

High-Power Low-Loss Pulsed Bias Tees

DATA SHEET / 2K-002

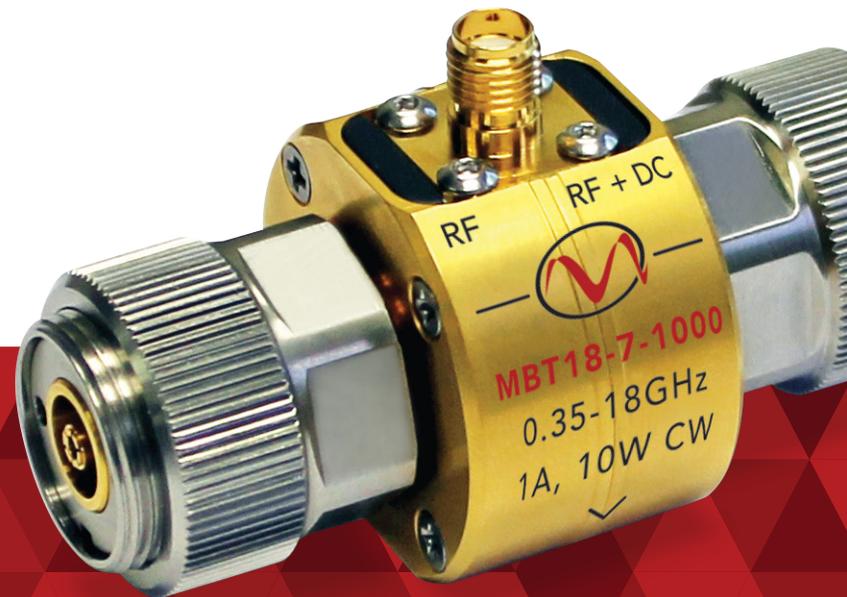
MODELS:

MBT18-7-1000

MBT18-7-5000

MBT18-NMF-5000

MBT18-NFM-5000



High-Power Low-Loss Pulsed Bias Tees

Features

- > High RF Power Handling
- > High Breakdown Voltage
- > High Current Handling
- > Low Insertion Loss
- > Excellent Return Loss
- > Pulsing Capable

Applications

- > High Power System Biasing
- > High Power Base Station Integration
- > Test and Measurement (Load Pull, Pulsed Measurements, General Lab...)



Model:
MBT18-7-1000
U.S. Patent No. 9,614,267

Description

Bias tees are passive RF circuits which provide DC bias to an active device under test. Normally consisting of a capacitor and inductor, bias tees act as diplexers by combining low-frequency (DC) and high frequency (RF) signals onto a common port (RF+DC). In a classic capacitor/inductor design, the capacitor acts as a DC block and prevents DC bias from entering the RF path, while the inductor acts as an RF choke preventing RF energy from entering the DC instrumentation.

Typical applications include providing bias to amplifiers inside of complex systems including base stations and radios; and biasing discrete transistors or packaged devices in test and measurement applications such as DC/pulsed-bias S-parameters, DC/pulsed-IV, DC/pulsed-bias load pull, stability-, robustness-, burn-in-, pre-production- and production-test.

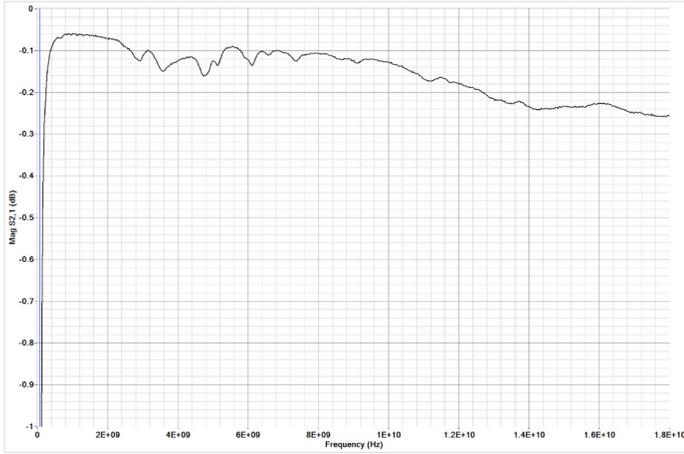
Important characteristics of a bias tee include the frequency range over which the bias tee will function with minimal to no performance degradation, the insertion loss and VSWR (or return loss) over the usable frequency range of the bias tee. Voltages, currents and RF powers are critical both in average/DC/CW and pulsed/peak operations. It is also essential to have bias tees with minimal overshoot of the signals under pulsed bias/pulsed RF conditions.

Specifications

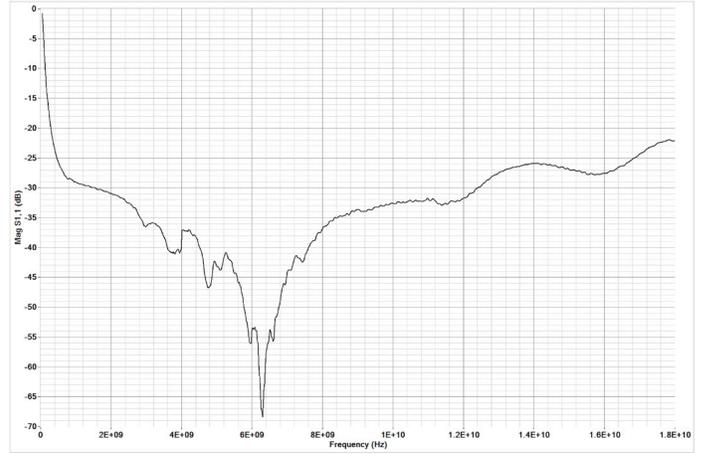
| Model | Connector | | | Frequency Range (GHz) | Insertion Loss (dB) | | Return Loss (dB) Typical | Max Voltage (V) | Max DC Current (A) | RF Rating | | | | Isolation (dB) Typical | DC Resistance (ohm) Typical | DC BW (MHz) Typical |
|----------------|-----------------|-----------------|------------|-----------------------|---------------------|-----|--------------------------|-----------------|--------------------|----------------|--------------|-------------------------------|-----------------------------|------------------------|-----------------------------|---------------------|
| | RF Port | RF+DC Port | DC Port | | Typ | Max | | | | CW Current (A) | CW Power (W) | Peak Current (A) ¹ | Peak Power (W) ¹ | | | |
| MBT18-7-1000 | 7mm | | SMA Female | 0.35 - 18 | 0.28 | 0.6 | 22 | 100 | 1 | 1 | 10 | 2 | 40 | 34 | 0.4 | 10 |
| MBT18-7-5000 | 7mm | | SMA Female | 6 - 18 | 1.1 | 1.5 | 15 | 100 | 5 | 5 | 50 | 15 | 250 | 30 | 0.4 | 10 |
| MBT18-NMF-5000 | Type N (male) | Type N (female) | SMA Female | 6 - 18 | 1.1 | 1.5 | 15 | 100 | 5 | 5 | 50 | 15 | 250 | 30 | 0.4 | 10 |
| MBT18-NFM-5000 | Type N (female) | Type N (male) | SMA Female | 6 - 18 | 1.1 | 1.5 | 15 | 100 | 5 | 5 | 50 | 15 | 250 | 30 | 0.4 | 10 |

¹ Power and current rating valid under the following condition: $T_{on} = 100\mu s$, Duty Cycle = 10%, $I_q \leq 500mA$. Different pulse conditions will affect the peak power and current handling.

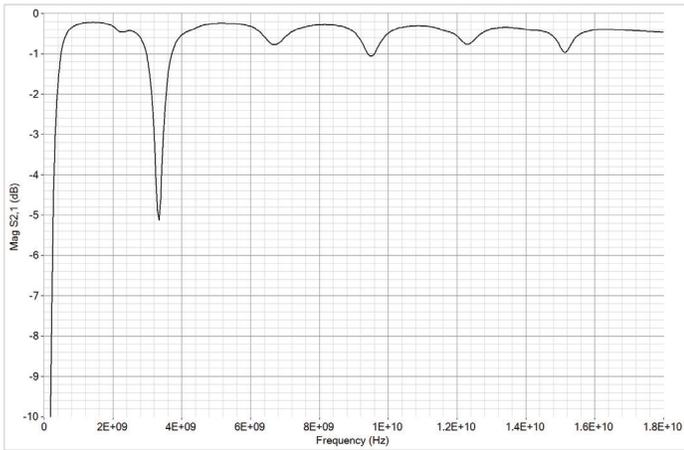
MBT18-7-1000
Typical Insertion
Loss - dB



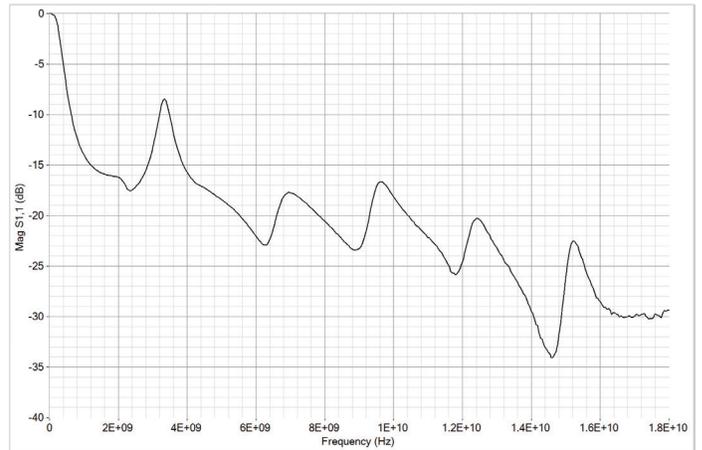
MBT18-7-1000
Typical Return
Loss - dB



MBT18-7-5000
Typical Insertion
Loss - dB

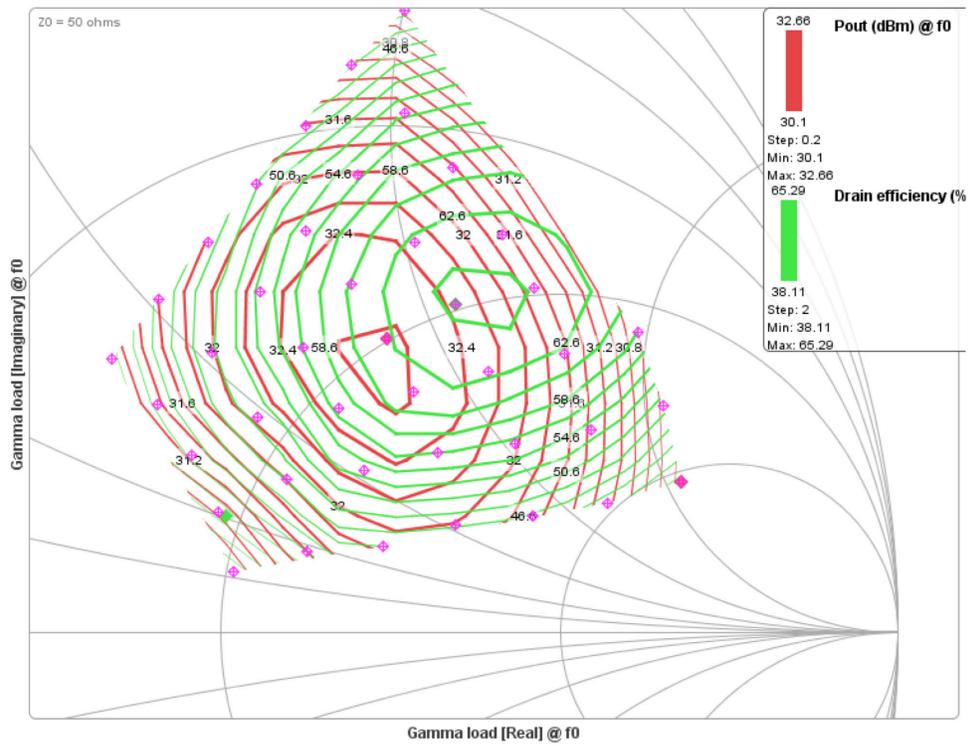


MBT18-7-5000
Typical Return
Loss - dB

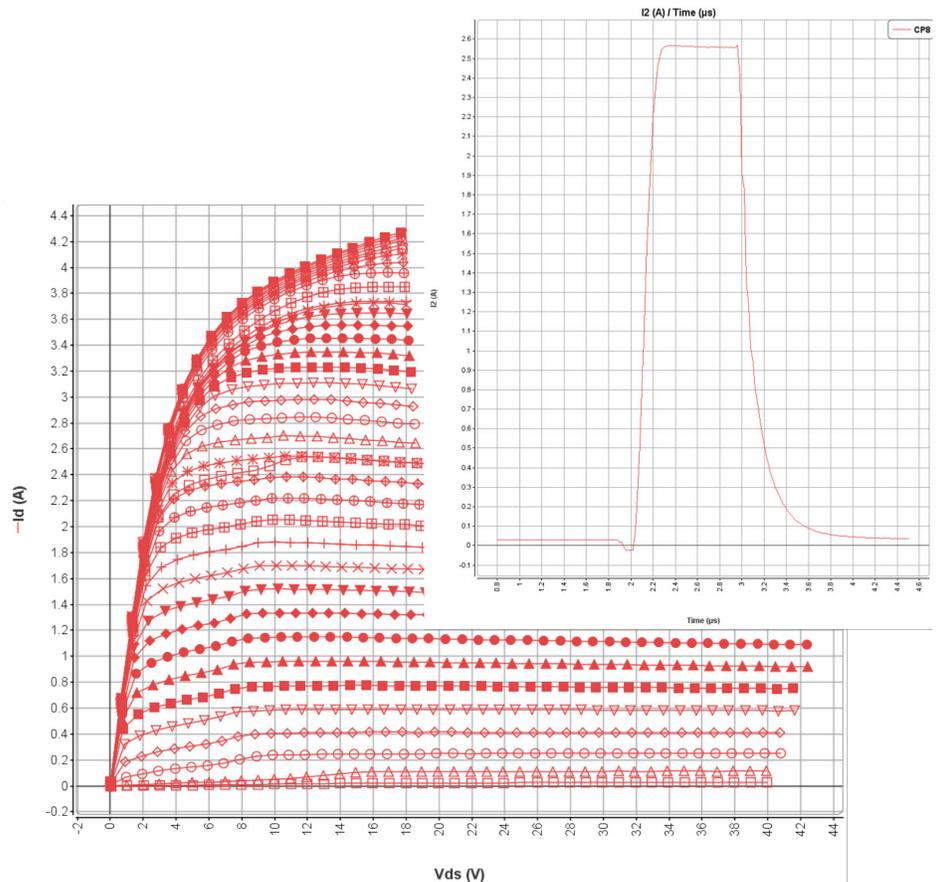


Typical Applications

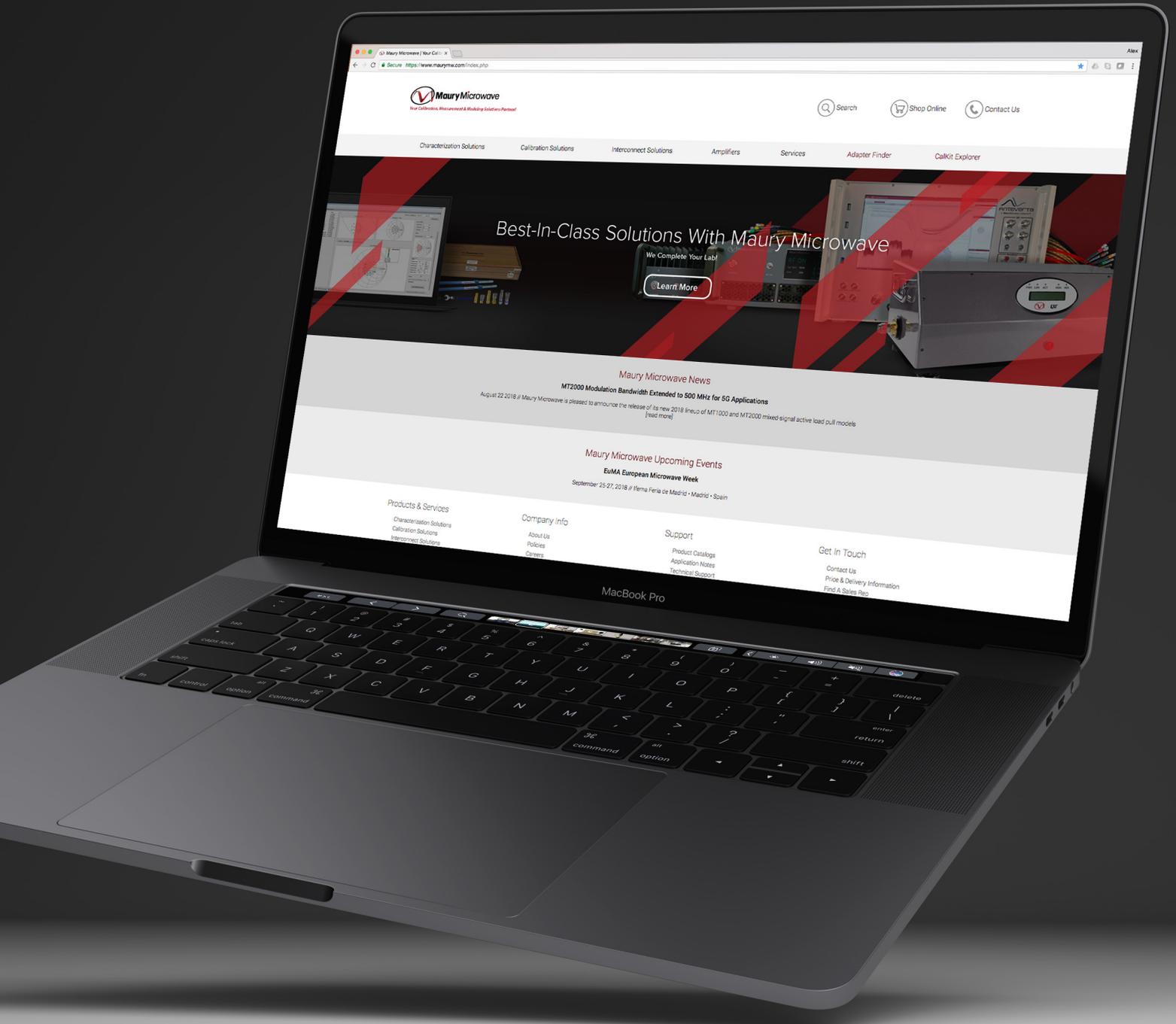
Load pull



Pulsed IV down to 1us



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