

# Surface Mount Multilayer Ceramic Chip Capacitors for High Frequency Applications



## FEATURES

- Case size 0402, 0505, 0603, 0805, 1111, 2525, and 3838
- High frequency
- Ultra-stable, high Q dielectric material
- Non-magnetic copper termination “C”
- Lead (Pb)-free terminations code “X”
- Tin / lead termination code “L”
- Surface mount, wet build process
- Reliable Noble Metal Electrode (NME) system
- Made with a combination of design, materials, and tight process control to achieve very high field reliability
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



Available  
**RoHS\***  
 Available  
**HALOGEN FREE**  
**GREEN**  
 [5-2008]  
 Available

## Note

\* This datasheet provides information about parts that are RoHS-compliant and / or parts that are non RoHS-compliant. For example, parts with lead (Pb) terminations are not RoHS-compliant. Please see the information / tables in this datasheet for details

## LINKS TO ADDITIONAL RESOURCES



## APPLICATIONS

- RF and microwave instruments
- Base stations
- Wireless devices
- Broadband communication
- Medical instrumentation and test
- Military devices (radar, communication, etc.)
- Satellite communication

## ELECTRICAL SPECIFICATIONS

### Note

- Electrical characteristics at 25 °C unless otherwise specified

### Operating Temperature:

-55 °C to +125 °C

### Capacitance Range:

- 0402: 0.1 pF to 82 pF
- 0505: 0.1 pF to 1.0 nF
- 0603: 0.1 pF to 470 pF
- 0805: 0.1 pF to 1.0 nF
- 1111: 0.2 pF to 3.3 nF
- 2525: 1.0 pF to 3.0 nF
- 3838: 1.0 pF to 12 nF

### Voltage Rating:

- 0402: 25 V<sub>DC</sub> to 200 V<sub>DC</sub>
- 0505: 50 V<sub>DC</sub> to 250 V<sub>DC</sub>
- 0603: 25 V<sub>DC</sub> to 250 V<sub>DC</sub>
- 0805: 25 V<sub>DC</sub> to 500 V<sub>DC</sub>
- 1111: 50 V<sub>DC</sub> to 1500 V<sub>DC</sub>
- 2525: 300 V<sub>DC</sub> to 3600 V<sub>DC</sub>
- 3838: 300 V<sub>DC</sub> to 7200 V<sub>DC</sub>

### Temperature Coefficient of Capacitance (TCC):

C0G (D): 0 ppm/°C ± 30 ppm/°C from -55 °C to +125 °C with zero (0) V<sub>DC</sub> applied

### Dissipation Factor (DF):

C0G (D): 0.05 % max. at 1.0 V<sub>RMS</sub> and 1 MHz for values ≤ 1000 pF

C0G (D): 0.05 % max. at 1.0 V<sub>RMS</sub> and 1 kHz for values > 1000 pF

**Aging Rate:** 0 % maximum per decade

### Insulation Resistance (IR):

at +25 °C and rated voltage 100 000 MΩ minimum or 1000 ΩF, whichever is less

at +125 °C and rated voltage 10 000 MΩ minimum or 100 ΩF, whichever is less

### Dielectric Strength Test:

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

Applied test voltages:

- ≤ 250 V<sub>DC</sub>-rated: min. 200 % of rated voltage
- > 250 V<sub>DC</sub>- to 1000 V<sub>DC</sub>-rated: min. 150 % of rated voltage
- 1500 V<sub>DC</sub> and up: 120 % rated voltage



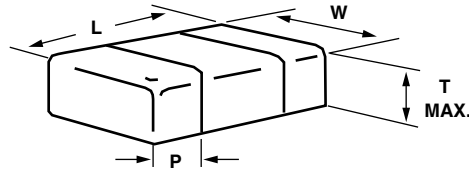
| QUICK REFERENCE DATA |      |                     |             |         |
|----------------------|------|---------------------|-------------|---------|
| DIELECTRIC           | CASE | MAXIMUM VOLTAGE (V) | CAPACITANCE |         |
|                      |      |                     | MINIMUM     | MAXIMUM |
| D = HIFREQ           | 0402 | 200                 | 0.1 pF      | 82 pF   |
|                      | 0505 | 250                 | 0.1 pF      | 1 nF    |
|                      | 0603 | 250                 | 0.1 pF      | 470 pF  |
|                      | 0805 | 500                 | 0.1 pF      | 1.0 nF  |
|                      | 1111 | 1500                | 0.2 pF      | 3.3 nF  |
|                      | 2525 | 3600                | 1.0 pF      | 3 nF    |
|                      | 3838 | 7200                | 1.0 pF      | 12 nF   |

| ORDERING INFORMATION                                 |            |  |   |  |  |                                |   |
|--|------------|--|---|--|--|--------------------------------|---|
| VJ0603   | D          | 101  | J   | X  | A  | A                              | T   |
| CASE CODE  | DIELECTRIC | CAPACITANCE NOMINAL CODE   | CAPACITANCE TOLERANCE   | TERMINATION  | DC VOLTAGE RATING (1)  | MARKING                        | PACKAGING (4)   |
| 0402<br>0505<br>0603<br>0805<br>1111<br>2525<br>3838 | D = HIFREQ | 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>1R0 = 1.0 pF | V = ± 0.05 pF<br>B = ± 0.10 pF<br>C = ± 0.25 pF<br>D = ± 0.50 pF<br>F = ± 1 %<br>G = ± 2 %<br>J = ± 5 %<br>K = ± 10 %<br>M = ± 20 %<br><br><b>Note</b><br>Details see "Selection Chart" | X = Ni barrier<br>100 % tin plate matte finish<br>C = non-magnetic copper barrier<br>100 % tin plate matte finish<br>E = AgPd (2)<br>L = Ni barrier with tin lead plated finish<br>min. 4 % lead | X = 25 V<br>A = 50 V<br>B = 100 V<br>K = 150 V<br>C = 200 V<br>P = 250 V<br>D = 300 V<br>E = 500 V<br>L = 630 V<br>I = 800 V<br>G = 1000 V<br>R = 1500 V<br>F = 2000 V<br>O = 2500 V<br>H = 3000 V<br>W = 3600 V<br>M = 5000 V<br>S = 7200 V | A = unmarked (3)<br>Q = marked | T = 7" reel / plastic tape<br>C = 7" reel / paper tape<br>O = 7" reel / flamed paper tape<br>J = 7" reel (low quantity)<br>R = 11 1/4" / 13" reel / plastic tape<br>P = 11 1/4" / 13" reel / paper tape<br>I = 11 1/4" / 13" reel / flamed paper tape<br>W = waffle pack<br><br><b>Note</b><br>"I" and "O" is used for "E" termination code |

**Notes**

- (1) DC voltage rating should not be exceeded in application
- (2) Termination code "E" is for conductive epoxy assembly - only available for EIA case sizes 0402, 0603, and 0805
- (3) Case size 0402 only available with "A"
- (4) See "Standard Packaging Quantities" table

| ENVIRONMENTAL STATUS |   |                |              |
|----------------------|---|----------------|--------------|
| TERMINATION CODE     | TERMINATION DESCRIPTION                                   | RoHS COMPLIANT | VISHAY GREEN |
| C                    | Non-magnetic copper barrier 100 % tin plated matte finish | Yes            | Yes          |
| X                    | Ni barrier 100 % tin plated matte finish                  | Yes            | Yes          |
| E                    | AgPd  | Yes            | Yes          |
| L                    | Ni barrier tin lead plated with min. 4 % lead             | No             | No           |

**DIMENSIONS** in inches (millimeters)


| CASE CODE | STYLE  | LENGTH (L)  | WIDTH (W)   | MAXIMUM THICKNESS (T) | TERMINATIONS PAD (P) |                                |
|-----------|--------|---|---|-----------------------|----------------------|--------------------------------|
|           |        |   |   |                       | MINIMUM              | MAXIMUM <sup>(1)</sup>         |
| 0402      | VJ0402 | 0.040 ± 0.004<br>(1.02 ± 0.10)                      | 0.020 ± 0.004<br>(0.51 ± 0.10)                      | 0.024<br>(0.61)       | 0.004<br>(0.10)      | 0.016<br>(0.41)                |
| 0505      | VJ0505 | 0.055 + 0.015 / - 0.010<br>(1.40 + 0.382 / - 0.254) | 0.055 ± 0.015<br>(1.40 ± 0.38)                      | 0.057<br>(1.45)       | 0.004<br>(0.10)      | 0.016<br>(0.41)                |
| 0603      | VJ0603 | 0.063 ± 0.006<br>(1.60 ± 0.15)                      | 0.031 ± 0.005<br>(0.80 ± 0.12)                      | 0.037<br>(0.94)       | 0.010<br>(0.25)      | 0.022<br>(0.55)                |
| 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)      | 0.030<br>(0.76)                |
| 1111      | VJ1111 | 0.117 + 0.015 / - 0.010<br>(2.98 + 0.382 / - 0.254) | 0.110 + 0.015 / - 0.020<br>(2.79 + 0.382 / - 0.509) | 0.102<br>(2.59)       | 0.012<br>(0.30)      | 0.018 <sup>(2)</sup><br>(0.46) |
| 2525      | VJ2525 | 0.250 + 0.020 / - 0.025<br>(6.35 + 0.508 / - 0.63)  | 0.250 ± 0.015<br>(6.35 ± 0.381)                     | 0.102<br>(2.59)       | 0.010<br>(0.25)      | 0.030 <sup>(3)</sup><br>(0.76) |
| 3838      | VJ3838 | 0.381 ± 0.015<br>(9.7 ± 0.40)                       | 0.381 + 0.017 / - 0.015<br>(9.7 + 0.45 / - 0.40)    | 0.118<br>(3.00)       | 0.010<br>(0.25)      | 0.030 <sup>(3)</sup><br>(0.76) |

**Notes**

- (1) For Cu termination "C" add 0.01 mm to maximum pad terminations  
 (2) For Cu termination "C" case size 1111 add 0.17 mm to maximum pad termination  
 (3) For Cu termination "C" case sizes 2525 and 3838 maximum pad termination size is 0.041 inches (1.04 mm)



| SELECTION CHART            |        |         |    |     |     |            |
|----------------------------|--------|---------|----|-----|-----|------------|
| DIELECTRIC (VISHAY CODE)   |        | C0G (D) |    |     |     |            |
| STYLE                      |        | VJ0402  |    |     |     |            |
| CASE CODE                  |        | 0402    |    |     |     |            |
| VOLTAGE (V <sub>DC</sub> ) |        | 25      | 50 | 100 | 200 | TOLERANCE  |
| VOLTAGE CODE               |        | X       | A  | B   | C   |            |
| CAP. CODE                  | CAP.   |         |    |     |     |            |
| 0R1                        | 0.1 pF | ••      | •• | ••  | ••  | V, B, C, D |
| 0R2                        | 0.2 pF | ••      | •• | ••  | ••  | V, B, C, D |
| 0R3                        | 0.3 pF | ••      | •• | ••  | ••  | V, B, C, D |
| 0R4                        | 0.4 pF | ••      | •• | ••  | ••  | V, B, C, D |
| 0R5                        | 0.5 pF | ••      | •• | ••  | ••  | V, B, C, D |
| 0R6                        | 0.6 pF | ••      | •• | ••  | ••  | V, B, C, D |
| 0R7                        | 0.7 pF | ••      | •• | ••  | ••  | V, B, C, D |
| 0R8                        | 0.8 pF | ••      | •• | ••  | ••  | V, B, C, D |
| 0R9                        | 0.9 pF | ••      | •• | ••  | ••  | V, B, C, D |
| 1R0                        | 1.0 pF | ••      | •• | ••  | ••  | V, B, C, D |
| 1R1                        | 1.1 pF | ••      | •• | ••  | ••  | V, B, C, D |
| 1R2                        | 1.2 pF | ••      | •• | ••  | ••  | V, B, C, D |
| 1R3                        | 1.3 pF | ••      | •• | ••  | ••  | V, B, C, D |
| 1R4                        | 1.4 pF | ••      | •• | ••  | ••  | V, B, C, D |
| 1R5                        | 1.5 pF | ••      | •• | ••  | ••  | V, B, C, D |
| 1R6                        | 1.6 pF | ••      | •• | ••  | ••  | V, B, C, D |
| 1R7                        | 1.7 pF | ••      | •• | ••  | ••  | V, B, C, D |
| 1R8                        | 1.8 pF | ••      | •• | ••  | ••  | V, B, C, D |
| 1R9                        | 1.9 pF | ••      | •• | ••  | ••  | V, B, C, D |
| 2R0                        | 2.0 pF | ••      | •• | ••  | ••  | V, B, C, D |
| 2R1                        | 2.1 pF | ••      | •• | ••  | ••  | V, B, C, D |
| 2R2                        | 2.2 pF | ••      | •• | ••  | ••  | V, B, C, D |
| 2R4                        | 2.4 pF | ••      | •• | ••  | ••  | V, B, C, D |
| 2R7                        | 2.7 pF | ••      | •• | ••  | ••  | V, B, C, D |
| 3R0                        | 3.0 pF | ••      | •• | ••  | ••  | V, B, C, D |
| 3R3                        | 3.3 pF | ••      | •• | ••  | ••  | V, B, C, D |
| 3R6                        | 3.6 pF | ••      | •• | ••  | ••  | V, B, C, D |
| 3R9                        | 3.9 pF | ••      | •• | ••  | ••  | V, B, C, D |
| 4R3                        | 4.3 pF | ••      | •• | ••  | ••  | V, B, C, D |
| 4R7                        | 4.7 pF | ••      | •• | ••  | ••  | V, B, C, D |
| 5R1                        | 5.1 pF | ••      | •• | ••  | ••  | V, B, C, D |
| 5R6                        | 5.6 pF | ••      | •• | ••  | ••  | V, B, C, D |
| 6R2                        | 6.2 pF | ••      | •• | ••  | ••  | V, B, C, D |
| 6R8                        | 6.8 pF | ••      | •• | ••  | ••  | V, B, C, D |
| 7R5                        | 7.5 pF | ••      | •• | ••  | ••  | V, B, C, D |
| 8R2                        | 8.2 pF | ••      | •• | ••  | ••  | V, B, C, D |
| 9R1                        | 9.1 pF | ••      | •• | ••  | ••  | V, B, C, D |

Notes

RoHS-compliant except when supplied with lead (Pb)-containing termination, code "L"

•• Paper carrier

- For soldering conditions see Vishay Soldering Recommendations [www.vishay.com/doc?45034](http://www.vishay.com/doc?45034)



| SELECTION CHART            |        |         |    |     |     |               |
|----------------------------|--------|---------|----|-----|-----|---------------|
| DIELECTRIC (VISHAY CODE)   |        | C0G (D) |    |     |     |               |
| STYLE                      |        | VJ0402  |    |     |     |               |
| CASE CODE                  |        | 0402    |    |     |     |               |
| VOLTAGE (V <sub>DC</sub> ) |        | 25      | 50 | 100 | 200 | TOLERANCE     |
| VOLTAGE CODE               |        | X       | A  | B   | C   |               |
| CAP. CODE                  | CAP.   |         |    |     |     |               |
| 100                        | 10 pF  | ••      | •• | ••  | ••  | F, G, J, K, M |
| 110                        | 11 pF  | ••      | •• | ••  | ••  | F, G, J, K, M |
| 120                        | 12 pF  | ••      | •• | ••  | ••  | F, G, J, K, M |
| 130                        | 13 pF  | ••      | •• | ••  | ••  | F, G, J, K, M |
| 150                        | 15 pF  | ••      | •• | ••  | ••  | F, G, J, K, M |
| 180                        | 18 pF  | ••      | •• | ••  | ••  | F, G, J, K, M |
| 200                        | 20 pF  | ••      | •• | ••  | ••  | F, G, J, K, M |
| 220                        | 22 pF  | ••      | •• | ••  | ••  | F, G, J, K, M |
| 240                        | 24 pF  | ••      | •• | ••  | ••  | F, G, J, K, M |
| 270                        | 27 pF  | ••      | •• | ••  | ••  | F, G, J, K, M |
| 300                        | 30 pF  | ••      | •• |     |     | F, G, J, K, M |
| 330                        | 33 pF  | ••      | •• |     |     | F, G, J, K, M |
| 360                        | 36 pF  | ••      | •• |     |     | F, G, J, K, M |
| 390                        | 39 pF  | ••      | •• |     |     | F, G, J, K, M |
| 430                        | 43 pF  | ••      | •• |     |     | F, G, J, K, M |
| 470                        | 47 pF  | ••      | •• |     |     | F, G, J, K, M |
| 510                        | 51 pF  | ••      | •• |     |     | F, G, J, K, M |
| 560                        | 56 pF  | ••      | •• |     |     | F, G, J, K, M |
| 620                        | 62 pF  | ••      |    |     |     | F, G, J, K, M |
| 680                        | 68 pF  | ••      |    |     |     | F, G, J, K, M |
| 750                        | 75 pF  | ••      |    |     |     | F, G, J, K, M |
| 820                        | 82 pF  | ••      |    |     |     | F, G, J, K, M |
| 910                        | 91 pF  |         |    |     |     |               |
| 101                        | 100 pF |         |    |     |     |               |
| 111                        | 110 pF |         |    |     |     |               |
| 121                        | 120 pF |         |    |     |     |               |

Notes

- RoHS-compliant except when supplied with lead (Pb)-containing termination, code "L"
- Paper carrier
- For soldering conditions see Vishay Soldering Recommendations [www.vishay.com/doc245034](http://www.vishay.com/doc245034)



| SELECTION CHART            |        |         |     |     |     |     |               |
|----------------------------|--------|---------|-----|-----|-----|-----|---------------|
| DIELECTRIC (VISHAY CODE)   |        | COG (D) |     |     |     |     |               |
| STYLE                      |        | VJ0505  |     |     |     |     |               |
| CASE CODE                  |        | 0505    |     |     |     |     |               |
| VOLTAGE (V <sub>DC</sub> ) |        | 50      | 100 | 150 | 200 | 250 | TOLERANCE     |
| VOLTAGE CODE               |        | A       | B   | K   | C   | P   |               |
| CAP. CODE                  | CAP.   |         |     |     |     |     |               |
| 0R1                        | 0.1 pF | •       | •   | •   | •   | •   | V, B, C, D    |
| 0R2                        | 0.2 pF | •       | •   | •   | •   | •   | V, B, C, D    |
| 0R3                        | 0.3 pF | •       | •   | •   | •   | •   | V, B, C, D    |
| 0R4                        | 0.4 pF | •       | •   | •   | •   | •   | V, B, C, D    |
| 0R5                        | 0.5 pF | •       | •   | •   | •   | •   | V, B, C, D    |
| 0R6                        | 0.6 pF | •       | •   | •   | •   | •   | V, B, C, D    |
| 0R7                        | 0.7 pF | •       | •   | •   | •   | •   | V, B, C, D    |
| 0R8                        | 0.8 pF | •       | •   | •   | •   | •   | V, B, C, D    |
| 0R9                        | 0.9 pF | •       | •   | •   | •   | •   | V, B, C, D    |
| 1R0                        | 1.0 pF | •       | •   | •   | •   | •   | V, B, C, D    |
| 1R1                        | 1.1 pF | •       | •   | •   | •   | •   | V, B, C, D    |
| 1R2                        | 1.2 pF | •       | •   | •   | •   | •   | V, B, C, D    |
| 1R3                        | 1.3 pF | •       | •   | •   | •   | •   | V, B, C, D    |
| 1R4                        | 1.4 pF | •       | •   | •   | •   | •   | V, B, C, D    |
| 1R5                        | 1.5 pF | •       | •   | •   | •   | •   | V, B, C, D    |
| 1R6                        | 1.6 pF | •       | •   | •   | •   | •   | V, B, C, D    |
| 1R7                        | 1.7 pF | •       | •   | •   | •   | •   | V, B, C, D    |
| 1R8                        | 1.8 pF | •       | •   | •   | •   | •   | V, B, C, D    |
| 1R9                        | 1.9 pF | •       | •   | •   | •   | •   | V, B, C, D    |
| 2R0                        | 2.0 pF | •       | •   | •   | •   | •   | V, B, C, D    |
| 2R1                        | 2.1 pF | •       | •   | •   | •   | •   | V, B, C, D    |
| 2R2                        | 2.2 pF | •       | •   | •   | •   | •   | V, B, C, D    |
| 2R4                        | 2.4 pF | •       | •   | •   | •   | •   | V, B, C, D    |
| 2R7                        | 2.7 pF | •       | •   | •   | •   | •   | V, B, C, D    |
| 3R0                        | 3.0 pF | •       | •   | •   | •   | •   | V, B, C, D    |
| 3R3                        | 3.3 pF | •       | •   | •   | •   | •   | V, B, C, D    |
| 3R6                        | 3.6 pF | •       | •   | •   | •   | •   | V, B, C, D    |
| 3R9                        | 3.9 pF | •       | •   | •   | •   | •   | V, B, C, D    |
| 4R3                        | 4.3 pF | •       | •   | •   | •   | •   | V, B, C, D    |
| 4R7                        | 4.7 pF | •       | •   | •   | •   | •   | V, B, C, D    |
| 5R1                        | 5.1 pF | •       | •   | •   | •   | •   | V, B, C, D    |
| 5R6                        | 5.6 pF | •       | •   | •   | •   | •   | B, C, D       |
| 6R2                        | 6.2 pF | •       | •   | •   | •   | •   | B, C, D       |
| 6R8                        | 6.8 pF | •       | •   | •   | •   | •   | B, C, D       |
| 7R5                        | 7.5 pF | •       | •   | •   | •   | •   | B, C, D       |
| 8R2                        | 8.2 pF | •       | •   | •   | •   | •   | B, C, D       |
| 9R1                        | 9.1 pF | •       | •   | •   | •   | •   | B, C, D       |
| 100                        | 10 pF  | •       | •   | •   | •   | •   | F, G, J, K, M |
| 110                        | 11 pF  | •       | •   | •   | •   | •   | F, G, J, K, M |
| 120                        | 12 pF  | •       | •   | •   | •   | •   | F, G, J, K, M |
| 130                        | 13 pF  | •       | •   | •   | •   | •   | F, G, J, K, M |
| 150                        | 15 pF  | •       | •   | •   | •   | •   | F, G, J, K, M |
| 160                        | 16 pF  | •       | •   | •   | •   | •   | F, G, J, K, M |
| 180                        | 18 pF  | •       | •   | •   | •   | •   | F, G, J, K, M |

Notes

RoHS-compliant except when supplied with lead (Pb)-containing termination, code "L"

- Plastic carrier tape

- For soldering conditions see Vishay Soldering Recommendations [www.vishay.com/doc?45034](http://www.vishay.com/doc?45034)



| SELECTION CHART            |         |         |     |     |     |     |               |
|----------------------------|---------|---------|-----|-----|-----|-----|---------------|
| DIELECTRIC (VISHAY CODE)   |         | COG (D) |     |     |     |     |               |
| STYLE                      |         | VJ0505  |     |     |     |     |               |
| CASE CODE                  |         | 0505    |     |     |     |     |               |
| VOLTAGE (V <sub>DC</sub> ) |         | 50      | 100 | 150 | 200 | 250 | TOLERANCE     |
| VOLTAGE CODE               |         | A       | B   | K   | C   | P   |               |
| CAP. CODE                  | CAP.    |         |     |     |     |     |               |
| 200                        | 20 pF   | •       | •   | •   | •   | •   | F, G, J, K, M |
| 220                        | 22 pF   | •       | •   | •   | •   | •   | F, G, J, K, M |
| 240                        | 24 pF   | •       | •   | •   | •   | •   | F, G, J, K, M |
| 270                        | 27 pF   | •       | •   | •   | •   | •   | F, G, J, K, M |
| 300                        | 30 pF   | •       | •   | •   | •   | •   | F, G, J, K, M |
| 330                        | 33 pF   | •       | •   | •   | •   | •   | F, G, J, K, M |
| 360                        | 36 pF   | •       | •   | •   | •   | •   | F, G, J, K, M |
| 390                        | 39 pF   | •       | •   | •   | •   | •   | F, G, J, K, M |
| 430                        | 43 pF   | •       | •   | •   | •   | •   | F, G, J, K, M |
| 470                        | 47 pF   | •       | •   | •   | •   | •   | F, G, J, K, M |
| 510                        | 51 pF   | •       | •   | •   | •   | •   | F, G, J, K, M |
| 560                        | 56 pF   | •       | •   | •   | •   | •   | F, G, J, K, M |
| 620                        | 62 pF   | •       | •   | •   | •   | •   | F, G, J, K, M |
| 680                        | 68 pF   | •       | •   | •   | •   | •   | F, G, J, K, M |
| 750                        | 75 pF   | •       | •   | •   | •   |     | F, G, J, K, M |
| 820                        | 82 pF   | •       | •   | •   | •   |     | F, G, J, K, M |
| 910                        | 91 pF   | •       | •   | •   | •   |     | F, G, J, K, M |
| 101                        | 100 pF  | •       | •   | •   | •   |     | F, G, J, K, M |
| 111                        | 110 pF  | •       | •   | •   | •   |     | F, G, J, K, M |
| 121                        | 120 pF  | •       | •   | •   | •   |     | F, G, J, K, M |
| 131                        | 130 pF  | •       | •   | •   | •   |     | F, G, J, K, M |
| 151                        | 150 pF  | •       | •   | •   | •   |     | F, G, J, K, M |
| 161                        | 160 pF  | •       | •   | •   | •   |     | F, G, J, K, M |
| 181                        | 180 pF  | •       | •   | •   | •   |     | F, G, J, K, M |
| 201                        | 200 pF  | •       | •   | •   | •   |     | F, G, J, K, M |
| 221                        | 220 pF  | •       | •   | •   | •   |     | F, G, J, K, M |
| 241                        | 240 pF  | •       | •   | •   | •   |     | F, G, J, K, M |
| 271                        | 270 pF  | •       | •   | •   |     |     | F, G, J, K, M |
| 301                        | 300 pF  | •       | •   | •   |     |     | F, G, J, K, M |
| 331                        | 330 pF  | •       | •   | •   |     |     | F, G, J, K, M |
| 361                        | 360 pF  | •       | •   | •   |     |     | F, G, J, K, M |
| 391                        | 390 pF  | •       | •   | •   |     |     | F, G, J, K, M |
| 431                        | 430 pF  | •       | •   | •   |     |     | F, G, J, K, M |
| 471                        | 470 pF  | •       | •   | •   |     |     | F, G, J, K, M |
| 511                        | 510 pF  | •       |     |     |     |     | F, G, J, K, M |
| 561                        | 560 pF  | •       |     |     |     |     | F, G, J, K, M |
| 621                        | 620 pF  | •       |     |     |     |     | F, G, J, K, M |
| 681                        | 680 pF  | •       |     |     |     |     | F, G, J, K, M |
| 751                        | 750 pF  | •       |     |     |     |     | F, G, J, K, M |
| 821                        | 820 pF  | •       |     |     |     |     | F, G, J, K, M |
| 911                        | 910 pF  | •       |     |     |     |     | F, G, J, K, M |
| 102                        | 1000 pF | •       |     |     |     |     | F, G, J, K, M |
| 112                        | 1100 pF |         |     |     |     |     |               |
| 122                        | 1200 pF |         |     |     |     |     |               |

Notes

- RoHS-compliant except when supplied with lead (Pb)-containing termination, code "L"
- Plastic carrier tape
- For soldering conditions see Vishay Soldering Recommendations [www.vishay.com/doc?45034](http://www.vishay.com/doc?45034)



| SELECTION CHART            |        |         |    |     |     |     |               |
|----------------------------|--------|---------|----|-----|-----|-----|---------------|
| DIELECTRIC (VISHAY CODE)   |        | COG (D) |    |     |     |     |               |
| STYLE                      |        | VJ0603  |    |     |     |     |               |
| CASE CODE                  |        | 0603    |    |     |     |     |               |
| VOLTAGE (V <sub>DC</sub> ) |        | 25      | 50 | 100 | 200 | 250 | TOLERANCE     |
| VOLTAGE CODE               |        | X       | A  | B   | C   | P   |               |
| CAP. CODE                  | CAP.   |         |    |     |     |     |               |
| 0R1                        | 0.1 pF | ••      | •• | ••  | ••  | ••  | V, B, C, D    |
| 0R2                        | 0.2 pF | ••      | •• | ••  | ••  | ••  | V, B, C, D    |
| 0R3                        | 0.3 pF | ••      | •• | ••  | ••  | ••  | V, B, C, D    |
| 0R4                        | 0.4 pF | ••      | •• | ••  | ••  | ••  | V, B, C, D    |
| 0R5                        | 0.5 pF | ••      | •• | ••  | ••  | ••  | V, B, C, D    |
| 0R6                        | 0.6 pF | ••      | •• | ••  | ••  | ••  | V, B, C, D    |
| 0R7                        | 0.7 pF | ••      | •• | ••  | ••  | ••  | V, B, C, D    |
| 0R8                        | 0.8 pF | ••      | •• | ••  | ••  | ••  | V, B, C, D    |
| 0R9                        | 0.9 pF | ••      | •• | ••  | ••  | ••  | V, B, C, D    |
| 1R0                        | 1.0 pF | ••      | •• | ••  | ••  | ••  | V, B, C, D    |
| 1R1                        | 1.1 pF | ••      | •• | ••  | ••  | ••  | V, B, C, D    |
| 1R2                        | 1.2 pF | ••      | •• | ••  | ••  | ••  | V, B, C, D    |
| 1R3                        | 1.3 pF | ••      | •• | ••  | ••  | ••  | V, B, C, D    |
| 1R4                        | 1.4 pF | ••      | •• | ••  | ••  | ••  | V, B, C, D    |
| 1R5                        | 1.5 pF | ••      | •• | ••  | ••  | ••  | V, B, C, D    |
| 1R6                        | 1.6 pF | ••      | •• | ••  | ••  | ••  | V, B, C, D    |
| 1R7                        | 1.7 pF | ••      | •• | ••  | ••  | ••  | V, B, C, D    |
| 1R8                        | 1.8 pF | ••      | •• | ••  | ••  | ••  | V, B, C, D    |
| 1R9                        | 1.9 pF | ••      | •• | ••  | ••  | ••  | V, B, C, D    |
| 2R0                        | 2.0 pF | ••      | •• | ••  | ••  | ••  | V, B, C, D    |
| 2R1                        | 2.1 pF | ••      | •• | ••  | ••  | ••  | V, B, C, D    |
| 2R2                        | 2.2 pF | ••      | •• | ••  | ••  | ••  | V, B, C, D    |
| 2R4                        | 2.4 pF | ••      | •• | ••  | ••  | ••  | V, B, C, D    |
| 2R7                        | 2.7 pF | ••      | •• | ••  | ••  | ••  | V, B, C, D    |
| 3R0                        | 3.0 pF | ••      | •• | ••  | ••  | ••  | V, B, C, D    |
| 3R3                        | 3.3 pF | ••      | •• | ••  | ••  | ••  | V, B, C, D    |
| 3R6                        | 3.6 pF | ••      | •• | ••  | ••  | ••  | V, B, C, D    |
| 3R9                        | 3.9 pF | ••      | •• | ••  | ••  | ••  | V, B, C, D    |
| 4R3                        | 4.3 pF | ••      | •• | ••  | ••  | ••  | V, B, C, D    |
| 4R7                        | 4.7 pF | ••      | •• | ••  | ••  | ••  | V, B, C, D    |
| 5R1                        | 5.1 pF | ••      | •• | ••  | ••  | ••  | V, B, C, D    |
| 5R6                        | 5.6 pF | ••      | •• | ••  | ••  | ••  | V, B, C, D    |
| 6R2                        | 6.2 pF | ••      | •• | ••  | ••  | ••  | V, B, C, D    |
| 6R8                        | 6.8 pF | ••      | •• | ••  | ••  | ••  | V, B, C, D    |
| 7R5                        | 7.5 pF | ••      | •• | ••  | ••  | ••  | V, B, C, D    |
| 8R2                        | 8.2 pF | ••      | •• | ••  | ••  | ••  | V, B, C, D    |
| 9R1                        | 9.1 pF | ••      | •• | ••  | ••  | ••  | V, B, C, D    |
| 100                        | 10 pF  | ••      | •• | ••  | ••  | ••  | F, G, J, K, M |
| 110                        | 11 pF  | ••      | •• | ••  | ••  | ••  | F, G, J, K, M |
| 120                        | 12 pF  | ••      | •• | ••  | ••  | ••  | F, G, J, K, M |
| 130                        | 13 pF  | ••      | •• | ••  | ••  | ••  | F, G, J, K, M |
| 150                        | 15 pF  | ••      | •• | ••  | ••  | ••  | F, G, J, K, M |
| 180                        | 18 pF  | ••      | •• | ••  | ••  | ••  | F, G, J, K, M |
| 200                        | 20 pF  | ••      | •• | ••  | ••  | ••  | F, G, J, K, M |
| 220                        | 22 pF  | ••      | •• | ••  | ••  | ••  | F, G, J, K, M |

Notes

•• RoHS-compliant except when supplied with lead (Pb)-containing termination, code "L"

•• Paper carrier • Plastic carrier tape

- For case size 0603: Cu termination "C" is only available in plastic carrier tape

- For soldering conditions see Vishay Soldering Recommendations [www.vishay.com/doc?45034](http://www.vishay.com/doc?45034)





| SELECTION CHART            |        |         |    |     |     |     |               |
|----------------------------|--------|---------|----|-----|-----|-----|---------------|
| DIELECTRIC (VISHAY CODE)   |        | COG (D) |    |     |     |     |               |
| STYLE                      |        | VJ0603  |    |     |     |     |               |
| CASE CODE                  |        | 0603    |    |     |     |     |               |
| VOLTAGE (V <sub>DC</sub> ) |        | 25      | 50 | 100 | 200 | 250 | TOLERANCE     |
| VOLTAGE CODE               |        | X       | A  | B   | C   | P   |               |
| CAP. CODE                  | CAP.   |         |    |     |     |     |               |
| 240                        | 24 pF  | ••      | •• | ••  | ••  | ••  | F, G, J, K, M |
| 270                        | 27 pF  | ••      | •• | ••  | ••  | ••  | F, G, J, K, M |
| 300                        | 30 pF  | ••      | •• | ••  | ••  | ••  | F, G, J, K, M |
| 330                        | 33 pF  | ••      | •• | ••  | ••  | ••  | F, G, J, K, M |
| 360                        | 36 pF  | ••      | •• | ••  | ••  | ••  | F, G, J, K, M |
| 390                        | 39 pF  | ••      | •• | ••  | ••  | ••  | F, G, J, K, M |
| 430                        | 43 pF  | ••      | •• | ••  | ••  | ••  | F, G, J, K, M |
| 470                        | 47 pF  | ••      | •• | ••  | ••  | ••  | F, G, J, K, M |
| 510                        | 51 pF  | ••      | •• | ••  | ••  | ••  | F, G, J, K, M |
| 560                        | 56 pF  | ••      | •• | ••  | ••  | ••  | F, G, J, K, M |
| 620                        | 62 pF  | •       | •  | •   | •   | •   | F, G, J, K, M |
| 680                        | 68 pF  | •       | •  | •   | •   | •   | F, G, J, K, M |
| 750                        | 75 pF  | •       | •  | •   | •   | •   | F, G, J, K, M |
| 820                        | 82 pF  | •       | •  | •   | •   | •   | F, G, J, K, M |
| 910                        | 91 pF  | •       | •  | •   | •   | •   | F, G, J, K, M |
| 101                        | 100 pF | •       | •  | •   | •   | •   | F, G, J, K, M |
| 111                        | 110 pF | •       | •  | •   |     |     | F, G, J, K, M |
| 121                        | 120 pF | •       | •  | •   |     |     | F, G, J, K, M |
| 131                        | 130 pF | •       | •  | •   |     |     | F, G, J, K, M |
| 151                        | 150 pF | •       | •  | •   |     |     | F, G, J, K, M |
| 181                        | 180 pF | •       | •  |     |     |     | F, G, J, K, M |
| 201                        | 200 pF | •       | •  |     |     |     | F, G, J, K, M |
| 221                        | 220 pF | •       | •  |     |     |     | F, G, J, K, M |
| 241                        | 240 pF | •       | •  |     |     |     | F, G, J, K, M |
| 271                        | 270 pF | •       | •  |     |     |     | F, G, J, K, M |
| 301                        | 300 pF | •       | •  |     |     |     | F, G, J, K, M |
| 331                        | 330 pF | •       | •  |     |     |     | F, G, J, K, M |
| 361                        | 360 pF | •       |    |     |     |     | F, G, J, K, M |
| 391                        | 390 pF | •       |    |     |     |     | F, G, J, K, M |
| 431                        | 430 pF | •       |    |     |     |     | F, G, J, K, M |
| 471                        | 470 pF | •       |    |     |     |     | F, G, J, K, M |
| 511                        | 510 pF |         |    |     |     |     |               |
| 561                        | 560 pF |         |    |     |     |     |               |
| 621                        | 620 pF |         |    |     |     |     |               |
| 681                        | 680 pF |         |    |     |     |     |               |
| 751                        | 750 pF |         |    |     |     |     |               |
| 821                        | 820 pF |         |    |     |     |     |               |
| 911                        | 910 pF |         |    |     |     |     |               |
| 102                        | 1.0 nF |         |    |     |     |     |               |
| 112                        | 1.1 nF |         |    |     |     |     |               |
| 122                        | 1.2 nF |         |    |     |     |     |               |
| 132                        | 1.3 nF |         |    |     |     |     |               |
| 152                        | 1.5 nF |         |    |     |     |     |               |
| 182                        | 1.8 nF |         |    |     |     |     |               |

Notes

- RoHS-compliant except when supplied with lead (Pb)-containing termination, code "L"
- Paper carrier • Plastic carrier tape
- For case size 0603: Cu termination "C" is only available in plastic carrier tape
- For soldering conditions see Vishay Soldering Recommendations [www.vishay.com/doc?45034](http://www.vishay.com/doc?45034)



| SELECTION CHART            |        |         |    |     |     |     |     |                  |
|----------------------------|--------|---------|----|-----|-----|-----|-----|------------------|
| DIELECTRIC (VISHAY CODE)   |        | COG (D) |    |     |     |     |     |                  |
| STYLE                      |        | VJ0805  |    |     |     |     |     |                  |
| CASE CODE                  |        | 0805    |    |     |     |     |     |                  |
| VOLTAGE (V <sub>DC</sub> ) |        | 25      | 50 | 100 | 200 | 250 | 500 | TOLERANCE<br>(1) |
| VOLTAGE CODE               |        | X       | A  | B   | C   | P   | E   |                  |
| CAP. CODE                  | CAP.   |         |    |     |     |     |     |                  |
| 0R1                        | 0.1 pF | •       | •  | •   | •   | •   |     | V, B, C, D       |
| 0R2                        | 0.2 pF | •       | •  | •   | •   | •   |     | V, B, C, D       |
| 0R3                        | 0.3 pF | •       | •  | •   | •   | •   |     | V, B, C, D       |
| 0R4                        | 0.4 pF | •       | •  | •   | •   | •   |     | V, B, C, D       |
| 0R5                        | 0.5 pF | •       | •  | •   | •   | •   |     | V, B, C, D       |
| 0R6                        | 0.6 pF | •       | •  | •   | •   | •   |     | V, B, C, D       |
| 0R7                        | 0.7 pF | •       | •  | •   | •   | •   |     | V, B, C, D       |
| 0R8                        | 0.8 pF | •       | •  | •   | •   | •   |     | V, B, C, D       |
| 0R9                        | 0.9 pF | •       | •  | •   | •   | •   |     | V, B, C, D       |
| 1R0                        | 1.0 pF | •       | •  | •   | •   | •   | •   | V, B, C, D       |
| 1R1                        | 1.1 pF | •       | •  | •   | •   | •   |     | V, B, C, D       |
| 1R2                        | 1.2 pF | •       | •  | •   | •   | •   | •   | V, B, C, D       |
| 1R3                        | 1.3 pF | •       | •  | •   | •   | •   |     | V, B, C, D       |
| 1R4                        | 1.4 pF | •       | •  | •   | •   | •   |     | V, B, C, D       |
| 1R5                        | 1.5 pF | •       | •  | •   | •   | •   | •   | V, B, C, D       |
| 1R6                        | 1.6 pF | •       | •  | •   | •   | •   |     | V, B, C, D       |
| 1R7                        | 1.7 pF | •       | •  | •   | •   | •   |     | V, B, C, D       |
| 1R8                        | 1.8 pF | •       | •  | •   | •   | •   | •   | V, B, C, D       |
| 1R9                        | 1.9 pF | •       | •  | •   | •   | •   |     | V, B, C, D       |
| 2R0                        | 2.0 pF | •       | •  | •   | •   | •   |     | V, B, C, D       |
| 2R1                        | 2.1 pF | •       | •  | •   | •   | •   |     | V, B, C, D       |
| 2R2                        | 2.2 pF | •       | •  | •   | •   | •   | •   | V, B, C, D       |
| 2R4                        | 2.4 pF | •       | •  | •   | •   | •   |     | V, B, C, D       |
| 2R7                        | 2.7 pF | •       | •  | •   | •   | •   |     | V, B, C, D       |
| 3R0                        | 3.0 pF | •       | •  | •   | •   | •   |     | V, B, C, D       |
| 3R3                        | 3.3 pF | •       | •  | •   | •   | •   | •   | V, B, C, D       |
| 3R6                        | 3.6 pF | •       | •  | •   | •   | •   |     | V, B, C, D       |
| 3R9                        | 3.9 pF | •       | •  | •   | •   | •   | •   | V, B, C, D       |
| 4R3                        | 4.3 pF | •       | •  | •   | •   | •   |     | V, B, C, D       |
| 4R7                        | 4.7 pF | •       | •  | •   | •   | •   | •   | V, B, C, D       |
| 5R1                        | 5.1 pF | •       | •  | •   | •   | •   |     | V, B, C, D       |
| 5R6                        | 5.6 pF | •       | •  | •   | •   | •   | •   | V, B, C, D       |
| 6R2                        | 6.2 pF | •       | •  | •   | •   | •   |     | V, B, C, D       |
| 6R8                        | 6.8 pF | •       | •  | •   | •   | •   | •   | V, B, C, D       |
| 7R5                        | 7.5 pF | •       | •  | •   | •   | •   |     | V, B, C, D       |
| 8R2                        | 8.2 pF | •       | •  | •   | •   | •   | •   | V, B, C, D       |
| 9R1                        | 9.1 pF | •       | •  | •   | •   | •   |     | V, B, C, D       |

Notes

RoHS-compliant except when supplied with lead (Pb)-containing termination, code "L"

• Plastic carrier tape

- For soldering conditions see Vishay Soldering Recommendations [www.vishay.com/doc?45034](http://www.vishay.com/doc?45034)

(1) 500 V, < 10 pF tolerances B, C, D only



| SELECTION CHART            |        |         |    |     |     |     |     |                  |
|----------------------------|--------|---------|----|-----|-----|-----|-----|------------------|
| DIELECTRIC (VISHAY CODE)   |        | COG (D) |    |     |     |     |     |                  |
| STYLE                      |        | VJ0805  |    |     |     |     |     |                  |
| CASE CODE                  |        | 0805    |    |     |     |     |     |                  |
| VOLTAGE (V <sub>DC</sub> ) |        | 25      | 50 | 100 | 200 | 250 | 500 | TOLERANCE<br>(1) |
| VOLTAGE CODE               |        | X       | A  | B   | C   | P   | E   |                  |
| CAP. CODE                  | CAP.   |         |    |     |     |     |     |                  |
| 100                        | 10 pF  | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |
| 110                        | 11 pF  | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |
| 120                        | 12 pF  | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |
| 130                        | 13 pF  | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |
| 150                        | 15 pF  | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |
| 180                        | 18 pF  | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |
| 200                        | 20 pF  | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |
| 220                        | 22 pF  | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |
| 240                        | 24 pF  | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |
| 270                        | 27 pF  | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |
| 300                        | 30 pF  | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |
| 330                        | 33 pF  | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |
| 360                        | 36 pF  | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |
| 390                        | 39 pF  | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |
| 430                        | 43 pF  | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |
| 470                        | 47 pF  | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |
| 510                        | 51 pF  | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |
| 560                        | 56 pF  | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |
| 620                        | 62 pF  | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |
| 680                        | 68 pF  | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |
| 750                        | 75 pF  | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |
| 820                        | 82 pF  | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |
| 910                        | 91 pF  | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |
| 101                        | 100 pF | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |
| 111                        | 110 pF | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |
| 121                        | 120 pF | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |
| 131                        | 130 pF | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |
| 151                        | 150 pF | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |
| 181                        | 180 pF | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |
| 201                        | 200 pF | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |
| 221                        | 220 pF | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |
| 241                        | 240 pF | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |
| 271                        | 270 pF | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |
| 301                        | 300 pF | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |
| 331                        | 330 pF | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |
| 361                        | 360 pF | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |
| 391                        | 390 pF | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |
| 431                        | 430 pF | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |
| 471                        | 470 pF | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |
| 511                        | 510 pF | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |
| 561                        | 560 pF | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |
| 621                        | 620 pF | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |
| 681                        | 680 pF | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |
| 751                        | 750 pF | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |
| 821                        | 820 pF | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |
| 911                        | 910 pF | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |
| 102                        | 1.0 nF | •       | •  | •   | •   | •   | •   | F, G, J, K, M    |

Notes

• RoHS-compliant except when supplied with lead (Pb)-containing termination, code "L"

• Plastic carrier tape

- For soldering conditions see Vishay Soldering Recommendations [www.vishay.com/doc?45034](http://www.vishay.com/doc?45034)

(1) 500 V, < 10 pF tolerances B, C, D only



| SELECTION CHART            |        |         |     |     |     |     |     |      |      |               |
|----------------------------|--------|---------|-----|-----|-----|-----|-----|------|------|---------------|
| DIELECTRIC (VISHAY CODE)   |        | COG (D) |     |     |     |     |     |      |      |               |
| STYLE                      |        | VJ1111  |     |     |     |     |     |      |      |               |
| CASE CODE                  |        | 1111    |     |     |     |     |     |      |      |               |
| VOLTAGE (V <sub>DC</sub> ) |        | 50      | 100 | 200 | 300 | 500 | 630 | 1000 | 1500 | TOLERANCE     |
| VOLTAGE CODE               |        | A       | B   | C   | D   | E   | L   | G    | R    |               |
| CAP. CODE                  | CAP.   |         |     |     |     |     |     |      |      |               |
| 0R2                        | 0.2 pF | •       | •   | •   | •   | •   | •   | •    | •    | V, B, C, D    |
| 0R3                        | 0.3 pF | •       | •   | •   | •   | •   | •   | •    | •    | V, B, C, D    |
| 0R4                        | 0.4 pF | •       | •   | •   | •   | •   | •   | •    | •    | V, B, C, D    |
| 0R5                        | 0.5 pF | •       | •   | •   | •   | •   | •   | •    | •    | V, B, C, D    |
| 0R6                        | 0.6 pF | •       | •   | •   | •   | •   | •   | •    | •    | V, B, C, D    |
| 0R7                        | 0.7 pF | •       | •   | •   | •   | •   | •   | •    | •    | V, B, C, D    |
| 0R8                        | 0.8 pF | •       | •   | •   | •   | •   | •   | •    | •    | V, B, C, D    |
| 0R9                        | 0.9 pF | •       | •   | •   | •   | •   | •   | •    | •    | V, B, C, D    |
| 1R0                        | 1.0 pF | •       | •   | •   | •   | •   | •   | •    | •    | V, B, C, D    |
| 1R1                        | 1.1 pF | •       | •   | •   | •   | •   | •   | •    | •    | V, B, C, D    |
| 1R2                        | 1.2 pF | •       | •   | •   | •   | •   | •   | •    | •    | V, B, C, D    |
| 1R3                        | 1.3 pF | •       | •   | •   | •   | •   | •   | •    | •    | V, B, C, D    |
| 1R4                        | 1.4 pF | •       | •   | •   | •   | •   | •   | •    | •    | V, B, C, D    |
| 1R5                        | 1.5 pF | •       | •   | •   | •   | •   | •   | •    | •    | V, B, C, D    |
| 1R6                        | 1.6 pF | •       | •   | •   | •   | •   | •   | •    | •    | V, B, C, D    |
| 1R7                        | 1.7 pF | •       | •   | •   | •   | •   | •   | •    | •    | V, B, C, D    |
| 1R8                        | 1.8 pF | •       | •   | •   | •   | •   | •   | •    | •    | V, B, C, D    |
| 1R9                        | 1.9 pF | •       | •   | •   | •   | •   | •   | •    | •    | V, B, C, D    |
| 2R0                        | 2.0 pF | •       | •   | •   | •   | •   | •   | •    | •    | V, B, C, D    |
| 2R1                        | 2.1 pF | •       | •   | •   | •   | •   | •   | •    | •    | V, B, C, D    |
| 2R2                        | 2.2 pF | •       | •   | •   | •   | •   | •   | •    | •    | V, B, C, D    |
| 2R4                        | 2.4 pF | •       | •   | •   | •   | •   | •   | •    | •    | V, B, C, D    |
| 2R7                        | 2.7 pF | •       | •   | •   | •   | •   | •   | •    | •    | V, B, C, D    |
| 3R0                        | 3.0 pF | •       | •   | •   | •   | •   | •   | •    | •    | V, B, C, D    |
| 3R3                        | 3.3 pF | •       | •   | •   | •   | •   | •   | •    | •    | V, B, C, D    |
| 3R6                        | 3.6 pF | •       | •   | •   | •   | •   | •   | •    | •    | V, B, C, D    |
| 3R9                        | 3.9 pF | •       | •   | •   | •   | •   | •   | •    | •    | V, B, C, D    |
| 4R3                        | 4.3 pF | •       | •   | •   | •   | •   | •   | •    | •    | V, B, C, D    |
| 4R7                        | 4.7 pF | •       | •   | •   | •   | •   | •   | •    | •    | V, B, C, D    |
| 5R1                        | 5.1 pF | •       | •   | •   | •   | •   | •   | •    | •    | V, B, C, D    |
| 5R6                        | 5.6 pF | •       | •   | •   | •   | •   | •   | •    | •    | B, C, D       |
| 6R2                        | 6.2 pF | •       | •   | •   | •   | •   | •   | •    | •    | B, C, D       |
| 6R8                        | 6.8 pF | •       | •   | •   | •   | •   | •   | •    | •    | B, C, D       |
| 7R5                        | 7.5 pF | •       | •   | •   | •   | •   | •   | •    | •    | B, C, D       |
| 8R2                        | 8.2 pF | •       | •   | •   | •   | •   | •   | •    | •    | B, C, D       |
| 9R1                        | 9.1 pF | •       | •   | •   | •   | •   | •   | •    | •    | B, C, D       |
| 100                        | 10 pF  | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 110                        | 11 pF  | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 120                        | 12 pF  | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 130                        | 13 pF  | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 150                        | 15 pF  | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 160                        | 16 pF  | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 180                        | 18 pF  | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 200                        | 20 pF  | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 220                        | 22 pF  | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 240                        | 24 pF  | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 270                        | 27 pF  | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 300                        | 30 pF  | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 330                        | 33 pF  | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 360                        | 36 pF  | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 390                        | 39 pF  | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 430                        | 43 pF  | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 470                        | 47 pF  | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |

**Notes**

- RoHS-compliant except when supplied with lead (Pb)-containing termination, code "L"
- Plastic carrier tape



| SELECTION CHART            |         |         |     |     |     |     |     |      |      |               |
|----------------------------|---------|---------|-----|-----|-----|-----|-----|------|------|---------------|
| DIELECTRIC (VISHAY CODE)   |         | COG (D) |     |     |     |     |     |      |      |               |
| STYLE                      |         | VJ1111  |     |     |     |     |     |      |      |               |
| CASE CODE                  |         | 1111    |     |     |     |     |     |      |      |               |
| VOLTAGE (V <sub>DC</sub> ) |         | 50      | 100 | 200 | 300 | 500 | 630 | 1000 | 1500 | TOLERANCE     |
| VOLTAGE CODE               |         | A       | B   | C   | D   | E   | L   | G    | R    |               |
| CAP. CODE                  | CAP.    |         |     |     |     |     |     |      |      |               |
| 510                        | 51 pF   | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 560                        | 56 pF   | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 620                        | 62 pF   | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 680                        | 68 pF   | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 750                        | 75 pF   | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 820                        | 82 pF   | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 910                        | 91 pF   | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 101                        | 100 pF  | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 111                        | 110 pF  | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 121                        | 120 pF  | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 131                        | 130 pF  | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 151                        | 150 pF  | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 161                        | 160 pF  | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 181                        | 180 pF  | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 201                        | 200 pF  | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 221                        | 220 pF  | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 241                        | 240 pF  | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 271                        | 270 pF  | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 301                        | 300 pF  | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 331                        | 330 pF  | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 361                        | 360 pF  | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 391                        | 390 pF  | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 431                        | 430 pF  | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 471                        | 470 pF  | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 511                        | 510 pF  | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 561                        | 560 pF  | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 621                        | 620 pF  | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 681                        | 680 pF  | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 751                        | 750 pF  | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 821                        | 820 pF  | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 911                        | 910 pF  | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 102                        | 1000 pF | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 112                        | 1100 pF | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 122                        | 1200 pF | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 132                        | 1300 pF | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 152                        | 1500 pF | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 162                        | 1600 pF | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 182                        | 1800 pF | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 202                        | 2000 pF | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 222                        | 2200 pF | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 242                        | 2400 pF | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 272                        | 2700 pF | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 302                        | 3000 pF | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |
| 332                        | 3300 pF | •       | •   | •   | •   | •   | •   | •    | •    | F, G, J, K, M |

Notes

- RoHS-compliant except when supplied with lead (Pb)-containing termination, code "L"
- Plastic carrier tape



| SELECTION CHART            |        |         |     |     |     |      |      |      |      |      |      |               |
|----------------------------|--------|---------|-----|-----|-----|------|------|------|------|------|------|---------------|
| DIELECTRIC (VISHAY CODE)   |        | COG (D) |     |     |     |      |      |      |      |      |      |               |
| STYLE                      |        | VJ2525  |     |     |     |      |      |      |      |      |      |               |
| CASE CODE                  |        | 2525    |     |     |     |      |      |      |      |      |      |               |
| VOLTAGE (V <sub>DC</sub> ) |        | 300     | 500 | 630 | 800 | 1000 | 1500 | 2000 | 2500 | 3000 | 3600 | TOLERANCE     |
| VOLTAGE CODE               |        | D       | E   | L   | I   | G    | R    | F    | O    | H    | W    |               |
| CAP. CODE                  | CAP.   |         |     |     |     |      |      |      |      |      |      |               |
| 1R0                        | 1.0 pF | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | B, C, D       |
| 1R1                        | 1.1 pF | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | B, C, D       |
| 1R2                        | 1.2 pF | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | B, C, D       |
| 1R3                        | 1.3 pF | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | B, C, D       |
| 1R4                        | 1.4 pF | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | B, C, D       |
| 1R5                        | 1.5 pF | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | B, C, D       |
| 1R6                        | 1.6 pF | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | B, C, D       |
| 1R7                        | 1.7 pF | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | B, C, D       |
| 1R8                        | 1.8 pF | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | B, C, D       |
| 1R9                        | 1.9 pF | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | B, C, D       |
| 2R0                        | 2.0 pF | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | B, C, D       |
| 2R1                        | 2.1 pF | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | B, C, D       |
| 2R2                        | 2.2 pF | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | B, C, D       |
| 2R4                        | 2.4 pF | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | B, C, D       |
| 2R7                        | 2.7 pF | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | B, C, D       |
| 3R0                        | 3.0 pF | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | B, C, D       |
| 3R3                        | 3.3 pF | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | B, C, D       |
| 3R6                        | 3.6 pF | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | B, C, D       |
| 3R9                        | 3.9 pF | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | B, C, D       |
| 4R3                        | 4.3 pF | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | B, C, D       |
| 4R7                        | 4.7 pF | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | B, C, D       |
| 5R1                        | 5.1 pF | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | B, C, D       |
| 5R6                        | 5.6 pF | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | B, C, D       |
| 6R2                        | 6.2 pF | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | B, C, D       |
| 6R8                        | 6.8 pF | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | B, C, D       |
| 7R5                        | 7.5 pF | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | B, C, D       |
| 8R2                        | 8.2 pF | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | B, C, D       |
| 9R1                        | 9.1 pF | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | B, C, D       |
| 100                        | 10 pF  | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | F, G, J, K, M |
| 110                        | 11 pF  | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | F, G, J, K, M |
| 120                        | 12 pF  | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | F, G, J, K, M |
| 130                        | 13 pF  | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | F, G, J, K, M |
| 150                        | 15 pF  | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | F, G, J, K, M |
| 160                        | 16 pF  | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | F, G, J, K, M |
| 180                        | 18 pF  | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | F, G, J, K, M |
| 200                        | 20 pF  | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | F, G, J, K, M |
| 220                        | 22 pF  | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | F, G, J, K, M |
| 240                        | 24 pF  | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | F, G, J, K, M |
| 270                        | 27 pF  | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | F, G, J, K, M |
| 300                        | 30 pF  | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | F, G, J, K, M |
| 330                        | 33 pF  | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | F, G, J, K, M |
| 360                        | 36 pF  | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | F, G, J, K, M |
| 390                        | 39 pF  | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | F, G, J, K, M |

Notes

- RoHS-compliant except when supplied with lead (Pb)-containing termination, code "L"
- Plastic carrier tape



| SELECTION CHART            |         |         |     |     |     |      |      |      |      |      |      |               |
|----------------------------|---------|---------|-----|-----|-----|------|------|------|------|------|------|---------------|
| DIELECTRIC (VISHAY CODE)   |         | COG (D) |     |     |     |      |      |      |      |      |      |               |
| STYLE                      |         | VJ2525  |     |     |     |      |      |      |      |      |      |               |
| CASE CODE                  |         | 2525    |     |     |     |      |      |      |      |      |      |               |
| VOLTAGE (V <sub>DC</sub> ) |         | 300     | 500 | 630 | 800 | 1000 | 1500 | 2000 | 2500 | 3000 | 3600 | TOLERANCE     |
| VOLTAGE CODE               |         | D       | E   | L   | I   | G    | R    | F    | O    | H    | W    |               |
| CAP. CODE                  | CAP.    |         |     |     |     |      |      |      |      |      |      |               |
| 430                        | 43 pF   | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | F, G, J, K, M |
| 470                        | 47 pF   | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | F, G, J, K, M |
| 510                        | 51 pF   | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | F, G, J, K, M |
| 560                        | 56 pF   | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | F, G, J, K, M |
| 620                        | 62 pF   | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | F, G, J, K, M |
| 680                        | 68 pF   | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | F, G, J, K, M |
| 750                        | 75 pF   | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | F, G, J, K, M |
| 820                        | 82 pF   | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | F, G, J, K, M |
| 910                        | 91 pF   | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | F, G, J, K, M |
| 101                        | 100 pF  | •       | •   | •   | •   | •    | •    | •    | •    | •    | •    | F, G, J, K, M |
| 111                        | 110 pF  | •       | •   | •   | •   | •    | •    | •    | •    | •    |      | F, G, J, K, M |
| 121                        | 120 pF  | •       | •   | •   | •   | •    | •    | •    | •    | •    |      | F, G, J, K, M |
| 131                        | 130 pF  | •       | •   | •   | •   | •    | •    | •    | •    | •    |      | F, G, J, K, M |
| 151                        | 150 pF  | •       | •   | •   | •   | •    | •    | •    | •    | •    |      | F, G, J, K, M |
| 161                        | 160 pF  | •       | •   | •   | •   | •    | •    | •    | •    | •    |      | F, G, J, K, M |
| 181                        | 180 pF  | •       | •   | •   | •   | •    | •    | •    | •    | •    |      | F, G, J, K, M |
| 201                        | 200 pF  | •       | •   | •   | •   | •    | •    | •    | •    | •    |      | F, G, J, K, M |
| 221                        | 220 pF  | •       | •   | •   | •   | •    | •    | •    | •    | •    |      | F, G, J, K, M |
| 241                        | 240 pF  | •       | •   | •   | •   | •    | •    | •    | •    | •    |      | F, G, J, K, M |
| 271                        | 270 pF  | •       | •   | •   | •   | •    | •    | •    | •    | •    |      | F, G, J, K, M |
| 301                        | 300 pF  | •       | •   | •   | •   | •    | •    | •    |      |      |      | F, G, J, K, M |
| 331                        | 330 pF  | •       | •   | •   | •   | •    | •    | •    |      |      |      | F, G, J, K, M |
| 361                        | 360 pF  | •       | •   | •   | •   | •    | •    | •    |      |      |      | F, G, J, K, M |
| 391                        | 390 pF  | •       | •   | •   | •   | •    | •    | •    |      |      |      | F, G, J, K, M |
| 431                        | 430 pF  | •       | •   | •   | •   | •    | •    | •    |      |      |      | F, G, J, K, M |
| 471                        | 470 pF  | •       | •   | •   | •   | •    | •    | •    |      |      |      | F, G, J, K, M |
| 511                        | 510 pF  | •       | •   | •   | •   | •    | •    |      |      |      |      | F, G, J, K, M |
| 561                        | 560 pF  | •       | •   | •   | •   | •    | •    |      |      |      |      | F, G, J, K, M |
| 621                        | 620 pF  | •       | •   | •   | •   | •    | •    |      |      |      |      | F, G, J, K, M |
| 681                        | 680 pF  | •       | •   | •   | •   | •    | •    |      |      |      |      | F, G, J, K, M |
| 751                        | 750 pF  | •       | •   | •   | •   | •    | •    |      |      |      |      | F, G, J, K, M |
| 821                        | 820 pF  | •       | •   | •   | •   | •    | •    |      |      |      |      | F, G, J, K, M |
| 911                        | 910 pF  | •       | •   | •   | •   | •    | •    |      |      |      |      | F, G, J, K, M |
| 102                        | 1000 pF | •       | •   | •   | •   | •    | •    |      |      |      |      | F, G, J, K, M |
| 112                        | 1100 pF | •       | •   | •   | •   | •    | •    |      |      |      |      | F, G, J, K, M |
| 122                        | 1200 pF | •       | •   | •   | •   | •    | •    |      |      |      |      | F, G, J, K, M |
| 152                        | 1500 pF | •       | •   | •   | •   |      |      |      |      |      |      | F, G, J, K, M |
| 182                        | 1800 pF | •       | •   | •   | •   |      |      |      |      |      |      | F, G, J, K, M |
| 222                        | 2200 pF | •       | •   | •   | •   |      |      |      |      |      |      | F, G, J, K, M |
| 242                        | 2400 pF | •       | •   | •   |     |      |      |      |      |      |      | F, G, J, K, M |
| 272                        | 2700 pF | •       | •   |     |     |      |      |      |      |      |      | F, G, J, K, M |
| 302                        | 3000 pF | •       | •   |     |     |      |      |      |      |      |      | F, G, J, K, M |

Notes

• RoHS-compliant except when supplied with lead (Pb)-containing termination, code "L"

- Plastic carrier tape



| SELECTION CHART            |        |         |     |      |      |      |      |      |               |
|----------------------------|--------|---------|-----|------|------|------|------|------|---------------|
| DIELECTRIC (VISHAY CODE)   |        | COG (D) |     |      |      |      |      |      |               |
| STYLE                      |        | VJ3838  |     |      |      |      |      |      |               |
| CASE CODE                  |        | 3838    |     |      |      |      |      |      |               |
| VOLTAGE (V <sub>DC</sub> ) |        | 300     | 500 | 1000 | 2500 | 3600 | 5000 | 7200 | TOLERANCE     |
| VOLTAGE CODE               |        | D       | E   | G    | O    | W    | M    | S    |               |
| CAP. CODE                  | CAP.   |         |     |      |      |      |      |      |               |
| 1R0                        | 1.0 pF | •       | •   | •    | •    | •    | •    | •    | B, C, D       |
| 1R1                        | 1.1 pF | •       | •   | •    | •    | •    | •    | •    | B, C, D       |
| 1R2                        | 1.2 pF | •       | •   | •    | •    | •    | •    | •    | B, C, D       |
| 1R3                        | 1.3 pF | •       | •   | •    | •    | •    | •    | •    | B, C, D       |
| 1R4                        | 1.4 pF | •       | •   | •    | •    | •    | •    | •    | B, C, D       |
| 1R5                        | 1.5 pF | •       | •   | •    | •    | •    | •    | •    | B, C, D       |
| 1R6                        | 1.6 pF | •       | •   | •    | •    | •    | •    | •    | B, C, D       |
| 1R7                        | 1.7 pF | •       | •   | •    | •    | •    | •    | •    | B, C, D       |
| 1R8                        | 1.8 pF | •       | •   | •    | •    | •    | •    | •    | B, C, D       |
| 1R9                        | 1.9 pF | •       | •   | •    | •    | •    | •    | •    | B, C, D       |
| 2R0                        | 2.0 pF | •       | •   | •    | •    | •    | •    | •    | B, C, D       |
| 2R1                        | 2.1 pF | •       | •   | •    | •    | •    | •    | •    | B, C, D       |
| 2R2                        | 2.2 pF | •       | •   | •    | •    | •    | •    | •    | B, C, D       |
| 2R4                        | 2.4 pF | •       | •   | •    | •    | •    | •    | •    | B, C, D       |
| 2R7                        | 2.7 pF | •       | •   | •    | •    | •    | •    | •    | B, C, D       |
| 3R0                        | 3.0 pF | •       | •   | •    | •    | •    | •    | •    | B, C, D       |
| 3R3                        | 3.3 pF | •       | •   | •    | •    | •    | •    | •    | B, C, D       |
| 3R6                        | 3.6 pF | •       | •   | •    | •    | •    | •    | •    | B, C, D       |
| 3R9                        | 3.9 pF | •       | •   | •    | •    | •    | •    | •    | B, C, D       |
| 4R3                        | 4.3 pF | •       | •   | •    | •    | •    | •    | •    | B, C, D       |
| 4R7                        | 4.7 pF | •       | •   | •    | •    | •    | •    | •    | B, C, D       |
| 5R1                        | 5.1 pF | •       | •   | •    | •    | •    | •    | •    | B, C, D       |
| 5R6                        | 5.6 pF | •       | •   | •    | •    | •    | •    | •    | B, C, D       |
| 6R2                        | 6.2 pF | •       | •   | •    | •    | •    | •    | •    | B, C, D       |
| 6R8                        | 6.8 pF | •       | •   | •    | •    | •    | •    | •    | B, C, D       |
| 7R5                        | 7.5 pF | •       | •   | •    | •    | •    | •    | •    | B, C, D       |
| 8R2                        | 8.2 pF | •       | •   | •    | •    | •    | •    | •    | B, C, D       |
| 9R1                        | 9.1 pF | •       | •   | •    | •    | •    | •    | •    | B, C, D       |
| 100                        | 10 pF  | •       | •   | •    | •    | •    | •    | •    | F, G, J, K, M |
| 110                        | 11 pF  | •       | •   | •    | •    | •    | •    | •    | F, G, J, K, M |
| 120                        | 12 pF  | •       | •   | •    | •    | •    | •    | •    | F, G, J, K, M |
| 130                        | 13 pF  | •       | •   | •    | •    | •    | •    | •    | F, G, J, K, M |
| 150                        | 15 pF  | •       | •   | •    | •    | •    | •    | •    | F, G, J, K, M |
| 160                        | 16 pF  | •       | •   | •    | •    | •    | •    | •    | F, G, J, K, M |
| 180                        | 18 pF  | •       | •   | •    | •    | •    | •    | •    | F, G, J, K, M |
| 200                        | 20 pF  | •       | •   | •    | •    | •    | •    | •    | F, G, J, K, M |
| 220                        | 22 pF  | •       | •   | •    | •    | •    | •    | •    | F, G, J, K, M |
| 240                        | 24 pF  | •       | •   | •    | •    | •    | •    | •    | F, G, J, K, M |
| 270                        | 27 pF  | •       | •   | •    | •    | •    | •    | •    | F, G, J, K, M |
| 300                        | 30 pF  | •       | •   | •    | •    | •    | •    | •    | F, G, J, K, M |
| 330                        | 33 pF  | •       | •   | •    | •    | •    | •    | •    | F, G, J, K, M |
| 360                        | 36 pF  | •       | •   | •    | •    | •    | •    | •    | F, G, J, K, M |
| 390                        | 39 pF  | •       | •   | •    | •    | •    | •    | •    | F, G, J, K, M |
| 430                        | 43 pF  | •       | •   | •    | •    | •    | •    | •    | F, G, J, K, M |
| 470                        | 47 pF  | •       | •   | •    | •    | •    | •    | •    | F, G, J, K, M |
| 510                        | 51 pF  | •       | •   | •    | •    | •    | •    | •    | F, G, J, K, M |
| 560                        | 56 pF  | •       | •   | •    | •    | •    | •    | •    | F, G, J, K, M |
| 620                        | 62 pF  | •       | •   | •    | •    | •    | •    | •    | F, G, J, K, M |
| 680                        | 68 pF  | •       | •   | •    | •    | •    | •    | •    | F, G, J, K, M |
| 750                        | 75 pF  | •       | •   | •    | •    | •    | •    | •    | F, G, J, K, M |
| 820                        | 82 pF  | •       | •   | •    | •    | •    | •    | •    | F, G, J, K, M |
| 910                        | 91 pF  | •       | •   | •    | •    | •    | •    | •    | F, G, J, K, M |

Notes

- RoHS-compliant except when supplied with lead (Pb)-containing termination, code "L"
- Plastic carrier tape





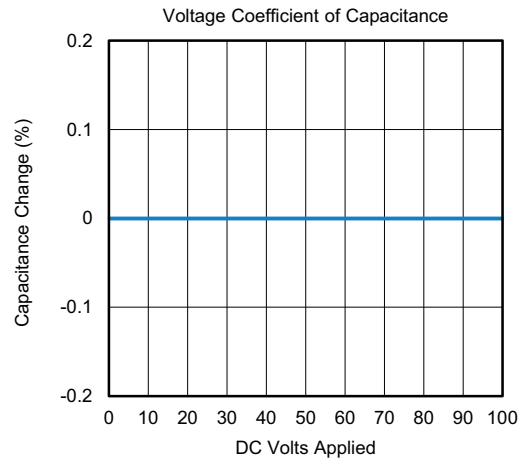
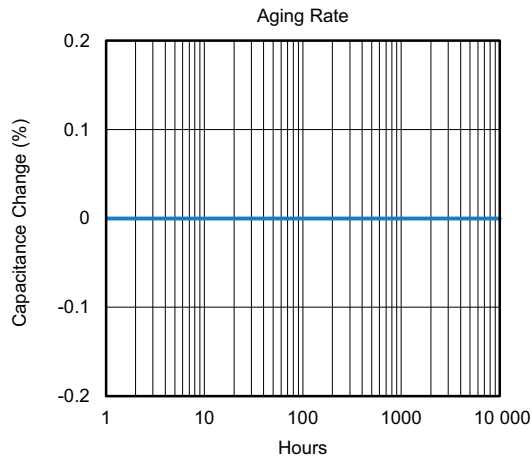
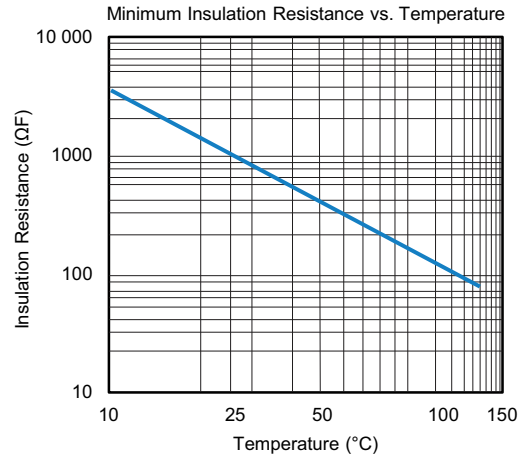
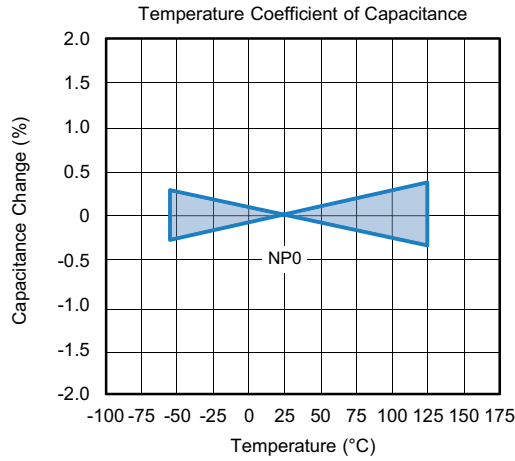
| SELECTION CHART            |           |         |     |      |      |      |      |      |               |
|----------------------------|-----------|---------|-----|------|------|------|------|------|---------------|
| DIELECTRIC (VISHAY CODE)   |           | COG (D) |     |      |      |      |      |      |               |
| STYLE                      |           | VJ3838  |     |      |      |      |      |      |               |
| CASE CODE                  |           | 3838    |     |      |      |      |      |      |               |
| VOLTAGE (V <sub>DC</sub> ) |           | 300     | 500 | 1000 | 2500 | 3600 | 5000 | 7200 | TOLERANCE     |
| VOLTAGE CODE               |           | D       | E   | G    | O    | W    | M    | S    |               |
| CAP. CODE                  | CAP.      |         |     |      |      |      |      |      |               |
| 101                        | 100 pF    | •       | •   | •    | •    | •    | •    | •    | F, G, J, K, M |
| 111                        | 110 pF    | •       | •   | •    | •    | •    | •    |      | F, G, J, K, M |
| 121                        | 120 pF    | •       | •   | •    | •    | •    | •    |      | F, G, J, K, M |
| 131                        | 130 pF    | •       | •   | •    | •    | •    | •    |      | F, G, J, K, M |
| 151                        | 150 pF    | •       | •   | •    | •    | •    | •    |      | F, G, J, K, M |
| 161                        | 160 pF    | •       | •   | •    | •    | •    | •    |      | F, G, J, K, M |
| 181                        | 180 pF    | •       | •   | •    | •    | •    | •    |      | F, G, J, K, M |
| 201                        | 200 pF    | •       | •   | •    | •    | •    |      |      | F, G, J, K, M |
| 221                        | 220 pF    | •       | •   | •    | •    | •    |      |      | F, G, J, K, M |
| 241                        | 240 pF    | •       | •   | •    | •    | •    |      |      | F, G, J, K, M |
| 271                        | 270 pF    | •       | •   | •    | •    | •    |      |      | F, G, J, K, M |
| 301                        | 300 pF    | •       | •   | •    | •    | •    |      |      | F, G, J, K, M |
| 331                        | 330 pF    | •       | •   | •    | •    | •    |      |      | F, G, J, K, M |
| 361                        | 360 pF    | •       | •   | •    | •    | •    |      |      | F, G, J, K, M |
| 391                        | 390 pF    | •       | •   | •    | •    | •    |      |      | F, G, J, K, M |
| 431                        | 430 pF    | •       | •   | •    | •    |      |      |      | F, G, J, K, M |
| 471                        | 470 pF    | •       | •   | •    | •    |      |      |      | F, G, J, K, M |
| 511                        | 510 pF    | •       | •   | •    | •    |      |      |      | F, G, J, K, M |
| 561                        | 560 pF    | •       | •   | •    | •    |      |      |      | F, G, J, K, M |
| 621                        | 620 pF    | •       | •   | •    | •    |      |      |      | F, G, J, K, M |
| 681                        | 680 pF    | •       | •   | •    | •    |      |      |      | F, G, J, K, M |
| 751                        | 750 pF    | •       | •   | •    | •    |      |      |      | F, G, J, K, M |
| 821                        | 820 pF    | •       | •   | •    |      |      |      |      | F, G, J, K, M |
| 911                        | 910 pF    | •       | •   | •    |      |      |      |      | F, G, J, K, M |
| 102                        | 1000 pF   | •       | •   | •    |      |      |      |      | F, G, J, K, M |
| 112                        | 1100 pF   | •       | •   | •    |      |      |      |      | F, G, J, K, M |
| 122                        | 1200 pF   | •       | •   | •    |      |      |      |      | F, G, J, K, M |
| 152                        | 1500 pF   | •       | •   | •    |      |      |      |      | F, G, J, K, M |
| 182                        | 1800 pF   | •       | •   | •    |      |      |      |      | F, G, J, K, M |
| 222                        | 2200 pF   | •       | •   | •    |      |      |      |      | F, G, J, K, M |
| 242                        | 2400 pF   | •       | •   | •    |      |      |      |      | F, G, J, K, M |
| 272                        | 2700 pF   | •       | •   | •    |      |      |      |      | F, G, J, K, M |
| 302                        | 3000 pF   | •       | •   | •    |      |      |      |      | F, G, J, K, M |
| 332                        | 3300 pF   | •       | •   | •    |      |      |      |      | F, G, J, K, M |
| 362                        | 3600 pF   | •       | •   | •    |      |      |      |      | F, G, J, K, M |
| 392                        | 3900 pF   | •       | •   | •    |      |      |      |      | F, G, J, K, M |
| 432                        | 4300 pF   | •       | •   | •    |      |      |      |      | F, G, J, K, M |
| 472                        | 4700 pF   | •       | •   | •    |      |      |      |      | F, G, J, K, M |
| 512                        | 5100 pF   | •       | •   | •    |      |      |      |      | F, G, J, K, M |
| 562                        | 5600 pF   | •       | •   |      |      |      |      |      | F, G, J, K, M |
| 622                        | 6200 pF   | •       | •   |      |      |      |      |      | F, G, J, K, M |
| 682                        | 6800 pF   | •       | •   |      |      |      |      |      | F, G, J, K, M |
| 752                        | 7500 pF   | •       | •   |      |      |      |      |      | F, G, J, K, M |
| 822                        | 8200 pF   | •       |     |      |      |      |      |      | F, G, J, K, M |
| 912                        | 9100 pF   | •       |     |      |      |      |      |      | F, G, J, K, M |
| 103                        | 10 000 pF | •       |     |      |      |      |      |      | F, G, J, K, M |
| 113                        | 11 000 pF | •       |     |      |      |      |      |      | F, G, J, K, M |
| 123                        | 12 000 pF | •       |     |      |      |      |      |      | F, G, J, K, M |

Notes

- RoHS-compliant except when supplied with lead (Pb)-containing termination, code "L"
- Plastic carrier tape

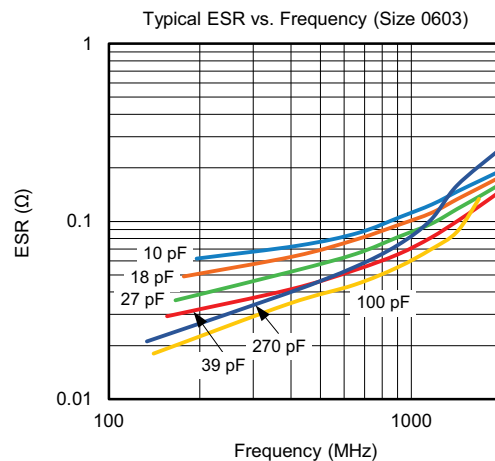
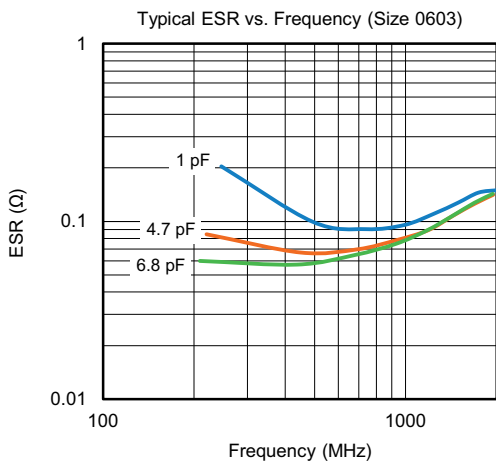
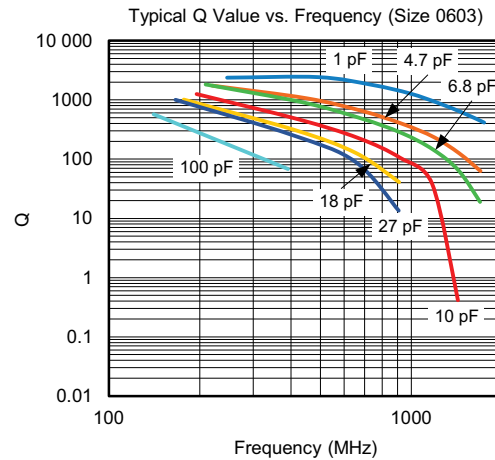
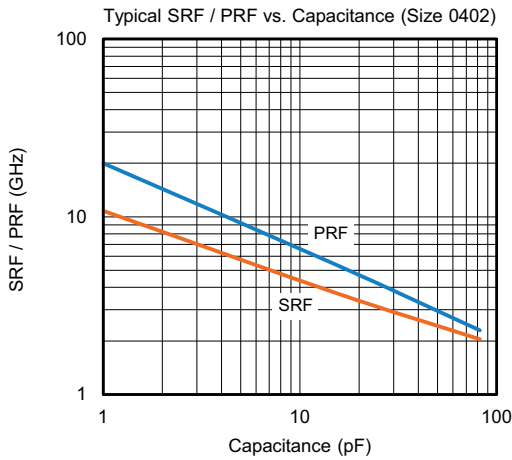
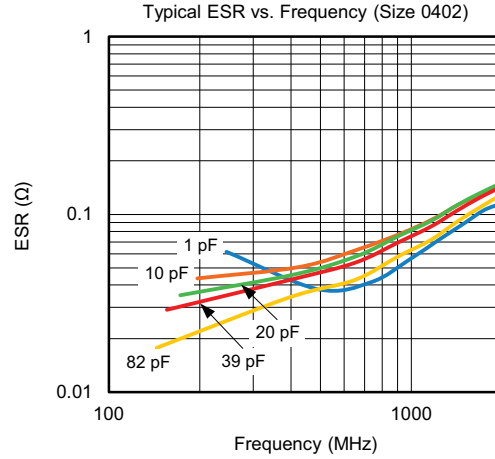
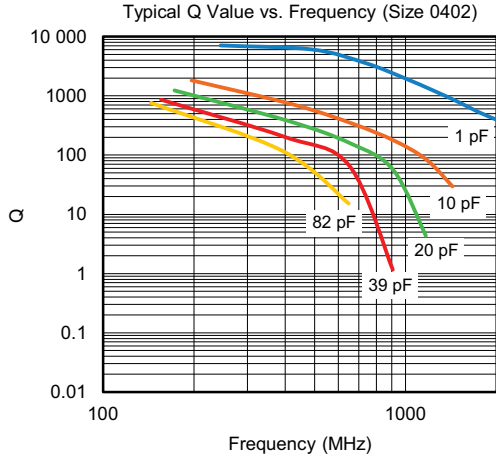


## EIA SIZE / QUAD SIZE - TYPICAL PARAMETERS



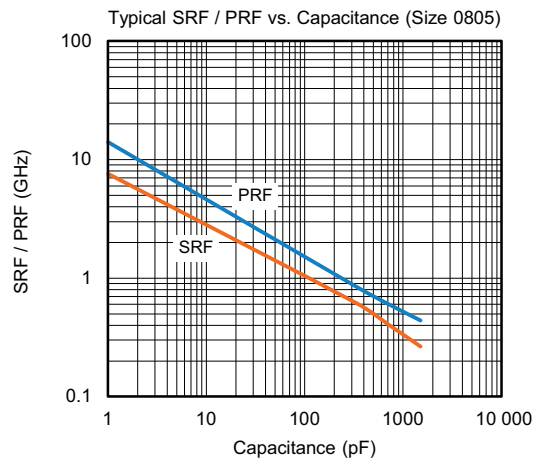
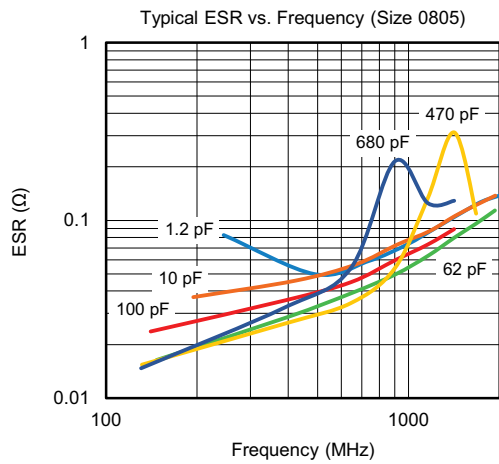
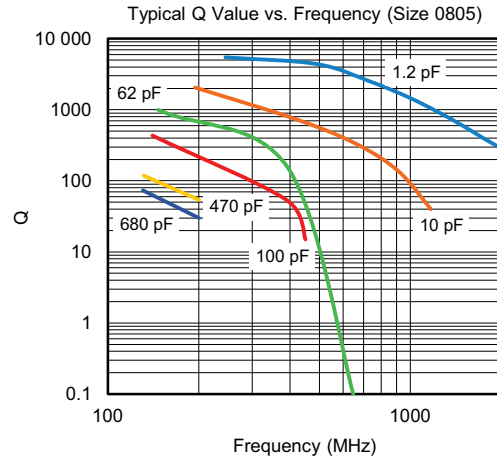
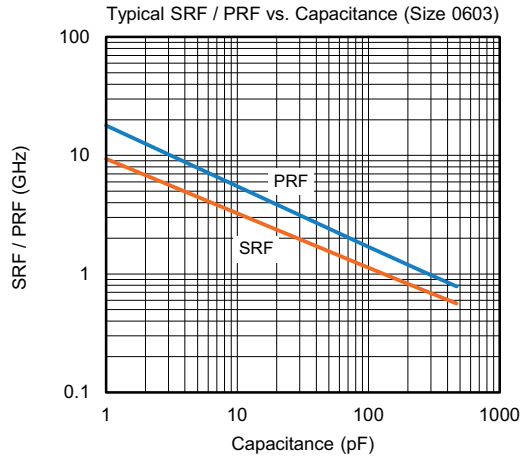


EIA SIZE DIELECTRIC - TYPICAL PARAMETERS



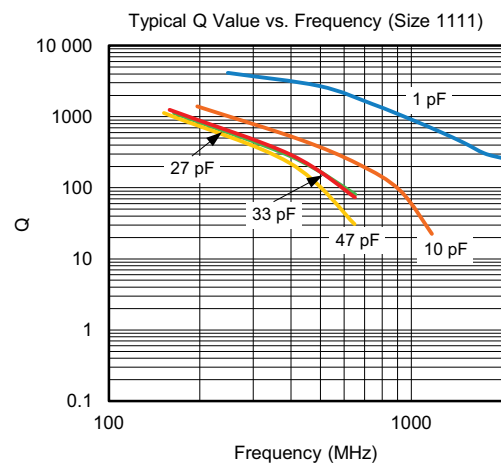
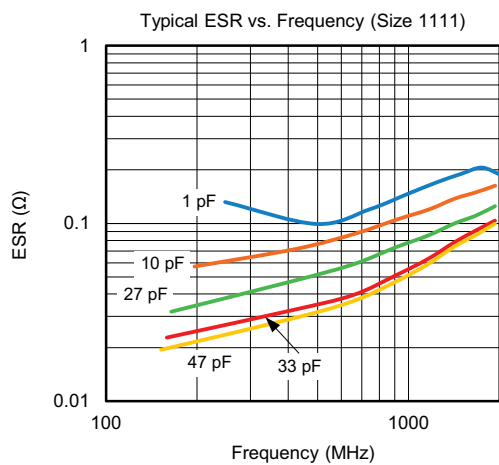
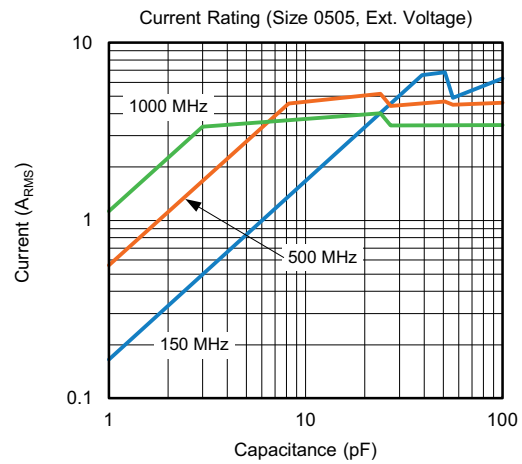
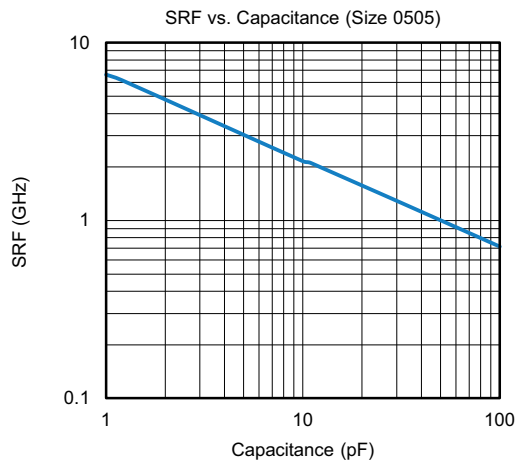
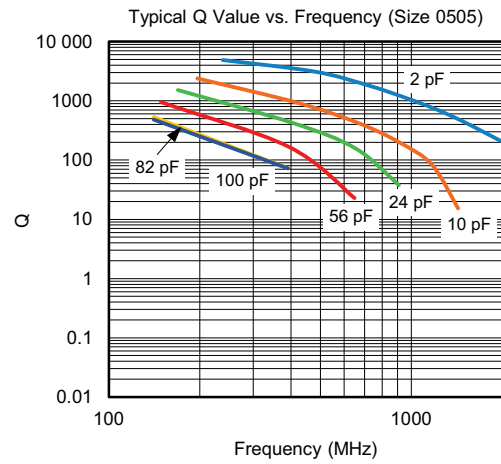
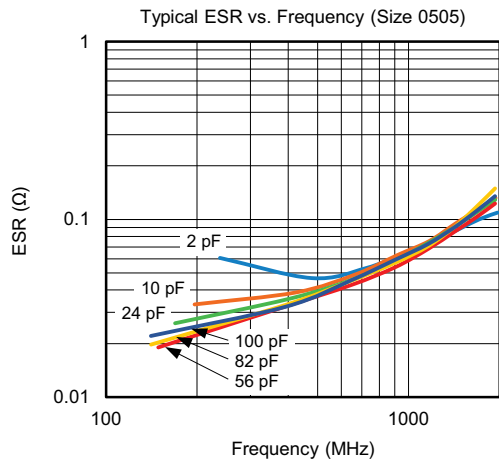


## EIA SIZE DIELECTRIC - TYPICAL PARAMETERS



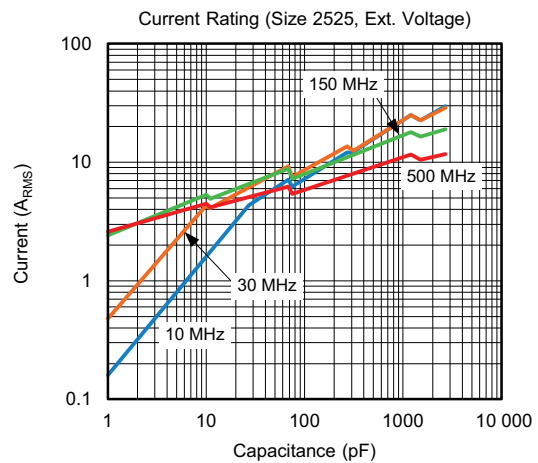
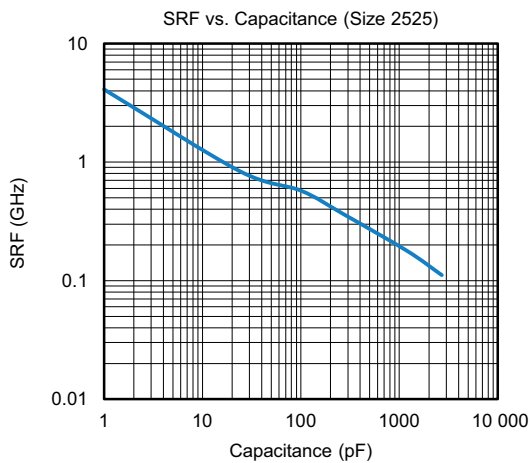
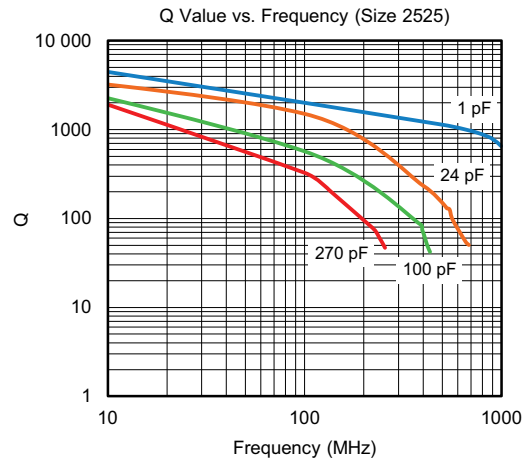
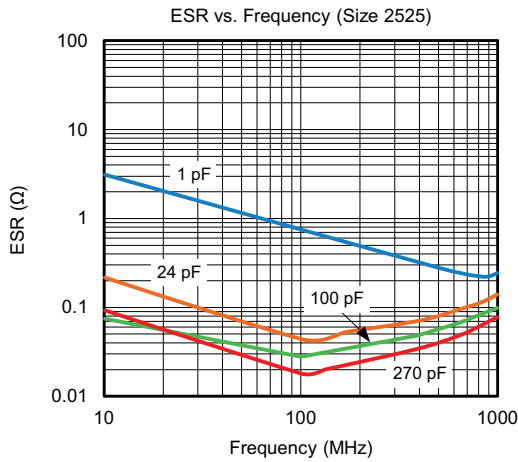
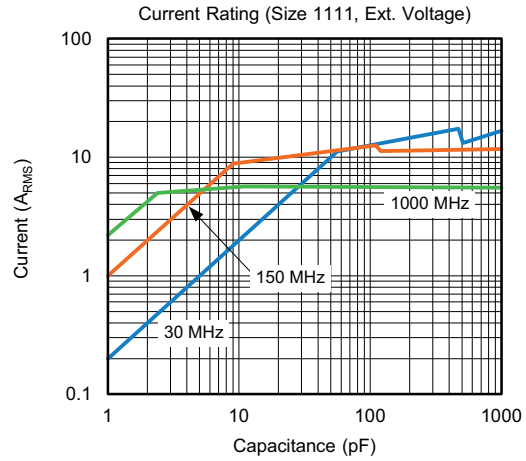
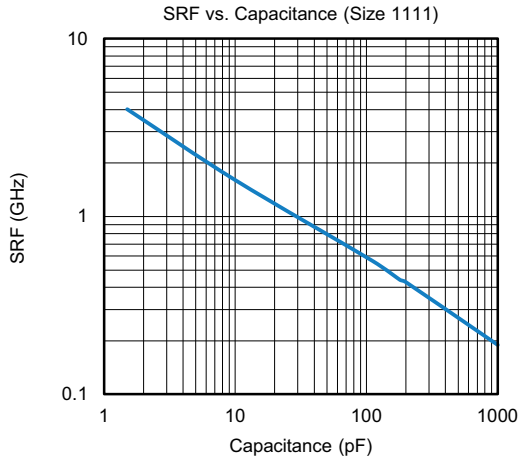


## QUAD SIZE DIELECTRIC - TYPICAL PARAMETERS



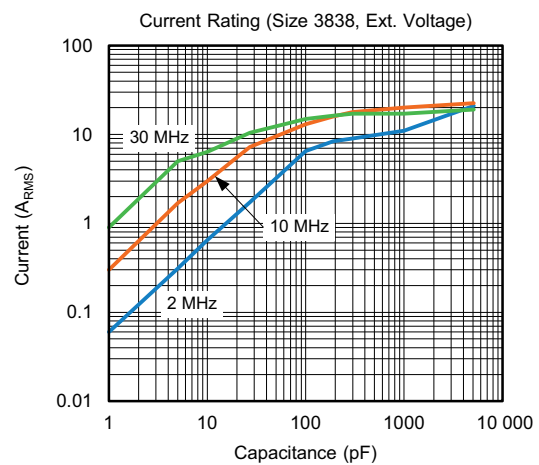
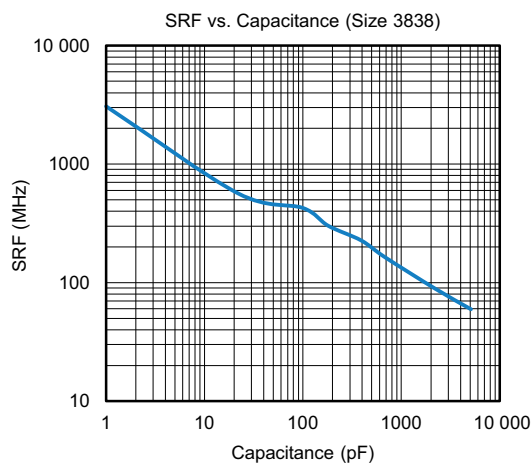
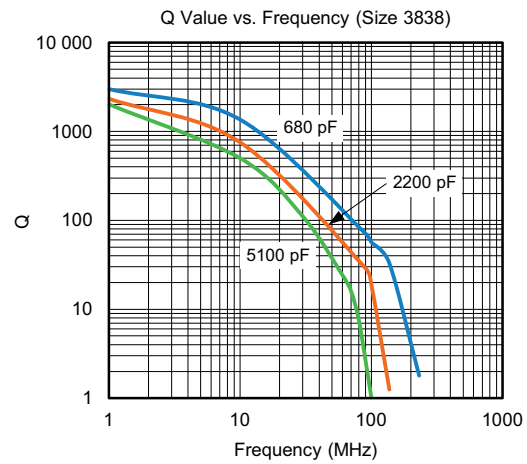
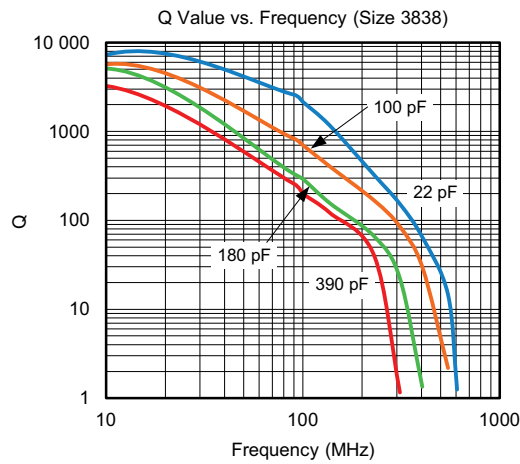
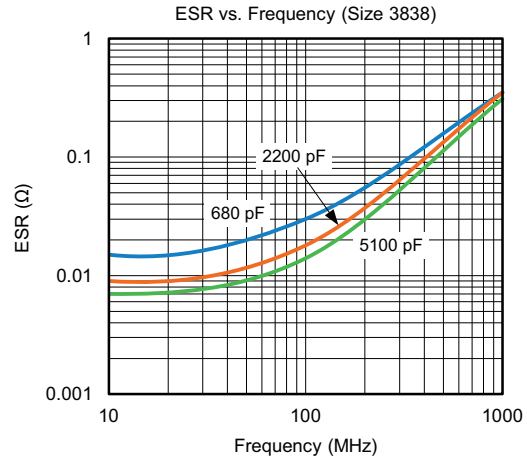
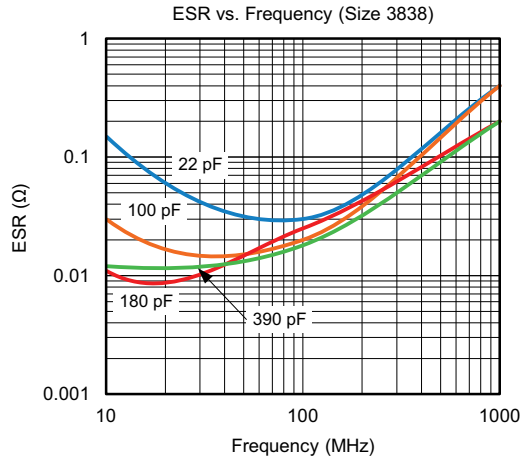


QUAD SIZE DIELECTRIC - TYPICAL PARAMETERS





QUAD SIZE DIELECTRIC - TYPICAL PARAMETERS





| STANDARD PACKAGING QUANTITIES (1)(2)(3) |           |                                     |                                 |                      |                                     |                                 |  |
|---|-----------|-------------------------------------|---------------------------------|----------------------|-------------------------------------|---------------------------------|--|
| CASE CODE                               | TAPE SIZE | 7" REEL QUANTITIES                  |                                 |                      | 11 1/4" AND 13" REEL QUANTITIES     |                                 | WAFFLE PACK                            |
|   |           | PAPER TAPE PACKAGING CODE "C" / "O" | PLASTIC TAPE PACKAGING CODE "T" | LOW QUANTITY "J" (5) | PAPER TAPE PACKAGING CODE "P" / "I" | PLASTIC TAPE PACKAGING CODE "R" | PLASTIC WAFFLE PACK PACKAGING CODE "W" |
| 0402                                    | 8 mm      | 5000                                | n/a                             | 1000                 | 10 000                              | n/a                             | n/a                                    |
| 0603 (4)                                | 8 mm      | 4000                                | 4000                            | 1000                 | 10 000                              | 10 000                          | n/a                                    |
| 0805 (4)                                | 8 mm      | n/a                                 | 3000                            | 1000                 | n/a                                 | 10 000                          | n/a                                    |
| 0505                                    | 8 mm      | n/a                                 | 3000                            | 1000                 | n/a                                 | 10 000                          | n/a                                    |
| 1111                                    | 8 mm      | n/a                                 | 2500                            | 1000                 | n/a                                 | 9000                            | n/a                                    |
| 2525                                    | 12 mm     | n/a                                 | 800                             | 500                  | n/a                                 | n/a                             | 81                                     |
| 3838                                    | 16 mm     | n/a                                 | 400                             | 100                  | n/a                                 | n/a                             | 35                                     |

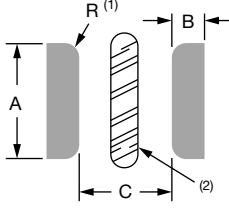
### Notes

- (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 "C" / "P" / "O" / "I" and "T" / "R" or lower quantities can depend from product thickness
- (5) Paper / plastic tape used by availability

| 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.<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> |



## Solder Pad Dimensions for Vishay Surface-Mount Multilayer Ceramic Chip Capacitors

| DIMENSIONS in millimeters   |                     |      |                     |
|---|---------------------|------|---------------------|
|  |                     |      |                     |
| CASE CODE   | A                   | B    | C                   |
| 0402  | 0.50                | 0.50 | 0.40                |
| 0505  | 1.35                | 1.00 | 0.60                |
| 0603  | 0.90                | 1.00 | 1.00 <sup>(3)</sup> |
| 0805  | 1.30                | 1.20 | 1.00                |
| 1111  | 2.90                | 1.30 | 1.75                |
| 1206  | 1.80                | 1.20 | 2.10                |
| 1210  | 2.80                | 1.30 | 1.90                |
| 1808  | 2.40                | 1.50 | 3.00                |
| 1812  | 3.60                | 1.50 | 3.00                |
| 1825  | 6.50                | 1.50 | 3.00                |
| 2008  | 2.70                | 1.50 | 4.08                |
| 2220  | 5.50 <sup>(4)</sup> | 1.50 | 4.20                |
| 2225  | 6.50                | 1.50 | 4.20                |
| 2525  | 6.60                | 1.50 | 4.50                |
| 3040  | 10.80               | 2.00 | 5.50                |
| 3640  | 10.80               | 2.00 | 7.00                |
| 3838  | 10.20               | 2.00 | 7.50                |
| 4044  | 12.30               | 2.00 | 8.00                |

### Notes

- (1) For safety capacitors and voltages above 3000 V, corner rounding (R) of 0.5 mm is recommended to suppress arcing
- (2) Add a 1 mm slot in PCB between pads to allow cleaning and coating under MLCC
- (3) For VJ HiFREQ Series, this dimension is 0.6 mm
- (4) For safety capacitors, the A dimension should be 5.80 mm



## PRINTED CIRCUIT BOARD PCB DESIGN CONSIDERATIONS FOR HIGH VOLTAGE SURFACE-MOUNT MLCCS

Special assembly process and design considerations should be employed for today's high voltage rating MLCCs. As case sizes remain the same and voltage ratings increase, MLCC manufacturers must design, evaluate, and qualify their capacitors using methods that reduce the occurrence of corona discharge and arcover events. To meet similar capability in high voltage applications, users should employ similar cautionary design and assembly methods.

### MLCC PAD LAYOUT

A capacitor's arcover inception point can degrade due to factors such as the MLCC termination, PCB pad design, PCB cleanliness, solder flux residue, surface contamination / deposits and environmental conditions. PCB pads and their design affect the air gap distance between the opposing polarities of the MLCC termination. For voltage rating greater than 1500 V<sub>DC</sub> add a corner radius to the inward facing edge of the MLCC pads and as large a gap as possible between the pads. Too small of a pad gap distance will reduce the capacitor's own arcover inception voltage level. Refer to the Figure and Table Figure 1.0, MLCC Pad Layout and Table 1.0, Vishay MLCC Solder Pad Dimensions for the recommended MLCC solder pad dimensions.

### SLOT OR TRENCH BETWEEN PADS

PCB assembly can deposit dust, trap solder balls, or flux residue underneath the capacitors. These contaminants will reduce conductive clearances and the arcover inception level. Assembly methods must include a final PCB cleaning process. A slot or trench can be cut into the PCB in between the pads to allow cleaners to penetrate underneath the MLCC. The slot will also allow conformal or epoxy coatings to flow underneath the MLCC and build an insulative barrier between pads. Refer to Figure 1.0 MLCC Pad Layout for slot reference location.

### COATING PRINTED CIRCUIT BOARD

Coating a printed circuit board with materials such as acrylic, silicone and urethane resins provide a protective dielectric barrier that is non-conductive and will enhance the resistance to arcing. Various processes exist which include dipping, brushing, and spaying. Optimal performance will come from coating the MLCC on all sides, top and bottom. The PCB slot in between the pads should extend slightly beyond the width of the MLCC. Refer to Figure 1.0 MLCC Pad Layout for slot reference location.



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