

Features

- LO to RF Frequency: 0.7GHz~2GHz
- IF Frequency: DC~1GHz
- Up-Converter Gain: 6dB
- Down-Converter Gain: 5.5dB
- LO Power: 0dBm
- Die Size: 3.45mm×3.1mm×0.1mm

Typical Applications

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

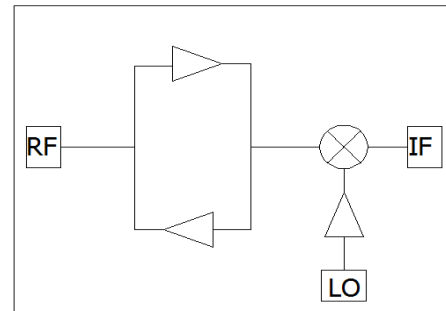
General Description

SAC3604 is a GaAs T/R multifunction chip. It can be configured as up-converter or down-converter at any time.

SAC3604 is integrated with RF bidirectional amplifier, LO driver amplifier, dual balanced mixer of switch. The RF/LO frequency range from 0.7 to 2GHz and IF frequency ranges from DC to 1GHz with 5.5dB typical conversion gain at LO power being 0dBm.

The backside of the SAC3604 is RF grounded. Die attach should be accomplished with electrically and thermally conductive epoxy only.

Functional Diagram



Electrical Performance

($T_A=25^{\circ}\text{C}$, $V_{DLO}=+5\text{V}$, $V_{DR}=+5\text{V}$, $V_{DT}=+5\text{V}$, $L_O=0\text{dBm}$, $Z_0=50\Omega$)

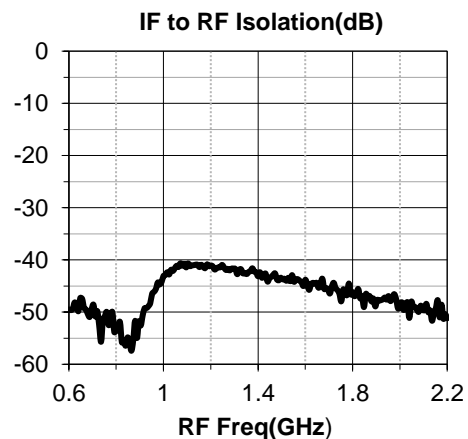
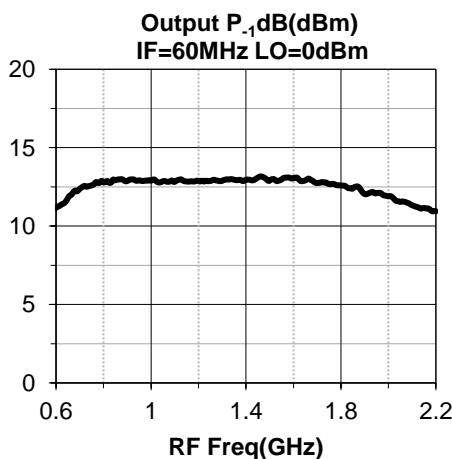
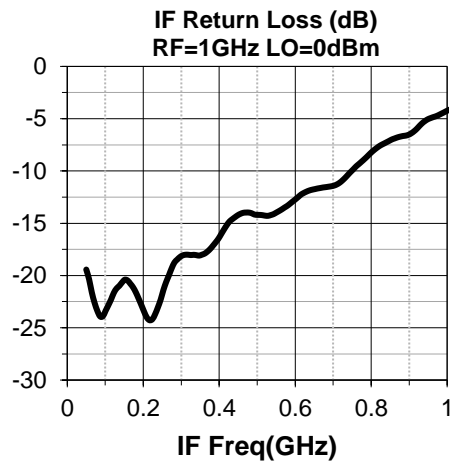
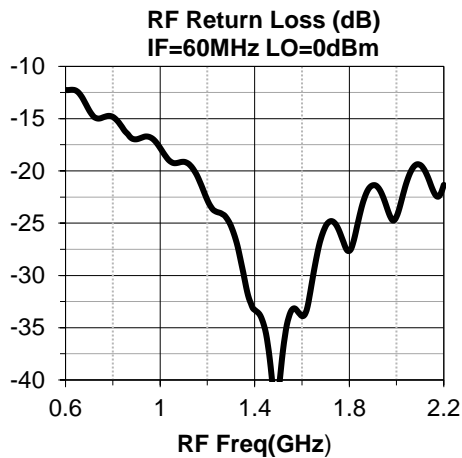
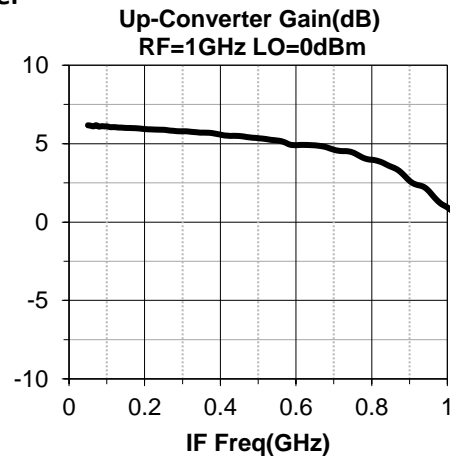
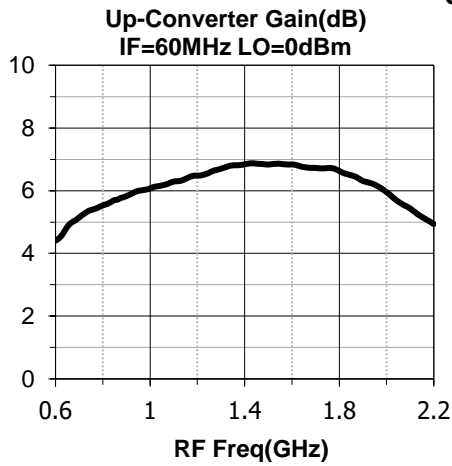
Parameter	Min.	Typ.	Max.	Units
LO to RF Frequency	0.7~2.0			GHz
IF Frequency Range	DC~1			GHz
Up-Converter Gain	—	6	—	dB
Down-Converter Gain	—	5.5	—	dB
Down Converter -OutputP _{-1dB}	—	4	—	dBm
LO to IF Isolation	—	-40	—	dB
LO to RF Isolation	—	-60	—	dB
Up-Converter OutputP _{-1dB}	—	12	—	dBm
Port of Return Loss	—	-12	—	dB
Supply Current(I _b)	—	80+50	—	mA

Absolute Maximum Ratings

RF Input Power	13dBm	Control Voltage Range	-5.5~+0.5V
Channel Temperature	150°C	Storage Temperature	-65~+150°C
Operating Temperature	-55~+85°C	ESD protection level (HBM)	Class 1A

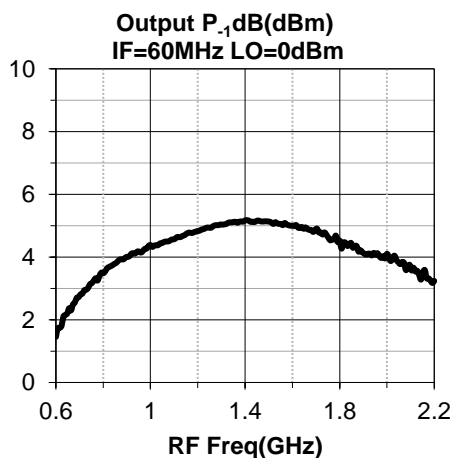
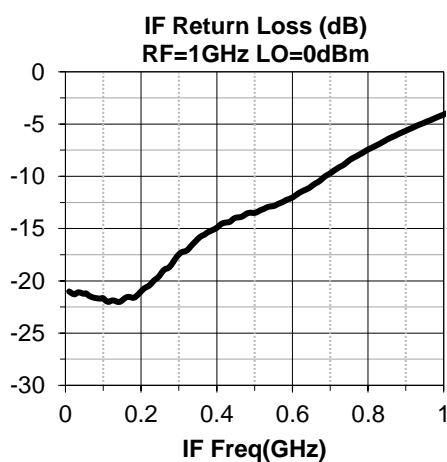
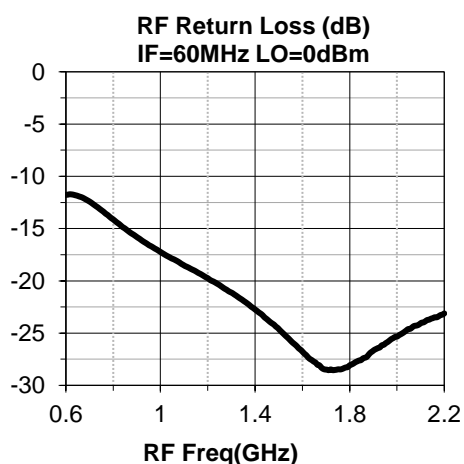
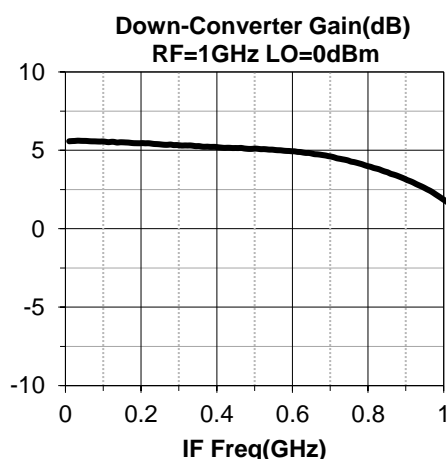
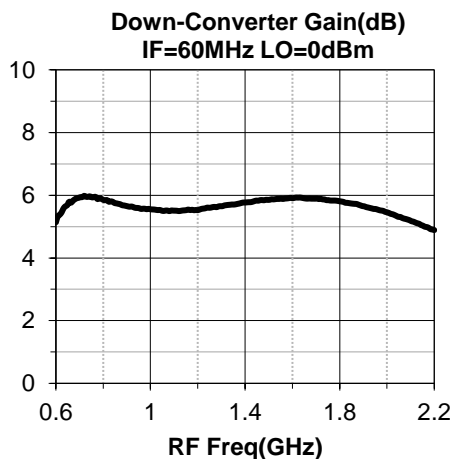
Typical Performance Curve

Up-Converter



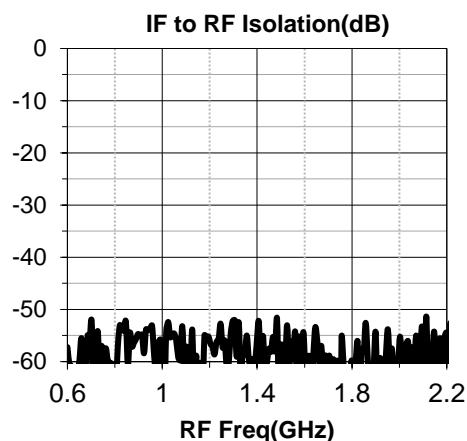
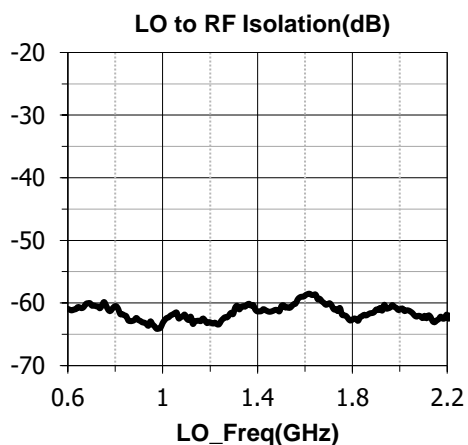
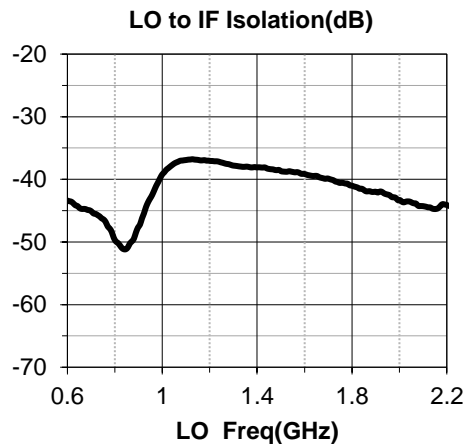
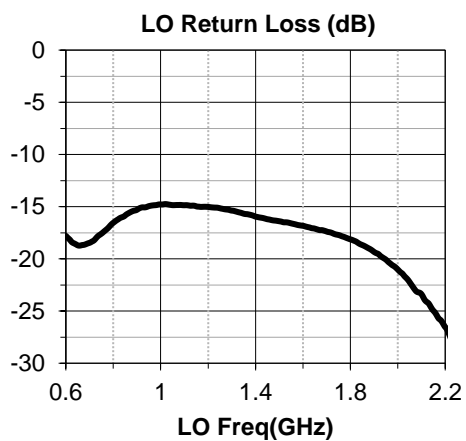
Typical Performance Curve

Down-Converter



Typical Performance Curve

Isolation



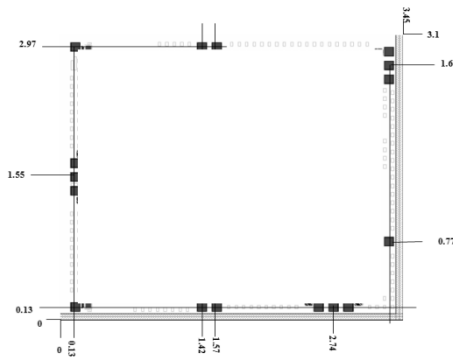
Attenuator Control Logic

	1A	2A	2B	3A	3B
REF	-5	0	-5	0	-5
1dB	0	0	-5	0	-5
2dB	-5	-5	0	0	-5
4dB	-5	0	-5	-5	0

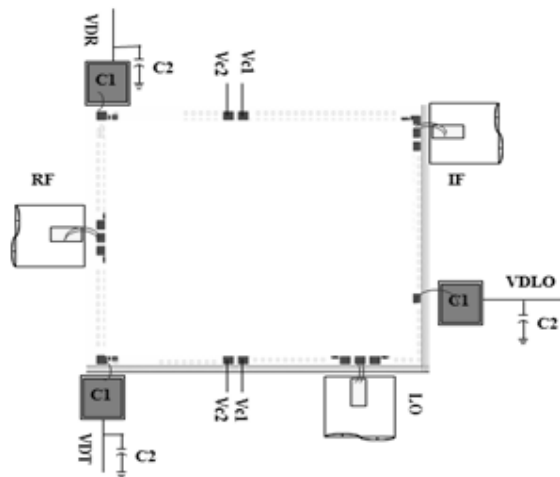
Function Description

	VC1	VC2
Down-conversion (RF-IF)	-5	0
Up-conversion (IF-RF)	0	-5

Die Outline (All dimensions in mm)



Assembly Diagram



Components List

Reference Des.	Value	Part Number	Manuf.	Size
C1	100pF	—	RADVISTA	Chip
C2	10nF	GRM1857U1A103JA44	MURATA	0603

Attention:

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