

Surface Mount Multilayer Ceramic Chip Capacitors for Non-Magnetic Applications (IR Reflow Soldering)



FEATURES

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



RoHS
COMPLIANT
HALOGEN
FREE

APPLICATIONS

- Magnetic Resonance Imaging (MRI)
- Medical test and diagnostic equipment
- 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: 1.0 pF to 39 nF

Voltage Range: 10 V_{DC} to 3000 V_{DC}

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_{RMS} and
1 MHz for values ≤ 1000 pF
0.1 % maximum at 1.0 V_{RMS} 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 _{DC} -rated: | 250 % of rated voltage |
| 500 V _{DC} -rated: | 200 % of rated voltage |
| 630 V _{DC} , 1000 V _{DC} -rated: | 150 % of rated voltage |
| 1500 V _{DC} to 3000 V _{DC} -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_{DC} to 3000 V_{DC}

Temperature Coefficient of Capacitance (TCC):

X5R: ± 15 % from -55 °C to +85 °C, with 0 V_{DC} applied
X7R: ± 15 % from -55 °C to +125 °C, with 0 V_{DC} applied

Dissipation Factor (DF):

≤ 6.3 V, 10 V ratings: 5 % maximum at 1.0 V_{RMS} and 1 kHz
16 V, 25 V ratings: 3.5 % maximum at 1.0 V_{RMS} and 1 kHz
≥ 50 V ratings: 2.5 % maximum at 1.0 V_{RMS} 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 _{DC} -rated: | 250 % of rated voltage |
| 500 V _{DC} -rated: | min. 150 % of rated voltage |
| 630 V _{DC} , 1000 V _{DC} -rated: | min. 120 % of rated voltage |
| 1500 V _{DC} , 3000 V _{DC} -rated: | 120 % of rated voltage |



| QUICK REFERENCE DATA | | | | |
|----------------------|------|---------------------|-------------|---------|
| DIELECTRIC | CASE | MAXIMUM VOLTAGE (V) | CAPACITANCE | |
| | | | MINIMUM | MAXIMUM |
| C0G (NP0) | 0402 | 100 | 1.0 pF | 180 pF |
| | 0603 | 200 | 1.0 pF | 1.5 nF |
| | 0805 | 500 | 1.0 pF | 3.3 nF |
| | 1206 | 600 | 1.0 pF | 10 nF |
| | 1210 | 500 | 1.0 pF | 12 nF |
| | 1808 | 3000 | 10 pF | 10 nF |
| | 1812 | 3000 | 27 pF | 22 nF |
| | 1825 | 1000 | 15 pF | 33 nF |
| | 2220 | 1000 | 100 pF | 33 nF |
| | 2225 | 1000 | 120 pF | 39 nF |
| X5R | 0402 | 16 | 27 nF | 47 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"

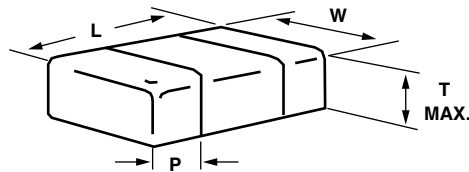


| ORDERING INFORMATION | | | | | | | |
|--|--|---|---|---|---|--------------|--|
| VJ0603 | Y | 102 | K | C | A | A | C |
| CASE CODE | DIELECTRIC | CAPACITANCE NOMINAL CODE | CAPACITANCE TOLERANCE | TERMINATION | DC VOLTAGE RATING ⁽¹⁾ | MARKING | PACKAGING |
| 0402 0603 0805 1206 1210 1808 1812 1825 2220 2225 3640 | A = COG Y = X7R G = X5R ⁽²⁾ | Expressed in picofarads (pF). The first two digits are significant, the third is a multiplier. An "R" indicates a decimal point. Examples 102 = 1000 pF 1R0 = 1.0 pF | COG (NP0): < 10 pF C = ± 0.25 pF D = 0.5 pF B = ± 0.1 pF ≥ 10 pF F = ± 1 % G = ± 2 % J = ± 5 % K = ± 10 % X5R / X7R: J = ± 5 % K = ± 10 % M = ± 20 % | C ⁽³⁾ = non-magnetic copper barrier termination | Q = 10 V J = 16 V X = 25 V A = 50 V K = 75 V B = 100 V C = 200 V P = 250 V E = 500 V L = 630 V G = 1000 V R = 1500 V F = 2000 V H = 3000 V | A = unmarked | T = 7" reel / plastic tape R = 11 1/4" / 13" reel / plastic tape C = 7" reel / flamed paper tape P = 11 1/4" / 13" reel / flamed paper tape J = 7" reel (low quantity) |

Notes

- (1) DC voltage rating should not be exceeded in application
- (2) Selected values for X5R, see dielectric selection chart
- (3) For soldering conditions see Vishay Soldering Recommendations www.vishay.com/doc?45034

DIMENSIONS in inches (millimeters)



| CASE CODE | STYLE | LENGTH (L) | WIDTH (W) | MAXIMUM THICKNESS (T) | TERMINATIONS (P) | |
|-----------|--------|---|--|-----------------------|------------------|-----------------|
| | | | | | MINIMUM | MAXIMUM |
| 0402 | VJ0402 | 0.04 - 0.004 / + 0.005 (1.02 - 0.10 / + 0.12) | 0.020 - 0.004 / + 0.006 (0.50 - 0.10 / + 0.14) | 0.026 (0.64) | 0.004 (0.10) | 0.017 (0.42) |
| 0603 | VJ0603 | 0.063 - 0.006 / + 0.008 (1.60 - 0.15 / + 0.20) | 0.031 - 0.006 / + 0.008 (0.80 - 0.15 / + 0.20) | 0.037 (0.94) | 0.012 (0.30) | 0.022 (0.55) |
| 0805 | VJ0805 | 0.078 - 0.008 / + 0.010 (2.00 - 0.20 / + 0.25) | 0.049 - 0.008 / + 0.009 (1.25 - 0.20 / + 0.23) | 0.057 (1.45) | 0.010 (0.25) | 0.030 (0.76) |
| 1206 | VJ1206 | 0.126 - 0.010 / + 0.012 (3.20 - 0.25 / + 0.30) | 0.063 - 0.010 / + 0.011 (1.60 - 0.25 / + 0.28) | 0.067 (1.70) | 0.010 (0.25) | 0.030 (0.76) |
| 1210 | VJ1210 | 0.126 - 0.010 / + 0.012 (3.20 - 0.25 / + 0.30) | 0.098 - 0.010 / + 0.011 (2.50 - 0.25 / + 0.28) | 0.067 (1.70) | 0.010 (0.25) | 0.030 (0.76) |
| 1808 | VJ1808 | 0.177 - 0.012 / + 0.014 (4.50 - 0.30 / + 0.35) | 0.078 - 0.010 / + 0.011 (2.03 - 0.25 / + 0.28) | 0.086 (2.18) | 0.010 (0.25) | 0.035 (0.90) |
| 1812 | VJ1812 | 0.177 - 0.012 / + 0.014 (4.50 - 0.30 / + 0.35) | 0.126 - 0.010 / + 0.011 (3.20 - 0.25 / + 0.28) | 0.086 (2.18) | 0.010 (0.25) | 0.035 (0.90) |
| 1825 | VJ1825 | 0.177 - 0.012 / + 0.014 (4.50 - 0.30 / + 0.35) | 0.252 - 0.010 / + 0.011 (6.40 - 0.25 / + 0.28) | 0.086 (2.18) | 0.010 (0.25) | 0.035 (0.90) |
| 2220 | VJ2220 | 0.22 - 0.010 / + 0.012 (5.59 - 0.25 / + 0.30) | 0.200 - 0.010 / + 0.011 (5.08 - 0.25 / + 0.28) | 0.086 (2.18) | 0.010 (0.25) | 0.037 (0.95) |
| 2225 | VJ2225 | 0.22 - 0.010 / + 0.012 (5.59 - 0.25 / + 0.30) | 0.250 - 0.010 / + 0.011 (6.35 - 0.25 / + 0.28) | 0.086 (2.18) | 0.010 (0.25) | 0.037 (0.95) |
| 3640 | VJ3640 | 0.36 - 0.015 / + 0.017 (9.14 - 0.38 / + 0.43) | 0.400 - 0.015 / + 0.017 (10.20 - 0.38 / + 0.43) | 0.086 (2.18) | 0.010 (0.25) | 0.039 (1.00) |



VJ Non-Magnetic Series for IR Reflow Soldering

Vishay Vitramon

| SELECTION CHART | | | | | | | | | | | | | | | | | | | | |
|----------------------------|--------|-----------|----|----|----|-----|--------|----|----|----|-----|-----|-----|--------|----|----|----|-----|-----|-----|
| DIELECTRIC | | COG (NP0) | | | | | | | | | | | | | | | | | | |
| STYLE | | VJ0402 | | | | | VJ0603 | | | | | | | VJ0805 | | | | | | |
| CASE CODE | | 0402 | | | | | 0603 | | | | | | | 0805 | | | | | | |
| VOLTAGE (V _{DC}) | | 10 | 16 | 25 | 50 | 100 | 10 | 16 | 25 | 50 | 100 | 200 | 250 | 10 | 16 | 25 | 50 | 100 | 200 | 500 |
| VOLTAGE CODE | | Q | J | X | A | B | Q | J | X | A | B | C | P | Q | J | X | A | B | C | E |
| CAP. CODE | CAP. | | | | | | | | | | | | | | | | | | | |
| 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 (NPO) | | | | | | | | | | | |
| STYLE | | VJ1206 | | | | | | VJ1210 | | | | | |
| CASE CODE | | 1206 | | | | | | 1210 | | | | | |
| VOLTAGE (V _{DC}) | | 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. | | | | | | | | | | | | |
| 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 _{DC}) | | 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 | | | | | | | | | | | | | | | | | | | | |

Notes

- RoHS-compliant
- Flamed paper tape • Plastic tape



| SELECTION CHART | | | | | | | | | | | | | | | | | | | | | | |
|----------------------------|--------|-----------|----|-----|-----|-----|-----|--------|----|----|-----|-----|-----|--------|------|----|----|-----|-----|-----|-----|------|
| DIELECTRIC | | C0G (NP0) | | | | | | | | | | | | | | | | | | | | |
| STYLE | | VJ1825 | | | | | | VJ2220 | | | | | | VJ2225 | | | | | | | | |
| CASE CODE | | 1825 | | | | | | 2220 | | | | | | 2225 | | | | | | | | |
| VOLTAGE (V _{DC}) | | 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 ⁽¹⁾ | | | | | | | | | | | | | | | | | |
| STYLE | | VJ0402 | | | | | | VJ0603 | | | | | | VJ0805 | | | | | |
| CASE CODE | | 0402 | | | | | | 0603 | | | | | | 0805 | | | | | |
| VOLTAGE (V _{DC}) | | 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 | | | | | | | •• | •• | •• | •• | •• | | • | • | • | • | • | • |
| 683 | 68 nF | | | | | | | •• | •• | •• | •• | •• | | • | • | • | • | • | • |
| 823 | 82 nF | | | | | | | •• | •• | •• | •• | •• | | • | • | • | • | • | • |
| 104 | 100 nF | | | | | | | •• | •• | •• | •• | •• | | • | • | • | • | • | • |
| 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 | | X7R | | | | | | | | | | | | |
| STYLE | | VJ1206 | | | | | | VJ1210 | | | | | | |
| CASE CODE | | 1206 | | | | | | 1210 | | | | | | |
| VOLTAGE (V _{DC}) | | 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 _{DC}) | | 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 _{DC}) | | 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

- RoHS-compliant
- Flamed paper tape • Plastic tape



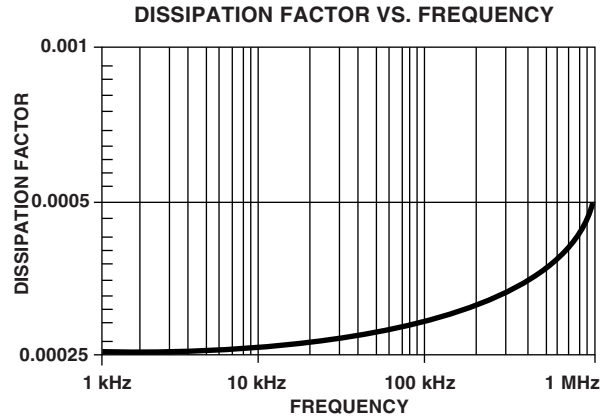
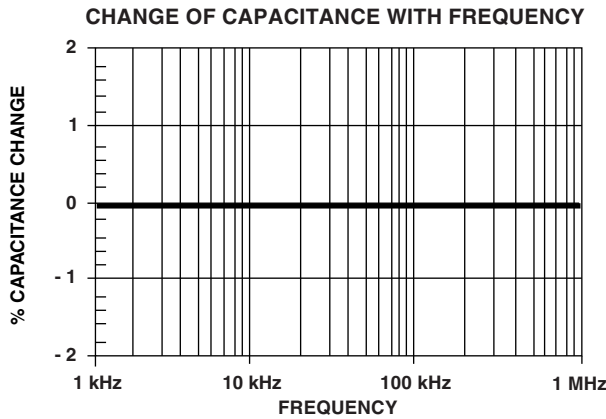
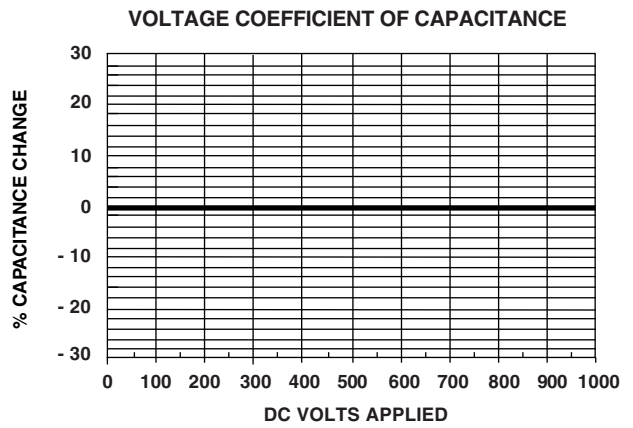
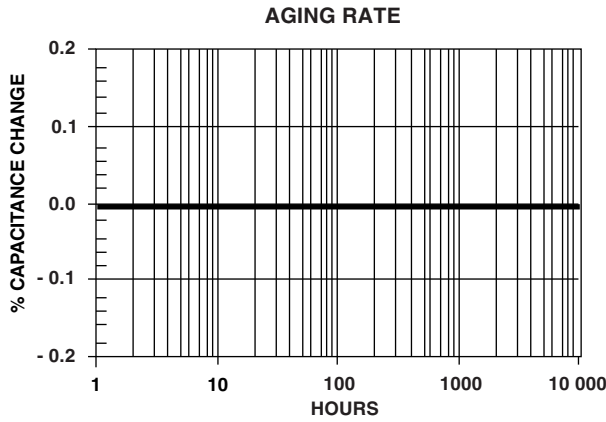
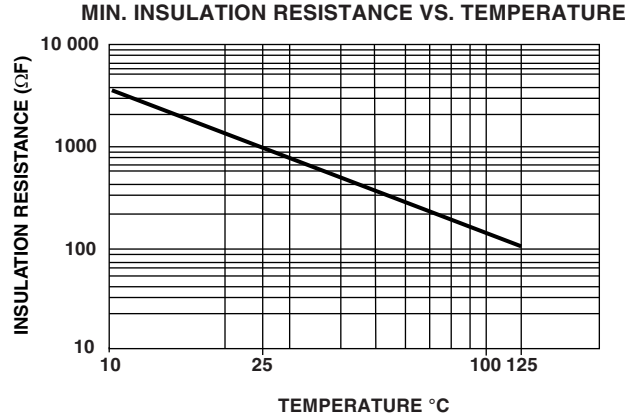
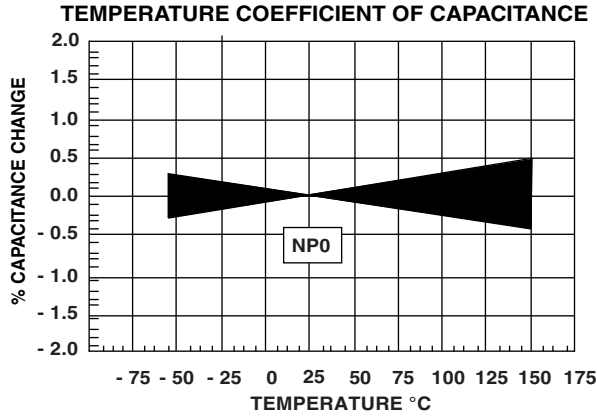
| SELECTION CHART | | | | | | | | | | | | | | | |
|----------------------------|--------|--------|----|-----|-----|-----|-----|------|------|--------|----|----|-----|-----|-----|
| DIELECTRIC | | X7R | | | | | | | | | | | | | |
| STYLE | | VJ2225 | | | | | | | | VJ3640 | | | | | |
| CASE CODE | | 2225 | | | | | | | | 3640 | | | | | |
| VOLTAGE (V _{DC}) | | 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



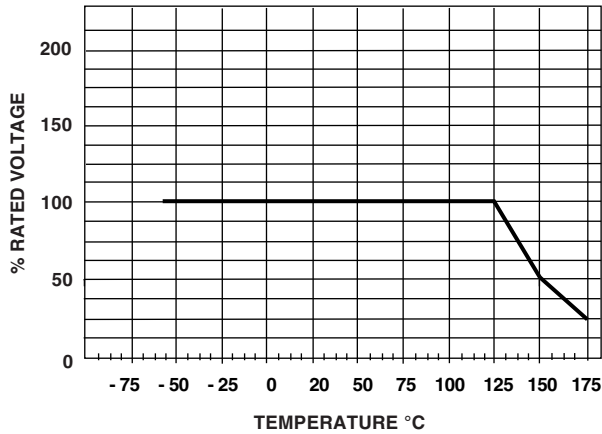
NON-MAGNETIC COG (NP0) DIELECTRIC - TYPICAL PARAMETERS



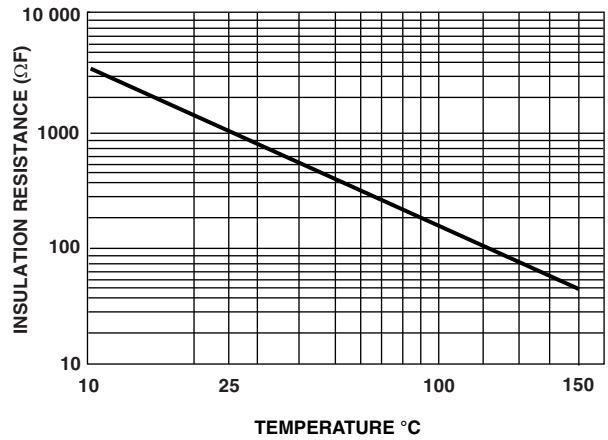


NON-MAGNETIC X7R DIELECTRIC - TYPICAL PARAMETERS

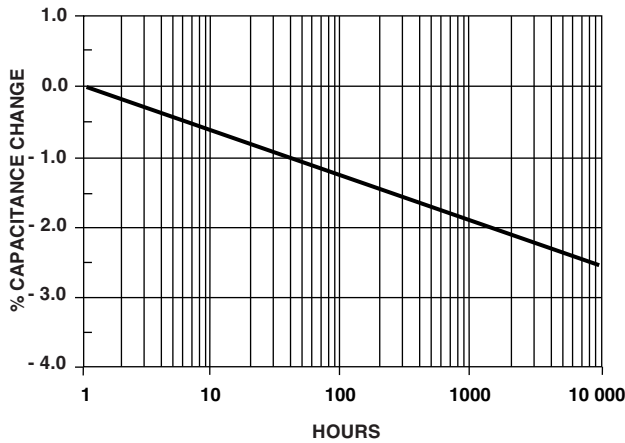
RATED VOLTAGE VS. TEMPERATURE



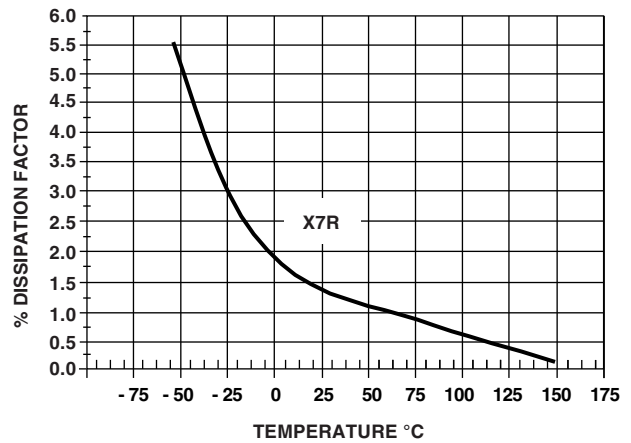
MIN. INSULATION RESISTANCE VS. TEMPERATURE



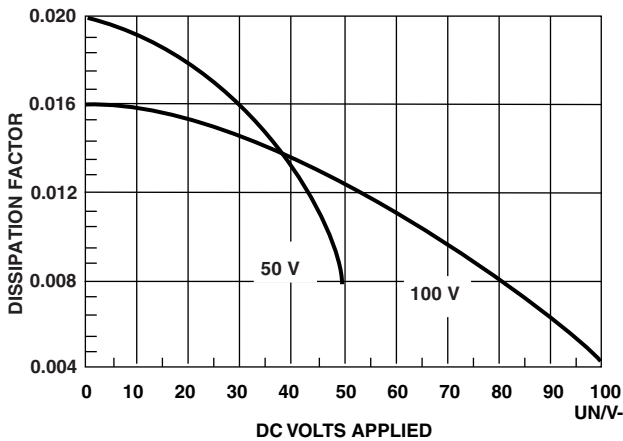
AGING RATE



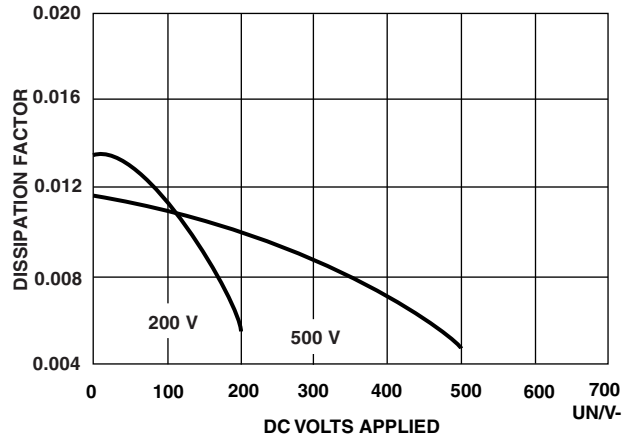
DISSIPATION FACTOR VS. TEMPERATURE



DISSIPATION FACTOR VS. VOLTAGE

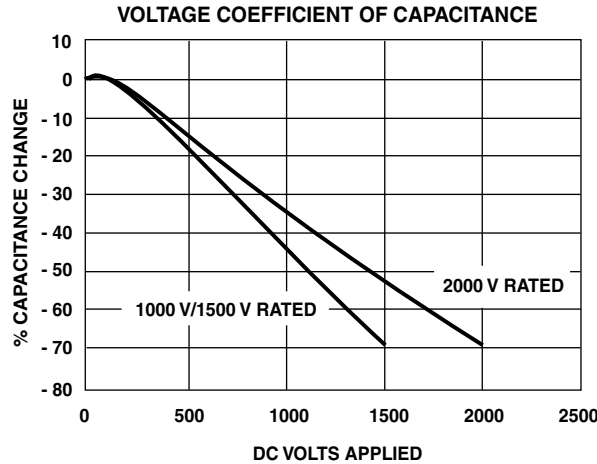
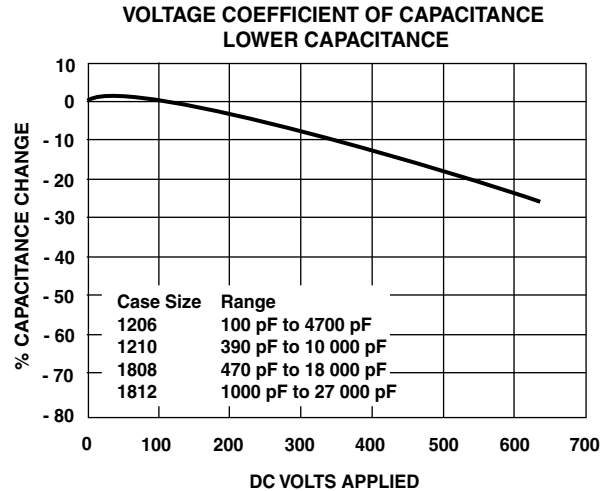
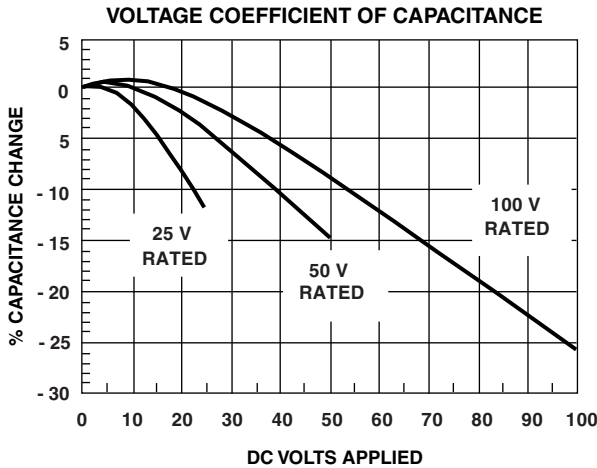
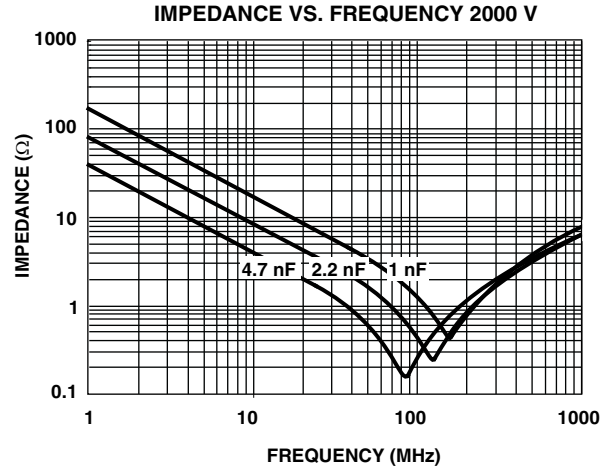
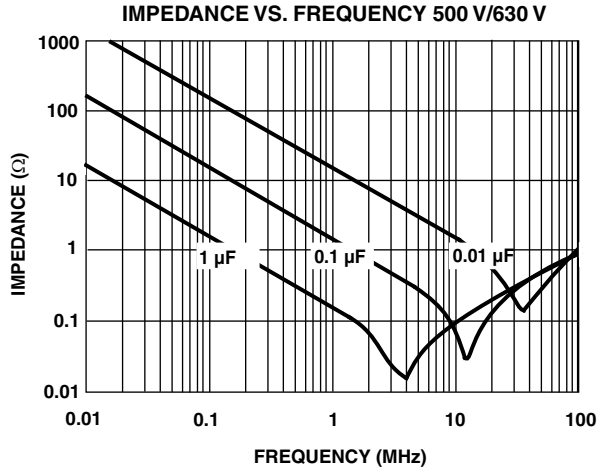


DISSIPATION FACTOR VS. VOLTAGE





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 "C" | PLASTIC TAPE PACKAGING CODE "T" | LOW QUANTITY PACKAGING CODE "J" | PAPER TAPE PACKAGING CODE "P" | 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 | 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 | 500 | 250 | 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 "T/R" and lower quantities can depend on product thickness

| STORAGE AND HANDLING CONDITIONS |
|---|
| <p>(1) Store the components at +5 °C to +40 °C ambient temperature and ≤ 70 % relative humidity conditions.</p> <p>(2) The product is recommended to be used within a time-frame of 2 years after shipment. Check solderability in case extended shelf life beyond the expiry date is needed.</p> <p>(3) For soldering conditions see Vishay Soldering Recommendations www.vishay.com/doc?45034.</p> <p>Precautions:</p> <ul style="list-style-type: none"> 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. b. Store products on the shelf and avoid exposure to moisture or dust. c. Do not expose products to excessive shock, vibration, direct sunlight, and so on. |



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