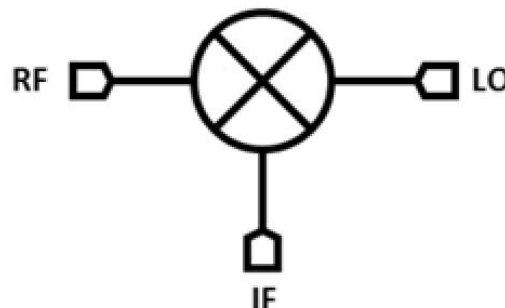


GaAs MMIC Mixer Chip, 6GHz-26GHz

Performance characteristics

- RF/LO frequency range: 6 - 26 GHz
- IF frequency range : DC-7GHz
- Conversion loss : 7.5 dB@+15dBm LO input
- LO-RF isolation: 51dB
- LO-IF isolation : 25dB
- RF-IF isolation : 35 dB
- Local oscillator power: +13dBm~+17dBm
- Chip size: 1.25 x 1.00 x 0.1mm

Block diagram



Product Introduction

GMX-0626AM is a GaAs MMIC double-balanced mixer with a frequency range of 6 GHz to 26 GHz , an IF range of DC to 7 GHz , a conversion loss of 7.5 dB , a LO/RF isolation of 51 dB , a LO /IF isolation of 25 dB , an RF/IF isolation of 35 dB , and a typical LO input power of +15 dBm. The chip uses an on-chip through-hole metallization process to ensure good grounding, and no additional grounding measures are required. Easy to use. No DC blocking capacitors for RF , LO, and IF ports .GMX-0630A and GMX-0630AM are mirror versions 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 = + 15dBm)

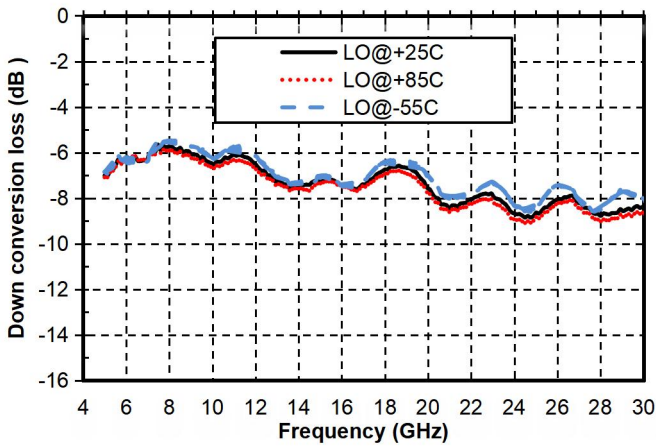
| index | Minimum | Typical Value | Maximum | unit |
|---------------------------|---------|---------------|---------|------|
| RF frequency range | 6-26 | | | GHz |
| LO frequency range | 6-26 | | | GHz |
| IF frequency | DC-7 | | | GHz |
| Frequency conversion loss | - | 7.5 | - | dB |
| LO-RF Isolation | - | 51 | - | dB |
| LO-IF isolation | - | 25 | - | dB |
| RF-IF isolation | - | 35 | - | 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.

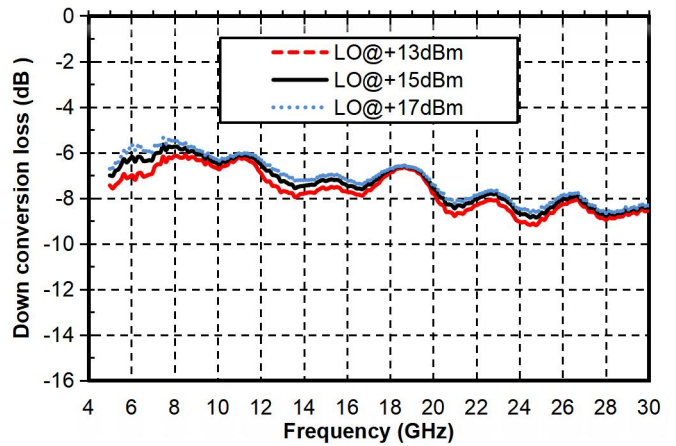
GaAs MMIC Mixer Chip, 6GHz-26GHz

Main index test curve

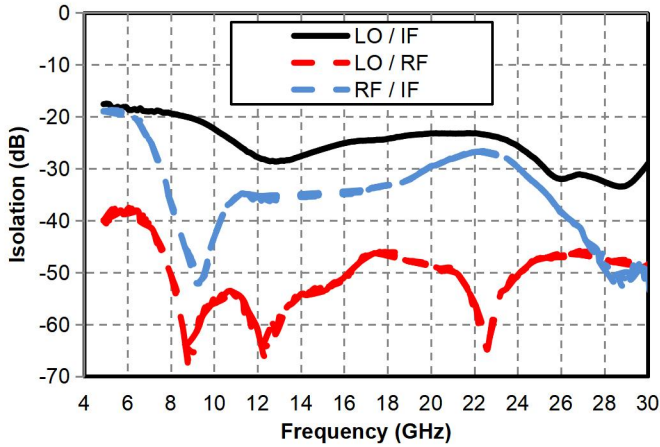
Downconversion loss vs. temperature @ LO = +15dBm



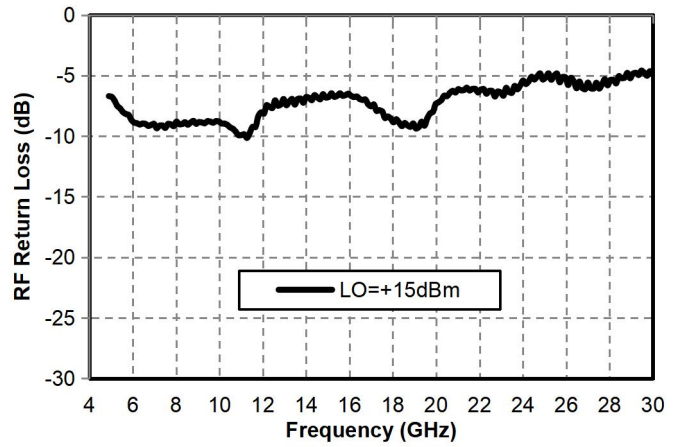
Downconversion Loss vs. LO Power



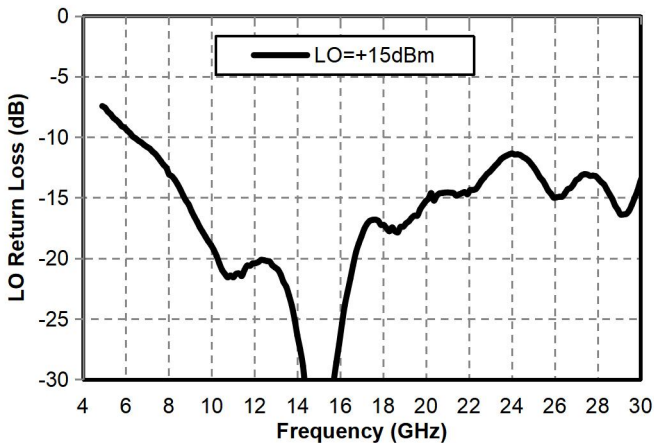
Isolation @ LO = +15dBm



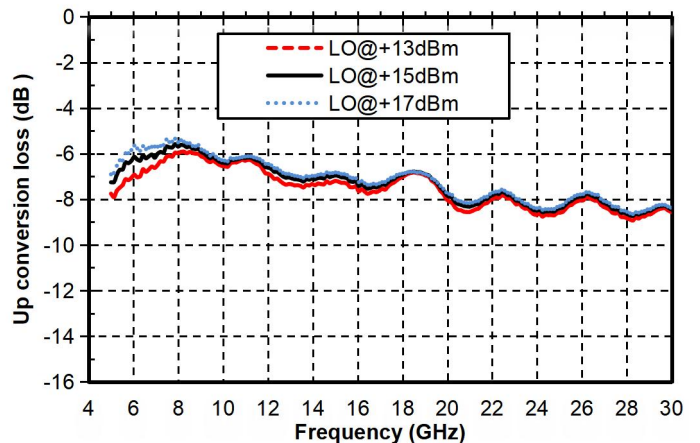
RF Return Loss Vs. Frequency



LO Return Loss Vs. Frequency

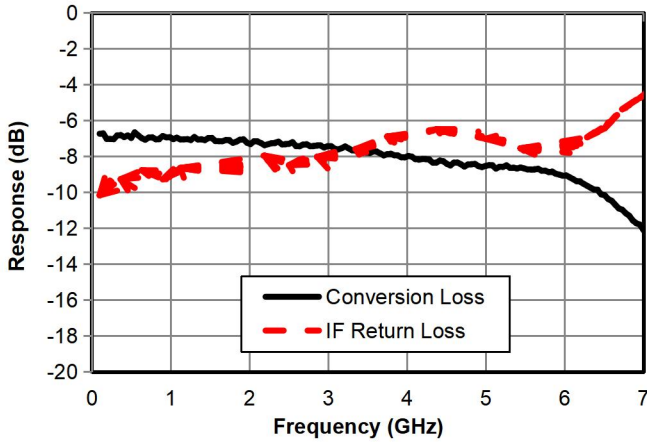


Upconversion Loss vs. LO Power

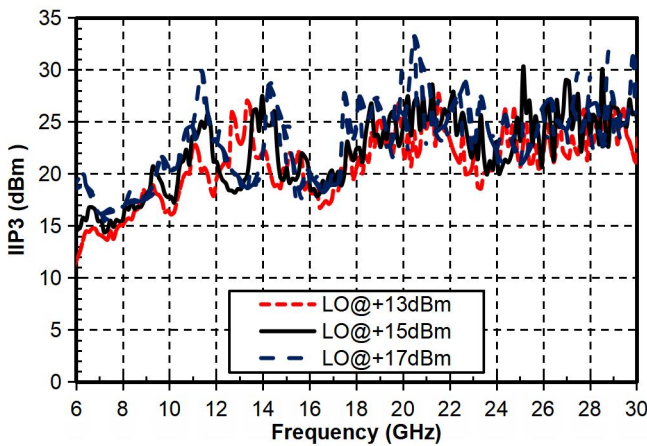


GaAs MMIC Mixer Chip, 6GHz-26GHz

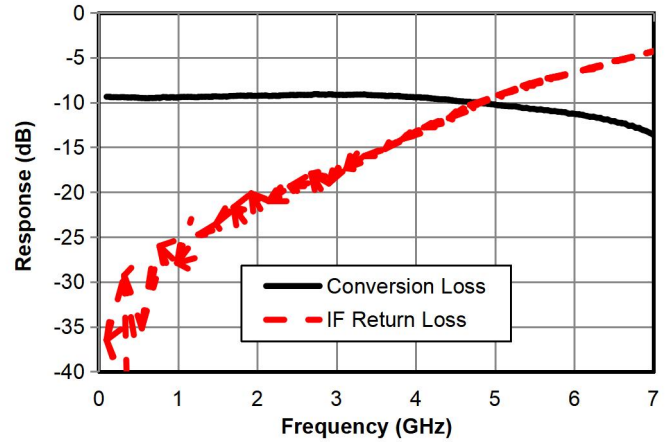
Down-converter IF bandwidth, return loss
@LO=6G, 15dBm



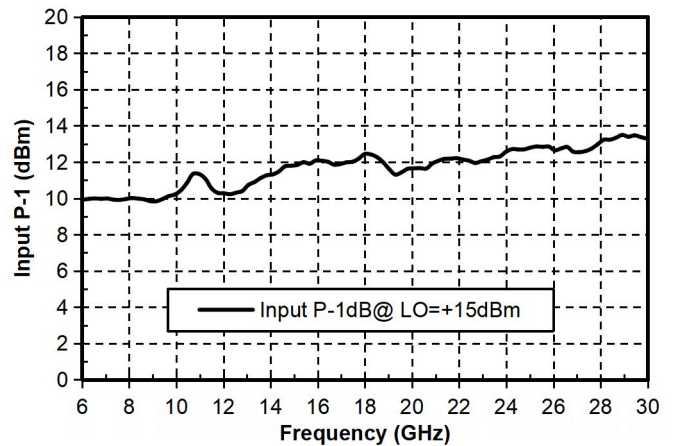
IIP3



Down-converter IF bandwidth, return loss
@LO=30G, 15dBm



P-1 vs. Frequency



LO harmonic leakage

| LO(GHz) 15dbm | nLO (measured at RF port) dBc | | |
|---------------|-------------------------------|----|----|
| | 1 | 2 | 3 |
| 6 | 39 | 29 | 48 |
| 8 | 51 | 31 | 50 |
| 10 | 54 | 38 | 57 |
| 12 | 62 | 46 | 70 |
| 14 | 55 | 64 | 63 |
| 16 | 52 | 64 | 57 |
| 18 | 48 | 64 | X |
| 20 | 51 | 54 | X |
| twenty two | 76 | 41 | X |
| twenty four | 50 | 42 | X |
| 26 | 48 | X | X |
| 28 | 47 | X | X |
| 30 | 48 | X | X |

GaAs MMIC Mixer Chip, 6GHz-26GHz

Down-conversion combined spurious suppression

| mRF | nLO | | | | |
|-----|-----|-----|-----|----|-----|
| | 0 | 1 | 2 | 3 | 4 |
| 0 | xxx | -9 | 30 | 12 | 27 |
| 1 | 36 | 0 | 40 | 29 | 47 |
| 2 | 79 | 54 | 66 | 58 | 70 |
| 3 | 84 | 76 | 79 | 64 | 78 |
| 4 | / | 100 | 107 | 94 | 102 |

Test conditions: RF = 10.1GHz @ -10dBm , LO = 10GHz @ 15dBm , all values are relative values of 1* RF - 1*LO(P_IF , dBm) , unit is dBc .

| mRF | nLO | | | | |
|-----|-----|----|----|------------|-----|
| | 0 | 1 | 2 | 3 | 4 |
| 0 | xxx | -8 | 27 | / | / |
| 1 | 27 | 0 | 59 | twenty two | / |
| 2 | 85 | 56 | 69 | 57 | 86 |
| 3 | / | 76 | 98 | 69 | / |
| 4 | / | / | / | 101 | 102 |

Test conditions: RF = 1 8 .1 GHz @ -10 dBm, LO = 1 8 GHz @ 1 5 dBm, all values are relative values of 1*RF-1*LO (P_IF, dBm), unit is dBc .

| mRF | nLO | | | | |
|-----|-----|----|----|----|-----|
| | 0 | 1 | 2 | 3 | 4 |
| 0 | xxx | -1 | / | / | / |
| 1 | 37 | 0 | 41 | / | / |
| 2 | / | 62 | 87 | 78 | / |
| 3 | / | / | 97 | 79 | 95 |
| 4 | / | / | / | / | 100 |

Test conditions: RF = 28.1GHz@-10dBm , LO = 28GHz @ 15dBm , all values are relative values of 1*RF-1*LO(P_IF,dBm) , unit is dBc .

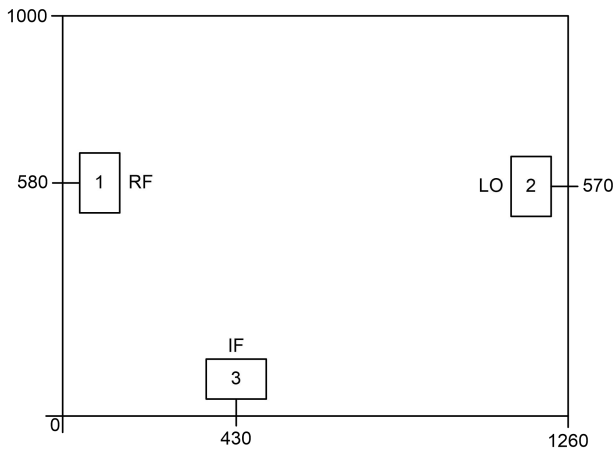
GaAs MMIC Mixer Chip, 6GHz-26GHz

Up-conversion combined spurious suppression

| | nLO | | | | |
|--|-----|-----|------------|--------------|----|
| iF | 0 | 1 | 2 | 3 | 4 |
| 0 | xxx | 20 | 6 | twenty four | 13 |
| 1 | 15 | 0 | twenty one | 11 | 30 |
| 2 | 49 | 56 | 53 | 59 | 55 |
| 3 | 69 | 61 | 68 | 68 | 76 |
| 4 | 107 | 112 | 106 | 100 | / |
| Test conditions: IF = 2.3GHz @-10dBm, LO=10GHz@15dBm, all values are relative values of 1* LO -1* IF (P_RF unit is dBc . | | | | | |
| | nLO | | | | |
| iF | 0 | 1 | 2 | 3 | 4 |
| 0 | xxx | 13 | 28 | / | / |
| 1 | 10 | 0 | 27 | twenty three | / |
| 2 | 47 | 56 | 54 | 64 | / |
| 3 | 72 | 61 | 70 | 65 | / |
| 4 | 99 | 108 | 99 | / | / |
| Test conditions: IF =4.3GHz@-10dBm, LO=18GHz@15dBm, all values are relative values of 1* LO -1* IF (P_RF , dBm), unit: dBc . | | | | | |

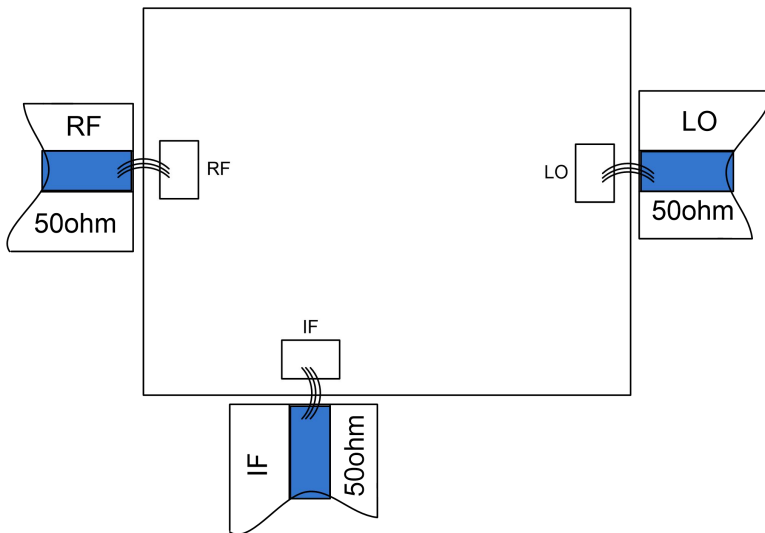
GaAs MMIC Mixer Chip, 6GHz-26GHz

Appearance structure ²



【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 | RF | RF signal end, requires external DC blocking capacitor |
| 2 | LO | The local oscillator signal terminal requires an 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. | | |