Standard Circuit

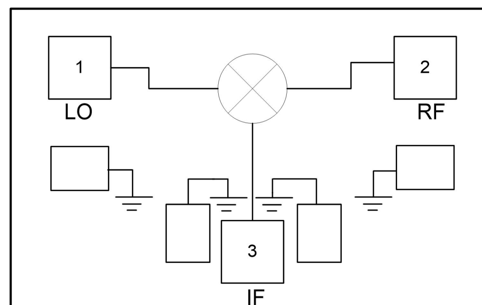
GMX-2440

GaAs MMIC Mixer Chip, 24GHz-40GHz

Performance characteristics

- RF/LO frequency range: 24 - 40 GHz
- IF frequency range : DC-10GHz
- Conversion loss : 8 dB
- LO-RF isolation: 30dB
- LO-IF isolation : 25dB
- RF-IF isolation : 28 dB
- Local oscillator power: +15dBm
- Chip size: 1.05 x 0.7 x 0.1mm

Functional Block Diagram:



Product Introduction

The GMX-2440 is a GaAs MMIC passive double-balanced mixer with an on-chip RF / LO frequency coverage of 24 GHz. ~ 40 GHz , IF frequency covers DC ~ 10 GHz , conversion loss is less than 8 dB , RF/IF isolation is greater than 21 dB , LO/IF isolation is greater than 20 dB , LO/RF isolation is greater than 27 dB , typical LO input power is +13dBm ~ + 15dBm .

Use restriction parameter [1]	
Maximum RF input power	+20dBm
Maximum LO input power	+20dBm
Operating temperature	-55 ~ +85°C
storage temperature	-65 ~ +150°C

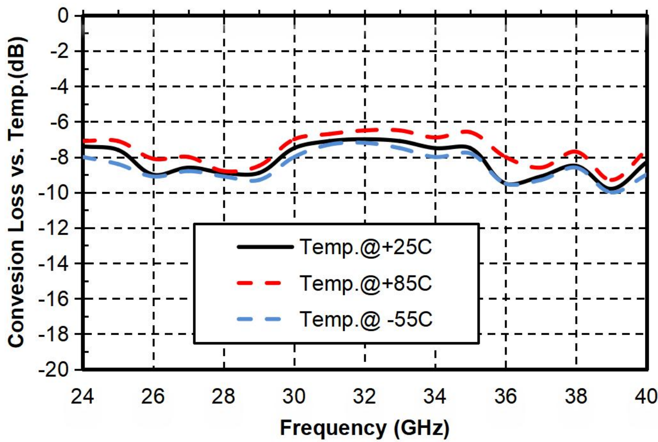
【1】 Exceeding any of these maximum limits may cause permanent damage.

Electrical Parameters (T_A = +25°C)				
index	Minimum	Typical Value	Maximum	unit
RF frequency range		24-40		GHz
LO frequency range		24-40		GHz
IF frequency		DC-10		GHz
Frequency conversion loss	7	8	10	dB
LO-RF Isolation	27	30	35	dBm
LO-IF isolation	20	25	32	dBm
RF-IF isolation	20	28	31	dB
RF 1dB compression point		12		dB
The above parameters are all tested in down-conversion mode, with an intermediate frequency of 1GHz and a local oscillator power of +13dBm ~+15dBm.				

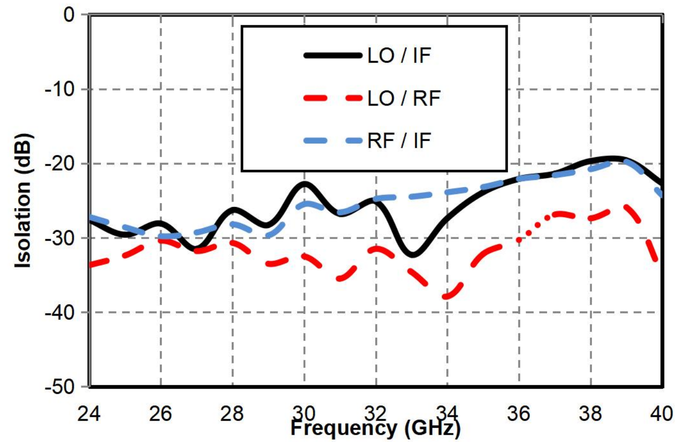
GaAs MMIC Mixer Chip, 24GHz-40GHz

Main index test curve

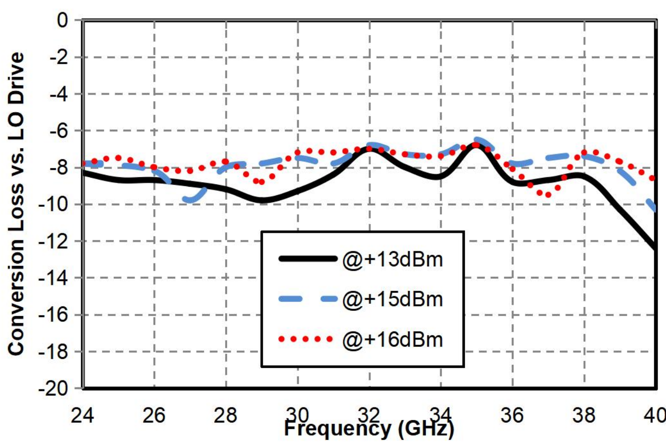
Conversion loss vs. temperature @ LO = +15dBm



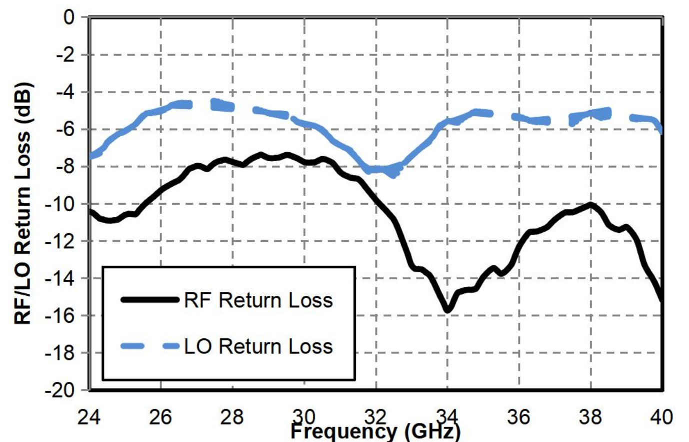
Isolation @ LO = +15dBm



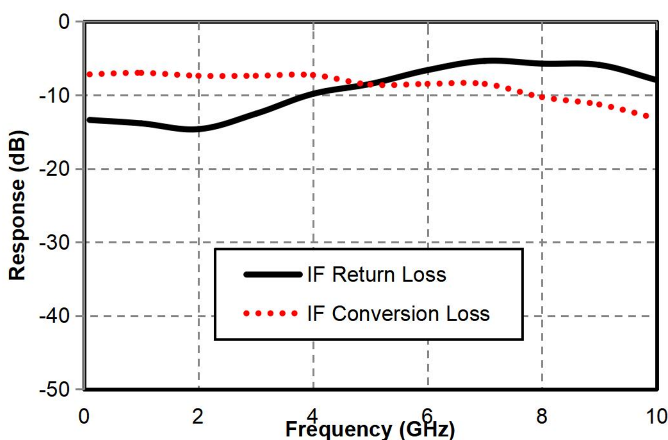
Conversion Loss vs. LO Drive Level



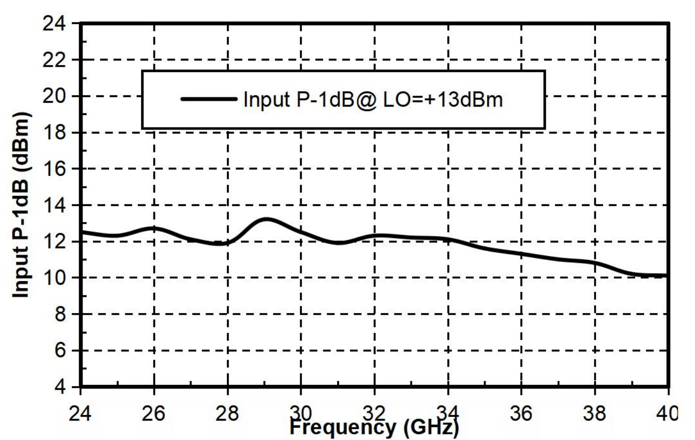
RF/LO Return Loss vs. Frequency



IF bandwidth @ LO = +13dBm

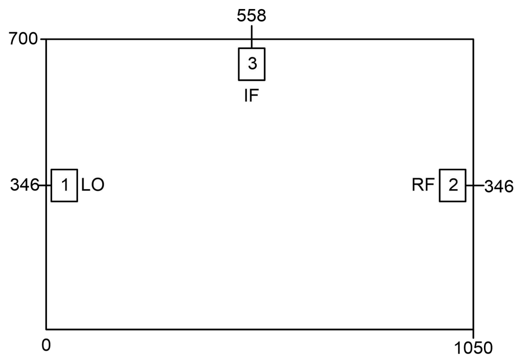


Input P-1dB vs. Frequency



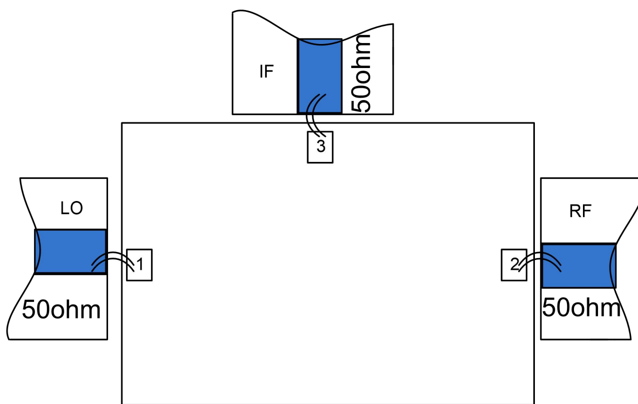
GaAs MMIC Mixer Chip, 24GHz-40GHz

Appearance structure [2]



【 2 】All units in the figure are micrometers

Recommended assembly drawing



Precautions for use

- The chip needs to be stored in an anti-static container and kept in a nitrogen environment.
- Do not attempt to clean the bare die surface using wet chemical methods.
- Please strictly comply with ESD protection requirements to avoid electrostatic damage to bare chips.
- General operation: Please use precision pointed tweezers to pick up bare chips. Avoid touching the chip surface with tools or fingers during operation.
- Rack mounting operation suggestions: Bare chip mounting can be done by AuSn solder eutectic sintering or conductive adhesive bonding. The mounting surface must be clean and flat.
- Sintering process: It is recommended to use AuSn solder sheets with a gold-tin ratio of 80/20 . The working surface temperature reaches 255 °C and the tool (vacuum chuck) temperature reaches 265 °C. When the high-temperature mixed gas (nitrogen-hydrogen ratio of 90/10) is blown to the chip, the temperature at the top of the tool should be raised to 290 °C. Do not keep the chip at a temperature above 320 °C for more than 20 seconds. The friction time should not exceed 3 seconds.

- Bonding process: The amount of conductive glue dispensed should be as small as possible. After the chip is placed in the installation position , the conductive glue should be vaguely visible around it . For curing conditions, please follow the information provided by the conductive glue manufacturer.
- Bonding operation suggestions: Use Φ0.025mm (1mil) gold wire for both ball and wedge bonding. Thermo-ultrasonic bonding temperature is 150 °C. The pressure of the wedge for ball bonding is 40~50gf , and the pressure of the wedge bonding is 18~22gf . Use the smallest possible ultrasonic energy. The bonding starts at the pressure point on the chip and ends at the package (or substrate) .

Add: 101 cecil street #14-10, tong eng building singapore 069533
Email: info@standardcircuit.com
Web: www.standardcircuit.com
Tel: +65 82613258