

# Surface Mount Frequency Mixer

## RMS-1MH+

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



CASE STYLE: TT240

### 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

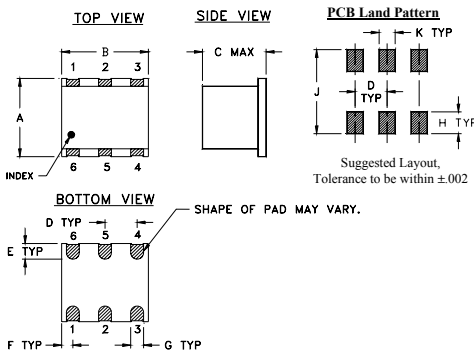
- excellent L-R isolation, 44 dB typ.
- conversion loss, 5.65 dB typ.
- small size, 0.25"x0.31"x0.2"

### Applications

- HF & VHF communications
- intermediate frequency for down converters

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

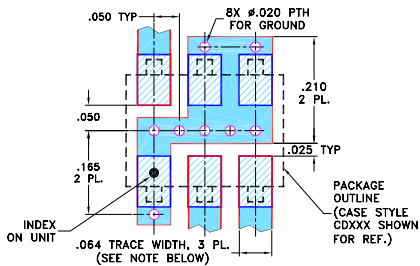
### Outline Drawing



### Outline Dimensions (inch/mm)

A	B	C	D	E	F
.250	.31	.20	.100	.050	.055
6.35	7.87	5.08	2.54	1.27	1.40
G	H	J	K	wt	
.040	.070	.270	.050	grams	
1.02	1.78	6.86	1.27	0.50	

### Demo Board MCL P/N: TB-03 Suggested PCB Layout (PL-052)



- NOTES: 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-Circuit's 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-Circuit's website at [www.minicircuits.com/MCLStore/terms.jsp](http://www.minicircuits.com/MCLStore/terms.jsp)

### Electrical Specifications

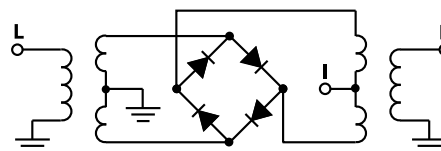
FREQUENCY (MHz)	CONVERSION LOSS (dB)	LO-RF ISOLATION (dB)						LO-IF ISOLATION (dB)						IP3 at center band (dBm)
		L		M		U		L		M		U		
$f_L - f_U$	$\bar{X}$ $\sigma$ Max.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.
2-500 DC-500	6.07 .16 7.0 8.0	58	45	44	25	30	20	55	40	36	25	28	17	26

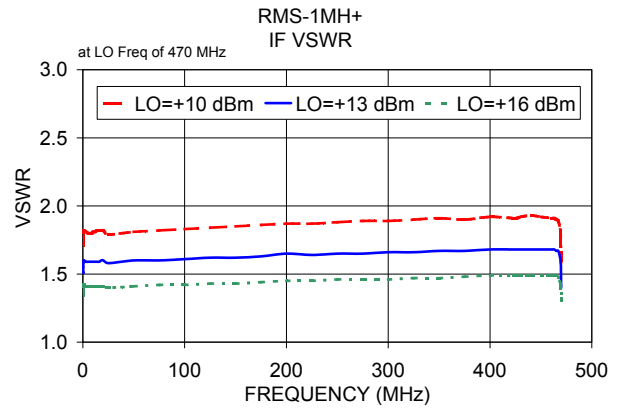
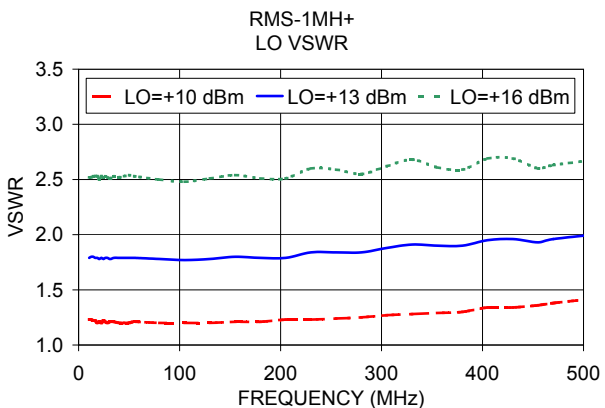
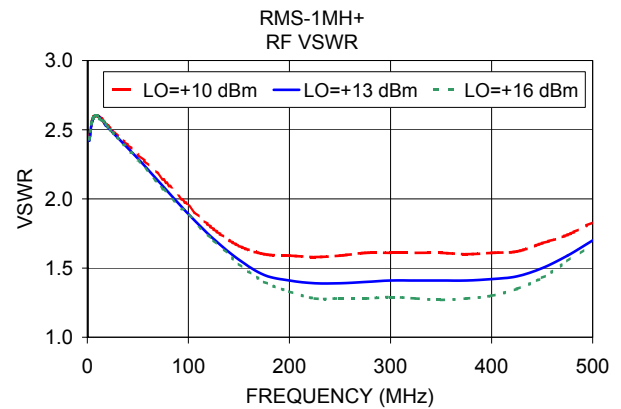
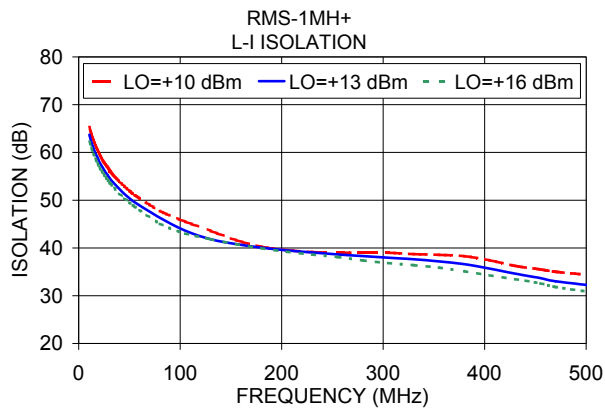
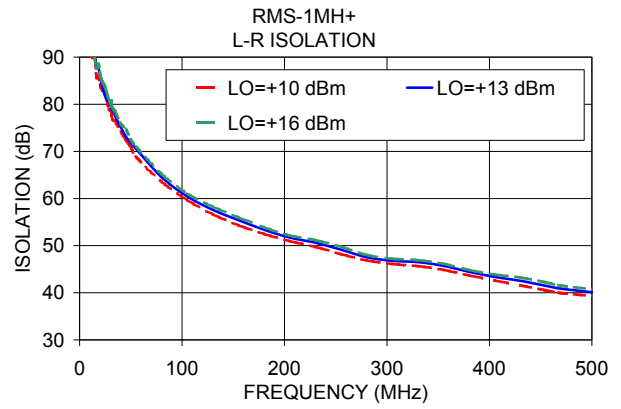
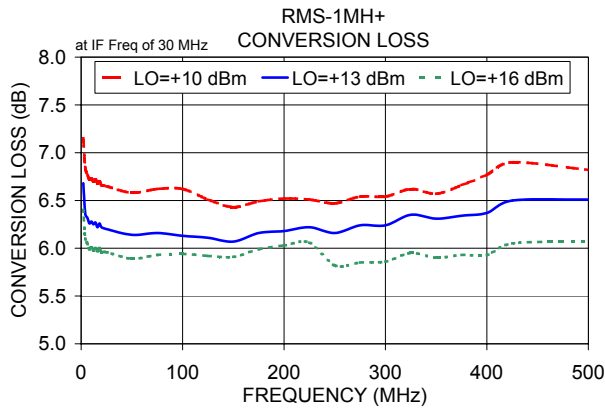
1 dB COMP: +9 dBm typ. For phase detection, DC output positive with in-phase RF & LO. L = low range [ $f_L$  to 10  $f_L$ ] M = mid range [10  $f_L$  to  $f_U/2$ ] U = upper range [ $f_U/2$  to  $f_U$ ]

### 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 +13dBm	LO +13dBm	LO +13dBm
2.10	32.10	6.68	2.42	10.50	95.44	63.71	1.79
4.10	34.10	6.36	2.54	14.50	90.48	60.97	1.80
6.10	36.10	6.32	2.59	20.50	85.55	57.99	1.78
10.10	40.10	6.28	2.60	24.50	81.96	56.51	1.78
14.10	44.10	6.27	2.57	30.50	79.59	54.62	1.78
18.10	48.10	6.26	2.53	35.00	77.37	53.48	1.79
20.10	50.10	6.22	2.52	40.10	75.20	52.34	1.79
25.10	55.10	6.20	2.48	50.10	71.74	50.40	1.79
50.10	80.10	6.14	2.29	80.10	64.50	46.30	1.78
100.10	130.10	6.13	1.89	105.10	60.46	43.60	1.77
125.10	155.10	6.11	1.71	155.10	55.39	40.81	1.80
150.10	180.10	6.07	1.56	205.10	51.72	39.49	1.79
175.10	205.10	6.16	1.45	255.10	49.15	38.65	1.84
200.10	230.10	6.18	1.41	305.10	46.78	37.95	1.88
250.10	280.10	6.16	1.39	330.10	46.50	37.64	1.91
300.10	330.10	6.24	1.41	355.10	45.71	37.18	1.90
350.10	380.10	6.31	1.41	405.10	43.38	35.68	1.95
400.10	430.10	6.37	1.42	430.10	42.53	34.62	1.96
425.10	455.10	6.50	1.44	455.10	41.47	33.69	1.93
500.00	470.00	6.51	1.70	470.00	40.85	33.01	1.96

### Electrical Schematic





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