

Performance characteristics

- RF/LO band: 24GHz ~ 40GHz
- IF band: DC-10GHz
- Frequency conversion loss: 8.5 dB
- RF-IF isolation: 18dB
- LO-IF isolation: 50dB
- LO-RF isolation: 45dB
- Local oscillator power: 13dBm
- Package size: 3 × 3mm, QFN, 12L

Overview

CW329SP3 is a GaAs MMIC passive double balanced mixer, with RF/LO frequency covering 24-40GHz, IF frequency covering DC-10GHz, conversion loss less than 9dB, RF-IF isolation greater than 15dB, LO-IF isolation greater than 35dB, LO-RF isolation greater than 42dB, and typical LO input power of 13dBm.

Typical application

- Base station communication
- Wireless infrastructure
- Automotive electronics
- Instruments and meters

FUNCTIONAL BLOCK DIAGRAM

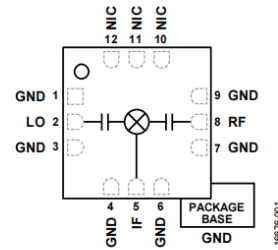


Figure 1.

Electrical performance table (TA=+25 °C, IF=1GHz, LO=13dBm)

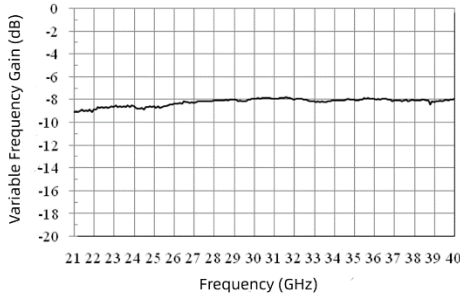
Indicators	Minimum value	Typical value	Maximum value	Unit
Radio frequency	24-40			GHz
Local oscillator frequency	24-40			GHz
Intermediate frequency	DC-10			GHz
Frequency conversion loss	8	8.5	9	dB
RF-IF isolation	15	18	22	dB
LO-IF isolation	35	50	64	dB
LO-RF isolation	42	45	48	dB
P1dB (input)	11	12	13	dBm

Use parameters (exceeding any of the above maximum limits may cause permanent damage)

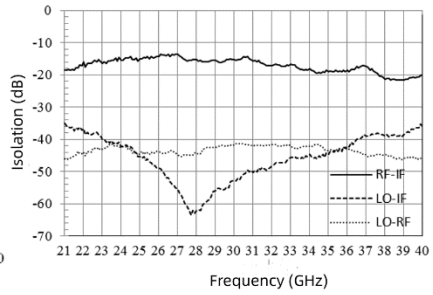
RF/IF power	25dBm
Local oscillator power	23dBm
Storage temperature	-65 °C-150 °C
Operating temperature	-55 °C-125 °C

Test curve

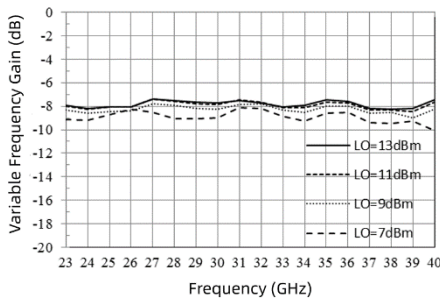
Frequency conversion loss curve @ LO=13dBm, IF frequency 1GHz



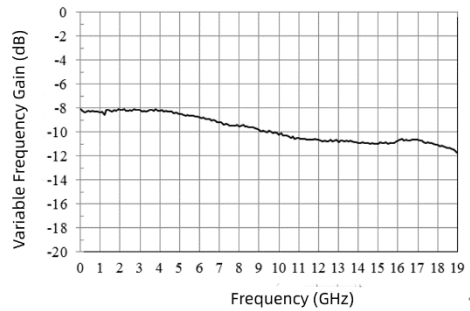
Isolation @ LO=13dBm, IF 1GHz



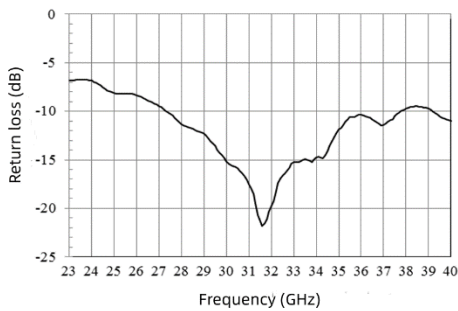
Frequency conversion loss curve @ IF frequency 1GHz



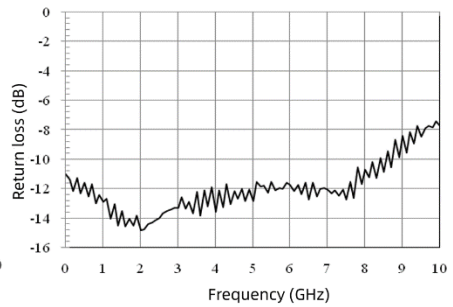
IF bandwidth @ LO=40GHz, LO=13dBm



RF return loss



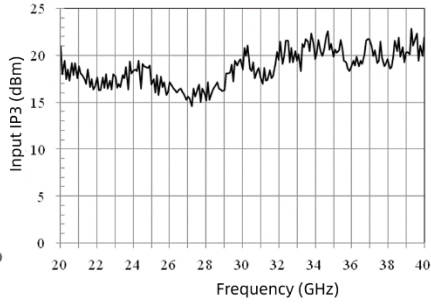
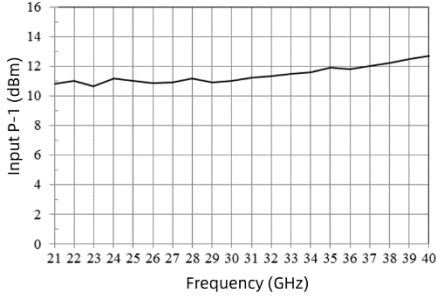
IF return loss



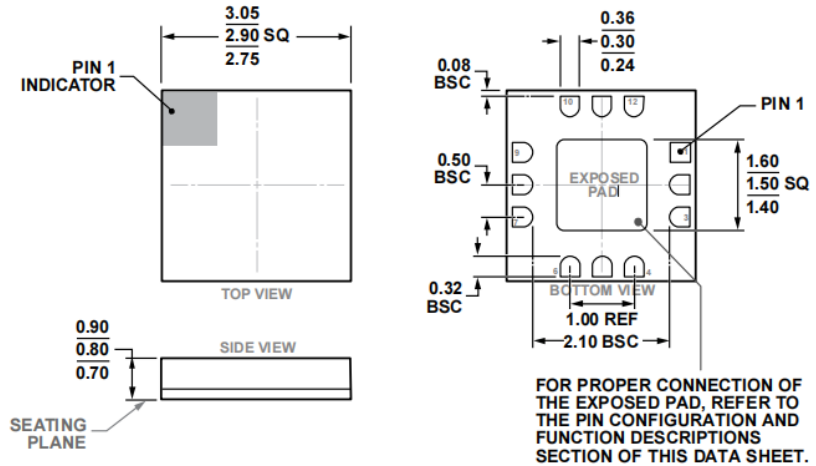
Test curve

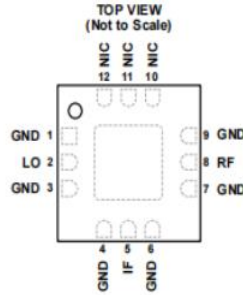
Enter P-1 @ L0=13dBm

Enter IP3 @ L0=13dBm



OUTLINE DIMENSIONS





- NOTES**
1. NOT INTERNALLY CONNECTED. THESE PINS CAN BE CONNECTED TO RF/DC GROUND. PERFORMANCE IS NOT AFFECTED.
 2. EXPOSED PAD. THE EXPOSED PAD MUST BE CONNECTED TO RF/DC GROUND.

Figure 2. Pin Configuration

Table 4. Pin Function Descriptions

Pin No.	Mnemonic	Description
1, 3, 4, 6, 7, 9	GND	Ground. These pins must be connected to RF/dc ground. See Figure 3 for the interface schematic.
2	LO	LO Port. This pin is ac-coupled and matched to 50 Ω. See Figure 4 for the interface schematic.
5	IF	IF Port. This pin is dc-coupled. For applications not requiring operation to dc, dc block this port externally using a series capacitor of a value chosen to pass the necessary IF frequency range. For operation to dc, this pin must not source or sink more than 3 mA of current. Otherwise, die malfunction or die failure may result. See Figure 5 for the interface schematic.
8	RF	RF Port. This pin is ac-coupled and matched to 50 Ω. See Figure 6 for the interface schematic.
10, 11, 12	NIC	Not Internally Connected. Connect these pins to RF/dc ground. Performance is not affected.
	EPAD	Exposed Pad. The exposed pad must be connected to RF/dc ground.

INTERFACE SCHEMATICS



Figure 3. GND Interface Schematic

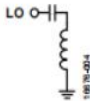


Figure 4. LO Interface Schematic

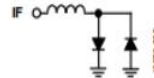


Figure 5. IF Interface Schematic

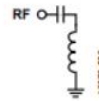


Figure 6. RF Interface Schematic