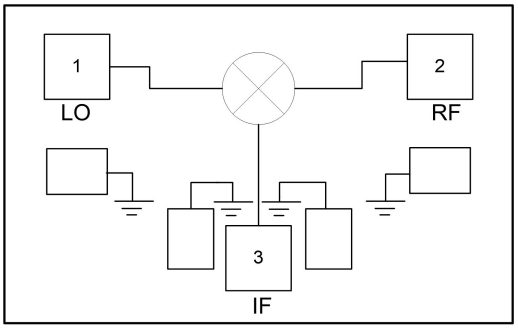
GMX-1832

GaAs MMIC Mixer Chip, 18GHz-32GHz

Performance characteristics

- RF/LO frequency range: 18 - 32 GHz
- IF frequency range : DC-10GHz
- Conversion loss : 8 dB
- LO-RF isolation: 33dB
- LO-IF isolation : 30dB
- RF-IF isolation : 28 dB
- Local oscillator power: +13dBm~+15dBm
- Chip size: 1.4 x 0.80 x 0.1mm

Functional Block Diagram



Product Introduction

GMX-1832 is a GaAs MMIC passive double-balanced mixer. The chip's RF / LO frequency covers 18 GHz~32GHz , and the IF frequency covers DC~ 10 GHz . The conversion loss is less than 9 dB, the RF/IF isolation is greater than 14 dB , the LO /IF isolation is greater than 23 dB , and the LO/RF isolation is greater than 23 dB . The 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	18-32			GHz
LO frequency range	18-32			GHz
IF frequency	DC-10			GHz
Frequency conversion loss	7	8	9	dB
LO-RF Isolation	twenty three	33	40	dB
LO-IF isolation	twenty three	30	37	dB
RF-IF isolation	14	28	45	dB
RF input P-1dB		12		dB m
The above parameters are all tested in down-conversion mode, with an intermediate frequency of 1GHz and a local oscillator power of + 13dBm~+ 15dBm .				

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

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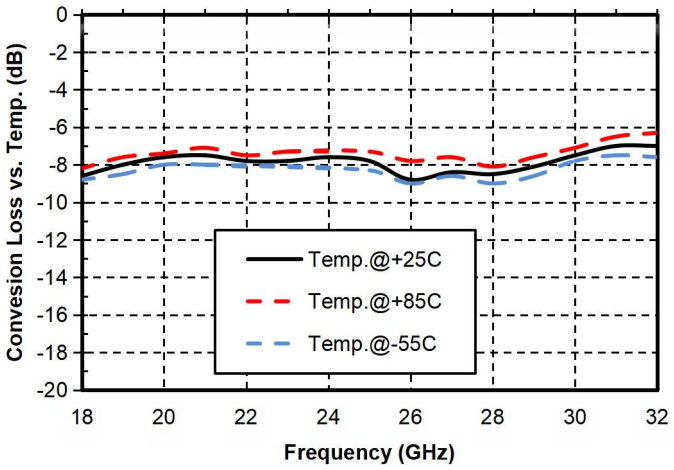
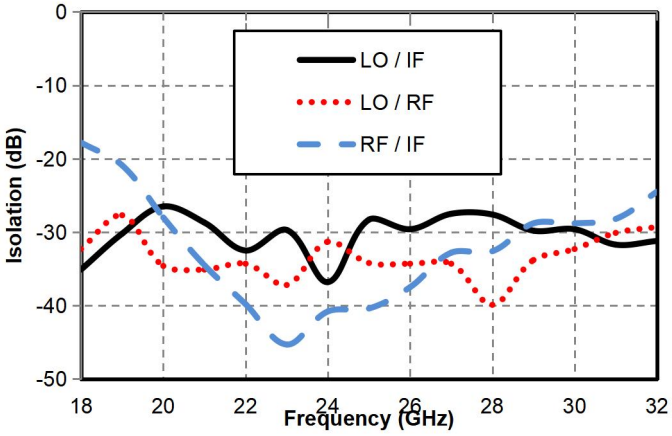
Main index test curve

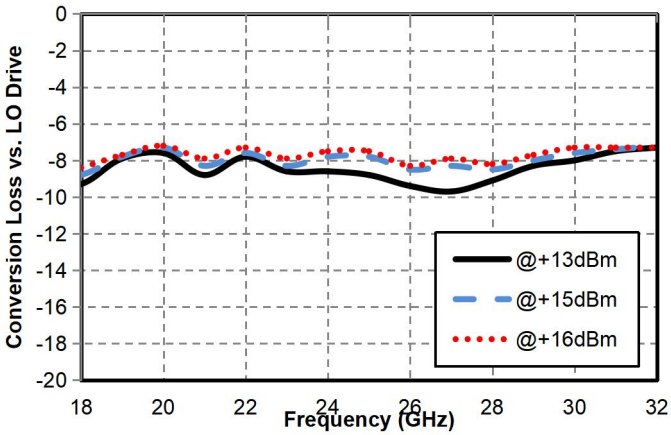
Conversion loss vs. temperature @ LO = +15dBm



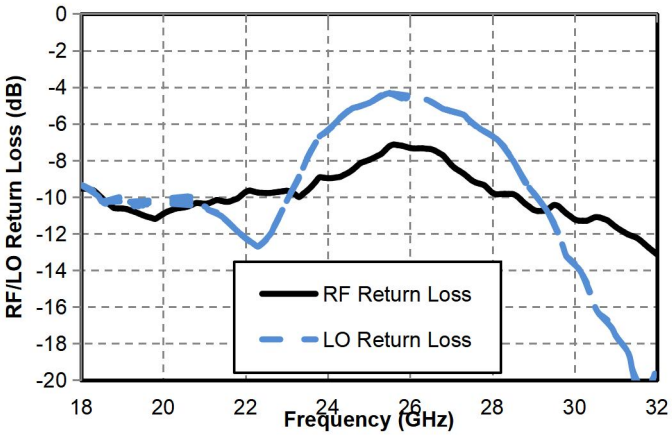
Isolation @ LO = +15dBm



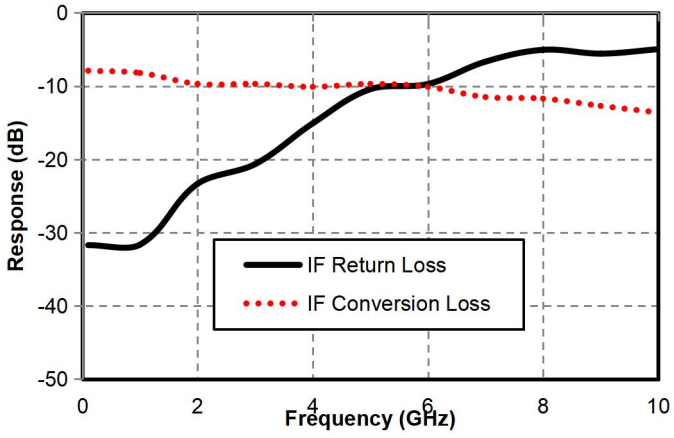
Conversion Loss vs. LO Drive Level



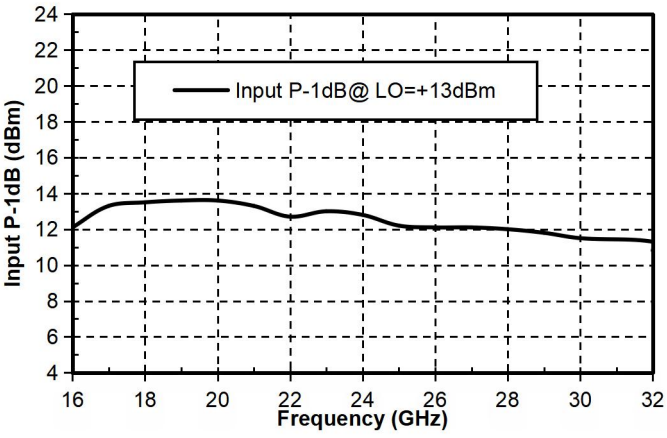
RF/LO Return Loss vs. Frequency



IF bandwidth @ LO = +13dBm



Input P-1dB vs. Frequency



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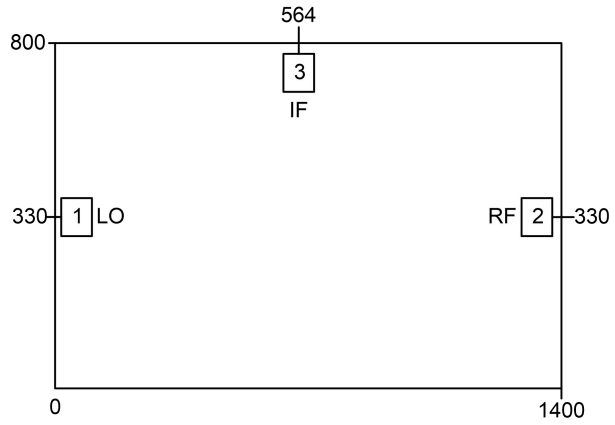
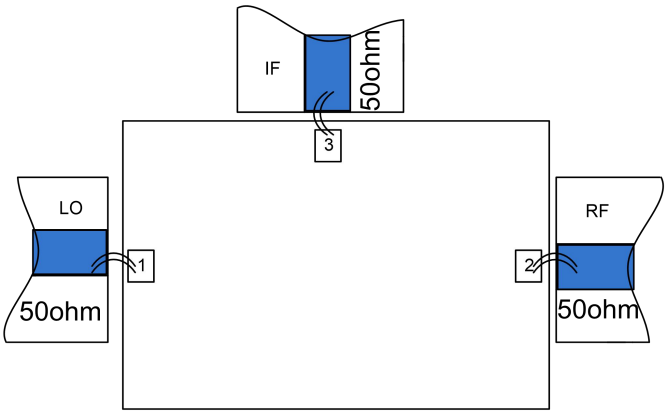
Appearance structure [2]



【 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 follow the ESD protection requirements to avoid static damage to the bare chip.
- 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 ℃ and the tool (vacuum chuck) temperature reaches 265 ℃. 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 ℃. Do not let the chip exceed 320 ℃ 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) .