | ••  | •      | •  | •  | •  | •   | •   | •   |
| 271                        | 270 pF |           |    |    |    |     | ••     | •• | •• | •• | ••  | ••  | •      | •  | •  | •  | •   | •   | •   |
| 331                        | 330 pF |           |    |    |    |     | ••     | •• | •• | •• | ••  | ••  | •      | •  | •  | •  | •   | •   | •   |
| 391                        | 390 pF |           |    |    |    |     | ••     | •• | •• | •• | ••  | ••  | •      | •  | •  | •  | •   | •   | •   |
| 471                        | 470 pF |           |    |    |    |     | ••     | •• | •• | •• | ••  | ••  | •      | •  | •  | •  | •   | •   | •   |
| 561                        | 560 pF |           |    |    |    |     | ••     | •• | •• | •• | ••  | ••  | •      | •  | •  | •  | •   | •   | •   |
| 681                        | 680 pF |           |    |    |    |     | ••     | •• | •• | •• | ••  | ••  | •      | •  | •  | •  | •   | •   | •   |
| 821                        | 820 pF |           |    |    |    |     | ••     | •• | •• | •• | ••  | ••  | •      | •  | •  | •  | •   | •   | •   |
| 102                        | 1.0 nF |           |    |    |    |     | ••     | •• | •• | •• | ••  | ••  | •      | •  | •  | •  | •   | •   | •   |
| 122                        | 1.2 nF |           |    |    |    |     | ••     | •• | •• | •• | ••  | ••  | •      | •  | •  | •  | •   | •   | •   |
| 152                        | 1.5 nF |           |    |    |    |     | ••     | •• | •• | •• | ••  | ••  | •      | •  | •  | •  | •   | •   | •   |
| 182                        | 1.8 nF |           |    |    |    |     | ••     | •• | •• | •• | ••  | ••  | •      | •  | •  | •  | •   | •   | •   |
| 222                        | 2.2 nF |           |    |    |    |     |        |    |    |    |     |     | •      | •  | •  | •  | •   | •   | •   |
| 272                        | 2.7 nF |           |    |    |    |     |        |    |    |    |     |     | •      | •  | •  | •  | •   | •   | •   |
| 332                        | 3.3 nF |           |    |    |    |     |        |    |    |    |     |     | •      | •  | •  | •  | •   | •   | •   |
| 392                        | 3.9 nF |           |    |    |    |     |        |    |    |    |     |     |        |    |    |    |     |     |     |
| 472                        | 4.7 nF |           |    |    |    |     |        |    |    |    |     |     |        |    |    |    |     |     |     |
| 562                        | 5.6 nF |           |    |    |    |     |        |    |    |    |     |     |        |    |    |    |     |     |     |
| 682                        | 6.8 nF |           |    |    |    |     |        |    |    |    |     |     |        |    |    |    |     |     |     |
| 822                        | 8.2 nF |           |    |    |    |     |        |    |    |    |     |     |        |    |    |    |     |     |     |
| 103                        | 10 nF  |           |    |    |    |     |        |    |    |    |     |     |        |    |    |    |     |     |     |
| 123                        | 12 nF  |           |    |    |    |     |        |    |    |    |     |     |        |    |    |    |     |     |     |

Notes

- RoHS-compliant
- Flamed paper tape • Plastic tape



| SELECTION CHART            |        |           |    |    |     |     |     |        |    |    |     |     |     |
|----------------------------|--------|-----------|----|----|-----|-----|-----|--------|----|----|-----|-----|-----|
| DIELECTRIC                 |        | COG (NP0) |    |    |     |     |     |        |    |    |     |     |     |
| STYLE                      |        | VJ1206    |    |    |     |     |     | VJ1210 |    |    |     |     |     |
| CASE CODE                  |        | 1206      |    |    |     |     |     | 1210   |    |    |     |     |     |
| VOLTAGE (V <sub>DC</sub> ) |        | 16        | 25 | 50 | 100 | 200 | 500 | 600    | 25 | 50 | 100 | 200 | 500 |
| VOLTAGE CODE               |        | J         | X  | A  | B   | C   | E   | N      | X  | A  | B   | C   | E   |
| CAP. CODE                  | CAP.   |           |    |    |     |     |     |        |    |    |     |     |     |
| 0R5                        | 0.5 pF | •         | •  | •  | •   | •   | •   | •      | •  | •  | •   | •   | •   |
| 1R0                        | 1.0 pF | •         | •  | •  | •   | •   | •   | •      | •  | •  | •   | •   | •   |
| 1R2                        | 1.2 pF | •         | •  | •  | •   | •   | •   | •      | •  | •  | •   | •   | •   |
| 1R5                        | 1.5 pF | •         | •  | •  | •   | •   | •   | •      | •  | •  | •   | •   | •   |
| 1R8                        | 1.8 pF | •         | •  | •  | •   | •   | •   | •      | •  | •  | •   | •   | •   |
| 2R2                        | 2.2 pF | •         | •  | •  | •   | •   | •   | •      | •  | •  | •   | •   | •   |
| 2R7                        | 2.7 pF | •         | •  | •  | •   | •   | •   | •      | •  | •  | •   | •   | •   |
| 3R3                        | 3.3 pF | •         | •  | •  | •   | •   | •   | •      | •  | •  | •   | •   | •   |
| 3R9                        | 3.9 pF | •         | •  | •  | •   | •   | •   | •      | •  | •  | •   | •   | •   |
| 4R7                        | 4.7 pF | •         | •  | •  | •   | •   | •   | •      | •  | •  | •   | •   | •   |
| 5R6                        | 5.6 pF | •         | •  | •  | •   | •   | •   | •      | •  | •  | •   | •   | •   |
| 6R8                        | 6.8 pF | •         | •  | •  | •   | •   | •   | •      | •  | •  | •   | •   | •   |
| 8R2                        | 8.2 pF | •         | •  | •  | •   | •   | •   | •      | •  | •  | •   | •   | •   |
| 100                        | 10 pF  | •         | •  | •  | •   | •   | •   | •      | •  | •  | •   | •   | •   |
| 120                        | 12 pF  | •         | •  | •  | •   | •   | •   | •      | •  | •  | •   | •   | •   |
| 150                        | 15 pF  | •         | •  | •  | •   | •   | •   | •      | •  | •  | •   | •   | •   |
| 180                        | 18 pF  | •         | •  | •  | •   | •   | •   | •      | •  | •  | •   | •   | •   |
| 220                        | 22 pF  | •         | •  | •  | •   | •   | •   | •      | •  | •  | •   | •   | •   |
| 270                        | 27 pF  | •         | •  | •  | •   | •   | •   | •      | •  | •  | •   | •   | •   |
| 330                        | 33 pF  | •         | •  | •  | •   | •   | •   | •      | •  | •  | •   | •   | •   |
| 390                        | 39 pF  | •         | •  | •  | •   | •   | •   | •      | •  | •  | •   | •   | •   |
| 470                        | 47 pF  | •         | •  | •  | •   | •   | •   | •      | •  | •  | •   | •   | •   |
| 560                        | 56 pF  | •         | •  | •  | •   | •   | •   | •      | •  | •  | •   | •   | •   |
| 680                        | 68 pF  | •         | •  | •  | •   | •   | •   | •      | •  | •  | •   | •   | •   |
| 820                        | 82 pF  | •         | •  | •  | •   | •   | •   | •      | •  | •  | •   | •   | •   |
| 101                        | 100 pF | •         | •  | •  | •   | •   | •   | •      | •  | •  | •   | •   | •   |
| 121                        | 120 pF | •         | •  | •  | •   | •   | •   | •      | •  | •  | •   | •   | •   |
| 151                        | 150 pF | •         | •  | •  | •   | •   | •   | •      | •  | •  | •   | •   | •   |
| 181                        | 180 pF | •         | •  | •  | •   | •   | •   | •      | •  | •  | •   | •   | •   |
| 221                        | 220 pF | •         | •  | •  | •   | •   | •   | •      | •  | •  | •   | •   | •   |
| 271                        | 270 pF | •         | •  | •  | •   | •   | •   | •      | •  | •  | •   | •   | •   |
| 331                        | 330 pF | •         | •  | •  | •   | •   | •   | •      | •  | •  | •   | •   | •   |
| 391                        | 390 pF | •         | •  | •  | •   | •   | •   | •      | •  | •  | •   | •   | •   |
| 471                        | 470 pF | •         | •  | •  | •   | •   | •   | •      | •  | •  | •   | •   | •   |
| 561                        | 560 pF | •         | •  | •  | •   | •   | •   | •      | •  | •  | •   | •   | •   |
| 681                        | 680 pF | •         | •  | •  | •   | •   | •   | •      | •  | •  | •   | •   | •   |
| 821                        | 820 pF | •         | •  | •  | •   | •   | •   | •      | •  | •  | •   | •   | •   |
| 102                        | 1.0 nF | •         | •  | •  | •   | •   | •   | •      | •  | •  | •   | •   | •   |
| 122                        | 1.2 nF | •         | •  | •  | •   | •   | •   | •      | •  | •  | •   | •   | •   |
| 152                        | 1.5 nF | •         | •  | •  | •   | •   | •   | •      | •  | •  | •   | •   | •   |
| 182                        | 1.8 nF | •         | •  | •  | •   | •   |     |        | •  | •  | •   | •   | •   |
| 222                        | 2.2 nF | •         | •  | •  | •   | •   |     |        | •  | •  | •   | •   |     |
| 272                        | 2.7 nF | •         | •  | •  | •   | •   |     |        | •  | •  | •   | •   |     |
| 332                        | 3.3 nF | •         | •  | •  | •   |     |     |        | •  | •  | •   | •   |     |
| 392                        | 3.9 nF | •         | •  | •  | •   |     |     |        | •  | •  | •   | •   |     |
| 472                        | 4.7 nF | •         | •  | •  | •   |     |     |        | •  | •  | •   | •   |     |
| 562                        | 5.6 nF | •         | •  | •  |     |     |     |        | •  | •  | •   | •   |     |
| 682                        | 6.8 nF | •         | •  | •  |     |     |     |        | •  | •  | •   |     |     |
| 822                        | 8.2 nF | •         | •  | •  |     |     |     |        | •  | •  |     |     |     |
| 103                        | 10 nF  | •         | •  | •  |     |     |     |        | •  | •  |     |     |     |
| 123                        | 12 nF  |           |    |    |     |     |     |        | •  | •  |     |     |     |

Notes

- RoHS-compliant
- Flamed paper tape • Plastic tape



| SELECTION CHART            |        |           |    |     |     |     |     |      |      |      |      |        |    |     |     |     |     |      |      |      |      |
|----------------------------|--------|-----------|----|-----|-----|-----|-----|------|------|------|------|--------|----|-----|-----|-----|-----|------|------|------|------|
| DIELECTRIC                 |        | COG (NP0) |    |     |     |     |     |      |      |      |      |        |    |     |     |     |     |      |      |      |      |
| STYLE                      |        | VJ1808    |    |     |     |     |     |      |      |      |      | VJ1812 |    |     |     |     |     |      |      |      |      |
| CASE CODE                  |        | 1808      |    |     |     |     |     |      |      |      |      | 1812   |    |     |     |     |     |      |      |      |      |
| VOLTAGE (V <sub>DC</sub> ) |        | 25        | 50 | 100 | 200 | 500 | 630 | 1000 | 1500 | 2000 | 3000 | 25     | 50 | 100 | 200 | 500 | 630 | 1000 | 1500 | 2000 | 3000 |
| VOLTAGE CODE               |        | X         | A  | B   | C   | E   | L   | G    | R    | F    | H    | X      | A  | B   | C   | E   | L   | G    | R    | F    | H    |
| CAP. CODE                  | CAP.   |           |    |     |     |     |     |      |      |      |      |        |    |     |     |     |     |      |      |      |      |
| 100                        | 10 pF  |           |    |     |     |     | •   | •    | •    | •    | •    |        |    |     |     |     | •   | •    | •    | •    | •    |
| 120                        | 12 pF  |           |    |     |     |     | •   | •    | •    | •    | •    |        |    |     |     |     | •   | •    | •    | •    | •    |
| 150                        | 15 pF  |           |    |     |     |     | •   | •    | •    | •    | •    |        |    |     |     |     | •   | •    | •    | •    | •    |
| 180                        | 18 pF  |           |    |     |     |     | •   | •    | •    | •    | •    |        |    |     |     |     | •   | •    | •    | •    | •    |
| 220                        | 22 pF  | •         | •  | •   | •   | •   | •   | •    | •    | •    | •    |        |    |     |     |     | •   | •    | •    | •    | •    |
| 270                        | 27 pF  | •         | •  | •   | •   | •   | •   | •    | •    | •    | •    |        |    |     |     |     | •   | •    | •    | •    | •    |
| 330                        | 33 pF  | •         | •  | •   | •   | •   | •   | •    | •    | •    | •    |        |    |     |     |     | •   | •    | •    | •    | •    |
| 390                        | 39 pF  | •         | •  | •   | •   | •   | •   | •    | •    | •    | •    |        |    |     |     |     | •   | •    | •    | •    | •    |
| 470                        | 47 pF  | •         | •  | •   | •   | •   | •   | •    | •    | •    | •    | •      | •  | •   | •   | •   | •   | •    | •    | •    | •    |
| 560                        | 56 pF  | •         | •  | •   | •   | •   | •   | •    | •    | •    | •    | •      | •  | •   | •   | •   | •   | •    | •    | •    | •    |
| 680                        | 68 pF  | •         | •  | •   | •   | •   | •   | •    | •    | •    | •    | •      | •  | •   | •   | •   | •   | •    | •    | •    | •    |
| 820                        | 82 pF  | •         | •  | •   | •   | •   | •   | •    | •    | •    | •    | •      | •  | •   | •   | •   | •   | •    | •    | •    | •    |
| 101                        | 100 pF | •         | •  | •   | •   | •   | •   | •    | •    | •    | •    | •      | •  | •   | •   | •   | •   | •    | •    | •    | •    |
| 121                        | 120 pF | •         | •  | •   | •   | •   | •   | •    | •    | •    | •    |        |    |     |     |     | •   | •    | •    | •    | •    |
| 151                        | 150 pF | •         | •  | •   | •   | •   | •   | •    | •    | •    | •    |        |    |     |     |     | •   | •    | •    | •    | •    |
| 181                        | 180 pF | •         | •  | •   | •   | •   | •   | •    | •    | •    | •    |        |    |     |     |     | •   | •    | •    | •    | •    |
| 221                        | 220 pF | •         | •  | •   | •   | •   | •   | •    | •    | •    | •    |        |    |     |     |     | •   | •    | •    | •    | •    |
| 271                        | 270 pF | •         | •  | •   | •   | •   | •   | •    |      |      |      |        |    |     |     |     | •   | •    | •    | •    | •    |
| 331                        | 330 pF | •         | •  | •   | •   | •   | •   | •    |      |      |      |        |    |     |     |     | •   | •    | •    | •    | •    |
| 391                        | 390 pF | •         | •  | •   | •   | •   | •   | •    |      |      |      |        |    |     |     |     | •   | •    | •    | •    | •    |
| 471                        | 470 pF | •         | •  | •   | •   | •   | •   | •    |      |      |      |        |    |     |     |     | •   | •    | •    | •    | •    |
| 561                        | 560 pF | •         | •  | •   | •   | •   | •   | •    |      |      |      |        |    |     |     |     | •   | •    | •    | •    | •    |
| 681                        | 680 pF | •         | •  | •   | •   | •   | •   | •    |      |      |      |        |    |     |     |     | •   | •    | •    | •    | •    |
| 821                        | 820 pF | •         | •  | •   | •   | •   | •   | •    |      |      |      |        |    |     |     |     | •   | •    | •    | •    | •    |
| 102                        | 1.0 nF | •         | •  | •   | •   | •   | •   | •    |      |      |      |        |    |     |     |     | •   | •    | •    | •    | •    |
| 122                        | 1.2 nF | •         | •  | •   | •   | •   |     |      |      |      |      |        |    |     |     |     | •   | •    | •    | •    | •    |
| 152                        | 1.5 nF | •         | •  | •   | •   | •   |     |      |      |      |      |        |    |     |     |     | •   | •    | •    | •    | •    |
| 182                        | 1.8 nF | •         | •  | •   | •   | •   |     |      |      |      |      |        |    |     |     |     | •   | •    | •    | •    | •    |
| 222                        | 2.2 nF | •         | •  | •   | •   |     |     |      |      |      |      |        |    |     |     |     | •   | •    | •    | •    | •    |
| 272                        | 2.7 nF | •         | •  | •   | •   |     |     |      |      |      |      |        |    |     |     |     | •   | •    | •    | •    | •    |
| 332                        | 3.3 nF | •         | •  | •   | •   |     |     |      |      |      |      |        |    |     |     |     | •   | •    | •    | •    | •    |
| 392                        | 3.9 nF | •         | •  | •   | •   |     |     |      |      |      |      |        |    |     |     |     | •   | •    | •    | •    | •    |
| 472                        | 4.7 nF | •         | •  | •   | •   |     |     |      |      |      |      |        |    |     |     |     | •   | •    | •    | •    | •    |
| 562                        | 5.6 nF | •         | •  | •   | •   |     |     |      |      |      |      |        |    |     |     |     | •   | •    | •    | •    | •    |
| 682                        | 6.8 nF | •         | •  | •   | •   |     |     |      |      |      |      |        |    |     |     |     | •   | •    | •    | •    | •    |
| 822                        | 8.2 nF | •         | •  | •   |     |     |     |      |      |      |      |        |    |     |     |     | •   | •    | •    | •    | •    |
| 103                        | 10 nF  | •         | •  |     |     |     |     |      |      |      |      |        |    |     |     |     | •   | •    | •    | •    | •    |
| 123                        | 12 nF  |           |    |     |     |     |     |      |      |      |      |        |    |     |     |     | •   | •    | •    | •    | •    |
| 153                        | 15 nF  |           |    |     |     |     |     |      |      |      |      |        |    |     |     |     | •   | •    | •    | •    | •    |
| 183                        | 18 nF  |           |    |     |     |     |     |      |      |      |      |        |    |     |     |     | •   | •    | •    | •    | •    |
| 223                        | 22 nF  |           |    |     |     |     |     |      |      |      |      |        |    |     |     |     | •   | •    | •    | •    | •    |
| 273                        | 27 nF  |           |    |     |     |     |     |      |      |      |      |        |    |     |     |     | •   | •    | •    | •    | •    |
| 333                        | 33 nF  |           |    |     |     |     |     |      |      |      |      |        |    |     |     |     |     |      |      |      |      |
| 393                        | 39 nF  |           |    |     |     |     |     |      |      |      |      |        |    |     |     |     |     |      |      |      |      |
| 473                        | 47 nF  |           |    |     |     |     |     |      |      |      |      |        |    |     |     |     |     |      |      |      |      |
| 563                        | 56 nF  |           |    |     |     |     |     |      |      |      |      |        |    |     |     |     |     |      |      |      |      |
| 683                        | 68 nF  |           |    |     |     |     |     |      |      |      |      |        |    |     |     |     |     |      |      |      |      |

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| SELECTION CHART            |        |           |    |     |     |     |     |        |    |    |     |     |     |        |      |    |    |     |     |     |     |      |
|----------------------------|--------|-----------|----|-----|-----|-----|-----|--------|----|----|-----|-----|-----|--------|------|----|----|-----|-----|-----|-----|------|
| DIELECTRIC                 |        | C0G (NP0) |    |     |     |     |     |        |    |    |     |     |     |        |      |    |    |     |     |     |     |      |
| STYLE                      |        | VJ1825    |    |     |     |     |     | VJ2220 |    |    |     |     |     | VJ2225 |      |    |    |     |     |     |     |      |
| CASE CODE                  |        | 1825      |    |     |     |     |     | 2220   |    |    |     |     |     | 2225   |      |    |    |     |     |     |     |      |
| VOLTAGE (V <sub>DC</sub> ) |        | 25        | 50 | 100 | 200 | 500 | 630 | 1000   | 25 | 50 | 100 | 200 | 500 | 630    | 1000 | 25 | 50 | 100 | 200 | 500 | 630 | 1000 |
| VOLTAGE CODE               |        | X         | A  | B   | C   | E   | L   | G      | X  | A  | B   | C   | E   | L      | G    | X  | A  | B   | C   | E   | L   | G    |
| CAP. CODE                  | CAP.   |           |    |     |     |     |     |        |    |    |     |     |     |        |      |    |    |     |     |     |     |      |
| 100                        | 10 pF  |           |    |     |     |     |     |        |    |    |     |     |     |        |      |    |    |     |     |     |     |      |
| 120                        | 12 pF  |           |    |     |     |     |     |        |    |    |     |     |     |        |      |    |    |     |     |     |     |      |
| 150                        | 15 pF  |           |    |     |     |     | •   | •      |    |    |     |     |     |        |      |    |    |     |     |     |     |      |
| 180                        | 18 pF  |           |    |     |     |     | •   | •      |    |    |     |     |     |        |      |    |    |     |     |     |     |      |
| 220                        | 22 pF  |           |    |     |     |     | •   | •      |    |    |     |     |     |        |      |    |    |     |     |     |     |      |
| 270                        | 27 pF  |           |    |     |     |     | •   | •      |    |    |     |     |     |        |      |    |    |     |     |     |     |      |
| 330                        | 33 pF  |           |    |     |     |     | •   | •      |    |    |     |     |     |        |      |    |    |     |     |     |     |      |
| 390                        | 39 pF  |           |    |     |     |     | •   | •      |    |    |     |     |     |        |      |    |    |     |     |     |     |      |
| 470                        | 47 pF  |           |    |     |     |     | •   | •      |    |    |     |     |     |        |      |    |    |     |     |     |     |      |
| 560                        | 56 pF  |           |    |     |     |     | •   | •      |    |    |     |     |     |        |      |    |    |     |     |     |     |      |
| 680                        | 68 pF  |           |    |     |     |     | •   | •      |    |    |     |     |     |        |      |    |    |     |     |     |     |      |
| 820                        | 82 pF  |           |    |     |     |     | •   | •      |    |    |     |     |     |        |      |    |    |     |     |     |     |      |
| 101                        | 100 pF | •         | •  | •   | •   | •   | •   | •      | •  | •  | •   | •   | •   | •      |      |    |    |     |     |     |     |      |
| 121                        | 120 pF | •         | •  | •   | •   | •   | •   | •      | •  | •  | •   | •   | •   | •      |      |    | •  | •   | •   | •   | •   |      |
| 151                        | 150 pF | •         | •  | •   | •   | •   | •   | •      | •  | •  | •   | •   | •   | •      |      |    | •  | •   | •   | •   | •   |      |
| 181                        | 180 pF | •         | •  | •   | •   | •   | •   | •      | •  | •  | •   | •   | •   | •      |      |    | •  | •   | •   | •   | •   |      |
| 221                        | 220 pF | •         | •  | •   | •   | •   | •   | •      | •  | •  | •   | •   | •   | •      |      |    | •  | •   | •   | •   | •   |      |
| 271                        | 270 pF | •         | •  | •   | •   | •   | •   | •      | •  | •  | •   | •   | •   | •      | •    | •  | •  | •   | •   | •   | •   | •    |
| 331                        | 330 pF | •         | •  | •   | •   | •   | •   | •      | •  | •  | •   | •   | •   | •      | •    | •  | •  | •   | •   | •   | •   | •    |
| 391                        | 390 pF | •         | •  | •   | •   | •   | •   | •      | •  | •  | •   | •   | •   | •      | •    | •  | •  | •   | •   | •   | •   | •    |
| 471                        | 470 pF | •         | •  | •   | •   | •   | •   | •      | •  | •  | •   | •   | •   | •      | •    | •  | •  | •   | •   | •   | •   | •    |
| 561                        | 560 pF | •         | •  | •   | •   | •   | •   | •      | •  | •  | •   | •   | •   | •      | •    | •  | •  | •   | •   | •   | •   | •    |
| 681                        | 680 pF | •         | •  | •   | •   | •   | •   | •      | •  | •  | •   | •   | •   | •      | •    | •  | •  | •   | •   | •   | •   | •    |
| 821                        | 820 pF | •         | •  | •   | •   | •   | •   | •      | •  | •  | •   | •   | •   | •      | •    | •  | •  | •   | •   | •   | •   | •    |
| 102                        | 1.0 nF | •         | •  | •   | •   | •   | •   | •      | •  | •  | •   | •   | •   | •      | •    | •  | •  | •   | •   | •   | •   | •    |
| 122                        | 1.2 nF | •         | •  | •   | •   | •   | •   | •      | •  | •  | •   | •   | •   | •      | •    | •  | •  | •   | •   | •   | •   | •    |
| 152                        | 1.5 nF | •         | •  | •   | •   | •   | •   | •      | •  | •  | •   | •   | •   | •      | •    | •  | •  | •   | •   | •   | •   | •    |
| 182                        | 1.8 nF | •         | •  | •   | •   | •   | •   | •      | •  | •  | •   | •   | •   | •      | •    | •  | •  | •   | •   | •   | •   | •    |
| 222                        | 2.2 nF | •         | •  | •   | •   | •   | •   | •      | •  | •  | •   | •   | •   | •      | •    | •  | •  | •   | •   | •   | •   | •    |
| 272                        | 2.7 nF | •         | •  | •   | •   | •   |     |        | •  | •  | •   | •   | •   | •      | •    | •  | •  | •   | •   | •   | •   | •    |
| 332                        | 3.3 nF | •         | •  | •   | •   | •   |     |        | •  | •  | •   | •   | •   | •      | •    | •  | •  | •   | •   | •   | •   | •    |
| 392                        | 3.9 nF | •         | •  | •   | •   | •   |     |        | •  | •  | •   | •   | •   | •      | •    | •  | •  | •   | •   | •   | •   | •    |
| 472                        | 4.7 nF | •         | •  | •   | •   | •   |     |        | •  | •  | •   | •   | •   | •      | •    | •  | •  | •   | •   | •   | •   | •    |
| 562                        | 5.6 nF | •         | •  | •   | •   | •   |     |        | •  | •  | •   | •   | •   | •      |      |    | •  | •   | •   | •   | •   |      |
| 682                        | 6.8 nF | •         | •  | •   | •   | •   |     |        | •  | •  | •   | •   | •   |        |      | •  | •  | •   | •   | •   | •   |      |
| 822                        | 8.2 nF | •         | •  | •   | •   | •   |     |        | •  | •  | •   | •   | •   |        |      | •  | •  | •   | •   | •   | •   |      |
| 103                        | 10 nF  | •         | •  | •   | •   | •   |     |        | •  | •  | •   | •   | •   |        |      | •  | •  | •   | •   | •   | •   |      |
| 123                        | 12 nF  | •         | •  | •   | •   | •   |     |        | •  | •  | •   | •   | •   |        |      | •  | •  | •   | •   | •   | •   | •    |
| 153                        | 15 nF  | •         | •  | •   | •   | •   |     |        | •  | •  | •   | •   | •   |        |      | •  | •  | •   | •   | •   | •   |      |
| 183                        | 18 nF  | •         | •  | •   | •   | •   |     |        | •  | •  | •   | •   | •   |        |      | •  | •  | •   | •   | •   | •   |      |
| 223                        | 22 nF  | •         | •  | •   | •   | •   |     |        | •  | •  | •   | •   | •   |        |      | •  | •  | •   | •   | •   | •   |      |
| 273                        | 27 nF  | •         | •  | •   | •   | •   |     |        | •  | •  | •   | •   | •   |        |      | •  | •  | •   | •   | •   | •   |      |
| 333                        | 33 nF  | •         | •  | •   | •   | •   |     |        | •  | •  | •   | •   | •   |        |      | •  | •  | •   | •   | •   | •   |      |
| 393                        | 39 nF  | •         | •  |     |     |     |     |        | •  | •  |     |     |     |        |      | •  | •  | •   | •   | •   | •   |      |
| 473                        | 47 nF  |           |    |     |     |     |     |        | •  | •  |     |     |     |        |      | •  | •  | •   | •   | •   | •   |      |
| 563                        | 56 nF  |           |    |     |     |     |     |        |    |    |     |     |     |        |      | •  | •  |     |     |     |     |      |
| 683                        | 68 nF  |           |    |     |     |     |     |        |    |    |     |     |     |        |      |    |    |     |     |     |     |      |

**Notes**

- RoHS-compliant
- Flamed paper tape • Plastic tape



| SELECTION CHART            |        |                        |        |        |    |    |        |        |    |    |    |        |     |    |    |    |    |     |     |
|----------------------------|--------|------------------------|--------|--------|----|----|--------|--------|----|----|----|--------|-----|----|----|----|----|-----|-----|
| DIELECTRIC                 |        | X7R/X5R <sup>(1)</sup> |        |        |    |    |        |        |    |    |    |        |     |    |    |    |    |     |     |
| STYLE                      |        | VJ0402                 |        |        |    |    | VJ0603 |        |    |    |    | VJ0805 |     |    |    |    |    |     |     |
| CASE CODE                  |        | 0402                   |        |        |    |    | 0603   |        |    |    |    | 0805   |     |    |    |    |    |     |     |
| VOLTAGE (V <sub>DC</sub> ) |        | 6.3                    | 10     | 16     | 25 | 50 | 100    | 6.3    | 10 | 16 | 25 | 50     | 100 | 10 | 16 | 25 | 50 | 100 | 200 |
| VOLTAGE CODE               |        | Y                      | Q      | J      | X  | A  | B      | Y      | Q  | J  | X  | A      | B   | Q  | J  | X  | A  | B   | C   |
| CAP. CODE                  | CAP.   |                        |        |        |    |    |        |        |    |    |    |        |     |    |    |    |    |     |     |
| 101                        | 100 pF | ••                     | ••     | ••     | •• | •• | ••     |        |    |    |    |        |     |    |    |    |    |     |     |
| 121                        | 120 pF | ••                     | ••     | ••     | •• | •• | ••     |        |    |    |    |        |     |    |    |    |    |     |     |
| 151                        | 150 pF | ••                     | ••     | ••     | •• | •• | ••     |        |    |    |    |        |     |    |    |    |    |     |     |
| 181                        | 180 pF | ••                     | ••     | ••     | •• | •• | ••     |        |    |    |    |        |     |    |    |    |    |     |     |
| 221                        | 220 pF | ••                     | ••     | ••     | •• | •• | ••     |        |    |    |    |        |     |    |    |    |    |     |     |
| 271                        | 270 pF | ••                     | ••     | ••     | •• | •• | ••     | ••     | •• | •• | •• | ••     | ••  |    |    |    |    |     |     |
| 331                        | 330 pF | ••                     | ••     | ••     | •• | •• | ••     | ••     | •• | •• | •• | ••     | ••  |    |    |    |    |     |     |
| 391                        | 390 pF | ••                     | ••     | ••     | •• | •• | ••     | ••     | •• | •• | •• | ••     | ••  | •  | •  | •  | •  | •   | •   |
| 471                        | 470 pF | ••                     | ••     | ••     | •• | •• | ••     | ••     | •• | •• | •• | ••     | ••  | •  | •  | •  | •  | •   | •   |
| 561                        | 560 pF | ••                     | ••     | ••     | •• | •• | ••     | ••     | •• | •• | •• | ••     | ••  | •  | •  | •  | •  | •   | •   |
| 681                        | 680 pF | ••                     | ••     | ••     | •• | •• | ••     | ••     | •• | •• | •• | ••     | ••  | •  | •  | •  | •  | •   | •   |
| 821                        | 820 pF | ••                     | ••     | ••     | •• | •• | ••     | ••     | •• | •• | •• | ••     | ••  | •  | •  | •  | •  | •   | •   |
| 102                        | 1.0 nF | ••                     | ••     | ••     | •• | •• | ••     | ••     | •• | •• | •• | ••     | ••  | •  | •  | •  | •  | •   | •   |
| 122                        | 1.2 nF | ••                     | ••     | ••     | •• | •• | ••     | ••     | •• | •• | •• | ••     | ••  | •  | •  | •  | •  | •   | •   |
| 152                        | 1.5 nF | ••                     | ••     | ••     | •• | •• | ••     | ••     | •• | •• | •• | ••     | ••  | •  | •  | •  | •  | •   | •   |
| 182                        | 1.8 nF | ••                     | ••     | ••     | •• | •• | ••     | ••     | •• | •• | •• | ••     | ••  | •  | •  | •  | •  | •   | •   |
| 222                        | 2.2 nF | ••                     | ••     | ••     | •• | •• | ••     | ••     | •• | •• | •• | ••     | ••  | •  | •  | •  | •  | •   | •   |
| 272                        | 2.7 nF | ••                     | ••     | ••     | •• | •• | ••     | ••     | •• | •• | •• | ••     | ••  | •  | •  | •  | •  | •   | •   |
| 332                        | 3.3 nF | ••                     | ••     | ••     | •• | •• | ••     | ••     | •• | •• | •• | ••     | ••  | •  | •  | •  | •  | •   | •   |
| 392                        | 3.9 nF | ••                     | ••     | ••     | •• | •• | ••     | ••     | •• | •• | •• | ••     | ••  | •  | •  | •  | •  | •   | •   |
| 472                        | 4.7 nF | ••                     | ••     | ••     | •• | •• | ••     | ••     | •• | •• | •• | ••     | ••  | •  | •  | •  | •  | •   | •   |
| 562                        | 5.6 nF | ••                     | ••     | ••     | •• | •• |        | ••     | •• | •• | •• | ••     | ••  | •  | •  | •  | •  | •   | •   |
| 682                        | 6.8 nF | ••                     | ••     | ••     | •• | •• |        | ••     | •• | •• | •• | ••     | ••  | •  | •  | •  | •  | •   | •   |
| 822                        | 8.2 nF | ••                     | ••     | ••     | •• | •• |        | ••     | •• | •• | •• | ••     | ••  | •  | •  | •  | •  | •   | •   |
| 103                        | 10 nF  | ••                     | ••     | ••     | •• | •• |        | ••     | •• | •• | •• | ••     | ••  | •  | •  | •  | •  | •   | •   |
| 123                        | 12 nF  | ••                     | ••     | ••     | •• |    |        | ••     | •• | •• | •• | ••     | ••  | •  | •  | •  | •  | •   | •   |
| 153                        | 15 nF  | ••                     | ••     | ••     | •• |    |        | ••     | •• | •• | •• | ••     | ••  | •  | •  | •  | •  | •   | •   |
| 183                        | 18 nF  | ••                     | ••     | ••     |    |    |        | ••     | •• | •• | •• | ••     | ••  | •  | •  | •  | •  | •   | •   |
| 223                        | 22 nF  | ••                     | ••     | ••     |    |    |        | ••     | •• | •• | •• | ••     | ••  | •  | •  | •  | •  | •   | •   |
| 273                        | 27 nF  | X5R ••                 | X5R •• | X5R •• |    |    |        | ••     | •• | •• | •• | ••     |     | •  | •  | •  | •  | •   | •   |
| 333                        | 33 nF  | X5R ••                 | X5R •• | X5R •• |    |    |        | ••     | •• | •• | •• | ••     |     | •  | •  | •  | •  | •   | •   |
| 393                        | 39 nF  | X5R ••                 |        |        |    |    |        | ••     | •• | •• | •• | ••     |     | •  | •  | •  | •  | •   | •   |
| 473                        | 47 nF  | X5R ••                 |        |        |    |    |        | ••     | •• | •• | •• | ••     |     | •  | •  | •  | •  | •   | •   |
| 563                        | 56 nF  | X5R ••                 |        |        |    |    |        | ••     | •• | •• | •• |        |     | •  | •  | •  | •  | •   | •   |
| 683                        | 68 nF  | X5R ••                 |        |        |    |    |        | ••     | •• | •• | •• |        |     | •  | •  | •  | •  | •   | •   |
| 823                        | 82 nF  | X5R ••                 |        |        |    |    |        | ••     | •• | •• | •• |        |     | •  | •  | •  | •  | •   | •   |
| 104                        | 100 nF | X5R ••                 |        |        |    |    |        | ••     | •• | •• | •• |        |     | •  | •  | •  | •  | •   | •   |
| 124                        | 120 nF |                        |        |        |    |    |        | X5R •• |    |    |    |        |     | •  | •  | •  | •  | •   | •   |
| 154                        | 150 nF |                        |        |        |    |    |        | X5R •• |    |    |    |        |     | •  | •  | •  | •  | •   | •   |
| 184                        | 180 nF |                        |        |        |    |    |        |        |    |    |    |        |     | •  | •  | •  | •  | •   | •   |
| 224                        | 220 nF |                        |        |        |    |    |        |        |    |    |    |        |     | •  | •  | •  | •  | •   | •   |
| 274                        | 270 nF |                        |        |        |    |    |        |        |    |    |    |        |     | •  | •  | •  | •  | •   | •   |
| 334                        | 330 nF |                        |        |        |    |    |        |        |    |    |    |        |     | •  | •  | •  | •  | •   | •   |
| 394                        | 390 nF |                        |        |        |    |    |        |        |    |    |    |        |     | •  | •  | •  | •  | •   | •   |
| 474                        | 470 nF |                        |        |        |    |    |        |        |    |    |    |        |     | •  | •  | •  | •  | •   | •   |
| 564                        | 560 nF |                        |        |        |    |    |        |        |    |    |    |        |     | •  | •  | •  | •  | •   | •   |
| 684                        | 680 nF |                        |        |        |    |    |        |        |    |    |    |        |     | •  | •  | •  | •  | •   | •   |
| 824                        | 820 nF |                        |        |        |    |    |        |        |    |    |    |        |     | •  | •  | •  | •  | •   | •   |
| 105                        | 1.0 μF |                        |        |        |    |    |        |        |    |    |    |        |     |    |    |    |    |     |     |
| 125                        | 1.2 μF |                        |        |        |    |    |        |        |    |    |    |        |     |    |    |    |    |     |     |

**Notes**

•• RoHS-compliant

•• Flamed paper tape • Plastic tape

(1) See selection chart for values only available as X5R. All other values X7R.





| SELECTION CHART            |        |        |    |    |     |     |     |        |    |    |    |     |     |     |
|----------------------------|--------|--------|----|----|-----|-----|-----|--------|----|----|----|-----|-----|-----|
| DIELECTRIC                 |        | VJ1206 |    |    |     |     |     | X7R    |    |    |    |     |     |     |
| STYLE                      |        | 1206   |    |    |     |     |     | VJ1210 |    |    |    |     |     |     |
| CASE CODE                  |        | 1206   |    |    |     |     |     | 1210   |    |    |    |     |     |     |
| VOLTAGE (V <sub>DC</sub> ) |        | 16     | 25 | 50 | 100 | 200 | 500 | 16     | 25 | 50 | 75 | 100 | 200 | 500 |
| VOLTAGE CODE               |        | J      | X  | A  | B   | C   | E   | J      | X  | A  | K  | B   | C   | E   |
| CAP. CODE                  | CAP.   |        |    |    |     |     |     |        |    |    |    |     |     |     |
| 101                        | 100 pF |        |    |    |     |     |     |        |    |    |    |     |     |     |
| 121                        | 120 pF |        |    |    |     |     |     |        |    |    |    |     |     |     |
| 151                        | 150 pF |        |    |    |     |     |     |        |    |    |    |     |     |     |
| 181                        | 180 pF |        |    |    |     |     |     |        |    |    |    |     |     |     |
| 221                        | 220 pF |        |    |    |     |     |     |        |    |    |    |     |     |     |
| 271                        | 270 pF |        |    |    |     |     |     |        |    |    |    |     |     |     |
| 331                        | 330 pF |        |    |    |     |     |     |        |    |    |    |     |     |     |
| 391                        | 390 pF |        |    |    |     |     |     |        |    |    |    |     |     |     |
| 471                        | 470 pF |        |    |    |     |     |     |        |    |    |    |     |     |     |
| 561                        | 560 pF |        |    |    |     |     |     |        |    |    |    |     |     |     |
| 681                        | 680 pF | •      | •  | •  | •   | •   | •   |        |    |    |    |     |     |     |
| 821                        | 820 pF | •      | •  | •  | •   | •   | •   |        |    |    |    |     |     |     |
| 102                        | 1.0 nF | •      | •  | •  | •   | •   | •   | •      | •  | •  | •  | •   | •   | •   |
| 122                        | 1.2 nF | •      | •  | •  | •   | •   | •   | •      | •  | •  | •  | •   | •   | •   |
| 152                        | 1.5 nF | •      | •  | •  | •   | •   | •   | •      | •  | •  | •  | •   | •   | •   |
| 182                        | 1.8 nF | •      | •  | •  | •   | •   | •   | •      | •  | •  | •  | •   | •   | •   |
| 222                        | 2.2 nF | •      | •  | •  | •   | •   | •   | •      | •  | •  | •  | •   | •   | •   |
| 272                        | 2.7 nF | •      | •  | •  | •   | •   | •   | •      | •  | •  | •  | •   | •   | •   |
| 332                        | 3.3 nF | •      | •  | •  | •   | •   | •   | •      | •  | •  | •  | •   | •   | •   |
| 392                        | 3.9 nF | •      | •  | •  | •   | •   | •   | •      | •  | •  | •  | •   | •   | •   |
| 472                        | 4.7 nF | •      | •  | •  | •   | •   | •   | •      | •  | •  | •  | •   | •   | •   |
| 562                        | 5.6 nF | •      | •  | •  | •   | •   | •   | •      | •  | •  | •  | •   | •   | •   |
| 682                        | 6.8 nF | •      | •  | •  | •   | •   | •   | •      | •  | •  | •  | •   | •   | •   |
| 822                        | 8.2 nF | •      | •  | •  | •   | •   | •   | •      | •  | •  | •  | •   | •   | •   |
| 103                        | 10 nF  | •      | •  | •  | •   | •   | •   | •      | •  | •  | •  | •   | •   | •   |
| 123                        | 12 nF  | •      | •  | •  | •   | •   | •   | •      | •  | •  | •  | •   | •   | •   |
| 153                        | 15 nF  | •      | •  | •  | •   | •   | •   | •      | •  | •  | •  | •   | •   | •   |
| 183                        | 18 nF  | •      | •  | •  | •   | •   | •   | •      | •  | •  | •  | •   | •   | •   |
| 223                        | 22 nF  | •      | •  | •  | •   | •   |     | •      | •  | •  | •  | •   | •   | •   |
| 273                        | 27 nF  | •      | •  | •  | •   | •   |     | •      | •  | •  | •  | •   | •   | •   |
| 333                        | 33 nF  | •      | •  | •  | •   | •   |     | •      | •  | •  | •  | •   | •   | •   |
| 393                        | 39 nF  | •      | •  | •  | •   | •   |     | •      | •  | •  | •  | •   | •   | •   |
| 473                        | 47 nF  | •      | •  | •  | •   | •   |     | •      | •  | •  | •  | •   | •   | •   |
| 563                        | 56 nF  | •      | •  | •  | •   | •   |     | •      | •  | •  | •  | •   | •   |     |
| 683                        | 68 nF  | •      | •  | •  | •   | •   |     | •      | •  | •  | •  | •   | •   |     |
| 823                        | 82 nF  | •      | •  | •  | •   | •   |     | •      | •  | •  | •  | •   | •   |     |
| 104                        | 100 nF | •      | •  | •  | •   | •   |     | •      | •  | •  | •  | •   | •   |     |
| 124                        | 120 nF | •      | •  | •  | •   |     |     | •      | •  | •  | •  | •   | •   |     |
| 154                        | 150 nF | •      | •  | •  | •   |     |     | •      | •  | •  | •  | •   | •   |     |
| 184                        | 180 nF | •      | •  | •  | •   |     |     | •      | •  | •  | •  | •   | •   |     |
| 224                        | 220 nF | •      | •  | •  | •   |     |     | •      | •  | •  | •  | •   | •   |     |
| 274                        | 270 nF | •      | •  | •  | •   |     |     | •      | •  | •  | •  | •   | •   |     |
| 334                        | 330 nF | •      | •  | •  |     |     |     | •      | •  | •  | •  | •   | •   |     |
| 394                        | 390 nF | •      | •  | •  |     |     |     | •      | •  | •  | •  | •   | •   |     |
| 474                        | 470 nF | •      | •  |    |     |     |     | •      | •  | •  | •  | •   | •   |     |
| 564                        | 560 nF | •      | •  |    |     |     |     | •      | •  | •  | •  | •   | •   |     |
| 684                        | 680 nF | •      | •  |    |     |     |     | •      | •  | •  | •  | •   | •   |     |
| 824                        | 820 nF | •      | •  |    |     |     |     | •      | •  | •  | •  | •   | •   |     |
| 105                        | 1.0 μF | •      | •  |    |     |     |     | •      | •  | •  | •  | •   | •   |     |
| 125                        | 1.2 μF |        |    |    |     |     |     |        |    |    |    |     |     |     |

Notes

- RoHS-compliant
- Flamed paper tape • Plastic tape



| SELECTION CHART            |        |        |    |     |     |     |     |      |      |      |      |        |    |    |     |     |     |     |     |      |      |      |      |
|----------------------------|--------|--------|----|-----|-----|-----|-----|------|------|------|------|--------|----|----|-----|-----|-----|-----|-----|------|------|------|------|
| DIELECTRIC                 |        | X7R    |    |     |     |     |     |      |      |      |      |        |    |    |     |     |     |     |     |      |      |      |      |
| STYLE                      |        | VJ1808 |    |     |     |     |     |      |      |      |      | VJ1812 |    |    |     |     |     |     |     |      |      |      |      |
| CASE CODE                  |        | 1808   |    |     |     |     |     |      |      |      |      | 1812   |    |    |     |     |     |     |     |      |      |      |      |
| VOLTAGE (V <sub>DC</sub> ) |        | 25     | 50 | 100 | 200 | 500 | 630 | 1000 | 1500 | 2000 | 3000 | 25     | 50 | 75 | 100 | 200 | 250 | 500 | 630 | 1000 | 1500 | 2000 | 3000 |
| VOLTAGE CODE               |        | X      | A  | B   | C   | E   | L   | G    | R    | F    | H    | X      | A  | K  | B   | C   | P   | E   | L   | G    | R    | F    | H    |
| CAP. CODE                  | CAP.   |        |    |     |     |     |     |      |      |      |      |        |    |    |     |     |     |     |     |      |      |      |      |
| 221                        | 220 pF |        |    |     |     |     |     |      |      |      | •    |        |    |    |     |     |     |     |     |      |      |      |      |
| 271                        | 270 pF |        |    |     |     |     |     |      |      |      | •    |        |    |    |     |     |     | •   | •   | •    | •    | •    | •    |
| 471                        | 470 pF |        |    |     |     |     | •   | •    | •    | •    | •    |        |    |    |     |     |     | •   | •   | •    | •    | •    | •    |
| 561                        | 560 pF |        |    |     |     |     | •   | •    | •    | •    | •    |        |    |    |     |     |     | •   | •   | •    | •    | •    | •    |
| 681                        | 680 pF |        |    |     |     |     | •   | •    | •    | •    | •    |        |    |    |     |     |     | •   | •   | •    | •    | •    | •    |
| 821                        | 820 pF |        |    |     |     |     | •   | •    | •    | •    | •    |        |    |    |     |     |     | •   | •   | •    | •    | •    | •    |
| 102                        | 1.0 nF | •      | •  | •   | •   | •   | •   | •    | •    | •    | •    |        |    |    |     |     |     | •   | •   | •    | •    | •    | •    |
| 122                        | 1.2 nF | •      | •  | •   | •   | •   | •   | •    | •    | •    | •    |        |    |    |     |     |     | •   | •   | •    | •    | •    | •    |
| 152                        | 1.5 nF | •      | •  | •   | •   | •   | •   | •    | •    | •    | •    |        |    |    |     |     |     | •   | •   | •    | •    | •    | •    |
| 182                        | 1.8 nF | •      | •  | •   | •   | •   | •   | •    | •    | •    | •    |        |    |    |     |     |     | •   | •   | •    | •    | •    | •    |
| 222                        | 2.2 nF | •      | •  | •   | •   | •   | •   | •    | •    | •    | •    |        |    |    |     |     |     | •   | •   | •    | •    | •    | •    |
| 272                        | 2.7 nF | •      | •  | •   | •   | •   | •   | •    | •    | •    | •    |        |    |    |     |     |     | •   | •   | •    | •    | •    | •    |
| 332                        | 3.3 nF | •      | •  | •   | •   | •   | •   | •    | •    | •    | •    |        |    |    |     |     |     | •   | •   | •    | •    | •    | •    |
| 392                        | 3.9 nF | •      | •  | •   | •   | •   | •   | •    | •    | •    | •    |        | •  | •  | •   | •   | •   | •   | •   | •    | •    | •    | •    |
| 472                        | 4.7 nF | •      | •  | •   | •   | •   | •   | •    | •    | •    | •    |        | •  | •  | •   | •   | •   | •   | •   | •    | •    | •    | •    |
| 562                        | 5.6 nF | •      | •  | •   | •   | •   | •   | •    | •    | •    | •    |        | •  | •  | •   | •   | •   | •   | •   | •    | •    | •    | •    |
| 682                        | 6.8 nF | •      | •  | •   | •   | •   | •   | •    | •    | •    | •    |        | •  | •  | •   | •   | •   | •   | •   | •    | •    | •    | •    |
| 822                        | 8.2 nF | •      | •  | •   | •   | •   | •   | •    | •    | •    | •    |        | •  | •  | •   | •   | •   | •   | •   | •    | •    | •    | •    |
| 103                        | 10 µF  | •      | •  | •   | •   | •   | •   | •    | •    | •    | •    |        | •  | •  | •   | •   | •   | •   | •   | •    | •    | •    | •    |
| 123                        | 12 µF  | •      | •  | •   | •   | •   | •   | •    | •    | •    | •    |        | •  | •  | •   | •   | •   | •   | •   | •    | •    | •    | •    |
| 153                        | 15 µF  | •      | •  | •   | •   | •   | •   | •    | •    | •    | •    |        | •  | •  | •   | •   | •   | •   | •   | •    | •    | •    | •    |
| 183                        | 18 nF  | •      | •  | •   | •   | •   | •   | •    | •    | •    | •    |        | •  | •  | •   | •   | •   | •   | •   | •    | •    | •    | •    |
| 223                        | 22 nF  | •      | •  | •   | •   | •   | •   | •    | •    | •    | •    |        | •  | •  | •   | •   | •   | •   | •   | •    | •    | •    | •    |
| 273                        | 27 nF  | •      | •  | •   | •   | •   | •   | •    | •    | •    | •    |        | •  | •  | •   | •   | •   | •   | •   | •    | •    | •    | •    |
| 333                        | 33 nF  | •      | •  | •   | •   | •   | •   | •    | •    | •    | •    |        | •  | •  | •   | •   | •   | •   | •   | •    | •    | •    | •    |
| 393                        | 39 nF  | •      | •  | •   | •   | •   | •   | •    | •    | •    | •    |        | •  | •  | •   | •   | •   | •   | •   | •    | •    | •    | •    |
| 473                        | 47 nF  | •      | •  | •   | •   | •   | •   | •    | •    | •    | •    |        | •  | •  | •   | •   | •   | •   | •   | •    | •    | •    | •    |
| 563                        | 56 nF  | •      | •  | •   | •   | •   | •   | •    | •    | •    | •    |        | •  | •  | •   | •   | •   | •   | •   | •    | •    | •    | •    |
| 683                        | 68 nF  | •      | •  | •   | •   | •   | •   | •    | •    | •    | •    |        | •  | •  | •   | •   | •   | •   | •   | •    | •    | •    | •    |
| 823                        | 82 nF  | •      | •  | •   | •   | •   | •   | •    | •    | •    | •    |        | •  | •  | •   | •   | •   | •   | •   | •    | •    | •    | •    |
| 104                        | 100 nF | •      | •  | •   | •   | •   | •   | •    | •    | •    | •    |        | •  | •  | •   | •   | •   | •   | •   | •    | •    | •    | •    |
| 124                        | 120 nF | •      | •  | •   | •   | •   | •   | •    | •    | •    | •    |        | •  | •  | •   | •   | •   | •   | •   | •    | •    | •    | •    |
| 154                        | 150 nF | •      | •  | •   | •   | •   | •   | •    | •    | •    | •    |        | •  | •  | •   | •   | •   | •   | •   | •    | •    | •    | •    |
| 184                        | 180 nF | •      | •  | •   | •   | •   | •   | •    | •    | •    | •    |        | •  | •  | •   | •   | •   | •   | •   | •    | •    | •    | •    |
| 224                        | 220 nF | •      | •  | •   | •   | •   | •   | •    | •    | •    | •    |        | •  | •  | •   | •   | •   | •   | •   | •    | •    | •    | •    |
| 274                        | 270 nF | •      | •  | •   | •   | •   | •   | •    | •    | •    | •    |        | •  | •  | •   | •   | •   | •   | •   | •    | •    | •    | •    |
| 334                        | 330 nF |        |    |     |     |     |     |      |      |      |      |        | •  | •  | •   | •   | •   | •   | •   | •    | •    | •    | •    |
| 394                        | 390 nF |        |    |     |     |     |     |      |      |      |      |        | •  | •  | •   | •   | •   | •   | •   | •    | •    | •    | •    |
| 474                        | 470 nF |        |    |     |     |     |     |      |      |      |      |        | •  | •  | •   | •   | •   | •   | •   | •    | •    | •    | •    |
| 564                        | 560 nF |        |    |     |     |     |     |      |      |      |      |        | •  | •  | •   | •   | •   | •   | •   | •    | •    | •    | •    |
| 684                        | 680 nF |        |    |     |     |     |     |      |      |      |      |        | •  | •  | •   | •   | •   | •   | •   | •    | •    | •    | •    |
| 824                        | 820 nF |        |    |     |     |     |     |      |      |      |      |        | •  | •  | •   | •   | •   | •   | •   | •    | •    | •    | •    |
| 105                        | 1.0 µF |        |    |     |     |     |     |      |      |      |      |        | •  | •  | •   | •   | •   | •   | •   | •    | •    | •    | •    |
| 125                        | 1.2 µF |        |    |     |     |     |     |      |      |      |      |        |    |    |     |     |     |     |     |      |      |      |      |
| 155                        | 1.5 µF |        |    |     |     |     |     |      |      |      |      |        |    |    |     |     |     |     |     |      |      |      |      |
| 185                        | 1.8 µF |        |    |     |     |     |     |      |      |      |      |        |    |    |     |     |     |     |     |      |      |      |      |
| 225                        | 2.2 µF |        |    |     |     |     |     |      |      |      |      |        |    |    |     |     |     |     |     |      |      |      |      |
| 275                        | 2.7 µF |        |    |     |     |     |     |      |      |      |      |        |    |    |     |     |     |     |     |      |      |      |      |
| 335                        | 3.3 µF |        |    |     |     |     |     |      |      |      |      |        |    |    |     |     |     |     |     |      |      |      |      |
| 395                        | 3.9 µF |        |    |     |     |     |     |      |      |      |      |        |    |    |     |     |     |     |     |      |      |      |      |
| 475                        | 4.7 µF |        |    |     |     |     |     |      |      |      |      |        |    |    |     |     |     |     |     |      |      |      |      |
| 565                        | 5.6 µF |        |    |     |     |     |     |      |      |      |      |        |    |    |     |     |     |     |     |      |      |      |      |
| 685                        | 6.8 µF |        |    |     |     |     |     |      |      |      |      |        |    |    |     |     |     |     |     |      |      |      |      |
| 825                        | 8.2 µF |        |    |     |     |     |     |      |      |      |      |        |    |    |     |     |     |     |     |      |      |      |      |

Notes

- RoHS-compliant
- Flamed paper tape • Plastic tape



| SELECTION CHART            |        |        |    |     |     |     |     |        |    |    |     |     |     |     |      |      |      |
|----------------------------|--------|--------|----|-----|-----|-----|-----|--------|----|----|-----|-----|-----|-----|------|------|------|
| DIELECTRIC                 |        | X7R    |    |     |     |     |     |        |    |    |     |     |     |     |      |      |      |
| STYLE                      |        | VJ1825 |    |     |     |     |     | VJ2220 |    |    |     |     |     |     |      |      |      |
| CASE CODE                  |        | 1825   |    |     |     |     |     | 2220   |    |    |     |     |     |     |      |      |      |
| VOLTAGE (V <sub>DC</sub> ) |        | 25     | 50 | 100 | 200 | 500 | 630 | 1000   | 25 | 50 | 100 | 200 | 500 | 630 | 1000 | 2000 | 3000 |
| VOLTAGE CODE               |        | X      | A  | B   | C   | E   | L   | G      | X  | A  | B   | C   | E   | L   | G    | F    | H    |
| CAP. CODE                  | CAP.   |        |    |     |     |     |     |        |    |    |     |     |     |     |      |      |      |
| 221                        | 220 pF |        |    |     |     |     |     |        |    |    |     |     |     |     |      |      |      |
| 271                        | 270 pF |        |    |     |     |     |     |        |    |    |     |     |     |     |      |      |      |
| 471                        | 470 pF |        |    |     |     |     |     |        |    |    |     |     |     |     |      |      |      |
| 561                        | 560 pF |        |    |     |     |     |     |        |    |    |     |     |     |     |      |      |      |
| 681                        | 680 pF |        |    |     |     |     |     |        |    |    |     |     |     |     |      |      |      |
| 821                        | 820 pF |        |    |     |     |     |     |        |    |    |     |     |     |     |      |      |      |
| 102                        | 1.0 nF |        |    |     |     |     |     |        |    |    |     |     |     |     |      |      | •    |
| 122                        | 1.2 nF |        |    |     |     |     |     |        |    |    |     |     |     |     |      |      | •    |
| 152                        | 1.5 nF |        |    |     |     |     |     |        |    |    |     |     |     |     |      |      | •    |
| 182                        | 1.8 nF |        |    |     |     |     |     |        |    |    |     |     |     |     |      |      | •    |
| 222                        | 2.2 nF |        |    |     |     |     |     |        |    |    |     |     |     |     |      |      | •    |
| 272                        | 2.7 nF |        |    |     |     |     |     |        |    |    |     |     |     |     |      |      |      |
| 332                        | 3.3 nF |        |    |     |     |     |     |        |    |    |     |     |     |     |      |      |      |
| 392                        | 3.9 nF |        |    |     |     |     |     |        |    |    |     |     |     |     |      |      |      |
| 472                        | 4.7 nF |        |    |     |     |     |     |        |    |    |     |     |     |     |      |      |      |
| 562                        | 5.6 nF |        |    |     |     |     |     |        |    |    |     |     |     |     |      |      | •    |
| 682                        | 6.8 nF |        |    |     |     |     |     |        |    |    |     |     |     |     |      |      | •    |
| 822                        | 8.2 nF |        |    |     |     |     |     |        |    |    |     |     |     |     |      |      | •    |
| 103                        | 10 nF  | •      | •  | •   | •   | •   | •   | •      | •  | •  | •   | •   | •   | •   | •    | •    | •    |
| 123                        | 12 nF  | •      | •  | •   | •   | •   | •   | •      | •  | •  | •   | •   | •   | •   | •    | •    | •    |
| 153                        | 15 nF  | •      | •  | •   | •   | •   | •   | •      | •  | •  | •   | •   | •   | •   | •    | •    | •    |
| 183                        | 18 nF  | •      | •  | •   | •   | •   | •   | •      | •  | •  | •   | •   | •   | •   | •    | •    | •    |
| 223                        | 22 nF  | •      | •  | •   | •   | •   | •   | •      | •  | •  | •   | •   | •   | •   | •    | •    | •    |
| 273                        | 27 nF  | •      | •  | •   | •   | •   | •   | •      | •  | •  | •   | •   | •   | •   | •    | •    | •    |
| 333                        | 33 nF  | •      | •  | •   | •   | •   | •   | •      | •  | •  | •   | •   | •   | •   | •    | •    | •    |
| 393                        | 39 nF  | •      | •  | •   | •   | •   | •   | •      | •  | •  | •   | •   | •   | •   | •    | •    | •    |
| 473                        | 47 nF  | •      | •  | •   | •   | •   | •   | •      | •  | •  | •   | •   | •   | •   | •    | •    | •    |
| 563                        | 56 nF  | •      | •  | •   | •   | •   | •   | •      | •  | •  | •   | •   | •   | •   | •    | •    | •    |
| 683                        | 68 nF  | •      | •  | •   | •   | •   | •   | •      | •  | •  | •   | •   | •   | •   | •    | •    | •    |
| 823                        | 82 nF  | •      | •  | •   | •   | •   | •   | •      | •  | •  | •   | •   | •   | •   | •    | •    | •    |
| 104                        | 100 nF | •      | •  | •   | •   | •   |     |        | •  | •  | •   | •   | •   | •   |      |      |      |
| 124                        | 120 nF | •      | •  | •   | •   | •   |     |        | •  | •  | •   | •   | •   | •   |      |      |      |
| 154                        | 150 nF | •      | •  | •   | •   | •   |     |        | •  | •  | •   | •   | •   | •   |      |      |      |
| 184                        | 180 nF | •      | •  | •   | •   | •   |     |        | •  | •  | •   | •   | •   | •   |      |      |      |
| 224                        | 220 nF | •      | •  | •   | •   | •   |     |        | •  | •  | •   | •   | •   | •   |      |      |      |
| 274                        | 270 nF | •      | •  | •   | •   | •   |     |        | •  | •  | •   | •   | •   | •   |      |      |      |
| 334                        | 330 nF | •      | •  | •   | •   | •   |     |        | •  | •  | •   | •   | •   | •   |      |      |      |
| 394                        | 390 nF | •      | •  | •   | •   | •   |     |        | •  | •  | •   | •   | •   | •   |      |      |      |
| 474                        | 470 nF | •      | •  | •   | •   | •   |     |        | •  | •  | •   | •   | •   | •   |      |      |      |
| 564                        | 560 nF | •      | •  | •   | •   | •   |     |        | •  | •  | •   | •   | •   | •   |      |      |      |
| 684                        | 680 nF | •      | •  | •   | •   | •   |     |        | •  | •  | •   | •   | •   | •   |      |      |      |
| 824                        | 820 nF | •      | •  | •   | •   | •   |     |        | •  | •  | •   | •   | •   | •   |      |      |      |
| 105                        | 1.0 μF | •      | •  | •   |     |     |     |        | •  | •  | •   | •   | •   |     |      |      |      |
| 125                        | 1.2 μF | •      | •  | •   |     |     |     |        | •  | •  | •   | •   | •   |     |      |      |      |
| 155                        | 1.5 μF | •      | •  | •   |     |     |     |        | •  | •  | •   | •   | •   |     |      |      |      |
| 185                        | 1.8 μF | •      | •  |     |     |     |     |        | •  | •  |     |     |     |     |      |      |      |
| 225                        | 2.2 μF | •      |    |     |     |     |     |        | •  | •  |     |     |     |     |      |      |      |
| 275                        | 2.7 μF | •      |    |     |     |     |     |        |    |    |     |     |     |     |      |      |      |
| 335                        | 3.3 μF |        |    |     |     |     |     |        |    |    |     |     |     |     |      |      |      |
| 395                        | 3.9 μF |        |    |     |     |     |     |        |    |    |     |     |     |     |      |      |      |
| 475                        | 4.7 μF |        |    |     |     |     |     |        |    |    |     |     |     |     |      |      |      |
| 565                        | 5.6 μF |        |    |     |     |     |     |        |    |    |     |     |     |     |      |      |      |
| 685                        | 6.8 μF |        |    |     |     |     |     |        |    |    |     |     |     |     |      |      |      |
| 825                        | 8.2 μF |        |    |     |     |     |     |        |    |    |     |     |     |     |      |      |      |

Notes

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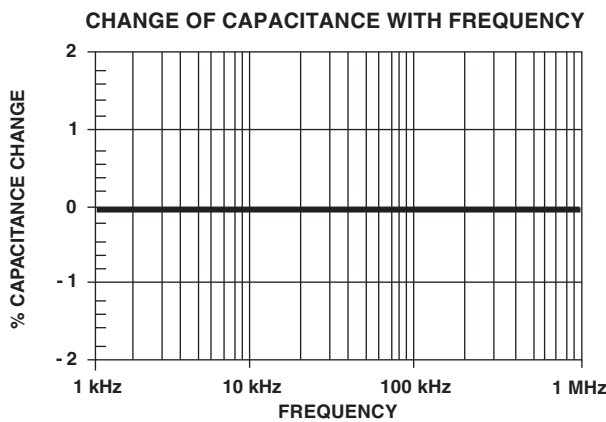
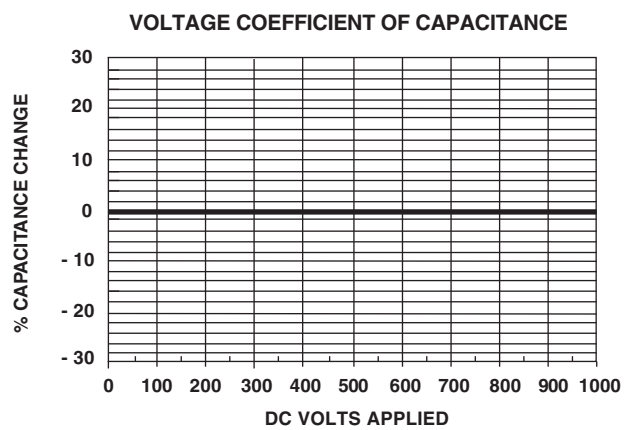
| SELECTION CHART            |        |        |    |     |     |     |     |      |      |        |    |    |     |     |     |
|----------------------------|--------|--------|----|-----|-----|-----|-----|------|------|--------|----|----|-----|-----|-----|
| DIELECTRIC                 |        | X7R    |    |     |     |     |     |      |      |        |    |    |     |     |     |
| STYLE                      |        | VJ2225 |    |     |     |     |     |      |      | VJ3640 |    |    |     |     |     |
| CASE CODE                  |        | 2225   |    |     |     |     |     |      |      | 3640   |    |    |     |     |     |
| VOLTAGE (V <sub>DC</sub> ) |        | 25     | 50 | 100 | 200 | 500 | 630 | 1000 | 1500 | 2000   | 25 | 50 | 100 | 200 | 500 |
| VOLTAGE CODE               |        | X      | A  | B   | C   | E   | L   | G    | R    | F      | X  | A  | B   | C   | E   |
| CAP. CODE                  | CAP.   |        |    |     |     |     |     |      |      |        |    |    |     |     |     |
| 102                        | 1.0 nF |        |    |     |     |     |     |      |      |        |    |    |     |     |     |
| 122                        | 1.2 nF |        |    |     |     |     |     |      |      |        |    |    |     |     |     |
| 152                        | 1.5 nF |        |    |     |     |     |     |      |      |        |    |    |     |     |     |
| 182                        | 1.8 nF |        |    |     |     |     |     |      |      |        |    |    |     |     |     |
| 222                        | 2.2 nF |        |    |     |     |     |     |      |      |        |    |    |     |     |     |
| 272                        | 2.7 nF |        |    |     |     |     |     |      |      |        |    |    |     |     |     |
| 332                        | 3.3 nF |        |    |     |     |     |     |      |      |        |    |    |     |     |     |
| 392                        | 3.9 nF |        |    |     |     |     |     |      |      |        |    |    |     |     |     |
| 472                        | 4.7 nF |        |    |     |     |     |     |      |      |        |    |    |     |     |     |
| 562                        | 5.6 nF |        |    |     |     |     |     |      | •    | •      |    |    |     |     |     |
| 682                        | 6.8 nF |        |    |     |     |     |     |      | •    | •      |    |    |     |     |     |
| 822                        | 8.2 nF |        |    |     |     |     |     |      | •    | •      |    |    |     |     |     |
| 103                        | 10 nF  | •      | •  | •   | •   | •   | •   | •    | •    | •      |    |    |     |     |     |
| 123                        | 12 nF  | •      | •  | •   | •   | •   | •   | •    | •    | •      |    |    |     |     |     |
| 153                        | 15 nF  | •      | •  | •   | •   | •   | •   | •    | •    | •      | •  | •  | •   | •   | •   |
| 183                        | 18 nF  | •      | •  | •   | •   | •   | •   | •    | •    | •      | •  | •  | •   | •   | •   |
| 223                        | 22 nF  | •      | •  | •   | •   | •   | •   | •    | •    | •      | •  | •  | •   | •   | •   |
| 273                        | 27 nF  | •      | •  | •   | •   | •   | •   | •    | •    | •      | •  | •  | •   | •   | •   |
| 333                        | 33 nF  | •      | •  | •   | •   | •   | •   | •    | •    | •      | •  | •  | •   | •   | •   |
| 393                        | 39 nF  | •      | •  | •   | •   | •   | •   | •    | •    | •      | •  | •  | •   | •   | •   |
| 473                        | 47 nF  | •      | •  | •   | •   | •   | •   | •    | •    | •      | •  | •  | •   | •   | •   |
| 563                        | 56 nF  | •      | •  | •   | •   | •   | •   | •    |      |        | •  | •  | •   | •   | •   |
| 683                        | 68 nF  | •      | •  | •   | •   | •   | •   | •    |      |        | •  | •  | •   | •   | •   |
| 823                        | 82 nF  | •      | •  | •   | •   | •   | •   | •    |      |        | •  | •  | •   | •   | •   |
| 104                        | 100 nF | •      | •  | •   | •   | •   | •   | •    |      |        | •  | •  | •   | •   | •   |
| 124                        | 120 nF | •      | •  | •   | •   | •   |     |      |      |        | •  | •  | •   | •   | •   |
| 154                        | 150 nF | •      | •  | •   | •   | •   |     |      |      |        | •  | •  | •   | •   | •   |
| 184                        | 180 nF | •      | •  | •   | •   | •   |     |      |      |        | •  | •  | •   | •   | •   |
| 224                        | 220 nF | •      | •  | •   | •   | •   |     |      |      |        | •  | •  | •   | •   | •   |
| 274                        | 270 nF | •      | •  | •   | •   | •   |     |      |      |        | •  | •  | •   | •   | •   |
| 334                        | 330 nF | •      | •  | •   | •   | •   |     |      |      |        | •  | •  | •   | •   | •   |
| 394                        | 390 nF | •      | •  | •   | •   |     |     |      |      |        | •  | •  | •   | •   | •   |
| 474                        | 470 nF | •      | •  | •   | •   |     |     |      |      |        | •  | •  | •   | •   | •   |
| 564                        | 560 nF | •      | •  | •   | •   |     |     |      |      |        | •  | •  | •   | •   | •   |
| 684                        | 680 nF | •      | •  | •   | •   |     |     |      |      |        | •  | •  | •   | •   | •   |
| 824                        | 820 nF | •      | •  | •   | •   |     |     |      |      |        | •  | •  | •   | •   |     |
| 105                        | 1.0 μF | •      | •  | •   | •   |     |     |      |      |        | •  | •  | •   | •   |     |
| 125                        | 1.2 μF | •      | •  | •   | •   |     |     |      |      |        | •  | •  | •   | •   |     |
| 155                        | 1.5 μF | •      | •  | •   |     |     |     |      |      |        | •  | •  | •   | •   |     |
| 185                        | 1.8 μF | •      | •  | •   |     |     |     |      |      |        | •  | •  | •   | •   |     |
| 225                        | 2.2 μF | •      | •  |     |     |     |     |      |      |        | •  | •  | •   |     |     |
| 275                        | 2.7 μF | •      | •  |     |     |     |     |      |      |        | •  | •  | •   |     |     |
| 335                        | 3.3 μF | •      |    |     |     |     |     |      |      |        | •  | •  | •   |     |     |
| 395                        | 3.9 μF | •      |    |     |     |     |     |      |      |        | •  | •  | •   |     |     |
| 475                        | 4.7 μF | •      |    |     |     |     |     |      |      |        | •  | •  |     |     |     |
| 565                        | 5.6 μF |        |    |     |     |     |     |      |      |        | •  |    |     |     |     |
| 685                        | 6.8 μF |        |    |     |     |     |     |      |      |        | •  |    |     |     |     |
| 825                        | 8.2 μF |        |    |     |     |     |     |      |      |        |    |    |     |     |     |

Notes

- RoHS-compliant
- Flamed paper tape • Plastic tape



## NON-MAGNETIC COG (NP0) DIELECTRIC - TYPICAL PARAMETERS



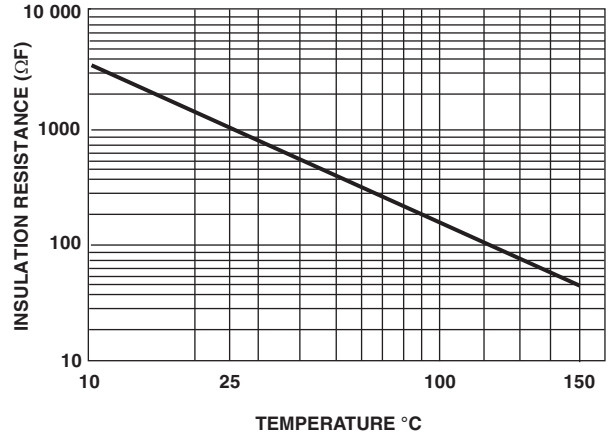


## NON-MAGNETIC X7R DIELECTRIC - TYPICAL PARAMETERS

### RATED VOLTAGE VS. TEMPERATURE



### MIN. INSULATION RESISTANCE VS. TEMPERATURE



### AGING RATE



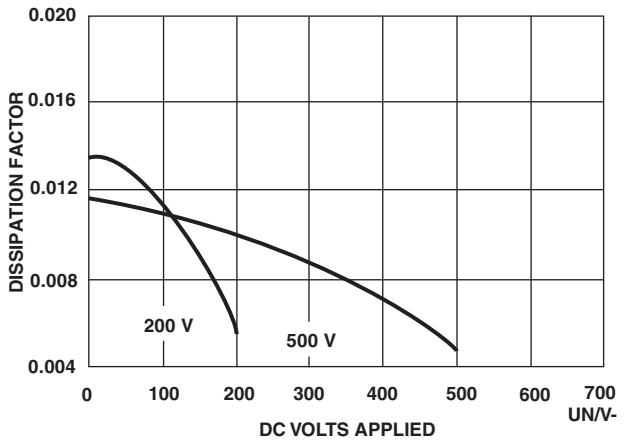
### DISSIPATION FACTOR VS. TEMPERATURE



### DISSIPATION FACTOR VS. VOLTAGE

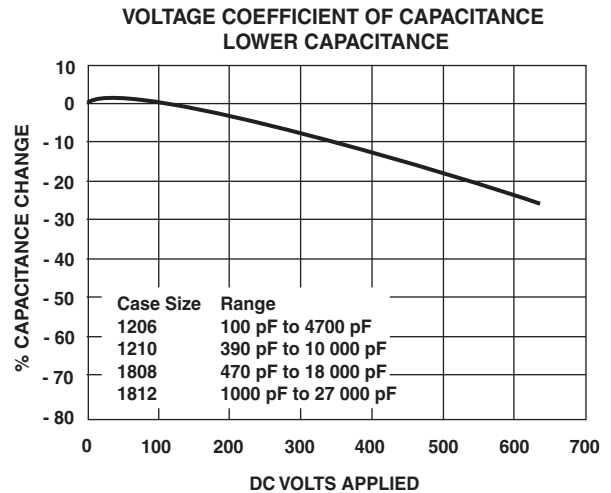
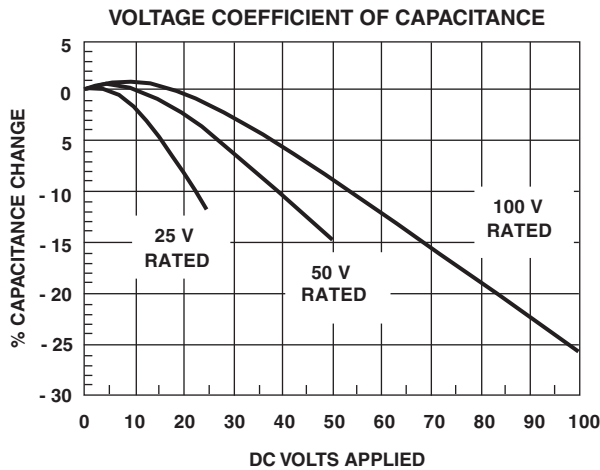
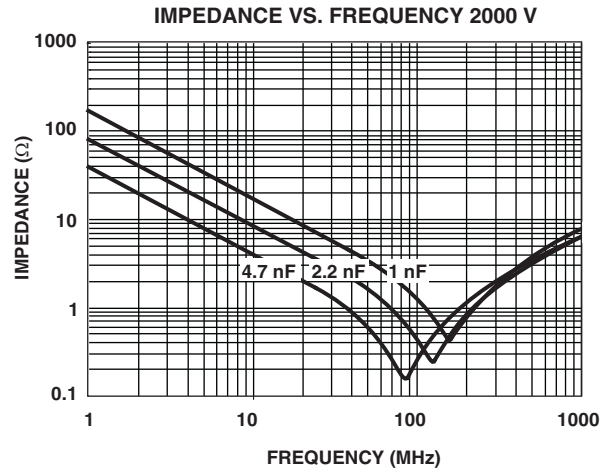
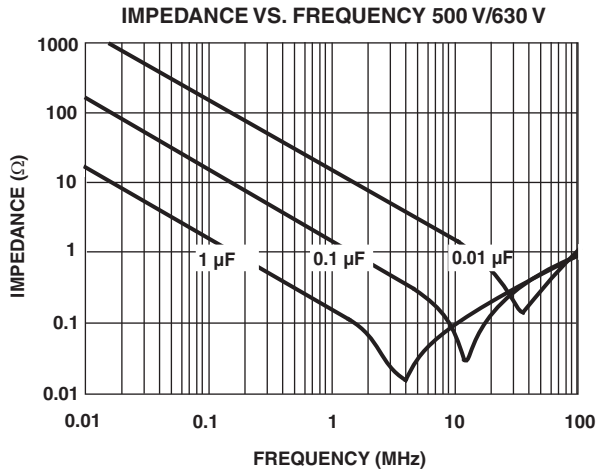


### DISSIPATION FACTOR VS. VOLTAGE





**NON-MAGNETIC X7R DIELECTRIC - TYPICAL PARAMETERS**





| STANDARD PACKAGING QUANTITIES (1)(2)(3) |           |                               |                                 |                                 |                                 |                                 |
|---|-----------|-------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
| CASE CODE                               | TAPE SIZE | 7" REEL QUANTITIES            |                                 |                                 | 11 1/4" AND 13" REEL QUANTITIES |                                 |
|   |           | PAPER TAPE PACKAGING CODE "O" | PLASTIC TAPE PACKAGING CODE "T" | LOW QUANTITY PACKAGING CODE "J" | PAPER TAPE PACKAGING CODE "I"   | PLASTIC TAPE PACKAGING CODE "R" |
| 0402                                    | 8 mm      | 5000                          | n/a                             | 1000                            | 10 000                          | n/a                             |
| 0603 (4)                                | 8 mm      | 4000                          | 4000                            | 1000                            | 10 000                          | 10 000                          |
| 0805 (4)                                | 8 mm      | 3000                          | 3000                            | 1000                            | 10 000                          | 10 000                          |
| 1206 (4)                                | 8 mm      | n/a                           | 3000/2500                       | 1000                            | n/a                             | 10 000/9000                     |
| 1210 (4)                                | 8 mm      | n/a                           | 3000/2500/2000                  | 1000                            | n/a                             | 10 000/9000                     |
| 1808                                    | 12 mm     | n/a                           | 2000                            | 500                             | n/a                             | 10 000                          |
| 1812                                    | 12 mm     | n/a                           | 1000                            | 500                             | n/a                             | 4000                            |
| 1825                                    | 12 mm     | n/a                           | 1000                            | 500                             | n/a                             | 4000                            |
| 2220                                    | 12 mm     | n/a                           | 1000                            | 500                             | n/a                             | 4000                            |
| 2225                                    | 12 mm     | n/a                           | 1000                            | 500                             | n/a                             | 4000                            |
| 3640                                    | 16 mm     | n/a                           | 500                             | n/a                             | n/a                             | n/a                             |

**Notes**

- (1) Vishay Vitramon uses embossed plastic carrier tape
- (2) Reference: EIA standard RS 481 - "Taping of Surface Mount Components for Automatic Placement"
- (3) n/a = Not available
- (4) Packaging code "O/I" or "T/R" and lower quantities can depend from product thickness

| STORAGE AND HANDLING CONDITIONS   |
|---|
| <p>(1) Store the components at 5 °C to + 40 °C ambient temperature and ≤ 70 % related humidity conditions.</p> <p>(2) The product is recommended to be used within a time-frame of 2 years after shipment.<br/>Check solderability in case extended shelf life beyond the expiry date is needed.</p> <p>Precautions:</p> <ul style="list-style-type: none"> <li>a. Do not store products in an environment containing corrosive elements, especially where chloride gas, sulfide gas, acid, alkali, salt or the like are present. This may cause corrosion or oxidization of the terminations, which can easily lead to poor soldering.</li> <li>b. Store products on the shelf and avoid exposure to moisture or dust.</li> <li>c. Do not expose products to excessive shock, vibration, direct sunlight and so on.</li> </ul> |





## RoHS COMPLIANCE UPDATE

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**The RoHS compliance of the parts in this datasheet is currently under review. For more information, please contact your local Vishay sales representative.**



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**Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.**

**Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as Halogen-Free follow Halogen-Free requirements as per JEDEC JS709A standards. Please note that some Vishay documentation may still make reference to the IEC 61249-2-21 definition. We confirm that all the products identified as being compliant to IEC 61249-2-21 conform to JEDEC JS709A standards.**

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Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
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- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
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- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
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ВЧ соединители, коаксиальные кабели, кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



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