

# Frequency Mixer WIDE BAND

## SIM-24MH+

Level 13 (LO Power +13 dBm) 7300 to 20000 MHz



### Maximum Ratings

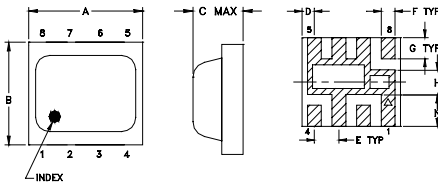
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power	50mW

For extended temperature range, consult factory.

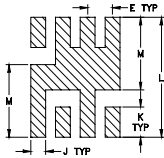
### Pin Connections

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

### Outline Drawing



### PCB Land Pattern

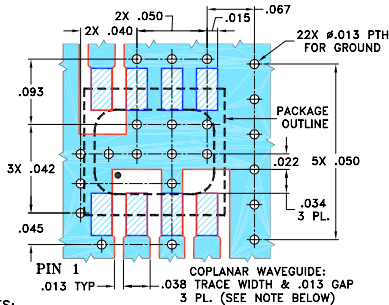


Suggested Layout,  
Tolerance to be within ±0.02

### Outline Dimensions (inch)

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-458+ Suggested PCB Layout (PL-284)



#### NOTES:

- COPLANAR WAVEGUIDE PARAMETERS ARE 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, 7300 to 20000 MHz
- low conversion loss, 5.7 dB typ.
- high L-R isolation, 36 dB typ.
- excellent IF BW, DC to 7500 MHz
- LTCC double balanced mixer
- tiny size, low profile, 0.08"
- useable as up and down converter
- aqueous washable
- protected under U.S Patent 7,027,795

### Applications

- fixed satellite
- mobile
- radio location

CASE STYLE: HV1195  
PRICE: \$11.95 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.				
7300-20000	DC-7500								
7300-10000	Typ. σ Max.	7.0	0.2	8.5	43	31	19	13	20
10000-14500		5.7	0.1	7.5	36	29	18	13	16
14500-18000		7.6	0.3	9.3	26	19	15	10	18
18000-20000		8.5	0.3	10.9	28	22	25	16	25

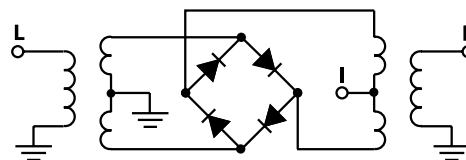
1 dB COMPR. +9 dBm typ.

\* Conversion loss at 30 MHz IF. σ 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 +13dBm
7300.00	7330.10	6.65	43.77	18.89	3.94	6.09
7500.00	7530.10	6.32	39.57	19.63	3.47	8.37
8000.00	8030.10	6.12	35.84	20.35	2.76	4.99
9000.00	9030.10	7.38	48.14	19.20	4.81	2.76
9500.00	9530.10	7.00	48.23	17.30	3.84	2.56
10000.00	10030.10	6.73	45.78	16.83	3.38	2.62
10500.00	10530.10	6.29	42.22	17.92	3.17	3.22
11000.00	11030.10	5.93	40.36	19.17	2.35	2.25
12000.00	12030.10	5.84	35.97	18.67	1.99	3.49
12500.00	12530.10	5.55	34.02	18.08	1.92	2.31
13000.00	13030.10	5.70	33.28	18.18	1.48	2.28
14000.00	14030.10	5.74	34.81	19.35	1.87	2.77
14500.00	14530.10	6.21	36.04	21.54	2.52	3.07
15000.00	15030.10	6.80	35.11	28.80	2.98	4.28
15500.00	15530.10	6.92	31.74	22.63	2.49	3.20
16000.00	16030.10	7.08	27.52	16.03	2.47	2.97
17000.00	17030.10	7.94	26.56	15.86	4.43	1.25
18000.00	18030.10	8.16	29.19	24.93	2.49	1.99
19000.00	19030.10	7.75	31.50	28.10	3.12	2.04
20000.00	20030.10	9.60	26.59	22.49	2.54	1.27

### Electrical Schematic



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

ALL NEW  
minicircuits.com

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site



The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: [www.minicircuits.com](http://www.minicircuits.com)

RF/IF MICROWAVE COMPONENTS

