



HMJ5

High Dynamic Range FET Mixer

The Communications Edge™

Product Features

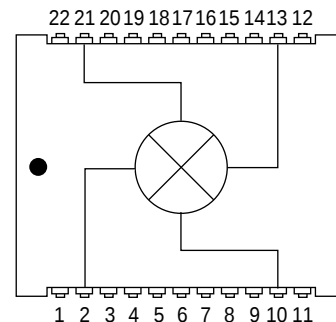
- +35 dBm IIP3
- No external matching element Required
- RF 40-1000 MHz
- LO 30-900 MHz
- IF 5-250 MHz
- +17 dBm LO Drive Level
- +3V at 35 mA DC Power Supply
- Low Cost Surface Mount J-Lead Package

Product Description

The HMJ5 is a high dynamic range, GaAs FET mixer. This active FET mixer realizes a typical third order intercept point of +35 dBm at an LO drive level of +17 dBm. The HMJ5 comes in a low cost, J-Lead package. Typical applications include frequency up/down conversion, modulation and demodulation for receivers and transmitters used in communications systems.

• **UPDATED**
• **+17 dBm LO Drive**

Functional Diagram



Function	Pin No.	Function	Pin No.
Ground	1	Ground	12
IF	2	LO	13
Ground	3-9	Ground	14-20
+3V DC	10	RF	21
Ground	11	Ground	22

Specifications

Parameter	Units	Minimum	Typical	Maximum	Condition
Frequency Range:					
RF	MHz	40		1000	
LO	MHz	30		900	
IF	MHz	5		250	
SSB Conversion Loss	dB		7.5	9.0	
SSB Noise Figure	dB		9.5		
Isolation:					
LO to RF	dB	20	28		
LO to IF	dB	24	30		
IIP3	dBm	31	35		
Return Loss:					
RF Port	dB		11.7		
LO Port	dB		6.0		
IF Port	dB		10.9		
Input P1dB	dBm		23		
LO Drive Level	dBm		17		
DC Current at +3V Bias	mA		35	60	

RF = 900 MHz (0 dBm)

Notes:

1. RF = 905 MHz (-10 dBm) LO 900 (+17 dB) IF = 5 at 25°C.
2. Measured in a 50-ohm system with nominal LO drive in a downconverter application only, unless otherwise specified.
3. LO frequency must be separated from IF frequency by a minimum of 2 MHz (i.e., $|F_{LO} - F_{IF}| \geq 2$ MHz).

Absolute Maximum Ratings

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

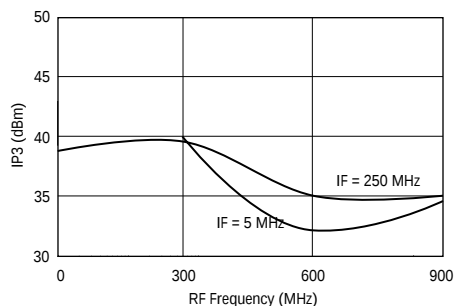
1. Operation of this device above any of these parameters may cause permanent damage.
2. Total sum of LO port and RF port power should not exceed 25 dBm.

Ordering Information

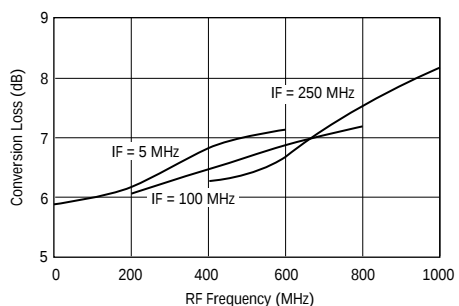
Part No.	Description
HMJ5	High Dynamic Range FET Mixer (Available in tape and reel)
HMJ5-PCB	Fully Assembled Application Circuit

Performance Charts

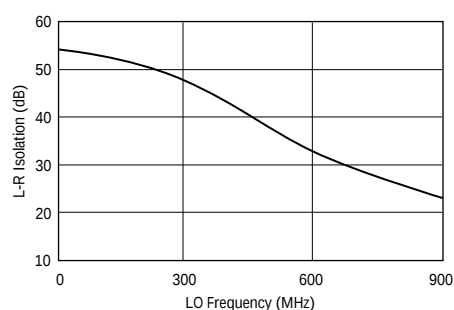
IP3 vs. RF Frequency



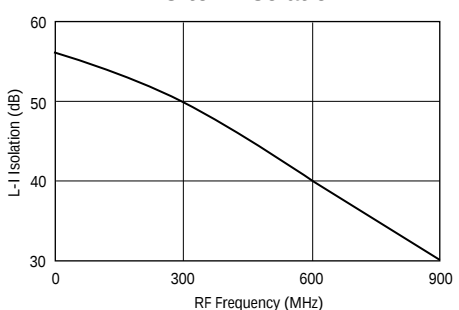
Conversion Loss vs. RF Frequency



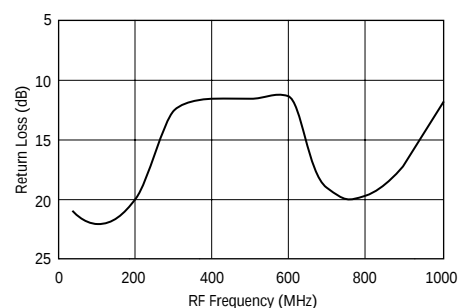
LO to RF Isolation



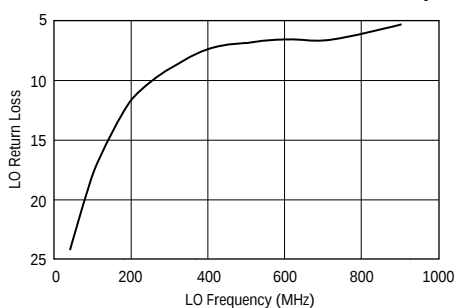
LO to IF Isolation



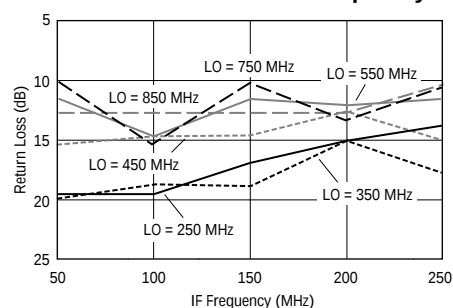
RF Port Return Loss



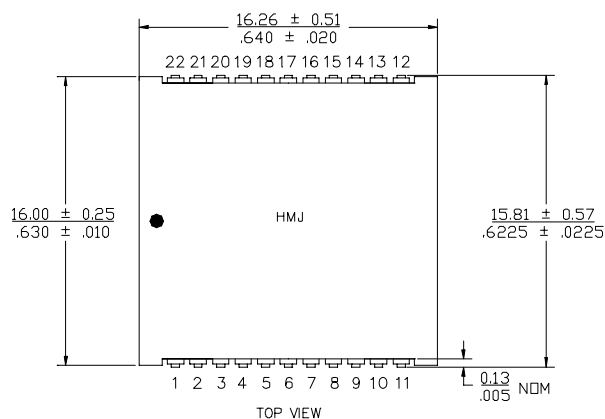
LO Port Return Loss vs. LO Freq



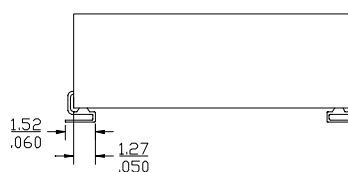
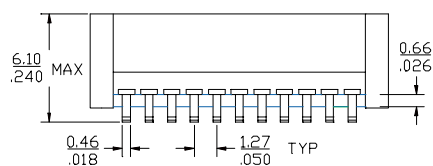
IF Return Loss vs. IF Frequency



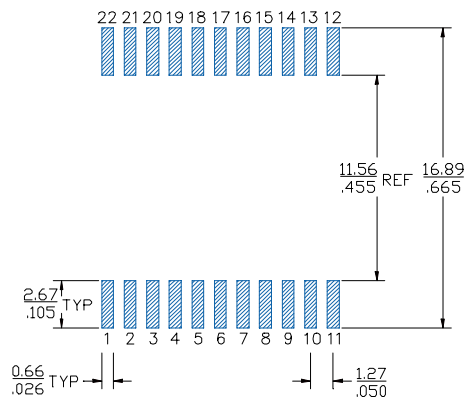
Outline Drawing



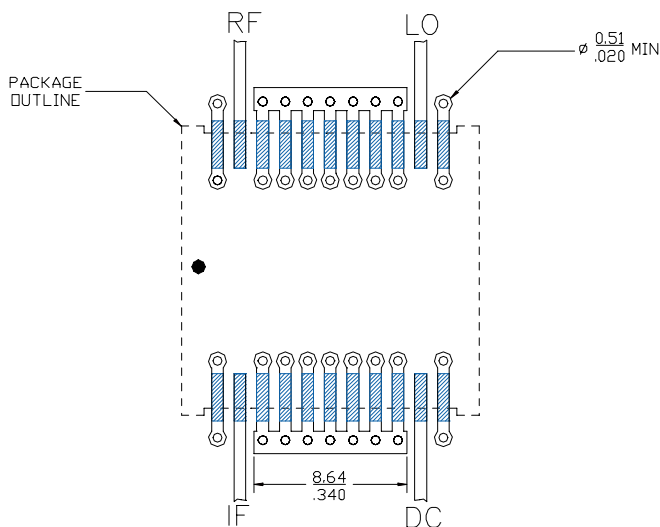
mm
inch



Land Pattern



Mounting Configuration



FUNCTION	PIN NO.	FUNCTION	PIN NO.
GROUND	1	GROUND	12
IF	2	LO	13
GROUND	3-9	GROUND	14-20
DC	10	RF	21
GROUND	11	GROUND	22

- Notes:
1. Ground vias are critical for thermal and RF grounding considerations.
 2. A minimum of 36 ground vias are required for 14 mil FR4 board.
 3. If your PCB design rules allow, ground vias should be placed under the land pattern for better RF and thermal performance. Otherwise ground vias should be placed as close to land pattern as possible.
 4. Trace width depends on PC board.

Specifications and information are subject to change without notice.



Caution! ESD sensitive device.

