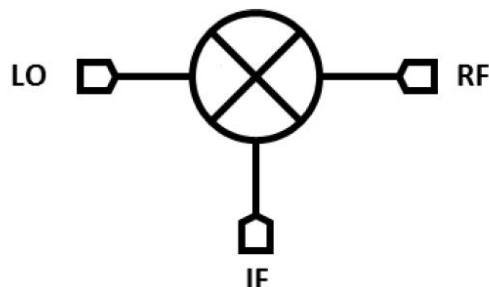


## GaAs MMIC Mixer Chip, 0.6GHz-2.4GHz

### Performance characteristics

- RF/LO frequency range: 0.6 - 2.4 GHz
- IF frequency range : DC-1.4GHz
- Conversion loss : 9.0 dB@+15dBm LO input
- LO-RF isolation: 65dB
- LO-IF isolation : 37dB
- RF-IF isolation : 31 dB
- Local oscillator power: +13dBm~+17dBm
- Chip size: 1.81 x 1.41 x 0.1mm

### Block Diagram



### Product Introduction

GMX-006024A is a GaAs MMIC double balanced mixer, covering 0.6 GHz~ 2.4 GHz , IF frequency coverage DC~ 1.4 GHz , conversion loss 9.0 dB , LO/RF isolation 65 dB , LO/IF isolation 37 dB , RF/IF isolation 31 dB , typical LO input power +15dBm. The chip uses on-chip through-hole metallization technology to ensure good grounding, and no additional grounding measures are required. Easy to use. The back of the chip is metallized, suitable for eutectic sintering or conductive adhesive bonding. There is no DC blocking capacitor at the RF , LO, and IF ports .

#### Use restriction parameter <sup>1</sup>

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 = + 15dBm )

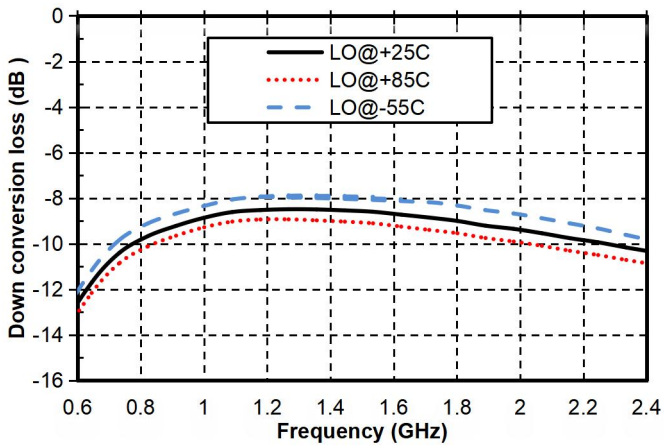
index	Minimum	Typical Value	Maximum	unit
RF frequency range	0.6-2.4			GHz
LO frequency range	0.6-2.4			GHz
IF frequency	DC-1.4			GHz
Frequency conversion loss	-	9.0	-	dB
LO-RF Isolation	-	65	-	dB
LO-IF isolation	-	37	-	dB
RF-IF isolation	-	31	-	dB
RF input P-1dB		11		dB m
IIP3		20		dBm

The above parameters are all tested in down-conversion mode, with an intermediate frequency of 0.1GHz and a local oscillator power of + 15dBm.

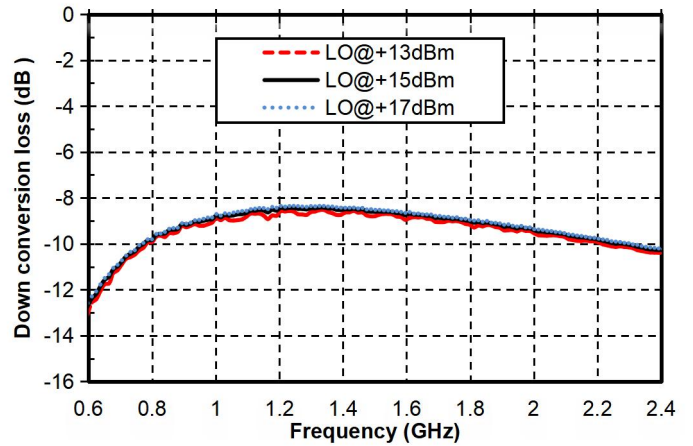
## GaAs MMIC Mixer Chip, 0.6GHz-2.4GHz

### Main index test curve

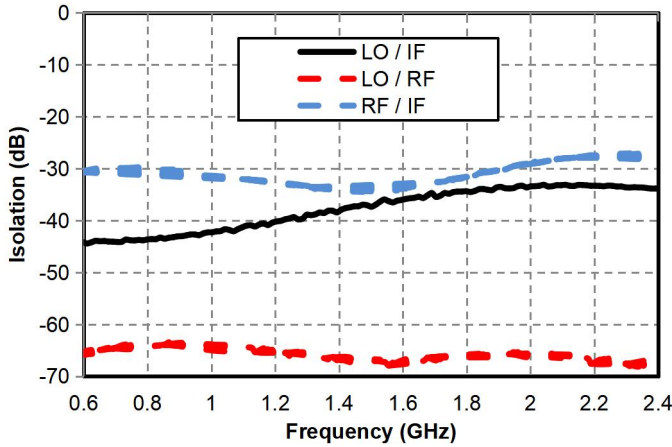
Downconversion loss vs. temperature @ LO = +15dBm



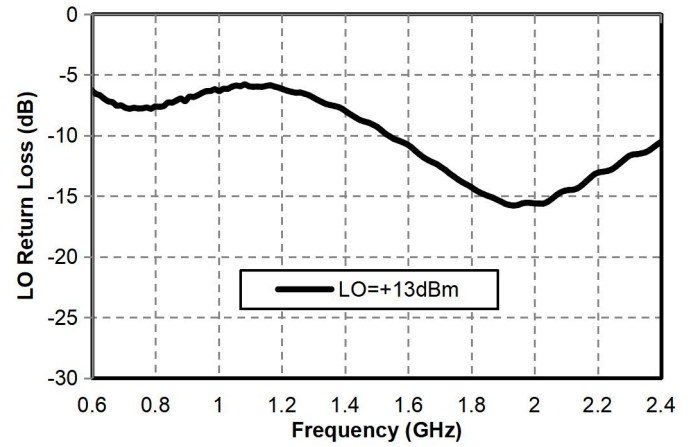
Downconversion Loss vs. LO Power



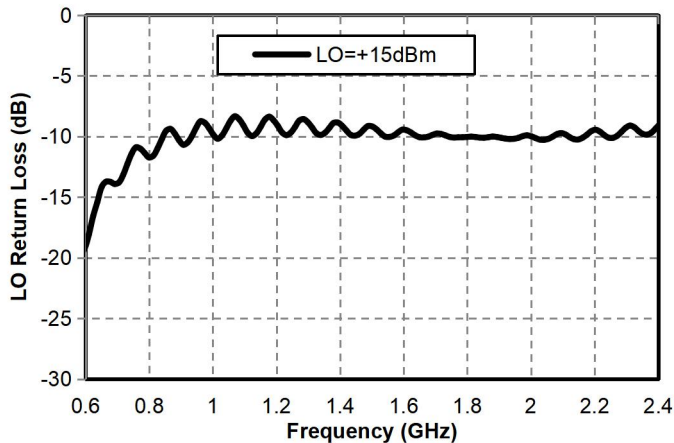
Isolation @ LO = +15dBm



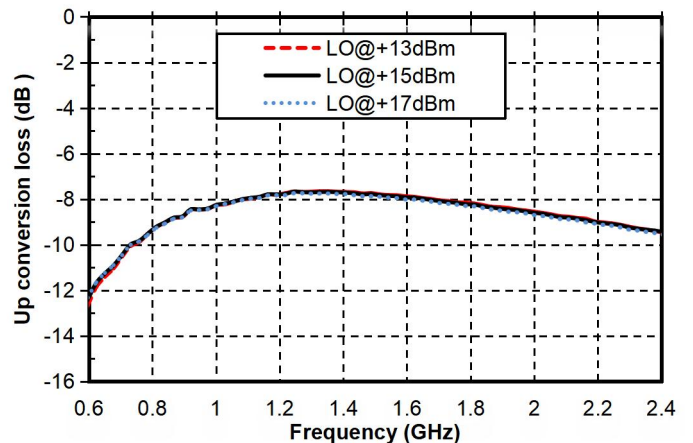
RF Return Loss Vs. Frequency



LO Return Loss Vs. Frequency

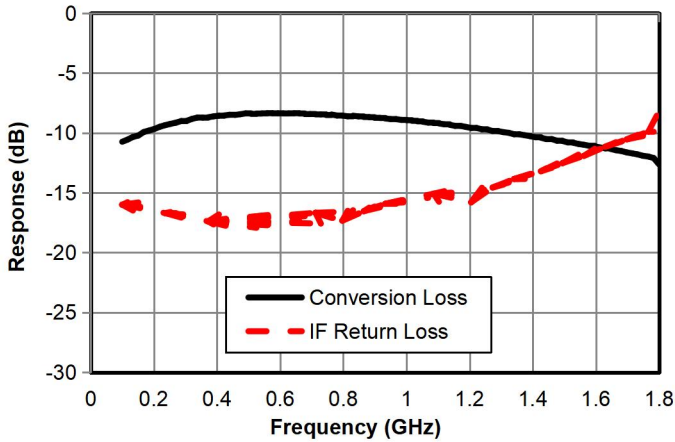


Upconversion Loss vs. LO Power

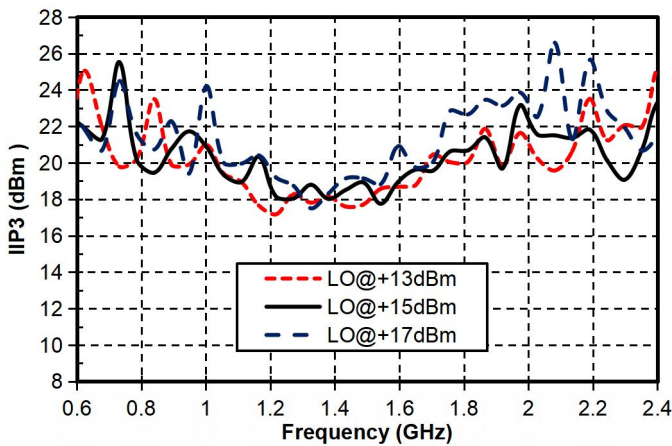


## GaAs MMIC Mixer Chip, 0.6GHz-2.4GHz

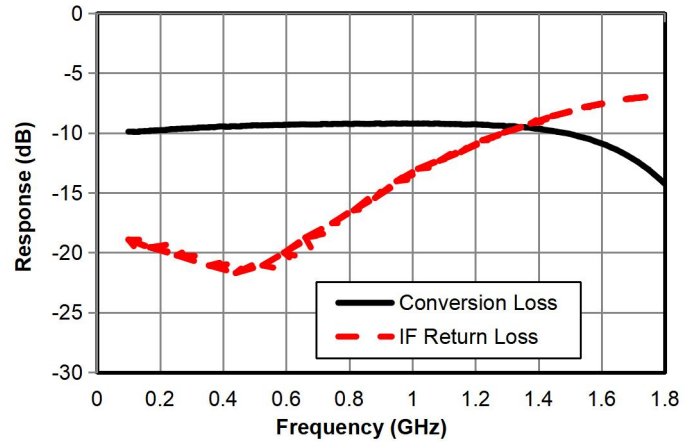
Down-converter IF bandwidth, return loss  
@LO=0.6G, 15dBm



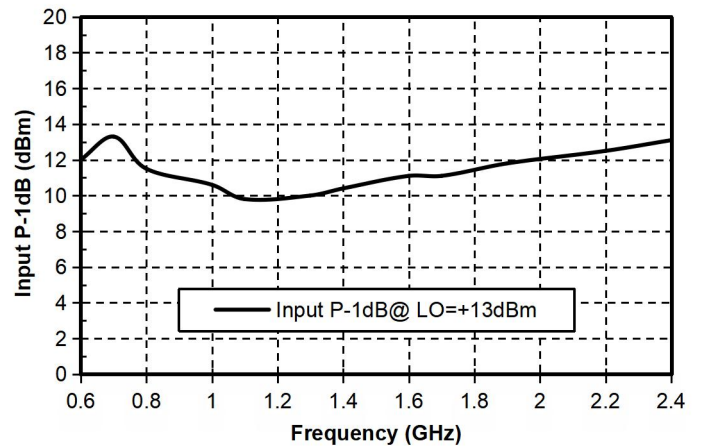
IIP3



Down-converter IF bandwidth, return loss  
@LO=2.4G, 15dBm



P-1 vs. Frequency



### LO harmonic RF leakage

LO(GHz)13dBm	nLO (measured at RF port) dBc		
	1	2	3
0.6	\	52	78
0.8	\	51	79
1.0	\	50	78
1.2	\	49	78
1.4	\	48	75
1.6	\	47	75
1.8	\	46	73
2.0	\	45	71
2.2	\	44	69
2.4	\	46	68

## GaAs MMIC Mixer Chip, 0.6GHz-2.4GHz

### LO harmonic IF leakage

LO(GHz)13dBm	nLO (measured at IF port) dBc		
	1	2	3
0.6	\	83	60
0.8	\	70	58
1.0	\	68	62
1.2	\	71	66
1.4	\	70	69
1.6	\	67	75
1.8	\	67	71
2.0	\	67	64
2.2	\	66	59
2.4	\	69	56

### Down-conversion combined spurious suppression

mRF	nLO				
	0	1	2	3	4
0	xxx	5	36	35	59
1	26	0	34	23	56
2	64	47	91	59	94
3	93	84	88	71	89
4	\	\	\	109	\

Test conditions: RF = 1.5GHz @ -10dBm , LO = 1.4GHz @ 15dBm

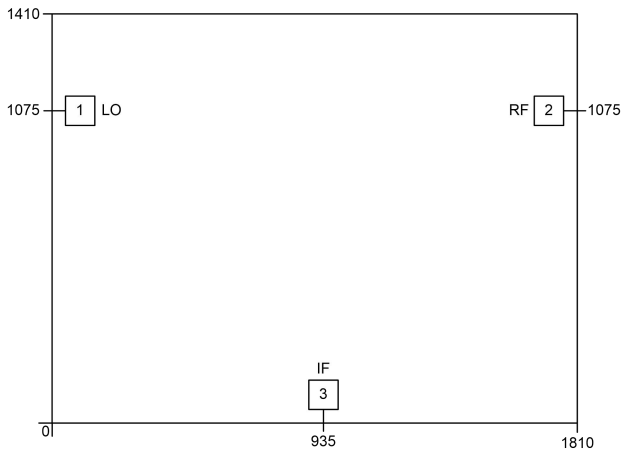
### Up-conversion combined spurious suppression

iF	nLO				
	0	1	2	3	4
0	xxx	35	15	43	27
1	43	0	45	17	54
2	85	52	72	69	80
3	97	79	98	72	101
4	\	94	\	104	\

Test conditions : IF=0.1GHz@-10dBm, LO=1.4GHz@15dBm

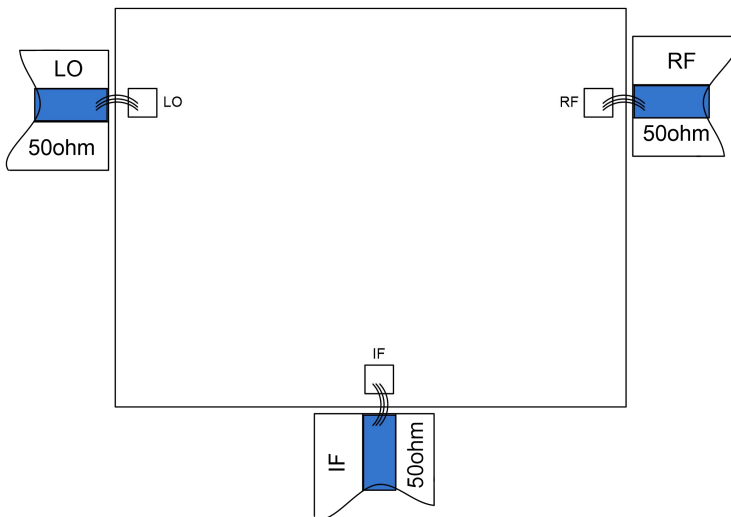
## GaAs MMIC Mixer Chip, 0.6GHz-2.4GHz

## Appearance structure <sup>2</sup>



【2】 The units in the figure are all micrometers , and the dimensional tolerance is  $\pm 50\mu\text{m}$ .

## Recommended assembly drawing



### Bonding point definition

Bonding point number	Function Symbol	Functional Description
1	LO	The local oscillator signal terminal has internal DC isolation , so no external DC isolation capacitor is required
2	RF	RF signal end, with internal DC isolation , no external DC isolation capacitor required
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.