

# Ceramic Surface Mount Frequency Mixer WIDE BAND

## SIM-63LH+

### Level 10 (LO Power +10 dBm) 750 to 6000 MHz



#### Maximum Ratings

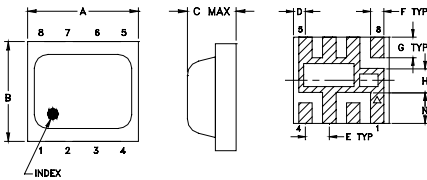
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power	50mW

For extended temperature range, consult factory.  
Permanent damage may occur if any of these limits are exceeded.

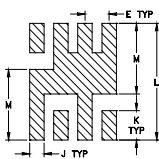
#### Pin Connections

LO	8
RF	4
IF	2
GROUND	1,3,5,6,7

#### Outline Drawing



#### PCB Land Pattern

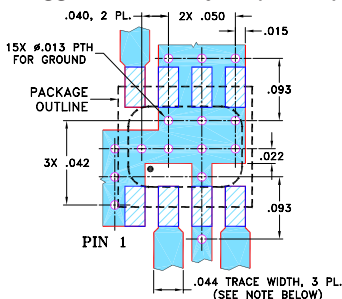


Suggested Layout,  
Tolerance to be within ±0.002

#### Outline Dimensions (inch/mm)

A	B	C	D	E	F	G
.200	.180	.087	.025	.050	.028	.043
5.08	4.57	2.21	0.64	1.27	0.71	1.09
H	J	K	L	M	N	wt
.050	.030	.060	0.238	0.144	0.065	grams
1.27	0.76	1.52	6.05	3.66	1.65	0.08

#### Demo Board MCL P/N: TB-382 Suggested PCB Layout (PL-239)



#### NOTES:

- TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .020" ± .0015"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
- 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

- wide bandwidth, 750 to 6000 MHz
- low conversion loss, 6.2 dB typ.
- excellent L-R isolation, 34 dB typ.
- LTCC double balanced mixer
- tiny size, low profile, 0.08"
- useable as up and down converter
- aqueous washable
- protected by US patent 7,027,795

#### Applications

- cellular
- defense & weather radar
- defense communications
- PCN
- WCDMA
- WIFI
- blue tooth
- VSAT
- ISM

CASE STYLE: HV1195  
PRICE: \$8.95 ea. QTY (10-49)

**+ RoHS compliant in accordance with EU Directive (2002/95/EC)**

The +Suffix has been added in order to identify RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications.

#### Electrical Specifications

FREQUENCY (MHz)	CONVERSION LOSS* (dB)	LO-RF ISOLATION (dB)		LO-IF ISOLATION (dB)		IP3 at center band (dBm)			
		Typ.	Min.	Typ.	Min.				
LO/RF $f_i - f_u$	IF	Typ.	$\sigma$	Max.	Typ.	Min.	Typ.		
750-6000	DC-1500								
750-1700		6.3	0.1	7.3	37	31	30	20	12
1700-2000		6.6	0.1	7.5	37	32	20	12	18
2000-3100		5.8	0.1	7.2	32	25	22	12	12
3100-3800		5.7	0.1	7.0	30	25	25	15	15
3800-6000		8.0	0.2	9.3	30	22	20	13	15

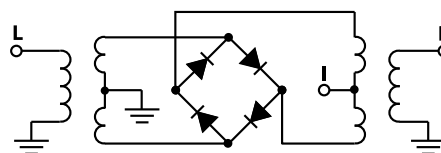
1 dB Compression: +3 dBm typ.

\* Conversion loss at 30 MHz IF.  $\sigma$  is a measure of repeatability from unit to unit.

#### Typical Performance Data

Frequency (MHz)	Conversion Loss (dB)		Isolation L-R (dB)		Isolation L-I (dB)		VSWR RF Port (:1)		VSWR LO Port (:1)	
	LO +10dBm	LO +10dBm	LO +10dBm	LO +10dBm	LO +10dBm	LO +10dBm	LO +10dBm	LO +10dBm	LO +10dBm	LO +10dBm
740.00	771.00	6.12	39.29	26.22	1.99	7.05				
850.00	881.00	5.79	36.91	27.35	1.51	4.55				
1000.00	1031.00	6.24	40.47	28.20	2.63	2.78				
1200.00	1231.00	6.27	42.51	30.04	3.21	1.54				
1500.00	1531.00	6.05	36.17	42.37	2.94	2.15				
1800.00	1831.00	6.53	37.46	21.72	3.22	2.96				
2100.00	2131.00	6.29	36.76	17.14	3.00	2.64				
2400.00	2431.00	5.47	35.23	21.65	2.01	2.45				
2700.00	2731.00	5.11	31.43	23.85	1.75	1.87				
3000.00	3031.00	5.05	30.30	26.15	1.34	1.30				
3400.00	3431.00	5.53	30.24	23.55	1.44	1.45				
3800.00	3831.00	6.01	28.84	20.37	2.40	2.23				
4200.00	4231.00	7.01	30.59	18.41	3.57	3.00				
4500.00	4531.00	8.08	32.32	17.66	4.84	3.45				
4800.00	4831.00	8.28	31.53	21.57	5.04	3.96				
5100.00	5131.00	7.96	28.60	26.68	3.55	3.05				
5400.00	5431.00	7.36	28.72	23.26	3.65	3.13				
5700.00	5731.00	7.43	28.75	20.86	2.99	3.26				
5850.00	5881.00	7.75	27.90	20.28	2.82	2.87				
6000.00	6031.00	7.66	27.87	21.39	2.48	2.13				

#### Electrical Schematic



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

For detailed performance specs & shopping online see web site

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 The Design Engineers Search Engine Provides ACTUAL Data Instantly at [minicircuits.com](http://minicircuits.com)

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).

REV. OR  
M105046  
SIM-63LH+  
ED-12399/1  
DJ/RS/CP  
071129  
Page 1 of 2

