

# Surface Mount Frequency Mixer

## RMS-1LH+ RMS-1LH

### Level 10 (LO Power +10 dBm) 2 to 500 MHz



CASE STYLE: TT240

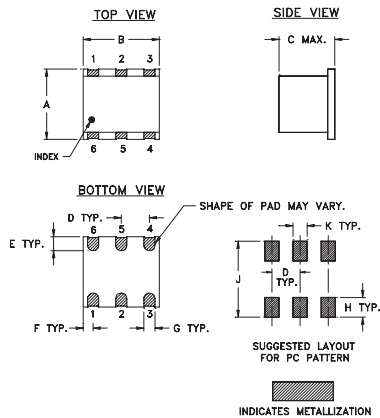
#### Maximum Ratings

Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power	50mW
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

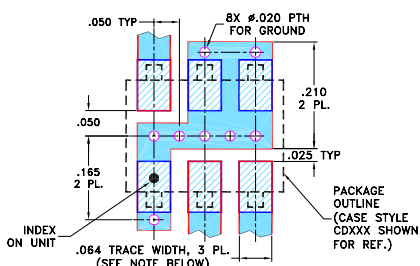
#### Outline Drawing



#### Outline Dimensions (inch/mm)

A	B	C	D	E	F	G	H	J	K	wt
.250	.31	.20	.100	.050	.055					
6.35	7.87	5.08	2.54	1.27	1.40					
										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 RO4350B 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

#### Features

- excellent L-R isolation, 44 dB typ.
- conversion loss, 5.68 dB typ.
- small size, 0.25"x0.31"x0.2"

#### Applications

- HF & VHF communications
- intermediate frequency for down converters

#### 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											
$f_c - f_u$	$\bar{X}$ $\sigma$ Max.	Typ. Min.	Typ. Min.	Typ. Min.	Typ. Min.	Typ. Min.	Typ. Min.	Typ.										
2-500	DC-500	5.68	0.11	7.0	8.0	58	45	44	25	30	20	55	40	40	25	28	17	15

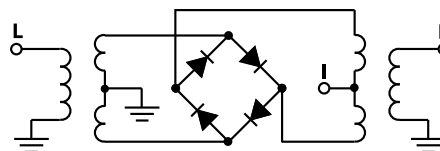
1 dB COMP.: +5 dBm typ.  
For phase detection, DC output positive with in-phase RF & LO.

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)	Isolation L-R (dB)	Isolation L-I (dB)	VSWR RF Port (:1)	VSWR LO Port (:1)	
						RF
10.10	40.10	5.60	74.28	45.84	1.06	2.46
49.80	79.80	5.69	60.16	43.26	1.04	2.50
89.50	119.50	5.68	55.26	41.54	1.05	2.36
129.20	159.20	5.75	52.39	40.39	1.06	2.46
168.90	198.90	5.77	50.72	39.56	1.07	2.38
208.60	238.60	5.78	49.03	38.78	1.09	2.45
248.30	278.30	5.86	48.01	37.59	1.09	2.47
287.90	317.90	5.87	46.41	36.30	1.10	2.47
327.60	357.60	5.93	45.92	34.99	1.10	2.57
367.30	397.30	5.98	44.83	33.07	1.10	2.54
407.00	437.00	5.98	42.83	31.78	1.12	2.62
446.70	476.70	6.02	41.37	31.24	1.13	2.66
486.40	516.40	6.07	40.02	30.07	1.14	2.69
526.10	556.10	6.14	38.49	29.39	1.14	2.78
565.80	595.80	6.18	37.45	27.46	1.15	2.79

#### Electrical Schematic



**Mini-Circuits**  
ISO 9001 ISO 14001 AS 9100 CERTIFIED

For detailed performance specs & shopping online see web site

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IF/RF MICROWAVE COMPONENTS

Notes: 1. Performance and quality attributes and conditions not expressly stated in this specification sheet are intended to be excluded and do not form a part of this specification sheet. 2. Electrical specifications and performance data contained herein are based on Mini-Circuits' applicable established test performance criteria and measurement instructions. 3. The parts covered by this specification sheet 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](http://www.minicircuits.com/MCLStore/terms.jsp).

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## Performance Charts

