MD408

GaAs PIN diode limiter 0.1…26 GHz

- frequency range 0.01…26 GHz
- input for 0.1 dB compression 10 dBm
- RF max power input +30 dBm
- return loss < −15 dB

Applications

- communications
- radars
- test and measurement equipment

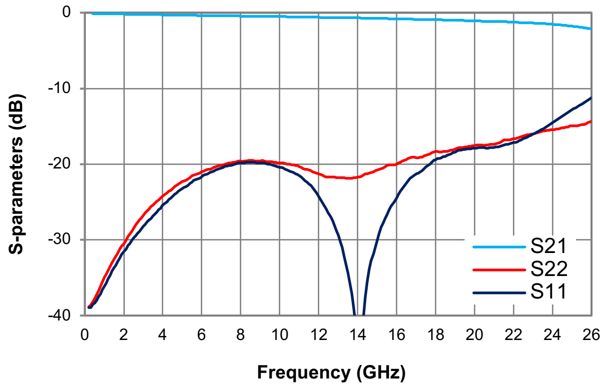
The MD405 is a wideband three-stage limiter based on GaAs Schottky diode technology designed to protect sensitive components om the Rx/Tx circuits against high power incident signals. The MD408 does not require DC bias and achieves a low insertion loss in a small form factor. The MD408 is compatible with conventional die attach methods which make it ideal for MCM and hybrid microcircuit applications.

Electrical specifications (T = 25 °C)

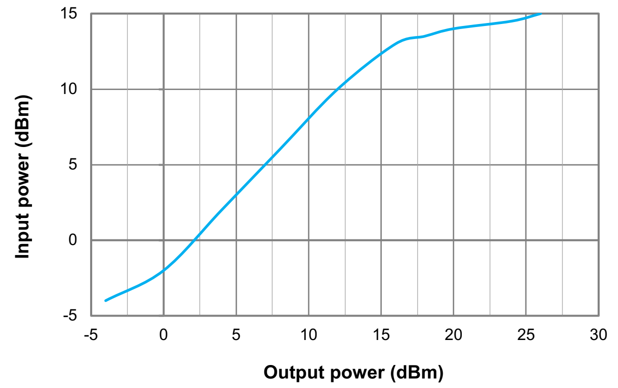
Symbol	Parameter	Min.	Typ.	Max.	Unit
ΔF	Frequency range	0.01	—	26	GHz
IL	Insertion loss	—	—	2	dB
$P_{0,1}$	Input for 0,1 dB compression	10	—	—	dBm
P_{MAX}	RF max power input	—	—	30	dBm

Typical characteristics (T = 25 °C)

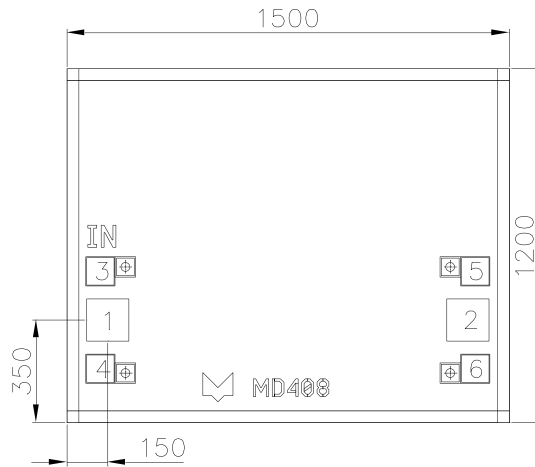
S-parameters



Dynamic characteristics



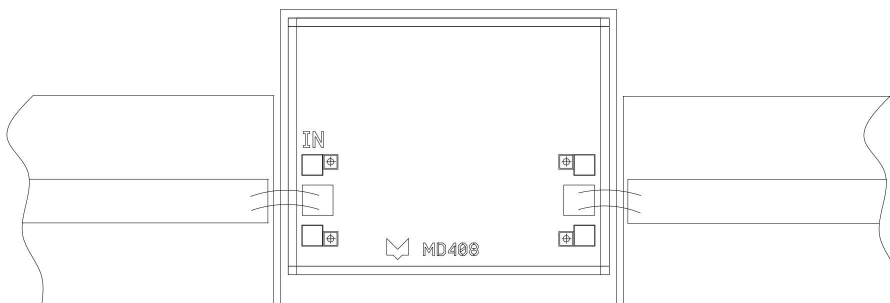
Mechanical data



- Chip size 1500 × 1200 µm (before wafer dicing);
- Die thickness 100 µm;
- Bond pad location is shown as a distance from 0-point to the center of the bond pad;
- Bond pad and backside metallization: gold;
- RF pads are 100 × 100 µm.

Pad number	Port	Description
1	IN	RF input
2	—	RF output
3	—	GND
4	—	GND
5	—	GND
6	—	GND

Assembly diagram



Application notes

Mounting
The chip is back-metallized and can be die mounted with AuSn eutectic preforms or with electrically conductive epoxy. The mounting surface should be clean and flat. The 50 Ohm Microstrip transmission lines on 0.127mm thick alumina thin film substrates are recommended for bringing RF to and from the chip (Figure 1). One way to accomplish this is to attach the 0.102 mm thick die to a 0.150 mm thick molybdenum heat spreader (molytab) which is then attached to the ground plane (Figure 2). Microstrip substrates should be located as close to the die as possible in order to minimize bond wire length. Typical die-to-substrate spacing is 0.1mm.

Wire Bonding
A recommendation for RF pads (1, 2) is two wires: diameter 25 µm, length 400 µm.

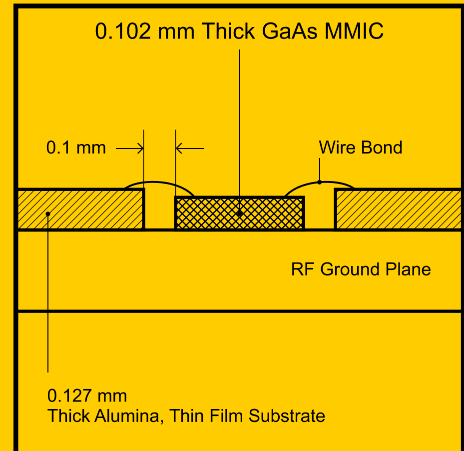


Figure 1.

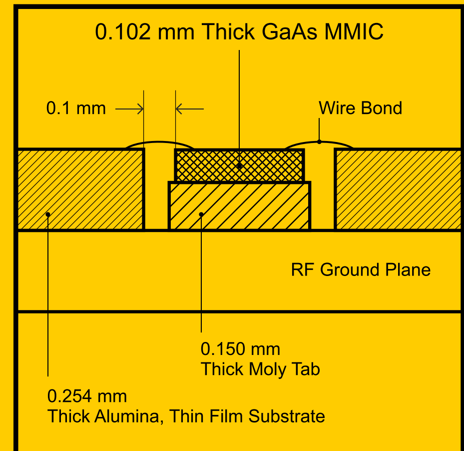


Figure 2.

Recommended ESD Management

This device is susceptible to electrostatic and mechanical damage. Dies are supplied in antistatic containers, which should be opened in cleanroom conditions at an appropriately grounded antistatic workstation. Devices need careful handling using correctly designed collets, vacuum pickups or, with care, sharp tweezers.

Micran | Kirova st., 51d, Tomsk, Russia, 634041 | +7 3822 90-00-29 | +7 3822 42-36-15 fax | mic@micran.ru | www.micran.ru