



GILBERT CELL MIXER (2 to 3 GHz)

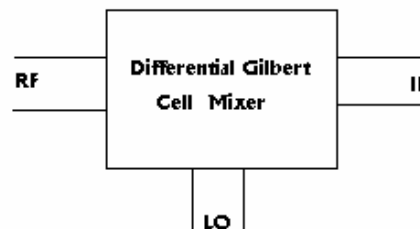
RCM01
Preliminary datasheet

IP Description

The RCM01 is 1.5 to 3 GHz Low noise, small size; differential down conversion CMOS Mixer designed on 0.35µm SiGe BiCMOS process. The device is designed for use in the 802.11 b/g and WLAN MIMO system.

The noise figure is less than 8dB at 2.5 GHz and it has an extremely small die size of 0.5mm by 0.5mm. The device works with single ± 3.3 V supply voltage and draws 8.15 mA of current.

Functional block diagram



Applications

- IEEE 802.11 b/g WLAN
- WLAN MIMO System
- WiFi Systems
- ISM Band Systems
- Wireless Infrastructure
- Image Reject Mixer
- I/Q Modulator

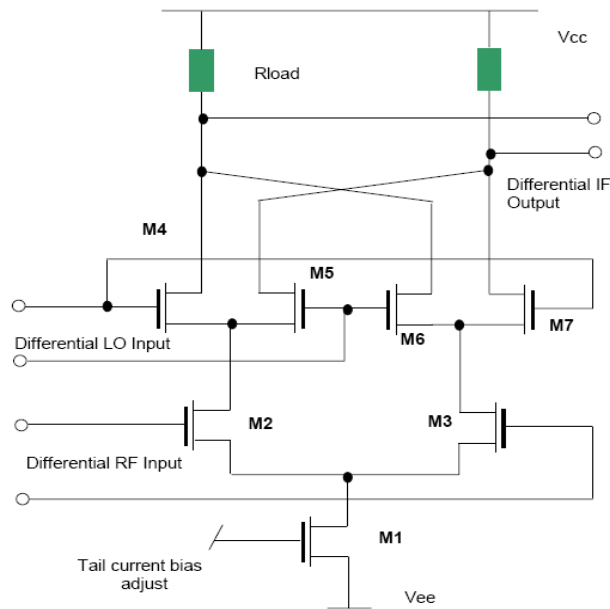
Key Features

- 1.5 GHz to 3 GHz Frequency range covered
- Noise figure <8 dB at 2.5 GHz
- Small Size
- Port Isolation of >50dB

Electrical Specifications

Parameter	Minimum	Typical	Maximum	Units
RF Frequency Range	1.5		3	GHz
IF Frequency Range	20		500	MHz
Conversion Gain @ IF of 250MHz	0		8	dB
IIM3 Intercept Point (Input)		-3		dB
DC Power consumption		< 30		mW
Noise Figure SSB		<8(@ 2.5 GHz)		dB
Supply voltage		± 3.3		V
Current		8.15		mA
Source impedance		50		Ohms

Gilbert Cells Mixer



Simulated Result

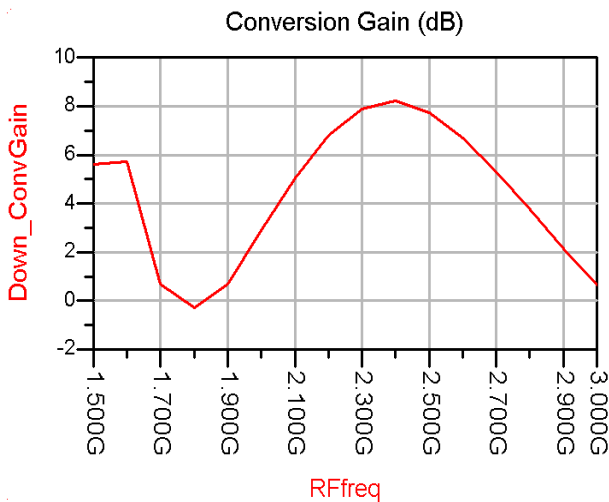


Fig1: Plot of Gain Vs. Frequency With Fixed LO

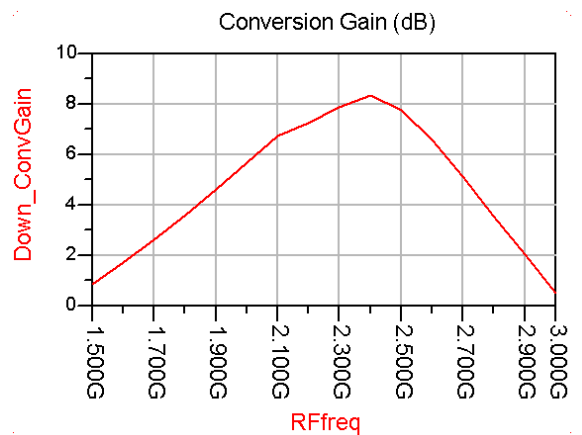


Fig2: Plot of Gain Vs. Frequency With Fixed IF



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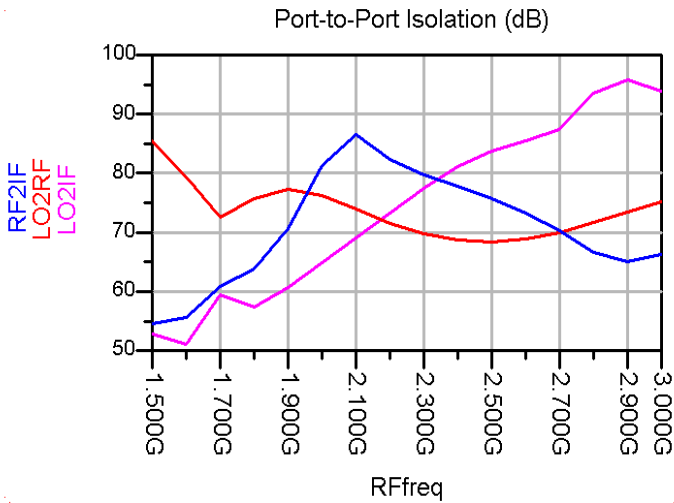


Fig3: Plot of Isolation Port to Port

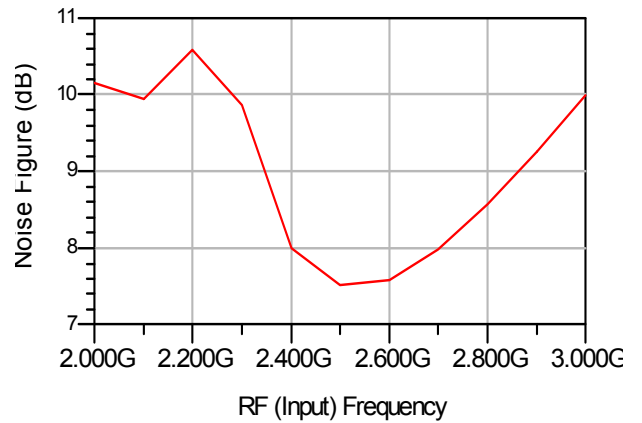


Fig4: Plot of Noise Vs Frequency

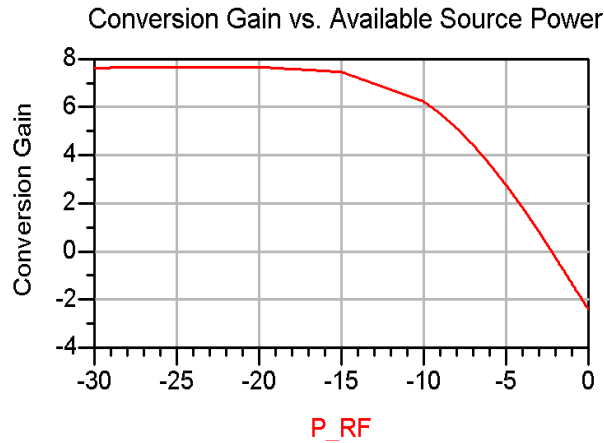


Fig5: Plot of Conversion Gain Vs Source Power

Layout

