

Product Features

- Greater than +34 dBm IIP3
- 77 dBc 2x1 Spur Rejection in IF Band
- RF 1000 2000 MHz
- LO 1000 2000 MHz
- IF 10 1000 MHz
- +24 dBm LO Drive Level
- +5V Bias (40 mA)
- SMT J-Lead Package

Applications

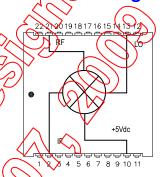
CATV Head-End Equipment

Product Description

The HMJ7-1 is a high dynamic range GaAs FET mixer. This active broadband mixer realizes a typical third order intercept point of +34 dBm at an LO drive level of +21 dBm. The HMJ7-1 also provides excellent suppression of spurious intermodulation products, greater than 67 dBc, meeting DOCSIS2 and Euro DOCSIS requirements. The HMJ7-1 is a specially screened version of the HMJ7 mixer meeting all of the performance requirements of the HMJ7 with 21 dBm LO power, but also meeting the suppression requirements for intermodulation products at a 24 dBm LO powerlevel.

The HMJ7-1 comes in a low cost, 22-pin J Lead package. The combination of high dynamic range and spurious suppression makes the HMJ7-1 an ideal choice for CATV headend transmission equipment and other applications requiring a broadband mixer in the 1000 MHz to 2000 MHz frequency range.

Functional Diagram



<u> </u>	
Function	Pin No.
IF	2
✓ LO	13
RF	21
+5V	10
Ground	All other pins

Specifications (1)

Parameter	Units	Min Ty	Max	Condition
RF Frequency Range	MHz	1000 2	000	(V)
LO Frequency Range	MHz	1000-/2	000	
IF Frequency Range	MHz	<u> 10=10</u>	00 (5	
SSB Conversion Loss	dB	8.5	95	
Noise Figure	dB	10.5		
LO-RF Isolation	dB	21 24	\sim	
LO-IF Isolation	dB	30	4 <	
RF-IF Isolation	dB 🗸	24/		
Input IP3	dBm⁄ 🤇	29 34	~4 <i>)</i>	RF = 1018 MHz @ 0 dBm
RF Return Loss	d₿	(10)	\supset	
LO Return Loss	THE STATE OF THE S	17/5	<i>y</i>	
IF Return Loss	dB,	A		
Spurious Rejection (2)	dBc	67) 77		LO = +24 dBm, IF freq = $150 - 540 MHz$, $640 - 1000 MHz$
Spurious Rejection (2)	dBc	76 77		LO = +24 dBm, IF freq = $540 - 640 MHz$
Input P1dB	dBm	+23		
LO Drive Level	dBm	+21		
DC Current at 45V Bias	mA 🗸	40	60	

Absolute Maximum Rating

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

Ordering Information

Part No.	Description			
HMJ7-1	High Dynamic Range FET Mixer			

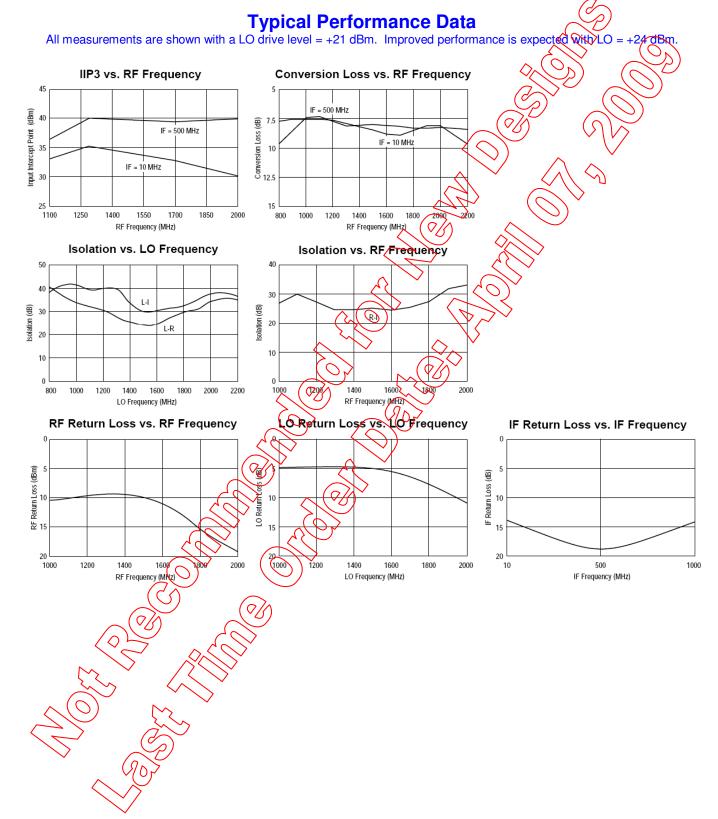
Operation of this device above any of these parameters may cause permanent damage

^{1.} Test conditions unless where use noted: 25 °C, Ref > 1088.75 MHz @ 0 dBm, LO = 21 dBm, IF = 50, 650, 860 MHz in a high-side LO configuration.

2. The 2x1 spur is tested where the IM spur = 2 */Rs input DQ where RF input = 1090 MHz @ -14 dBm, LO = 1190 to 2090 MHz @ 24 dBm, IM spur = output frequency. The IM spur level is specified in dBc with respect to the desired IF frequency calculateds. IF output = LO - RF input.



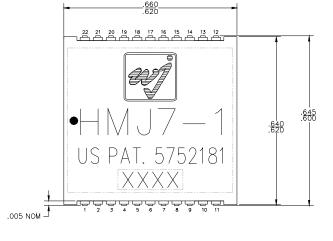




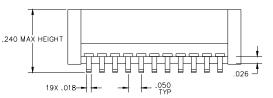










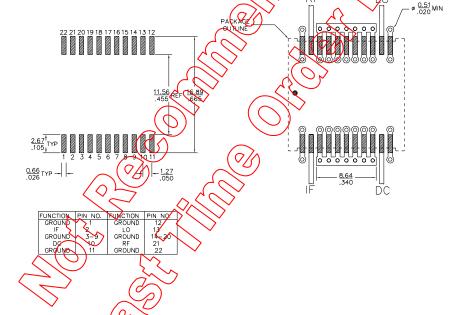


Dimensions are expressed in Inches.

TOLERANCE (XXX).05 .XX [.02

Drawing is illustrated at Max dimensions.

Land Pattern / Mounting Configuration



Product Marking

The component will be marked with an "HMJ7" designator with alphanumetric lot number XXXX designator with a føur-digit

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

ESDInformation

Caution PSD sensitive device.

ESD/Rating: Class 2

Passes at 2000 V Value:

Human Body Model (HBM) Test Standard: JEDEC Standard JESD22-A114

ESD Rating: Class IV

Value: Passes at 2000 V

Charged Device Model (CDM) Test: Standard: JEDEC Standard JESD22-C101

Mounting Config. 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 boards.
- 30 outs.

 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.