

WIRE BONDABLE VERTICAL ELECTRODE CAPACITORS

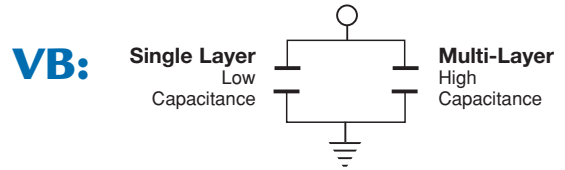
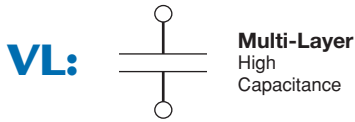
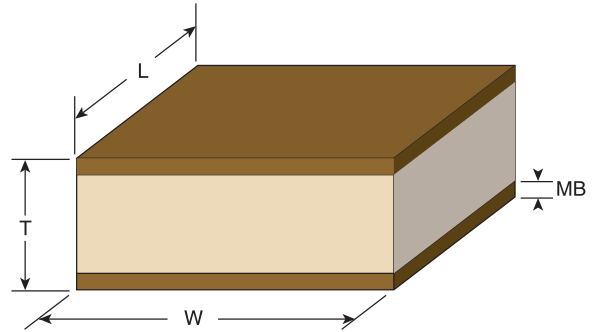
PRESIDIO ADVANTAGE

VL SERIES

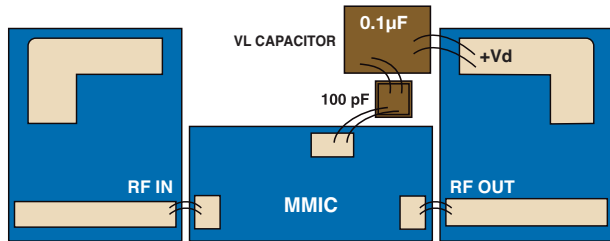
- Wire Bondable Bypass Capacitors for MMIC's

VB SERIES

- Wire Bondable Integrated Broadband Bypass Capacitors for MMIC's up to Millimeter Frequencies
- Low Profile

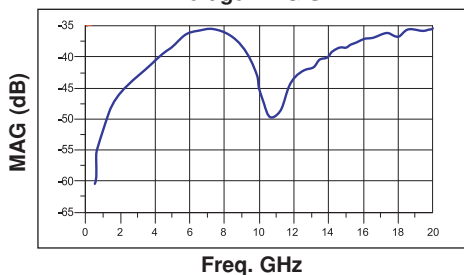


VL SERIES

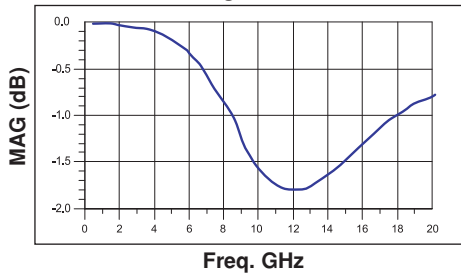


MVL4080X104MGH5C-_* (Bond Wires Included)

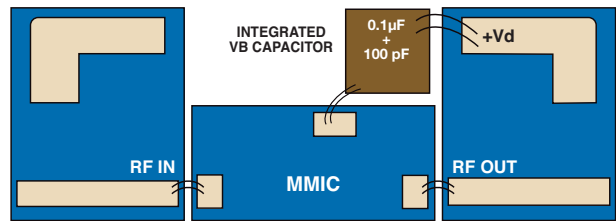
Data in Shunt
Average MAG S21



Average MAG S11

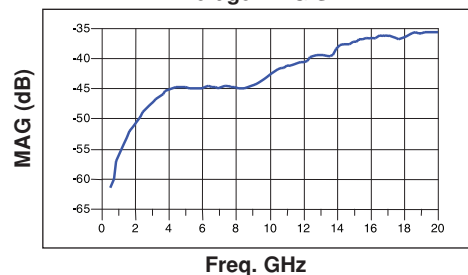


VB SERIES

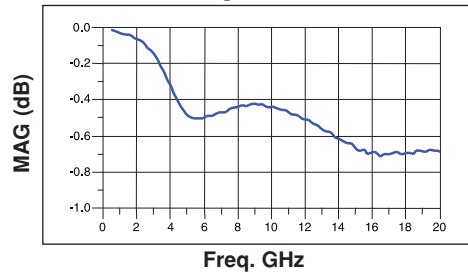


MVB4080X104ZGH5C3_* (Bond Wires Included)

Data in Shunt
Average MAG S21



Average MAG S11



GLOBAL PART NUMBER EXAMPLE (How to Order)

| | | | | | | | | | | | |
|-----------|--|--------------|------------|-------------|-----------------------|----------|-------------|-----------|----------------|---|------------------------------|
| M | VB | 3030 | X | 103 | M | G | H | 5 | C | 1 | * |
| Test Code | VB = Vertical Broadband VL = Vertical Layer | Size (Pg. 9) | Dielectric | Capacitance | Capacitance Tolerance | Voltage | Termination | Packaging | RoHS Compliant | VB – Special Code VL – Hyphen Required | Design-In Code (See Page 14) |

Test Codes, Dielectric Codes and Specifications

| | | | | FIT* 85° C | FIT* 100° C | Mil-PRF-38534E Table C-III | -55681 Similar | -123 Similar | Cust. Spec. | |
|---|------------------------------|------------------------------|--------------------------|---------------|----------------|-------------------------------|-------------------|-----------------|----------------|---|
| TEST CODES: | | | | M | N | H | K | C | S | D |
| Upgradable to Codes: | | | | H, K, C | H, K, C, S | | | | | |
| ELECTRICAL SPECIFICATIONS | X7R Dielectric Code X | Y5V Dielectric Code Y | Testing Method | Test Samples | | Test Samples | | Test Samples | Test Samples | |
| Temperature Coefficient Limits | ± 20% | + 22%, -82% | Presidio Specification | | | | | | | |
| Temperature Coefficient Limit Cycle | -55° to +125° C | -30° to +85° C | Presidio Specification | | | | | | | |
| Capacitance | 1 kHz, 1.0 V AC RMS | 1 kHz, 1.0 V AC RMS | MIL-STD-202 Meth. 305 | 100% | 100% | 100% | 100% | 100% | 100% | |
| Dissipation Factor, maximum | 5% max. | 19% max. | Presidio Specification | 100% | 100% | 100% | 100% | 100% | 100% | |
| Insulation Resistance @ +25° C at WVDC | 1000 MΩ - μF | 50 MΩ - μF | MIL-STD-202 Meth. 302 | 1% AQL | 1% AQL | 100% | 100% | 100% | 100% | |
| Insulation Resistance @ +125° C at WVDC | 100 MΩ - μF | Not Applicable | MIL-STD-202 Meth. 302 | | | | | 1% AQL | 100% | |
| Dielectric Withstanding Voltage (DWV) | 250% of WVDC | 250% of WVDC | MIL-STD-202 Meth. 301 | 1% AQL | 1% AQL | 100% | 100% | 100% | 100% | |
| Aging Effects | 2.5% typ./decade hr. | 5% typ./decade hr. | Presidio Specification | | | | | | | |
| VISUAL & MECHANICAL SPECIFICATIONS | | | | | | | | | | |
| Visual, Workmanship | | | Presidio Specification | 100% | 100% | 100% | 100% | 100% | 100% | |
| Bond Strength, minimum | 3 grams, 0.001" dia. Au wire | 3 grams, 0.001" dia. Au wire | STD-883 Method 2011 | | | 10 | 10 | 10 | 10 | |
| Shear Strength, minimum | Size dependent | Size dependent | STD-883 Method 2019 | | | | | 10 | 10 | |
| Physical Dimensions | See Page 9 | See Page 9 | Presidio Specification | | | | | 20 | 20 | |
| Metalization, minimum | 100 μin (2.5 μm) | 100 μin (2.5 μm) | Presidio Specification | | | | | | | |
| ENVIRONMENTAL TESTS, LEVEL I (TEST CODES K AND C) | | | | | | | | | | |
| Voltage Conditioning | 100 Hours | 100 Hours | MIL-STD-202 Meth. 108, A | | | | 10 | 100% | | |
| Constant Acceleration | 3,000g's, Y1 Direction | 3,000g's, Y1 Direction | STD-883 Method 2001 | | | | 10 | | | |
| ENVIRONMENTAL TESTS, LEVEL II (TEST CODE S) | | | | | | | | | | |
| Thermal Shock & Voltage Conditioning | 20 cycles/168 hr. min. | Not Applicable | MIL-STD-202 Meth. 107 | | | | | | 100% | |
| Destructive Physical Analysis Report | | Not Applicable | EIA-469 +MIL-PRF-123 | | | | | | Included | |
| Temperature Coeff. of Capacitance, 0 Volt | ± 15% | Not Applicable | Presidio Specification | | | | | | 12 | |
| Life Test | 1000 Hours Each Lot | Not Applicable | MIL-STD-202 Meth. 108 | | | | | | 25 min. | |
| Humidity, Steady State, Low Voltage | 240 hours min. | Not Applicable | MIL-STD-202 Meth. 103, A | | | | | | 12 | |
| RoHS Compliant, Yes or No | Specify | Not Applicable | | | | | | | | |

*FIT (Failure In Time) Calculations are based on assumed CONTINUOUS operating temperatures 85° C and 100° C

| -3dB CUT OFF FREQUENCY | |
|------------------------|------|
| pF | kHz |
| 330,000 | < 10 |
| 180,000 | 10 |
| 100,000 | 16 |
| 68,000 | 25 |
| 47,000 | 35 |
| 43,000 | 40 |
| 30,000 | 55 |
| 22,000 | 75 |
| 20,000 | 80 |
| 15,000 | 105 |
| 10,000 | 160 |
| 8,200 | 195 |
| 4,700 | 340 |

Capacitance Codes

First Two Digits = Significant figures of capacitance in picofarads
Third Digit = Additional number of zeros
Example: 100 = 10 pF
 102 = 1,000 pF
 104 = 100,000 pF

Capacitance Tolerance

| Code | Tol. |
|------|------------|
| M | ± 20% |
| Z | -20%, +80% |

Packaging

5 = Waffle Pack (standard)
 F = Grip Ring, 6.0" diameter standard

Working Voltage (See Page 9)

| Code | WVDC | Code | WVDC |
|------|------|------|------|
| 3 | 100 | G | 16 |
| 2 | 50 | F | 12 |
| 1 | 25 | E | 10 |
| | | C | 6.3 |

RoHS

| Code | Compliant |
|------|---------------------------|
| N | No |
| R | Legacy, ended 2012 |
| C | Yes, started January 2013 |

Termination

| VL/VB | Description |
|-------|---|
| H | 99.8% Au Top and Bottom Suitable for Conductive Epoxy |
| K | 99.8% Au Top, PdAg Bottom Conductive Epoxy or Solder |

100 Microns minimum thickness on both sides

Special Code

VB Series: Single Layer Capacitance Value:
 1 = 100 pF
 3 = 1800 pF
 VL Series: Hyphen Required



SELECTION TABLE: VERTICAL ELECTRODE CAPACITORS — WIRE BONDABLE

| Size Code | L inch (mm) | W inch (mm) | T Max. inch (mm) | MB Max. inch (mm) | Working Voltage (WVDC) Max. | Capacitance (pF) | INDUSTRIAL & MILITARY Test Code M | | SPACE Test Code N | VB SERIES | | Performance Curves | S2P Files "VB" |
|-----------|---|---|---|----------------------------|--------------------------------|---------------------|--------------------------------------|-------------|----------------------|---------------------|--------------------------|-----------------------|---------------------|
| | | | | | | | X7R (pF) | Y5V (pF) | X7R (pF) | PART NUMBER | VL SERIES PART NUMBER | | |
| 2020 | 0.020 (0.508) ± 0.003 (0.076) | 0.020 (0.508) ± 0.003 (0.076) | 0.015 (0.381) | 0.003 (0.076) | 100 | Max: | 390 | | | | MVL2020X391M3H5C-* | | |
| | | | | | 50 | Max: | 1,000 | | | | MVL2020X102M2H5C-* | | |
| | | | | | 25 | Max: | 2,700 | | | | MVL2020X272M1H5C-* | | |
| | | | | | 16 | Max: | 5,100 | | | | MVL2020X512MGH5C-* | | |
| | | | | | 10 | Max: | 10,000 | | | | MVL2020X103MEH5C-* | | |
| | | | | | 6.3 | Max: | | | | | LVB2020X103MC *5C1* | | |
| 2040 | 0.020 (0.508) ± 0.003 (0.076) | 0.040 (1.016) ± 0.004 (0.102) | 0.017 (0.432) | 0.005 (0.127) | 100 | Max: | 1,000 | | | MVB2040X102M3 *5C1* | MVL2040X102M3H5C-* | | |
| | | | | | 50 | Max: | 2,200 | | | MVB2040X222M2 *5C1* | MVL2040X222M2H5C-* | | |
| | | | | | 25 | Max: | 5,100 | | | MVB2040X512M1 *5C1* | MVL2040X512M1H5C-* | | |
| | | | | | 16 | Max: | 10,000 | | | MVB2040X103MG *5C1* | MVL2040X103MGH5C-* | | |
| | | | | | 10 | Max: | 22,000 | | | MVB2040X223ME *5C1* | MVL2040X223MEH5C-* | | |
| 2741 | 0.027 (0.686) ± 0.004 (0.102) | 0.041 (1.041) ± 0.004 (0.102) | 0.033 (0.838) | 0.005 (0.127) | 16 | Max: | 100,000 | | | MVB2741X104MG *5C1* | MVL2741X104MGH5C-* | | |
| 3030 | 0.030 (0.762) ± 0.003 (0.076) | 0.030 (0.762) ± 0.003 (0.076) | 0.022 (0.559) | 0.005 (0.127) | 100 | Max: | 4,700 | | | MVB3030X472M3 *5C1* | MVL3030X472M3H5C-* | | |
| | | | | | 50 | Max: | 10,000 | | | MVB3030X103M2 *5C1* | MVL3030X103M2H5C-* | | |
| | | | | | 50 | Max: | | | 6,800 | | NVL3030X682M2H5N-* | | |
| | | | | | 25 | Max: | 15,000 | | | MVB3030X153M1 *5C1* | MVL3030X153M1H5C-* | | |
| | | | | | 16 | Max: | 22,000 | | | MVB3030X223MG *5C1* | MVL3030X223MGH5C-* | | |
| | | | | | 16 | Nominal | 10,000 | | 10,000 | MVB3030X103MG *5C1* | NVL3030X103MGH5N-* | PDE | WEB |
| | | | | | 16 | Max: | | 100,000 | | MVL3030Y104ZGH5C-* | | | |
| 10 | Max: | 43,000 | | | MVB3030X433ME *5C1* | MVL3030X433MEH5C-* | | | | | | | |
| 3060 | 0.030 (0.762) ± 0.003 (0.076) | 0.060 (1.524) ± 0.004 (0.102) | 0.017 (0.432) | 0.005 (0.127) | 100 | Max: | 8,200 | | | MVB3060X822M3 *5C1* | MVL3060X822M3H5C-* | | |
| | | | | | 50 | Max: | 20,000 | | | MVB3060X203M2 *5C1* | MVL3060X203M2H5C-* | | |
| | | | | | 25 | Max: | 30,000 | | | MVB3060X303M1 *5C1* | MVL3060X303M1H5C-* | | |
| | | | | | 16 | Max: | 47,000 | | | MVB3060X473MG *5C1* | MVL3060X473MGH5C-* | | |
| | | | | | 10 | Max: | 100,000 | | | MVB3060X104ME *5C1* | MVL3060X104MEH5C-* | | |
| 4040 | 0.040 (1.016) ± 0.004 (0.102) | 0.040 (1.016) ± 0.004 (0.102) | 0.025 (0.635) | 0.005 (0.127) | 100 | Max: | 8,200 | | | MVB4040X822M3 *5C1* | MVL4040X822M3H5C-* | | |
| | | | | | 50 | Max: | 20,000 | | | MVB4040X203M2 *5C1* | MVL4040X203M2H5C-* | | |
| | | | | | 25 | Max: | 30,000 | | | MVB4040X303M1 *5C1* | MVL4040X303M1H5C-* | | |
| | | | | | 25 | Max: | | | 10,000 | NVB4040X103M1 *5N1* | NVL4040X103M1H5N-* | | |
| | | | | | 16 | Max: | 47,000 | | | MVB4040X473MG *5C1* | MVL4040X473MGH5C-* | | |
| | | | | | 10 | Max: | 100,000 | | | MVB4040X104ME *5C1* | MVL4040X104MEH5C-* | | |
| 3080 | 0.030 (0.762) ± 0.003 (0.076) | 0.080 (2.032) ± 0.004 (0.102) | 0.025 (0.635) | 0.005 (0.127) | 50 | Max: | 15,000 | | | | MVL3080X153M2H5C-* | | |
| | | | | | 16 | Max: | 100,000 | | | | MVL3080X104MGH5C-* | | |
| 4080 | 0.042 (1.067) ± 0.004 (0.102) | 0.083 (2.108) ± 0.004 (0.102) | VB 0.017 (0.432) ± VL 0.025 (0.635) | 0.005 (0.127) | 100 | Max: | 15,000 | | | MVB4080X153M3 *5C1* | MVL4080X153M3H5C-* | | |
| | | | | | 50 | Max: | 30,000 | | | MVB4080X303M2 *5C1* | MVL4080X303M2H5C-* | | |
| | | | | | 25 | Max: | 68,000 | | | MVB4080X683M1 *5C1* | MVL4080X683M1H5C-* | | |
| | | | | | 16 | Max: | 100,000 | | | MVB4080X104MG *5C3* | MVL4080X104MGH5C-* | PDE | WEB |
| 5080 | 0.050 (1.270) ± 0.004 (0.102) | 0.083 (2.108) ± 0.004 (0.102) | 0.025 (0.635) | 0.005 (0.127) | 100 | Max: | 30,000 | | | MVB5080X303M3 *5C1* | MVL5080X303M3H5C-* | | |
| | | | | | 50 | Max: | 68,000 | | | MVB5080X683M2 *5C1* | MVL5080X683M2H5C-* | | |
| | | | | | 25 | Max: | | | 100,000 | | NVL5080X104M1H5N-* | | |
| | | | | | 16 | Max: | 180,000 | | | MVB5080X184MG *5C1* | MVL5080X184MGH5C-* | | |
| | | | | | 12 | Max: | | | 100,000 | | NVB5080X104MF *5N3* | | |
| | | | | | 10 | Max: | 220,000 | | | MVB5080X224ME *5C1* | MVL5080X224MEH5C-* | | |

* Insert codes for termination (Page 8)
and design-in location (Page 14)



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A WORD TO THE DESIGN ENGINEER

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We added a “Design In” locator code for quick traceability, if needed. Please select your location from the list below and add the appropriate code at the end of the part number.

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UNITED STATES

| USA | Code | USA | Code |
|----------------------|------|-------------------|------|
| Alabama | G | Nebraska | P |
| Alaska | P | Nevada, North | B |
| Arizona | D | Nevada, South | C |
| Arkansas | P | New Hampshire | L |
| California, North | B | New Jersey | J |
| California, South | C | New Mexico | D |
| Colorado | E | New York, Metro | J |
| Connecticut | L | New York, Upstate | K |
| Delaware | I | North Carolina | G |
| District of Columbia | H | North Dakota | O |
| Florida | G | Ohio | M |
| Georgia | G | Oklahoma | P |
| Hawaii | P | Oregon | A |
| Idaho | A | Pennsylvania | I |
| Illinois | N | Rhode Island | L |
| Indiana | M | South Carolina | G |
| Iowa | O | South Dakota | O |
| Kansas | P | Tennessee | G |
| Kentucky | M | Texas | F |
| Louisiana | P | Utah | E |
| Maine | L | Vermont | L |
| Maryland | H | Virginia | H |
| Massachusetts | L | Washington | A |
| Michigan | N | West Virginia | P |
| Minnesota | O | Wisconsin, East | N |
| Mississippi | G | Wisconsin, West | O |
| Missouri | N | Wyoming | E |
| Montana | A | | |

OUTSIDE THE UNITED STATES

| Americas | Code | Europe | Code |
|-----------------|------|--------------------------|------|
| Canada | R | Austria | 3 |
| Mexico | R | Belgium | 1 |
| Caribbean | R | Denmark | 5 |
| Central America | R | Finland | 5 |
| South America | R | France | 2 |
| | | Germany | 3 |
| | | Ireland | 6 |
| | | Italy | 4 |
| | | Luxembourg | 1 |
| | | Netherlands | 1 |
| | | Norway | 5 |
| | | Sweden | 5 |
| | | Switzerland | 3 |
| | | United Kingdom | 6 |
| | | Other European Countries | 7 |
| | | Other | |
| | | India | 2 |
| | | Israel | 8 |
| | | Rest of World | 9 |

