GMX-0614-CQ3

GaAs MMIC Mixer Chip, 6GHz-14GHz

Performance characteristics

- RF/LO frequency range: 6-14GHz
- IF frequency range: DC-5GHz
- Conversion loss: 7.0dB
- LO-RF isolation degree: 38dB
- LO-IF isolation degree: 31dB
- RF-IF isolation degree: 18dB
- Local oscillator power:+11dBm~+15dBm
- Chip size: QFN 3x3mm

Product Introduction

GMX-0614-CQ3 is a GaAs MMIC dual balanced mixer with a frequency range of 6GHz~14GHz and an intermediate frequency range of DC~5GHz. The frequency conversion loss is 7.0dB, and the local oscillator/radio frequency isolation is 38dB, 31dB, and 18dB, respectively. The typical local oscillator input power is+13dBm.RF, LO, and IF ports have no DC blocking capacitors. The mixer adopts a 3X3mm surface mount lead-free ceramic tube shell, and the surface of the pin solder pads is treated with a gold plating process, suitable for reflow soldering installation process.

Use restriction parameters[1]	
Maximum RF input power	+24dBm
Maximum local oscillator input power	+24dBm
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	6-14			GHz
Local oscillator frequency range	6-14			GHz
Intermediate frequency	DC-5			GHz
Variable frequency loss	-	7.0	-	dB
LO-RF isolation degree	-	38	-	dB
LO-IF isolation degree	-	31	-	dB
RF-IF isolation	-	18	-	dB

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degree				
RF input P-1dB		10		dBm
IIP3		16		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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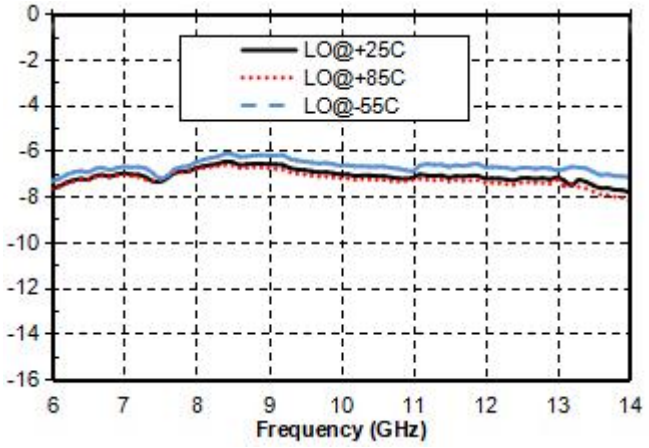
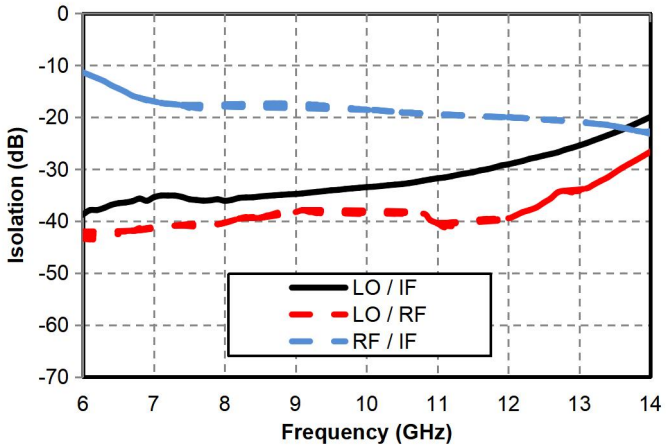
Main indicator testing curve

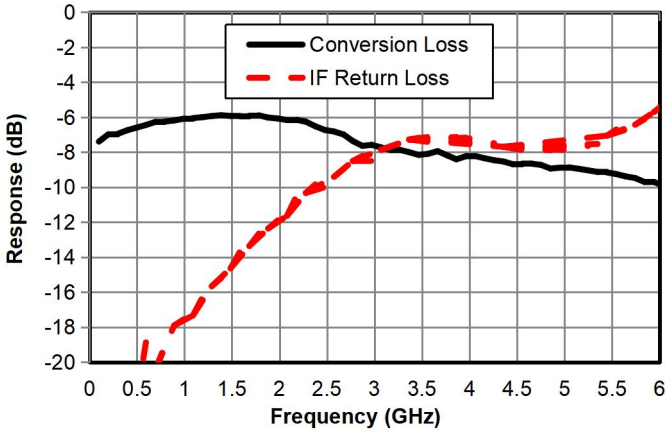
Downconversion loss vs. Temperature @ LO=+13dBm



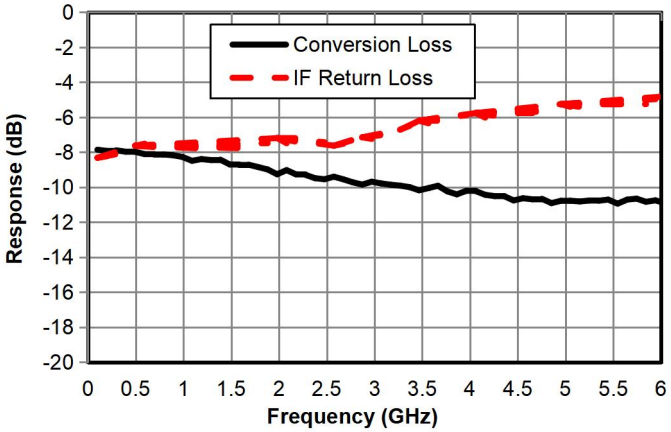
Isolation degree @ LO=+13dBm



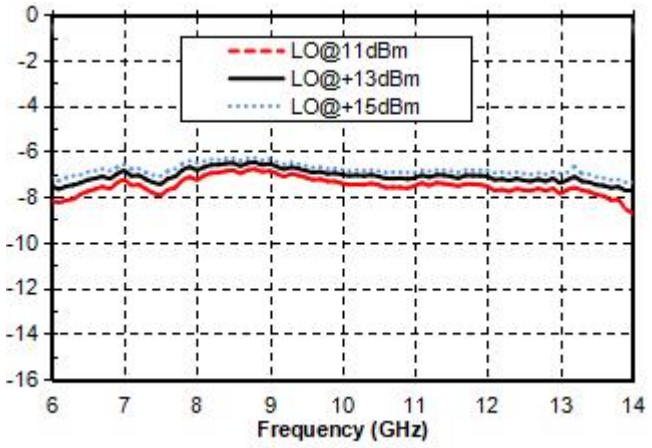
Intermediate frequency bandwidth @ LO=6G/+13dBm



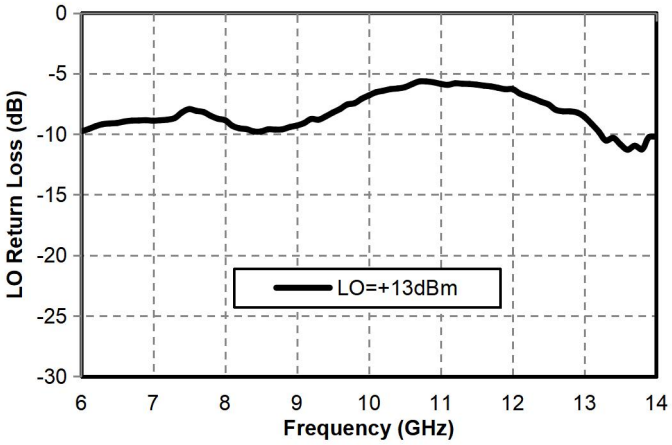
Intermediate frequency bandwidth @ LO=14G/+13dBm



Downconversion frequency conversion loss vs. LO power



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



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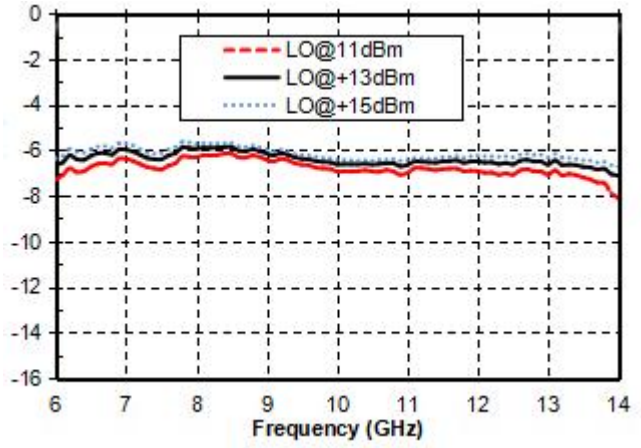
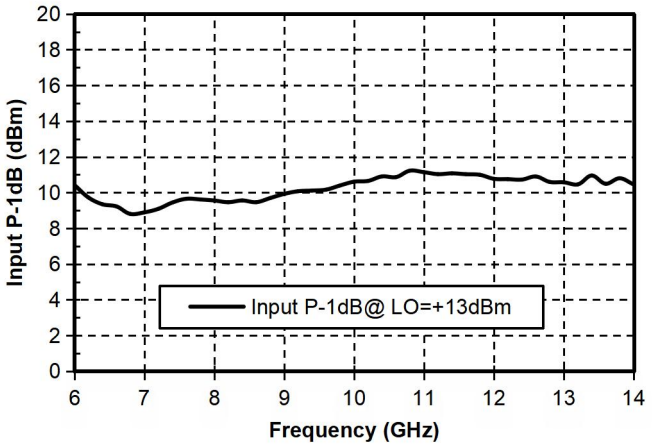
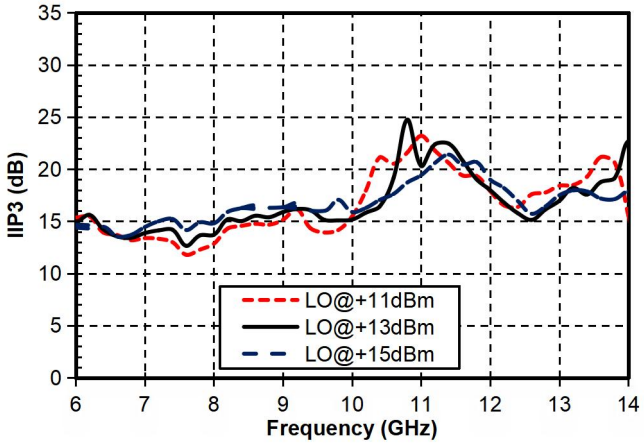
Upconversion loss vs. LO power



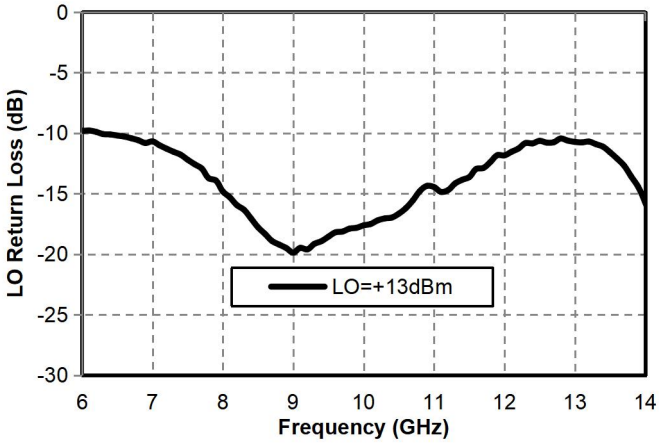
Input P-1dB vs. RF frequency



IIP3



Local oscillator standing wave vs. frequency



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Local oscillator harmonic leakage

LO(GHz)13dBm	nLO（Tested on RF port）dBc		
	1	2	3
6	44	39	56
7	41	34	58
8	40	36	70
9	39	40	80
10	39	45	72
11	43	48	65
12	44	54	77
13	39	65	82
14	33	69	86

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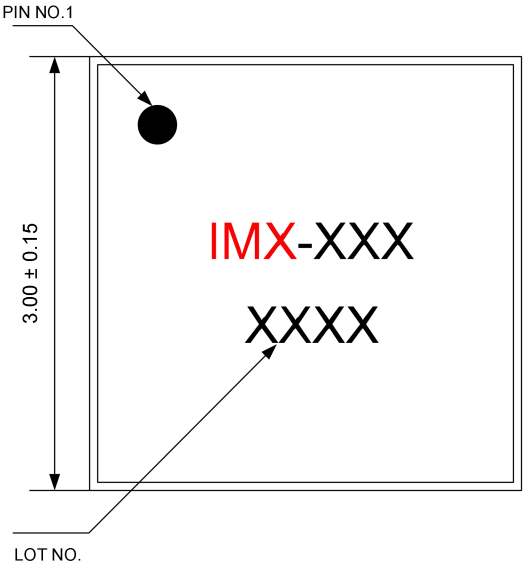
Combined spurious suppression

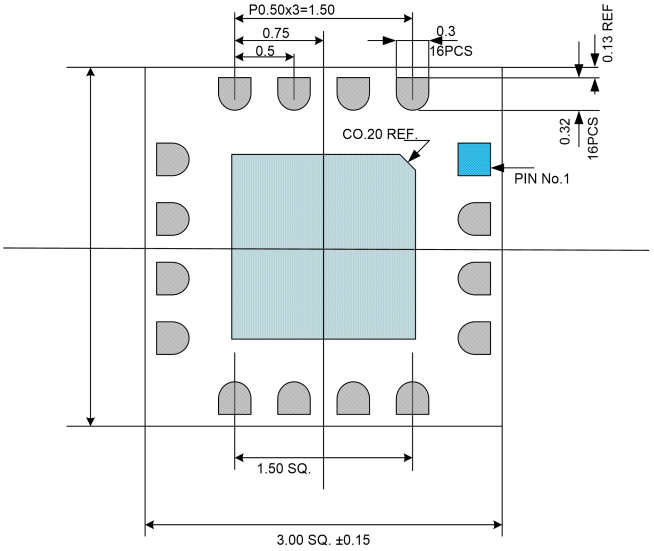
	nLO				
mRF	0	1	2	3	4
0	×××	5	44	51	64
1	12	0	33	53	81
2	88	66	72	63	87
3	86	88	88	60	85
4	86	87	88	90	90
Test conditions: RF= 10.1GHz@-10dBm , LO= 10GHz@13dBm All relative values of 1 * RF-1 * LO (P_IF, dBm), in dBc.					

	nLO				
mRF	0	1	2	3	4
0	×××	-6	20	12	19
1	12	0	34	52	51
2	79	77	78	71	77
3	77	78	79	81	78
4	/	/	/	/	/
Test conditions: RF= 10.1GHz@-20dBm , LO= 10GHz@13dBm All relative values of 1 * RF-1 * LO (P_IF, dBm), in dBc.					

External structure



vertical view



Top view

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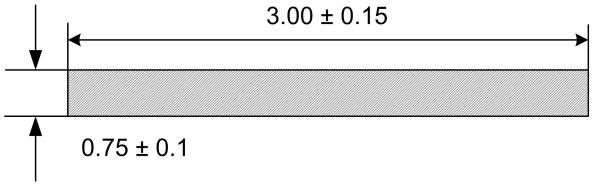
External structure



Side view

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

Pin Definition

Solder joint serial number	Functional symbols	Function Description
3	RF	RF signal terminal requires an additional DC isolation capacitor
7	IF	Intermediate frequency signal terminal requires an additional DC isolation capacitor
10	LO	The local oscillator signal terminal requires an additional DC isolation capacitor
2、4、6、8、9、11	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