

## GaAs MMIC Mixer Chip, 4GHz-8GHz

### Performance characteristics

- RF/LO frequency range: 4-8GHz
- IF frequency range: DC-4GHz
- Conversion Loss: 7.0dB
- LO-RF isolation degree: 42dB
- LO-IF isolation degree: 44dB
- RF-IF isolation degree: 28dB
- Local oscillator power: +11dBm~+15dBm
- Chip size: QFN 4x4mm

### Product Introduction

GMX-0408-CQ4 is a GaAs MMIC dual balanced mixer with a frequency range of 4GHz~8GHz and an intermediate frequency range of DC~4GHz. The frequency conversion loss is 7.0dB, and the local oscillator/radio frequency isolation is 42dB, 44dB, and 28dB, respectively. The typical local oscillator input power is +13dBm. RF, LO, and IF ports have no DC blocking capacitors. The amplifier adopts a 4X4mm surface mount lead-free ceramic casing, and the surface of the pin solder pads is treated with a gold plating process, suitable for reflow soldering installation process.

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

Maximum RF input power	+22dBm
Maximum local oscillator input power	+22dBm
Maximum input power of the central oscillator	+22dBm
Working temperature	-55 ~ +85°C
Storage temperature	-65 ~ +150°C

【1】 Exceeding any of the above maximum limits may result in permanent damage.

#### Electrical performance parameters (TA=+25 ° C, IF=100MHz, LO=+13dBm)

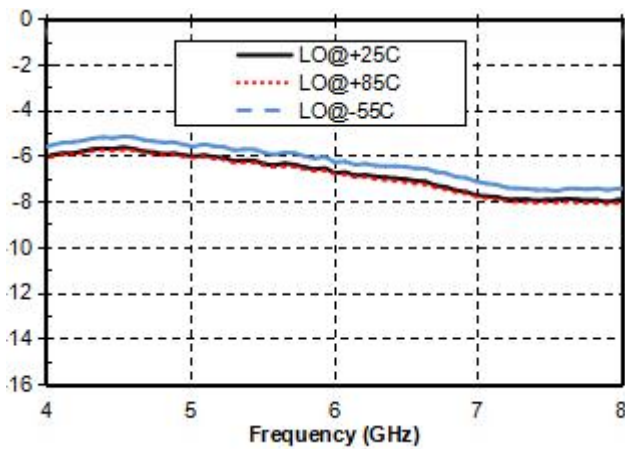
Index	Minimum value	Typical value	Maximum value	Unit
RF frequency range	4-8			GHz
Local oscillator frequency range	4-8			GHz
Intermediate frequency	DC-4			GHz
Variable frequency loss	-	7.0	-	dB
LO-RF isolation degree	-	42	-	dB
LO-IF isolation degree	-	44	-	dB
RF-IF isolation	-	28	-	dB

degree			
RF input P-1dB		10	dBm
IIP3		17	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.			

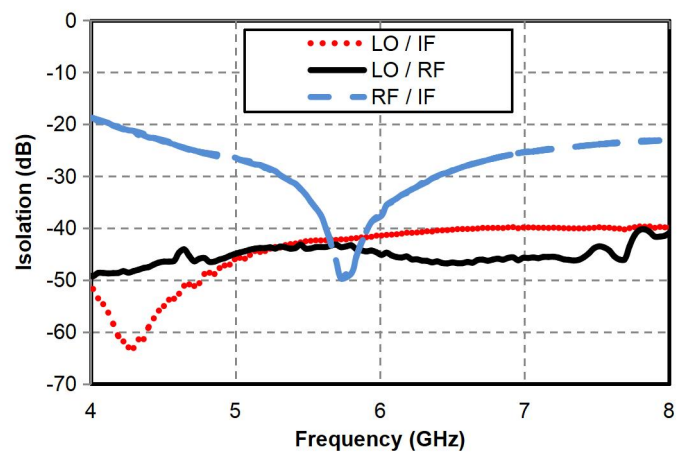
## GaAs MMIC Mixer Chip, 4GHz-8GHz

### Main indicator testing curve

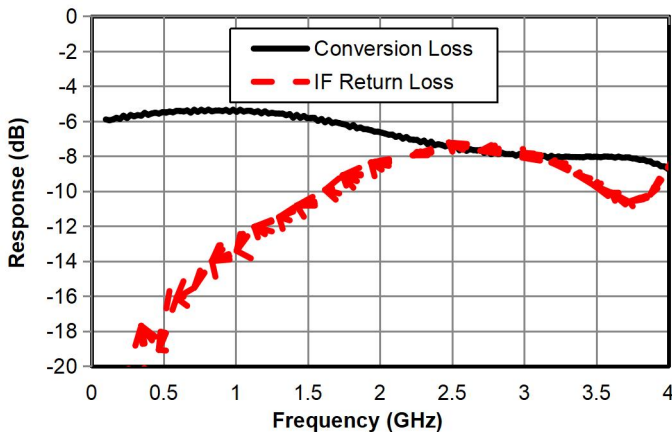
Downconversion loss vs. temperature @  
LO=+13dBm



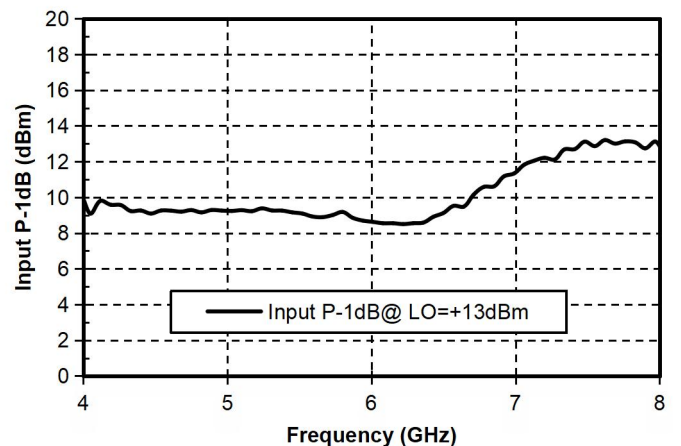
Isolation degree @ LO=+13dBm



Intermediate frequency bandwidth @  
LO=2G/+13dBm

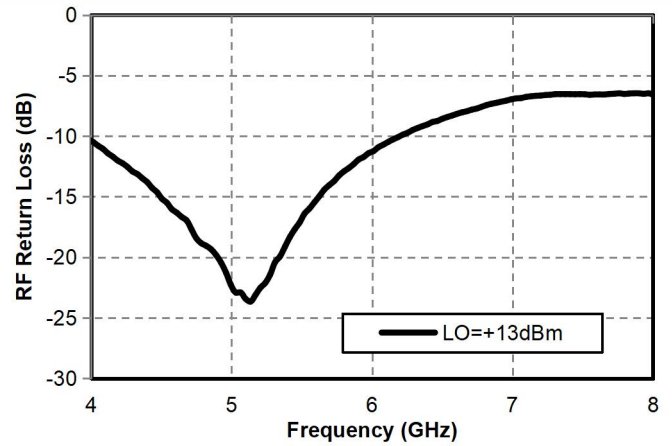
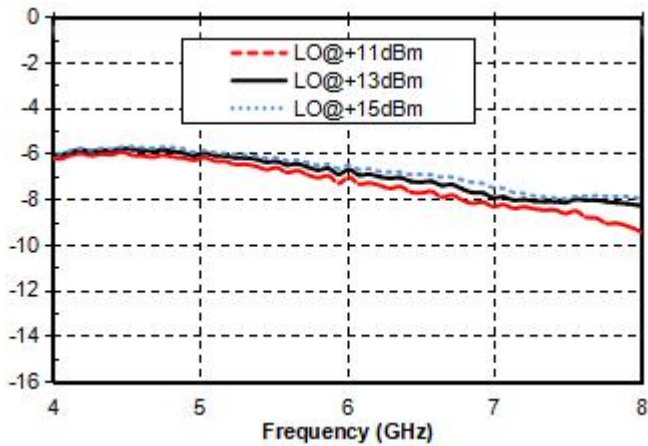


Input P-1dB vs. RF frequency



Downconversion frequency conversion loss vs.  
LO power

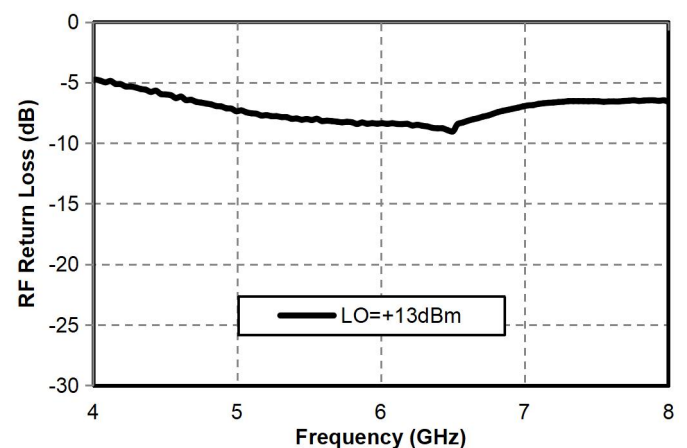
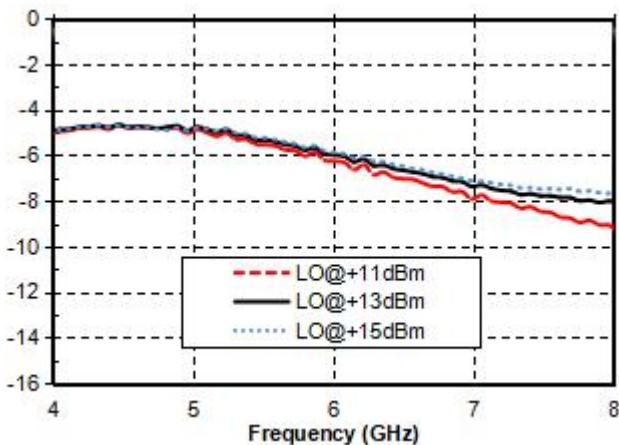
Downconversion RF return loss vs. frequency  
LO=+13dBm



## GaAs MMIC Mixer Chip, 4GHz-8GHz

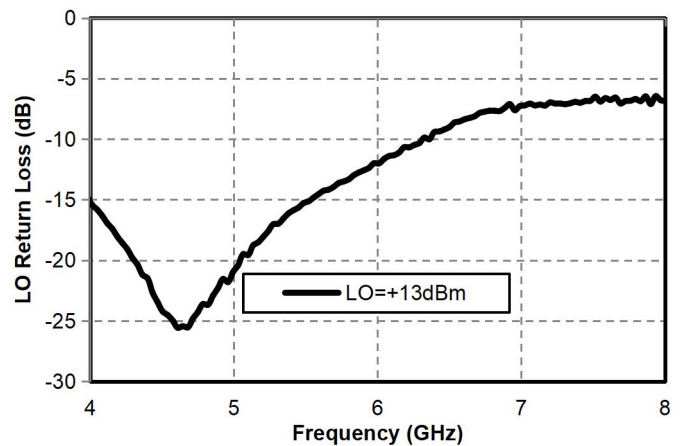
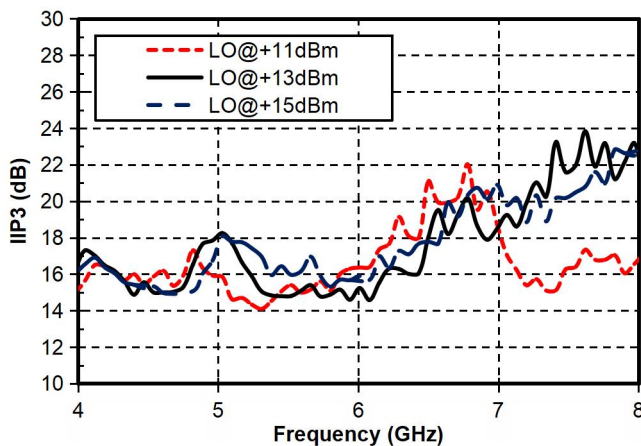
Upconversion loss vs. LO power

Upconversion RF return loss vs. frequency  
LO=+13dBm



IIP3

Local oscillator standing wave vs. frequency



## Local oscillator harmonic leakage

#1			
LO(GHz)13dbm	nLO (Tested at RF port) dbc		
	1	2	3
4	34	35	25
5	33	47	32
6	35	36	32
7	35	35	32
8	29	41	28

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### Combined spurious suppression

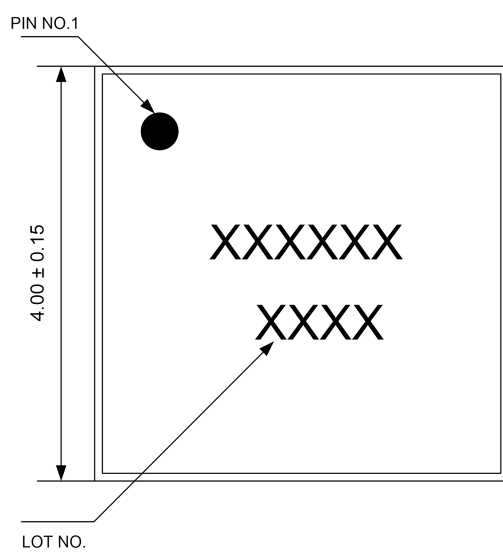
mRF	nLO				
	0	1	2	3	4
0	xxx	11	23	19	25
1	27	0	46	33	27
2	61	65	60	65	66
3	70	72	76	59	80
4	94	92	92	102	101

Test conditions: RF= 6.1GHZ@-10dBm , LO= 6GHZ@13dBm All relative values of 1 \* RF-1 \* LO (P\_IF, dBm), in dBc.

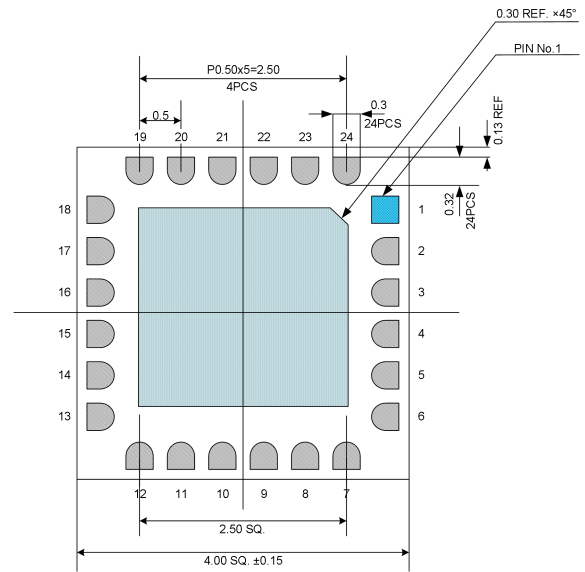
mRF	nLO				
	0	1	2	3	4
0	xxx	0	13	8	14
1	27	0	46	33	28
2	71	75	69	75	76
3	87	91	/	79	/
4	/	/	/	/	/

Test conditions: RF= 6.1GHZ@-20dBm , LO= 6GHZ@13dBm All relative values of 1 \* RF-1 \* LO (P\_IF, dBm), in dBc.

## External structure



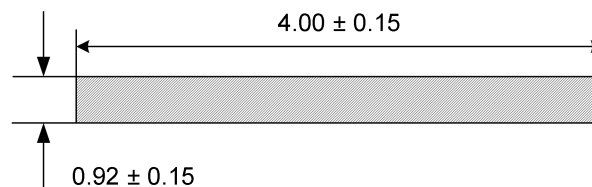
vertical view



Top view

## GaAs MMIC Mixer Chip, 4GHz-8GHz

## External structure



Side view

The units in the figure are all millimeters, with an unspecified tolerance of  $\pm 0.15$ mm

## Pin Definition

Solder joint serial number	Functional symbols	Function Description
3	RF	RF signal terminal requires an additional DC isolation capacitor
9	IF	Intermediate frequency signal terminal requires an additional DC isolation capacitor
16	LO	The local oscillator signal terminal requires an additional DC isolation capacitor
2、4、8、10、15、17	GND	The pins should have sufficient and good contact with the RF and DC ground
Chip bottom	GND	The bottom of the chip needs to be well grounded with RF and DC
other	NC	No welding required

## Application Block Diagram

