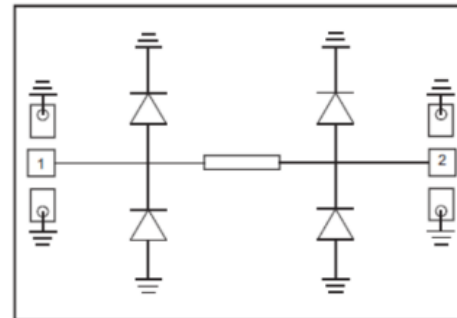


Features

- Frequency: 1-4GHz
- Insertion Loss: 0.3dB Typical
- Handles 45dBm CW Power
- Flat Leakage: <13dBm Typical
- Spike Leakage: <16dBm Typical
- Passive (no DC bias required)
- Input/Output: 50Ω
- Chip Size: 1.54 x 0.69 x 0.1mm

Functional Block Diagram



Typical Applications

- Test Instrumentation
- Microwave Radio & VSAT
- Military & Space
- Telecom Infrastructure
- Fiber Optics

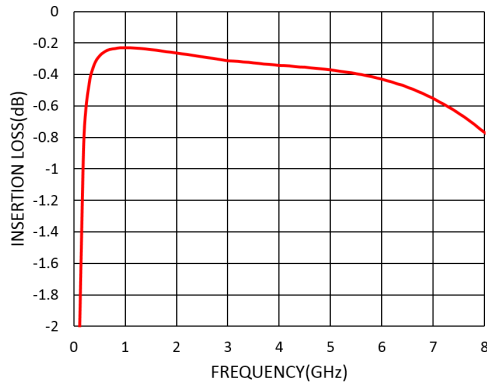
Electrical Specifications

TA = +25°C

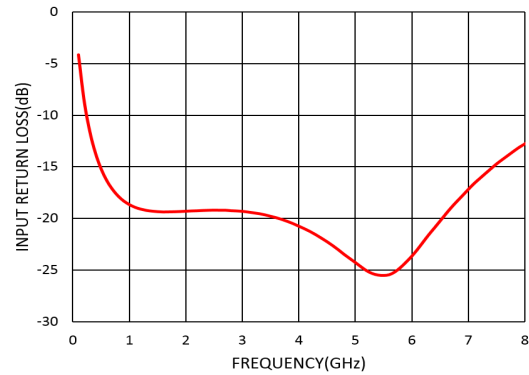
Parameters	Min.	Typ.	Max.	Units
Frequency	0.5		6	GHz
Incident Power CW			45	dBm
Insertion Loss		0.3		dB
Input Return Loss		-19		dB
Output Return Loss		-18		dB
Flat Leakage Power		<13		dBm
Spike Leakage		<16		dBm
Recovery Time		<115		ns



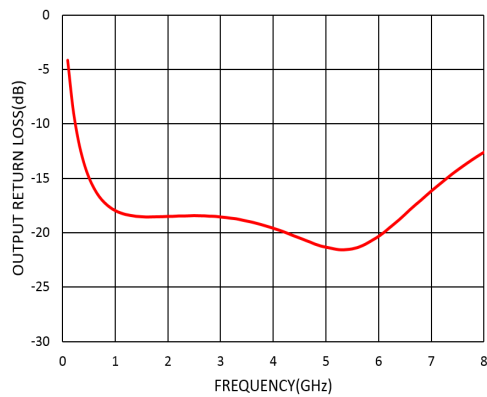
Insertion Loss vs. Frequency TA = +25°C



Input Return Loss vs. Frequency TA = +25°C



Output Return Loss vs. Frequency TA = +25°C

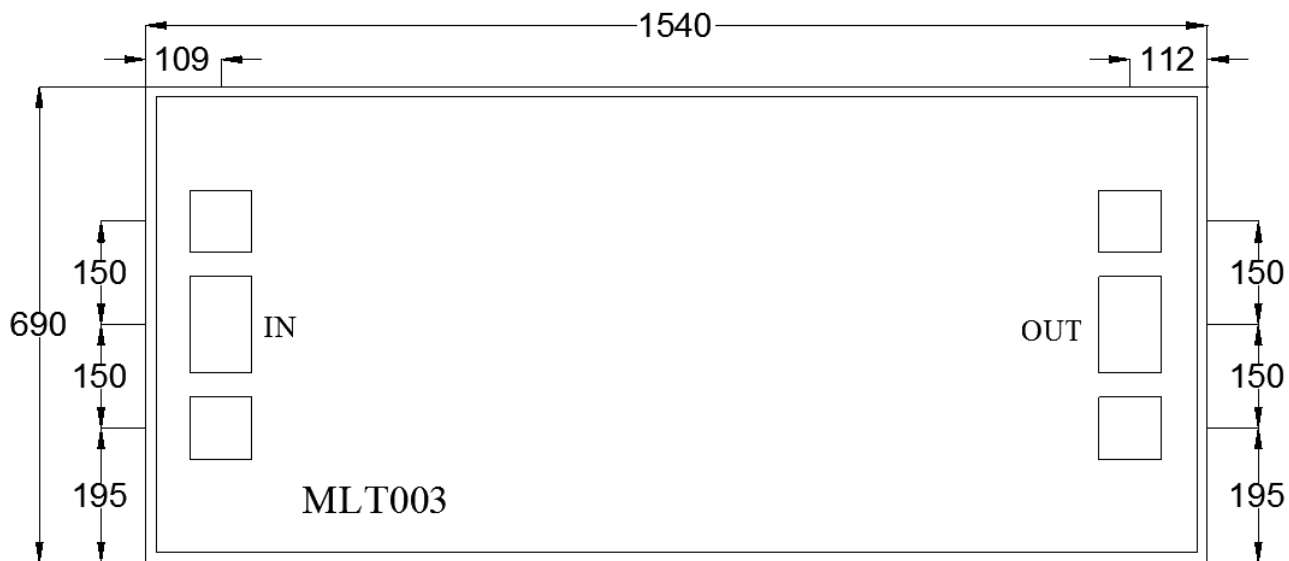


Absolute Maximum Ratings

Incident Power, CW , 50Ω, 25 °C	+45dBm
Thermal Resistance (channel to die bottom)	55°C/W
Junction Temperature to Maintain 1,000,000 Hour Mean Time to Failure (MTTF)	165°C
Maximum Channel Temperature	175°C
Operating Temperature	-55°C to +80 °C
Storage Temperature	-65°C to +150 °C


 ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

MLT300

Outline Drawing:
All Dimensions in μm

Notes:

1. Die thickness: 100μm
2. RF IN/OUT bond pad is 90*140μm²
3. Bond pad metalization: Gold
4. Backside metalization: Gold

GaAs MMIC Limiter 0.5-6GHz



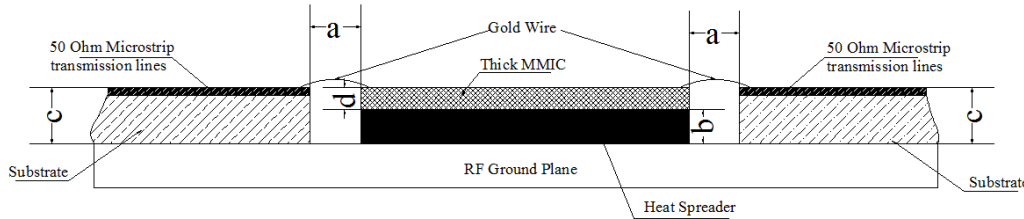
Assembly Drawing



No	Function	Description
1	RF IN	RF signal input terminal
2	RF OUT	RF signal output terminal
3	Die Bottom	Die bottom must be connected to RF and dc ground.



Mounting & Bonding Techniques for MMICs



Direct Mounting

1. Typically, the die is mounted directly on the ground plane.
2. If the thickness difference between the substrate (thickness c) and the die (thickness d) exceeds 0.05 mm (i.e., $c - d > 0.05$ mm), it is recommended to first mount the die on a heat spreader, then attach the heat spreader to the ground plane.
3. Heat Spreader Material: Molybdenum-copper (MoCu) alloy is commonly used.
4. Heat Sink Thickness (b): Should be within the range of $(c - d - 0.05$ mm) to $(c - d + 0.05$ mm).
5. Spacing (a): The gap between the bare die and the 50Ω transmission line should typically be 0.05 mm to 0.1 mm. If the application frequency is higher than 40GHz, then this gap is recommended to be 0.05mm

Wire Bonding Interconnection

The connection between the die and the 50Ω transmission line is usually made using 25 μm diameter gold (Au) wires, bonded via wedge bonding or ball bonding processes.

Die Attachment Methods

1. Conductive Epoxy:

After adhesive application, cure according to the manufacturer's recommended temperature profile.

2. Au-Sn80/20 Eutectic Bonding:

Use preformed Au-Sn80/20 solder preforms.

Perform bonding in an inert atmosphere (N_2 or forming gas: 90% N_2 + 10% H_2).

Keep the time above 320°C to less than 20 seconds to prevent excessive intermetallic formation.

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