HMC8327LG

v01.0717

E-BAND LOW NOISE DOWNCONVERTER SIP 81 - 86 GHz

Typical Applications

The HMC8327LG is ideal for:

- E-Band Communication Systems
- High Capacity Wireless Backhaul
- Test & Measurement

Features

Conversion Gain: 8.5 dB typical

Image Rejection: 30 dBc typical

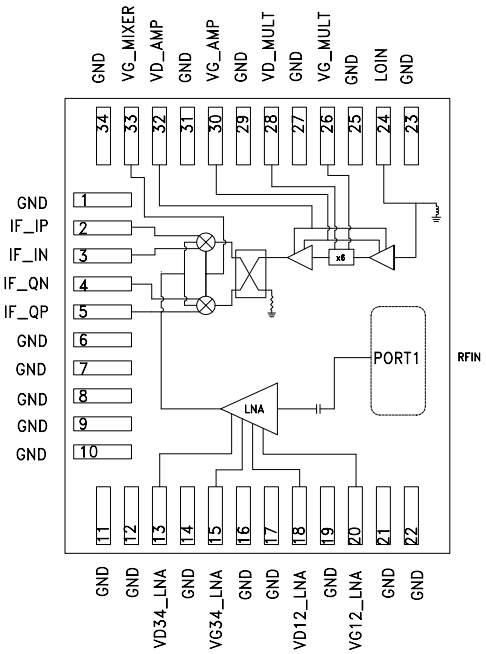
Noise Figure: 6 dB typical

Input Third-Order Intercept (IP3): 2 dBm typical

Input Power for P1dB Compression: -7 dBm typical

Fully Integrated In Surface Mount 34 Lead 13 mm x 11 mm Package

Functional Diagram



General Description

The HMC8327LG is a fully integrated System In Package (SiP) in-phase/quadrature (I/Q) downconverter that operates between an RF input frequency range of 81 GHz to 86 GHz and an IF output frequency range of DC to 2 GHz. This device provides a small signal conversion gain of 8 to 13 dB with 30 dBc of image rejection. The HMC8327LG utilizes a low noise amplifier followed by an image rejection mixer which is driven by a 6x LO multiplier. Differential I and Q mixer outputs are provided for direct conversion applications. Alternatively, the outputs can be combined using an external 90° hybrid and two external 180° hybrids for single-ended applications.

Electrical Specifications, T_A = -40°C to +85°C, IF = 1000 MHz, LO = 4 dBm, VDLNA = 3 V, VD_AMP = 4 V, VD_MULT = 1.5 V, VG_MIXER = -1 V [1]

Parameter	Min.	Typ. (25°C)	Max.	Units
RF Frequency Range	81		86	GHz
LO Frequency Range	13.2		14.6	GHz
IF Frequency Range	0		2	GHz
LO Input Level Range	0		8	dBm
Gain Flatness		2		dB
Conversion Gain		8.5		dB
Image Rejection		30		dBc
Input Power for 1 dB Compression (P1dB)		-7		dBm
Input Third-Order Intercept (IP3)		2		dBm
Input Second-Order Intercept (IP2)		30		dBm
6× LO Leakage at the RF Input Port (RFIN)		-55		dBm
I/Q Phase Balance [2]		2		degrees
I/Q Amplitude Balance [2]		0.5		dB
Noise Figure		6		dB

[1] Measurements performed as downconverter with upper sideband selected and two external 180° hybrids followed by one external 90° hybrid at the IF ports, unless otherwise noted.
[2] Measurements performed without external hybrids.

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Parameter	Min.	Typ. (25°C)	Max.	Units
RF Port Return Loss		10		dB
DC Power Dissipation		1.0	1.25	W
Input Waveguide port		WR-12		
Baseband Output Port Impedance (differential)		100		Ohm
Baseband Output Port Return Loss		10		dB
LO Input Port Impedance		50		Ohm
LO Input Port Return Loss		10		dB
VG for the LNA	-2		0	V
VD for the LNA		3		V
VD for the Multiplier (VD_MULT)		1.5		V
VG for the Multiplier (VG_MULT)	-2		0	V
VG for the Mixer (VG_MIXER)	-2		0	V