COAXIAL

# Wideband Bias-Tee ZBT-V543-FT+

50Ω 10 MHz to 54 GHz 2.4mm Male to 2.4mm Female

## THE BIG DEAL

- Wideband millimeter wave , 10 MHz to 54 GHz
- Low insertion loss, 1.8 dB typ. for the full band
- Excellent return loss, 15 dB typ.
- Excellent isolation, > 30 dB

*Generic photo used for illustration purposes only*

| | |
|---|---|
| **Model No.** | ZBT-V543-FT+ |
| **Case Style** | Y3206-1 |
| **Connectors** | 2.4mm Male to 2.4mm Female |

**+RoHS Compliant**
The +Suffix identifies RoHS Compliance.
See our website for methodologies and qualifications

## APPLICATIONS

- Broadband Communication
- Test & Measurement
- 5G RF & Millimeter Wave
- Aerospace and Defense

## PRODUCT OVERVIEW

This wideband Bias-Tee is ideal for applications such as biasing amplifiers, laser diodes, active antennas and more. Mini-Circuits' ZBT-V543-FT+ is an ultra-wideband coaxial bias-tee covering frequencies from 10 MHz to 54 GHz with low insertion loss, excellent return loss, and high DC to RF isolation over its entire frequency range. This model is capable of handling up to +30 dBm (1W) RF input power and DC input current up to 250mA.

## KEY FEATURES

| Features | Advantages |
|---|---|
| Ultra-wideband, 10 MHz to 54 GHz | Supports a wide range of applications with a single device, such as broadband communication systems, instrumentation, biasing broadband amplifiers, laser diodes, active antennas, and more. |
| Low insertion loss, typically <2 dB in full band | Preserves signal strength from input to output and minimizes overall system loss. |
| Excellent return loss, 15 dB typ. | Provides excellent matching for 50Ω systems with minimal signal reflection. |
| RF power handling up to 1W | Supports applications with a variety of power requirements. |
| Excellent DC-RF isolation > 30 dB typ. in full band | Minimizes RF leakage and interference with other elements in the system. |

REV. OR
ECO-013918
ZBT-V543-FT
MCL NY
220805

# Wideband Bias-Tee ZBT-V543-FT+

50Ω 10 MHz to 54 GHz 2.4mm Male to 2.4mm Female

## ELECTRICAL SPECIFICATIONS AT 25°C

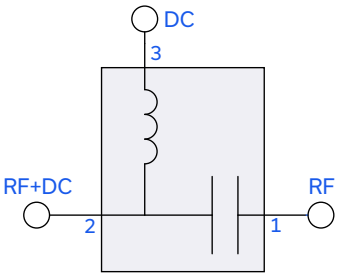
| Parameter | Frequency (MHz) | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| Frequency Range | | 10 | | 54000 | MHz |
| Insertion Loss | 10-30000 | - | 0.8 | 1.7 | dB |
| | 30000-54000 | - | 1.8 | 2.8 | |
| Input VSWR | 10-30000 | - | 1.2 | 2.0 | :1 |
| | 30000-54000 | - | 1.4 | 2.0 | |
| Output VSWR | 10-30000 | - | 1.2 | 2.0 | :1 |
| | 30000-54000 | - | 1.4 | 2.0 | |
| DC Resistance, DC to RF and DC port | | - | 2.5 | - | Ohm |

## MAXIMUM RATINGS

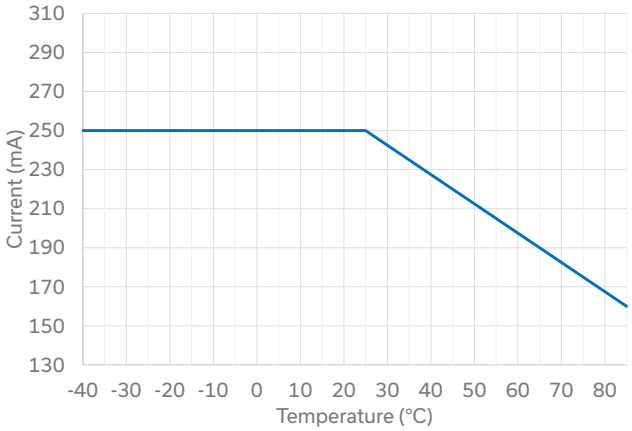
| Parameter | Ratings |
|---|---|
| Operating Case Temperature | -40 °C to +85 °C |
| Storage Temperature | -55 °C to +100 °C |
| RF Power | 30 dBm max. |
| Input Current | SEE CHART BELOW |
| Voltage at DC Port | 25V max. |

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

## FUNCTIONAL SCHEMATIC




## CURRENT DERATING



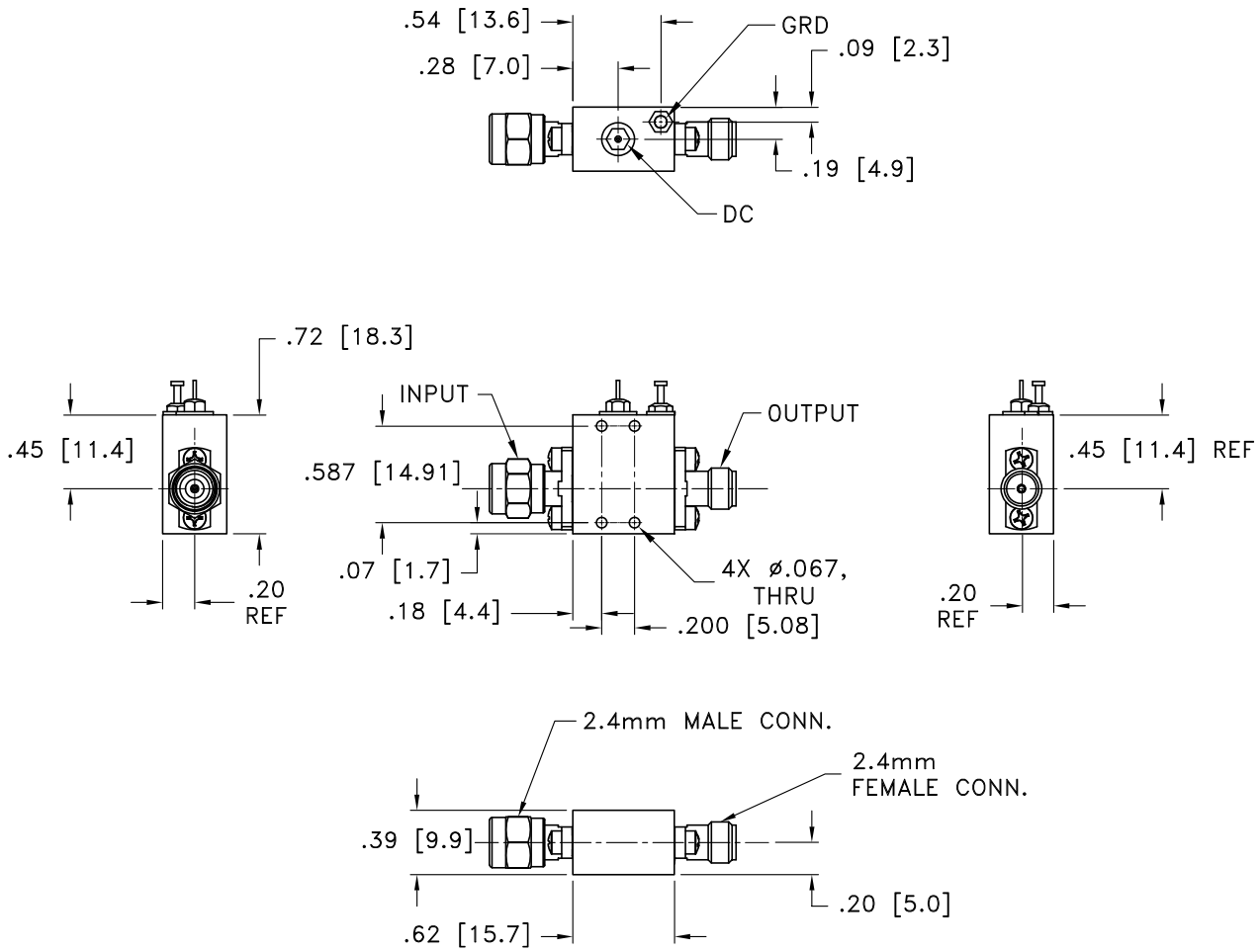
# Wideband Bias-Tee ZBT-V543-FT+

50Ω 10 MHz to 54 GHz 2.4mm Male to 2.4mm Female

## COAXIAL CONNECTIONS

| | |
|---|---|
| **Input** | 2.4mm Male |
| **Output** | 2.4mm Female |

## OUTLINE DRAWING




Weight: 35 Grams
Dimensions are in inches [mm]. Tolerances: 2 Pl.±.03; 3 Pl. ±.015

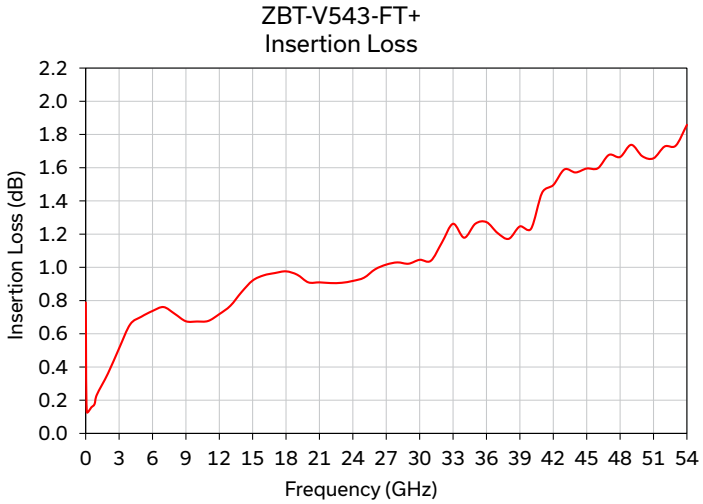
COAXIAL

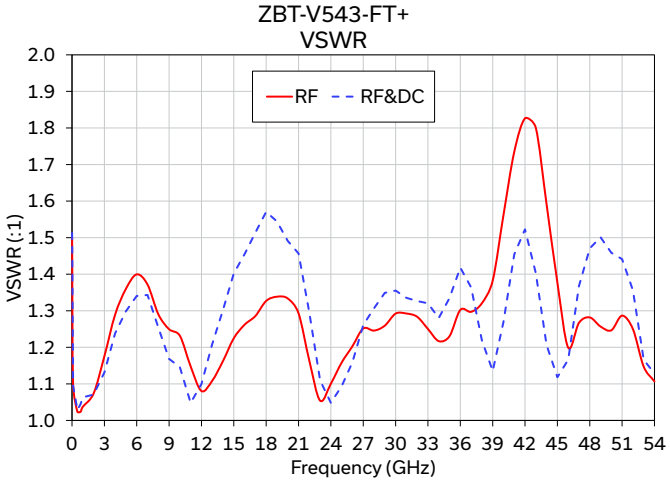
# Wideband Bias-Tee ZBT-V543-FT+

50Ω 10 MHz to 54 GHz 2.4mm Male to 2.4mm Female

## TYPICAL PERFORMANCE DATA AND CHARTS

| Frequency (GHz) | Insertion Loss (dB) | VSWR (:1) | |
|---|---|---|---|
| | | Input (DC+RF) | Output (RF) |
| 0.01 | 0.79 | 1.51 | 1.50 |
| 0.1 | 0.13 | 1.09 | 1.10 |
| 1 | 0.23 | 1.06 | 1.04 |
| 2 | 0.36 | 1.07 | 1.07 |
| 4 | 0.66 | 1.24 | 1.29 |
| 6 | 0.74 | 1.34 | 1.40 |
| 8 | 0.72 | 1.25 | 1.29 |
| 10 | 0.67 | 1.15 | 1.23 |
| 12 | 0.72 | 1.10 | 1.08 |
| 14 | 0.85 | 1.30 | 1.16 |
| 16 | 0.95 | 1.46 | 1.26 |
| 18 | 0.98 | 1.57 | 1.33 |
| 20 | 0.91 | 1.49 | 1.33 |
| 22 | 0.91 | 1.30 | 1.16 |
| 24 | 0.92 | 1.05 | 1.10 |
| 26 | 0.99 | 1.16 | 1.20 |
| 28 | 1.03 | 1.31 | 1.25 |
| 30 | 1.05 | 1.36 | 1.29 |
| 32 | 1.15 | 1.33 | 1.28 |
| 34 | 1.18 | 1.28 | 1.22 |
| 36 | 1.27 | 1.42 | 1.30 |
| 38 | 1.17 | 1.22 | 1.32 |
| 40 | 1.23 | 1.27 | 1.56 |
| 42 | 1.50 | 1.52 | 1.83 |
| 44 | 1.57 | 1.21 | 1.59 |
| 46 | 1.60 | 1.17 | 1.20 |
| 48 | 1.66 | 1.47 | 1.28 |
| 50 | 1.67 | 1.46 | 1.25 |
| 52 | 1.73 | 1.36 | 1.25 |
| 54 | 1.86 | 1.13 | 1.11 |




NOTES

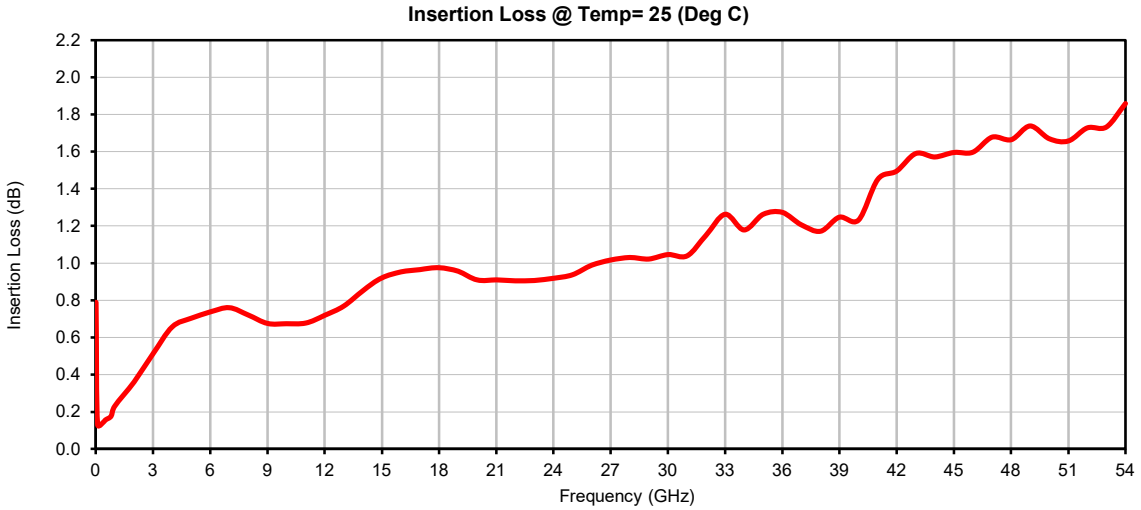
A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's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

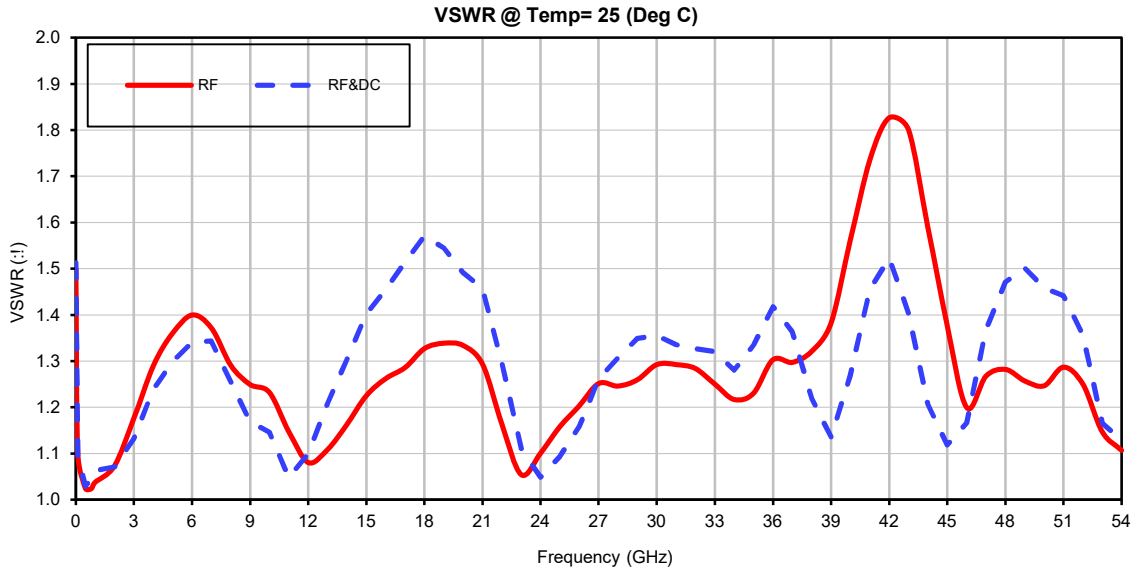
# Bias-Tee, Coaxial ZBT-V543-FT+

## *Typical Performance Data*

| FREQUENCY (GHz) | INSERTION LOSS (dB) | VSWR (:1) | |
|---|---|---|---|
| | | RF | RF&DC |
| 0.01 | 0.79 | 1.50 | 1.51 |
| 0.1 | 0.13 | 1.10 | 1.09 |
| 0.5 | 0.16 | 1.02 | 1.03 |
| 0.8 | 0.18 | 1.02 | 1.04 |
| 1.0 | 0.23 | 1.04 | 1.06 |
| 2.0 | 0.36 | 1.07 | 1.07 |
| 3.0 | 0.51 | 1.18 | 1.13 |
| 4.0 | 0.66 | 1.29 | 1.24 |
| 5.0 | 0.70 | 1.36 | 1.30 |
| 6.0 | 0.74 | 1.40 | 1.34 |
| 7.0 | 0.76 | 1.37 | 1.34 |
| 8.0 | 0.72 | 1.29 | 1.25 |
| 9.0 | 0.68 | 1.25 | 1.17 |
| 10.0 | 0.67 | 1.23 | 1.15 |
| 11.0 | 0.68 | 1.15 | 1.05 |
| 12.0 | 0.72 | 1.08 | 1.10 |
| 13.0 | 0.77 | 1.11 | 1.21 |
| 14.0 | 0.85 | 1.16 | 1.30 |
| 15.0 | 0.92 | 1.22 | 1.40 |
| 16.0 | 0.95 | 1.26 | 1.46 |
| 17.0 | 0.97 | 1.29 | 1.51 |
| 18.0 | 0.98 | 1.33 | 1.57 |
| 19.0 | 0.96 | 1.34 | 1.54 |
| 20.0 | 0.91 | 1.33 | 1.49 |
| 21.0 | 0.91 | 1.29 | 1.46 |
| 22.0 | 0.91 | 1.16 | 1.30 |
| 23.0 | 0.91 | 1.05 | 1.11 |
| 24.0 | 0.92 | 1.10 | 1.05 |
| 25.0 | 0.94 | 1.16 | 1.09 |
| 26.0 | 0.99 | 1.20 | 1.16 |
| 27.0 | 1.02 | 1.25 | 1.26 |
| 28.0 | 1.03 | 1.25 | 1.31 |
| 29.0 | 1.02 | 1.26 | 1.35 |
| 30.0 | 1.05 | 1.29 | 1.36 |
| 31.0 | 1.04 | 1.29 | 1.34 |
| 32.0 | 1.15 | 1.28 | 1.33 |
| 33.0 | 1.26 | 1.25 | 1.32 |
| 34.0 | 1.18 | 1.22 | 1.28 |
| 35.0 | 1.26 | 1.23 | 1.33 |
| 36.0 | 1.27 | 1.30 | 1.42 |
| 37.0 | 1.21 | 1.30 | 1.36 |
| 38.0 | 1.17 | 1.32 | 1.22 |
| 39.0 | 1.25 | 1.38 | 1.14 |
| 40.0 | 1.23 | 1.56 | 1.27 |
| 41.0 | 1.45 | 1.73 | 1.45 |
| 42.0 | 1.50 | 1.83 | 1.52 |
| 43.0 | 1.59 | 1.80 | 1.40 |
| 44.0 | 1.57 | 1.59 | 1.21 |
| 45.0 | 1.60 | 1.38 | 1.12 |
| 46.0 | 1.60 | 1.20 | 1.17 |
| 47.0 | 1.68 | 1.27 | 1.37 |
| 48.0 | 1.66 | 1.28 | 1.47 |
| 49.0 | 1.74 | 1.26 | 1.50 |
| 50.0 | 1.67 | 1.25 | 1.46 |
| 51.0 | 1.66 | 1.29 | 1.44 |
| 52.0 | 1.73 | 1.25 | 1.36 |
| 53.0 | 1.73 | 1.15 | 1.17 |
| 54.0 | 1.86 | 1.11 | 1.13 |

## *Typical Performance Curves*

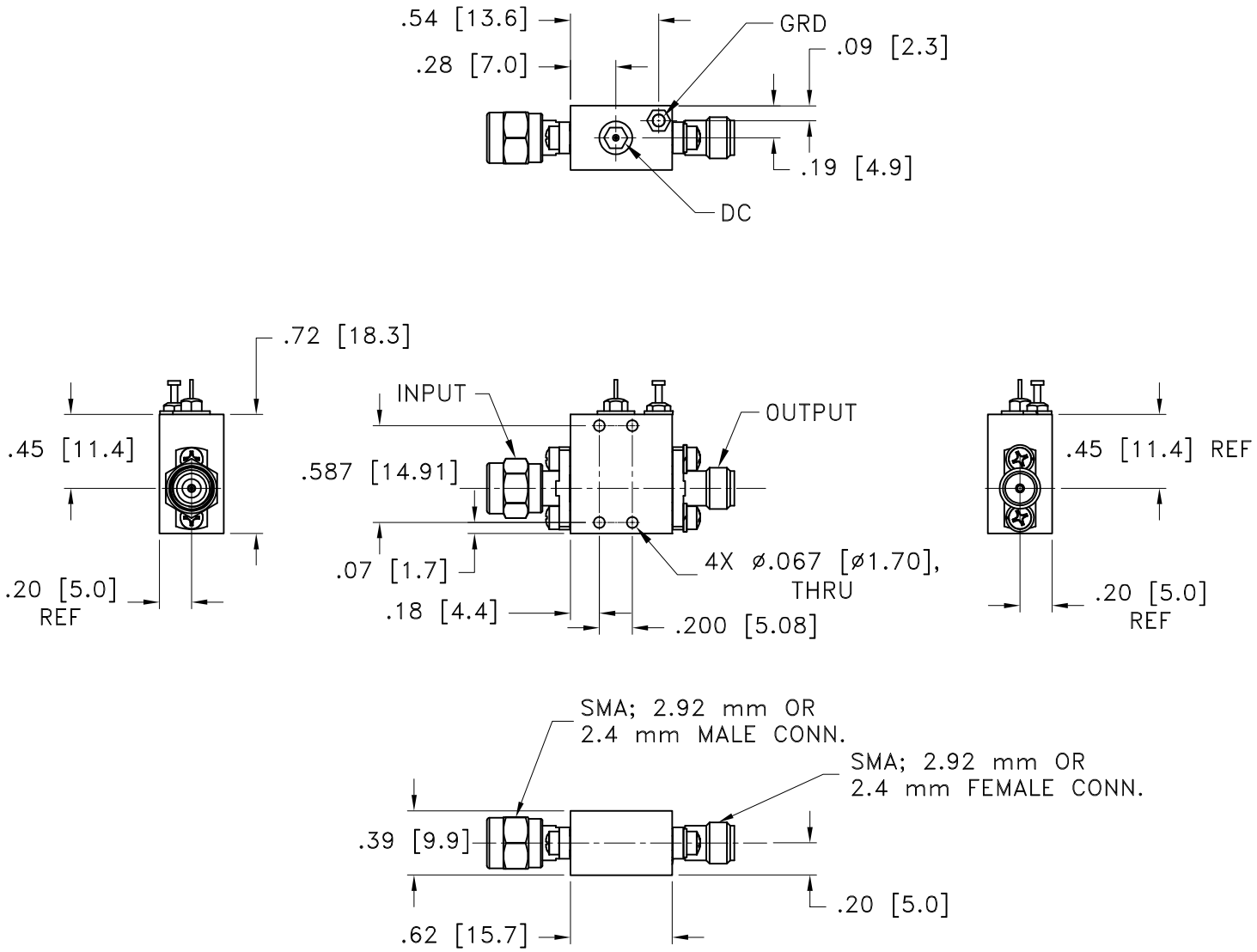


# Case Style Y

## Outline Dimensions

## Y3206-1




Weight: 35 grams

Dimensions are in inches [mm]. Tolerances: 2 Pl.±.03; 3 Pl. ±.015 inches

Notes:

Case material: Brass alloy 360.

Case Finish:

For RoHS Case Styles: Gold Plating.

Mini-Circuits

# Environmental Specifications ENV135

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 | -40° to 85°C | Individual Model Data Sheet |
| Storage Temperature | -40° to +85° C<br>Ambient Environment | Individual Model Data Sheet |
| Thermal Shock | -40° C to +85°C, 100 cycles | Transition time = 5 mins, Dwell time = 30 mins |
| Vibration | Random Vibration<br>(Non-operating) | MIL-STD-810F Method 514.5 Procedure I, Category 24, Figure 513C-17 |
| Mechanical Shock | Non-operation | MIL-STD 810F Method 516.5 Procedure 1, Table 516.5-II |