

# Coaxial Bias-Tee

50Ω Wideband 10 to 2800 MHz

## Maximum Ratings

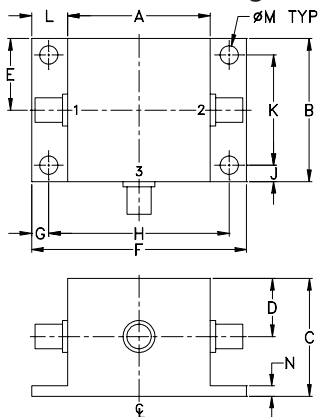
|                                     |                |
|-------------------------------------|----------------|
| Operating Temperature               | -55°C to 100°C |
| Storage Temperature                 | -55°C to 100°C |
| RF Power                            | 30 dBm max.    |
| Voltage at DC port                  | 30 V max.      |
| Input Current                       | 1.5A*          |
| DC resistance from DC to RF&DC port | 0.5 ohm typ.   |

\* Max Current 1.2 A above 80°C.  
Permanent damage may occur if any of these limits are exceeded.

## Coaxial Connections

|       |                |
|-------|----------------|
| RF    | 1 (SMA female) |
| RF&DC | 2 (SMA male)   |
| DC    | 3 (SMA female) |

## Outline Drawing



## Outline Dimensions (inch mm)

| A     | B     | C     | D     | E     | F     | G     |
|-------|-------|-------|-------|-------|-------|-------|
| 1.25  | 1.25  | .94   | .47   | .63   | 2.19  | .25   |
| 31.75 | 31.75 | 23.88 | 11.94 | 16.00 | 55.63 | 6.35  |
| H     | J     | K     | L     | M     | N     | wt    |
| 1.687 | .25   | .750  | .47   | .125  | .10   | grams |
| 42.85 | 6.35  | 19.05 | 11.94 | 3.18  | 2.54  | 60.0  |

## Features

- wideband, 10 to 2800 MHz
- low insertion loss, 0.6 dB typ.
- good isolation, 45 dB typ.
- high current, 1.5A

## Applications

- biasing amplifiers
- biasing of laser diodes
- biasing of active antennas
- DC return
- DC blocking
- test accessory

## Bias-Tee Electrical Specifications

| FREQUENCY<br>(MHz)            |      | INSERTION LOSS<br>(dB) |     |              |     |              |     | ISOLATION (dB)<br>(RF port to DC port)<br>(RF&DC port to DC port) |    |              |    |              |    | VSWR<br>(:1) |      |              |      |              |      |
|-------------------------------|------|------------------------|-----|--------------|-----|--------------|-----|-------------------------------------------------------------------|----|--------------|----|--------------|----|--------------|------|--------------|------|--------------|------|
|                               |      |                        |     |              |     |              |     |                                                                   |    |              |    |              |    |              |      |              |      |              |      |
| f <sub>L</sub> f <sub>U</sub> |      | L                      |     | M            |     | U            |     | L                                                                 |    | M            |    | U            |    | L            |      | M            |      | U            |      |
| Typ.    Max.                  |      | Typ.    Max.           |     | Typ.    Max. |     | Typ.    Max. |     | Typ.    Min.                                                      |    | Typ.    Min. |    | Typ.    Min. |    | Typ.    Max. |      | Typ.    Max. |      | Typ.    Max. |      |
| 10                            | 2800 | 0.5                    | 1.0 | 0.6          | 1.0 | 0.8          | 1.6 | 50                                                                | 30 | 45           | 30 | 30           | 20 | 1.16         | 1.35 | 1.10         | 1.20 | 1.08         | 1.35 |

L= low range (f<sub>L</sub> to 10 f<sub>L</sub>)

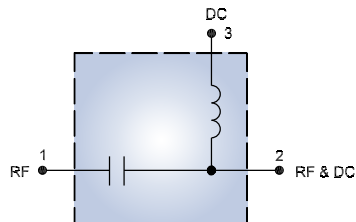
M= mid range (10 f<sub>L</sub> to f<sub>U</sub>/2)

U= upper range (f<sub>U</sub>/2 to f<sub>U</sub>)

## Typical Performance Data

| Freq. (MHz) | INSERTION LOSS (dB) |      | ISOLATION (dB) |       |          |       | VSWR (:1) |      |       |      |
|-------------|---------------------|------|----------------|-------|----------|-------|-----------|------|-------|------|
|             | 0A                  | 1.5A | RF-DC          |       | RF&DC-DC |       | RF        |      | RF/DC |      |
|             |                     |      | 0A             | 1.5A  | 0A       | 1.5A  | 0A        | 1.5A | 0A    | 1.5A |
| 10.00       | 0.29                | 0.42 | 54.81          | 47.57 | 54.15    | 47.33 | 1.06      | 1.24 | 1.06  | 1.25 |
| 50.00       | 0.42                | 0.41 | 68.07          | 64.48 | 73.12    | 65.97 | 1.10      | 1.10 | 1.10  | 1.12 |
| 100.00      | 0.64                | 0.41 | 52.01          | 60.62 | 60.00    | 57.83 | 1.14      | 1.06 | 1.14  | 1.07 |
| 300.00      | 0.40                | 0.37 | 59.41          | 59.59 | 57.55    | 57.53 | 1.07      | 1.07 | 1.07  | 1.07 |
| 500.00      | 0.40                | 0.35 | 51.13          | 51.46 | 51.60    | 52.76 | 1.05      | 1.06 | 1.06  | 1.07 |
| 700.00      | 0.47                | 0.41 | 45.14          | 46.61 | 43.35    | 46.15 | 1.05      | 1.07 | 1.07  | 1.08 |
| 900.00      | 0.50                | 0.47 | 55.11          | 48.80 | 43.14    | 41.54 | 1.06      | 1.06 | 1.08  | 1.09 |
| 950.00      | 0.51                | 0.48 | 55.06          | 51.87 | 43.12    | 41.45 | 1.06      | 1.06 | 1.08  | 1.06 |
| 1000.00     | 0.51                | 0.46 | 52.18          | 56.35 | 44.66    | 41.54 | 1.06      | 1.06 | 1.08  | 1.09 |
| 1100.00     | 0.51                | 0.47 | 45.30          | 53.11 | 50.89    | 43.76 | 1.06      | 1.05 | 1.08  | 1.10 |
| 1200.00     | 0.51                | 0.47 | 42.03          | 45.81 | 44.47    | 47.09 | 1.06      | 1.06 | 1.08  | 1.09 |
| 1300.00     | 0.51                | 0.47 | 41.45          | 43.19 | 40.75    | 43.35 | 1.06      | 1.05 | 1.09  | 1.09 |
| 1400.00     | 0.52                | 0.48 | 40.88          | 42.11 | 38.26    | 39.95 | 1.06      | 1.05 | 1.10  | 1.09 |
| 1450.00     | 0.53                | 0.47 | 40.44          | 41.52 | 37.23    | 38.58 | 1.06      | 1.05 | 1.10  | 1.10 |
| 1600.00     | 0.57                | 0.51 | 37.75          | 38.77 | 34.31    | 35.38 | 1.07      | 1.06 | 1.11  | 1.10 |
| 1800.00     | 0.65                | 0.57 | 35.76          | 36.46 | 33.89    | 33.05 | 1.08      | 1.07 | 1.14  | 1.11 |
| 2000.00     | 0.78                | 0.67 | 35.26          | 36.66 | 35.48    | 34.12 | 1.09      | 1.08 | 1.15  | 1.12 |
| 2200.00     | 0.84                | 0.79 | 35.39          | 35.52 | 34.71    | 34.08 | 1.09      | 1.10 | 1.15  | 1.10 |
| 2400.00     | 0.94                | 0.88 | 35.29          | 35.6  | 32.29    | 32.06 | 1.11      | 1.12 | 1.17  | 1.11 |
| 2800.00     | 1.41                | 1.37 | 33.34          | 35.69 | 28.98    | 28.71 | 1.22      | 1.24 | 1.25  | 1.21 |

## Electrical Schematic



### 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.
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# ZFBT-282-1.5A+



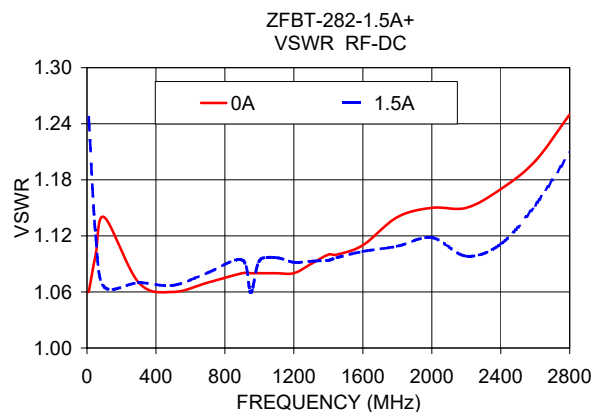
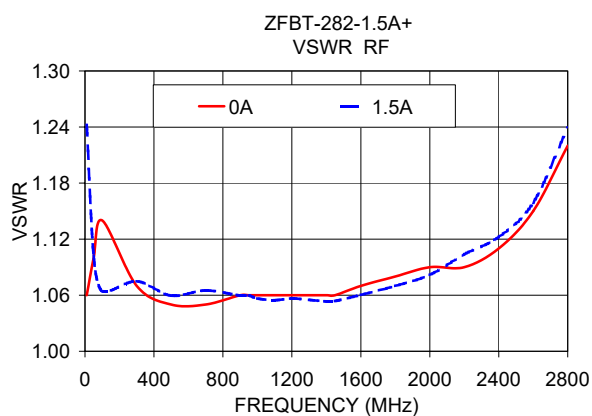
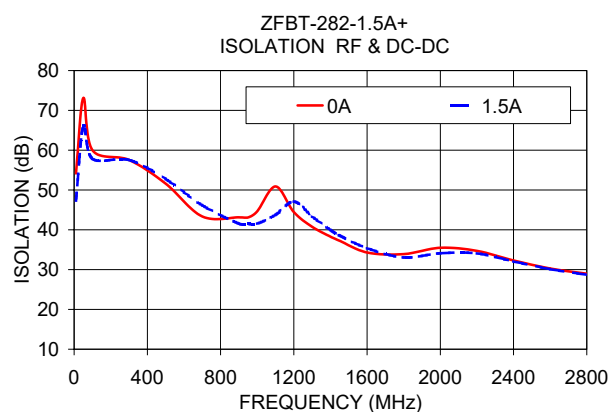
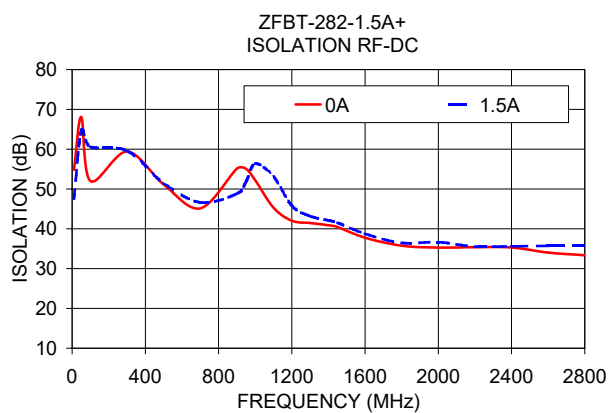
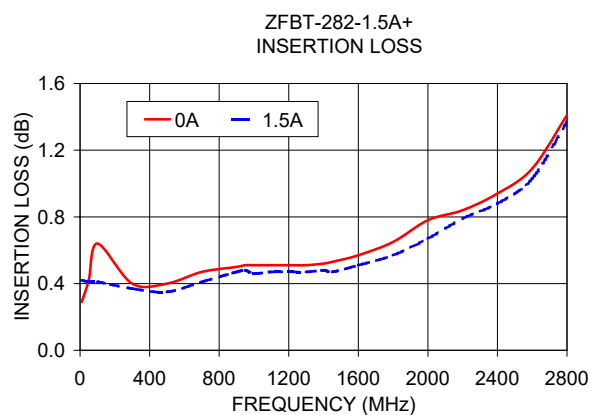
Generic photo used for illustration purposes only

CASE STYLE: V1381

Connectors Model  
SMA ZFBT-282-1.5A+

+RoHS Compliant

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



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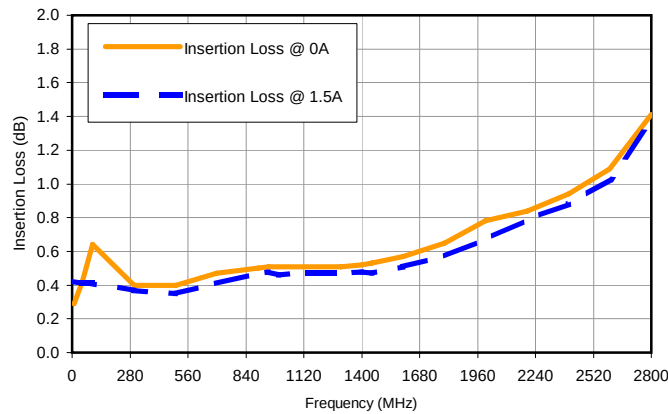


## Typical Performance Data

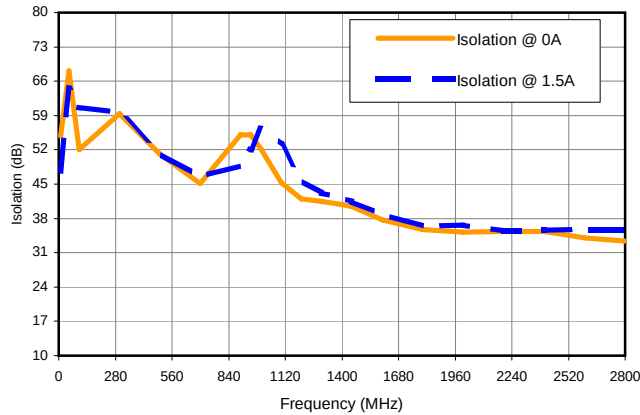
| FREQ.<br>(MHz) | INSERTION LOSS<br>(dB) |      | ISOLATION<br>(dB) |       |          |       | VSWR<br>(:1) |      |       |      |
|----------------|------------------------|------|-------------------|-------|----------|-------|--------------|------|-------|------|
|                |                        |      |                   |       |          |       |              |      |       |      |
|                | 0A                     | 1.5A | RF-DC             |       | RF/DC-DC |       | RF           |      | RF/DC |      |
|                |                        |      | 0A                | 1.5A  | 0A       | 1.5A  | 0A           | 1.5A | 0A    | 1.5A |
| 10.0           | 0.29                   | 0.42 | 54.81             | 47.57 | 54.15    | 47.33 | 1.06         | 1.24 | 1.06  | 1.25 |
| 50.0           | 0.42                   | 0.41 | 68.07             | 64.48 | 73.12    | 65.97 | 1.10         | 1.10 | 1.10  | 1.12 |
| 100.0          | 0.64                   | 0.41 | 52.01             | 60.62 | 60.00    | 57.83 | 1.14         | 1.06 | 1.14  | 1.07 |
| 300.0          | 0.40                   | 0.37 | 59.41             | 59.59 | 57.55    | 57.53 | 1.07         | 1.07 | 1.07  | 1.07 |
| 500.0          | 0.40                   | 0.35 | 51.13             | 51.46 | 51.60    | 52.76 | 1.05         | 1.06 | 1.06  | 1.07 |
| 700.0          | 0.47                   | 0.41 | 45.14             | 46.61 | 43.35    | 46.15 | 1.05         | 1.07 | 1.07  | 1.08 |
| 900.0          | 0.50                   | 0.47 | 55.11             | 48.80 | 43.14    | 41.54 | 1.06         | 1.06 | 1.08  | 1.09 |
| 950.0          | 0.51                   | 0.48 | 55.06             | 51.87 | 43.12    | 41.45 | 1.06         | 1.06 | 1.08  | 1.06 |
| 1000.0         | 0.51                   | 0.46 | 52.18             | 56.35 | 44.66    | 41.54 | 1.06         | 1.06 | 1.08  | 1.09 |
| 1100.0         | 0.51                   | 0.47 | 45.30             | 53.11 | 50.89    | 43.76 | 1.06         | 1.05 | 1.08  | 1.10 |
| 1200.0         | 0.51                   | 0.47 | 42.03             | 45.81 | 44.47    | 47.09 | 1.06         | 1.06 | 1.08  | 1.09 |
| 1300.0         | 0.51                   | 0.47 | 41.45             | 43.19 | 40.75    | 43.35 | 1.06         | 1.05 | 1.09  | 1.09 |
| 1400.0         | 0.52                   | 0.48 | 40.88             | 42.11 | 38.26    | 39.95 | 1.06         | 1.05 | 1.10  | 1.09 |
| 1450.0         | 0.53                   | 0.47 | 40.44             | 41.52 | 37.23    | 38.58 | 1.06         | 1.05 | 1.10  | 1.10 |
| 1600.0         | 0.57                   | 0.51 | 37.75             | 38.77 | 34.31    | 35.38 | 1.07         | 1.06 | 1.11  | 1.10 |
| 1800.0         | 0.65                   | 0.57 | 35.76             | 36.46 | 33.89    | 33.05 | 1.08         | 1.07 | 1.14  | 1.11 |
| 2000.0         | 0.78                   | 0.67 | 35.26             | 36.66 | 35.48    | 34.12 | 1.09         | 1.08 | 1.15  | 1.12 |
| 2200.0         | 0.84                   | 0.79 | 35.39             | 35.52 | 34.71    | 34.08 | 1.09         | 1.10 | 1.15  | 1.10 |
| 2400.0         | 0.94                   | 0.88 | 35.29             | 35.60 | 32.29    | 32.06 | 1.11         | 1.12 | 1.17  | 1.11 |
| 2600.0         | 1.09                   | 1.03 | 34.02             | 35.69 | 30.26    | 30.10 | 1.15         | 1.16 | 1.20  | 1.15 |
| 2800.0         | 1.41                   | 1.37 | 33.34             | 35.69 | 28.98    | 28.71 | 1.22         | 1.24 | 1.25  | 1.21 |

## Typical Performance Curves

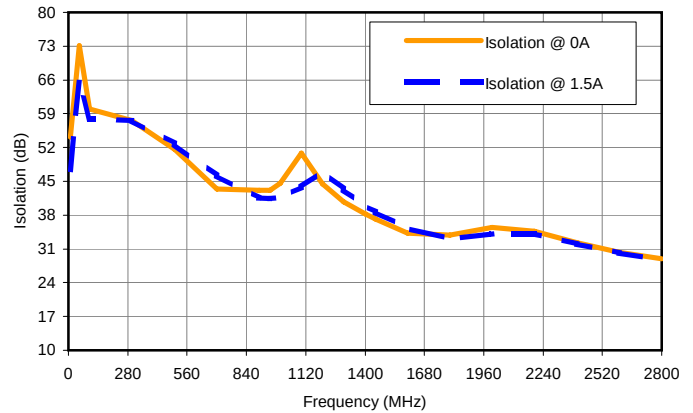
Insertion Loss



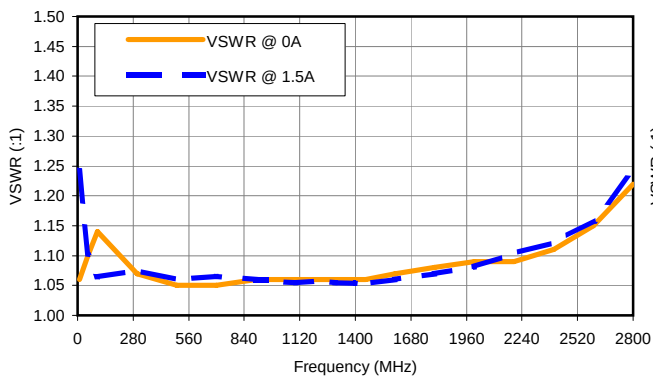
Isolation, RF-DC



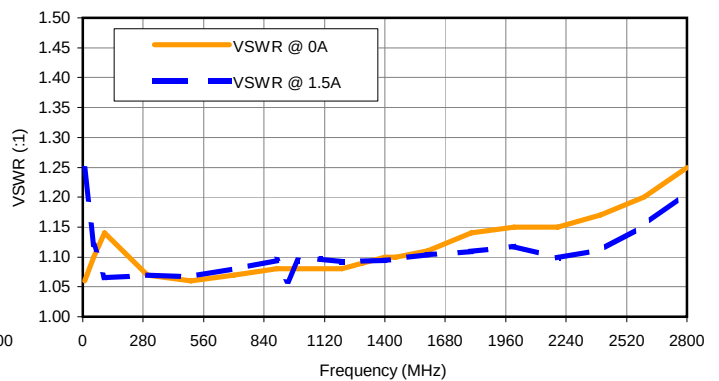
Isolation, RF/DC-DC



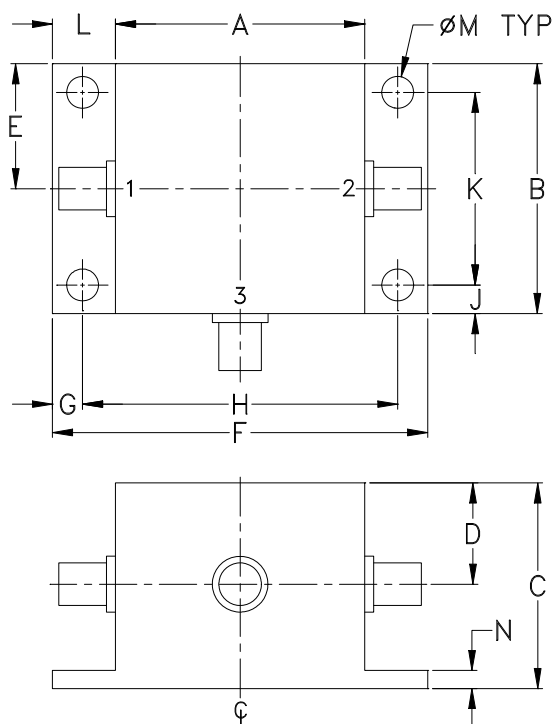
RF VSWR



RF/DC VSWR



### Outline Dimensions



| CASE# | A               | B               | C              | D              | E              | F               | G             | H                | J             | K               | L              | M              | N             | WT<br>GRAMS |
|-------|-----------------|-----------------|----------------|----------------|----------------|-----------------|---------------|------------------|---------------|-----------------|----------------|----------------|---------------|-------------|
| V1381 | 1.25<br>(31.75) | 1.25<br>(31.75) | .94<br>(23.88) | .47<br>(11.94) | .63<br>(16.00) | 2.19<br>(55.63) | .25<br>(6.35) | 1.687<br>(42.85) | .25<br>(6.35) | .750<br>(19.05) | .47<br>(11.94) | .125<br>(3.18) | .10<br>(2.54) | 60.0        |

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

#### Notes:

1. Case material: Aluminum alloy.
2. Case finish:  
For RoHS Case Styles: Clear chemical conversion coating, non-chrome or trivalent chrome based.
3. Refer to the individual model data sheet for the type of connectors available.



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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<br>Ambient Environment                                                   | Individual Model Data Sheet          |
| Storage Temperature        | -55° to 100° C<br>Ambient Environment                                                  | Individual Model Data Sheet          |
| Barometric Pressure        | 100,000 Feet                                                                           | MIL-STD-202, Method 105, Condition D |
| Humidity                   | 90% RH, 65°C<br>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 |