GaAs MMIC DOUBLE-BALANCED MIXER, 25 - 40 GHz

Typical Applications

The HMC329A is ideal for:

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

Features

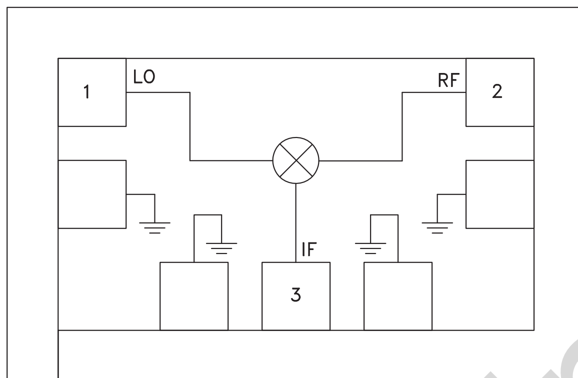
Passive: No DC Bias Required

Input IP3: +19 dBm

LO/RF Isolation: 42 dB

Small Size: 0.85 x 0.55 x 0.1 mm

Functional Diagram



General Description

The HMC329A chip is a miniature passive double balanced mixer which can be used as an upconverter or downconverter from 25-40 GHz in a small chip area of 0.85 x 0.55 mm. Excellent isolations are provided by on-chip baluns, and the chip requires no external components and no DC bias. Measurements were made with the chip mounted and ribbon bonded into in a 50-ohm microstrip test fi xture that contains 5-mil alumina substrates between the chip and K-connectors. Measured data includes the parasitic effects of the assembly. RF connections to the chip were made with 0.076 mm (3-mil) ribbon bond with minimal length <0.31mm (<12 mil).

Preliminary

Electrical Specifications, T_A = +25° C

Parameter	LO = +13 dBm, IF = 1 GHz			Units
	Min.	Typ.	Max.	
Frequency Range, RF & LO	25 - 40			GHz
Frequency Range, IF	DC - 8			GHz
Conversion Loss		9.5	11.5	dB
Noise Figure (SSB)		9.5	11.5	dB
LO to RF Isolation	38	42		dB
LO to IF Isolation	25	35		dB
RF to IF Isolation	21	28		dB
IP3 (Input)	16	19		dBm
IP2 (Input)	45	55		dBm
1 dB Compression (Input)	8	11		dBm

* Unless otherwise noted, all measurements performed as downconverter, IF= 1 GHz.

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Application Support: Phone: 1-800-ANALOG-D

Absolute Maximum Ratings

RF / IF Input	+13 dBm
LO Drive	+27 dBm
IF DC Current	±2 mA
Storage Temperature	-65 to +150 °C
Operating Temperature	-55 to +85 °C
ESD Sensitivity (HBM)	Class 1B

ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

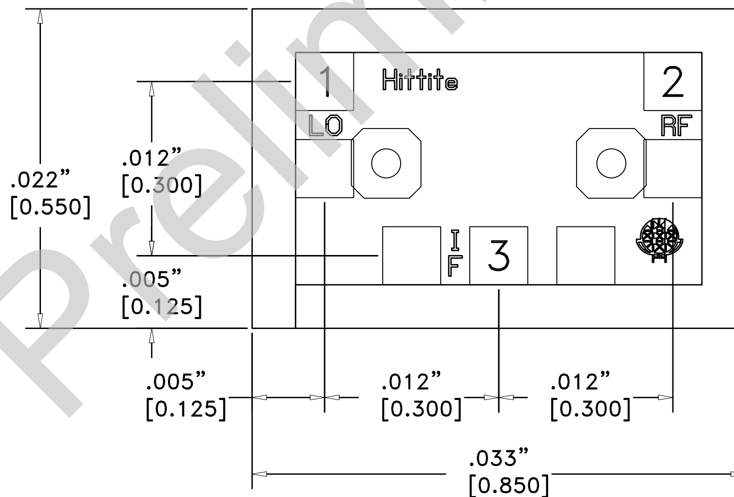
MxN Spurious Outputs as a Down Converter

	nLO				
mRF	0	1	2	3	4
0	xx	7			
1	19	0	41		
2		69	57	67	
3			74	69	71
4				74	74

RF = 31 GHz @ -10 dBm
LO = 32 GHz @ +13 dBm
All values in dBc below IF output power level.

Preliminary

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.

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