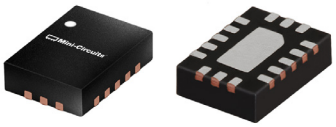
*MMIC*

# Bias-Tee

# MBT-283+

## 50Ω Wideband, 1.5 to 28 GHz



CASE STYLE: JV2579

## The Big Deal

- Extremely Wideband, 1.5 to 28 GHz
- Very low insertion loss, 0.7 dB typ.
- Good return loss, 20 dB typ.
- Excellent Isolation, 47 dB typ.

## Product Overview

Mini-Circuits' MBT-283+ is an ultra-wideband MMIC surface mount bias tee covering applications from 1.5 GHz to 28 GHz with low insertion loss, excellent return loss, and high DC-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 500mA. MBT-283+ is enclosed in a 3.5 x 2.5mm, 16-lead MCLP package for good thermal performance.

## Key Features

| Feature | Advantages |
|---|---|
| Ultra-wideband, 1.5 to 28 GHz | Supports a wide range of applications with a single device, including biasing broadband amplifier, laser diodes, active antennas and more. |
| Low insertion loss, 0.7 dB | Preserves signal strength from input to output and minimizes overall system loss |
| Excellent return loss, 20 dB typ. | Provides excellent matching for 50  systems with minimal signal reflection. |
| RF power handling up to 1W | This model supports applications with a variety of power requirements. |
| Excellent DC-RF isolation<br>• 59 dB, 1.5 to 10 GHz<br>• 47 dB, 10 to 20 GHz<br>• 48 dB, 20 to 28 GHz | Minimizes RF leakage and interference with other elements in the system. |

*MMIC*

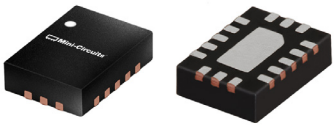
# Bias-Tee

# MBT-283+

## 50Ω Wideband, 1.5 to 28 GHz

### Product Features

- Extremely Wideband, 1.5 to 28 GHz
- Very low insertion loss, 0.7 dB typ.
- Good return loss, 20 dB typ.
- Excellent Isolation, 47 dB typ.
- Patent pending



*Generic photo used for illustration purposes only*

CASE STYLE: JV2579

***+RoHS Compliant***

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

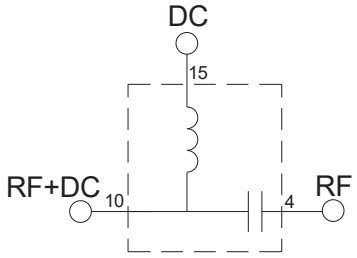
### Typical Applications

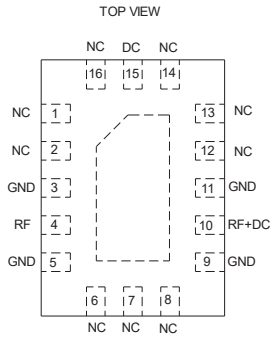
- Biasing Amplifiers
- Biasing laser diodes
- Biasing of active antennas

### General Description

Mini-Circuits' MBT-283+ is an ultra-wideband MMIC surface mount bias tee covering applications from 1.5 GHz to 28 GHz with low insertion loss, excellent return loss, and high DC-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 500mA. MBT-283+ is enclosed in a 3.5 x 2.5mm, 16-lead MCLP package for good thermal performance.

### *simplified schematic & pad description*




| Function | Pad Number | Description |
|---|---|---|
| RF | 4 | RF Pad |
| RF + DC | 10 | RF + DC Pad |
| DC | 15 | DC Pad, Connects DC port via C1 |
| N/C | 1,2, 6-8, 12-14 & 16 | No connection, grounded on Test Board. |
| GROUND | 3,5,9,11 & Paddle | Ground |

## Electrical Specifications[1] at 25°C, unless noted

| Parameter | Frequency (MHz) | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|
| Frequency Range | | 1500 | | 28000 | MHz |
| Insertion Loss | 1500 - 10000 | | 0.7 | 1.3 | dB |
| | 10000 - 20000 | | 0.7 | 1.6 | |
| | 20000 - 25000 | | 0.7 | 1.8 | |
| | 25000 - 28000 | | 1.0 | 2.1 | |
| Isolation (RF Port to DC Port) | 1500 - 10000 | | 57 | | dB |
| | 10000 - 20000 | | 47 | | |
| | 20000 - 25000 | | 48 | | |
| | 25000 - 28000 | | 47 | | |
| Return Loss | 1500 - 10000 | | 19 | | dB |
| | 10000 - 20000 | | 21 | | |
| | 20000 - 25000 | | 16 | | |
| | 25000 - 28000 | | 14 | | |
| DC resistance from DC to RF & DC port | | | 2.7 | | Ohm |

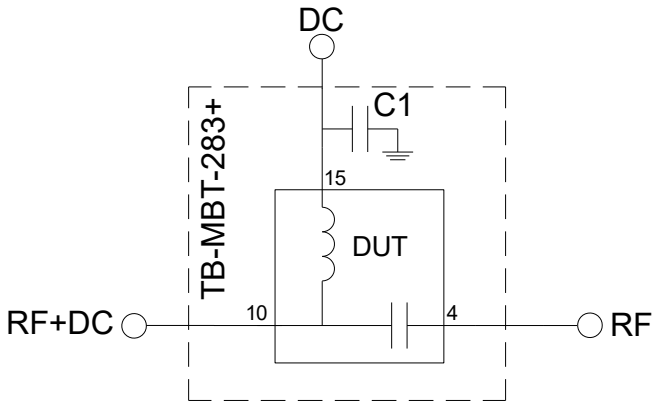
1. Measured on Mini-Circuits Characterization Test Board TB-MBT-283+. See Characterization Test Circuit (Fig. 1)

## Absolute Maximum Ratings[2]

| Parameter | Ratings |
|---|---|
| Operating Temperature | -40°C to 85°C |
| Storage Temperature | -65°C to 150°C |
| RF Power | 30 dBm |
| Voltage at DC Port | 35V |
| Current at DC Port | 500mA |

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

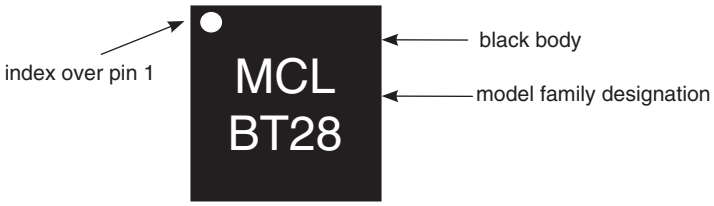
## Characterization Test & Application Circuit




| Component | Size | Value | Part Number | Manufacturer |
|---|---|---|---|---|
| C1 | 0402 | 0.1uF | GRM155R71H104KE14J | Murata |

Fig 1. Block Diagram of Test Circuit used for characterization. Test Board TB-MBT-283+
Parameter to measure: Insertion Loss, Isolation, Return Loss
Condition: Pin = 0 dBm

## Product Marking



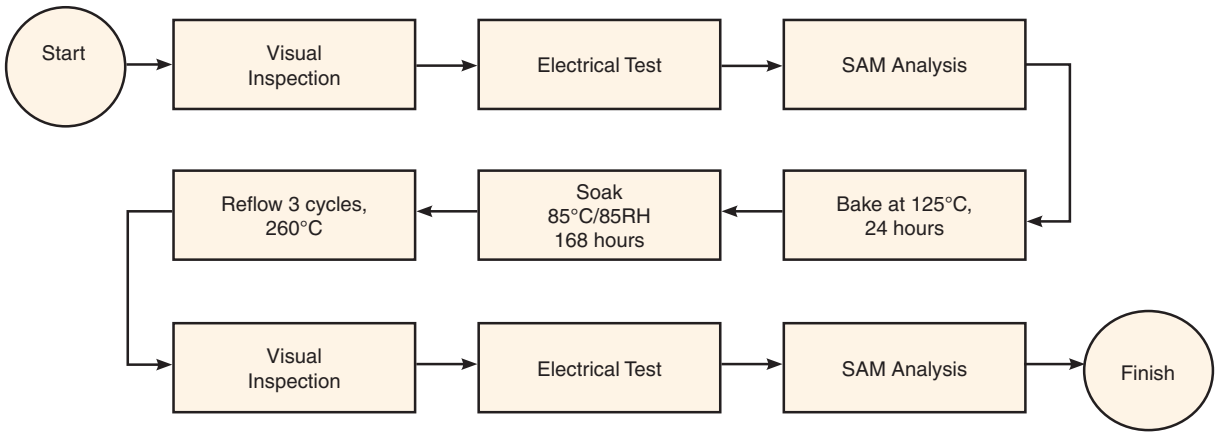

Marking may contain other features or characters for internal lot control

| Additional Detailed Technical Information<br>*additional information is available on our dash board. To access this information click here* | |
|---|---|
| **Performance Data** | Data Table |
| | Swept Graphs |
| | S-Parameter (S3P Files) Data Set (.zip file) |
| **Case Style** | JV2579 Plastic package, exposed paddle, lead finish: Matte-Tin Plate |
| **Tape & Reel**<br>**Standard quantities available on reel** | F104<br>*7" reels with 2K devices* |
| **Suggested Layout for PCB Design** | PL-692 |
| **Evaluation Board** | TB-MBT-283+ & TB-MBT-283C+ |
| **Environmental Ratings** | ENV08T1 |

## ESD Rating

Human Body Model (HBM): Class 1B (500 V) in accordance with ANSI/ESD STM 5.1 - 2001

## MSL Test Flow Chart




### Additional 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