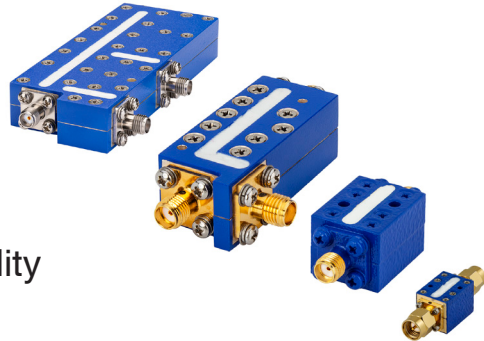


Suspended Substrate Stripline Filters and Multiplexers

50Ω DC to 26 GHz

The Big Deal

- Low insertion loss
- Ultra-wide passband width
- Fast roll-off with wide stopband
- Good power handling and temperature stability
- Passband up to 26 GHz
- Stopband up to 26.5 GHz can extend to 40 GHz



Product Overview

Mini-Circuits' Suspended Substrate Stripline filters offer low insertion loss by implementing printed circuit board suspended between two parallel ground planes, providing high Q. Low insertion loss combined with wide stopband makes them an excellent choice for wideband instruments and systems like ECM, ECCM, ELINT and ultra-broadband receivers.

Low pass, high pass, band pass, band stop, diplexer and multiplexer designs can be realized with this technology. Advanced filter design and construction can achieve stopband width greater than 6x the center frequency, and temperature stability will be better than other printed circuit realizations because the fields are mainly in the air rather than in a dielectric. The inside walls of the housing hold the circuit and prevent movement that could be caused by vibration or mechanical shock, making these designs excellent candidates for harsh operating environments.

Suspended substrate stripline filters can be realized in small form factors with high-quality, precise machining for applications where size is critical. Excellent repeatability across units is achieved through precise tuning and process control.

Key Features

| Feature | Advantages |
|---------------------------------|--|
| Low insertion loss | Low signal loss results in better SNR in receiver front end and better power delivery to antenna in transmitters |
| Fast roll-off | Higher selectivity results in better adjacent channel rejection and dynamic range |
| Wide stopband | Wide, spur-free stop band results in better receiver sensitivity |
| High power handling | Well suited for transmitter applications |
| Excellent temperature stability | Ensures minimal variation in electrical performance across temperature |

Notes

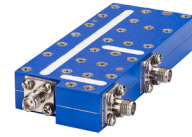
- Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's 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/MCLStore/terms.jsp



Triplexer

Z3SS-7000-S+

50Ω DC to 15000 MHz
(DC-1600, 2600-5500, 7000-15000 MHz)



Maximum Ratings

| | |
|-----------------------|----------------|
| Operating Temperature | -40°C to 85°C |
| Storage Temperature | -55°C to 100°C |
| RF Power Input | 3 W max |

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

Coaxial Connections

| | |
|----------------------------|---|
| Common Port | 1 |
| Low Pass Port (Channel-1) | 2 |
| Band Pass Port (Channel-2) | 3 |
| High Pass Port (Channel-3) | 4 |

Features

- Low passband insertion loss of 1.5 dB typical
- Good flatness
- High rejection of 90 dB typical
- Wider passband and stopband

Generic photo used for illustration purposes only

CASE STYLE: UB2923
Connectors Model SMA-F
Z3SS-7000-S+

Applications

- Test and measurement
- Wireless communication system

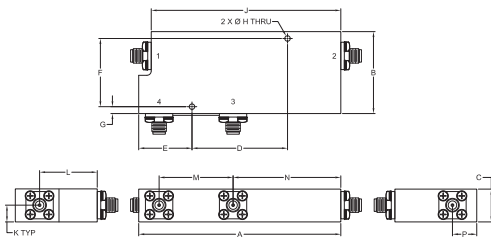
+RoHS Compliant

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

Electrical Specifications at 25°C

| Parameter | Port | Frequency (MHz) | Min. | Typ. | Max. | Unit | | |
|-----------------------|-----------------------|-----------------------|-----------------------|--------------|------|------|----|----|
| Pass Band | Insertion Loss | Low Pass, Channel -1 | DC - 1600 | - | 1.5 | 2.0 | dB | |
| | | Band Pass, Channel -2 | 2600 - 5500 | - | 2.0 | 3.0 | | |
| | | High Pass, Channel -3 | 7000 - 15000 | - | 2.0 | 3.0 | | |
| | Return Loss | Common | Low Pass, Channel -1 | DC - 1600 | - | 10 | - | dB |
| | | | Band Pass, Channel -2 | 2600 - 5500 | - | 10 | - | |
| | | | High Pass, Channel -3 | 7000 - 15000 | - | 8 | - | |
| Common | | DC - 1600 | - | 10 | - | | | |
| | | 2600 - 5500 | - | 10 | - | | | |
| | | 7000 - 15000 | - | 8 | - | | | |
| Stop Band Rejection | Low Pass, Channel-1 | 2600 - 3400 | 20 | 35 | - | dB | | |
| | | 3400 - 4000 | 40 | 55 | - | | | |
| | | 4000 - 15000 | - | 30 | - | | | |
| | Band Pass, Channel -2 | DC - 1600 | 25 | 40 | - | | | |
| | | 7000 - 10000 | 60 | 80 | - | | | |
| | | 10000 - 15000 | - | 90 | - | | | |
| High Pass, Channel -3 | DC - 3400 | - | 90 | - | | | | |
| | 3400 - 5500 | 25 | 40 | - | | | | |

Outline Drawing

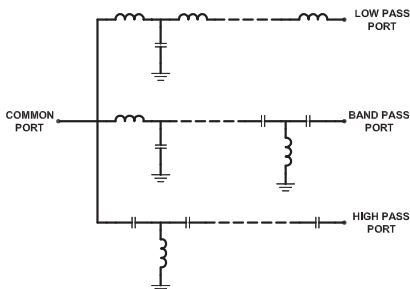


Outline Dimensions (inch mm)

| | | | | | | | |
|-------|-------|-------|-------|-------|-------|------|-------|
| A | B | C | D | E | F | G | H |
| 3.70 | 1.50 | .60 | 1.750 | .98 | 1.250 | .13 | .100 |
| 93.98 | 38.10 | 15.24 | 44.45 | 24.77 | 31.75 | 3.18 | 2.54 |
| J | K | L | M | N | P | | Wt. |
| 3.47 | .31 | 1.06 | 1.35 | 1.97 | .44 | | grams |
| 88.16 | 7.78 | 26.81 | 34.40 | 50.10 | 11.29 | | 416 |

Note: Please refer to case style drawing for details

Functional Schematic



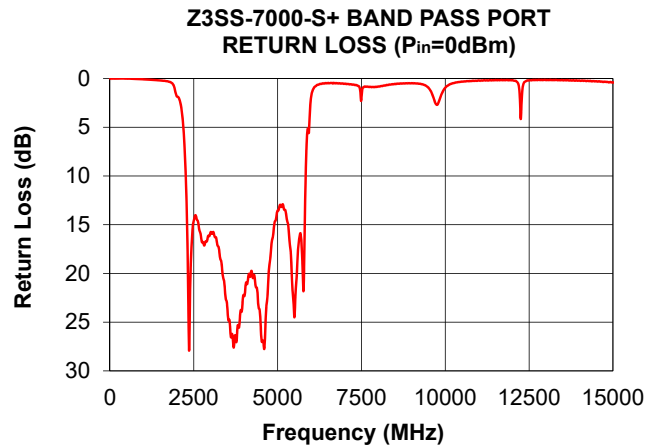
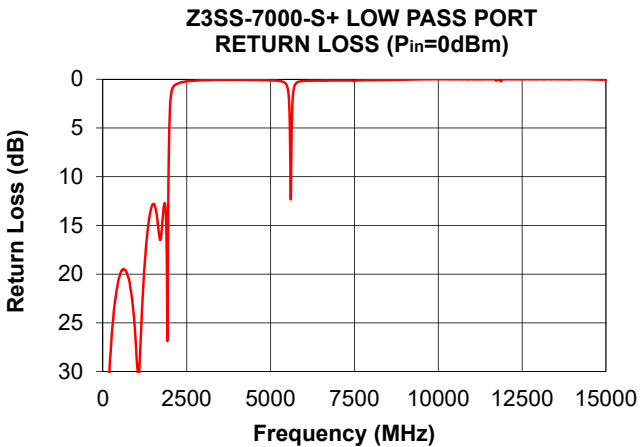
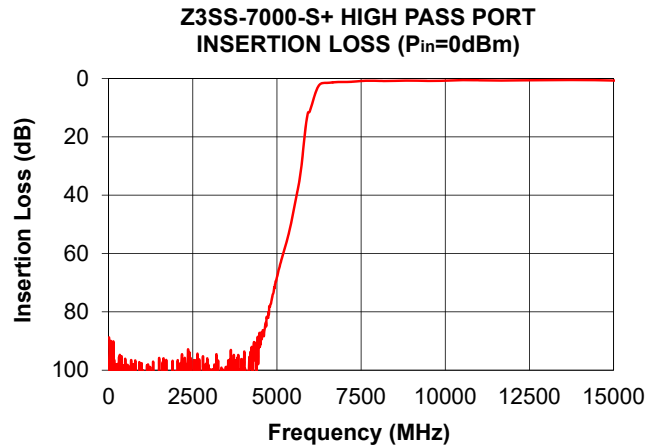
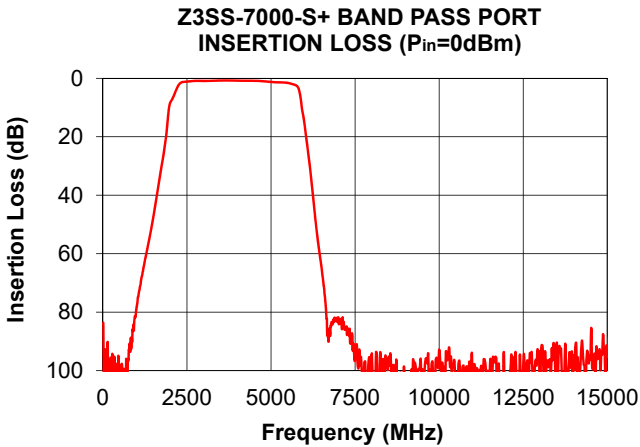
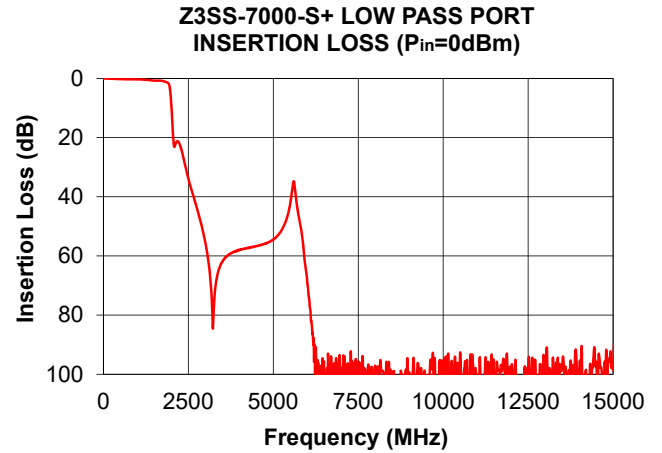
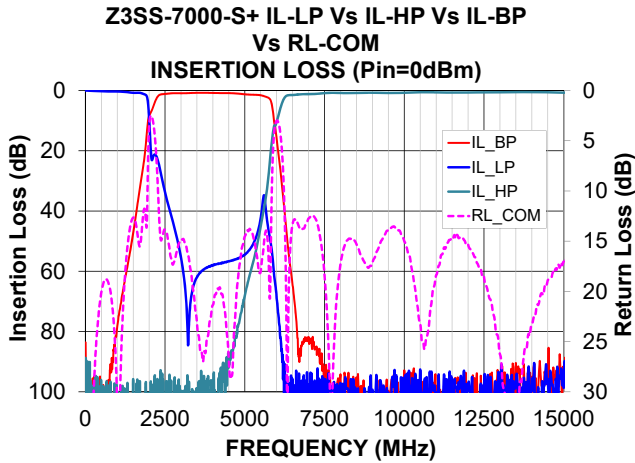
Typical Performance Data at 25°C

| FREQ. (MHz) | INSERTION LOSS (dB) | | | RETURN LOSS (dB) | | | |
|-------------|---------------------|---------------------|---------------------|------------------|--------------------|---------------------|---------------------|
| | Low Pass Chanel -1 | Band Pass Chanel -2 | High Pass Chanel -3 | Common | Low Pass Chanel -1 | Band Pass Chanel -2 | High Pass Chanel -3 |
| 10 | 0.03 | 83.62 | 88.77 | 33.69 | 31.25 | 0.00 | 0.01 |
| 1600 | 0.75 | 40.36 | 97.40 | 13.53 | 13.81 | 0.23 | 0.05 |
| 1760 | 0.88 | 28.96 | 108.69 | 14.34 | 15.20 | 0.33 | 0.06 |
| 1890 | 1.43 | 18.67 | 100.71 | 12.55 | 15.41 | 0.63 | 0.07 |
| 1970 | 4.67 | 9.80 | 113.04 | 6.50 | 6.58 | 1.63 | 0.07 |
| 2070 | 22.34 | 6.94 | 106.47 | 2.51 | 0.96 | 2.13 | 0.07 |
| 2210 | 21.47 | 3.14 | 105.68 | 5.81 | 0.48 | 6.07 | 0.08 |
| 2460 | 31.97 | 1.17 | 109.17 | 14.00 | 0.23 | 15.63 | 0.09 |
| 2600 | 37.92 | 1.02 | 107.62 | 15.04 | 0.19 | 14.52 | 0.11 |
| 3400 | 64.50 | 0.79 | 101.25 | 20.23 | 0.07 | 20.72 | 0.15 |
| 4000 | 57.94 | 0.80 | 97.27 | 21.35 | 0.06 | 22.28 | 0.18 |
| 5000 | 54.44 | 1.25 | 68.00 | 14.53 | 0.12 | 13.55 | 0.23 |
| 5500 | 42.27 | 1.58 | 44.96 | 18.00 | 0.82 | 24.50 | 0.31 |
| 6000 | 69.11 | 16.08 | 10.41 | 3.01 | 0.18 | 1.85 | 1.81 |
| 6240 | 101.48 | 39.23 | 2.48 | 11.34 | 0.14 | 0.59 | 9.70 |
| 7000 | 101.95 | 81.79 | 1.19 | 12.74 | 0.13 | 0.53 | 13.19 |
| 10000 | 96.55 | 92.90 | 0.73 | 14.99 | 0.01 | 0.95 | 14.09 |
| 12000 | 98.16 | 105.41 | 0.65 | 15.32 | 0.00 | 0.16 | 15.60 |
| 14400 | 97.83 | 93.32 | 0.57 | 19.55 | 0.01 | 0.26 | 18.98 |
| 15000 | 98.58 | 95.21 | 0.71 | 16.98 | 0.07 | 0.40 | 15.09 |

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/MCLStore/terms.jsp



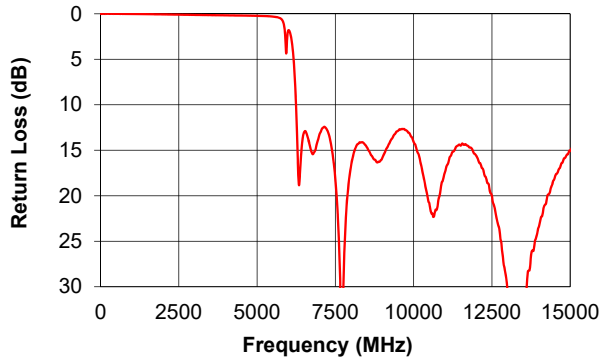


Notes

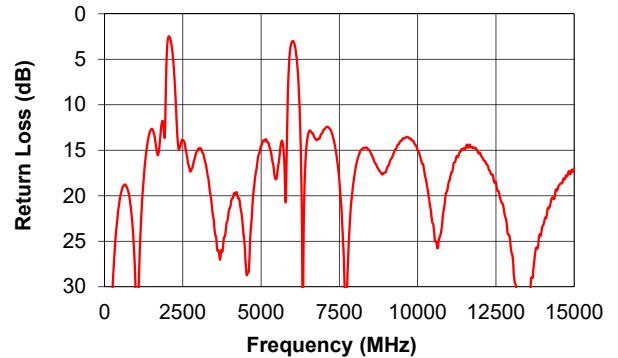
- A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
- B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuits' applicable established test performance criteria and measurement instructions.
- C. 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/MCLStore/terms.jsp



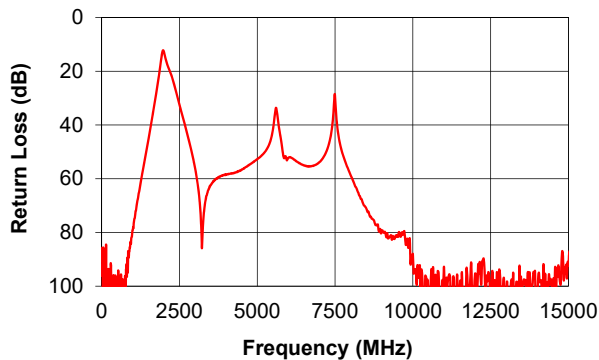
Z3SS-7000-S+ HIGH PASS PORT
RETURN LOSS (P_{in}=0dBm)



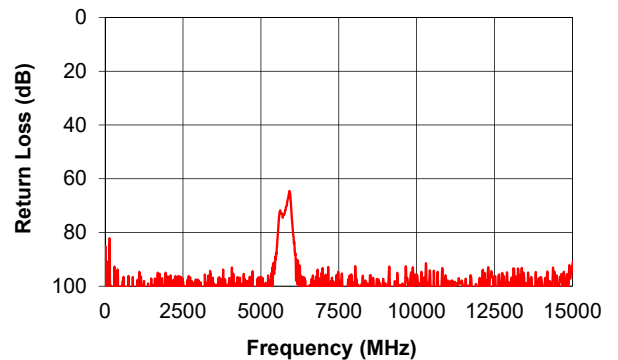
Z3SS-7000-S+ COMMON PORT
RETURN LOSS (P_{in}=0dBm)



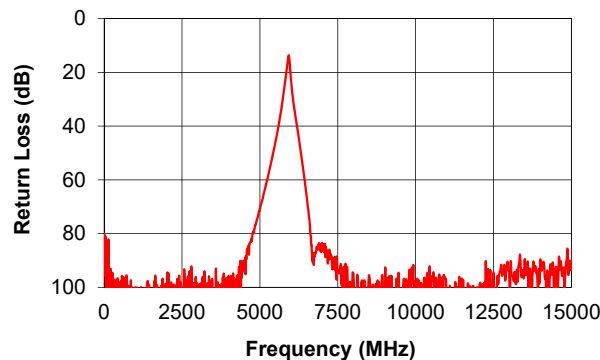
Z3SS-7000-S+ LOW PASS - BAND PASS
CROSS OVER ISOLATION (P_{in}=0dBm)



Z3SS-7000-S+ LOW PASS - HIGH PASS
CROSS OVER ISOLATION (P_{in}=0dBm)



Z3SS-7000-S+ BAND PASS - HIGH PASS
CROSS OVER ISOLATION (P_{in}=0dBm)



Notes

- A. 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.
- B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- C. 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/MCLStore/terms.jsp



Suspended Substrate Stripline Triplexer

Z3SS-7000-S+

Typical Performance Data

| FREQUENCY (MHz) | INSERTIONLOSS | | | Cross over isolation | | | RETURNLOSS | | | |
|--------------------|---------------|---------------|---------------|-----------------------|-----------------------|-----------------------|-------------|--------------|---------------|---------------|
| | (dB) | | | (dB) | | | (dB) | | | |
| | Lowpass port | Bandpass port | Highpass port | (between LPF and HPF) | (between BPF and HPF) | (between LPF and BPF) | Common port | Lowpass port | Bandpass port | Highpass port |
| 10 | 0.03 | 83.62 | 88.77 | 85.62 | 80.10 | 85.74 | 33.69 | 31.25 | 0.00 | 0.01 |
| 100 | 0.06 | 104.02 | 95.66 | 99.30 | 106.37 | 98.45 | 50.14 | 38.35 | 0.01 | 0.00 |
| 200 | 0.10 | 103.18 | 102.55 | 103.64 | 98.74 | 93.90 | 35.67 | 29.61 | 0.01 | 0.00 |
| 400 | 0.19 | 97.69 | 101.71 | 93.89 | 98.35 | 101.28 | 22.88 | 21.84 | 0.00 | 0.00 |
| 500 | 0.23 | 113.85 | 100.13 | 100.29 | 103.19 | 106.85 | 20.12 | 20.20 | 0.01 | 0.00 |
| 600 | 0.27 | 102.02 | 100.17 | 106.11 | 105.79 | 96.25 | 18.93 | 19.47 | 0.02 | 0.01 |
| 1000 | 0.33 | 78.47 | 100.83 | 104.92 | 105.54 | 79.02 | 31.36 | 28.34 | 0.09 | 0.02 |
| 1200 | 0.41 | 65.20 | 103.53 | 108.87 | 105.15 | 64.95 | 20.64 | 21.41 | 0.12 | 0.03 |
| 1500 | 0.74 | 47.41 | 95.96 | 104.79 | 103.62 | 45.47 | 12.65 | 12.81 | 0.20 | 0.04 |
| 1600 | 0.75 | 40.36 | 97.40 | 97.17 | 103.86 | 38.81 | 13.53 | 13.81 | 0.23 | 0.05 |
| 2000 | 9.18 | 8.37 | 104.53 | 102.15 | 102.79 | 12.78 | 3.66 | 2.92 | 1.85 | 0.07 |
| 2200 | 21.34 | 3.39 | 99.76 | 99.22 | 109.07 | 20.28 | 5.35 | 0.50 | 5.52 | 0.08 |
| 2500 | 33.80 | 1.13 | 104.91 | 98.27 | 103.60 | 32.49 | 13.88 | 0.22 | 14.59 | 0.10 |
| 2600 | 37.92 | 1.02 | 107.62 | 101.55 | 104.77 | 36.79 | 15.04 | 0.19 | 14.52 | 0.11 |
| 3000 | 55.44 | 0.90 | 107.39 | 97.99 | 103.24 | 56.05 | 14.80 | 0.10 | 15.79 | 0.13 |
| 3400 | 64.50 | 0.79 | 101.25 | 103.73 | 103.75 | 65.21 | 20.23 | 0.07 | 20.72 | 0.15 |
| 3800 | 58.88 | 0.76 | 105.68 | 115.30 | 109.45 | 59.23 | 24.99 | 0.06 | 25.68 | 0.16 |
| 4000 | 57.94 | 0.80 | 97.27 | 103.02 | 112.13 | 58.40 | 21.35 | 0.06 | 22.28 | 0.18 |
| 4100 | 57.72 | 0.82 | 101.52 | 110.70 | 102.24 | 58.19 | 20.22 | 0.06 | 21.01 | 0.18 |
| 4300 | 57.15 | 0.85 | 96.49 | 97.87 | 97.50 | 57.66 | 20.32 | 0.07 | 20.16 | 0.19 |
| 4500 | 56.69 | 0.86 | 89.77 | 102.58 | 89.95 | 56.64 | 26.88 | 0.08 | 25.68 | 0.19 |
| 4700 | 56.08 | 0.95 | 82.12 | 104.34 | 83.14 | 55.14 | 22.52 | 0.08 | 22.25 | 0.21 |
| 4900 | 55.14 | 1.15 | 73.24 | 104.29 | 75.10 | 53.60 | 15.81 | 0.11 | 14.97 | 0.22 |
| 5100 | 53.45 | 1.32 | 63.49 | 103.36 | 66.28 | 51.81 | 13.99 | 0.13 | 13.12 | 0.24 |
| 5300 | 50.10 | 1.41 | 55.43 | 104.02 | 56.61 | 49.13 | 14.98 | 0.19 | 14.76 | 0.26 |
| 5500 | 42.27 | 1.58 | 44.96 | 88.03 | 45.83 | 41.91 | 18.00 | 0.82 | 24.50 | 0.31 |
| 5700 | 43.20 | 2.22 | 32.49 | 74.46 | 32.83 | 41.07 | 14.40 | 0.85 | 16.33 | 0.44 |
| 5900 | 58.84 | 8.52 | 12.82 | 65.58 | 15.21 | 51.65 | 5.09 | 0.20 | 5.14 | 2.56 |
| 6000 | 69.11 | 16.08 | 10.41 | 75.09 | 22.87 | 52.23 | 3.01 | 0.18 | 1.85 | 1.81 |
| 6300 | 95.23 | 46.08 | 1.80 | 98.51 | 48.47 | 53.83 | 21.48 | 0.15 | 0.56 | 16.08 |
| 6500 | 105.46 | 64.67 | 1.49 | 104.26 | 66.14 | 55.06 | 13.29 | 0.14 | 0.46 | 13.03 |
| 6700 | 93.95 | 87.23 | 1.29 | 123.10 | 88.21 | 55.39 | 13.57 | 0.14 | 0.48 | 14.73 |
| 6900 | 105.25 | 83.08 | 1.19 | 112.26 | 83.61 | 54.70 | 13.36 | 0.13 | 0.52 | 14.40 |
| 7000 | 101.95 | 81.79 | 1.19 | 107.17 | 83.58 | 53.80 | 12.74 | 0.13 | 0.53 | 13.19 |
| 7300 | 98.83 | 86.48 | 1.05 | 105.21 | 88.39 | 47.16 | 13.56 | 0.13 | 0.66 | 13.35 |
| 7500 | 101.07 | 95.34 | 0.86 | 99.60 | 94.30 | 29.40 | 18.38 | 0.19 | 1.97 | 18.24 |
| 7700 | 98.28 | 100.14 | 0.76 | 103.65 | 92.62 | 49.02 | 32.86 | 0.11 | 0.85 | 48.03 |
| 7900 | 97.56 | 96.90 | 0.77 | 96.11 | 98.03 | 55.77 | 20.07 | 0.11 | 0.87 | 19.54 |
| 8000 | 97.36 | 94.21 | 0.81 | 119.85 | 94.87 | 58.68 | 17.32 | 0.11 | 0.82 | 16.76 |
| 8200 | 98.93 | 103.85 | 0.85 | 115.82 | 117.51 | 63.88 | 14.95 | 0.09 | 0.72 | 14.35 |
| 8500 | 102.67 | 95.21 | 0.80 | 96.03 | 95.62 | 70.93 | 15.29 | 0.08 | 0.54 | 14.65 |
| 9000 | 99.84 | 104.39 | 0.72 | 98.97 | 104.93 | 79.28 | 17.20 | 0.05 | 0.47 | 15.85 |
| 9200 | 106.54 | 104.68 | 0.76 | 103.60 | 103.45 | 82.18 | 15.64 | 0.04 | 0.53 | 14.37 |
| 9500 | 100.28 | 99.68 | 0.81 | 126.98 | 102.25 | 81.01 | 13.88 | 0.02 | 0.95 | 12.87 |
| 10000 | 96.55 | 92.90 | 0.73 | 95.74 | 106.34 | 88.03 | 14.99 | 0.01 | 0.95 | 14.09 |
| 10300 | 98.93 | 92.23 | 0.62 | 91.48 | 103.39 | 95.74 | 18.97 | 0.01 | 0.42 | 17.67 |
| 10600 | 100.38 | 96.57 | 0.57 | 103.67 | 105.37 | 93.72 | 25.13 | 0.01 | 0.30 | 21.97 |
| 10800 | 93.54 | 98.87 | 0.57 | 99.64 | 108.46 | 94.40 | 22.37 | 0.02 | 0.24 | 20.28 |
| 11000 | 100.19 | 110.97 | 0.60 | 98.07 | 107.55 | 92.77 | 18.39 | 0.02 | 0.20 | 17.41 |
| 11200 | 101.03 | 132.56 | 0.65 | 102.73 | 101.21 | 96.86 | 16.27 | 0.00 | 0.21 | 15.52 |
| 11500 | 101.24 | 103.35 | 0.68 | 100.55 | 109.05 | 101.20 | 14.83 | 0.02 | 0.15 | 14.49 |
| 12000 | 98.16 | 105.41 | 0.65 | 99.27 | 101.85 | 95.28 | 15.32 | 0.00 | 0.16 | 15.60 |
| 12500 | 98.55 | 98.98 | 0.60 | 96.98 | 94.50 | 104.59 | 18.55 | 0.01 | 0.19 | 20.03 |
| 13000 | 108.72 | 123.30 | 0.58 | 105.10 | 93.70 | 104.14 | 26.26 | 0.01 | 0.16 | 30.58 |
| 13200 | 108.68 | 97.09 | 0.55 | 96.85 | 98.31 | 103.77 | 34.81 | 0.02 | 0.16 | 38.52 |
| 13500 | 97.55 | 90.43 | 0.53 | 99.75 | 89.51 | 107.18 | 34.01 | 0.01 | 0.17 | 33.58 |
| 13800 | 107.38 | 101.05 | 0.51 | 102.04 | 91.65 | 109.27 | 25.70 | 0.01 | 0.19 | 26.00 |
| 14000 | 99.36 | 94.99 | 0.52 | 96.85 | 89.73 | 108.92 | 23.28 | 0.02 | 0.20 | 23.39 |
| 14500 | 95.83 | 95.97 | 0.58 | 96.21 | 92.38 | 98.33 | 18.89 | 0.00 | 0.27 | 18.09 |
| 15000 | 98.58 | 95.21 | 0.71 | 91.83 | 91.64 | 92.34 | 16.98 | 0.07 | 0.40 | 15.09 |



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

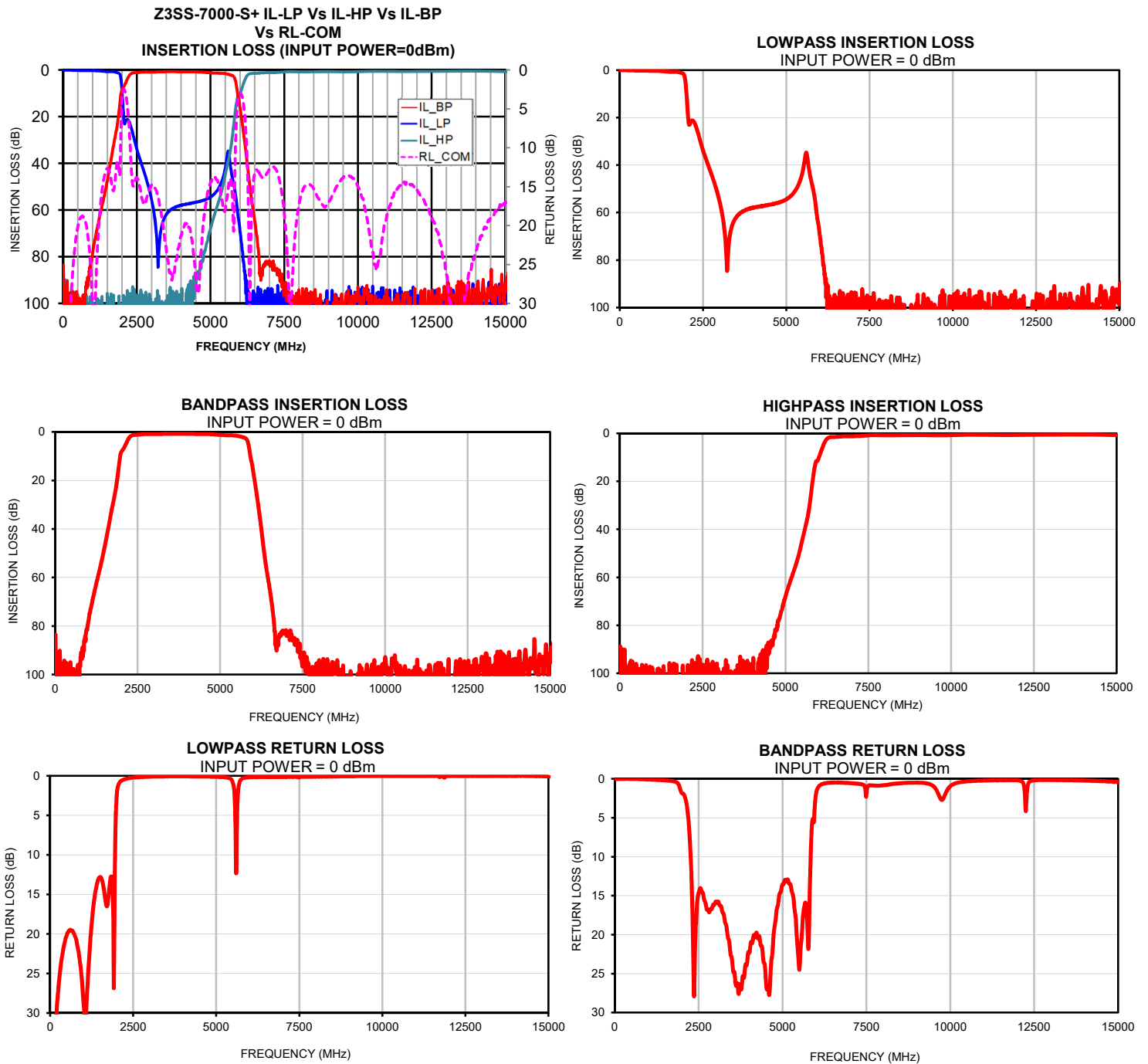


The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com

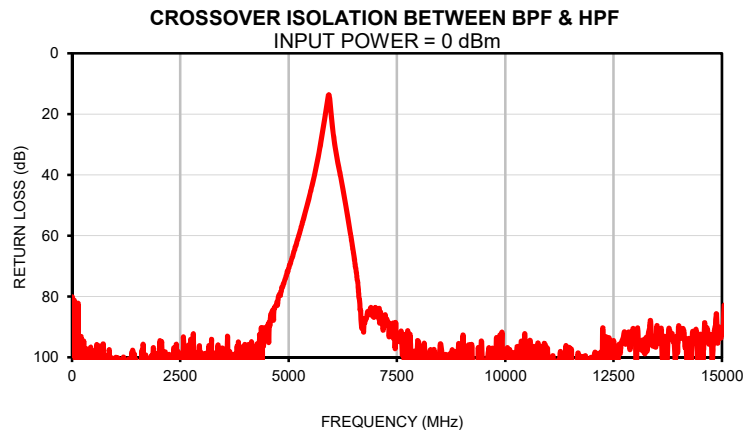
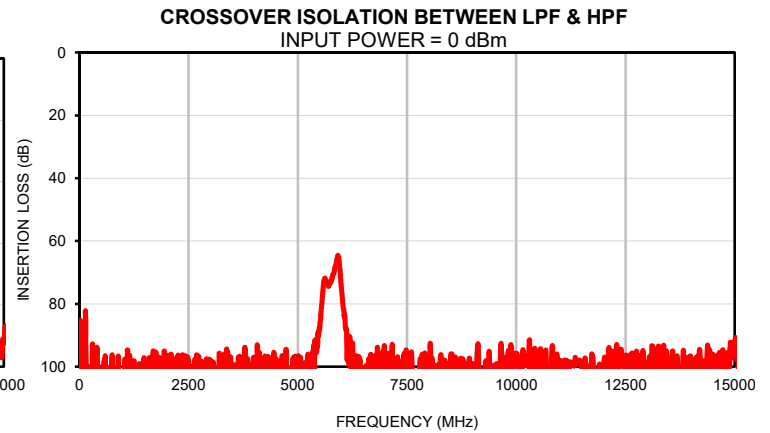
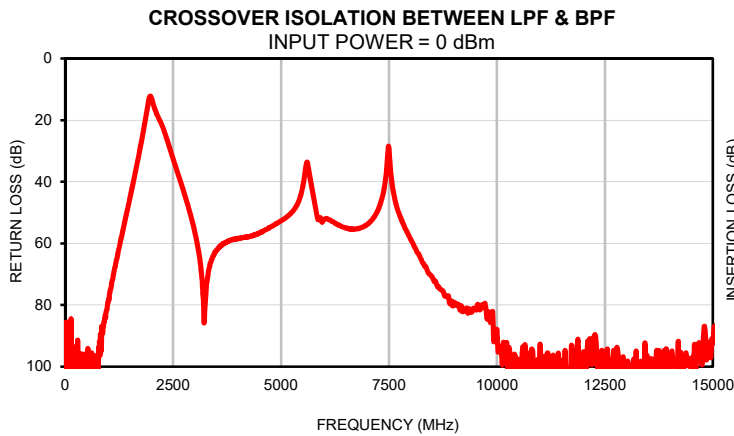
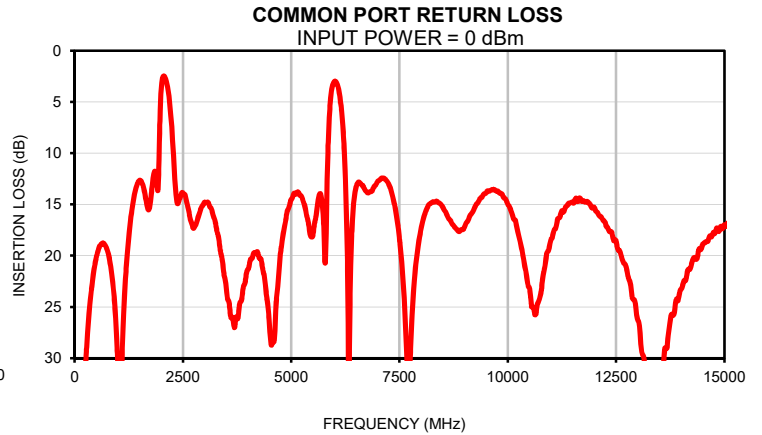
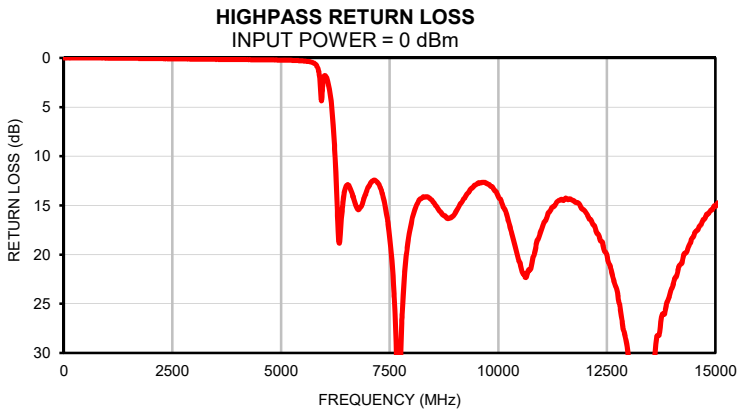
IF/RF MICROWAVE COMPONENTS

REV. OR
Z3SS-7000-S+
201106

Typical Performance Curves



Typical Performance Curves

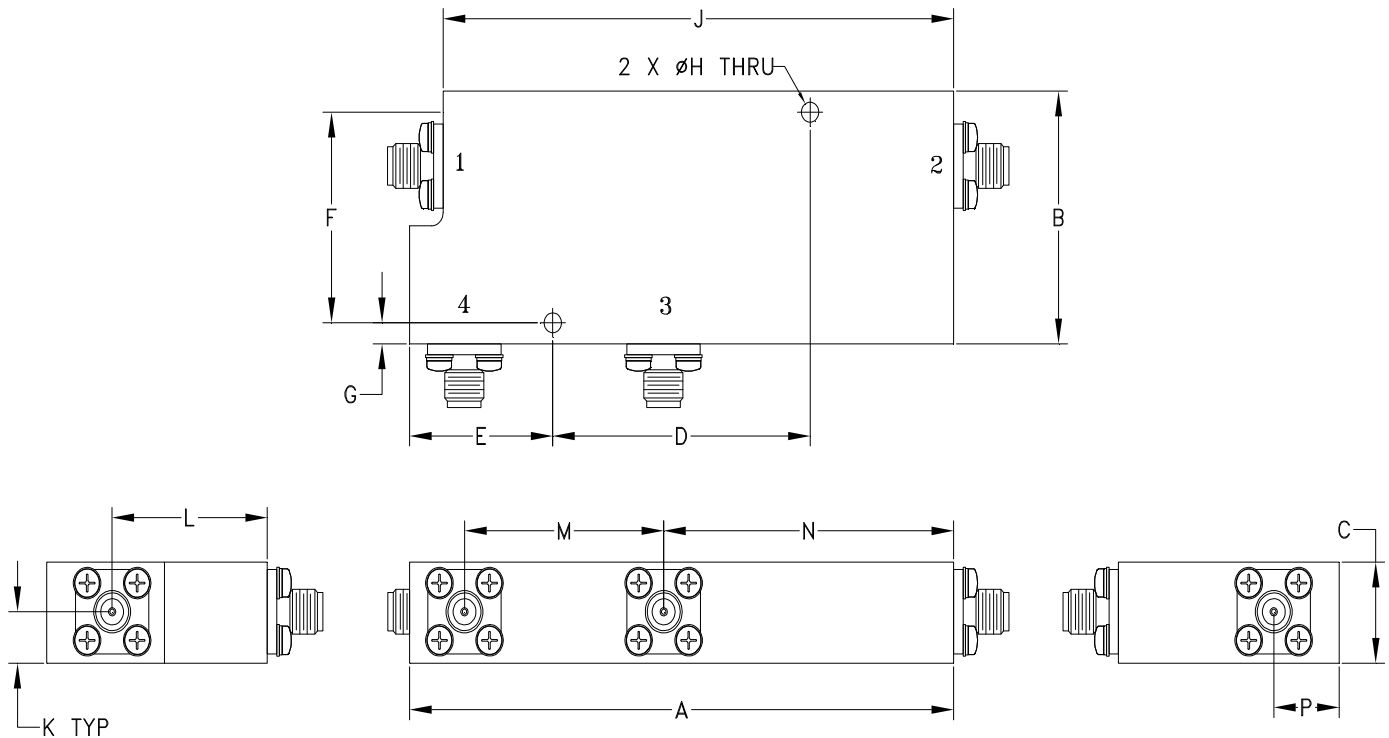


Case Style

UB

Outline Dimensions

UB2923



| CASE# | A | B | C | D | E | F | G | H |
|--------|-----------------|-----------------|----------------|------------------|----------------|------------------|---------------|----------------|
| UB2923 | 3.70 (93.98) | 1.50 (38.10) | .60 (15.24) | 1.750 (44.45) | .98 (24.77) | 1.250 (31.75) | .13 (3.18) | .100 (2.54) |

| CASE# | J | K | L | M | N | P | WT.GRAMS |
|--------|-----------------|---------------|-----------------|-----------------|-----------------|----------------|----------|
| UB2923 | 3.47 (88.16) | .31 (7.78) | 1.06 (26.81) | 1.35 (34.40) | 1.97 (50.10) | .44 (11.29) | 416 |

Dimensions are in inches (mm). Tolerances: 2 Pl. $\pm .10$; 3 Pl. $\pm .015$

Notes:

1. Case material: Aluminum alloy.
2. Case finish: Powder coated over silver plating.
3. Refer to the individual model data sheet for the type of connectors available.

Mini-Circuits®
ISO 9001 ISO 14001 CERTIFIED

ALL NEW
minicircuits.com

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

RF/IF MICROWAVE COMPONENTS

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 |
| Humidity | 90 to 95% RH, 40°C, 96 hours; Units may require bake-out after humidity to restore full performance. | MIL-STD-202, Method 103, Condition B |
| Thermal Shock | -55° to 100°C, 100 cycles | MIL-STD-202, Method 107, Condition A-3, except +100°C |
| 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 | 50g, 11ms half-sine, 3 shocks each direction 3 axes (total 18) | MIL-STD-202, Method 213, Condition A |