I/Q Modulator/Demodulator 850-960 MHz

MA4IQP900M-1291T V2

Features

- Excellent Carrier suppression
- 6.0 dB Typical Modulator Conversion Loss
- + 13 to + 15 dBm LO Drive
- High 3xI and 5xI Harmonic suppression
- NO External Matching Required
- Low Cost Miniature Plastic MLP Package

Description and Applications

M/A-COM's MA4IQP900M-1291T is a silicon monolithic 850-960 MHz, medium barrier, I/Q Modulator/Demodulator. Encapsulated in a low cost, miniature surface mount FQFP-N 6mm Square, 28 lead plastic package the die utilizes M/A-COM's unique HMIC silicon/glass process. This process enables the realization of low loss passive elements and efficient diode technology which in turn provides excellent harmonic suppression. In addition, the incorporated monolithic design techniques provide unparalleled amplitude and phase imbalance performance during demodulation thus adding to the units overall versatility.

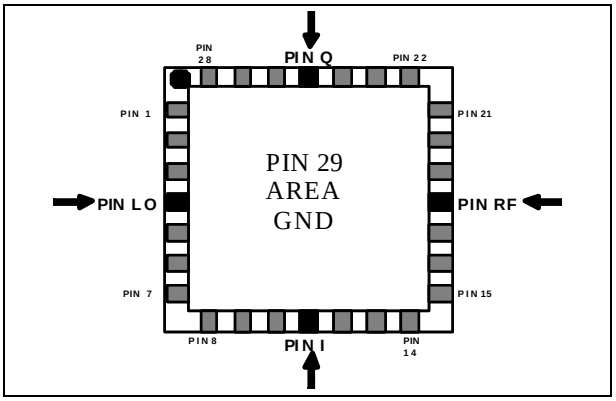
These modulators/demodulators are well suited for GSM and CDMA Cellular basestation applications where small size and high performance are required. Typical applications include upconvertion and downconvertion requirements in wireless receivers and transmitters.

Absolute Maximum Ratings[1]

Parameter	Maximum Ratings
Operating Temperature	-40 °C to +85 °C
Storage Temperature	-65 °C to +150 °C
Incident LO Power	+20 dBm C.W.
Incident RF Power	+20 dBm C.W.

1. Exceeding these limits may cause permanent damage.

MLP 6mm Package
Circuit Side View



PIN Configuration

PIN	Function	PIN	Function
1	N/C	15	N/C
2	N/C	16	N/C
3	N/C	17	N/C
4	LO	18	RF
5	N/C	19	N/C
6	N/C	20	N/C
7	N/C	21	N/C
8	N/C	22	N/C
9	N/C	23	N/C
10	N/C	24	N/C
11	I	25	Q
12	N/C	26	N/C
13	N/C	27	N/C
14	N/C	28	N/C

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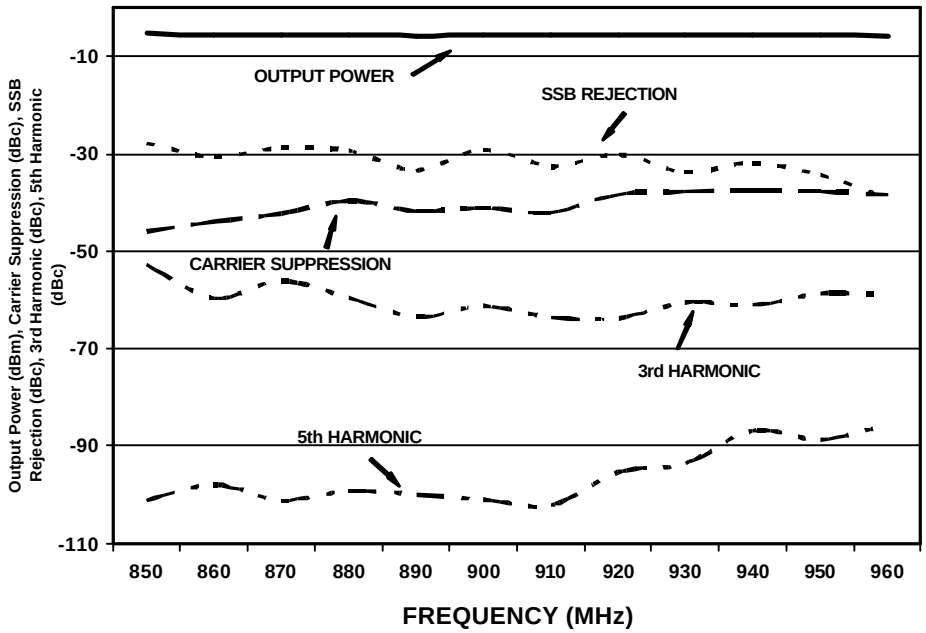
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- **Europe** Tel: 44.1908.574.200 / Fax: 44.1908.574.300
- **Asia/Pacific** Tel: 81.44.844.8296 / Fax: 81.44.844.8298

Visit www.macom.com for additional data sheets and product information.

Electrical Specifications (Modulator) @ +25 °C

Parameter	Frequency Range	Test Conditions	Units	Min.	Avg.	Max.
Output Power	900 MHz 850-960 MHz	LO Drive = +13 dBm I/Q = -7 dBm, I/Q = 200 kHz	dB	-6.5 -7.5	-5.5 -5.8	- -
LO Carrier Suppression	900 MHz 850-960 MHz	LO Drive = +13 dBm I/Q = -7 dBm, I/Q = 200 kHz	dBc	- -	39 39	- -
SSB Rejection	900 MHz 850-960 MHz	LO Drive = +13 dBm I/Q = -7 dBm, I/Q = 200 kHz	dBc	- -	32 32	- -
3 x 1 Harmonic Suppression	900 MHz 850-960 MHz	LO Drive = +13 dBm I/Q = -7 dBm, I/Q = 200 kHz	dBc	- -	60 60	- -
5 x 1 Harmonic Suppression	900 MHz 850-960 MHz	LO Drive = +13 dBm I/Q = -7 dBm, I/Q = 200 kHz	dBc	- -	96 96	- -
LO Return Loss	900 MHz 850-960 MHz	LO Drive = +13 dBm	dB	- -	15.5 15.5	- -
RF Return Loss	850-960 MHz	LO Drive = +13 dBm	dB	- -	12	- -
ACPR CDMA IS-95	880 MHz Carrier Freq	LO Drive = +13 dBm I/Q Power level = -7 dBm	dBc	60	68	- -
Output Noise Floor	850-960 MHz	LO Drive = +13 dBm I/Q Power level = -7 dBm	dBm/Hz	- -	-163	- -

Modulator Band Performance 850-960 MHz

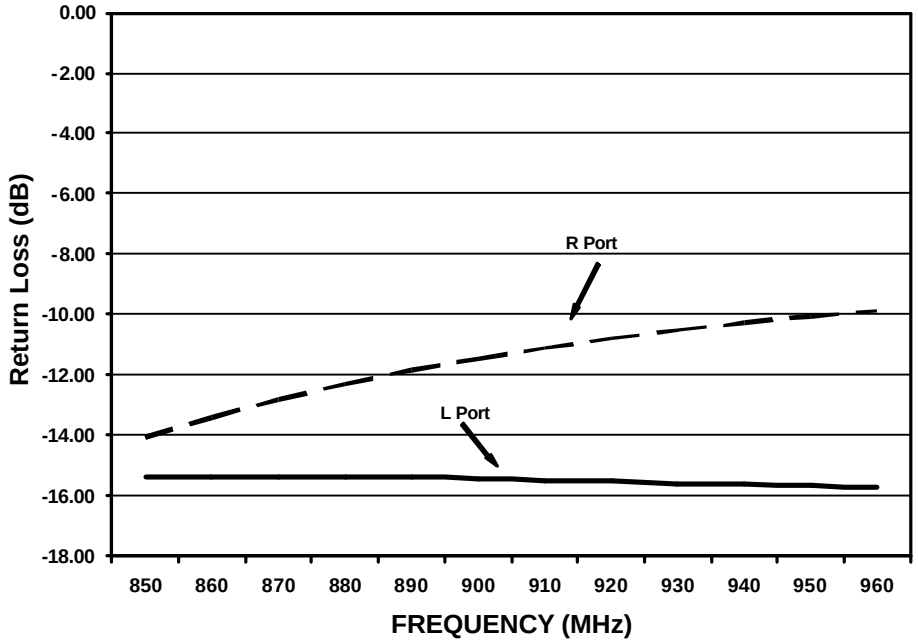


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Modulator/Demodulator Return Loss 850-960 MHz



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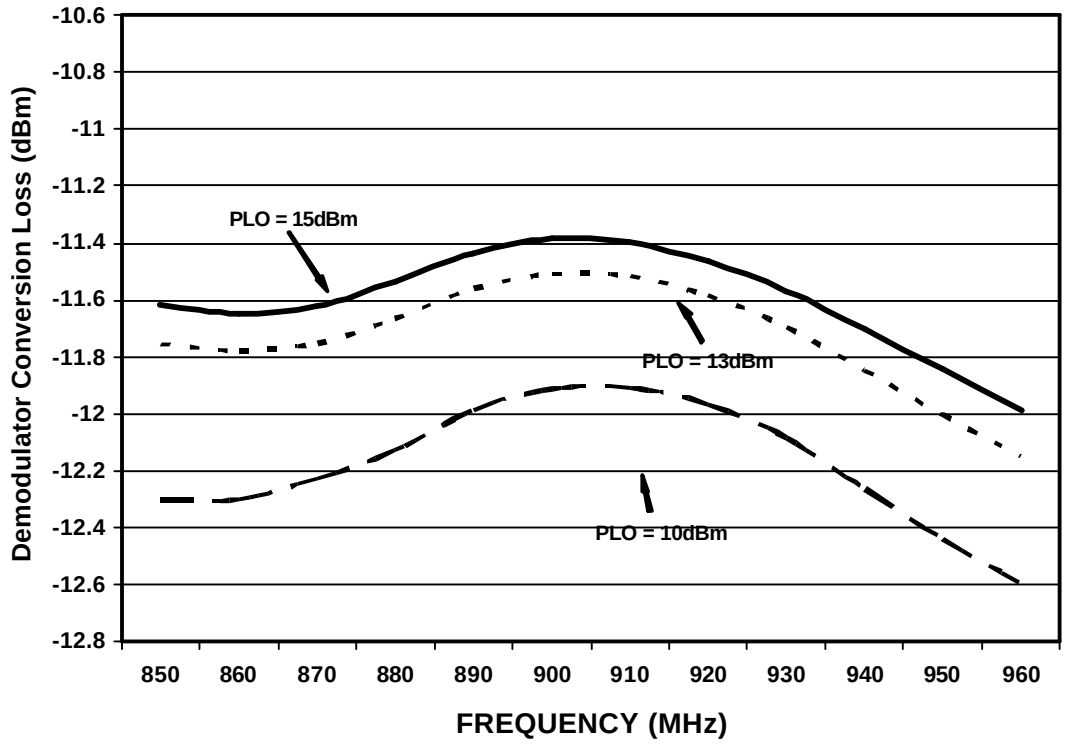
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Electrical Specifications (Demodulator) @ +25 °C

Parameter	Frequency Range	Test Conditions	Units	Min.	Avg.	Max.
Conversion Loss	900 MHz 850-960 MHz	LO Drive = +15 dBm	dB	-12.5 -12.5	-11.4 -11.5	- -
Amplitude Imbalance	900 MHz 850-960 MHz	LO Drive = +15 dBm Freq offset = 400 kHz	dB	- -	0.05 0.05	.4 -
Phase Imbalance	900 MHz 850-960 MHz	LO Drive = +15 dBm Freq offset = 400 kHzv	deg	- -	2.5 2.5	4 -
Input IP3	900 MHz 850-960 MHz	LO Drive = +15 dBm Freq offset = 400 kHz	dBm	- -	32 30	- -
Input 1 dB Compression	900 MHz 850-960 MHz	LO Drive = +15 dBm	dBm	- -	11 11	- -
LO Return Loss	900 MHz 850-960 MHz	LO Drive = +13 dBm	dB	- -	15.5 15.5	- -
RF Return Loss	900 MHz 850-960 MHz	LO Drive = +13 dBm RF Power Level = -10 dBm	dB	- -	12 12	- -

Demodulator Conversion Loss 850-960 MHz

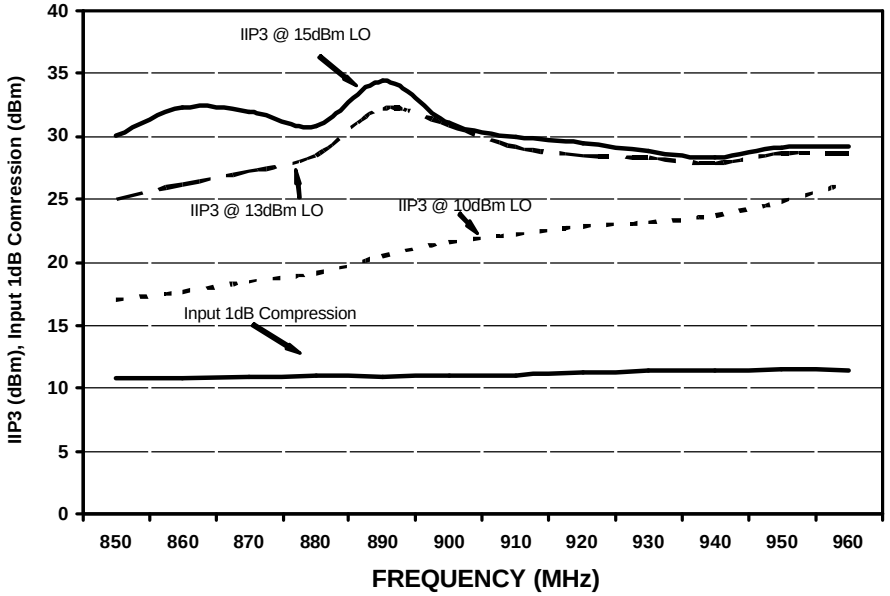


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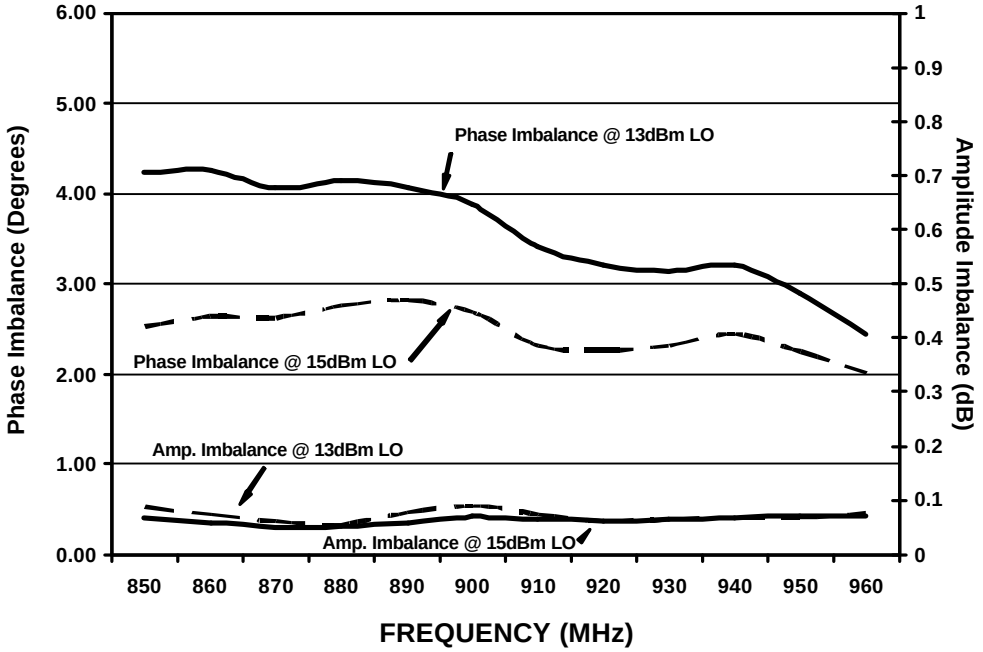
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Demodulator Input IP3 and Input 1dB Compression 850-960 MHz



Demodulator Phase and Amplitude Imbalance 850-960 MHz

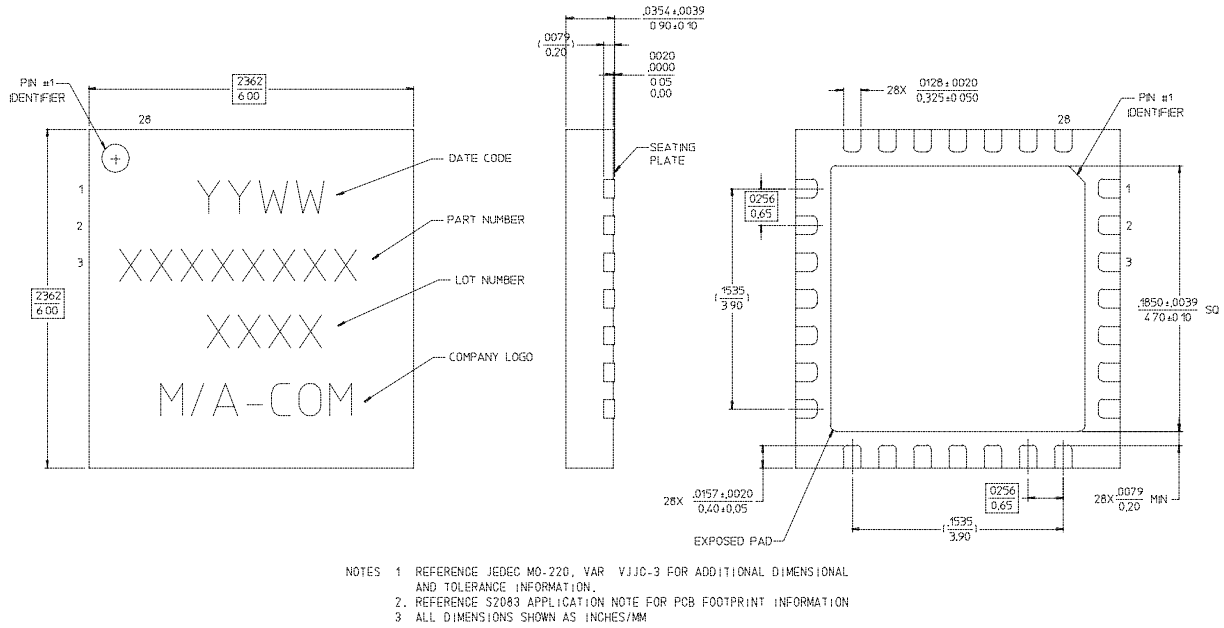


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MA4IQP900H-1291T Outline – 6mm FQFP-N, 28 Lead Saw Singulated



NOTES 1 REFERENCE JEDEC MO-220, VAR VJJC-3 FOR ADDITIONAL DIMENSIONAL AND TOLERANCE INFORMATION.
2. REFERENCE S2083 APPLICATION NOTE FOR PCB FOOTPRINT INFORMATION
3 ALL DIMENSIONS SHOWN AS INCHES/MM

Ordering Information

Part Number	Package
MA4IQP900M-1291T	Tape and Reel

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