

Surface Mount I&Q Modulator

50Ω

52 to 88 MHz

JCIQ-88M+ JCIQ-88M



CASE STYLE: BG291

Maximum Ratings

Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
LO Power	50 mW
I & Q Current	40mA

Permanent damage may occur if any of these limits are exceeded.

Pin Connections

LO (carrier)	2
RF (signal)	9
I (0°)(ref.)	4
Q (90°)*	11
GROUND	1,3,5,6,7,8,10,12,13,14

*Q= I +90° for lower sideband suppression

Features

- shielded metal case with J-leads
- excellent 3rd and 5th order suppression
- good carrier and sideband rejection
- aqueous washable

Applications

- communications systems

Modulator Electrical Specifications

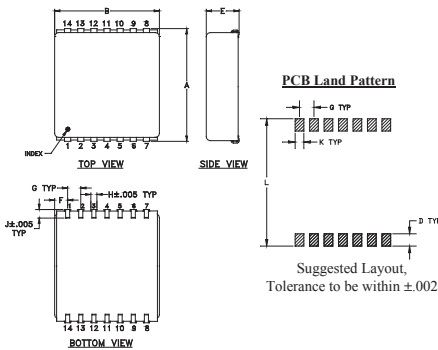
FREQUENCY (MHz)				CONVERSION LOSS (dB)			CARRIER REJECTION (-dBc)		SIDE BAND REJECTION (-dBc)		HARMONIC SUPPRESSION (-dBc)					
RF (SIGNAL)		LO (CARRIER)		I&Q		\bar{x}	σ	Max.	Typ.	Min.	Typ.	Min.	3XI/Q		5XI/Q	
f_L	f_U	Min.	Max.	Min.	Max.								Typ.	Min.	Typ.	Min.
52	88	DC	5	5.6	0.1	7.0			40	32	35	30	45	35	65	50

1. Operating LO power: 10±1dBm
2. 1dB Compression: 0dBm typical
3. Conversion Loss: (I + Q) power, dBm - RF power, dBm
4. Carrier and sideband rejections measured at -5dBm I/Q power.

+RoHS Compliant

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

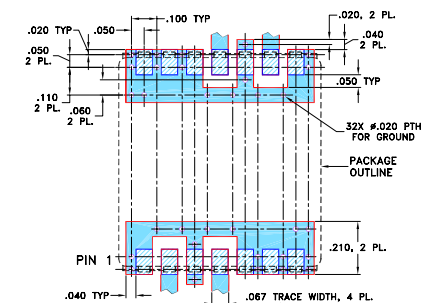
Outline Drawing



Outline Dimensions (inch/mm)

A	B	C	D	E	F	G
.870	.800	--	.100	.250	.100	.100
22.10	20.32	--	2.54	6.35	2.54	2.54
H	J	K	L	wt		
.047	.065	.065	.890	grams		
1.19	1.65	1.65	22.61	4.0		

Demo Board MCL P/N: TB-21 Suggested PCB Layout (PL-209)



NOTE:

1. TRACE WIDTH IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS .030" ± .002"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

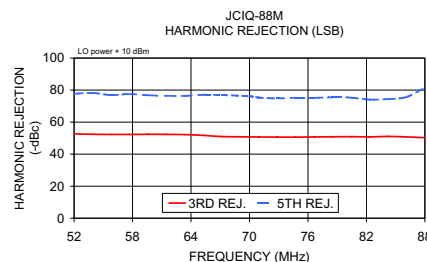
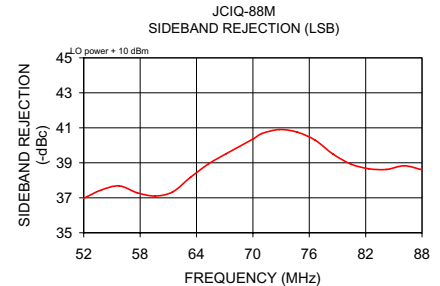
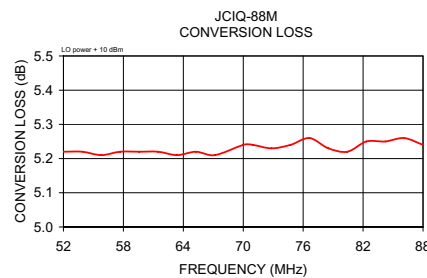
- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
- DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

Notes

- A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
- B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/MCLStore/terms.jsp

Typical Performance Data

Carrier Freq. (MHz)	Conversion Loss		Sideband Rejection (x)		Carrier Rejection (x)		3rd Harmonic Suppression (x)		5th Harmonic Suppression (x)		DC Offset (mV)
	\bar{x} (dB)	σ (dB)	LSB (-dBc)	USB (-dBc)	LSB (-dBc)	USB (-dBc)	LSB (-dBc)	USB (-dBc)	LSB (-dBc)	USB (-dBc)	
52.00	5.22	0.05	36.97	37.65	43.38	43.31	52.68	55.74	77.71	66.44	-0.09
53.89	5.22	0.06	37.45	38.38	43.18	43.06	52.39	55.40	78.23	66.23	-0.09
55.79	5.21	0.05	37.68	38.74	43.01	42.82	52.29	55.33	76.92	66.50	-0.09
57.68	5.22	0.04	37.29	38.62	42.73	42.82	52.32	55.69	77.52	66.09	-0.09
59.58	5.22	0.05	37.10	38.14	42.51	42.66	52.39	56.29	76.79	66.29	-0.09
61.47	5.22	0.05	37.34	38.13	42.24	42.41	52.35	56.74	76.42	65.70	-0.09
63.37	5.21	0.05	38.17	38.36	42.12	42.14	52.24	57.04	76.37	65.54	-0.09
65.26	5.22	0.05	38.93	38.85	42.02	41.92	51.75	56.96	77.08	65.07	-0.09
67.16	5.21	0.05	39.52	39.23	41.83	41.75	50.99	56.54	76.89	64.48	-0.09
70.00	5.24	0.04	40.36	39.80	41.38	41.26	50.81	56.24	76.15	64.21	-0.09
70.95	5.24	0.05	40.67	40.04	41.26	41.18	50.70	56.27	75.33	64.14	-0.09
72.84	5.23	0.04	40.90	40.45	41.06	41.14	50.66	56.46	74.83	64.16	-0.09
74.74	5.24	0.04	40.75	40.23	40.86	40.94	50.64	56.22	75.24	63.63	-0.09
76.63	5.26	0.04	40.29	39.72	40.76	40.78	50.76	56.14	75.16	63.41	-0.09
78.53	5.23	0.04	39.50	39.13	40.48	40.56	50.83	55.76	75.46	63.59	-0.09
80.42	5.22	0.04	38.93	38.78	40.32	40.45	50.94	55.27	75.28	63.71	-0.09
82.32	5.25	0.05	38.66	38.82	40.20	40.25	50.78	54.88	74.08	63.38	-0.08
84.21	5.25	0.05	38.62	38.89	40.03	40.09	51.05	55.07	74.38	63.27	-0.07
86.11	5.26	0.05	38.83	39.07	39.97	39.89	50.76	55.61	75.66	62.42	-0.06
88.00	5.24	0.04	38.60	38.69	39.81	39.73	50.25	55.64	81.59	62.31	-0.07



I&Q modulation block diagram

