

# Ceramic Surface Mount Frequency Mixer WIDE BAND

## SIM-14LH+

### Level 10 (LO Power +10 dBm) 3700 to 10000 MHz



CASE STYLE: HV1195

**+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, 500

#### Maximum Ratings

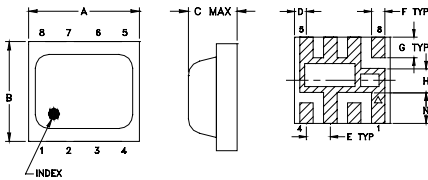
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power	50mW

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

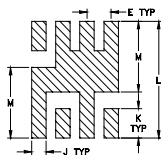
#### Pin Connections

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

#### Outline Drawing



#### PCB Land Pattern

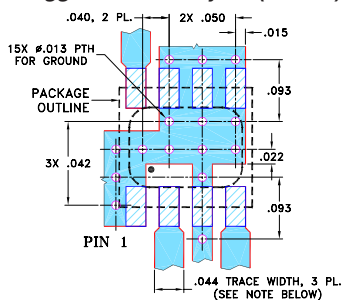


Suggested Layout,  
Tolerance to be within ±.002

#### 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

#### Notes

- 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.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- 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)

#### Features

- wide bandwidth, 3700 to 10000 MHz
- low conversion loss, 6.7 dB typ.
- high L-R isolation, 38 dB typ.
- excellent IF BW, DC to 4000 MHz
- 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

- satellite up and down converters
- defense radar and communications
- line of sight links
- federal fixed service
- WIFI
- blue tooth
- VSAT
- ISM

#### 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.		
<b>3700-10000</b>	<b>DC-4000</b>								
3700-6200		6.7	0.3	8.3	38	29	17	11	19
6200-10000		6.7	0.2	8.9	35	21	17	10	12

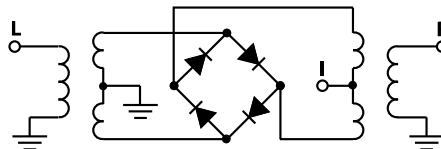
1 dB Compression: +5 dBm typ.

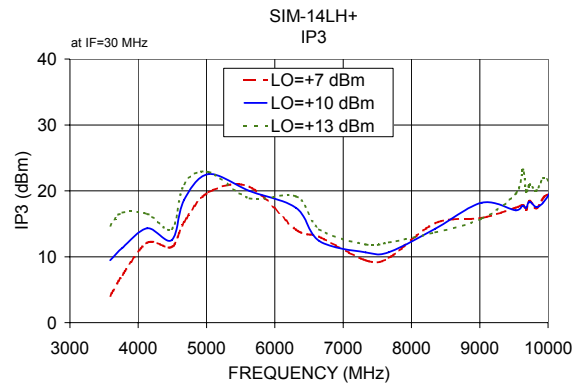
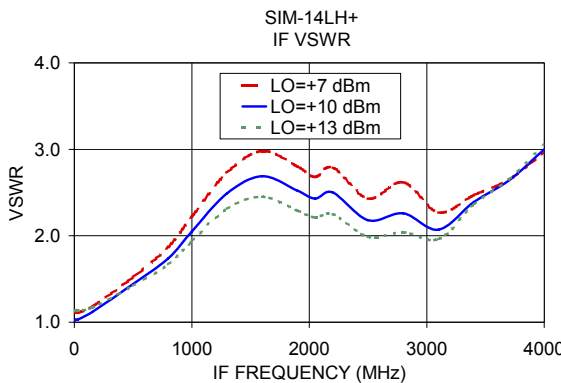
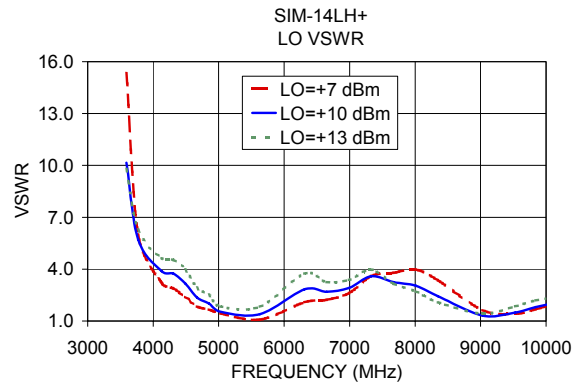
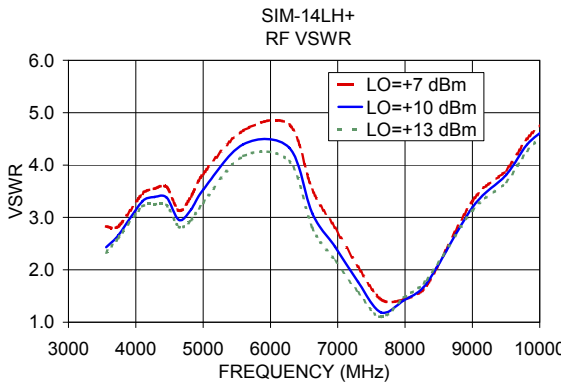
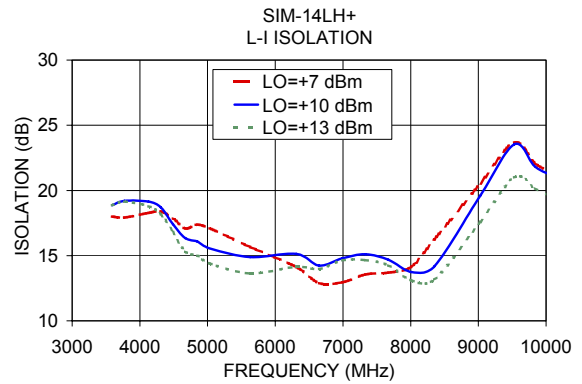
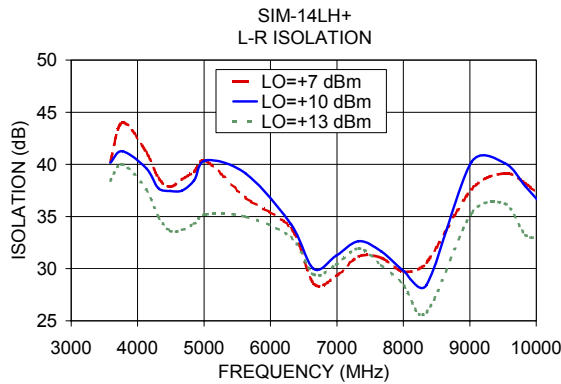
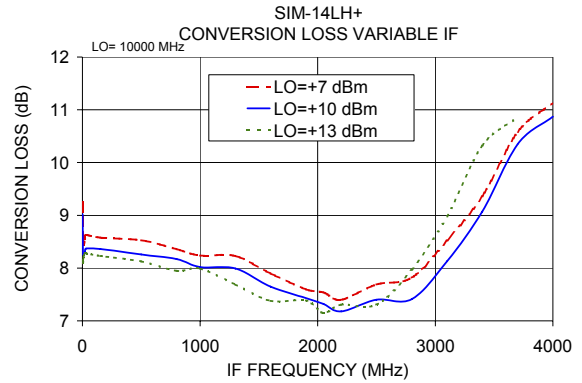
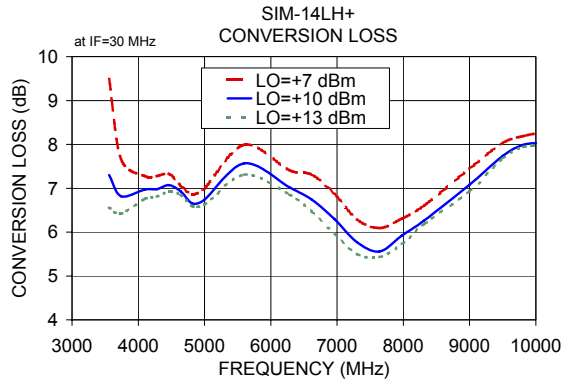
\* Conversion loss at 30 MHz IF.  $\sigma$  is a measure of repeatability from unit to unit.

#### 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	RF	LO	RF	LO	RF	LO	RF	LO	RF
3560.00	3590.00	7.30	40.15	18.87	2.43	10.16				
3740.00	3770.00	6.82	41.27	19.21	2.66	5.72				
4100.00	4130.00	6.97	39.63	19.14	3.31	3.88				
4280.00	4310.00	6.98	37.73	18.69	3.39	3.74				
4460.00	4490.00	7.07	37.45	17.41	3.38	3.17				
4640.00	4670.00	6.93	37.50	16.34	2.95	2.36				
4820.00	4850.00	6.65	38.46	16.08	3.15	2.02				
5000.00	5030.00	6.74	40.39	15.55	3.53	1.54				
5600.00	5630.00	7.57	39.12	14.89	4.40	1.40				
6280.00	6310.00	7.02	34.27	15.14	4.33	2.83				
6620.00	6650.00	6.74	29.98	14.24	3.08	2.69				
6960.00	6990.00	6.30	31.24	14.80	2.44	2.91				
7300.00	7330.00	5.77	32.63	15.10	1.77	3.59				
7640.00	7670.00	5.56	31.66	14.68	1.19	3.25				
7980.00	8010.00	5.92	29.76	13.75	1.42	3.04				
8320.00	8350.00	6.27	28.44	14.18	1.74	2.43				
9000.00	9030.00	7.08	40.25	19.61	3.19	1.31				
9500.00	9530.00	7.74	40.11	23.53	3.81	1.49				
9810.00	9840.00	7.99	37.87	21.82	4.39	1.80				
10120.00	10150.00	8.04	35.70	21.02	4.73	2.05				

#### Electrical Schematic





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