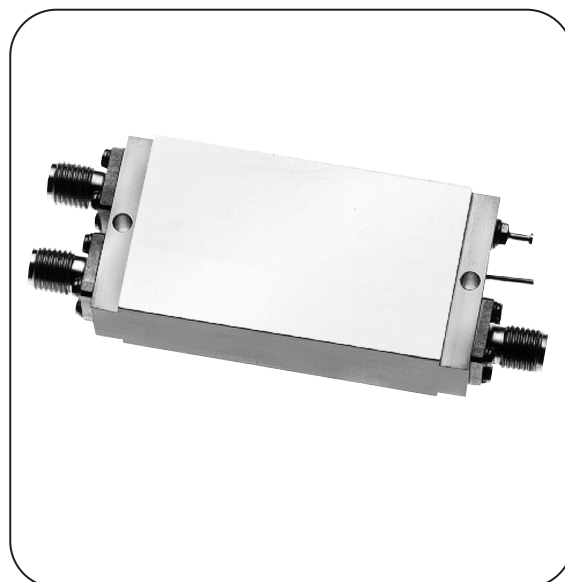


## 3 TO 6 GHz MESFET REJECTION MIXER

### MODEL: IRF0306HI2

#### FEATURES

- **RF/LO Coverage..... 3 to 6 GHz**
- **IF Operation..... DC to 300 MHz**
- **LO Power Range.....+13 to +23 dBm**
- **Image Rejection..... 20 dB Typical**
- **Input IP<sup>3</sup>..... +33 dBm Typical**
- **Input P1 dB Comp..... +23 dBm Typical**

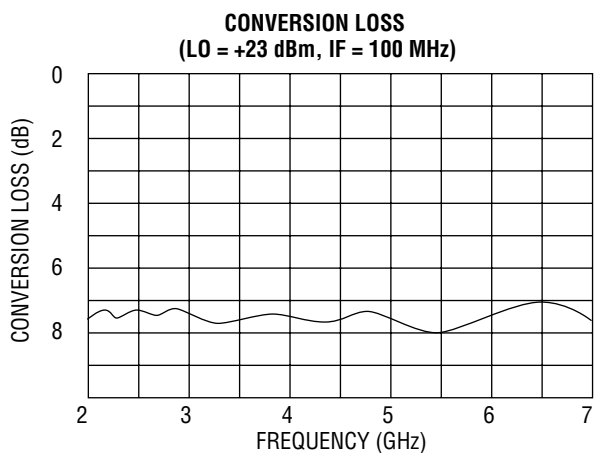
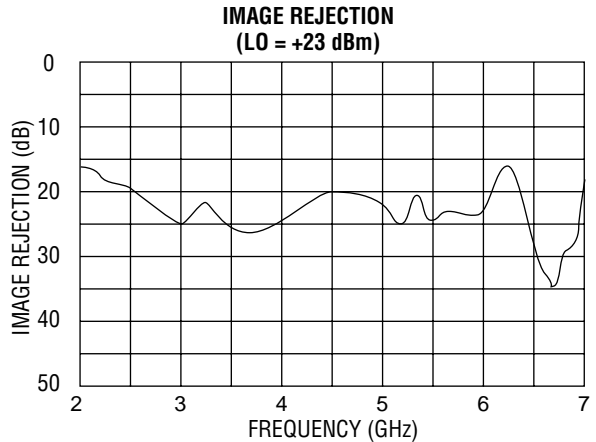
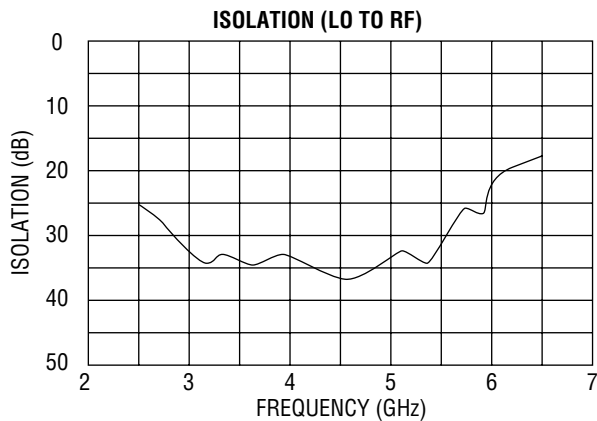


This mixer is designed to reject the image noise of a low-noise RF preamplifier without degrading the dynamic range from second-stage mixer compression. Higher and lower power MESFETS are available with proportional changes in LO power and IP<sup>3</sup>. Lower power versions are useful for upgrading systems using Schottky diode mixers without changing the LO power. This unit is also available with separate I and Q outputs for high-level, low phase-noise and demodulator applications.

#### ELECTRICAL SPECIFICATIONS

INPUT PARAMETERS	CONDITION	UNITS	MIN.	TYP.	MAX.
RF frequency range		GHz	3		6
RF VSWR (IF = -10 dBm, LO = +23 dBm)		Ratio		1.5:1	
LO frequency range		GHz	3		6
LO power range		dBm	+13		+26
LO VSWR	LO = +23 dBm	Ratio	+10	1.25:1	
DC power	-15 VDC	mA		14	
TRANSFER CHARACTERISTICS	CONDITION	UNITS	MIN.	TYP.	MAX.
Conversion loss	LO = +23 dBm	dB		8	9
Single-sideband noise figure	LO = +23 dBm	dB		9.5	
Image rejection (Note 2)	IF = 100 MHz	dB	18	20	
LO-to-RF isolation		dB	20	30	
LO-to-IF isolation		dB		35	
IF-to-RF isolation		dB		30	
Input power at 1 dB compression (Note 2)	LO = +13 dBm	dBm	+20	+23	
Input two-tone third-order intercept point (Note 2)	LO = +13 dBm	dBm		+33	
OUTPUT PARAMETERS	CONDITION	UNITS	MIN.	TYP.	MAX.
IF frequency range (Notes 1 and 3)	3 dB bandwidth	MHz	DC		300
IF VSWR (RF = -10 dBm, LO = +13 dBm)		Ratio		2.5:1	

# IRFO306H12 TYPICAL DATA



SINGLE-TONE (m) RF x (n) LO RELATIVE SPUR LEVEL (dBc)  
(RF = 0 dBm, LO = +23 dBm)

SPUR (m) RF x (n) LO	RF TEST FREQ. (GHz)	LO TEST FREQ. (GHz)	SPUR LEVEL (dBc)
1 x -1	4.1	4	0
-1 x 1	3.9	4	-2.5
1 x 3	-	-	-
2 x -2	4.05	4	-4
-2 x 2	3.95	4	-4
2 x 3	-	-	-
3 x 1	-	-	-
3 x -3	4.03	4	-70
-3 x 3	3.97	4	-65

## MAXIMUM RATINGS

Specifications taken at ..... +25°C  
 Operating temperature ..... -54 to +85°C  
 Storage temperature ..... -65 to +125°C

## GENERAL NOTES

- To specify the IF frequency, select from the following standard options, or contact MITEG:  
 Suffix A: 20-40 MHz, Suffix B: 40-80 MHz,  
 Suffix C: 100-200 MHz,  
 Suffix Q: I/Q outputs (DC to 300 MHz)
- Standard units are aligned for LO < RF. For LO > RF add suffix L to the end of the part number.
- Maximum linear output voltage as I/Q phase detector = 1.4 volts (50 ohms). Typical output voltage with no RF input = ±50 mV (DC offset voltage)

## OUTLINE DRAWING

