

32–37 GHz GaAs MMIC Ring Hybrid Mixer



AM035N4-00

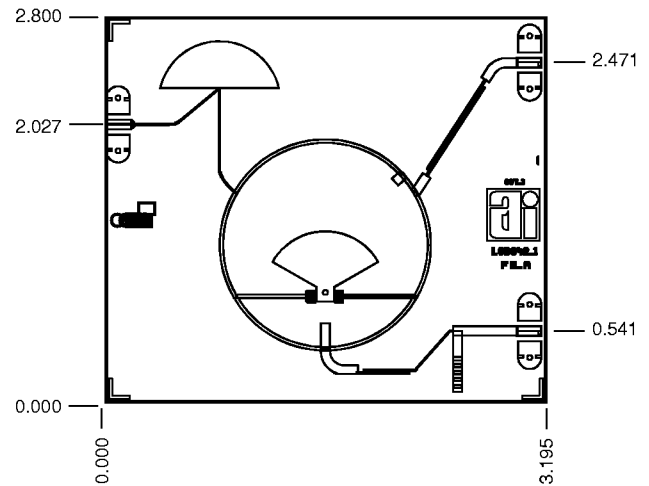
Features

- Low Conversion Loss, 6.0 dB
- Low LO Power Requirement, 9 dBm
- High LO to RF Isolation, 28 dB
- No DC Bias Required

Description

Alpha's ring hybrid GaAs Schottky diode mixer has a typical conversion loss of 6.0 dB at an LO power level as low as 9 dBm over the band 32–37 GHz. The chip uses Alpha's proven Schottky diode technology, and is based upon MBE layers for the highest uniformity and repeatability. The diodes employ surface passivation to ensure a rugged, reliable part with through-substrate via holes and gold-based backside metallization to facilitate an epoxy die attach process. All chips are screened for DC diode parameters and lot samples are RF measured to guarantee performance.

Chip Outline



Dimensions indicated in mm.
All pads are ≥ 0.07 mm wide.
Chip thickness = 0.1 mm.

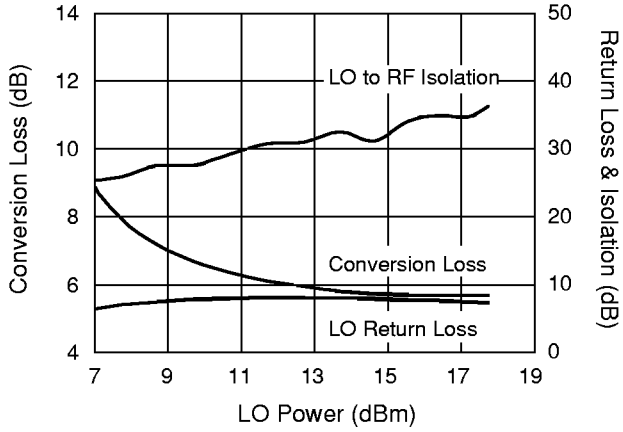
Absolute Maximum Ratings

Characteristic	Value
Operating Temperature	-55°C to +125°C
Storage Temperature	-65°C to +150°C
Total Input Power (RF + LO)	20 dBm

Electrical Specifications at 25°C

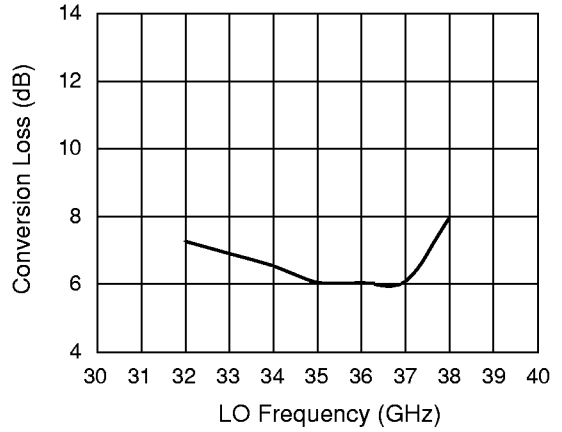
Parameter	Symbol	Min.	Typ.	Max.	Unit
RF and LO Frequency Range	F_{RF}, F_{LO}	32		37	GHz
IF Frequency Range	F_{IF}	0		3	GHz
LO Power Level	P_{LO}	9		19	dBm
Conversion Loss	L_C		6	8	dB
RF and LO Return Loss	RL_{RF}, RL_{LO}	6	9		dB
LO to RF Isolation	ISO_{LO-RF}	25	28		dB
LO to IF Isolation	ISO_{LO-IF}	25	35		dB
RF Input 1 dB Compression Point	$P_{1\text{ dB}}$	5	10		dBm

Typical Performance Data



Performance vs. LO Power

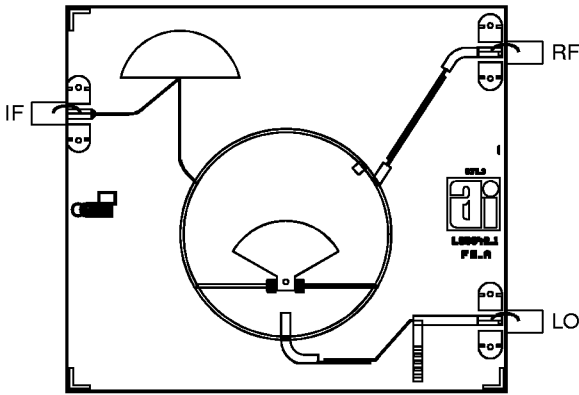
$F_{RF} = 34.5 \text{ GHz}$, $F_{LO} = 35 \text{ GHz}$, $P_{RF} = -10 \text{ dBm}$



Performance vs. LO Frequency

$F_{RF} = F_{LO} - 1.5 \text{ GHz}$, $P_{LO} = 12 \text{ dBm}$

Wire Bonding Configurations



Circuit Schematic

