

X=900 μm Y=1000 μm

Features

- ◆ RF frequency: 54 to 64 GHz
- ◆ Conversion loss: 8 dB, (typ.)
- ◆ Functions as an up- or down-converter
- ◆ No External Bias Required
- ◆ Star mixer topology
- ◆ Die Size: 0.9 sq. mm

Performance Characteristics (T<sub>OP</sub> = 25°C)

| Specification   | Min | Typ | Max | Unit |
|-----------------|-----|-----|-----|------|
| RF Frequency    | 54  |     | 64  | GHz  |
| LO Frequency    | 54  |     | 64  | GHz  |
| IF Frequency    | DC  |     | 5   | GHz  |
| LO Power        |     | 13  |     | dBm  |
| Input P1 dB     |     | 4   |     | dBm  |
| Input IP3       |     | 13  |     | dBm  |
| Conversion Loss |     |     |     |      |
| Upconverter     |     | 8   | 11  | dB   |
| Downconverter   |     | 9   | 11  | dB   |
| RF Return Loss  | 10  | 12  |     | dB   |
| IF Return Loss  | 10  | 12  |     | dB   |
| Isolation       |     |     |     |      |
| LO-RF           |     | 30  |     | dB   |
| LO-IF           |     | 25  |     | dB   |
| RF-IF           |     | 25  |     | dB   |

Applications

- ◆ Short Haul / High Capacity Links
- ◆ Wireless LANs

Product Description

The MDB169 is a monolithic HBT schottky diode star mixer designed for use in commercial digital radios and wireless LANs. The design requires no external bias and can be used as an upconverter as well as a downconverter. To ensure rugged and reliable operation, HBT 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.

Absolute Maximum Ratings (T<sub>OP</sub> = 25°C)

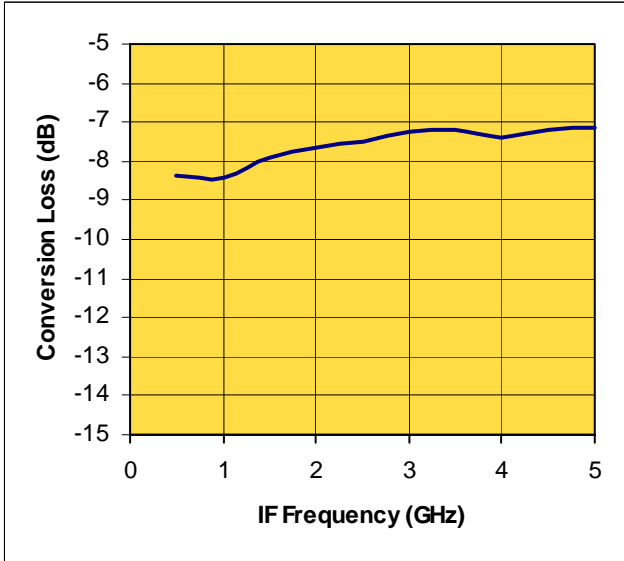
| Parameter                      | Min | Max | Unit |
|--------------------------------|-----|-----|------|
| Assy. Temperature (60 seconds) |     | 300 | °C   |

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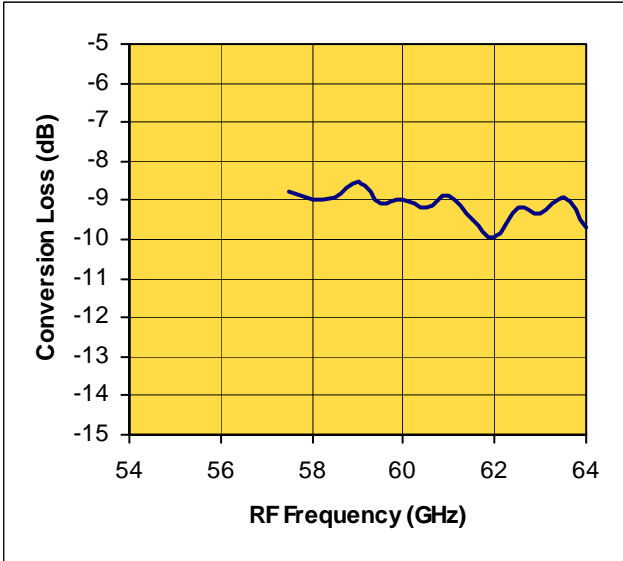
Measured Performance Characteristics ( $T_{OP} = 25^{\circ}C$ )

**Upconverter Conversion Loss**



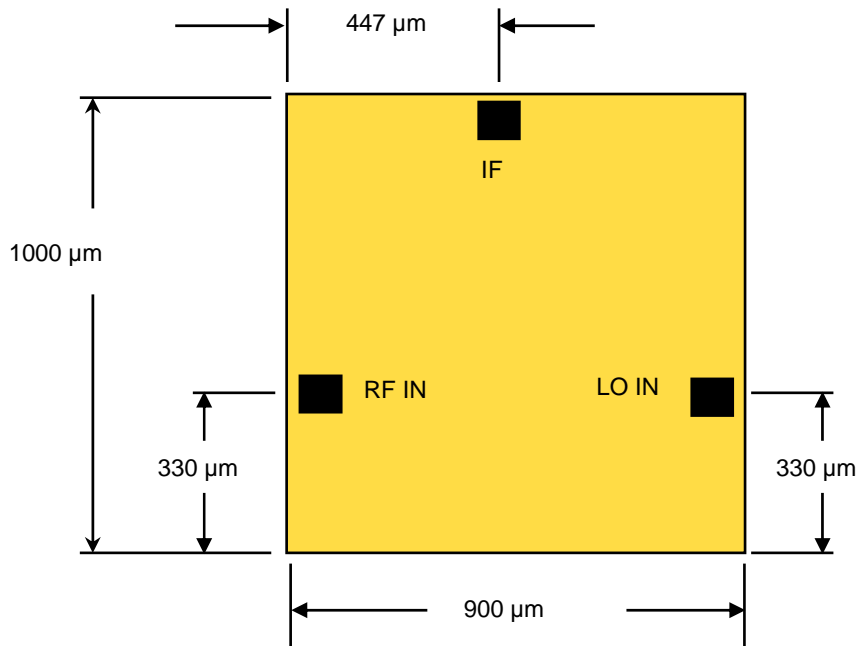
RF=59.5-64 GHz, LO=59 GHz, IF=0.1-5 GHz, PLO=+13 dBm, PRF=-10 dBm

**Downconverter Conversion Loss**



RF=57.5-64 GHz, LO=55.5-62 GHz, IF=2 GHz, PLO=+13dBm, PRF=-5 dBm

Die Size and Bond Pad Locations



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