

Coaxial High Power Combiner

ZB4PD-52-20W+

4 Way-0° 50Ω 10 to 500 MHz



Generic photo used for illustration purposes only

CASE STYLE: Z54

| Connectors | Model |
|------------|-----------------|
| BNC | ZB4PD-52-20W+ |
| SMA | ZB4PD-52-20W-S+ |
| N-TYPE | ZB4PD-52-20W-N+ |

+RoHS Compliant

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

Maximum Ratings

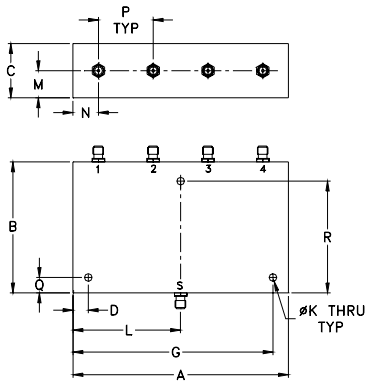
| | |
|-----------------------------|----------------|
| Operating Temperature | -55°C to 100°C |
| Storage Temperature | -55°C to 100°C |
| Power Input (as a splitter) | 20W |
| Internal Dissipation | 3W |

Permanent damage may occur if any of these limits are exceeded.

Coaxial Connections

| | |
|----------|---|
| SUM PORT | S |
| PORT 1 | 1 |
| PORT 2 | 2 |
| PORT 3 | 3 |
| PORT 4 | 4 |

Outline Drawing



Outline Dimensions (inch/mm)

| | | | | | |
|-------|-------|-------|-------|-------|-------|
| A | B | C | D | G | K |
| 3.50 | 2.13 | .88 | 250 | 3.250 | .125 |
| 88.90 | 54.10 | 22.35 | 6.35 | 82.55 | 3.18 |
| L | M | N | P | Q | R |
| 1.750 | .44 | .415 | .89 | .250 | 1.813 |
| 44.45 | 11.18 | 10.54 | 22.61 | 6.35 | 46.05 |
| | | | | | wt |
| | | | | | grams |
| | | | | | 250 |

Electrical Schematic



Features

- high input power, 20W as splitter
- wideband, 10 to 500 MHz
- high isolation, 32 dB typ.
- excellent amplitude unbalance, 0.1 dB typ.
- excellent phase unbalance, 1 deg. typ.
- excellent matching VSWR, 1.1:1 typ.
- rugged, shielded case

Applications

- VHF/UHF
- receivers/transmitters

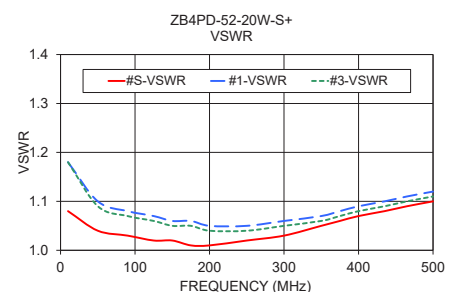
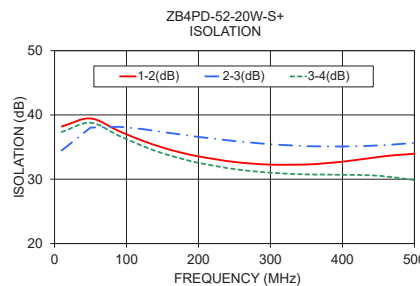
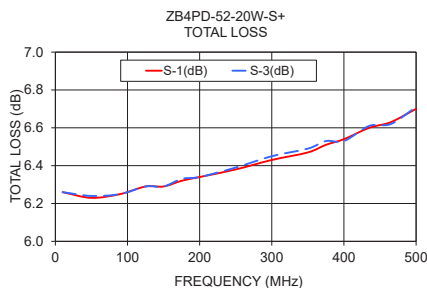
Electrical Specifications at 25°C

| Parameter | Frequency (MHz) | Min. | Typ. | Max. | Unit |
|---|------------------------------------|----------------|--------------------|-------------------|--------|
| Frequency Range | | 10 | | 500 | MHz |
| Insertion Loss (above theoretical 6.0 dB) | 10 - 100 100 - 250 250 - 500 | — | 0.3 0.4 0.8 | 0.6 0.7 1.2 | dB |
| Isolation | 10 - 100 100 - 250 250 - 500 | 24 24 20 | 34 29 26 | — — — | dB |
| Phase Unbalance | 10 - 100 100 - 250 250 - 500 | — — — | 1 2 3 | 3 4 6 | Degree |
| Amplitude Unbalance | 10 - 100 100 - 250 250 - 500 | — — — | 0.05 0.1 0.3 | 0.2 0.3 0.6 | dB |
| VSWR (Port S) | 10 - 100 100 - 250 250 - 500 | — — — | 1.1 1.1 1.2 | 1.3 1.2 1.4 | :1 |
| VSWR (Port 1-4) | 10 - 100 100 - 250 250 - 500 | — — — | 1.2 1.1 1.1 | 1.4 1.3 1.4 | :1 |

Typical Performance Data

| Freq. (MHz) | Total Loss ¹ (dB) | | | | Amp. Unb. (dB) | Isolation (dB) | | | Phase Unb. (deg.) | VSWR S | VSWR 1 | VSWR 2 | VSWR 3 | VSWR 4 |
|-------------|------------------------------|------|------|------|----------------|----------------|-------|-------|-------------------|--------|--------|--------|--------|--------|
| | S-1 | S-2 | S-3 | S-4 | | 1-2 | 2-3 | 3-4 | | | | | | |
| 10.00 | 6.26 | 6.26 | 6.26 | 6.25 | 0.01 | 38.20 | 34.47 | 37.34 | 0.04 | 1.08 | 1.18 | 1.18 | 1.18 | 1.18 |
| 50.00 | 6.23 | 6.24 | 6.24 | 6.23 | 0.01 | 39.45 | 38.03 | 38.79 | 0.11 | 1.04 | 1.10 | 1.10 | 1.09 | 1.10 |
| 90.00 | 6.25 | 6.26 | 6.25 | 6.24 | 0.01 | 37.45 | 38.16 | 36.73 | 0.22 | 1.03 | 1.08 | 1.08 | 1.07 | 1.08 |
| 125.00 | 6.29 | 6.30 | 6.29 | 6.28 | 0.02 | 35.87 | 37.76 | 35.05 | 0.28 | 1.02 | 1.07 | 1.07 | 1.06 | 1.07 |
| 150.00 | 6.29 | 6.31 | 6.29 | 6.28 | 0.02 | 34.93 | 37.34 | 34.04 | 0.40 | 1.02 | 1.06 | 1.06 | 1.05 | 1.06 |
| 175.00 | 6.32 | 6.33 | 6.33 | 6.31 | 0.02 | 34.16 | 36.96 | 33.24 | 0.41 | 1.01 | 1.06 | 1.06 | 1.05 | 1.06 |
| 200.00 | 6.34 | 6.36 | 6.34 | 6.32 | 0.04 | 33.55 | 36.58 | 32.55 | 0.47 | 1.01 | 1.05 | 1.05 | 1.04 | 1.05 |
| 250.00 | 6.38 | 6.41 | 6.39 | 6.36 | 0.05 | 32.68 | 35.94 | 31.57 | 0.58 | 1.02 | 1.05 | 1.04 | 1.04 | 1.04 |
| 300.00 | 6.43 | 6.46 | 6.45 | 6.39 | 0.07 | 32.27 | 35.43 | 31.01 | 0.70 | 1.03 | 1.06 | 1.05 | 1.05 | 1.05 |
| 350.00 | 6.47 | 6.52 | 6.49 | 6.42 | 0.10 | 32.29 | 35.14 | 30.75 | 0.84 | 1.05 | 1.07 | 1.06 | 1.06 | 1.06 |
| 375.00 | 6.51 | 6.56 | 6.53 | 6.45 | 0.11 | 32.48 | 35.10 | 30.73 | 0.83 | 1.06 | 1.08 | 1.07 | 1.07 | 1.06 |
| 400.00 | 6.54 | 6.60 | 6.53 | 6.46 | 0.14 | 32.73 | 35.09 | 30.68 | 0.93 | 1.07 | 1.09 | 1.08 | 1.08 | 1.07 |
| 435.00 | 6.60 | 6.66 | 6.61 | 6.50 | 0.16 | 33.23 | 35.18 | 30.63 | 0.93 | 1.08 | 1.10 | 1.09 | 1.09 | 1.08 |
| 465.00 | 6.63 | 6.71 | 6.62 | 6.51 | 0.20 | 33.66 | 35.35 | 30.38 | 1.06 | 1.09 | 1.11 | 1.10 | 1.10 | 1.09 |
| 500.00 | 6.70 | 6.78 | 6.71 | 6.56 | 0.22 | 33.96 | 35.66 | 29.87 | 1.02 | 1.10 | 1.12 | 1.11 | 1.11 | 1.09 |

1. Total Loss = Insertion Loss + 6.0 dB splitter theoretical loss.



Notes

- Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuits' applicable established test performance criteria and measurement instructions.
- The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/WCLStore/terms.jsp



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REV. A
M151107
ZB4PD-52-20W+
ED-13268/1
HY/CP/AM
201120

4 Way-0° Power Splitter/Combiner

ZB4PD-52-20W+

Typical Performance Data

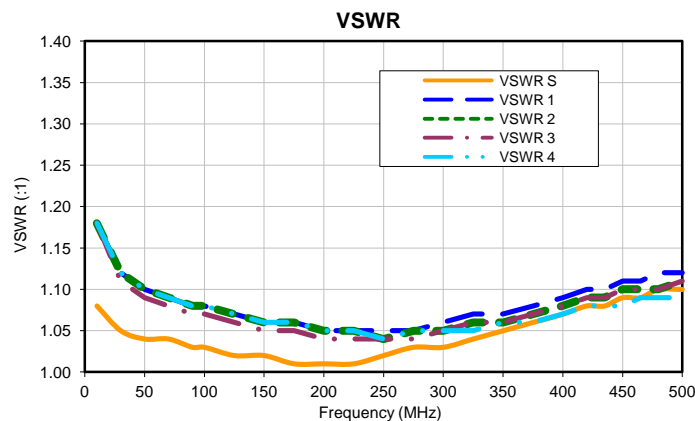
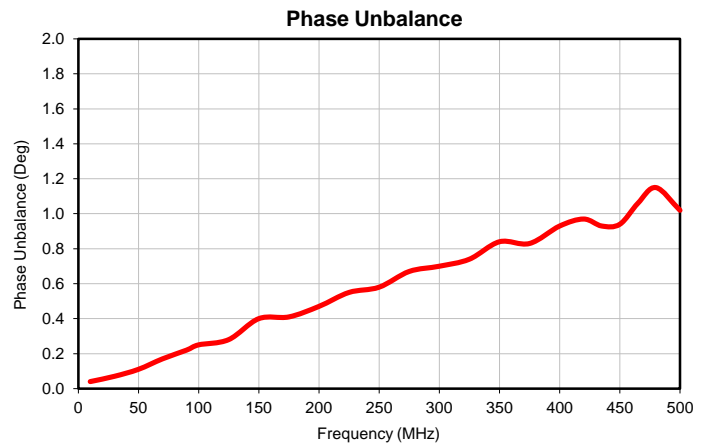
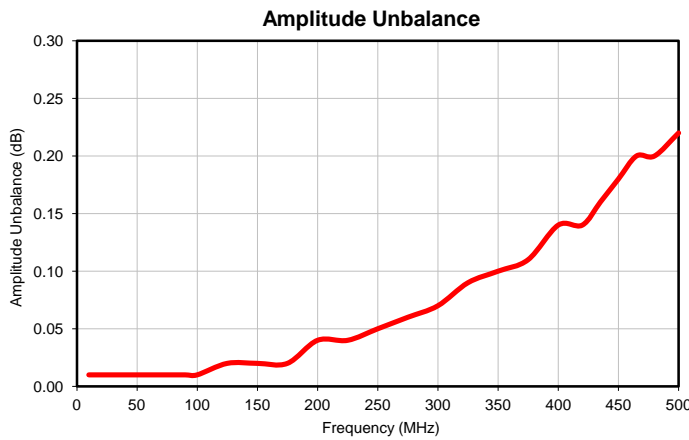
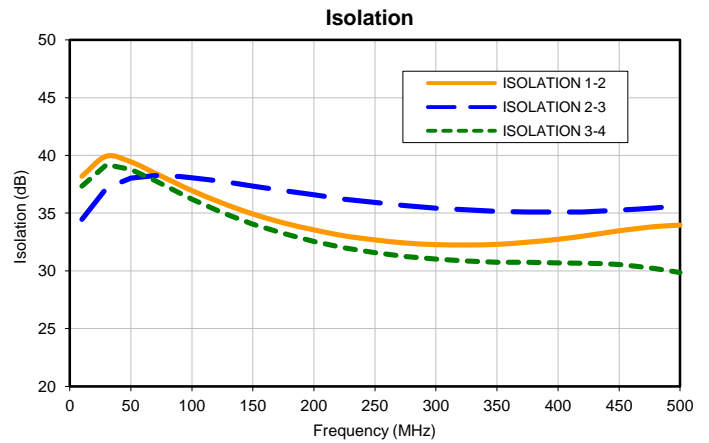
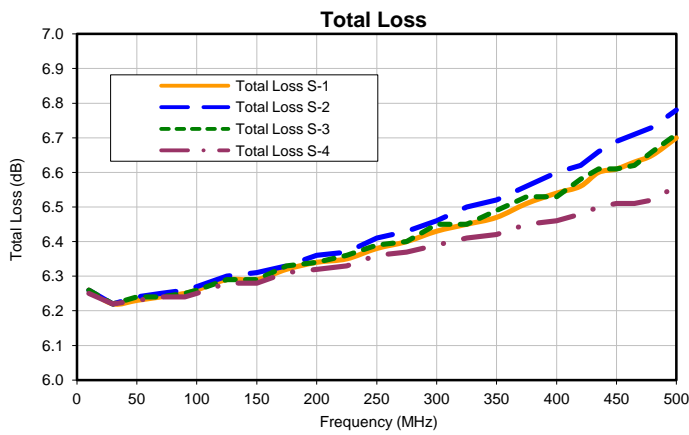
| FREQ. (MHz) | TOTAL LOSS ¹ (dB) | | | | AMP UNBAL. (dB) | ISOLATION (dB) | | | PHASE UNBAL. (Deg) | FREQ. (MHz) | VSWR (:1) | | | | |
|----------------|---------------------------------|------|------|------|-----------------------|-------------------|-------|-------|--------------------------|----------------|--------------|------|------|------|------|
| | S1 | S2 | S3 | S4 | | 1-2 | 2-3 | 3-4 | | | S | 1 | 2 | 3 | 4 |
| 10.0 | 6.26 | 6.26 | 6.26 | 6.25 | 0.01 | 38.20 | 34.47 | 37.34 | 0.04 | 10.0 | 1.08 | 1.18 | 1.18 | 1.18 | 1.18 |
| 30.0 | 6.22 | 6.22 | 6.22 | 6.22 | 0.01 | 39.94 | 37.18 | 39.20 | 0.07 | 30.0 | 1.05 | 1.12 | 1.12 | 1.11 | 1.12 |
| 50.0 | 6.23 | 6.24 | 6.24 | 6.23 | 0.01 | 39.45 | 38.03 | 38.79 | 0.11 | 50.0 | 1.04 | 1.10 | 1.10 | 1.09 | 1.10 |
| 70.0 | 6.24 | 6.25 | 6.24 | 6.24 | 0.01 | 38.47 | 38.26 | 37.81 | 0.17 | 70.0 | 1.04 | 1.09 | 1.09 | 1.08 | 1.09 |
| 90.0 | 6.25 | 6.26 | 6.25 | 6.24 | 0.01 | 37.45 | 38.16 | 36.73 | 0.22 | 90.0 | 1.03 | 1.08 | 1.08 | 1.07 | 1.08 |
| 100.0 | 6.26 | 6.27 | 6.26 | 6.25 | 0.01 | 36.96 | 38.06 | 36.21 | 0.25 | 100.0 | 1.03 | 1.08 | 1.08 | 1.07 | 1.08 |
| 125.0 | 6.29 | 6.30 | 6.29 | 6.28 | 0.02 | 35.87 | 37.76 | 35.05 | 0.28 | 125.0 | 1.02 | 1.07 | 1.07 | 1.06 | 1.07 |
| 150.0 | 6.29 | 6.31 | 6.29 | 6.28 | 0.02 | 34.93 | 37.34 | 34.04 | 0.40 | 150.0 | 1.02 | 1.06 | 1.06 | 1.05 | 1.06 |
| 175.0 | 6.32 | 6.33 | 6.33 | 6.31 | 0.02 | 34.16 | 36.96 | 33.24 | 0.41 | 175.0 | 1.01 | 1.06 | 1.06 | 1.05 | 1.06 |
| 200.0 | 6.34 | 6.36 | 6.34 | 6.32 | 0.04 | 33.55 | 36.58 | 32.55 | 0.47 | 200.0 | 1.01 | 1.05 | 1.05 | 1.04 | 1.05 |
| 225.0 | 6.35 | 6.37 | 6.36 | 6.33 | 0.04 | 33.03 | 36.21 | 32.00 | 0.55 | 225.0 | 1.01 | 1.05 | 1.05 | 1.04 | 1.05 |
| 250.0 | 6.38 | 6.41 | 6.39 | 6.36 | 0.05 | 32.68 | 35.94 | 31.57 | 0.58 | 250.0 | 1.02 | 1.05 | 1.04 | 1.04 | 1.04 |
| 275.0 | 6.40 | 6.43 | 6.40 | 6.37 | 0.06 | 32.41 | 35.65 | 31.23 | 0.67 | 275.0 | 1.03 | 1.05 | 1.05 | 1.04 | 1.05 |
| 300.0 | 6.43 | 6.46 | 6.45 | 6.39 | 0.07 | 32.27 | 35.43 | 31.01 | 0.70 | 300.0 | 1.03 | 1.06 | 1.05 | 1.05 | 1.05 |
| 325.0 | 6.45 | 6.50 | 6.45 | 6.41 | 0.09 | 32.24 | 35.29 | 30.86 | 0.74 | 325.0 | 1.04 | 1.07 | 1.06 | 1.06 | 1.05 |
| 350.0 | 6.47 | 6.52 | 6.49 | 6.42 | 0.10 | 32.29 | 35.14 | 30.75 | 0.84 | 350.0 | 1.05 | 1.07 | 1.06 | 1.06 | 1.06 |
| 375.0 | 6.51 | 6.56 | 6.53 | 6.45 | 0.11 | 32.48 | 35.10 | 30.73 | 0.83 | 375.0 | 1.06 | 1.08 | 1.07 | 1.07 | 1.06 |
| 400.0 | 6.54 | 6.60 | 6.53 | 6.46 | 0.14 | 32.73 | 35.09 | 30.68 | 0.93 | 400.0 | 1.07 | 1.09 | 1.08 | 1.08 | 1.07 |
| 420.0 | 6.56 | 6.62 | 6.58 | 6.48 | 0.14 | 33.00 | 35.11 | 30.66 | 0.97 | 420.0 | 1.08 | 1.10 | 1.09 | 1.09 | 1.08 |
| 435.0 | 6.60 | 6.66 | 6.61 | 6.50 | 0.16 | 33.23 | 35.18 | 30.63 | 0.93 | 435.0 | 1.08 | 1.10 | 1.09 | 1.09 | 1.08 |
| 450.0 | 6.61 | 6.69 | 6.61 | 6.51 | 0.18 | 33.47 | 35.27 | 30.54 | 0.94 | 450.0 | 1.09 | 1.11 | 1.10 | 1.10 | 1.08 |
| 465.0 | 6.63 | 6.71 | 6.62 | 6.51 | 0.20 | 33.66 | 35.35 | 30.38 | 1.06 | 465.0 | 1.09 | 1.11 | 1.10 | 1.10 | 1.09 |
| 480.0 | 6.65 | 6.73 | 6.66 | 6.52 | 0.20 | 33.84 | 35.45 | 30.20 | 1.15 | 480.0 | 1.10 | 1.12 | 1.10 | 1.10 | 1.09 |
| 500.0 | 6.70 | 6.78 | 6.71 | 6.56 | 0.22 | 33.96 | 35.66 | 29.87 | 1.02 | 500.0 | 1.10 | 1.12 | 1.11 | 1.11 | 1.09 |

¹Total Loss = Insertion Loss + 6dB Splitter Loss

4 Way-0° Power Splitter/Combiner

ZB4PD-52-20W+

Typical Performance Curves



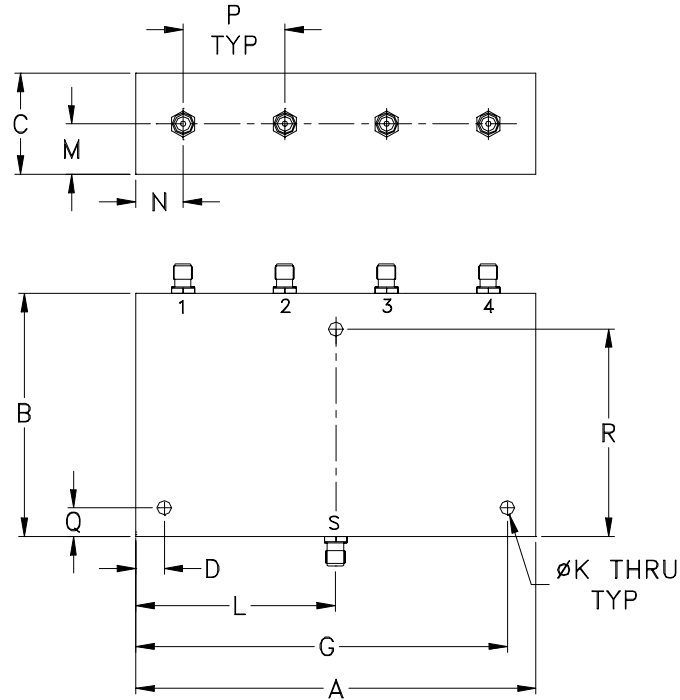
P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 • Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site
The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com



IF/RF MICROWAVE COMPONENTS

REV. OR
ZB4PD-52-20W+
2/24/2014
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Outline Dimensions



| CASE# | A | B | C | D | E | F | G | H | J | K | L | M | N |
|-------|-----------------|-----------------|----------------|----------------|----|----|------------------|----|----|----------------|------------------|----------------|-----------------|
| Z54 | 3.50 (88.90) | 2.13 (54.10) | .88 (22.35) | .250 (6.35) | -- | -- | 3.250 (82.55) | -- | -- | .125 (3.17) | 1.750 (44.45) | .44 (11.18) | .415 (10.54) |

| CASE# | P | Q | R | WT.GRAMS |
|-------|----------------|----------------|------------------|----------|
| Z54 | .89 (22.61) | .250 (6.35) | 1.813 (46.05) | 250 |

Dimensions are in inches (mm). Tolerances: 2 Pl. $\pm .03$; 3 Pl. $\pm .015$

Notes:

- Case material: Aluminum alloy.
- Case finish:
For RoHS Case Styles: Clear chemical conversion coating, non-chrome or trivalent chrome based.



All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

| Specification | Test/Inspection Condition | Reference/Spec |
|----------------------------|--|--------------------------------------|
| Operating Temperature | -55° to 100°C Ambient Environment | Individual Model Data Sheet |
| Storage Temperature | -55° to 100° C Ambient Environment | Individual Model Data Sheet |
| Barometric Pressure | 100,000 Feet | MIL-STD-202, Method 105, Condition D |
| Humidity | 90% RH, 65°C Units may require bake-out after humidity to restore full performance. | MIL-STD-202, Method 103 |
| Thermal Shock | -65° to 125°C, 5 cycles | MIL-STD-202, Method 107, Condition B |
| Vibration (High Frequency) | 20g peak, 10-2000 Hz, 12 times in each of three perpendicular directions (total 36) | MIL-STD-202, Method 204, Condition D |
| Mechanical Shock | 100g, 6ms sawtooth, 3 shocks each direction 3 axes (total 18) | MIL-STD-202, Method 213, Condition I |