TELEDYNE
MICROWAVE SOLUTIONS
Everywhereyoulook™

Rev. 1/12

IQM2811

1.4 TO 2.8 GHz IQ MIXER MODULATOR/DEMODULATOR

Typical Values	IQM2811
LO & RF	1.4 - 2.8 GHz
IF	DC - 0.5 GHz
Third Order I.P.	+13.0 dBm
Conversion Loss	-9.0 dB
LO Drive (nominal)	+13.0 dBm
High Isolation (LO to RF)	42.0 dB
Standard Mixer Carrier	

SPECIFICATIONS*

Parameter	Port	Frequency (GHz)	Typ. (dB)	Guaranteed -55 to +85 °C Max. (dB)
SSB Conversion Loss and SSB Noise Figure	f_R	1.6 to 2.8	8.5	9.5
	f_L	1.6 to 2.8	8.5	9.5
	f_I	DC to 0.5	8.5	9.5
	f_R	1.4 to 2.8	10.5	11.5
	f_L	1.4 to 2.8	10.5	11.5
	f_I	DC to 0.5	10.5	11.5
Conversion Comp.	f_R	Level = +5 dBm	–	1.0
Desenitization	f_{R2}	Level = +2 dBm	–	1.0
			Typ. (dB)	**Min. (dB)**
Isolation				
f_L at R	f_L	1.4 to 2.0	42	35
f_L at I, Q	f_L	1.4 to 2.0	40	30
f_R at I, Q	f_R	1.4 to 2.0	32	25
f_L at R	f_L	2.0 to 2.8	46	36
f_L at I, Q	f_L	2.0 to 2.8	50	42
f_R at I, Q	f_R	2.0 to 2.8	36	30
Third Order Intercept		LO = +13 dBm	+15 dBm	—
		LO = +16 dBm	+16 dBm	—
Image Rejection Side Band Suppression		RF = 1.4 to 2.8 GHz IF = 0.5 GHz	25 dB	20 dB
Amplitude Match		RF = 1.4 to 1.8 GHz	0.5 dB	1.0 dB
		RF = 1.8 to 2.8 GHz	0.15 dB	0.25 dB
Phase Match (Demodulation)		RF = 1.4 to 2.8 GHz	4.0°	6.0°
Phase Match (Modulation)		RF = 1.4 to 1.8 GHz	±25.0°	±30.0°
		RF = 1.8 to 2.8 GHz	±15.0°	±22.0°
Conversion Loss (Modulation)		RF = 1.4 to 1.8 GHz	-9.5 dB	-11.0 dB
		RF = 1.8 to 2.8 GHz	-7.0 dB	-8.5 dB

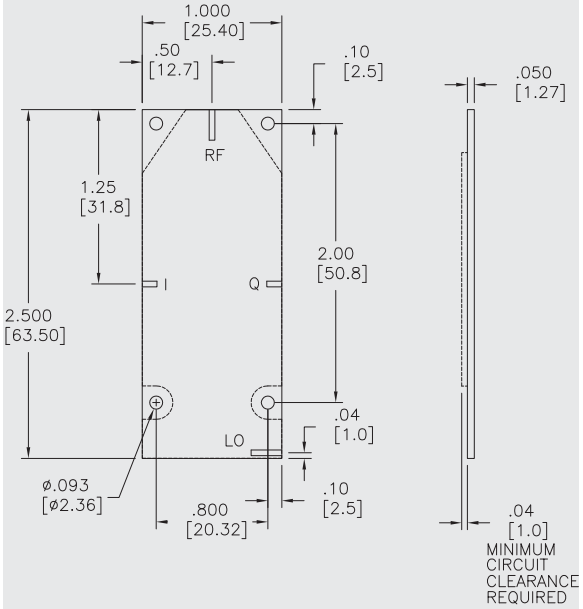
* Measured in a 50-ohm system with nominal LO drive of +13 dBm as a downconverter.

ABSOLUTE MAXIMUM RATINGS

Storage Temperature	-65 to +150 °C
Peak RF Input Power All Ports	+22 dBm @ 25 °C
	derate to +17 dBm @ 100 °C

IQM2811

Mixer Carrier MC6



DIMENSIONS ARE IN INCHES [MILLIMETERS]

Harmonic Intermodulation Products
(single tone)

HARMONICS OF f_R (rows 5 to 0) × HARMONICS OF f_L (columns 0 to 5)

	0	1	2	3	4	5
5	94	93	95	94	96	96
	93	93	94	95	96	94
4	93	95	94	96	95	97
	93	91	95	96	90	96
3	78	95	95	64	94	95
	74	95	96	56	94	95
2	83	78	61	81	88	56
	83	82	59	78	82	55
1	27	0	65	53	35	36
	27	0	59	53	36	39
0		9	35	7	26	40
		15	37	9	31	40

F_R = 2000 MHz @ -10 dBm
F_L @ +13 dBm
F_L = 2030 MHz
F_L @ +16 dBm

Harmonic Intermodulation Products
(single tone)

HARMONICS OF f_R (rows 5 to 0) × HARMONICS OF f_L (columns 0 to 5)

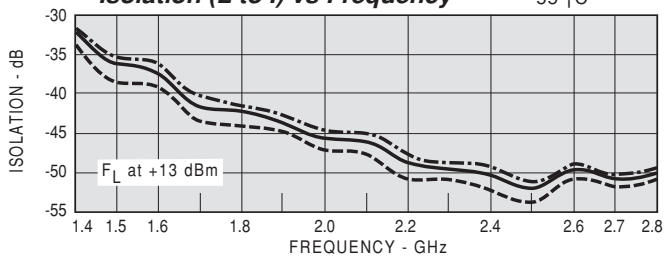
	0	1	2	3	4	5
5	88	92	93	95	96	98
	90	93	93	96	96	98
4	92	94	96	96	97	96
	92	94	95	96	95	95
3	93	92	94	61	96	80
	93	89	93	59	95	74
2	67	82	65	81	76	76
	65	82	67	82	79	74
1	30	0	48	31	50	53
	30	0	52	33	49	59
0		13	12	31	33	30
		19	16	31	37	31

F_R = 2800 MHz @ -10 dBm
F_L @ +13 dBm
F_L = 2830 MHz
F_L @ +16 dBm

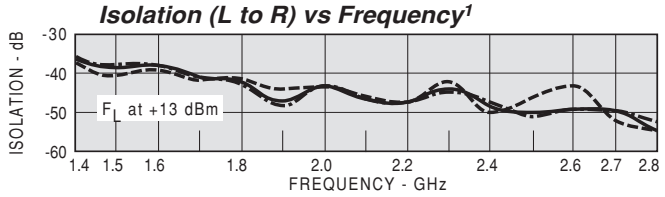
TYPICAL PERFORMANCE

KEY: +25 ¡C
+85 ¡C
-55 ¡C

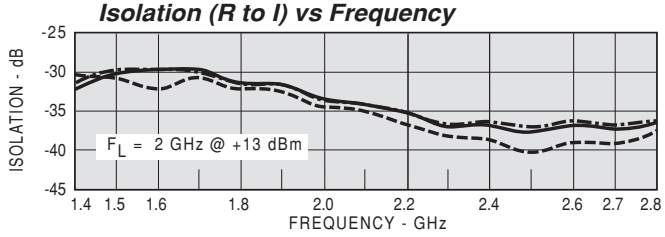
Isolation (L to I) vs Frequency[1]



Isolation (L to R) vs Frequency[1]

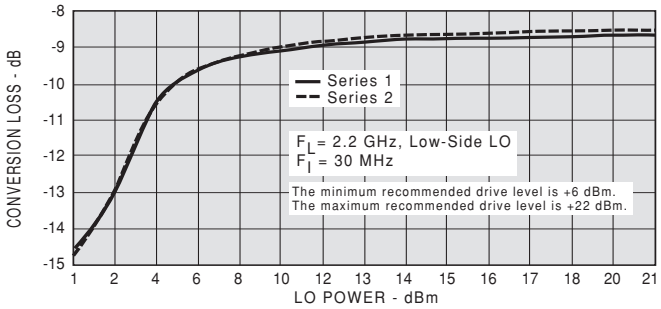


Isolation (R to I) vs Frequency

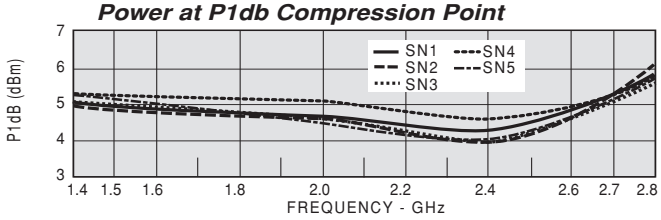


[1]Level of the f_L signal fed through to the R- and I-ports with respect to the level of the f_L signal at the L-port.

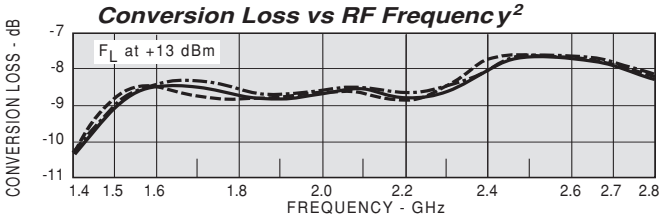
Conversion Loss vs LO Drive Level[2]



Power at P1db Compression Point

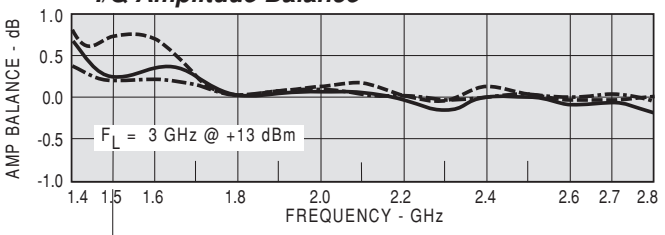


Conversion Loss vs RF Frequency[2]



[2]Conversion loss of the mixer when used in an SSB system. The frequency ordinate refers to the R-port (f_R) with f_I at 30 MHz.

I/Q Amplitude Balance



I/Q Quadrative Phase Balance

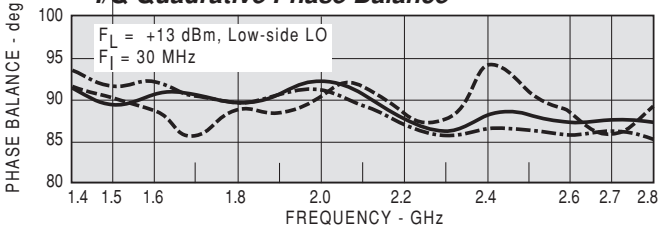
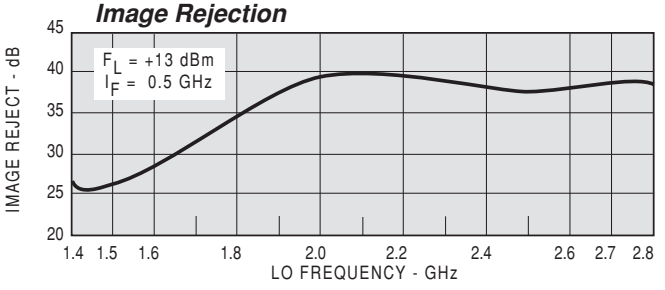
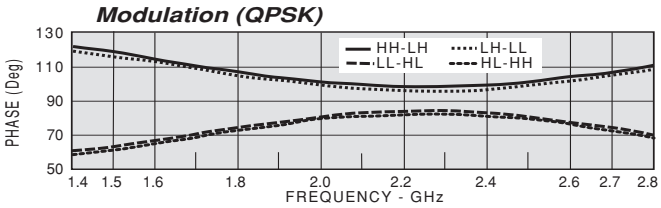


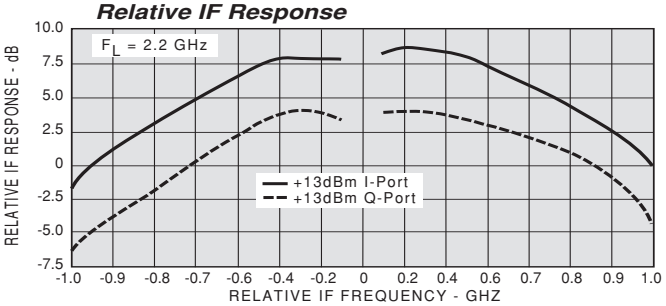
Image Rejection



Modulation (QPSK)



Relative IF Response



Intercept Point

