HMJ8

High Dynamic Range FET Mixer

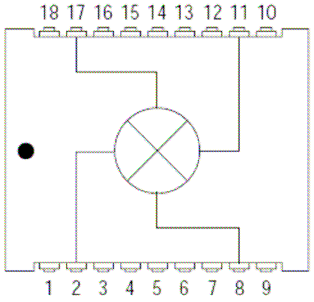
Product Features

- +37 dBm IIP3
- No External Matching Elements Required
- RF 2200 - 2300 MHz
- LO 2060 - 2160 MHz
- IF 50 - 150 MHz
- +18 dBm LO Drive Level
- +3V Bias (22 mA)
- Low Cost SMT J-Lead Package

Product Description

The HMJ8 is a high dynamic range GaAs FET mixer. This active FET mixer realizes a typical third order intercept point of +37 dBm at an LO drive level of +18 dBm. The HMJ8 comes in a low cost, 18-pin J-Lead package. Typical applications include frequency up/down conversion, modulation and demodulation for receivers and transmitters used in communication systems.

Functional Diagram



Function	Pin No.
IF	2
LO	11
RF	17
+3V	8
Ground	All other pins

Specifications (1)

Parameter	Units	Min	Typ	Max	Condition
RF Frequency Range	MHz		2200 – 2300		
LO Frequency Range	MHz		2060 – 2160		
IF Frequency Range	MHz		50 – 150		
SSB Conversion Loss	dB		8.0	9.0	
Noise Figure	dB		10.5		
LO-RF Isolation	dB	22	27		
LO-IF Isolation	dB	20	30		
RF-IF Isolation	dB		15		
Input IP3	dBm	32	37		
RF Return Loss	dB		11		
LO Return Loss	dB		8.5		
IF Return Loss	dB		14		
Input P1dB	dBm		+23		
LO Drive Level	dBm		+18		
DC Current at +3V Bias	mA		22	35	

1. Test conditions unless otherwise noted: 25 ºC, RF = 2250 MHz @ -10 dBm, LO = 2110 MHz @ +18 dBm, IF = 140 MHz

Absolute Maximum Rating

Parameters	Rating
Operating Case Temperature	-40 to +85 °C
Storage Temperature	-65 to +100 °C
Maximum Input Power	+25 dBm

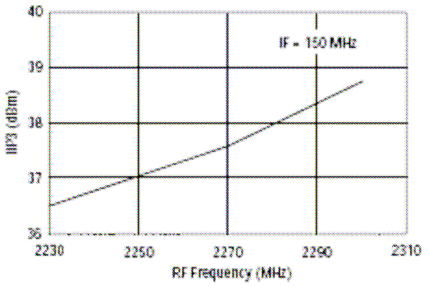
1. Operation of this device above any of these parameters may cause permanent damage.
2. Total sum of LO port and RF port power should not exceed 25 dBm

Ordering Information

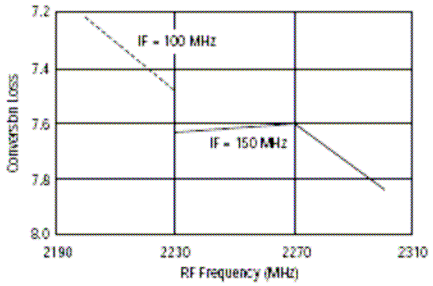
Part No.	Description
HMJ8	High Dynamic Range FET Mixer
HMJ8-PCB	Fully Assembled Application Circuit

Typical Performance Data

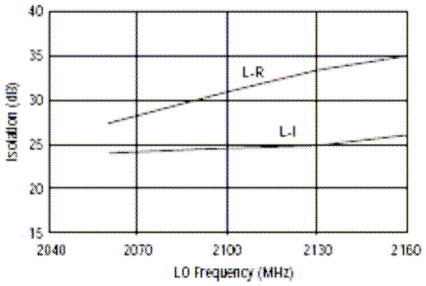
IIP3 vs. RF Frequency



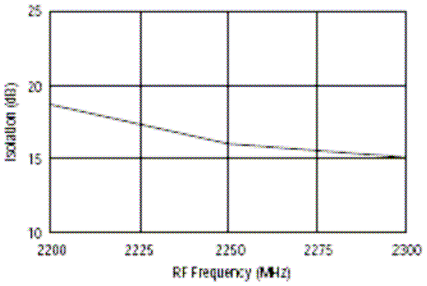
Conversion Loss vs. RF Frequency



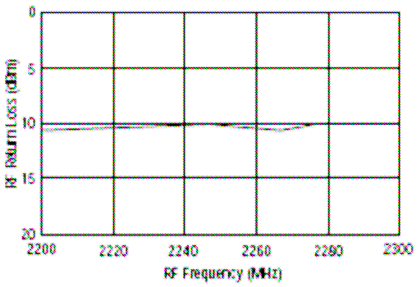
Isolation vs. LO Frequency



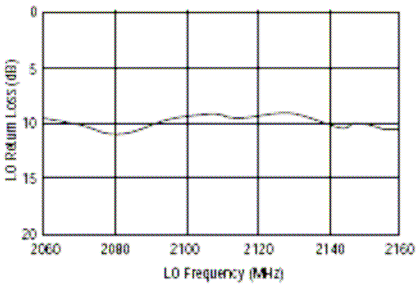
Isolation vs. RF Frequency



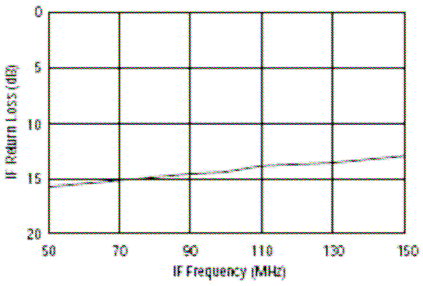
RF Return Loss vs. RF Frequency



LO Return Loss vs. LO Frequency



IF Return Loss vs. IF Frequency



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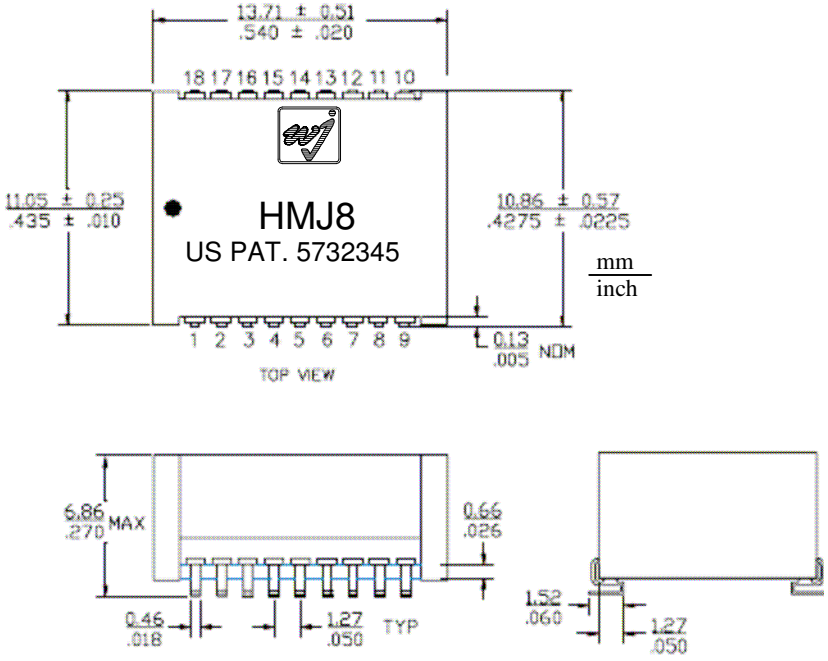
Outline Drawing



Product Marking

The component will be marked with an "HMJ8" designator with a four-digit alphanumeric lot number XXXX.

Tape and reel specifications for this part are located on the website in the "Application Notes" section.

ESD Information

Caution! ESD sensitive device.

ESD Rating:	Class 2
Value:	Passes at 2000 V
Test:	Human Body Model (HBM)
Standard:	JEDEC Standard JESD22-A114

ESD Rating:	Class IV
Value:	Passes at 2000 V
Test:	Charged Device Model (CDM)
Standard:	JEDEC Standard JESD22-C101

Mounting Config. Notes

1. Ground vias are critical for thermal and RF grounding considerations.
2. A minimum of 28 ground vias are required for 14 mil FR4 boards.
3. If your PCB design rules allow, ground vias should be placed under the land pattern for better RF performance. Otherwise ground vias should be placed as close to the land pattern as possible.
4. Trace width depends on the PCB material.

Land Pattern / Mounting Configuration