

# Frequency Mixer WIDE BAND

## SIM-153LH+

Level 10 (LO Power +10 dBm) 3200 to 15000 MHz



Generic photo used for illustration purposes only

CASE STYLE: HV1195

### Maximum Ratings

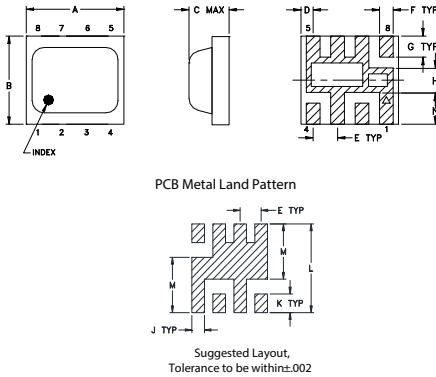
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power	50mW

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

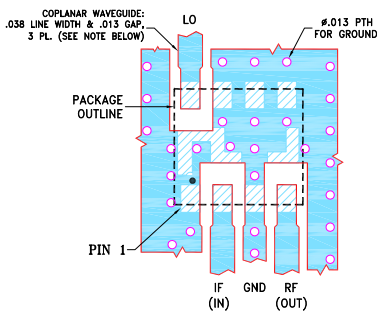
### Outline Drawing



### Outline Dimensions (inch/mm)

A	B	C	D	E	F	G
.200	.180	.087	.025	.050	.028	.043
5.08	4.57	2.2098	0.64	1.27	0.71	1.09
H	J	K	L	M	N	wt
.050	.030	.043	.204	.127	0.065	grams
1.27	0.76	1.09	5.18	3.23	1.65	0.08

### Demo Board MCL P/N: TB-458+ Suggested PCB Layout (PL-517)



- NOTES:
- TRACE WIDTH AND GAP ARE SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .0028/.0015"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH AND GAP 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.
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### Features

- wide bandwidth, 3200 to 15000 MHz
- low conversion loss, 6.1 dB typ.
- high L-R isolation, 36 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)
	LO/RF $f_c-f_u$	IF		Typ.	Min.	Typ.	Min.	
3200-15000	DC-4000							
3200-4500		Typ.	$\sigma$	Max.	Typ.	Min.	Typ.	Min.
4500-5100		6.4	0.2	8.9	40	32	19	13
5100-14000		6.5	0.2	8.7	38	32	15	10
14000-15000		7.5	0.4	12.4	35	23	15	9
		7.8	0.3	10.3	30	17	28	19

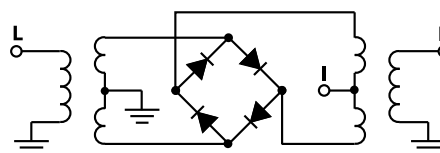
1 dB Compression: +3 dBm typ.

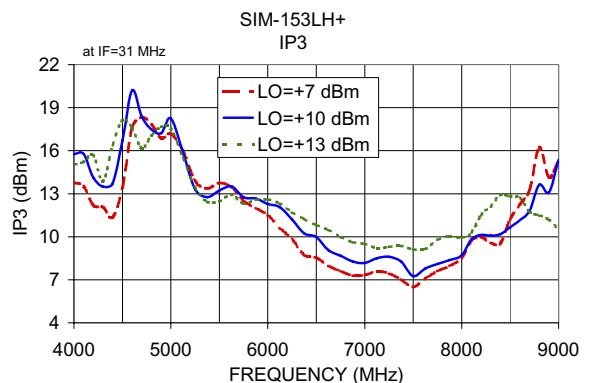
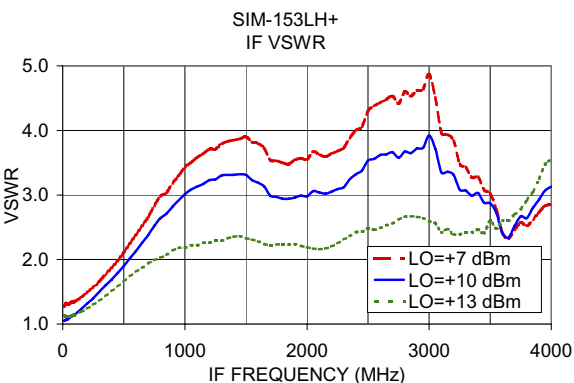
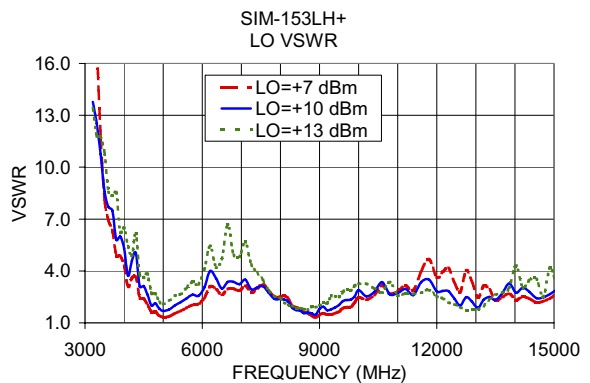
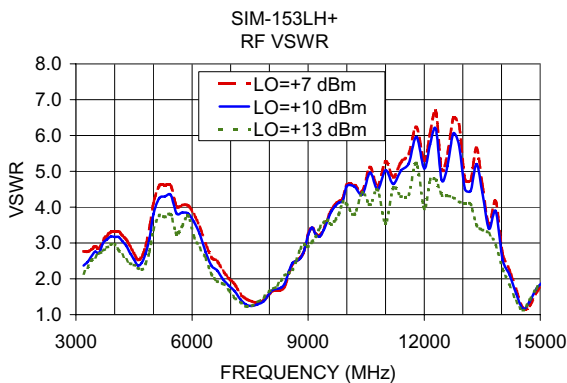
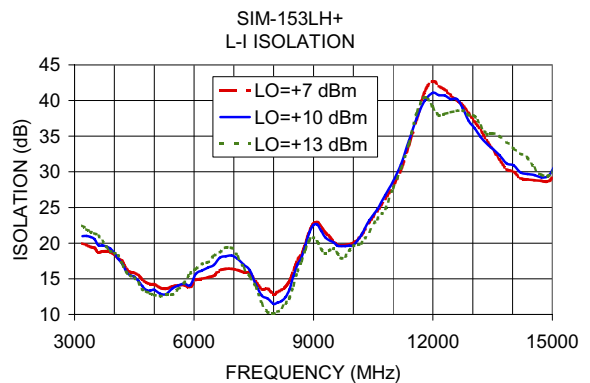
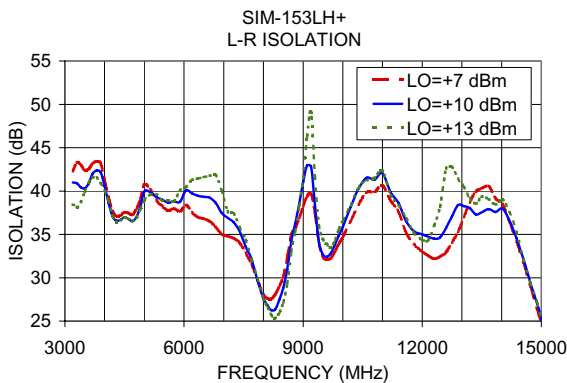
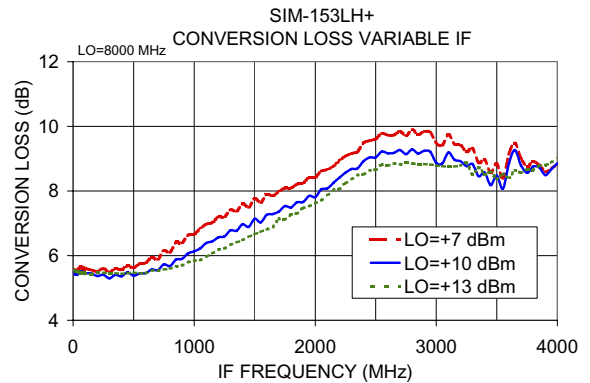
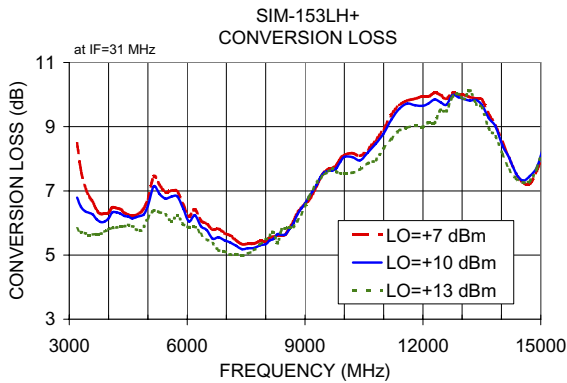
\* Conversion loss at 30 MHz IF.  $\sigma$  is a measure of repeatability from unit to unit.

### 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
RF	LO	LO +10dBm	LO +10dBm	LO +10dBm	LO +10dBm	
3200.00	3231.00	6.79	40.99	20.99	2.37	13.77
4000.00	4031.00	6.14	40.60	18.67	3.17	5.31
4500.00	4531.00	6.20	36.96	15.28	2.55	3.13
5000.00	5031.00	6.53	39.95	13.46	3.80	1.69
5600.00	5631.00	6.82	38.66	14.05	3.82	2.42
6500.00	6531.00	5.78	39.33	16.94	2.37	2.99
7400.00	7431.00	5.18	35.38	16.21	1.28	3.04
8000.00	8031.00	5.34	27.64	11.48	1.59	2.38
8500.00	8531.00	5.64	28.80	15.40	2.21	1.70
9000.00	9031.00	6.60	41.06	22.55	3.22	1.81
9500.00	9531.00	7.58	32.65	20.12	3.61	2.04
10000.00	10031.00	8.06	35.87	19.69	4.59	2.89
11000.00	11031.00	8.79	42.06	28.67	5.03	2.72
12000.00	12031.00	9.65	35.00	41.07	5.08	2.82
12600.00	12631.00	9.68	35.75	40.20	5.15	2.00
13050.00	13081.00	9.86	38.27	36.10	4.51	1.87
13500.00	13531.00	9.68	37.53	33.24	4.42	2.32
14025.00	14056.00	8.42	37.98	30.91	2.53	2.74
14550.00	14581.00	7.32	32.13	29.55	1.16	2.43
15075.00	15106.00	8.42	24.21	30.95	1.92	2.93

### Electrical Schematic





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