

## Surface Mount Multilayer Ceramic Chip Capacitors for Commercial Applications



### FEATURES

- C0G (NP0) and X7R/X5R dielectrics offered
- C0G (NP0) is an ultra-stable dielectric offering a very low Temperature Coefficient of Capacitance (TCC)
- C0G (NP0) offers low dissipation
- Excellent aging characteristics
- Ideal for decoupling and filtering (X7R)
- Ideal for surge suppression and high voltage applications
- Wide range of case sizes, voltage ratings and capacitance values
- Wet build process
- Reliable Noble Metal Electrode (NME) system
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?999912](http://www.vishay.com/doc?999912)



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

### APPLICATIONS

- Timing and tuning circuits
- Sensor and scanner applications
- Decoupling and filtering
- Surge suppression

### ELECTRICAL SPECIFICATIONS

#### C0G (NP0) DIELECTRIC

##### GENERAL SPECIFICATION

###### Note

Electrical characteristics at + 25 °C unless otherwise specified

**Operating Temperature:** - 55 °C to + 150 °C  
(above + 125 °C changed characteristics)

**Capacitance Range:** 1 pF to 56 nF

**Voltage Range:** 25 V<sub>DC</sub> to 1000 V<sub>DC</sub>

**Temperature Coefficient of Capacitance (TCC):**  
0 ppm/°C ± 30 ppm/°C from - 55 °C to + 125 °C

###### Dissipation Factor (DF):

0.1 % maximum at 1.0 V<sub>RMS</sub> and  
1 MHz for values ≤ 1000 pF  
0.1 % maximum at 1.0 V<sub>RMS</sub> and  
1 kHz for values > 1000 pF

###### Insulating Resistance:

At + 25 °C 100 000 MΩ min. or 1000 ΩF whichever is less  
At + 125 °C 10 000 MΩ min. or 100 ΩF whichever is less

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

###### Dielectric Strength Test:

Performed per method 103 of EIA 198-2-E

Applied test voltages

|                                                    |                        |
|----------------------------------------------------|------------------------|
| ≤ 200 V <sub>DC</sub> -rated:                      | 250 % of rated voltage |
| 500 V <sub>DC</sub> -rated:                        | 200 % of rated voltage |
| 630 V <sub>DC</sub> , 1000 V <sub>DC</sub> -rated: | 150 % of rated voltage |

#### X5R, X7R DIELECTRIC

##### GENERAL SPECIFICATION

###### Note

Electrical characteristics at + 25 °C unless otherwise specified

**Operating Temperature:** - 55 °C to + 150 °C  
(X5R above + 85 °C changed characteristics)  
(X7R above + 125 °C changed characteristics)

**Capacitance Range:** 120 pF to 6.8 μF

**Voltage Range:** 10 V<sub>DC</sub> to 1000 V<sub>DC</sub>

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

X5R: ± 15 % from - 55 °C to + 85 °C, with 0 V<sub>DC</sub> applied  
X7R: ± 15 % from - 55 °C to + 125 °C, with 0 V<sub>DC</sub> applied

###### Dissipation Factor (DF):

10 V ratings: 5 % maximum at 1.0 V<sub>RMS</sub> and 1 kHz  
16 V/25 V ratings: 3.5 % maximum at 1.0 V<sub>RMS</sub> and 1 kHz  
> 25 V ratings: 2.5 % maximum at 1.0 V<sub>RMS</sub> and 1 kHz

###### Insulating Resistance:

At + 25 °C 100 000 MΩ min. or 1000 ΩF whichever is less  
At + 125 °C 10 000 MΩ min. or 100 ΩF whichever is less

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

###### Dielectric Strength Test:

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

Applied test voltages

|                                                    |                             |
|----------------------------------------------------|-----------------------------|
| ≤ 250 V <sub>DC</sub> -rated:                      | 250 % of rated voltage      |
| 500 V <sub>DC</sub> -rated:                        | min. 150 % of rated voltage |
| 630 V <sub>DC</sub> , 1000 V <sub>DC</sub> -rated: | 150 % of rated voltage      |



| QUICK REFERENCE DATA |      |                     |             |         |
|----------------------|------|---------------------|-------------|---------|
| DIELECTRIC           | CASE | MAXIMUM VOLTAGE (V) | CAPACITANCE |         |
|                      |      |                     | MINIMUM     | MAXIMUM |
| C0G (NP0)            | 0402 | 100                 | 1.0 pF      | 220 pF  |
|                      | 0603 | 200                 | 1.0 pF      | 1.0 nF  |
|                      | 0805 | 500                 | 1.0 pF      | 4.7 nF  |
|                      | 1206 | 630                 | 1.0 pF      | 10 nF   |
|                      | 1210 | 630                 | 56 pF       | 22 nF   |
|                      | 1808 | 1000                | 18 pF       | 10 nF   |
|                      | 1812 | 1000                | 39 pF       | 22 nF   |
|                      | 1825 | 500                 | 100 pF      | 39 nF   |
|                      | 2220 | 1000                | 270 pF      | 47 nF   |
|                      | 2225 | 1000                | 270 pF      | 56 nF   |
| X5R                  | 0805 | 10                  | 560 nF      | 1.0 μF  |
| X7R                  | 0402 | 100                 | 120 pF      | 47 nF   |
|                      | 0603 | 200                 | 330 pF      | 150 nF  |
|                      | 0805 | 250                 | 330 pF      | 470 nF  |
|                      | 1206 | 630                 | 330 pF      | 1.0 μF  |
|                      | 1210 | 630                 | 390 pF      | 1.0 μF  |
|                      | 1808 | 1000                | 470 pF      | 270 nF  |
|                      | 1812 | 1000                | 1.0 nF      | 1.0 μF  |
|                      | 1825 | 1000                | 10 nF       | 2.7 μF  |
|                      | 2220 | 500                 | 15 nF       | 2.2 μF  |
|                      | 2225 | 1000                | 33 nF       | 4.7 μF  |
|                      | 3640 | 500                 | 27 nF       | 6.8 μF  |

Note

- Detail ratings see selection chart

| ORDERING INFORMATION                                                                 |                                                    |                                                                                                                                                    |                                                                                                                                                                                                                 |                                                                                                                                     |                                                                                                                             |                                                                                                                     |                                                                                                                                                                                                                                                                                            |                    |
|--------------------------------------------------------------------------------------|----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| VJ0805 <sup>(3)</sup>                                                                | Y                                                  | 102                                                                                                                                                | K                                                                                                                                                                                                               | X                                                                                                                                   | A                                                                                                                           | A                                                                                                                   | T                                                                                                                                                                                                                                                                                          | ### <sup>(2)</sup> |
| CASE CODE                                                                            | DIELECTRIC                                         | CAPACITANCE NOMINAL CODE                                                                                                                           | CAPACITANCE TOLERANCE                                                                                                                                                                                           | TERMINATION                                                                                                                         | DC VOLTAGE RATING <sup>(1)</sup>                                                                                            | MARKING                                                                                                             | PACKAGING                                                                                                                                                                                                                                                                                  | PROCESS CODE       |
| 0402<br>0603<br>0805<br>1206<br>1210<br>1808<br>1812<br>1825<br>2220<br>2225<br>3640 | A = C0G (NP0)<br>Y = X7R<br>G = X5R <sup>(4)</sup> | Expressed in picofarads (pF). The first two digits are significant, the third is a multiplier.<br><b>Examples</b><br>1R8 = 1.8 pF<br>102 = 1000 pF | B = ± 0.10 pF<br>C = ± 0.25 pF<br>D = ± 0.5 pF<br>F = ± 1 %<br>G = ± 2 %<br>J = ± 5 %<br>K = ± 10 %<br>M = ± 20 %<br><b>Note:</b><br>C0G (NP0):<br>B, C, D < 10 pF<br>F, G, J, K ≥ 10 pF<br>X7R/X5R:<br>J, K, M | X = Ni barrier<br>100 % tin plated<br>matte finish<br>F, E = AgPd<br>B = Polymer<br>100 % tin plated<br>matte finish <sup>(5)</sup> | Q = 10 V<br>J = 16 V<br>X = 25 V<br>A = 50 V<br>B = 100 V<br>C = 200 V<br>P = 250 V<br>E = 500 V<br>L = 630 V<br>G = 1000 V | A = Unmarked<br>M = Marked<br><b>Note:</b><br>Marking is only available for 0805 and 1206 with termination code "X" | C = 7" reel/paper tape<br>T = 7" reel/plastic tape<br>P = 11 1/4"/13" reel/paper tape<br>R = 11 1/4"/13" reel/plastic tape<br>O = 7" reel/flamed paper tape<br>I = 11 1/4"/13" reel/flamed paper tape<br><b>Note:</b><br>"I" and "O" are used for "F", "E" termination size 0402/0603/0805 |                    |

Notes

- (1) DC voltage rating should not be exceeded in application. Other application factors may affect the MLCC performance. Consult for questions: [mlcc@vishay.com](mailto:mlcc@vishay.com)
- (2) Process code may be added with up to three digits, used to control non-standard products and/or special requirements
- (3) Case size designator may be replaced by four digit drawing number used to control non-standard products and/or special requirements
- (4) Selected values for X5R, see selection chart
- (5) Selected values available, contact [mlcc@vishay.com](mailto:mlcc@vishay.com) for list of released ratings
- (6) Termination code "E" is for conductive epoxy assembly



**DIMENSIONS** in inches (millimeters)



| CASE CODE | STYLE  | LENGTH (L)                                    | WIDTH (W)                                     | MAXIMUM THICKNESS (T) | TERMINATION (P) |                 |
|-----------|--------|-----------------------------------------------|-----------------------------------------------|-----------------------|-----------------|-----------------|
|           |        |                                               |                                               |                       | MINIMUM         | MAXIMUM         |
| 0402      | VJ0402 | 0.040 + 0.004/- 0.002<br>(1.00 + 0.10/- 0.05) | 0.020 + 0.004/- 0.002<br>(0.50 + 0.10/- 0.05) | 0.024<br>(0.60)       | 0.004<br>(0.10) | 0.016<br>(0.41) |
| 0603      | VJ0603 | 0.063 ± 0.006<br>(1.60 ± 0.15)                | 0.031 ± 0.006<br>(0.80 ± 0.15)                | 0.036<br>(0.92)       | 0.012<br>(0.30) | 0.018<br>(0.46) |
| 0805      | VJ0805 | 0.079 ± 0.008<br>(2.00 ± 0.20)                | 0.049 ± 0.008<br>(1.25 ± 0.20)                | 0.057<br>(1.45)       | 0.010<br>(0.25) | 0.028<br>(0.71) |
| 1206      | VJ1206 | 0.126 ± 0.008<br>(3.20 ± 0.20)                | 0.063 ± 0.008<br>(1.60 ± 0.20)                | 0.067<br>(1.70)       | 0.010<br>(0.25) | 0.028<br>(0.71) |
| 1210      | VJ1210 | 0.126 ± 0.008<br>(3.20 ± 0.20)                | 0.098 ± 0.008<br>(2.50 ± 0.20)                | 0.067<br>(1.70)       | 0.010<br>(0.25) | 0.028<br>(0.71) |
| 1808      | VJ1808 | 0.180 ± 0.012<br>(4.57 ± 0.30)                | 0.080 ± 0.010<br>(2.03 ± 0.25)                | 0.086<br>(2.18)       | 0.010<br>(0.25) | 0.030<br>(0.76) |
| 1812      | VJ1812 | 0.177 ± 0.012<br>(4.50 ± 0.30)                | 0.126 ± 0.008<br>(3.20 ± 0.20)                | 0.086<br>(2.18)       | 0.010<br>(0.25) | 0.030<br>(0.76) |
| 1825      | VJ1825 | 0.177 ± 0.012<br>(4.50 ± 0.30)                | 0.252 ± 0.010<br>(6.40 ± 0.25)                | 0.086<br>(2.18)       | 0.010<br>(0.25) | 0.030<br>(0.76) |
| 2220      | VJ2220 | 0.220 ± 0.010<br>(5.59 ± 0.25)                | 0.200 ± 0.010<br>(5.08 ± 0.25)                | 0.086<br>(2.18)       | 0.010<br>(0.25) | 0.030<br>(0.76) |
| 2225      | VJ2225 | 0.220 ± 0.010<br>(5.59 ± 0.25)                | 0.250 ± 0.010<br>(6.35 ± 0.25)                | 0.086<br>(2.18)       | 0.010<br>(0.25) | 0.030<br>(0.76) |
| 3640      | VJ3640 | 0.360 ± 0.015<br>(9.14 ± 0.38)                | 0.400 ± 0.015<br>(10.20 ± 0.38)               | 0.086<br>(2.18)       | 0.010<br>(0.25) | 0.030<br>(0.76) |

**Note**

- Polymer (B-termination) have increased dimensions:  
Length 0.006"(0.15 mm)





| SELECTION CHART            |        |                       |     |     |     |      |                       |     |     |     |      |                       |     |     |     |
|----------------------------|--------|-----------------------|-----|-----|-----|------|-----------------------|-----|-----|-----|------|-----------------------|-----|-----|-----|
| DIELECTRIC                 |        | COG (NP0)             |     |     |     |      |                       |     |     |     |      |                       |     |     |     |
| STYLE                      |        | VJ1808 <sup>(1)</sup> |     |     |     |      | VJ1812 <sup>(1)</sup> |     |     |     |      | VJ1825 <sup>(1)</sup> |     |     |     |
| CASE CODE                  |        | 1808                  |     |     |     |      | 1812                  |     |     |     |      | 1825                  |     |     |     |
| VOLTAGE (V <sub>DC</sub> ) |        | 50                    | 100 | 200 | 500 | 1000 | 50                    | 100 | 200 | 500 | 1000 | 50                    | 100 | 200 | 500 |
| VOLTAGE CODE               |        | A                     | B   | C   | E   | G    | A                     | B   | C   | E   | G    | A                     | B   | C   | E   |
| CAP. CODE                  | CAP.   |                       |     |     |     |      |                       |     |     |     |      |                       |     |     |     |
| 1R0                        | 1.0 pF |                       |     |     |     |      |                       |     |     |     |      |                       |     |     |     |
| 1R2                        | 1.2 pF |                       |     |     |     |      |                       |     |     |     |      |                       |     |     |     |
| 1R5                        | 1.5 pF |                       |     |     |     |      |                       |     |     |     |      |                       |     |     |     |
| 1R8                        | 1.8 pF |                       |     |     |     |      |                       |     |     |     |      |                       |     |     |     |
| 2R2                        | 2.2 pF |                       |     |     |     |      |                       |     |     |     |      |                       |     |     |     |
| 2R7                        | 2.7 pF |                       |     |     |     |      |                       |     |     |     |      |                       |     |     |     |
| 3R3                        | 3.3 pF |                       |     |     |     |      |                       |     |     |     |      |                       |     |     |     |
| 3R9                        | 3.9 pF |                       |     |     |     |      |                       |     |     |     |      |                       |     |     |     |
| 4R7                        | 4.7 pF |                       |     |     |     |      |                       |     |     |     |      |                       |     |     |     |
| 5R6                        | 5.6 pF |                       |     |     |     |      |                       |     |     |     |      |                       |     |     |     |
| 6R8                        | 6.8 pF |                       |     |     |     |      |                       |     |     |     |      |                       |     |     |     |
| 8R2                        | 8.2 pF |                       |     |     |     |      |                       |     |     |     |      |                       |     |     |     |
| 100                        | 10 pF  |                       |     |     |     |      |                       |     |     |     |      |                       |     |     |     |
| 120                        | 12 pF  |                       |     |     |     |      |                       |     |     |     |      |                       |     |     |     |
| 150                        | 15 pF  |                       |     |     |     |      |                       |     |     |     |      |                       |     |     |     |
| 180                        | 18 pF  |                       |     |     |     | •    |                       |     |     |     |      |                       |     |     |     |
| 220                        | 22 pF  |                       |     | •   |     | •    |                       |     |     |     |      |                       |     |     |     |
| 270                        | 27 pF  |                       |     | •   |     | •    |                       |     |     |     |      |                       |     |     |     |
| 330                        | 33 pF  |                       |     | •   |     | •    |                       |     |     |     |      |                       |     |     |     |
| 390                        | 39 pF  |                       |     | •   |     | •    | •                     | •   | •   | •   |      |                       |     |     |     |
| 470                        | 47 pF  |                       |     | •   |     | •    | •                     | •   | •   | •   | •    |                       |     |     |     |
| 560                        | 56 pF  |                       |     | •   |     | •    | •                     | •   | •   | •   | •    | •                     |     |     |     |
| 680                        | 68 pF  |                       |     | •   |     | •    | •                     | •   | •   | •   | •    | •                     |     |     |     |
| 820                        | 82 pF  |                       |     | •   |     | •    | •                     | •   | •   | •   | •    | •                     |     |     |     |
| 101                        | 100 pF |                       |     | •   |     | •    | •                     | •   | •   | •   | •    | •                     |     |     | •   |
| 121                        | 120 pF |                       |     | •   | •   | •    | •                     | •   | •   | •   | •    | •                     |     |     | •   |
| 151                        | 150 pF |                       |     | •   | •   | •    | •                     | •   | •   | •   | •    | •                     |     |     | •   |
| 181                        | 180 pF |                       |     | •   | •   | •    | •                     | •   | •   | •   | •    | •                     |     |     | •   |
| 221                        | 220 pF | •                     | •   | •   | •   | •    | •                     | •   | •   | •   | •    | •                     |     |     | •   |
| 271                        | 270 pF | •                     | •   | •   | •   | •    | •                     | •   | •   | •   | •    | •                     |     |     | •   |
| 331                        | 330 pF | •                     | •   | •   | •   | •    | •                     | •   | •   | •   | •    | •                     |     |     | •   |
| 391                        | 390 pF | •                     | •   | •   | •   | •    | •                     | •   | •   | •   | •    | •                     |     |     | •   |
| 471                        | 470 pF | •                     | •   | •   | •   | •    | •                     | •   | •   | •   | •    | •                     |     |     | •   |
| 561                        | 560 pF | •                     | •   | •   | •   | •    | •                     | •   | •   | •   | •    | •                     |     |     | •   |
| 681                        | 680 pF | •                     | •   | •   | •   | •    | •                     | •   | •   | •   | •    | •                     |     |     | •   |
| 821                        | 820 pF | •                     | •   | •   | •   | •    | •                     | •   | •   | •   | •    | •                     |     |     | •   |
| 102                        | 1.0 nF | •                     | •   | •   | •   | •    | •                     | •   | •   | •   | •    | •                     | •   | •   | •   |
| 122                        | 1.2 nF | •                     | •   | •   | •   | •    | •                     | •   | •   | •   | •    | •                     | •   | •   | •   |
| 152                        | 1.5 nF | •                     | •   | •   | •   | •    | •                     | •   | •   | •   | •    | •                     | •   | •   | •   |
| 182                        | 1.8 nF | •                     | •   | •   | •   | •    | •                     | •   | •   | •   | •    | •                     | •   | •   | •   |
| 222                        | 2.2 nF | •                     | •   | •   | •   | •    | •                     | •   | •   | •   | •    | •                     | •   | •   | •   |
| 272                        | 2.7 nF | •                     | •   | •   | •   | •    | •                     | •   | •   | •   | •    | •                     | •   | •   | •   |
| 332                        | 3.3 nF | •                     | •   | •   | •   | •    | •                     | •   | •   | •   | •    | •                     | •   | •   | •   |
| 392                        | 3.9 nF | •                     | •   | •   | •   | •    | •                     | •   | •   | •   | •    | •                     | •   | •   | •   |
| 472                        | 4.7 nF | •                     | •   | •   | •   | •    | •                     | •   | •   | •   | •    | •                     | •   | •   | •   |
| 562                        | 5.6 nF | •                     | •   | •   | •   | •    | •                     | •   | •   | •   | •    | •                     | •   | •   | •   |
| 682                        | 6.8 nF | •                     | •   | •   | •   | •    | •                     | •   | •   | •   | •    | •                     | •   | •   | •   |
| 822                        | 8.2 nF | •                     | •   | •   | •   | •    | •                     | •   | •   | •   | •    | •                     | •   | •   | •   |
| 103                        | 10 nF  | •                     |     |     |     |      | •                     | •   | •   | •   |      | •                     | •   | •   | •   |
| 123                        | 12 nF  |                       |     |     |     |      | •                     | •   | •   |     |      | •                     | •   | •   |     |
| 153                        | 15 nF  |                       |     |     |     |      | •                     | •   |     |     |      | •                     | •   | •   |     |
| 183                        | 18 nF  |                       |     |     |     |      | •                     |     |     |     |      | •                     | •   | •   |     |
| 223                        | 22 nF  |                       |     |     |     |      | •                     |     |     |     |      | •                     | •   | •   |     |
| 273                        | 27 nF  |                       |     |     |     |      |                       |     |     |     |      | •                     | •   | •   |     |
| 333                        | 33 nF  |                       |     |     |     |      |                       |     |     |     |      | •                     | •   |     |     |
| 393                        | 39 nF  |                       |     |     |     |      |                       |     |     |     |      | •                     |     |     |     |
| 473                        | 47 nF  |                       |     |     |     |      |                       |     |     |     |      |                       |     |     |     |
| 563                        | 56 nF  |                       |     |     |     |      |                       |     |     |     |      |                       |     |     |     |

Notes

<sup>(1)</sup> See soldering recommendations within this data book, or visit [www.vishay.com/doc?45034](http://www.vishay.com/doc?45034)

- Plastic tape



| SELECTION CHART            |        |                       |     |     |     |     |                       |    |     |     |     |      |
|----------------------------|--------|-----------------------|-----|-----|-----|-----|-----------------------|----|-----|-----|-----|------|
| DIELECTRIC                 |        | COG (NP0)             |     |     |     |     |                       |    |     |     |     |      |
| STYLE                      |        | VJ2220 <sup>(1)</sup> |     |     |     |     | VJ2225 <sup>(1)</sup> |    |     |     |     |      |
| CASE CODE                  |        | 2220                  |     |     |     |     | 2225                  |    |     |     |     |      |
| VOLTAGE (V <sub>DC</sub> ) |        | 50                    | 100 | 200 | 500 | 630 | 1000                  | 50 | 100 | 200 | 500 | 1000 |
| VOLTAGE CODE               |        | A                     | B   | C   | E   | L   | G                     | A  | B   | C   | E   | G    |
| CAP. CODE                  | CAP.   |                       |     |     |     |     |                       |    |     |     |     |      |
| 1R0                        | 1.0 pF |                       |     |     |     |     |                       |    |     |     |     |      |
| 1R2                        | 1.2 pF |                       |     |     |     |     |                       |    |     |     |     |      |
| 1R5                        | 1.5 pF |                       |     |     |     |     |                       |    |     |     |     |      |
| 1R8                        | 1.8 pF |                       |     |     |     |     |                       |    |     |     |     |      |
| 2R2                        | 2.2 pF |                       |     |     |     |     |                       |    |     |     |     |      |
| 2R7                        | 2.7 pF |                       |     |     |     |     |                       |    |     |     |     |      |
| 3R3                        | 3.3 pF |                       |     |     |     |     |                       |    |     |     |     |      |
| 3R9                        | 3.9 pF |                       |     |     |     |     |                       |    |     |     |     |      |
| 4R7                        | 4.7 pF |                       |     |     |     |     |                       |    |     |     |     |      |
| 5R6                        | 5.6 pF |                       |     |     |     |     |                       |    |     |     |     |      |
| 6R8                        | 6.8 pF |                       |     |     |     |     |                       |    |     |     |     |      |
| 8R2                        | 8.2 pF |                       |     |     |     |     |                       |    |     |     |     |      |
| 100                        | 10 pF  |                       |     |     |     |     |                       |    |     |     |     |      |
| 120                        | 12 pF  |                       |     |     |     |     |                       |    |     |     |     |      |
| 150                        | 15 pF  |                       |     |     |     |     |                       |    |     |     |     |      |
| 180                        | 18 pF  |                       |     |     |     |     |                       |    |     |     |     |      |
| 220                        | 22 pF  |                       |     |     |     |     |                       |    |     |     |     |      |
| 270                        | 27 pF  |                       |     |     |     |     |                       |    |     |     |     |      |
| 330                        | 33 pF  |                       |     |     |     |     |                       |    |     |     |     |      |
| 390                        | 39 pF  |                       |     |     |     |     |                       |    |     |     |     |      |
| 470                        | 47 pF  |                       |     |     |     |     |                       |    |     |     |     |      |
| 560                        | 56 pF  |                       |     |     |     |     |                       |    |     |     |     |      |
| 680                        | 68 pF  |                       |     |     |     |     |                       |    |     |     |     |      |
| 820                        | 82 pF  |                       |     |     |     |     |                       |    |     |     |     |      |
| 101                        | 100 pF |                       |     |     |     |     |                       |    |     |     |     |      |
| 121                        | 120 pF |                       |     |     |     |     |                       |    |     |     |     |      |
| 151                        | 150 pF |                       |     |     |     |     |                       |    |     |     |     |      |
| 181                        | 180 pF |                       |     |     |     |     |                       |    |     |     |     |      |
| 221                        | 220 pF |                       |     |     |     |     |                       |    |     |     |     |      |
| 271                        | 270 pF | •                     | •   | •   | •   | •   | •                     |    |     |     |     | •    |
| 331                        | 330 pF | •                     | •   | •   | •   | •   | •                     |    |     |     |     | •    |
| 391                        | 390 pF | •                     | •   | •   | •   | •   | •                     |    |     |     |     | •    |
| 471                        | 470 pF | •                     | •   | •   | •   | •   | •                     |    |     |     | •   | •    |
| 561                        | 560 pF | •                     | •   | •   | •   | •   | •                     |    |     |     | •   | •    |
| 681                        | 680 pF | •                     | •   | •   | •   | •   | •                     |    |     |     | •   | •    |
| 821                        | 820 pF | •                     | •   | •   | •   | •   | •                     |    |     |     | •   | •    |
| 102                        | 1.0 nF | •                     | •   | •   | •   | •   | •                     |    |     | •   | •   | •    |
| 122                        | 1.2 nF | •                     | •   | •   | •   | •   | •                     | •  | •   | •   | •   | •    |
| 152                        | 1.5 nF | •                     | •   | •   | •   | •   | •                     | •  | •   | •   | •   | •    |
| 182                        | 1.8 nF | •                     | •   | •   | •   | •   | •                     | •  | •   | •   | •   | •    |
| 222                        | 2.2 nF | •                     | •   | •   | •   | •   | •                     | •  | •   | •   | •   | •    |
| 272                        | 2.7 nF | •                     | •   | •   | •   | •   | •                     | •  | •   | •   | •   | •    |
| 332                        | 3.3 nF | •                     | •   | •   | •   | •   | •                     | •  | •   | •   | •   | •    |
| 392                        | 3.9 nF | •                     | •   | •   | •   | •   | •                     | •  | •   | •   | •   | •    |
| 472                        | 4.7 nF | •                     | •   | •   | •   | •   | •                     | •  | •   | •   | •   | •    |
| 562                        | 5.6 nF | •                     | •   | •   | •   | •   | •                     | •  | •   | •   | •   | •    |
| 682                        | 6.8 nF | •                     | •   | •   | •   | •   | •                     | •  | •   | •   | •   | •    |
| 822                        | 8.2 nF | •                     | •   | •   | •   | •   | •                     | •  | •   | •   | •   | •    |
| 103                        | 10 nF  | •                     | •   | •   |     |     |                       | •  | •   | •   | •   | •    |
| 123                        | 12 nF  | •                     | •   | •   |     |     |                       | •  | •   | •   | •   | •    |
| 153                        | 15 nF  | •                     | •   | •   |     |     |                       | •  | •   | •   | •   | •    |
| 183                        | 18 nF  | •                     | •   |     |     |     |                       | •  | •   | •   |     |      |
| 223                        | 22 nF  | •                     | •   |     |     |     |                       | •  | •   | •   |     |      |
| 273                        | 27 nF  | •                     | •   |     |     |     |                       | •  | •   | •   |     |      |
| 333                        | 33 nF  | •                     | •   |     |     |     |                       | •  | •   | •   |     |      |
| 393                        | 39 nF  | •                     |     |     |     |     |                       | •  | •   | •   |     |      |
| 473                        | 47 nF  | •                     |     |     |     |     |                       | •  | •   |     |     |      |
| 563                        | 56 nF  |                       |     |     |     |     |                       | •  |     |     |     |      |

Notes

<sup>(1)</sup> See soldering recommendations within this data book, or visit [www.vishay.com/doc?45034](http://www.vishay.com/doc?45034)

- Plastic tape



| SELECTION CHART            |        |                        |    |    |     |        |    |    |     |     |        |    |    |    |     |     |     |
|----------------------------|--------|------------------------|----|----|-----|--------|----|----|-----|-----|--------|----|----|----|-----|-----|-----|
| DIELECTRIC                 |        | X7R/X5R <sup>(1)</sup> |    |    |     |        |    |    |     |     |        |    |    |    |     |     |     |
| STYLE                      |        | VJ0402                 |    |    |     | VJ0603 |    |    |     |     | VJ0805 |    |    |    |     |     |     |
| CASE CODE                  |        | 0402                   |    |    |     | 0603   |    |    |     |     | 0805   |    |    |    |     |     |     |
| VOLTAGE (V <sub>DC</sub> ) |        | 16                     | 25 | 50 | 100 | 16     | 25 | 50 | 100 | 200 | 10     | 16 | 25 | 50 | 100 | 200 | 250 |
| VOLTAGE CODE               |        | J                      | X  | A  | B   | J      | X  | A  | B   | C   | Q      | J  | X  | A  | B   | C   | P   |
| CAP. CODE                  | CAP.   |                        |    |    |     |        |    |    |     |     |        |    |    |    |     |     |     |
| 121                        | 120 pF | **                     | ** | ** | **  |        |    |    |     |     |        |    |    |    |     |     |     |
| 151                        | 150 pF | **                     | ** | ** | **  |        |    |    |     |     |        |    |    |    |     |     |     |
| 181                        | 180 pF | **                     | ** | ** | **  |        |    |    |     |     |        |    |    |    |     |     |     |
| 221                        | 220 pF | **                     | ** | ** | **  |        |    |    |     |     |        |    |    |    |     |     |     |
| 271                        | 270 pF | **                     | ** | ** | **  |        |    |    |     |     |        |    |    |    |     |     |     |
| 331                        | 330 pF | **                     | ** | ** | **  |        |    | ** | **  | **  |        |    |    |    |     | **  |     |
| 391                        | 390 pF | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        |    |    |    |     | **  |     |
| 471                        | 470 pF | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | ** | ** | ** | **  | **  | **  |
| 561                        | 560 pF | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | ** | ** | ** | **  | **  | **  |
| 681                        | 680 pF | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | ** | ** | ** | **  | **  | **  |
| 821                        | 820 pF | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | ** | ** | ** | **  | **  | **  |
| 102                        | 1.0 nF | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | ** | ** | ** | **  | **  | **  |
| 122                        | 1.2 nF | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | ** | ** | ** | **  | **  | **  |
| 152                        | 1.5 nF | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | ** | ** | ** | **  | **  | **  |
| 182                        | 1.8 nF | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | ** | ** | ** | **  | **  | **  |
| 222                        | 2.2 nF | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | ** | ** | ** | **  | **  | **  |
| 272                        | 2.7 nF | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | ** | ** | ** | **  | **  | **  |
| 332                        | 3.3 nF | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | ** | ** | ** | **  | **  | **  |
| 392                        | 3.9 nF | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | ** | ** | ** | **  | **  | **  |
| 472                        | 4.7 nF | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | ** | ** | ** | **  | **  | **  |
| 562                        | 5.6 nF | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | ** | ** | ** | **  | **  | **  |
| 682                        | 6.8 nF | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | ** | ** | ** | **  | **  | **  |
| 822                        | 8.2 nF | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | ** | ** | ** | **  | **  | **  |
| 103                        | 10 nF  | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | ** | ** | ** | **  | **  | *   |
| 123                        | 12 nF  | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | ** | ** | ** | **  | **  | *   |
| 153                        | 15 nF  | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | ** | ** | ** | **  | **  | *   |
| 183                        | 18 nF  | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | ** | ** | ** | **  | **  | *   |
| 223                        | 22 nF  | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | ** | ** | ** | **  | *   | *   |
| 273                        | 27 nF  | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | ** | ** | ** | **  | *   | *   |
| 333                        | 33 nF  | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | ** | ** | ** | **  | *   | *   |
| 393                        | 39 nF  | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | ** | ** | ** | **  | *   | *   |
| 473                        | 47 nF  | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | ** | ** | ** | **  | *   | *   |
| 563                        | 56 nF  | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | ** | ** | ** | **  | *   | *   |
| 683                        | 68 nF  | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | ** | ** | ** | **  | *   | *   |
| 823                        | 82 nF  | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | ** | ** | ** | **  | *   | *   |
| 104                        | 100 nF | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | ** | ** | *  | *   |     |     |
| 124                        | 120 nF | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | ** | ** | *  | *   |     |     |
| 154                        | 150 nF | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | *  | *  | *  | *   |     |     |
| 184                        | 180 nF | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | *  | *  | *  | *   |     |     |
| 224                        | 220 nF | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | *  | *  | *  | *   |     |     |
| 274                        | 270 nF | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | *  | *  | *  | *   |     |     |
| 334                        | 330 nF | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | *  | *  | *  | *   |     |     |
| 394                        | 390 nF | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | *  | *  | *  | *   |     |     |
| 474                        | 470 nF | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | *  | *  | *  | *   |     |     |
| 564                        | 560 nF | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | *  | *  | *  | *   |     |     |
| 684                        | 680 nF | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | *  | *  | *  | *   |     |     |
| 824                        | 820 nF | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | *  | *  | *  | *   |     |     |
| 105                        | 1.0 μF | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | *  | *  | *  | *   |     |     |
| 125                        | 1.2 μF | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | *  | *  | *  | *   |     |     |
| 155                        | 1.5 μF | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | *  | *  | *  | *   |     |     |
| 185                        | 1.8 μF | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | *  | *  | *  | *   |     |     |
| 225                        | 2.2 μF | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | *  | *  | *  | *   |     |     |
| 275                        | 2.7 μF | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | *  | *  | *  | *   |     |     |
| 335                        | 3.3 μF | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | *  | *  | *  | *   |     |     |
| 395                        | 3.9 μF | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | *  | *  | *  | *   |     |     |
| 475                        | 4.7 μF | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | *  | *  | *  | *   |     |     |
| 565                        | 5.6 μF | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | *  | *  | *  | *   |     |     |
| 685                        | 6.8 μF | **                     | ** | ** | **  | **     | ** | ** | **  | **  |        | *  | *  | *  | *   |     |     |

Notes

(1) X5R (- 55 °C to + 85 °C TCC: ± 15 %) for all 0805/10 V ratings. All other values X7R.

\*\* Paper tape • Plastic tape



| SELECTION CHART            |        |                       |    |    |     |     |     |     |     |                       |    |    |     |     |     |     |     |
|----------------------------|--------|-----------------------|----|----|-----|-----|-----|-----|-----|-----------------------|----|----|-----|-----|-----|-----|-----|
| DIELECTRIC                 |        | X7R                   |    |    |     |     |     |     |     |                       |    |    |     |     |     |     |     |
| STYLE                      |        | VJ1206 <sup>(1)</sup> |    |    |     |     |     |     |     | VJ1210 <sup>(1)</sup> |    |    |     |     |     |     |     |
| CASE CODE                  |        | 1206 <sup>(1)</sup>   |    |    |     |     |     |     |     | 1210 <sup>(1)</sup>   |    |    |     |     |     |     |     |
| VOLTAGE (V <sub>DC</sub> ) |        | 16                    | 25 | 50 | 100 | 200 | 250 | 500 | 630 | 16                    | 25 | 50 | 100 | 200 | 250 | 500 | 630 |
| VOLTAGE CODE               |        | J                     | X  | A  | B   | C   | P   | E   | L   | J                     | X  | A  | B   | C   | P   | E   | L   |
| CAP. CODE                  | CAP.   |                       |    |    |     |     |     |     |     |                       |    |    |     |     |     |     |     |
| 121                        | 120 pF |                       |    |    |     |     |     |     |     |                       |    |    |     |     |     |     |     |
| 151                        | 150 pF |                       |    |    |     |     |     |     |     |                       |    |    |     |     |     |     |     |
| 181                        | 180 pF |                       |    |    |     |     |     |     |     |                       |    |    |     |     |     |     |     |
| 221                        | 220 pF |                       |    |    |     |     |     |     |     |                       |    |    |     |     |     |     |     |
| 271                        | 270 pF |                       |    |    |     |     |     |     |     |                       |    |    |     |     |     |     |     |
| 331                        | 330 pF |                       |    |    |     |     |     | ••  | ••  |                       |    |    |     |     |     |     |     |
| 391                        | 390 pF |                       |    |    |     |     |     | ••  | ••  |                       |    |    |     |     |     |     | •   |
| 471                        | 470 pF |                       | •• | •• | ••  | ••  |     | ••  | ••  |                       |    |    |     |     |     |     | •   |
| 561                        | 560 pF |                       | •• | •• | ••  | ••  |     | ••  | ••  |                       |    |    |     |     |     |     | •   |
| 681                        | 680 pF |                       | •• | •• | ••  | ••  |     | ••  | ••  |                       |    |    |     |     |     |     | •   |
| 821                        | 820 pF |                       | •• | •• | ••  | ••  |     | ••  | ••  |                       |    |    |     |     |     |     | •   |
| 102                        | 1.0 nF | ••                    | •• | •• | ••  | ••  |     | ••  | ••  |                       |    |    |     |     |     | •   | •   |
| 122                        | 1.2 nF | ••                    | •• | •• | ••  | ••  |     | ••  | ••  |                       |    |    |     |     |     | •   | •   |
| 152                        | 1.5 nF | ••                    | •• | •• | ••  | ••  |     | ••  | ••  |                       |    |    |     |     |     | •   | •   |
| 182                        | 1.8 nF | ••                    | •• | •• | ••  | ••  |     | ••  | ••  |                       |    |    |     |     |     | •   | •   |
| 222                        | 2.2 nF | ••                    | •• | •• | ••  | ••  |     | ••  | ••  |                       |    |    |     |     |     | •   | •   |
| 272                        | 2.7 nF | ••                    | •• | •• | ••  | ••  |     | ••  | ••  |                       |    |    |     |     |     | •   | •   |
| 332                        | 3.3 nF | ••                    | •• | •• | ••  | ••  |     | ••  | ••  |                       |    |    | •   |     |     | •   | •   |
| 392                        | 3.9 nF | ••                    | •• | •• | ••  | ••  |     | ••  | ••  |                       |    |    | •   |     |     | •   | •   |
| 472                        | 4.7 nF | ••                    | •• | •• | ••  | ••  |     | ••  | ••  |                       |    |    | •   |     |     | •   | •   |
| 562                        | 5.6 nF | ••                    | •• | •• | ••  | ••  |     | •   | •   |                       |    |    | •   |     |     | •   | •   |
| 682                        | 6.8 nF | ••                    | •• | •• | ••  | ••  |     | •   | •   |                       |    |    | •   |     |     | •   | •   |
| 822                        | 8.2 nF | ••                    | •• | •• | ••  | ••  |     | •   | •   |                       |    |    | •   |     |     | •   | •   |
| 103                        | 10 nF  | ••                    | •• | •• | ••  | ••  | •   | •   | •   | •                     | •  | •  | •   | •   | •   | •   | •   |
| 123                        | 12 nF  | ••                    | •• | •• | ••  | ••  | •   | •   | •   | •                     | •  | •  | •   | •   | •   | •   | •   |
| 153                        | 15 nF  | ••                    | •• | •• | ••  | ••  | •   | •   | •   | •                     | •  | •  | •   | •   | •   | •   | •   |
| 183                        | 18 nF  | ••                    | •• | •• | ••  | ••  | •   | •   | •   | •                     | •  | •  | •   | •   | •   | •   | •   |
| 223                        | 22 nF  | ••                    | •• | •• | ••  | ••  | •   | •   | •   | •                     | •  | •  | •   | •   | •   | •   | •   |
| 273                        | 27 nF  | ••                    | •• | •• | ••  | ••  | •   | •   | •   | •                     | •  | •  | •   | •   | •   | •   | •   |
| 333                        | 33 nF  | ••                    | •• | •• | ••  | ••  | •   | •   | •   | •                     | •  | •  | •   | •   | •   | •   | •   |
| 393                        | 39 nF  | ••                    | •• | •• | ••  | •   | •   | •   | •   | •                     | •  | •  | •   | •   | •   | •   | •   |
| 473                        | 47 nF  | ••                    | •• | •• | ••  | •   | •   | •   | •   | •                     | •  | •  | •   | •   | •   | •   | •   |
| 563                        | 56 nF  | ••                    | •• | •• | ••  | •   | •   | •   | •   | •                     | •  | •  | •   | •   | •   | •   | •   |
| 683                        | 68 nF  | ••                    | •• | •• | ••  | •   | •   | •   | •   | •                     | •  | •  | •   | •   | •   | •   | •   |
| 823                        | 82 nF  | ••                    | •• | •• | ••  | •   | •   | •   | •   | •                     | •  | •  | •   | •   | •   | •   | •   |
| 104                        | 100 nF | ••                    | •• | •  | •   | •   | •   | •   | •   | •                     | •  | •  | •   | •   | •   | •   | •   |
| 124                        | 120 nF | ••                    | •• | •  | •   | •   | •   | •   | •   | •                     | •  | •  | •   | •   | •   | •   | •   |
| 154                        | 150 nF | ••                    | •• | •  | •   | •   | •   | •   | •   | •                     | •  | •  | •   | •   | •   | •   | •   |
| 184                        | 180 nF | ••                    | •• | •  | •   | •   | •   | •   | •   | •                     | •  | •  | •   | •   | •   | •   | •   |
| 224                        | 220 nF | •                     | •  | •  | •   | •   | •   | •   | •   | •                     | •  | •  | •   | •   | •   | •   | •   |
| 274                        | 270 nF | •                     | •  | •  | •   | •   | •   | •   | •   | •                     | •  | •  | •   | •   | •   | •   | •   |
| 334                        | 330 nF | •                     | •  | •  | •   | •   | •   | •   | •   | •                     | •  | •  | •   | •   | •   | •   | •   |
| 394                        | 390 nF | •                     | •  | •  | •   | •   | •   | •   | •   | •                     | •  | •  | •   | •   | •   | •   | •   |
| 474                        | 470 nF | •                     | •  | •  | •   | •   | •   | •   | •   | •                     | •  | •  | •   | •   | •   | •   | •   |
| 564                        | 560 nF | •                     | •  | •  | •   | •   | •   | •   | •   | •                     | •  | •  | •   | •   | •   | •   | •   |
| 684                        | 680 nF | •                     | •  | •  | •   | •   | •   | •   | •   | •                     | •  | •  | •   | •   | •   | •   | •   |
| 824                        | 820 nF | •                     | •  | •  | •   | •   | •   | •   | •   | •                     | •  | •  | •   | •   | •   | •   | •   |
| 105                        | 1.0 µF | •                     | •  | •  | •   | •   | •   | •   | •   | •                     | •  | •  | •   | •   | •   | •   | •   |
| 125                        | 1.2 µF |                       |    |    |     |     |     |     |     |                       |    |    |     |     |     |     |     |
| 155                        | 1.5 µF |                       |    |    |     |     |     |     |     |                       |    |    |     |     |     |     |     |
| 185                        | 1.8 µF |                       |    |    |     |     |     |     |     |                       |    |    |     |     |     |     |     |
| 225                        | 2.2 µF |                       |    |    |     |     |     |     |     |                       |    |    |     |     |     |     |     |
| 275                        | 2.7 µF |                       |    |    |     |     |     |     |     |                       |    |    |     |     |     |     |     |
| 335                        | 3.3 µF |                       |    |    |     |     |     |     |     |                       |    |    |     |     |     |     |     |
| 395                        | 3.9 µF |                       |    |    |     |     |     |     |     |                       |    |    |     |     |     |     |     |
| 475                        | 4.7 µF |                       |    |    |     |     |     |     |     |                       |    |    |     |     |     |     |     |
| 565                        | 5.6 µF |                       |    |    |     |     |     |     |     |                       |    |    |     |     |     |     |     |
| 685                        | 6.8 µF |                       |    |    |     |     |     |     |     |                       |    |    |     |     |     |     |     |

Notes

<sup>(1)</sup> See soldering recommendations within this data book, or visit [www.vishay.com/doc?45034](http://www.vishay.com/doc?45034)

•• Paper tape • Plastic tape





| SELECTION CHART            |        |                       |     |     |     |      |                       |    |     |     |     |     |     |      |                       |    |     |     |     |     |      |
|----------------------------|--------|-----------------------|-----|-----|-----|------|-----------------------|----|-----|-----|-----|-----|-----|------|-----------------------|----|-----|-----|-----|-----|------|
| DIELECTRIC                 |        | X7R                   |     |     |     |      |                       |    |     |     |     |     |     |      |                       |    |     |     |     |     |      |
| STYLE                      |        | VJ1808 <sup>(1)</sup> |     |     |     |      | VJ1812 <sup>(1)</sup> |    |     |     |     |     |     |      | VJ1825 <sup>(1)</sup> |    |     |     |     |     |      |
| CASE CODE                  |        | 1808                  |     |     |     |      | 1812                  |    |     |     |     |     |     |      | 1825                  |    |     |     |     |     |      |
| VOLTAGE (V <sub>DC</sub> ) |        | 50                    | 100 | 200 | 500 | 1000 | 25                    | 50 | 100 | 200 | 250 | 500 | 630 | 1000 | 25                    | 50 | 100 | 200 | 250 | 500 | 1000 |
| VOLTAGE CODE               |        | A                     | B   | C   | E   | G    | X                     | A  | B   | C   | P   | E   | L   | G    | X                     | A  | B   | C   | P   | E   | G    |
| CAP. CODE                  | CAP.   |                       |     |     |     |      |                       |    |     |     |     |     |     |      |                       |    |     |     |     |     |      |
| 121                        | 120 pF |                       |     |     |     |      |                       |    |     |     |     |     |     |      |                       |    |     |     |     |     |      |
| 151                        | 150 pF |                       |     |     |     |      |                       |    |     |     |     |     |     |      |                       |    |     |     |     |     |      |
| 181                        | 180 pF |                       |     |     |     |      |                       |    |     |     |     |     |     |      |                       |    |     |     |     |     |      |
| 221                        | 220 pF |                       |     |     |     |      |                       |    |     |     |     |     |     |      |                       |    |     |     |     |     |      |
| 271                        | 270 pF |                       |     |     |     |      |                       |    |     |     |     |     |     |      |                       |    |     |     |     |     |      |
| 331                        | 330 pF |                       |     |     |     |      |                       |    |     |     |     |     |     |      |                       |    |     |     |     |     |      |
| 391                        | 390 pF |                       |     |     |     |      |                       |    |     |     |     |     |     |      |                       |    |     |     |     |     |      |
| 471                        | 470 pF |                       |     |     |     | •    |                       |    |     |     |     |     |     |      |                       |    |     |     |     |     |      |
| 561                        | 560 pF |                       |     |     |     | •    |                       |    |     |     |     |     |     |      |                       |    |     |     |     |     |      |
| 681                        | 680 pF |                       |     |     |     | •    |                       |    |     |     |     |     |     |      |                       |    |     |     |     |     |      |
| 821                        | 820 pF |                       |     |     |     | •    |                       |    |     |     |     |     |     |      |                       |    |     |     |     |     |      |
| 102                        | 1.0 nF |                       |     |     | •   | •    |                       |    |     |     |     | •   | •   | •    |                       |    |     |     |     |     |      |
| 122                        | 1.2 nF |                       |     |     | •   | •    |                       |    |     |     |     | •   | •   | •    |                       |    |     |     |     |     |      |
| 152                        | 1.5 nF |                       |     |     | •   | •    |                       |    |     |     |     | •   | •   | •    |                       |    |     |     |     |     |      |
| 182                        | 1.8 nF |                       |     |     | •   | •    |                       |    |     |     |     | •   | •   | •    |                       |    |     |     |     |     |      |
| 222                        | 2.2 nF |                       |     |     | •   | •    |                       |    |     |     |     | •   | •   | •    |                       |    |     |     |     |     |      |
| 272                        | 2.7 nF |                       |     |     | •   | •    |                       |    |     |     |     | •   | •   | •    |                       |    |     |     |     |     |      |
| 332                        | 3.3 nF |                       |     |     | •   | •    |                       |    |     |     |     | •   | •   | •    |                       |    |     |     |     |     |      |
| 392                        | 3.9 nF |                       |     |     | •   | •    |                       |    |     |     |     | •   | •   | •    |                       |    |     |     |     |     |      |
| 472                        | 4.7 nF |                       |     | •   | •   | •    |                       |    |     |     |     | •   | •   | •    |                       |    |     |     |     |     |      |
| 562                        | 5.6 nF |                       |     | •   | •   | •    |                       |    |     |     |     | •   | •   | •    |                       |    |     |     |     |     |      |
| 682                        | 6.8 nF |                       |     | •   | •   | •    |                       |    |     |     |     | •   | •   | •    |                       |    |     |     |     |     |      |
| 822                        | 8.2 nF |                       |     | •   | •   | •    |                       |    |     |     |     | •   | •   | •    |                       |    |     |     |     |     |      |
| 103                        | 10 nF  | •                     | •   | •   | •   | •    |                       |    |     |     |     | •   | •   | •    |                       | •  | •   | •   | •   | •   |      |
| 123                        | 12 nF  | •                     | •   | •   | •   | •    |                       |    |     |     |     | •   | •   | •    |                       | •  | •   | •   | •   | •   |      |
| 153                        | 15 nF  | •                     | •   | •   | •   | •    |                       |    |     |     |     | •   | •   | •    |                       | •  | •   | •   | •   | •   |      |
| 183                        | 18 nF  | •                     | •   | •   | •   | •    |                       |    |     |     |     | •   | •   | •    |                       | •  | •   | •   | •   | •   |      |
| 223                        | 22 nF  | •                     | •   | •   | •   | •    | •                     | •  | •   | •   |     | •   | •   | •    |                       | •  | •   | •   | •   | •   |      |
| 273                        | 27 nF  | •                     | •   | •   | •   | •    | •                     | •  | •   | •   |     | •   | •   | •    |                       | •  | •   | •   | •   | •   |      |
| 333                        | 33 nF  | •                     | •   | •   | •   | •    | •                     | •  | •   | •   |     | •   | •   | •    |                       | •  | •   | •   | •   | •   |      |
| 393                        | 39 nF  | •                     | •   | •   | •   | •    | •                     | •  | •   | •   |     | •   | •   | •    |                       | •  | •   | •   | •   | •   |      |
| 473                        | 47 nF  | •                     | •   | •   | •   | •    | •                     | •  | •   | •   |     | •   | •   | •    |                       | •  | •   | •   | •   | •   |      |
| 563                        | 56 nF  | •                     | •   | •   | •   | •    | •                     | •  | •   | •   |     | •   | •   | •    |                       | •  | •   | •   | •   | •   |      |
| 683                        | 68 nF  | •                     | •   | •   | •   | •    | •                     | •  | •   | •   |     | •   | •   | •    |                       | •  | •   | •   | •   | •   |      |
| 823                        | 82 nF  | •                     | •   | •   | •   | •    | •                     | •  | •   | •   |     | •   | •   | •    |                       | •  | •   | •   | •   | •   |      |
| 104                        | 100 nF | •                     | •   | •   | •   | •    | •                     | •  | •   | •   | •   | •   | •   | •    |                       | •  | •   | •   | •   | •   |      |
| 124                        | 120 nF | •                     | •   | •   | •   | •    | •                     | •  | •   | •   | •   | •   | •   | •    |                       | •  | •   | •   | •   | •   |      |
| 154                        | 150 nF | •                     | •   | •   | •   | •    | •                     | •  | •   | •   | •   | •   | •   | •    |                       | •  | •   | •   | •   | •   |      |
| 184                        | 180 nF | •                     | •   | •   | •   | •    | •                     | •  | •   | •   | •   | •   | •   | •    |                       | •  | •   | •   | •   | •   |      |
| 224                        | 220 nF | •                     | •   | •   | •   | •    | •                     | •  | •   | •   | •   | •   | •   | •    |                       | •  | •   | •   | •   | •   |      |
| 274                        | 270 nF | •                     | •   | •   | •   | •    | •                     | •  | •   | •   | •   | •   | •   | •    |                       | •  | •   | •   | •   | •   |      |
| 334                        | 330 nF |                       |     |     |     |      | •                     | •  | •   | •   | •   | •   | •   | •    |                       | •  | •   | •   | •   | •   |      |
| 394                        | 390 nF |                       |     |     |     |      | •                     | •  | •   | •   | •   | •   | •   | •    |                       | •  | •   | •   | •   | •   |      |
| 474                        | 470 nF |                       |     |     |     |      | •                     | •  | •   | •   | •   | •   | •   | •    |                       | •  | •   | •   | •   | •   |      |
| 564                        | 560 nF |                       |     |     |     |      | •                     | •  | •   | •   | •   | •   | •   | •    |                       | •  | •   | •   | •   | •   |      |
| 684                        | 680 nF |                       |     |     |     |      | •                     | •  | •   | •   | •   | •   | •   | •    |                       | •  | •   | •   | •   | •   |      |
| 824                        | 820 nF |                       |     |     |     |      | •                     | •  | •   | •   | •   | •   | •   | •    |                       | •  | •   | •   | •   | •   |      |
| 105                        | 1.0 µF |                       |     |     |     |      | •                     | •  |     |     |     |     |     |      |                       | •  | •   | •   |     | •   |      |
| 125                        | 1.2 µF |                       |     |     |     |      |                       |    |     |     |     |     |     |      |                       | •  | •   | •   |     |     |      |
| 155                        | 1.5 µF |                       |     |     |     |      |                       |    |     |     |     |     |     |      |                       | •  | •   | •   |     |     |      |
| 185                        | 1.8 µF |                       |     |     |     |      |                       |    |     |     |     |     |     |      |                       | •  | •   | •   |     |     |      |
| 225                        | 2.2 µF |                       |     |     |     |      |                       |    |     |     |     |     |     |      |                       | •  | •   | •   |     |     |      |
| 275                        | 2.7 µF |                       |     |     |     |      |                       |    |     |     |     |     |     |      |                       | •  | •   | •   |     |     |      |
| 335                        | 3.3 µF |                       |     |     |     |      |                       |    |     |     |     |     |     |      |                       |    |     |     |     |     |      |
| 395                        | 3.9 µF |                       |     |     |     |      |                       |    |     |     |     |     |     |      |                       |    |     |     |     |     |      |
| 475                        | 4.7 µF |                       |     |     |     |      |                       |    |     |     |     |     |     |      |                       |    |     |     |     |     |      |
| 565                        | 5.6 µF |                       |     |     |     |      |                       |    |     |     |     |     |     |      |                       |    |     |     |     |     |      |
| 685                        | 6.8 µF |                       |     |     |     |      |                       |    |     |     |     |     |     |      |                       |    |     |     |     |     |      |

Notes

<sup>(1)</sup> See soldering recommendations within this data book, or visit [www.vishay.com/doc?45034](http://www.vishay.com/doc?45034)

- Plastic tape



| SELECTION CHART            |        |                       |     |     |     |                       |    |     |     |     |      |                       |    |     |     |     |
|----------------------------|--------|-----------------------|-----|-----|-----|-----------------------|----|-----|-----|-----|------|-----------------------|----|-----|-----|-----|
| DIELECTRIC                 |        | X7R                   |     |     |     |                       |    |     |     |     |      |                       |    |     |     |     |
| STYLE                      |        | VJ2220 <sup>(1)</sup> |     |     |     | VJ2225 <sup>(1)</sup> |    |     |     |     |      | VJ3640 <sup>(1)</sup> |    |     |     |     |
| CASE CODE                  |        | 2220                  |     |     |     | 2225                  |    |     |     |     |      | 3640                  |    |     |     |     |
| VOLTAGE (V <sub>DC</sub> ) |        | 50                    | 100 | 200 | 500 | 25                    | 50 | 100 | 200 | 500 | 1000 | 25                    | 50 | 100 | 200 | 500 |
| VOLTAGE CODE               |        | A                     | B   | C   | E   | X                     | A  | B   | C   | E   | G    | X                     | A  | B   | C   | E   |
| CAP. CODE                  | CAP.   |                       |     |     |     |                       |    |     |     |     |      |                       |    |     |     |     |
| 121                        | 120 pF |                       |     |     |     |                       |    |     |     |     |      |                       |    |     |     |     |
| 151                        | 150 pF |                       |     |     |     |                       |    |     |     |     |      |                       |    |     |     |     |
| 181                        | 180 pF |                       |     |     |     |                       |    |     |     |     |      |                       |    |     |     |     |
| 221                        | 220 pF |                       |     |     |     |                       |    |     |     |     |      |                       |    |     |     |     |
| 271                        | 270 pF |                       |     |     |     |                       |    |     |     |     |      |                       |    |     |     |     |
| 331                        | 330 pF |                       |     |     |     |                       |    |     |     |     |      |                       |    |     |     |     |
| 391                        | 390 pF |                       |     |     |     |                       |    |     |     |     |      |                       |    |     |     |     |
| 471                        | 470 pF |                       |     |     |     |                       |    |     |     |     |      |                       |    |     |     |     |
| 561                        | 560 pF |                       |     |     |     |                       |    |     |     |     |      |                       |    |     |     |     |
| 681                        | 680 pF |                       |     |     |     |                       |    |     |     |     |      |                       |    |     |     |     |
| 821                        | 820 pF |                       |     |     |     |                       |    |     |     |     |      |                       |    |     |     |     |
| 102                        | 1.0 nF |                       |     |     |     |                       |    |     |     |     |      |                       |    |     |     |     |
| 122                        | 1.2 nF |                       |     |     |     |                       |    |     |     |     |      |                       |    |     |     |     |
| 152                        | 1.5 nF |                       |     |     |     |                       |    |     |     |     |      |                       |    |     |     |     |
| 182                        | 1.8 nF |                       |     |     |     |                       |    |     |     |     |      |                       |    |     |     |     |
| 222                        | 2.2 nF |                       |     |     |     |                       |    |     |     |     |      |                       |    |     |     |     |
| 272                        | 2.7 nF |                       |     |     |     |                       |    |     |     |     |      |                       |    |     |     |     |
| 332                        | 3.3 nF |                       |     |     |     |                       |    |     |     |     |      |                       |    |     |     |     |
| 392                        | 3.9 nF |                       |     |     |     |                       |    |     |     |     |      |                       |    |     |     |     |
| 472                        | 4.7 nF |                       |     |     |     |                       |    |     |     |     |      |                       |    |     |     |     |
| 562                        | 5.6 nF |                       |     |     |     |                       |    |     |     |     |      |                       |    |     |     |     |
| 682                        | 6.8 nF |                       |     |     |     |                       |    |     |     |     |      |                       |    |     |     |     |
| 822                        | 8.2 nF |                       |     |     |     |                       |    |     |     |     |      |                       |    |     |     |     |
| 103                        | 10 nF  |                       |     |     |     |                       |    |     |     |     |      |                       |    |     |     |     |
| 123                        | 12 nF  |                       |     |     |     |                       |    |     |     |     |      |                       |    |     |     |     |
| 153                        | 15 nF  |                       |     |     | •   |                       |    |     |     |     |      |                       |    |     |     |     |
| 183                        | 18 nF  |                       |     |     | •   |                       |    |     |     |     |      |                       |    |     |     |     |
| 223                        | 22 nF  |                       |     |     | •   |                       |    |     |     |     |      |                       |    |     |     |     |
| 273                        | 27 nF  |                       |     |     | •   |                       |    |     |     |     |      |                       |    |     | •   | •   |
| 333                        | 33 nF  |                       |     |     | •   | •                     | •  | •   | •   | •   | •    |                       |    |     | •   | •   |
| 393                        | 39 nF  |                       |     |     | •   | •                     | •  | •   | •   | •   | •    |                       |    |     | •   | •   |
| 473                        | 47 nF  |                       |     |     | •   | •                     | •  | •   | •   | •   | •    |                       |    |     | •   | •   |
| 563                        | 56 nF  |                       |     |     | •   | •                     | •  | •   | •   | •   | •    |                       |    |     | •   | •   |
| 683                        | 68 nF  |                       |     |     | •   | •                     | •  | •   | •   | •   | •    |                       |    |     | •   | •   |
| 823                        | 82 nF  |                       |     |     | •   | •                     | •  | •   | •   | •   | •    |                       |    |     | •   | •   |
| 104                        | 100 nF |                       |     | •   | •   | •                     | •  | •   | •   | •   | •    |                       |    |     | •   | •   |
| 124                        | 120 nF |                       |     | •   | •   | •                     | •  | •   | •   | •   | •    |                       |    |     | •   | •   |
| 154                        | 150 nF |                       |     | •   | •   | •                     | •  | •   | •   | •   | •    |                       |    |     | •   | •   |
| 184                        | 180 nF |                       |     | •   | •   | •                     | •  | •   | •   | •   | •    | •                     | •  | •   | •   | •   |
| 224                        | 220 nF |                       | •   | •   | •   | •                     | •  | •   | •   | •   | •    | •                     | •  | •   | •   | •   |
| 274                        | 270 nF | •                     | •   | •   | •   | •                     | •  | •   | •   | •   | •    | •                     | •  | •   | •   | •   |
| 334                        | 330 nF | •                     | •   | •   | •   | •                     | •  | •   | •   | •   | •    | •                     | •  | •   | •   | •   |
| 394                        | 390 nF | •                     | •   | •   | •   | •                     | •  | •   | •   | •   | •    | •                     | •  | •   | •   | •   |
| 474                        | 470 nF | •                     | •   | •   | •   | •                     | •  | •   | •   | •   | •    | •                     | •  | •   | •   | •   |
| 564                        | 560 nF | •                     | •   | •   | •   | •                     | •  | •   | •   | •   | •    | •                     | •  | •   | •   | •   |
| 684                        | 680 nF | •                     | •   | •   | •   | •                     | •  | •   | •   | •   | •    | •                     | •  | •   | •   | •   |
| 824                        | 820 nF | •                     | •   | •   | •   | •                     | •  | •   | •   | •   | •    | •                     | •  | •   | •   | •   |
| 105                        | 1.0 µF | •                     | •   | •   | •   | •                     | •  | •   | •   | •   | •    | •                     | •  | •   | •   | •   |
| 125                        | 1.2 µF | •                     | •   | •   | •   | •                     | •  | •   | •   | •   | •    | •                     | •  | •   | •   | •   |
| 155                        | 1.5 µF | •                     | •   | •   | •   | •                     | •  | •   | •   | •   | •    | •                     | •  | •   | •   | •   |
| 185                        | 1.8 µF | •                     | •   | •   | •   | •                     | •  | •   | •   | •   | •    | •                     | •  | •   | •   | •   |
| 225                        | 2.2 µF | •                     | •   | •   | •   | •                     | •  | •   | •   | •   | •    | •                     | •  | •   | •   | •   |
| 275                        | 2.7 µF | •                     | •   | •   | •   | •                     | •  | •   | •   | •   | •    | •                     | •  | •   | •   | •   |
| 335                        | 3.3 µF | •                     | •   | •   | •   | •                     | •  | •   | •   | •   | •    | •                     | •  | •   | •   | •   |
| 395                        | 3.9 µF | •                     | •   | •   | •   | •                     | •  | •   | •   | •   | •    | •                     | •  | •   | •   | •   |
| 475                        | 4.7 µF | •                     | •   | •   | •   | •                     | •  | •   | •   | •   | •    | •                     | •  | •   | •   | •   |
| 565                        | 5.6 µF | •                     | •   | •   | •   | •                     | •  | •   | •   | •   | •    | •                     | •  | •   | •   | •   |
| 685                        | 6.8 µF | •                     | •   | •   | •   | •                     | •  | •   | •   | •   | •    | •                     | •  | •   | •   | •   |

Notes

- (1) See soldering recommendations within this data book, or visit [www.vishay.com/doc?45034](http://www.vishay.com/doc?45034)
- Plastic tape



COG (NP0) DIELECTRIC - TYPICAL PARAMETERS





X7R/X5R DIELECTRIC - TYPICAL PARAMETERS

TEMPERATURE COEFFICIENT OF CAPACITANCE



INSULATION RESISTANCE VS. TEMPERATURE



DISSIPATION FACTOR VS. TEMPERATURE



AGING RATE



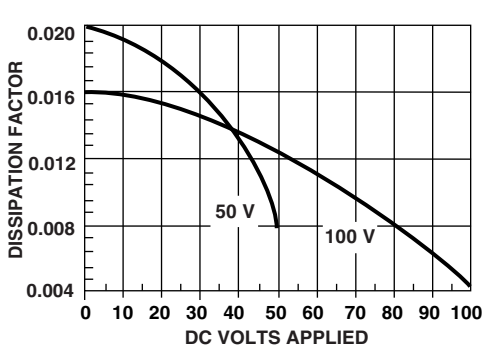
RATED VOLTAGE VS. TEMPERATURE



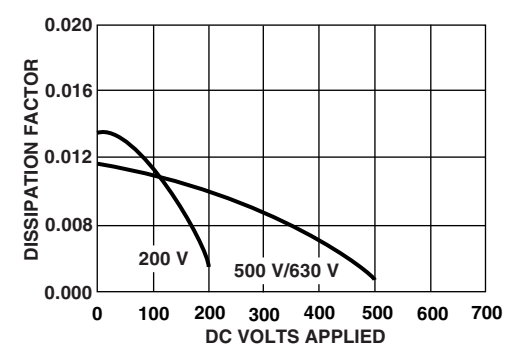
VOLTAGE COEFFICIENT OF CAPACITANCE



DISSIPATION FACTOR VS. VOLTAGE



DISSIPATION FACTOR VS. VOLTAGE





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

**Notes**

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

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



## RoHS COMPLIANCE UPDATE

---

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



## Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and/or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.

## Material Category Policy

**Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as RoHS-Compliant fulfill the definitions and restrictions defined under Directive 2011/65/EU of The European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE) - recast, unless otherwise specified as non-compliant.**

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

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

Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибьютором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения «JONHON», а так же официальным дистрибьютором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов «FORSTAR».



## JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели,  
кабельные сборки и микроволновые компоненты:

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



Телефон: 8 (812) 309-75-97 (многоканальный)

Факс: 8 (812) 320-03-32

Электронная почта: [ocean@oceanchips.ru](mailto:ocean@oceanchips.ru)

Web: <http://oceanchips.ru/>

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, д. 2, корп. 4, лит. А