

Features

- Low Insertion Loss: <1 dB
- Return Loss: Well matched >15 dB
- High Current: 300 mA max.
- SMT Compatible
- Post SMT Aqueous Wash Compatible
- Lead-Free 4 mm Laminate Package
- RoHS* Compliant

Applications

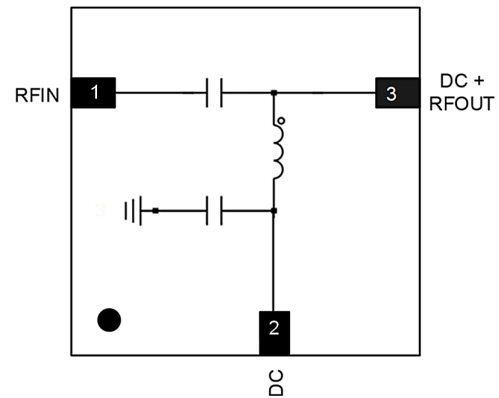
- Test & Measurement
- Wideband Amplifiers & Wideband Switches

Description

The MABT-011001 is a wideband high current Bias T. It functions as an RF-DC de-coupling network as well as the DC return and contains a series DC blocking capacitor and shunt DC decoupling capacitor on the DC feed. Providing a high performance robust solution suitable for use on a standard SMT production line.

Ideal Biasing solution for Wideband Amplifier and Switch Circuits.

Functional Schematic



Pin Names³

Pin #	Function	Pin #	Function
1	RF _{IN}	3	DC & RF _{OUT}
2	DC	Paddle	GND ⁴

3. MACOM recommends connecting unused package pins to ground.
4. The exposed pad centered on the package bottom must be connected to RF, DC and thermal ground.

AC Electrical Specifications: Freq. = 0.03 - 45 GHz, V_{CC} = 0 V, Z₀ = 50 Ω, T_A = 25°C

Parameter	Test Conditions	Units	Min.	Typ.	Max.
Insertion Loss	0.03 — 2 GHz	dB	—	1.0	2.1
	2 — 10 GHz			0.4	0.7
	10 — 20 GHz			0.7	1.4
	20 — 40 GHz			1.1	1.7
	40 — 45 GHz			1.5	2.3
Input Return Loss	0.03 - 45 GHz	dB	—	15	—
Output Return Loss	0.03 - 45 GHz	dB	—	15	—
RF- DC Isolation	0.03 - 45 GHz	dB	—	22	—

Ordering Information^{1,2}

Part Number	Package
MABT-011001	Cut Tape or Tray
MABT-011001-TR0300	300 Piece Reel
MABT-011001-TR0500	500 Piece Reel
MABT-011001-SB1	Sample Board

1. Reference Application Note M513 for reel size information.
2. All sample boards include 5 loose parts.

* Restrictions on Hazardous Substances, compliant to current RoHS EU directive.

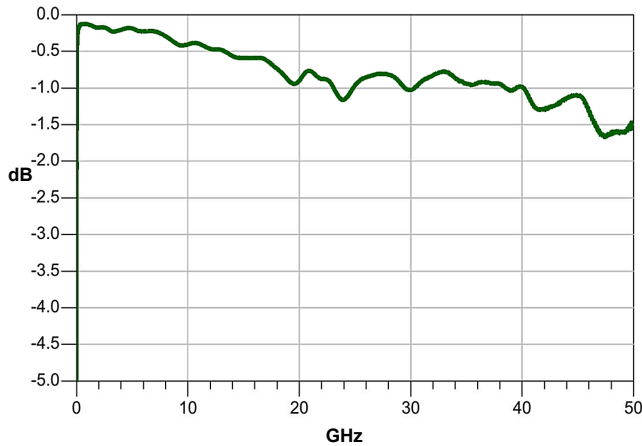
Absolute Maximum Ratings^{5,6}

Parameter	Maximum
Input Power (pin 1 & 3)	30 dBm
DC Bias Voltage (pin 2)	25 V
DC Bias Current (pin 2)	300 mA
Operating Temperature	-55°C to +105°C
Storage Temperature	-65°C to +150°C

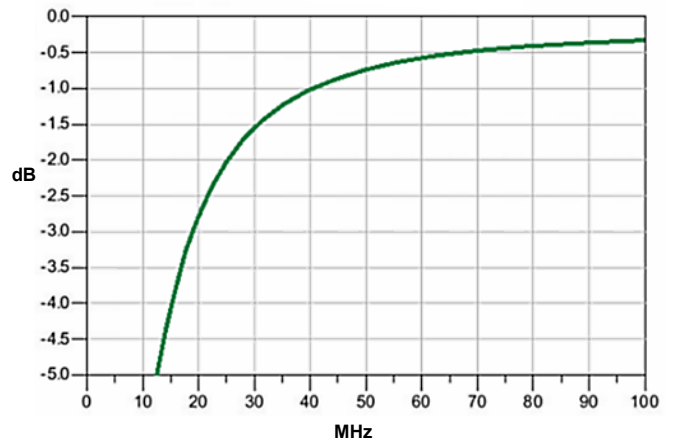
5. Exceeding any one or combination of these limits may cause permanent damage to this device.
6. MACOM does not recommend sustained operation near these survivability limits.

Typical Performance Curves: $T_A = 25^\circ\text{C}$, $V_{CC} = 0\text{V}$, $Z_0 = 50 \Omega$

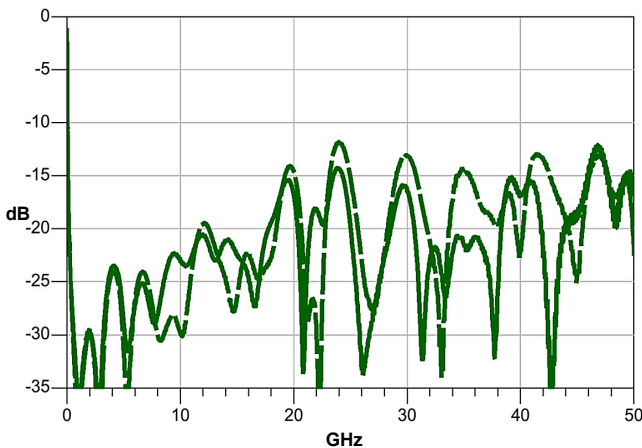
Insertion Loss (pin 1 to 3) Broadband Span



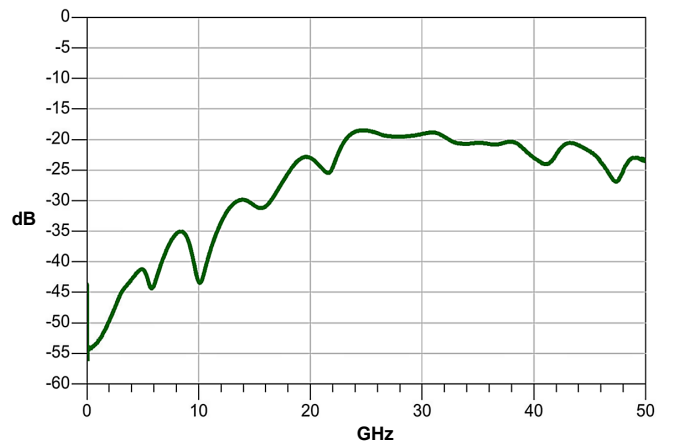
Insertion Loss (pin 1 to 3) Low Frequency Sweep



Return Loss: (pin 1 solid and pin 3 dashed)

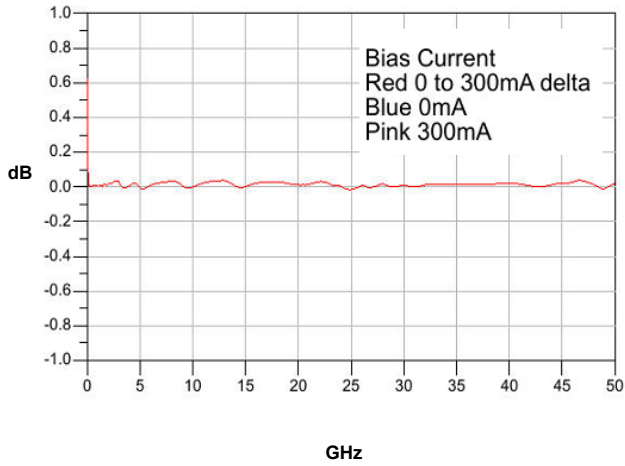


Isolation (pin 1 to 2)

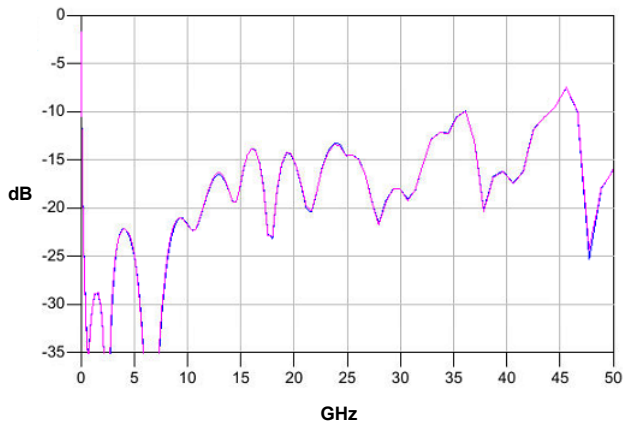


DC Bias Current Robustness

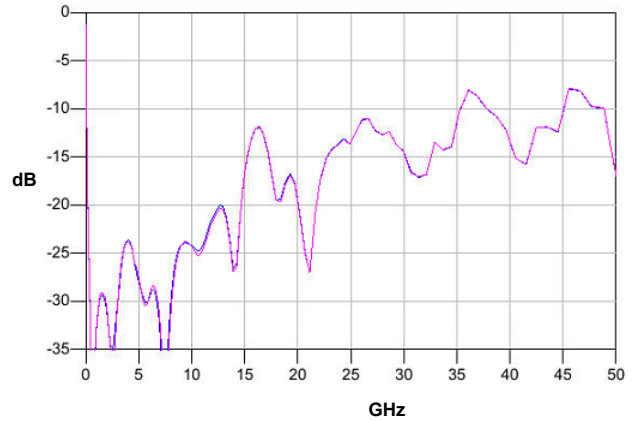
Insertion Loss Delta (pin 1 to pin 3)



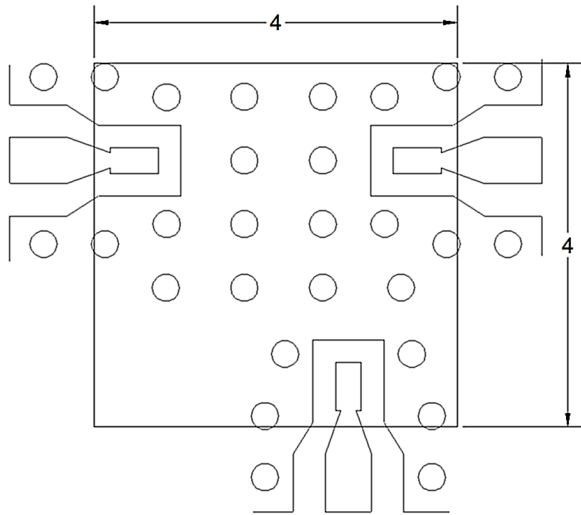
Return Loss: Input (pin 1)



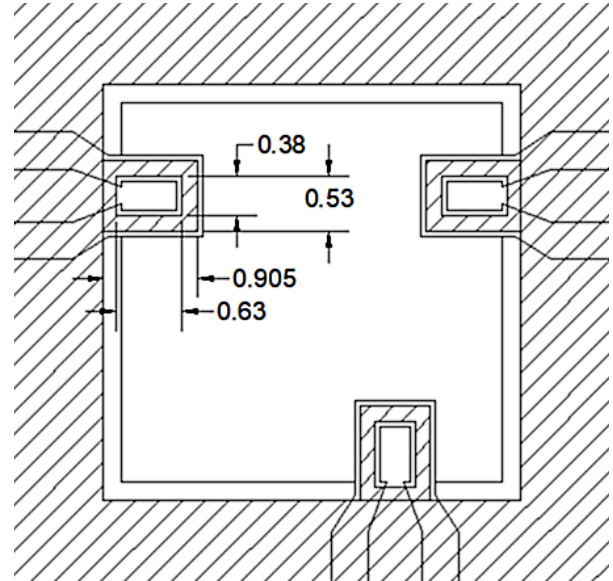
Return Loss: Output (pin 3)



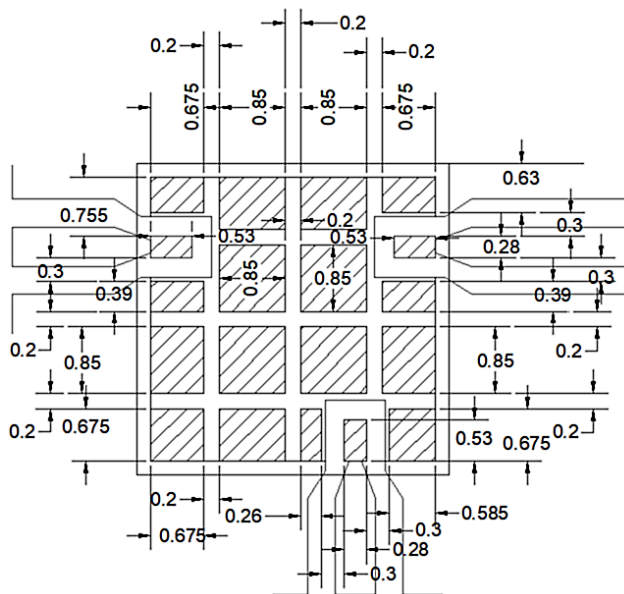
Recommended PCB Footprint^{7,8}



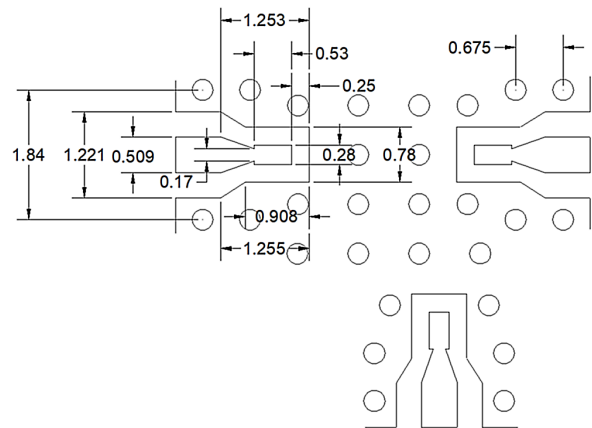
Solder Mask Coverage⁷



Solder Paste Template⁷

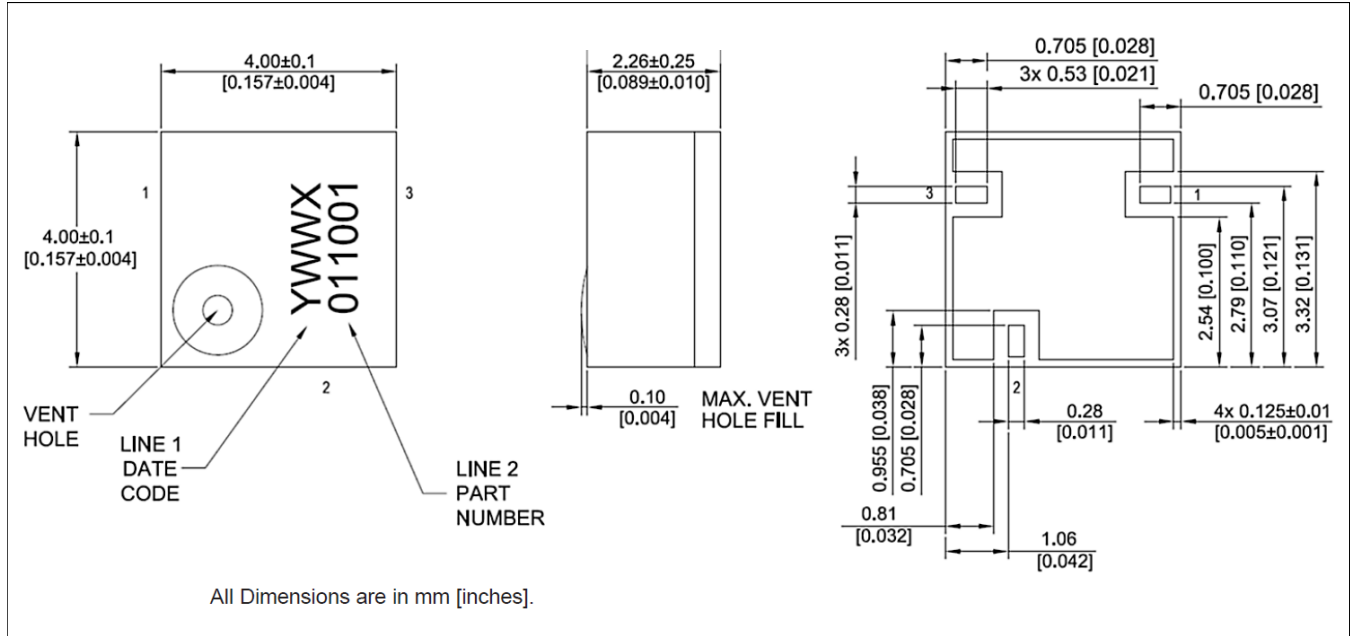


RF Line Dimensions^{7,8}



7. Dimensions in mm.
 8. Use Rogers RO4350 dielectric, thickness 254µm

Lead-Free 4 mm Air-Cavity Laminate Module[†]



[†] Reference Application Note J-STD-020E for both Lead (Pb) or Lead free solder reflow recommendations.
 Meets JEDEC moisture sensitivity level MSL1 requirements.
 Plating is ENEPIG

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