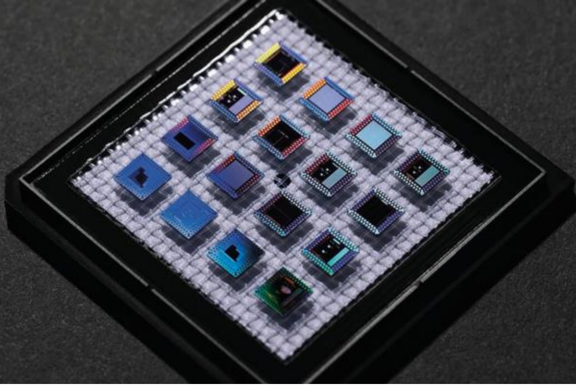


MDJ183
17-32 GHz
InP Schottky Diode Mixer

PRODUCT DESCRIPTION

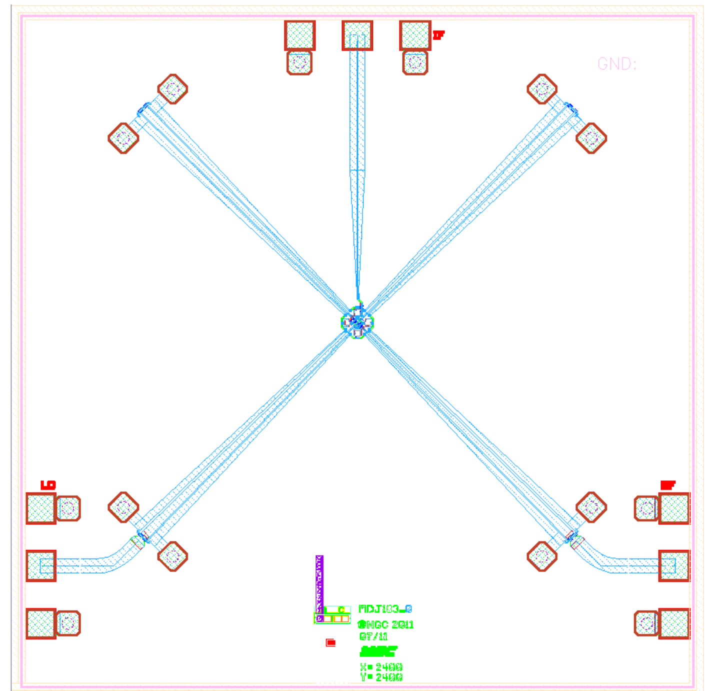
The MDJ183 is a W-Band monolithic InP Schottky diode, double balanced mixer designed for use in commercial digital radios, wireless LANs. Radar, Satcom & Test Equipment. The design requires no external bias and can be used as an upconverter and as a downconverter. To ensure rugged and reliable operation, the InP Schottky devices are fully passivated. Both bond pad and backside metallization are Ti/Au, which is compatible with conventional die attach, thermocompression, and thermosonic wire bonding assembly techniques.

APPLICATIONS

- Point-to-Point Digital Radios
- Point-to-Multipoint Digital Radios
- VSAT & SatCom
- Test equipment and sensors
- Military & Space Applications
- K-Band Automotive Radar

PRODUCT FEATURES

- Passive Double Balanced Mixer
- RF/LO: 17-32 GHz
- IF: DC-10 GHz (min)
- Downconverter Conversion Loss < 8 dB
- LO Input Power 9 dBm (Typ)
- RF & LO ports are interchangeable.
- Chip Size: 2.4 mm x 2.4 mm



X=2.4 mm; y=2.4 mm

EXPORT INFORMATION

ECCN: 5A991.h

HTS (Schedule B) code: 8542.39

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ABSOLUTE MAXIMUM RATINGS

Parameter	Value	Unit
Input LO Power	14	dBm
Assy. Temperature (30 sec)	300	°C

RECOMMENDED OPERATING CONDITIONS

Parameter	Value	Unit
Input LO Power	8-12	dBm

ELECTRICAL SPECIFICATIONS

Parameter	Min	Typical	Max	Unit
Operational LO Frequency	17		32	GHz
Operational RF Frequency	17		32	GHz
Operational IF Frequency	DC		10	GHz
Performance @ LO Power = 9 dBm				
DownConverter Conversion Loss			8	dB
UpConverter Conversion Loss			7	dB
RF to LO Isolation		20		dB

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MDJ183

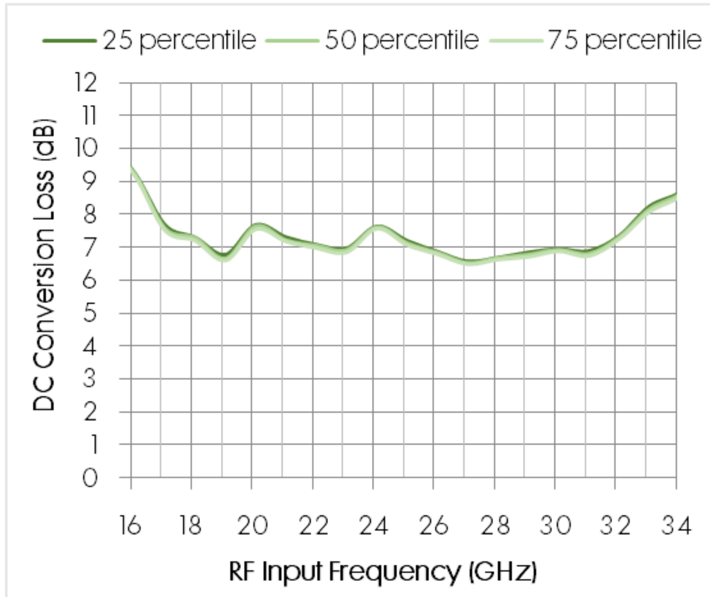
17 — 32 GHz

InP Schottky Diode Mixer

On-wafer measured Downconverter Performance Characteristics (Typical Performance at 25°C)

IF=1.1 GHz

Conversion Loss vs. Frequency



* LO Power = 9dBm

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MDJ183

17 — 32 GHz
InP Schottky Diode Mixer

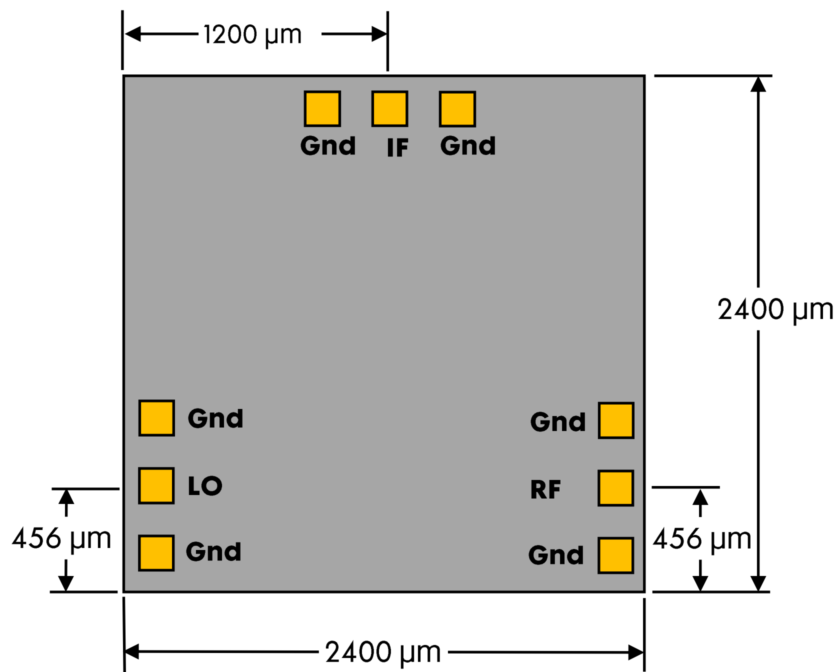
DIE SIZE AND BOND PAD LOCATIONS (NOT TO SCALE)

X = 2400 ± 25 µm

Y = 2400 ± 25 µm

RF Bond Pad = 100 x 100 ± 0.5 µm

Chip Thickness = 76 ± 5 µm



RECOMMENDED ASSEMBLY NOTES

1. Best performance obtained from use of <10 mil (long) by 3 by 0.5 mil ribbon on Ports.

MOUNTING PROCESSES

Most NG InP IC chips have a gold backing and can be mounted successfully using either a conductive epoxy or AuSn attachment. NG recommends the use of conductive epoxy due to the reduced mechanical strain placed on the chip. The two most important factors when mounting these MMICs are to provide a good thermal path and a good RF path to ground. This should be considered when determining the method for attachment.

Note: Many of the NG parts do incorporate airbridges, so caution should be used when determining the pick up tool.

CAUTION: THE IMPROPER USE OF AuSn ATTACHMENT CAN CATASTROPHICALLY DAMAGE InP

PLEASE ALSO REFER TO OUR "GaAs & InP Application Note" BEFORE HANDLING, ASSEMBLING OR BIASING THESE MMICS!

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