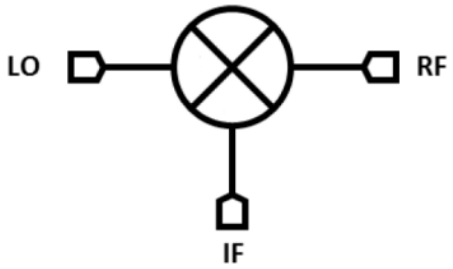
Features

- RF/LO Frequency: 2-22 GHz
- IF Frequency: DC-3.5 GHz
- Conversion Loss: 8.0 dB@+13dBm LO input
- LO-RF Isolation: 50 dB
- LO-IF Isolation: 30 dB
- RF-IF Isolation: 32 dB
- Local Oscillator Frequency: +13dBm~+15 dBm
- Die Size: 1.45 x 1.25 x 0.1 mm

Functional Block Diagram



Typical Applications

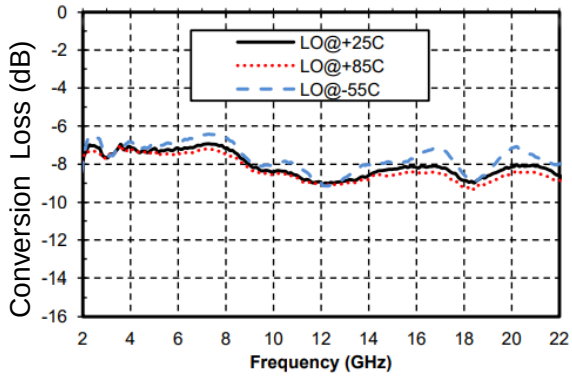
- Test Instrumentation
- Microwave Radio & VSAT
- Military & Space
- Telecom Infrastructure
- Fiber Optics

Electrical Specifications

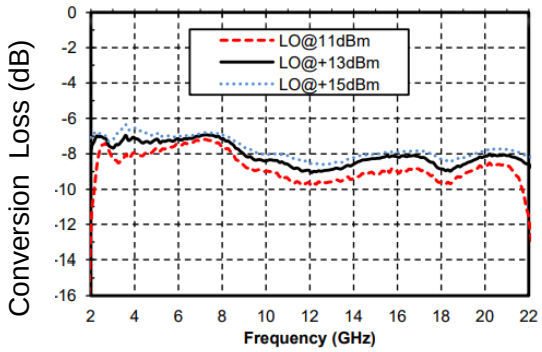
TA = +25°C, IF=100MHz, LO=+13dBm

Parameters	Min.	Typ.	Max.	Units
RF Frequency		2-22		GHz
Local Oscillator Frequency		2-22		GHz
IF Frequency		DC-3.5		GHz
Conversion Loss	-	8	-	dB
Isolation “LO to RF”	-	50	-	dB
Isolation “LO to IF”	-	30	-	dB
Isolation “RF to IF”	-	32	-	dB
RF Input P1dB Compression	-	11		dBm
IIP3		18		dBm
Parameters above are intended for down-conversion test. IF frequency is 0.1GHz; local oscillator power +13dBm.				

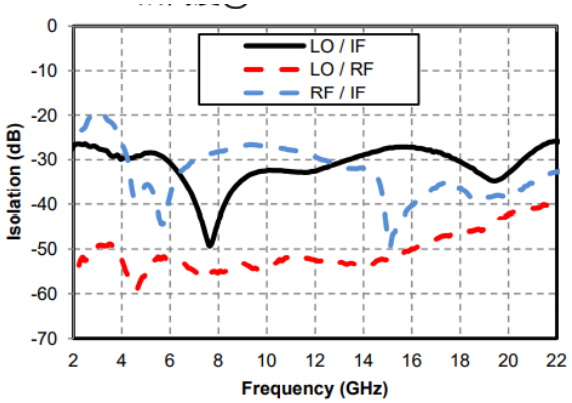
Down Conversion Loss vs. Temperature @ LO=+13dBm



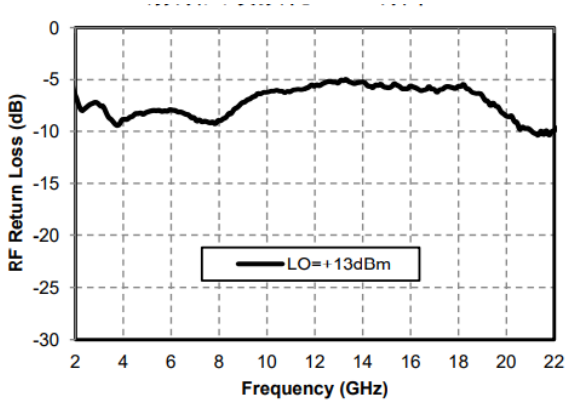
Down Conversion Loss vs. LO Power



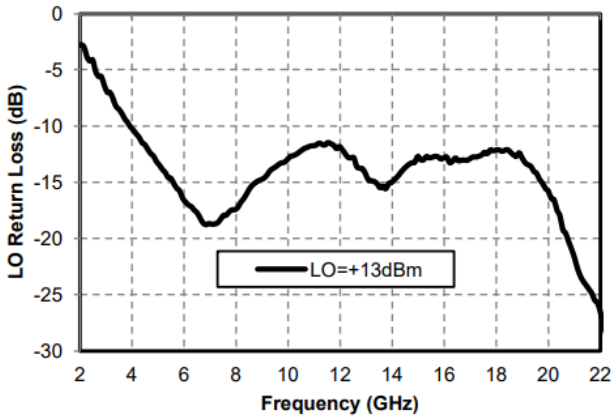
Isolation @ LO=+13dBm



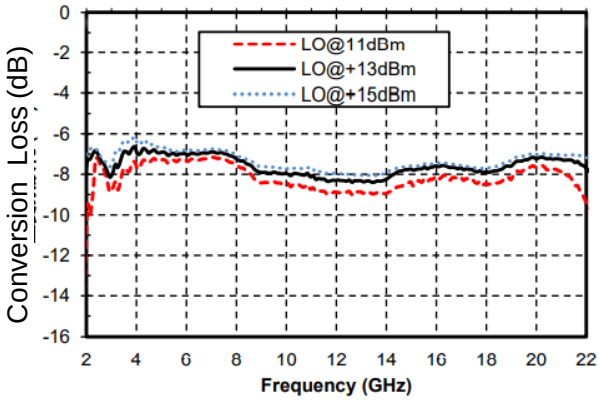
RF Return Loss vs. Frequency



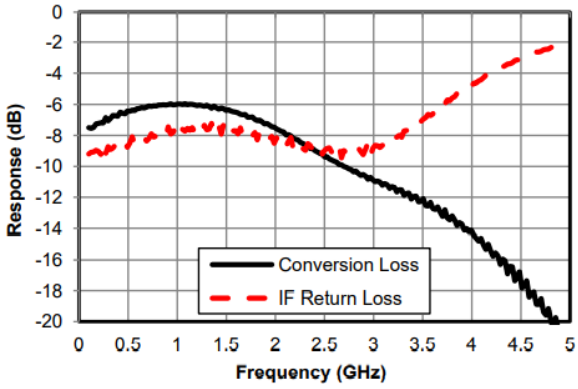
LO Return Loss vs. Frequency



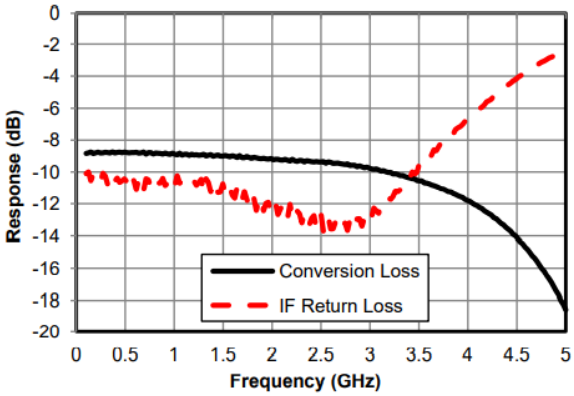
Up Conversion Loss vs. LO Power



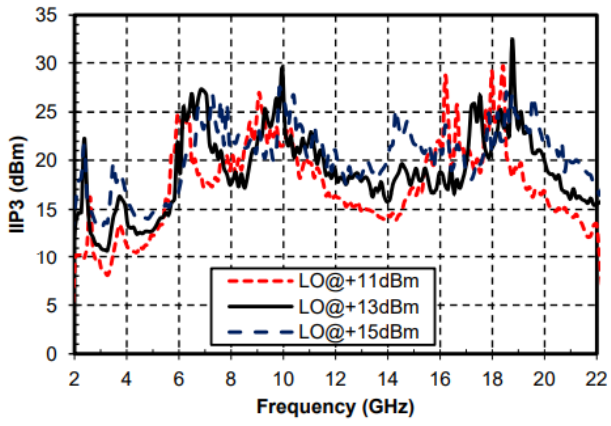
Down Conversion IF Bandwidth, Return Loss @ LO=2G,13dBm



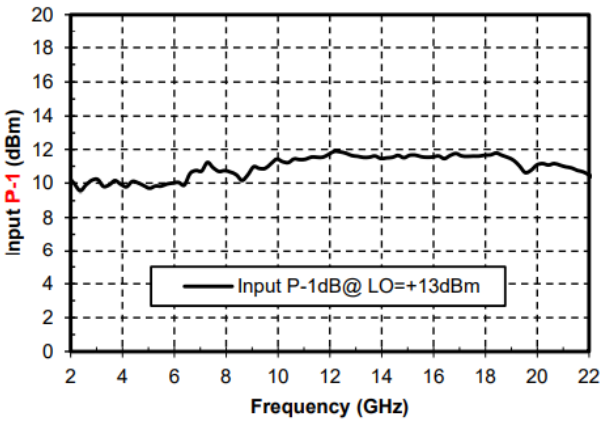
Down Conversion IF Bandwidth, Return Loss @ LO=22G,13dBm



IIP3



P-1 vs. Frequency



Local oscillator harmonic leakage

	nLO (RF port) dBc		
LO(GHz) 13dbm	1	2	3
2	55	42	61
4	53	39	58
6	52	42	54
8	57	61	58
10	56	65	66
12	56	58	66
14	56	62	55
16	51	51	67
18	48	50	-
20	44	54	-
22	42	50	-

Down conversion combined spurious suppression

	nLO				
mRF	0	1	2	3	4
0	×××	-2	39	13	41
1	29	0	34	35	35
2	74	50	54	47	75
3	66	70	75	54	66
4	89	82	104	87	83

Test conditions: RF=5.1GHz@-10dBm, LO=5GHz@13dBm, all values are relative values of 1*RF-1*LO(P_IF, dBm) in dBc.

	nLO				
mRF	0	1	2	3	4
0	×××	2	35	13	45
1	18	0	36	26	31
2	69	67	73	65	75
3	76	72	82	68	87
4	/	/	/	110	101

Test conditions: RF=10.1GHz@-10dBm, LO=10GHz@13dBm, all values are relative values of 1*RF-1*LO(P_IF, dBm) in dBc.

	nLO				
mRF	0	1	2	3	4
0	×××	-4	30	17	/
1	38	0	41	34	50
2	71	66	68	64	85
3	87	85	80	63	100
4	/	/	/	104	101

Test conditions: RF=15.1GHz@-10dBm, LO=15GHz@13dBm, all values are relative values of 1*RF-1*LO(P_IF, dBm) in dBc.

Up conversion combined spurious suppression

	nLO				
mIF	0	1	2	3	4
0	×××	21	6	24	19
1	17	0	27	13	38
2	51	40	61	50	49
3	69	59	75	65	71
4	84	95	82	85	82

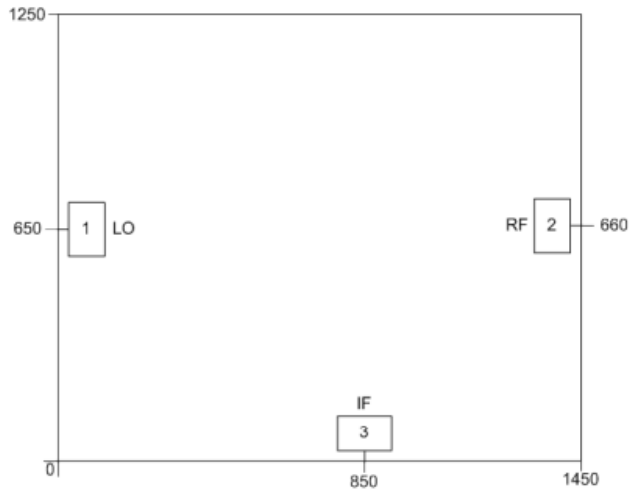
Test conditions: RF=1.3GHz@-10dBm, LO=5GHz@13dBm, all values are relative values of 1*LO-1*IF(P_RF, dBm) in dBc.

	nLO				
mIF	0	1	2	3	4
0	×××	25	31	33	41
1	12	0	24	19	25
2	52	62	71	64	76
3	76	57	66	64	73
4	92	108	95	/	/

Test conditions: RF=2.3GHz@-10dBm, LO=10GHz@13dBm, all values are relative values of 1*LO-1*IF(P_RF, dBm) in dBc.

Outline Drawing:

All Dimensions in um, tolerance range ±50um

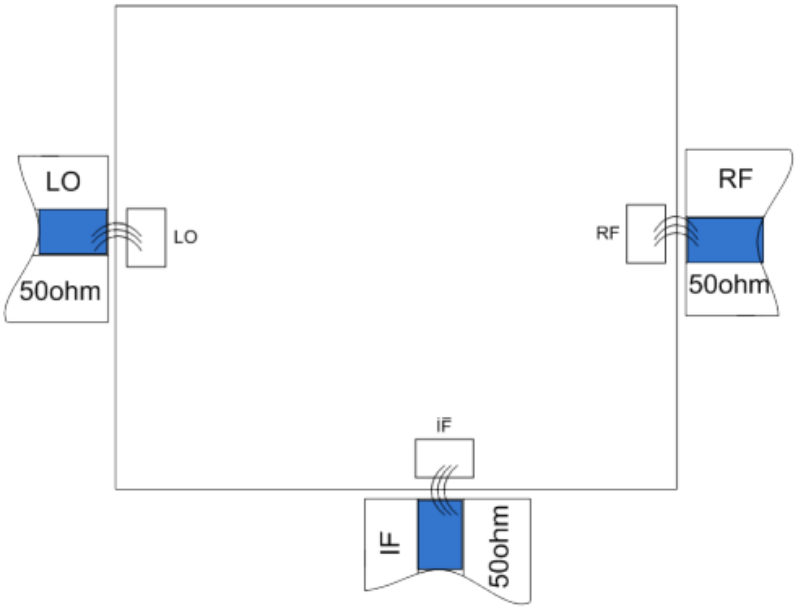


Pad Description

PAD	Function	Description
1	LO	LO signal terminal, blocking capacitor required.
2	RF	RF signal terminal, blocking capacitor required.
3	IF	IF signal terminal, blocking capacitor required.
Die Bottom	GND	Die bottom must be connected to RF/DC ground.

1. The LO and RF ports are used interchangeably, and the electrical performance specifications vary partially.
2. It is recommended that the pads be welded with three bonded alloy wires.

Recommended Assembly Drawing:



Notes:
1. Die thickness: 100um
2. Typical bond pad is 100*100 μm^2
3. Bond pad metalization: Gold
4. Backside metalization: Gold
5. Backside of the die is grounded
6. No connection required for unlabeled bond pads

Maximum Ratings:
1. Max RF input power: +22dBm
2. Max local oscillator input power: +22dBm
3. Max If input power:+22dBm
3. Operating temperature: -55℃ to +85℃
4. Storage temperature: -65℃ to +150℃