Fixed Attenuator, 10 dB
DC - 18 GHz

MAAT-011039
Rev. V1

Features

- Attenuation: 10 dB up to 18 GHz
- 50 Ω Impedance
- Power Handling: 27 dBm
- Bidirectional
- 6 Lead 2 mm TDFN Package
- RoHS* Compliant

Applications

- Satellite Communications
- Test and Measurement
- Telecom Infrastructure
- General Purpose

Description

The MAAT-011039 is a 10 dB bidirectional, fixed attenuator.

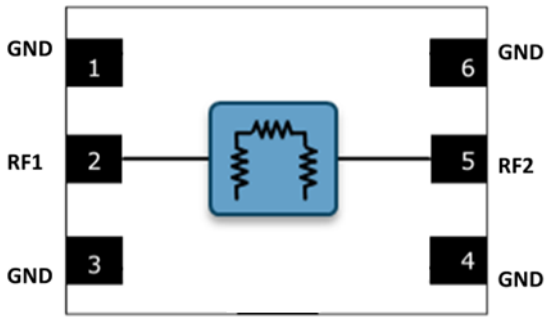
This attenuator is suited for many applications, including satellite communications, that require small SMT attenuators with flat attenuation and good return losses.

Ordering Information[1]

Part Number	Description
MAAT-011039-TR1000	1000 piece reel
MAAT-011039-SMB	Sample Board

1. Reference Application Note M513 for reel size information.

Functional Schematic



Pin Names[2,3]

Pin #	Name	Function
1,3,4,6	GND	Ground
2	RF1	RF Input/Output
5	RF2	RF Input/Output

3. Ground Pins 1, 3, 4, and 6 are internally connected to the exposed backside pad.
2. The exposed pad centered on the package bottom must be connected to RF, DC and thermal ground.

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

Pin Description

Pin #	Name	Description
1	GND	Ground
2	RF1	RF Input/Output (DC coupled, Do not apply external Vdc)
3	GND	Ground
4	GND	Ground
5	RF2	RF Input/Output (DC coupled, Do not apply external Vdc)
6	GND	Ground

Electrical Specifications: T_C = 25°C[4], Z_0 = 50 Ω

Parameter	Test Conditions	Units	Min.	Typ.	Max.
Attenuation	6 GHz 18 GHz	dB	9.9 —	10.2 10.9	10.5 —
Input / Output Return Loss	6 GHz 18 GHz	dB	—	22 16	—
Input IP3	6 GHz	dBm	—	55	—

4. Tc is defined as the case temperature of the backside ground paddle.

Maximum Operating Conditions

Parameter	Maximum
Input Power	29 dBm
Operating Temperature	-40ºC to +85ºC

Absolute Maximum Ratings[5,6]

Parameter	Absolute Maximum
Input Power	30 dBm
Storage Temperature	-65ºC to +150ºC

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.

Handling Procedures

Please observe the following precautions to avoid damage:

Static Sensitivity

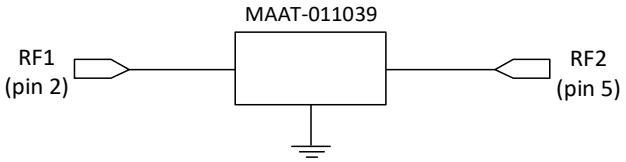
These electronic devices are sensitive to electrostatic discharge (ESD) and can be damaged by static electricity. Proper ESD control techniques should be used when handling these HBM Class 1C and CDM Class C3 devices.

Application Information

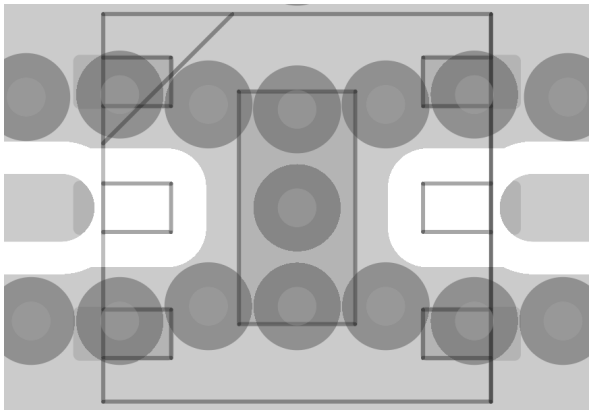
The MAAT-011039 attenuator is designed to deliver high performance and to be easy to use.

No external components are needed. The RF connections required by the MAAT-011039 are shown in a schematic below.

The MAAT-011039 attenuator series is bidirectional. Pins 2 and 5 should be connected to the RF lines on the printed circuit board (PCB). The third required connection is to RF ground. The exposed metal paddle on the backside of the package must be connected to the RF ground of the PCB housing the Attenuator. This can be accomplished by using conductive via holes. It is important to ensure that the parasitic inductance associated with the connection between the attenuator and the RF ground is as small as possible.



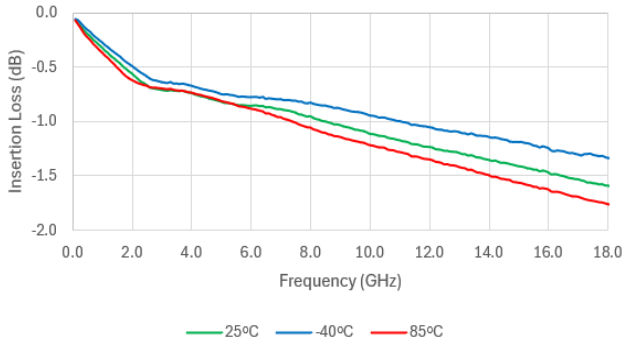
Recommended PCB Configuration



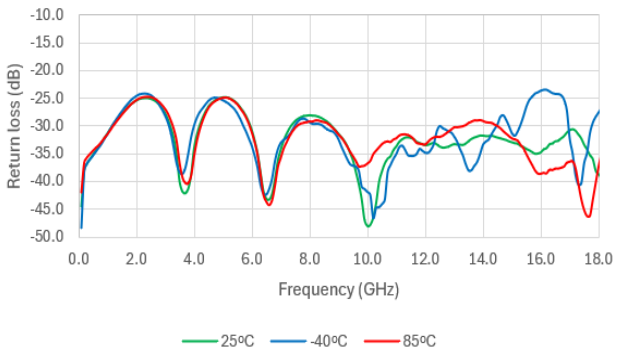
Evaluation Board

An evaluation board for the MAAT-011039 series attenuator with loose samples is available. The kit consists of a PCB with 2.4mm connectors along with loose samples. MACOM suggests a Rogers 4003 dielectric of 0.008" (0.20 mm) with 1 ounce copper. Proper grounding is always important; we suggest using 8 mil (0.20 mm) vias placed generously underneath the part.

Thru Line on Evaluation Board Insertion Loss

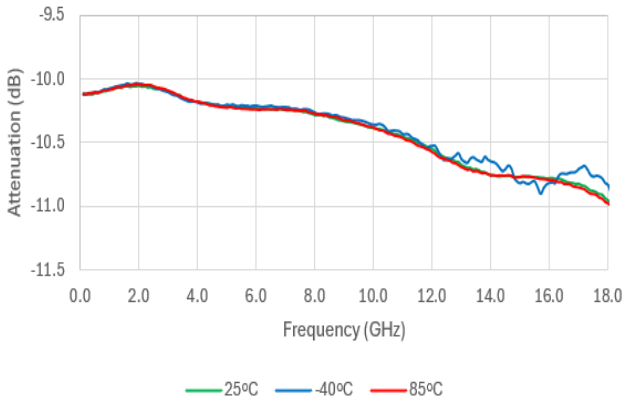


Thru Line on Evaluation Board Return Loss

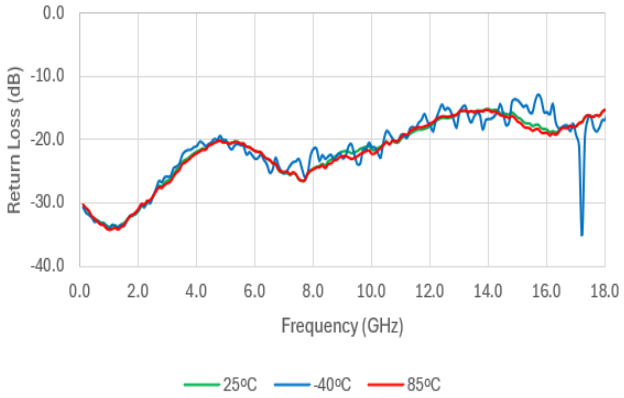


Typical Performance Curves

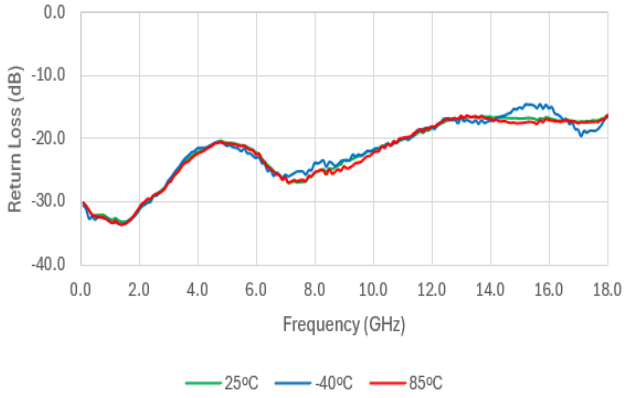
Attenuation Over Temperature



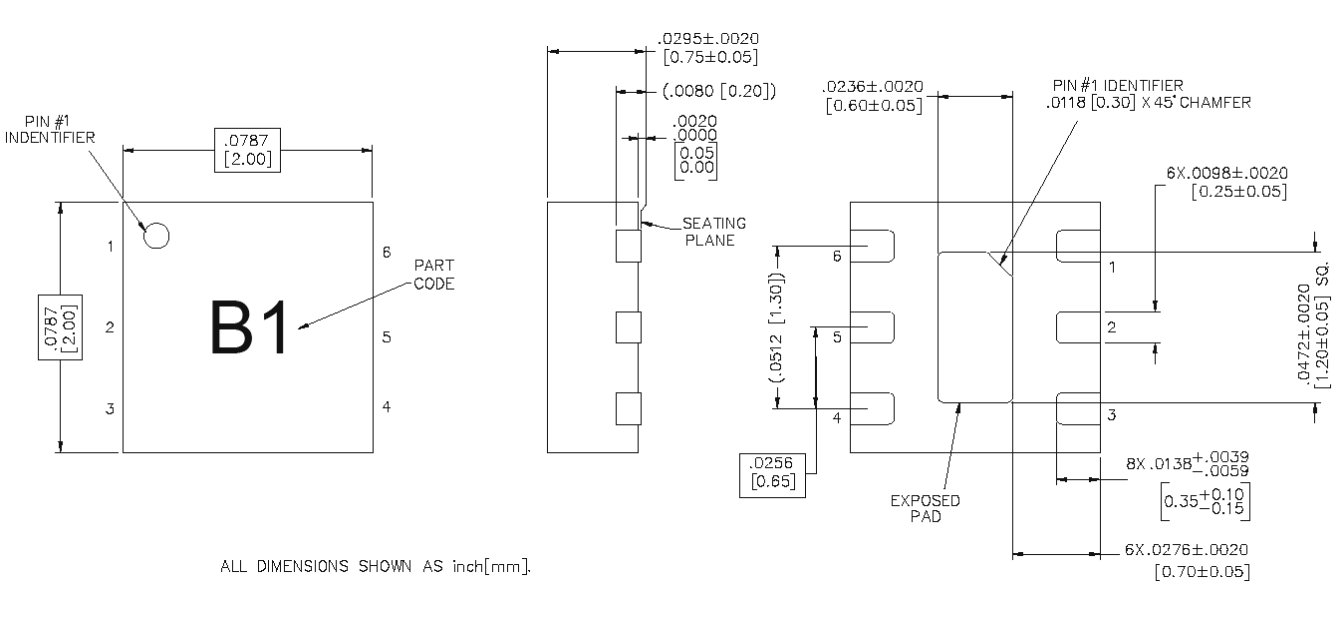
Input Return Loss Over Temperature



Output Return Loss Over Temperature



Lead-Free 2 mm 6-Lead PQFN†



† Reference Application Note S2083 for lead-free solder reflow recommendations.
Plating is NiPdAuAg.

Revision History

Rev	Date	Change Description
V1	March 2026	Production Release