

GaAs MMIC Mixer Chip, 2.5GHz-7.0GHz

Performance characteristics

- RF/LO frequency range: 2.5 - 7.0 GHz
- IF frequency range : DC-3GHz
- Conversion loss : 7.0 dB@+13dBm LO input
- LO-RF isolation: 54dB
- LO-IF isolation : 52dB
- RF-IF isolation : 29 dB
- Local oscillator power: +11dBm~+15dBm
- Chip size: 1.76 x 1.31 x 0.1mm

Product Introduction

GMX-025070A/AM is a GaAs MMIC double-balanced mixer with a frequency range of 2.5 GHz to 7.0 GHz , an IF range of DC to 3 GHz , a conversion loss of 7.0 dB , a LO /RF isolation of 54 dB , a LO/IF isolation of 52 dB , an RF/IF isolation of 29 dB , and a typical LO input power of +13dBm. The back of the chip is metallized for eutectic sintering or conductive adhesive bonding. There are no DC blocking capacitors on the RF , LO, and IF ports . GX-025070A and GX-025070AM are mirror images of each other .

Use restriction parameter ¹

Maximum RF input power	+22dBm
Maximum LO input power	+22dBm
Maximum IF input power	+22dBm
Operating temperature	-55 ~ +85°C
storage temperature	-65 ~ +150°C

【1】 Exceeding any of these maximum limits may cause permanent damage.

Electrical performance parameters ($T_A = +25^{\circ}\text{C}$, IF = 100MHz , LO = +13 dBm)

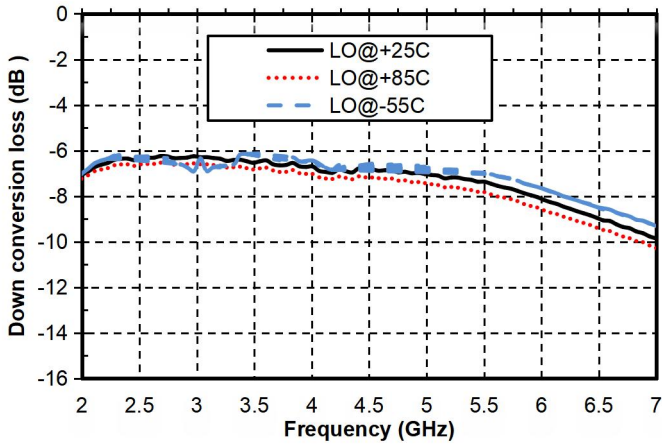
index	Minimum	Typical Value	Maximum	unit
RF frequency range	2.5-7.0			GHz
LO frequency range	2.5-7.0			GHz
IF frequency	DC-3			GHz
Frequency conversion loss	-	7.0	-	dB
LO-RF Isolation	-	54	-	dB
LO-IF isolation	-	52	-	dB
RF-IF isolation	-	29	-	dB
RF input P-1dB		10		dB m
IIP3		18		dBm

The above parameters are all tested in down-conversion mode, with an intermediate frequency of 0.1GHz and a local oscillator power of + 13dBm.

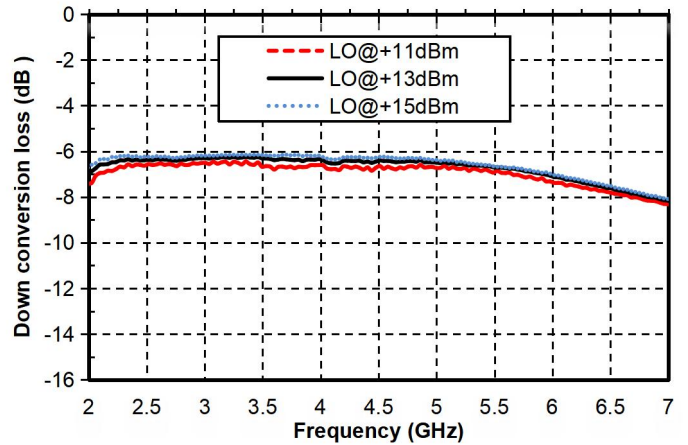
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Main index test curve

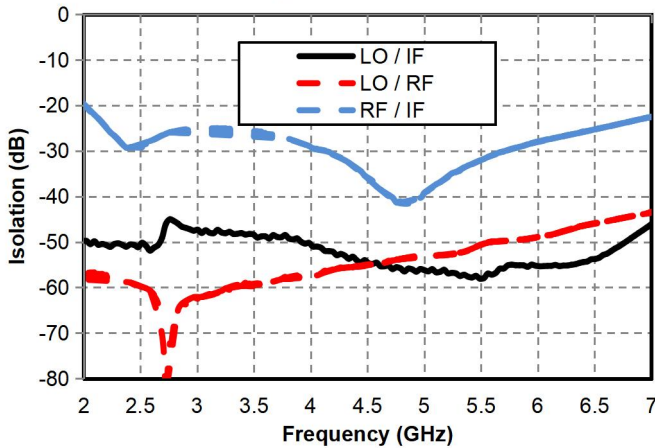
Downconversion loss vs. temperature @ LO = +13dBm



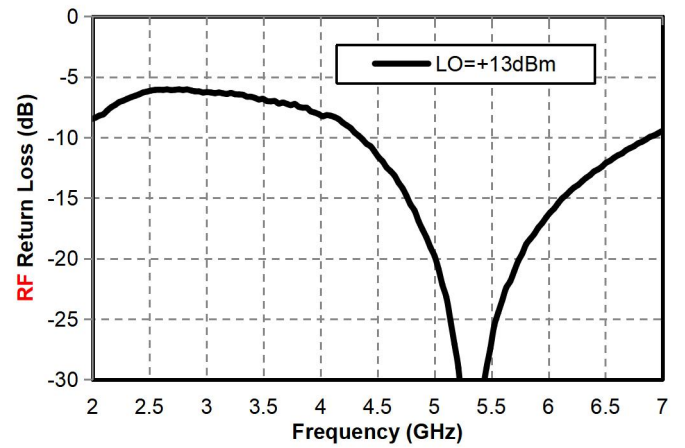
Downconversion Loss vs. LO Power



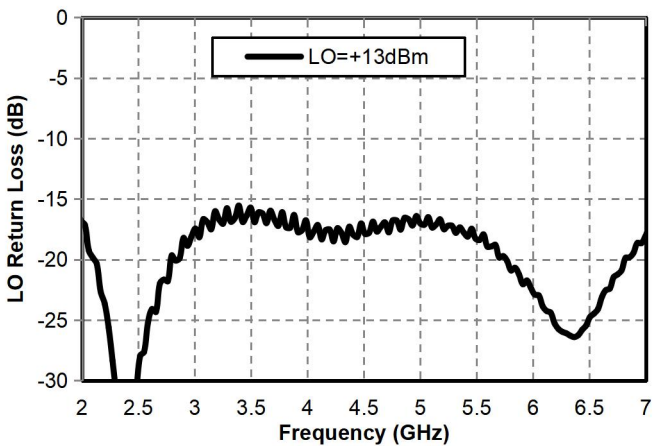
Isolation @ LO = +13dBm



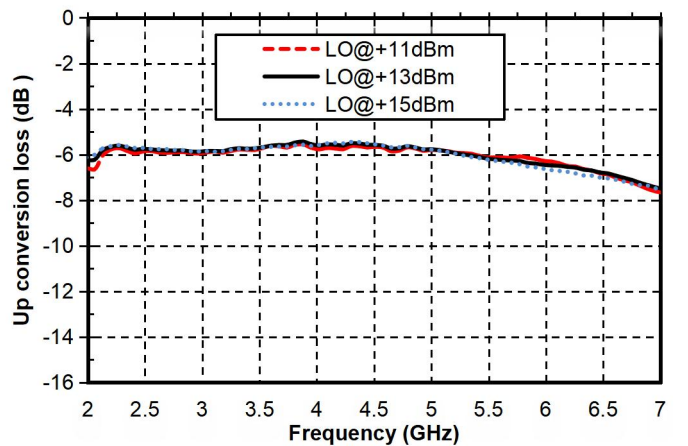
RF Return Loss Vs. Frequency



LO Return Loss Vs. Frequency

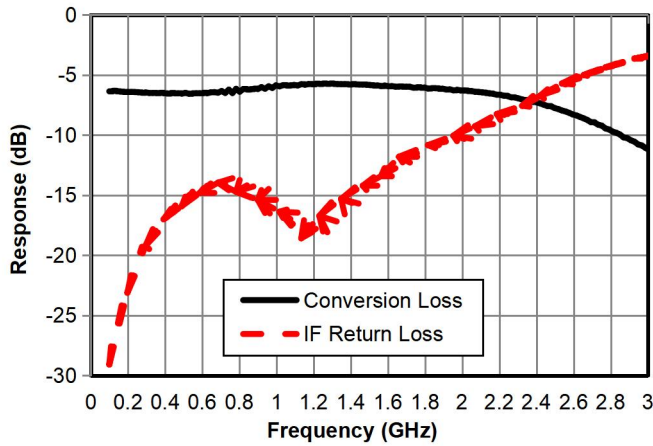


Upconversion Loss vs. LO Power

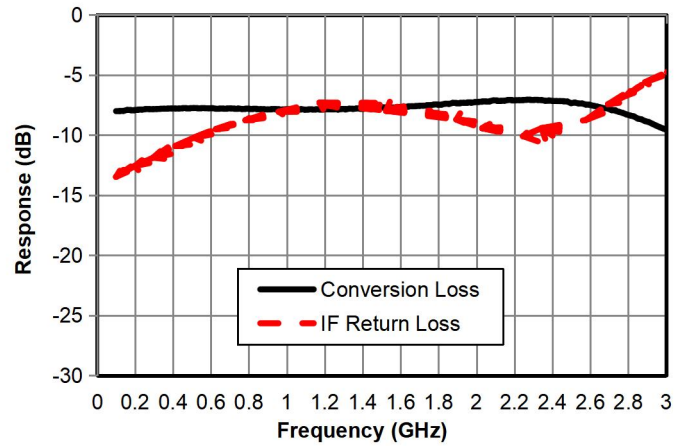


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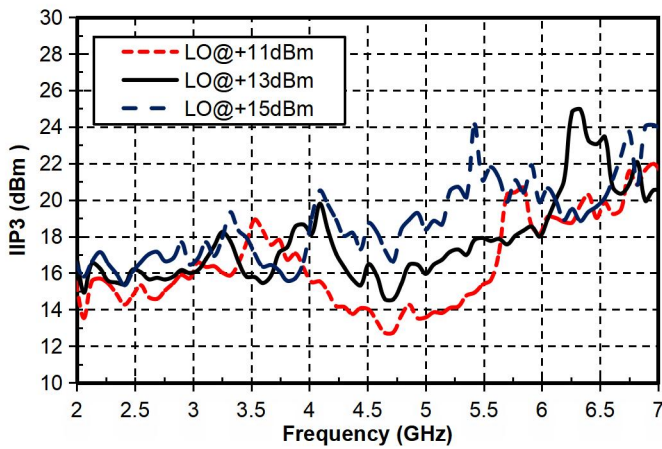
Down-converter IF bandwidth, return loss
@LO=2.5G, 13dBm



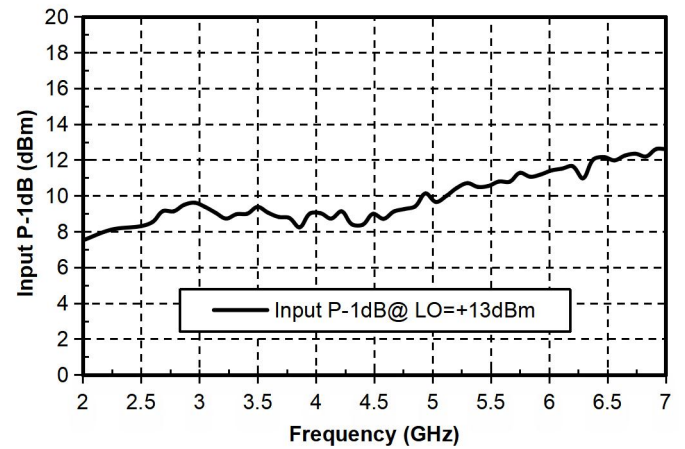
Down-converter IF bandwidth, return loss
@LO=7G, 13dBm



IIP3



P-1 vs. Frequency



LO harmonic RF leakage

LO(GHz) 13dBm	nLO (measured at RF port) dBc		
	1	2	3
2.5	\	46	57
3.0	\	48	56
3.5	\	47	49
4.0	\	52	46
4.5	\	58	46
5.0	\	59	50
5.5	\	57	54
6.0	\	55	57

6.5	\	53	56
7.0	\	52	52

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LO harmonic IF leakage

LO(GHz)13dBm	nLO (measured at IF port) dBc		
	1	2	3
2.5	\	60	62
3.0	\	59	52
3.5	\	54	52
4.0	\	52	48
4.5	\	51	49
5.0	\	51	56
5.5	\	50	60
6.0	\	50	68
6.5	\	51	70
7.0	\	53	64

Down-conversion combined spurious suppression

mRF	nLO				
	0	1	2	3	4
0	xxx	23	22	18	47
1	23	0	43	35	34
2	67	73	81	63	82
3	74	82	82	78	88
4	\	\	\	107	113

Test conditions : RF = 4.1 GHz @ -10 dBm , LO = 4 GHz @ 13 dBm

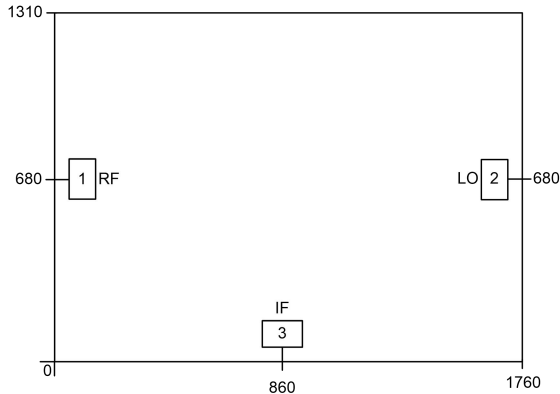
Up-conversion combined spurious suppression

iF	nLO				
	0	1	2	3	4
0	xxx	22	31	22	31
1	24	0	41	31	52
2	65	47	79	73	72
3	104	80	88	91	100
4	98	85	\	\	\

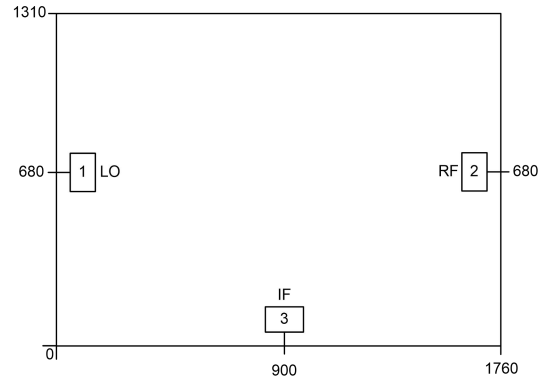
Test conditions: IF=0.3GHz@-10dBm , LO= 5 GHz@13 dBm

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Appearance structure ²



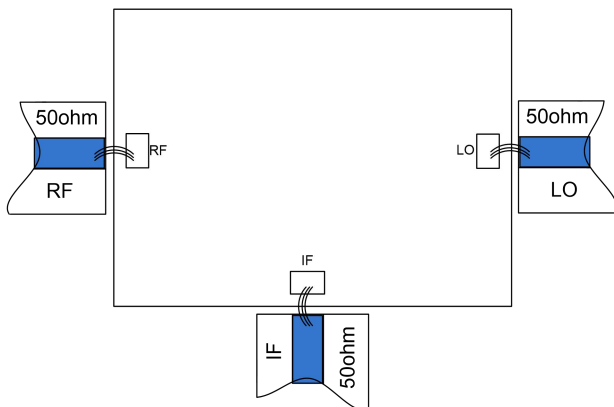
IMX - 0 25 0 70 A



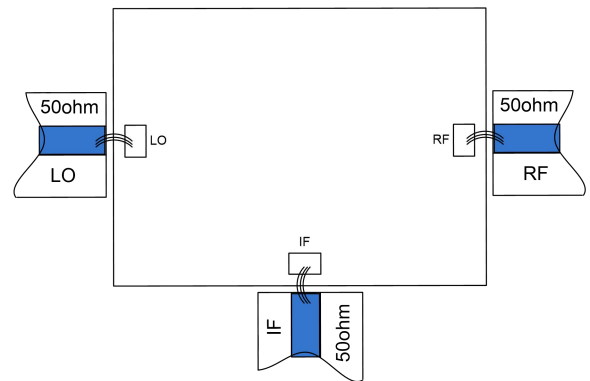
IMX - 0 25 0 70 A M

【2】 The units in the figure are all micrometers (dimensional tolerance: $\pm 50\mu\text{m}$.)

Recommended assembly drawing



IMX - 0 25 0 70 A



IMX - 0 25 0 70 A M

Bonding point definition

Bonding point number	Function Symbol	Functional Description
1	RF/LO	The local oscillator signal terminal requires an external DC blocking capacitor
2	LO/RF	RF signal end, requires external DC blocking capacitor
3	IF	Intermediate frequency signal end, requires external DC blocking capacitor
Chip bottom	GND	The bottom of the chip needs to be well grounded to RF and DC

Note 1: LO and RF ports can be used interchangeably, but the electrical performance indicators may vary.

Note 2: It is recommended to solder three gold bonding wires to the pad.