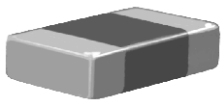
Vishay Vitramon

# Surface Mount Multilayer Ceramic Chip Capacitors
# DSCC Qualified Type 03029



## FEATURES

Pb Available

RoHS* COMPLIANT

- US defense supply center approved
- Federal stock control number, CAGE CODE 95275
- Small case size (0402)
- Stable BP, BR and BX dielectrics
- Excellent aging characteristics
- Lead (Pb)-free applied for “M” termination code
- Tin/lead “Z” termination code is available
- Surface-mount, precious metal technology, wet build process
- Made with a combination of design, materials and tight process control to achieve very high field reliability

## ELECTRICAL SPECIFICATIONS

**Note:** Electrical characteristics at + 25 °C unless otherwise specified.

**Operating Temperature:** BP, BR, BX: - 55 °C to + 125 °C

**Capacitance Range:**

**BP:** = 0.5 pF to 180 pF

**BR:** = 100 pF to 3900 pF

**BX:** = 100 pF to 3900 pF

**Voltage Rating:** 16 Vdc to 100 Vdc

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

**BP:** = 0 ± 30 ppm/°C from - 55 °C to + 125 °C with zero (0) Vdc applied

**BP:** = 0 ± 30 ppm/°C from - 55 °C to + 125 °C with 100 % rated Vdc applied

**BR:** = ± 15 % from - 55 °C to + 125 °C with zero (0) Vdc applied

**BR:** = + 15 %, - 40 % from - 55 °C to + 125 °C with 100 % rated Vdc applied

**BX:** = ± 15 % from - 55 °C to + 125 °C with zero (0) Vdc applied

**BX:** = + 15 %, - 25 % from - 55 °C to + 125 °C with 100 % rated Vdc applied

**Dissipation Factor (DF):**

**BP:**

0.15 % max. at 1.0 $V_{rms}$ and 1 MHz for values ≤ 1000 pF

0.15 % max. at 1.0 $V_{rms}$ and 1 kHz for values > 1000 pF

**BR and BX:**

≤ 25 V ± 3.5 % max. at 1.0 $V_{rms}$ and 1 kHz

≥ 50 V ± 2.5 % max. at 1.0 $V_{rms}$ and 1 kHz

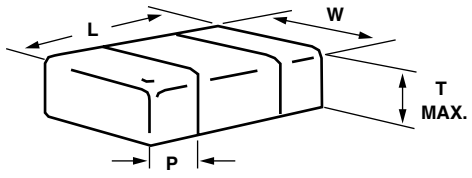
**Aging Rate:**
**BP:** = 0 % maximum per decade.
**BR, BX:** = 1 % maximum per decade

**Insulation Resistance (IR):**
At + 25 °C and rated voltage 100 000 MΩ minimum or 1000 ΩF, whichever is less
At + 125 °C and rated voltage 10 000 MΩ minimum or 100 ΩF, whichever is less

**Dielectric Withstanding Voltage (DWV):**
This is the maximum voltage the capacitors are tested for a 1 to 5 seconds period and the charge/discharge current does not exceed 50 mA
≤ 200 Vdc: DWV at 250 % of rated voltage

* Pb containing terminations are not RoHS compliant, exemptions may apply

## DIMENSIONS




| PART ORDERING NUMBER | LENGTH (L) | WIDTH (W) | MAXIMUM THICKNESS (T) | TERMINATION PAD (P) | |
|---|---|---|---|---|---|
| | | | | MINIMUM | MAXIMUM |
| 03029- | 0.040 ± 0.004 [1.02 ± 0.10] | 0.020 ± 0.004 [0.51 ± 0.10] | 0.024 [0.61] | 0.004 [0.10] | 0.016 [0.41] |

## ORDERING INFORMATION

| 03029- | BX | 102 | B | J | Z | - | T |
|---|---|---|---|---|---|---|---|
| DSCC NUMBER | DIELECTRIC | CAPACITANCE NOMINAL CODE | DC VOLTAGE RATING (1) | CAPACITANCE TOLERANCE | TERMINATION | GROUP C TESTING OPTION | PACKAGING |
| CASE SIZE<br>0402 | BP<br>BR<br>BX | Expressed in picofarads (pF). The first two digits are significant, the third is a multiplier. An "R" indicates a decimal point.<br>Examples:<br>101 = 100 pF<br>1R8 = 1.8 pF | Y = 16 V<br>Z = 25 V<br>A = 50 V<br>B = 100 V | C = ± 0.25 pF<br>D = ± 0.5 pF<br>F = ± 1 %<br>G = ± 2 %<br>H = ± 3 %<br>J = ± 5 %<br>K = ± 10 %<br>**Note:**<br>C, D < 10 pF (BP)<br>F, G, H ≥ 10 pF (BP)<br>J, K ≥ 10 pF<br>(BP, BR, BX) | M = Palladium silver<br>Z = Ni barrier with tin/lead plate min. 4 % lead | C = Full Group C<br>L = 2000 h life test only<br>M = 1000 h life test only<br>H = Low voltage humidity test only<br>- = Group A test only | T = 7" Reel Plastic tape<br>O = 7" Reel Paper tape<br>J = 7" Reel (low quantity)<br>R = 11 1/4" Reel Plastic tape<br>I = 11 1/4" Reel Paper tape<br>B = Bulk |

**Note:**
(1) DC voltage rating should not be exceeded in application

| DIELECTRIC | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| STYLE | | 03029 | | | | | | | | | |
| EIA TYPE | | 0402 | | | | | | | | | |
| DIELECTRIC | | BP | | | | BR | | | BX | | |
| VOLTAGE (Vdc) | | 16 | 25 | 50 | 100 | 16 | 25 | 50 | 16 | 25 | 50 |
| CAP. CODE | CAP. | | | | | | | | | | |
| 0R5 | 0.5 pF | • | • | • | • | | | | | | |
| R75 | 0.75 pF | • | • | • | • | | | | | | |
| 1R0 | 1.0 pF | • | • | • | • | | | | | | |
| 1R2 | 1.2 pF | • | • | • | • | | | | | | |
| 1R5 | 1.5 pF | • | • | • | • | | | | | | |
| 1R8 | 1.8 pF | • | • | • | • | | | | | | |
| 2R2 | 2.2 pF | • | • | • | • | | | | | | |
| 2R4 | 2.4 pF | • | • | • | • | | | | | | |
| 2R7 | 2.7 pF | • | • | • | • | | | | | | |
| 3R0 | 3.0 pF | • | • | • | • | | | | | | |
| 3R3 | 3.3 pF | • | • | • | • | | | | | | |
| 3R6 | 3.6 pF | • | • | • | • | | | | | | |
| 3R9 | 3.9 pF | • | • | • | • | | | | | | |
| 4R7 | 4.7 pF | • | • | • | • | | | | | | |
| 5R1 | 5.1 pF | • | • | • | • | | | | | | |
| 5R6 | 5.6 pF | • | • | • | • | | | | | | |
| 6R2 | 6.2 pF | • | • | • | • | | | | | | |
| 6R8 | 6.8 pF | • | • | • | • | | | | | | |
| 7R5 | 7.5 pF | • | • | • | • | | | | | | |
| 8R2 | 8.2 pF | • | • | • | • | | | | | | |
| 9R1 | 9.1 pF | • | • | • | • | | | | | | |
| 100 | 10 pF | • | • | • | • | | | | | | |
| 110 | 11 pF | • | • | • | • | | | | | | |
| 120 | 12 pF | • | • | • | • | | | | | | |
| 130 | 13 pF | • | • | • | • | | | | | | |
| 150 | 15 pF | • | • | • | • | | | | | | |
| 160 | 16 pF | • | • | • | • | | | | | | |
| 180 | 18 pF | • | • | • | • | | | | | | |
| 200 | 20 pF | • | • | • | • | | | | | | |
| 220 | 22 pF | • | • | • | • | | | | | | |
| 240 | 24 pF | • | • | • | • | | | | | | |
| 270 | 27 pF | • | • | • | • | | | | | | |
| 300 | 30 pF | • | • | • | • | | | | | | |
| 330 | 33 pF | • | • | • | • | | | | | | |
| 360 | 36 pF | • | • | • | • | | | | | | |
| 390 | 39 pF | • | • | • | • | | | | | | |
| 430 | 43 pF | • | • | • | • | | | | | | |
| 470 | 47 pF | • | • | • | • | | | | | | |
| 510 | 51 pF | • | • | • | • | | | | | | |
| 560 | 56 pF | • | • | • | • | | | | | | |
| 620 | 62 pF | • | • | • | • | | | | | | |
| 680 | 68 pF | • | • | • | • | | | | | | |
| 750 | 75 pF | • | • | • | • | | | | | | |
| 820 | 82 pF | • | • | • | • | | | | | | |
| 910 | 91 pF | • | • | • | • | | | | | | |

## DIELECTRIC

| STYLE | | 03029 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| EIA TYPE | | 0402 | | | | | | | | | |
| DIELECTRIC | | BP | | | | BR | | | BX | | |
| VOLTAGE (Vdc) | | 16 | 25 | 50 | 100 | 16 | 25 | 50 | 16 | 25 | 50 |
| CAP. CODE | CAP. | | | | | | | | | | |
| 101 | 100 pF | • | • | • | • | • | • | • | • | • | • |
| 121 | 120 pF | • | • | • | • | • | • | • | • | • | • |
| 151 | 150 pF | • | • | • | • | • | • | • | • | • | • |
| 181 | 180 pF | • | • | • | • | • | • | • | • | • | • |
| 221 | 220 pF | | | | | • | • | • | • | • | • |
| 271 | 270 pF | | | | | • | • | • | • | • | • |
| 331 | 330 pF | | | | | • | • | • | • | • | • |
| 391 | 390 pF | | | | | • | • | • | • | • | • |
| 471 | 470 pF | | | | | • | • | • | • | • | • |
| 561 | 560 pF | | | | | • | • | • | • | • | • |
| 681 | 680 pF | | | | | • | • | • | • | • | • |
| 821 | 820 pF | | | | | • | • | • | • | • | • |
| 102 | 1000 pF | | | | | • | • | • | • | • | • |
| 122 | 1200 pF | | | | | • | • | • | • | • | • |
| 152 | 1500 pF | | | | | • | • | • | • | • | • |
| 182 | 1800 pF | | | | | • | • | • | • | • | • |
| 222 | 2200 pF | | | | | • | • | • | • | • | • |
| 272 | 2700 pF | | | | | • | • | | • | • | |
| 332 | 3300 pF | | | | | • | • | | • | • | |
| 392 | 3900 pF | | | | | • | • | | • | • | |
| 472 | 4700 pF | | | | | | | | | | |
| 562 | 5600 pF | | | | | | | | | | |
| 682 | 6800 pF | | | | | | | | | | |
| 822 | 8200 pF | | | | | | | | | | |
| 103 | 0.010 µF | | | | | | | | | | |
| 123 | 0.012 µF | | | | | | | | | | |

**Note:**
See soldering recommendations within this data book, or visit www.vishay.com/doc?45034

## DSCC PACKAGING QUANTITIES (1) (2)

| | | 7" REEL QUANTITIES | | 11 1/4" AND 13" REEL QUANTITIES | BULK QUANTITIES | |
|---|---|---|---|---|---|---|
| BODY SIZE | TAPE SIZE | PAPER TAPE PACKAGING CODE "C" | PAPER TAPE PACKAGING CODE "J" | PAPER TAPE PACKAGING CODE "P" | VIAL PACKAGING CODE "B" | WAFFLE PACKAGING CODE "W" |
| 0402 | 8 mm | 5000 | 1000 | 10 000 | 100 | N/a |

**Notes:**
(1) Vishay Vitramon uses embossed plastic carrier tape and punch paper carrier tape
(2) REFERENCE: EIA Standard RS 481 - "Taping of Surface Mount Components for Automatic Placement"

# Disclaimer

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