

SAC3506

GaAs MMIC Double Balanced Mixer
11.0~20GHz

Rev 2.1

Features

- RF/LO Frequency: 11.0~20GHz
- IF Frequency: DC~4GHz
- Conversion Loss: -8dB
- LO Power: +13dBm
- Die Size: 1.24mm×0.82mm×0.1mm

Typical Applications

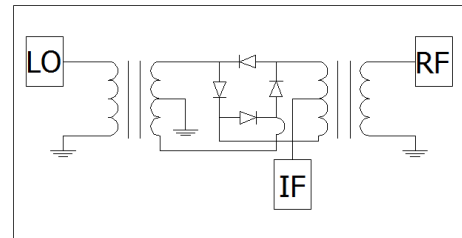
- EW
- Military Radar and Weather Radar
- SATCOM
- Beamforming

General Description

SAC3506 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.

The chip offers full passivation for increased reliability and moisture protection.

Functional Diagram



Electrical Performance

($T_A=25^\circ\text{C}$, LO=+13dBm, Vdd=+5V, Up-Converter Performance)

Parameter	Min.	Typ.	Max.	Units
RF/LO Frequency Range	11~20			GHz
IF Frequency Range	DC~4			GHz
Conversion Loss	—	—	-5	dB
Input P_{-1} dB	—	5	—	dBm

Electrical Performance

($T_A=25^\circ\text{C}$, LO=+13dBm, Vdd=+5V, Down-Converter Performance)

Parameter	Min.	Typ.	Max.	Units
RF/LO Frequency Range	11~20			GHz
IF Frequency Range	DC~4			GHz
Conversion Loss	—	—	-8	dB
Input P_{-1} dB	—	10	—	dBm

Electrical Performance

($T_A=25^\circ\text{C}$, LO=+13dBm, Vdd=+5V)

Parameter	Min.	Typ.	Max.	Units
LO to IF Isolation	-27	—	—	dB
LO to RF Isolation	-30	—	—	dB
RF to IF Isolation	-18	—	—	dB
LO Return Loss	—	-15	—	dB
IF Return Loss	—	-7	—	dB
RF Return Loss	—	-10	—	dB

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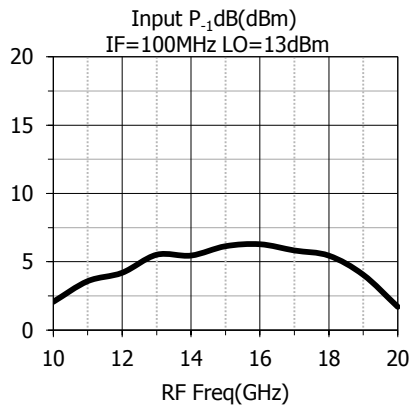
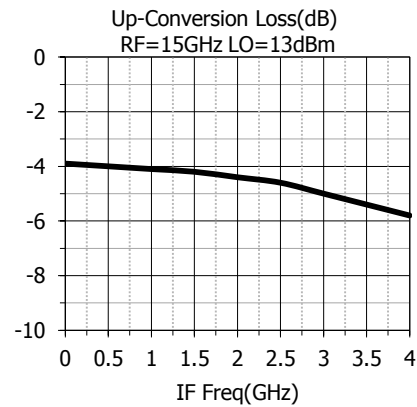
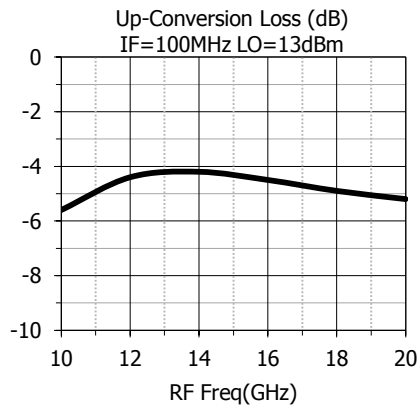
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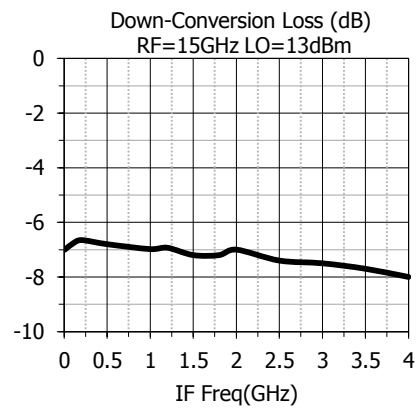
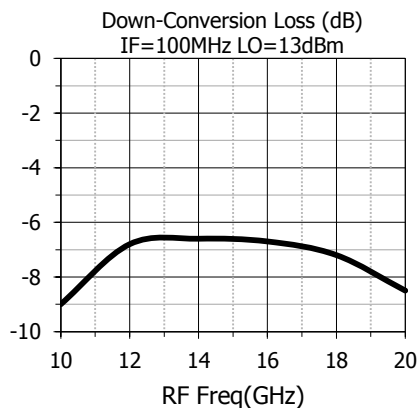
Absolute Maximum Ratings

Maximum RF Input power	+20dBm	Operating Temperature	-55°C~+85°C
Maximum LO Input power	+24dBm		
Maximum Input Voltage	+8V	Storage Temperature	-65°C~+150°C

Typical Performance Curve (Up-Converter Performance)



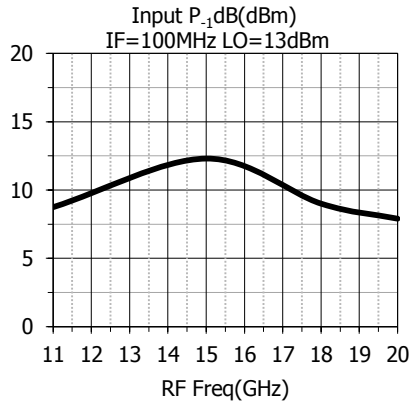
Typical Performance Curve (Down-Converter Performance)



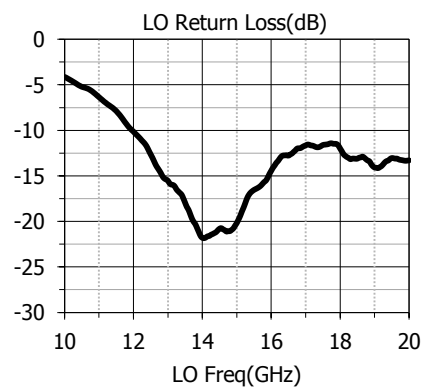
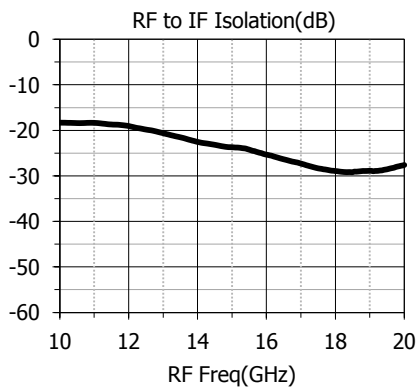
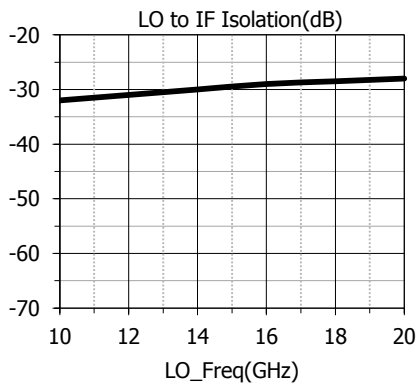
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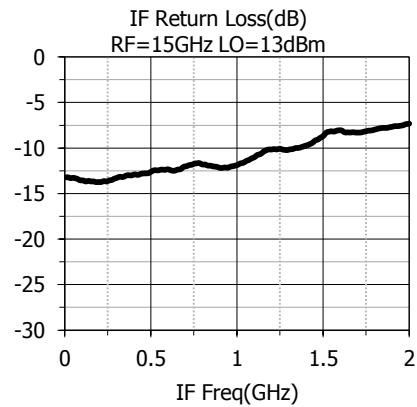
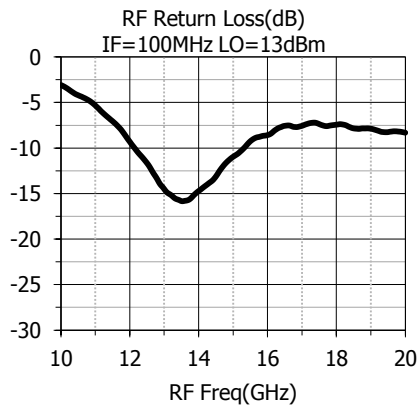
Typical Performance Curve (Isolation)



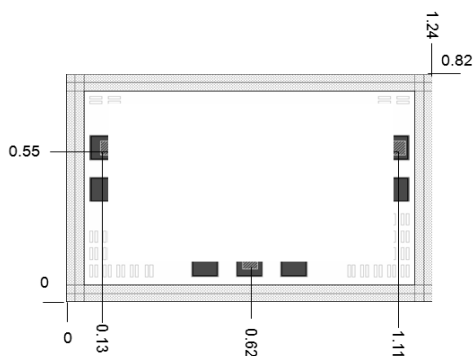
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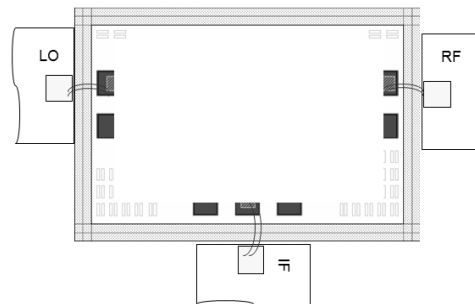
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Die Outline
(all dimensions in mm)



Assembly Diagram



Attention:

GaAs MMIC devices are susceptible to damage from electrostatic discharge. Proper precautions should be observed during handling, assembly and test.