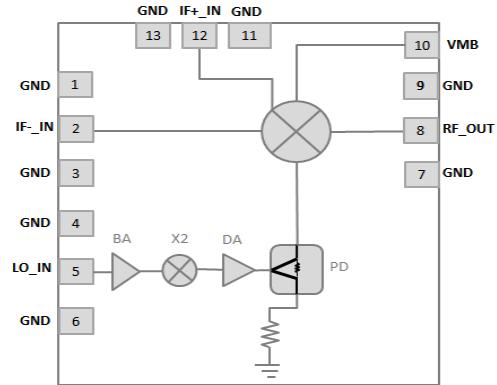


Features:

- RF Frequency:24-30 GHz
- IF Frequency:2-6 GHz
- LO Frequency:13-18 GHz
- Conversion Loss of 8-9 dB over 24 to 30 GHz Bandwidth.
- IIP3 of +15 dBm with min LO power.
- Integrated x2LO Chain

Functional Block Diagram



Description:

RFICUC03 (UPC Mixer) is LO reject Mixer used in receive application. The process used to design UPC Mixer is 0.1um GaAs pHEMT.

This is singly balanced resistive Mixer. The IF+ and IF- ports are connected to an off-chip IF Balun. The LO is applied to a balun to generate the required 180 phase shift at the transistor gates. DC bias gate is applied to gate of resistive mixer which improves LO rejection, IIP3 and CG as well.

LO chain includes buffer amplifier, frequency doubler, LO driver amplifier. It consumes 2 watt of power.

Applications

- Wireless 5G Systems
- Satellite Communication
- TDD/FDD System.

Pin Configuration:

Pin No.	Pin Name	Description
1	GND	RF Ground
2	IF-_IN	IF_Input
3	GND	RF Ground
4	GND	RF Ground
5	LO_IN	LO Input
6	GND	RF Ground
7	GND	RF Ground
8	RF_OUT	RF output
9	GND	RF Ground
10	VMB	Mixer Bias
11	GND	RF Ground
12	IF+_IN	IF_Input
13	GND	RF Ground

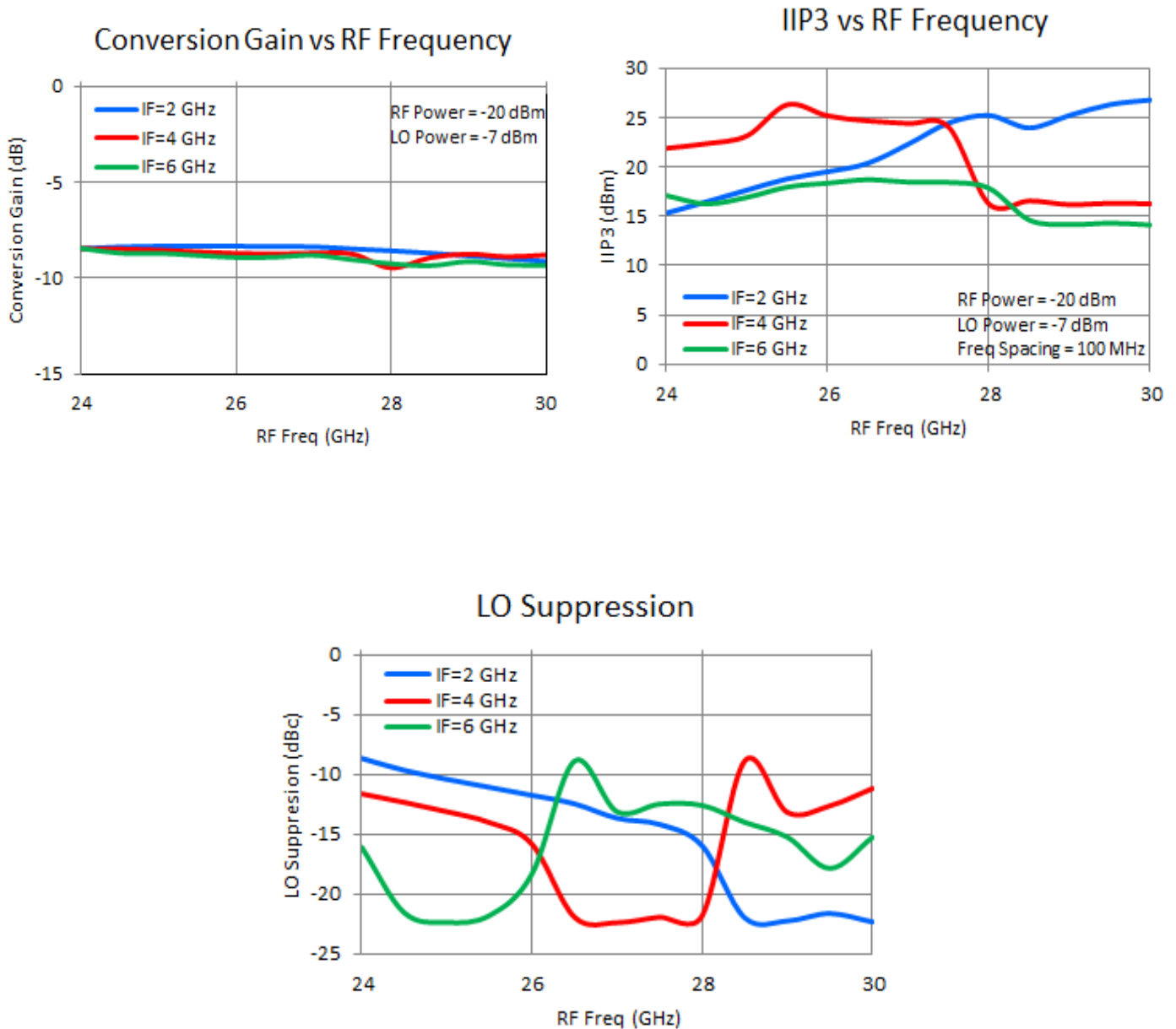
Electrical Specification:

The electrical specifications apply at TA=+25°C in a 50Ω system. Typical data shown is for a down conversion application with a -7 dBm sine wave LO input.

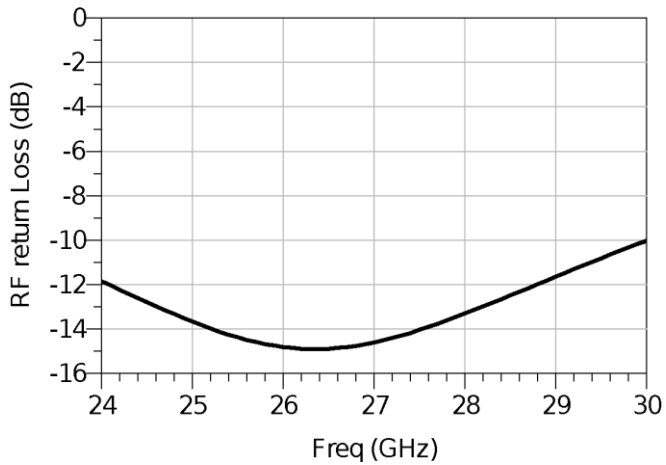
Parameter	Test Condition	Min	Typ	Max	Unit
RF (Port 1) Frequency Range	-	24	-	30	GHz
LO (Port 2) Frequency Range	-	13	-	18	GHz
IF (Port 3) Frequency Range	-	2	-	6	GHz
Conversion Loss (CL)	IF = 2 GHz	-9	-	-8	dB
	IF = 4 GHz	-9.5	-	-8	
	IF = 6 GHz	-9	-	-8	
Image Rejection (IR)	@IF=6GHz		13		dBc
Isolation	LO to RF	-	21+	-	dB
	LO to IF	-	24+	-	dB
	RF to IF	-	28+	-	dB
Input IP3 (IIP3) RF power = -20 dBm ,Freq spacing= 100MHz , LO Power =-7 dBm	IF = 2 GHz	15	20	26	dBm
	IF = 4 GHz	16	25	26	dBm
	IF = 6 GHz	15	16	18	dBm
Input 1 dB Gain Compression Point (P1dB)	-	-	11	-	dBm

Typical Performance Curves: The test conditions and frequency plan below applies to all following sections, unless otherwise specified.

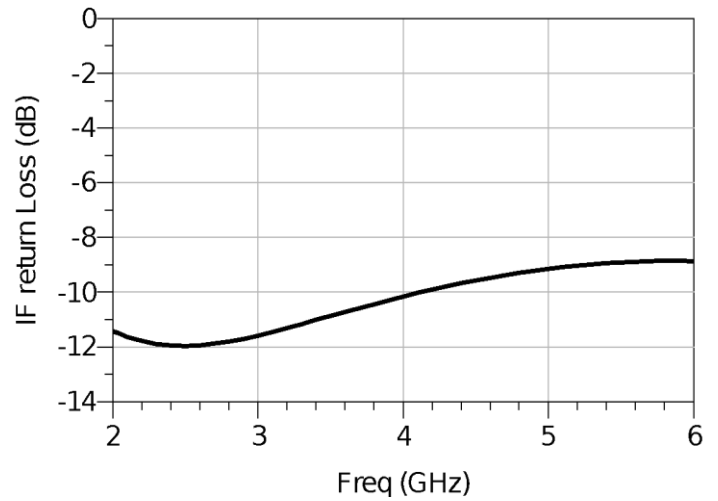
Frequency spacing = 100 MHz , LO power = - 7 dBm



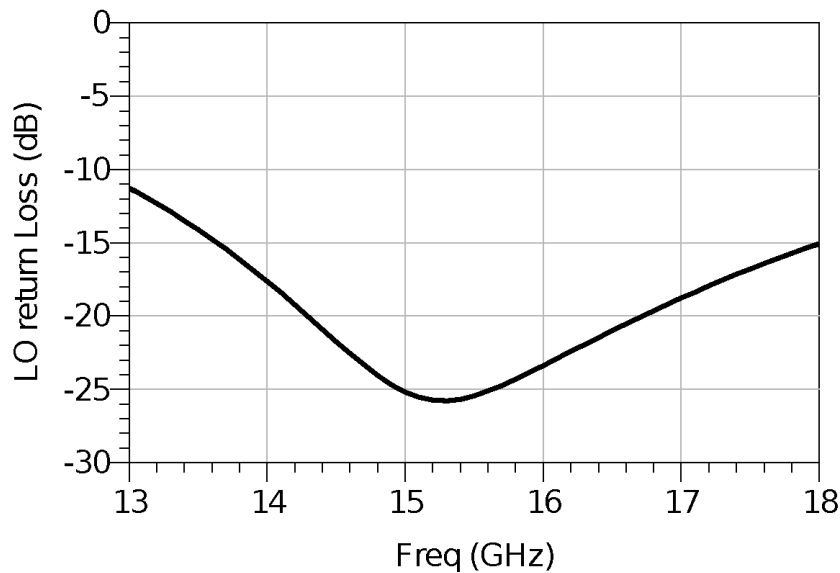
RF Port Return Loss



IF Port Return Loss



LO Port Return Loss



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