

GaAs MMIC DOUBLE-BALANCED MIXER, 18 - 32 GHz

Typical Applications

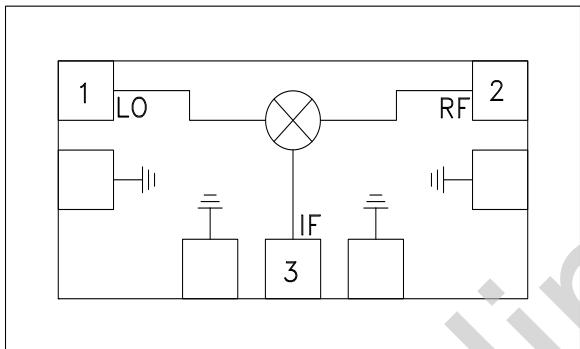
The HMC292A is ideal for:

- Microwave Point-to-Point Radios
- LMDS
- SATCOM

Features

- Input IP3: +19 dBm
- LO / RF Isolation: 38 dB
- Passive: No DC Bias Required
- Small Size: 1.04 x 0.58 x 0.1 mm

Functional Diagram



General Description

The HMC292A chip is a miniature passive GaAs MMIC double-balanced mixer which can be used as an upconverter or downconverter from 18 - 32 GHz in a small chip area of 0.66 mm². Excellent isolations are provided by on-chip baluns, which require no external components and no DC bias. All data is measured with the chip in a 50 ohm test fixture connected via 0.076 mm (3 mil) ribbon bonds of minimal length <0.31 mm (<12 mils).

Electrical Specifications, $T_A = +25^\circ C$

| Parameter | LO = +13 dBm | | | LO = +13 dBm | | | Units |
|-------------------------------|--------------|------|------|--------------|------|------|-------|
| | Min. | Typ. | Max. | Min. | Typ. | Max. | |
| Frequency Range, RF & LO | 20 - 30 | | | 18 - 32 | | | GHz |
| Frequency Range, IF | DC - 8 | | | DC - 8 | | | GHz |
| Conversion Loss | | 7.5 | 9.5 | | 9 | 11 | dB |
| Noise Figure (SSB) | | 7.5 | 9.5 | | 9 | 11 | dB |
| LO to RF Isolation | 30 | 38 | | 30 | 38 | | dB |
| LO to IF Isolation | 31 | 40 | | 28 | 40 | | dB |
| RF to IF Isolation | 20 | 24 | | 17 | 24 | | dB |
| IP3 (Input) | 17 | 19 | | 15 | 19 | | dB |
| IP2 (Input) | 45 | 50 | | 42 | 50 | | dBm |
| 1 dB Gain Compression (Input) | 8 | 12 | | 8 | 12 | | dBm |

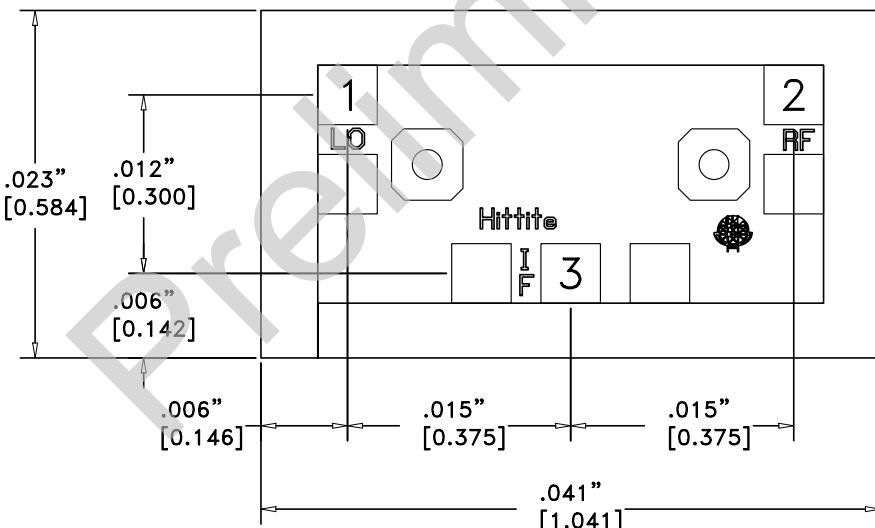
**GAAs MMIC DOUBLE-BALANCED
MIXER, 18 - 32 GHz**
Absolute Maximum Ratings

| | |
|---|----------------|
| RF / LO Total Power | +24 dBm |
| IF Input | +16 dBm |
| Channel Temperature | 150 °C |
| Continuous Pdiss (Ta=85 °C) (derate 4 mW/°C above 85 °C) | 260 mW |
| Thermal Resistance (R_{Th}) (junction to die bottom) | 250 °C/W |
| Storage Temperature | -65 to +150 °C |
| Operating Temperature | -55 to +85 °C |
| ESD Sensitivity (HBM) | Class 1C |

MxN Spurious Outputs

| mRF | nLO | | | | |
|-----|-----|----|----|------|------|
| | 0 | 1 | 2 | 3 | 4 |
| 0 | xx | 11 | | | |
| 1 | 17 | 0 | 39 | | |
| 2 | | 70 | 77 | 76 | |
| 3 | | | 93 | 69 | 86 |
| 4 | | | | >110 | >110 |

RF = 21 GHz @ -10 dBm
LO = 22 GHz @ +13 dBm
All values in dBc below the IF power level.


**ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS**
Outline Drawing

NOTES:

1. ALL DIMENSIONS ARE IN INCHES [MM].
2. DIE THICKNESS IS .004".
3. TYPICAL BOND PAD IS .004" SQUARE.
4. BACKSIDE METALLIZATION: GOLD.
5. BOND PAD METALLIZATION: GOLD.
6. BACKSIDE METAL IS GROUND.
7. CONNECTION NOT REQUIRED FOR UNLabeled BOND PADS.