

Surface Mount Frequency Mixer

LRMS-1MH+ LRMS-1MH

Level 13 (LO Power +13dBm) 2 to 500 MHz



CASE STYLE: QQQ130

Maximum Ratings

Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power	200mW
IF Current	40mA
Permanent damage may occur if any of these limits are exceeded.	

Pin Connections

LO	1
RF	4
IF	5
GROUND	2,3,6

Features

- low conversion loss, 6.11 dB typ.
- excellent L-R isolation, 44 dB typ.

Applications

- VHF/UHF
- instrumentation

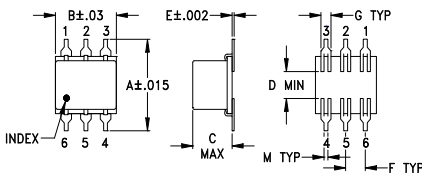
+RoHS Compliant

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

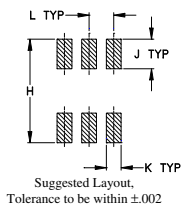
Available Tape and Reel at no extra cost

Reel Size	Devices/Reel
7"	10, 20, 50, 100, 200
13"	500

Outline Drawing



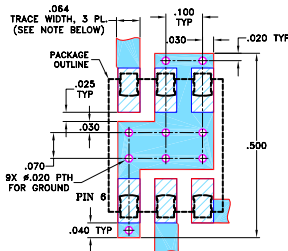
PCB Land Pattern



Outline Dimensions (inch/mm)

A	B	C	D	E	F	G	
.400	.31	.200	.10	.010	.100	.050	
10.16	7.87	5.08	2.54	0.25	2.54	1.27	
H	J	K	L	M		wt	
.420	.120	.060	.100	.020		grams	
10.67	3.05	1.52	2.54	0.51		0.55	

Demo Board MCL P/N: TB-44+ Suggested PCB Layout (PL-083)



- NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS 0.030" ± 0.002"; 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

Electrical Specifications

FREQUENCY (MHz)	CONVERSION LOSS (dB)	LO-RF ISOLATION (dB)						LO-IF ISOLATION (dB)						IP3 at center band (dBm)				
		Mid-Band		Total Range		L	M	U	L	M	U							
LO/RF	IF	\bar{X}	σ	Max.	Max.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.				
2-500	DC-500	6.11	.08	7.0	8.0	58	45	44	25	30	20	55	40	36	25	28	17	23

1 dB COMP.: +9 dBm typ.

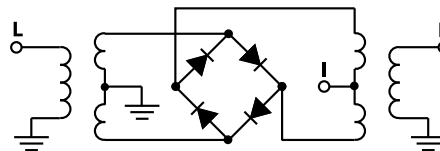
L = low range [f_1 to $10 f_1$]
m = mid band [$2f_1$ to $f_1/2$]

M = mid range [$10 f_1$ to $f_1/2$]
U = upper range [$f_1/2$ to f_1]

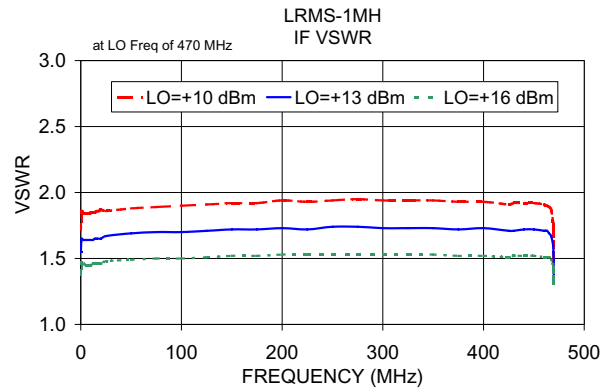
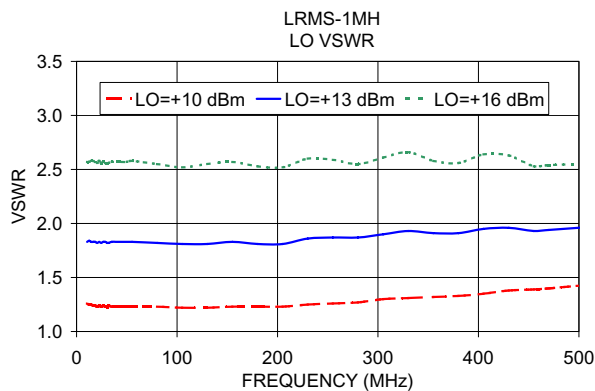
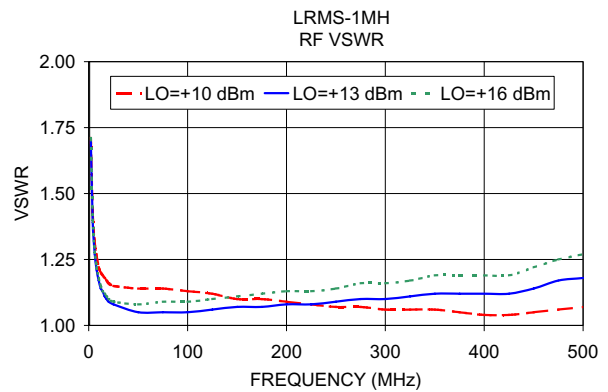
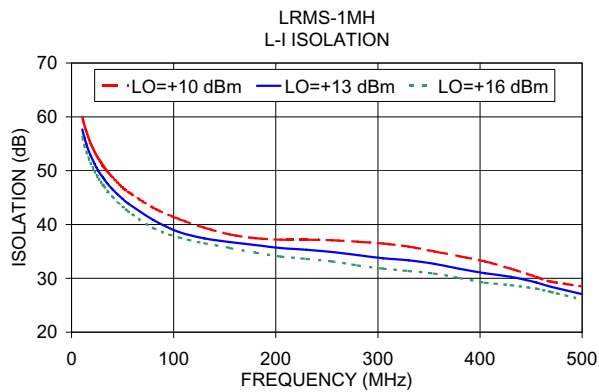
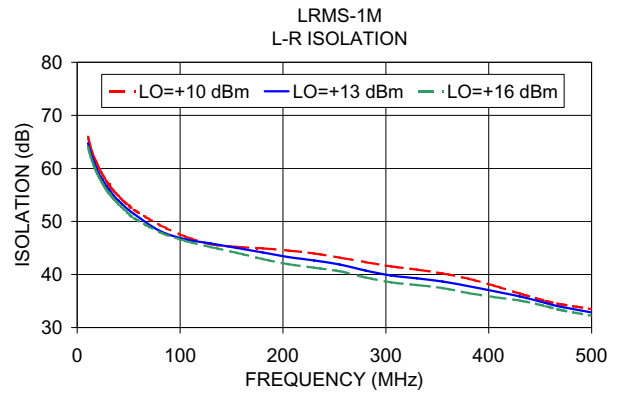
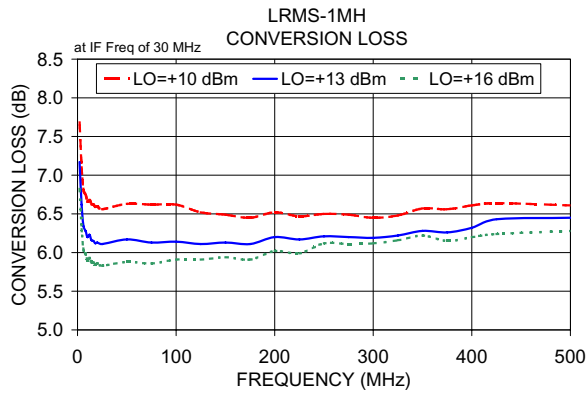
Typical Performance Data

Frequency (MHz)		Conversion Loss (dB)	VSWR RF Port (:1)	Frequency (MHz)	Isolation L-R (dB)	Isolation L-I (dB)	VSWR LO Port (:1)
RF	LO	LO +13dBm	LO +13dBm	LO	LO +13dBm	LO +13dBm	LO +13dBm
2.10	32.10	7.17	1.70	10.50	64.73	57.65	1.83
4.10	34.10	6.62	1.39	14.50	62.18	54.96	1.83
6.10	36.10	6.34	1.27	20.50	59.26	52.09	1.82
10.10	40.10	6.20	1.17	24.50	57.87	50.57	1.82
14.10	44.10	6.16	1.13	30.50	56.09	48.83	1.82
18.10	48.10	6.12	1.10	35.00	54.94	47.64	1.83
20.10	50.10	6.13	1.09	40.10	53.90	46.55	1.83
25.10	55.10	6.11	1.08	50.10	52.15	44.74	1.83
50.10	80.10	6.17	1.05	80.10	48.24	40.84	1.82
100.10	130.10	6.14	1.05	105.10	46.64	38.62	1.81
125.10	155.10	6.11	1.06	155.10	45.00	36.74	1.83
150.10	180.10	6.13	1.07	205.10	43.30	35.62	1.81
175.10	205.10	6.11	1.07	255.10	41.88	34.89	1.87
200.10	230.10	6.20	1.08	305.10	39.81	33.72	1.90
250.10	280.10	6.21	1.09	330.10	39.28	33.35	1.93
300.10	330.10	6.19	1.10	355.10	38.68	32.69	1.91
350.10	380.10	6.28	1.12	405.10	36.85	30.94	1.95
400.10	430.10	6.32	1.12	430.10	35.87	30.29	1.96
425.10	455.10	6.43	1.12	455.10	34.64	29.24	1.93
500.00	470.00	6.45	1.18	470.00	33.91	28.41	1.94

Electrical Schematic



Performance Charts



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