

MDJ191

92-97 GHz

InP Schottky Diode Mixer

PRODUCT DESCRIPTION

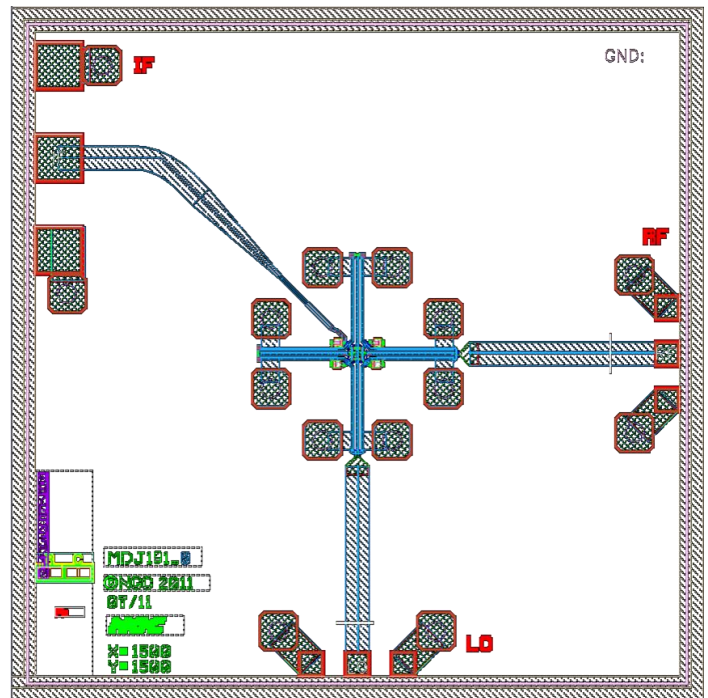
The MDJ191 is a W-Band monolithic InP Schottky diode, double balanced mixer designed for use in commercial digital radios, wireless LANs, Radar, Satcom & Test Equipment. The design requires no external bias and can be used as an upconverter and as a downconverter. To ensure rugged and reliable operation, 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

- Short Haul / High Capacity Radios
- Radar
- Wireless LAN
- Test equipment and sensors
- Military & Security Applications

PRODUCT FEATURES

- Passive Double Balanced Mixer
- RF/LO: 92-97 GHz
- IF: DC-20 GHz (min)
- Downconverter Conversion Loss < 8.5 dB
- LO Input: 92-97 GHz @ 7-9 dBm
- RF & LO ports are interchangeable
- Chip Size: 1.5 mm x 1.5 mm



X=1.5 mm; y=1.5 mm

EXPORT INFORMATION

ECCN: 5A991.h

HTS (Schedule B) code: 8542.39



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MDJ191

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ABSOLUTE MAXIMUM RATINGS

Parameter	Value	Unit
Input LO Power	13	dBm
Assy. Temperature (30 sec)	300	°C

RECOMMENDED OPERATING CONDITIONS

Parameter	Value	Unit
Input LO Power	7-11	dBm

ELECTRICAL SPECIFICATIONS

Parameter	Min	Typical	Max	Unit
Operational LO Frequency	92		97	GHz
Operational RF Frequency	92		97	GHz
Operational IF Frequency	DC		20	GHz
Performance @ LO Power = 9 dBm				
DownConverter Conversion Loss		8	8.5	dB
UpConverter Conversion Loss		7	7.5	dB
RF to LO Isolation		20		dB

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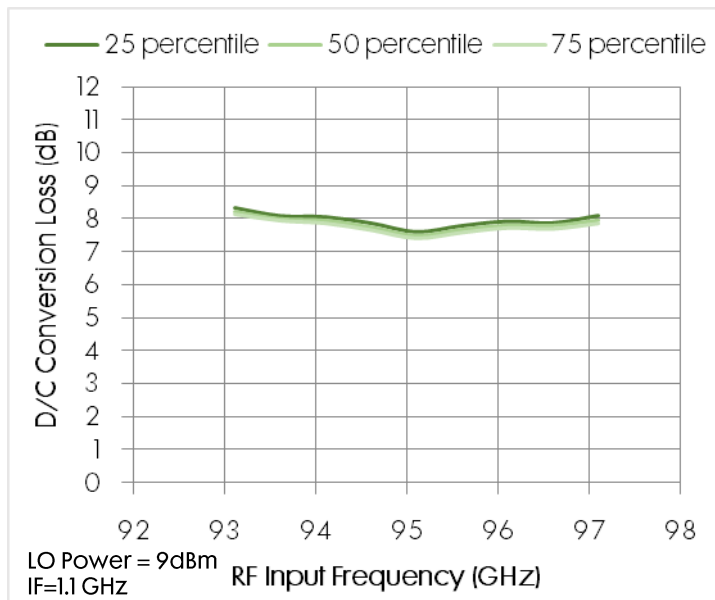
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On-wafer measured Downconverter Performance Characteristics (Typical Performance at 25°C)

Conversion Loss vs. Frequency



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92 –97 GHz

InP Schottky Diode Mixer

DIE SIZE AND BOND PAD LOCATIONS (NOT TO SCALE)

X = 1500 ± 25 μm

Y = 1500 ± 25 μm

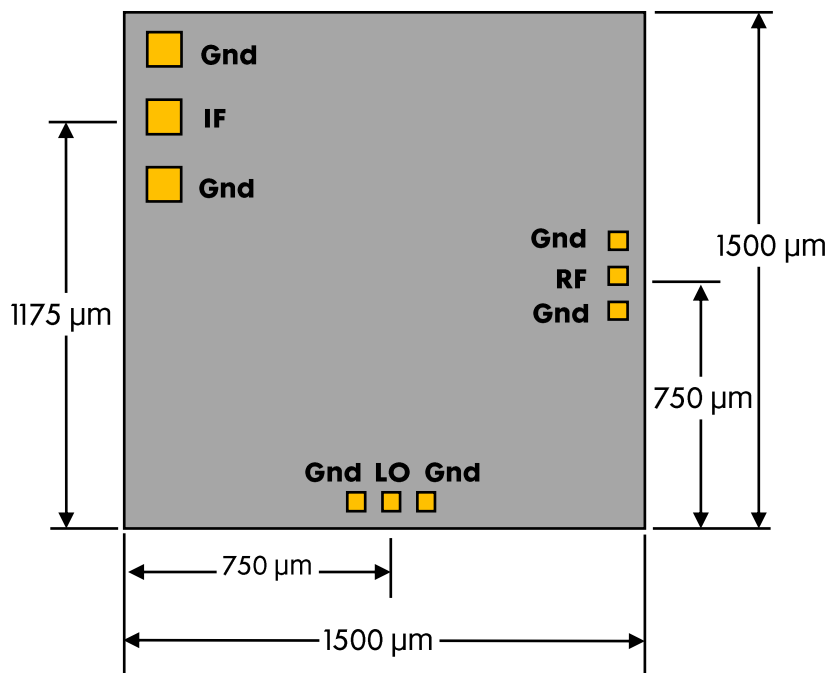
IF Bond Pad = 100 x 100 ± 0.5 μm

RF & LO Bond Pads = 50 x 50 ± 0.5 μm

Chip Thickness = 76 ± 5 μm

RECOMMENDED ASSEMBLY NOTES

1. Best performance obtained from use of <6 mil (long) by 1.5 by 0.5 mil ribbon on RF & LO ports.
2. Best performance obtained from use of <10 mil (long) by 3 by 0.5 mil ribbon on IF Port.



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 CHIPS.

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

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