

SAC3508Q4

GaAs MMIC Double Balanced Mixer
2.0~6.0GHz

Rev 2.3

Features

- RF/LO Frequency: 2.0~6.0GHz
- IF Frequency: DC~2GHz
- Conversion Loss: 8dB
- LO Power: +0dBm
- Size: 4mm×4mm×1.2mm

Typical Applications

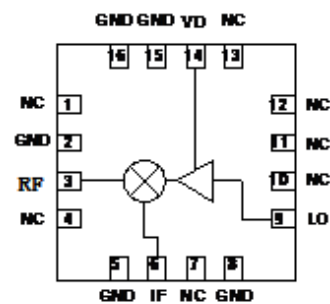
- Microwave radio including point to point communication
- Telecommunication
- Weather radar
- Optical communication
- Test instrumentation
- SatCom
- VSAT
- Military and Aerospace

General Description

SAC3508Q4 is general-purpose double balanced mixer. This MMIC mixer is fabricated in a GaAs process and requires no external components or matching circuitry. The device can be used as both up-converter and down-converter.

SAC3508Q4 is assembled in a 4mm x 4mm QFN package.

Functional Diagram



Electrical Performance

($T_A=25^{\circ}\text{C}$, $\text{LO}=+0\text{dBm}$, $V_D=+5\text{V}$, $I_D=42\text{mA}$, Up-Converter Performance)

Parameter	Min.	Typ.	Max.	Units
RF/LO Frequency Range	2.0~6.0			GHz
IF Frequency Range	DC~2			GHz
Conversion Loss	—	-8.0	—	dB
IF Return Loss	—	-12	—	dB
RF Return Loss	—	-10	—	dB
LO Return Loss	—	-12	—	dB
LO to RF Isolation	—	-24	—	dB
LO to IF Isolation	—	-20	—	dB
RF to IF Isolation	—	-14	—	dB

($T_A=25^{\circ}\text{C}$, $\text{LO}=+0\text{dBm}$, $V_D=+5\text{V}$, $I_D=42\text{mA}$, Down-Converter Performance)

Parameter	Min.	Typ.	Max.	Units
RF/LO Frequency Range	2.0~6.0			GHz
IF Frequency Range	DC~2			GHz
Conversion Loss	—	-8.5	—	dB
IF Return Loss	—	-12	—	dB
RF Return Loss	—	-10	—	dB
LO Return Loss	—	-12	—	dB
LO to RF Isolation	—	-24	—	dB
LO to IF Isolation	—	-24	—	dB
RF to IF Isolation	—	-14	—	dB

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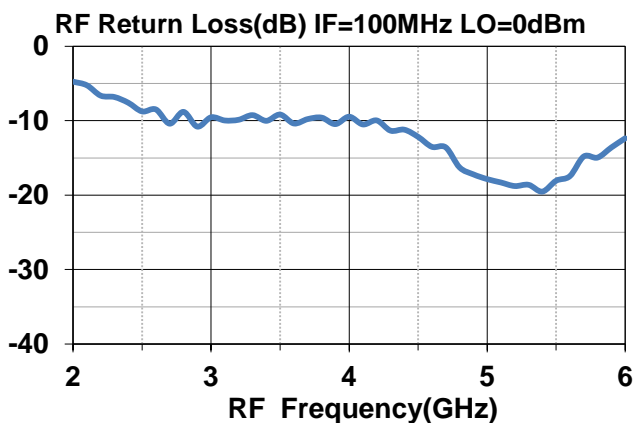
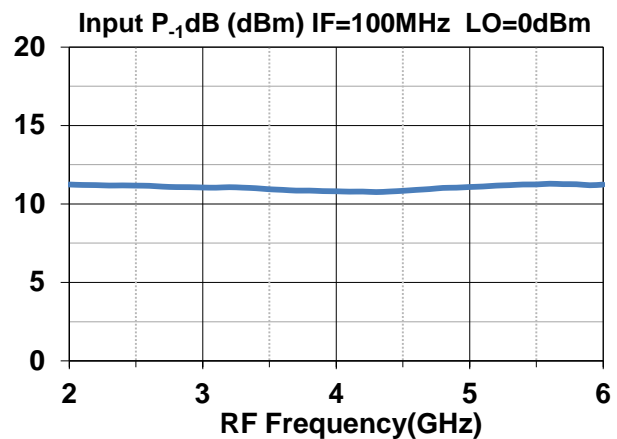
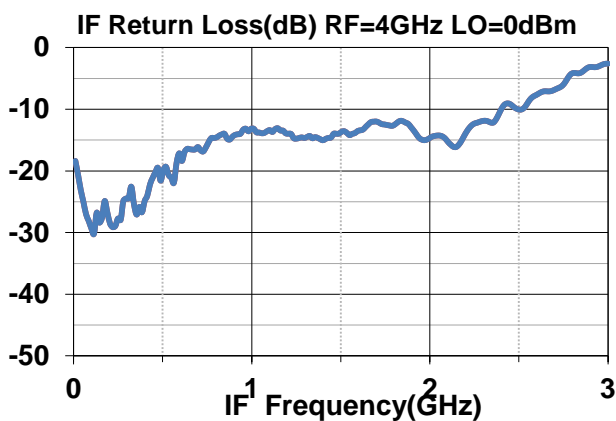
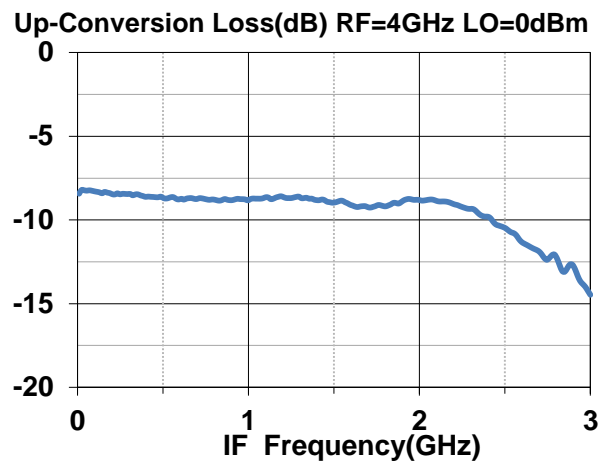
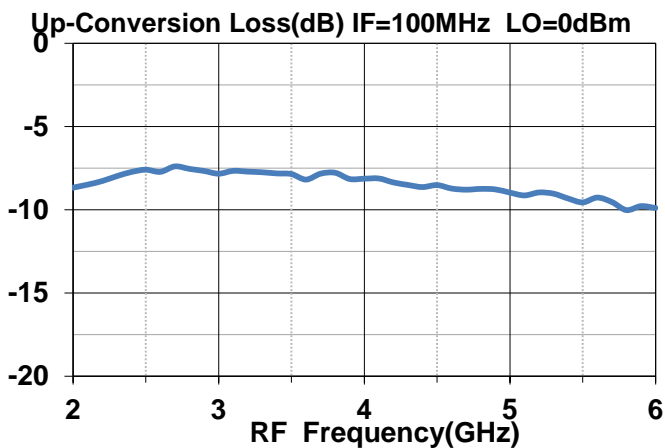
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Absolute Maximum Ratings

Maximum RF/IF Input	+20dBm	Operating Temperature	-55°C~+85°C
Maximum LO Input	+10dBm		
Maximum Input Voltage	+8V	Storage Temperature	-65°C~+150°C

Typical Performance Curve (Up-Converter Performance)



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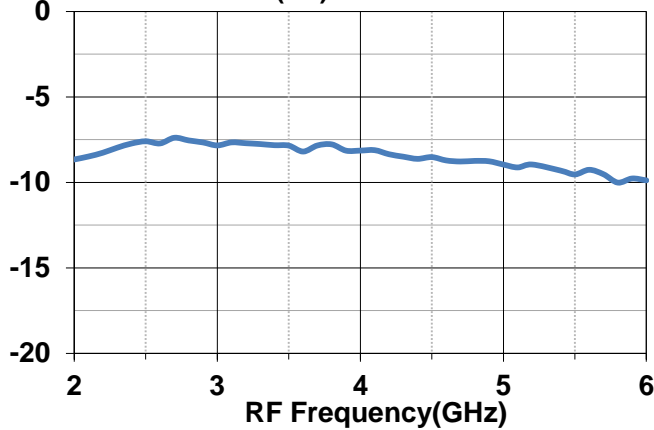
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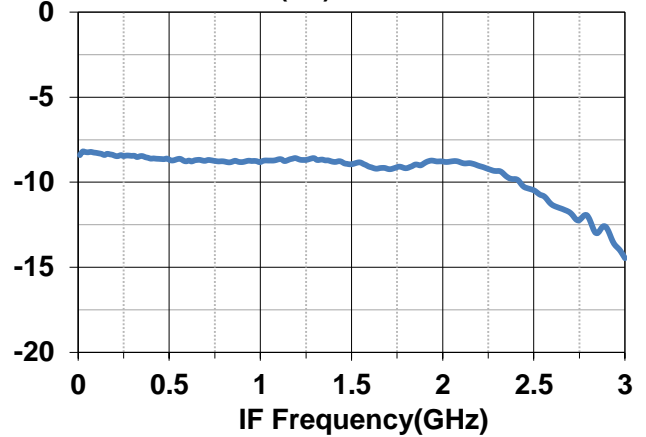
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Typical Performance Curve (Down-Converter Performance)

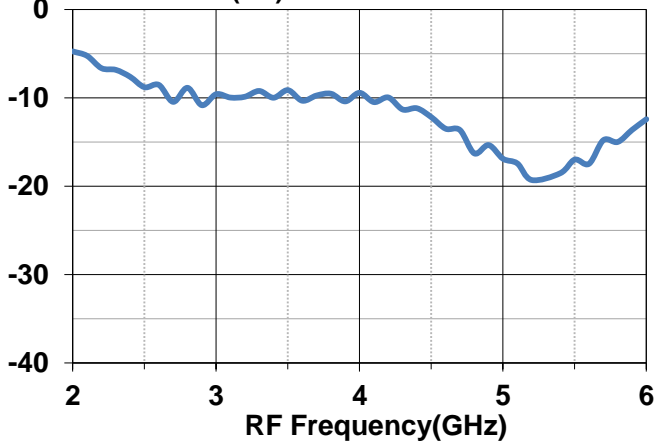
Down-Conversion Loss(dB) IF=100MHz LO=0dBm



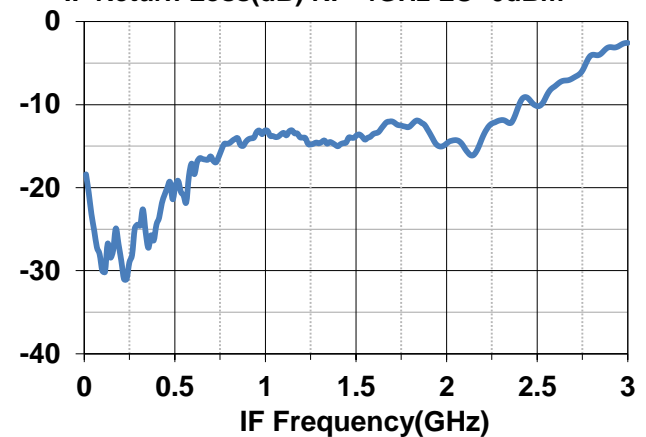
Down-Conversion Loss(dB) RF=4GHz LO=0dBm



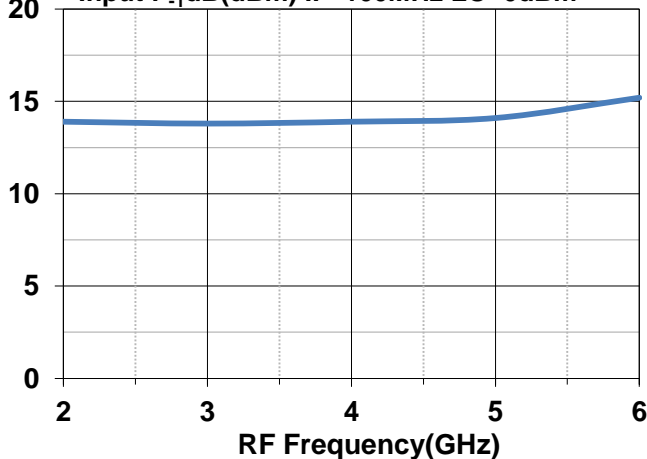
RF Return Loss(dB) IF=100MHz LO=0dBm



IF Return Loss(dB) RF=4GHz LO=0dBm



Input P₁(dBm) IF=100MHz LO=0dBm

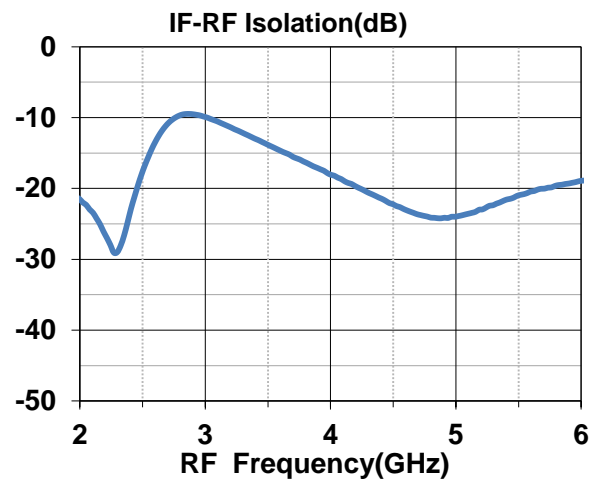
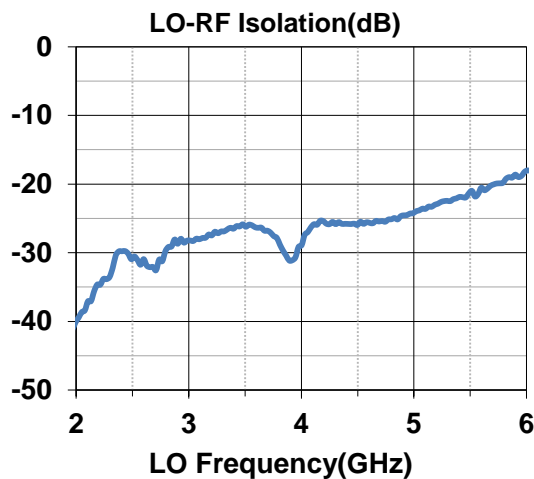
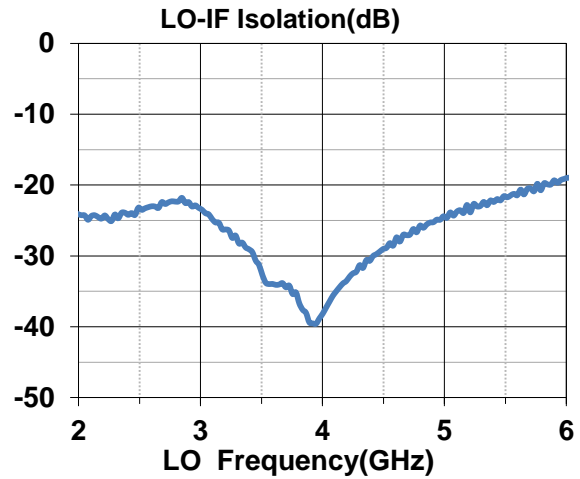
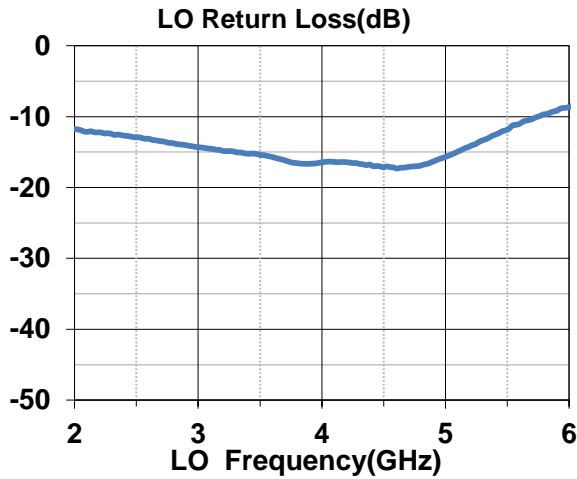


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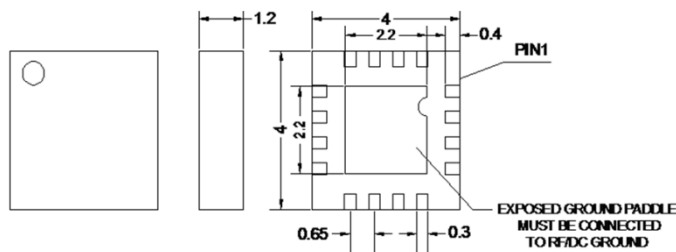
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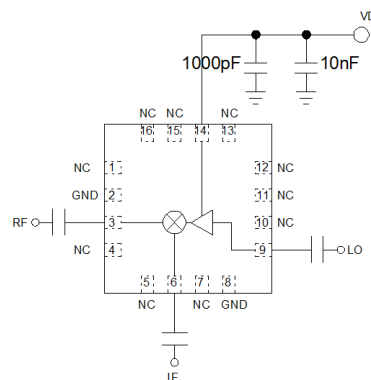
Typical Performance Curve (Isolation)



Outline Drawing (all dimensions in mm)



Outline Drawing (all dimensions in mm)



Attention:

1. The moisture resistant grade of products is 2A, the storage environment $\leq 30^{\circ}$ C/60% RH, The surrounding workshop Life is 4 weeks.
2. After un-packing, It is necessary to bake the parts for 6 hours in 125+/-5 degree environment before soldering.

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