

# Ceramic Surface Mount Frequency Mixer WIDE BAND

## SIM-153+

### Level 7 (LO Power +7 dBm) 3400 to 15000 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

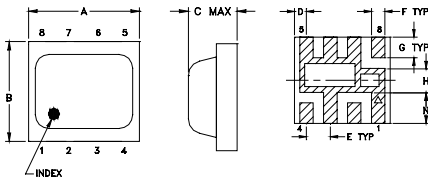
#### Features

- wide bandwidth, 3400 to 15000 MHz
- low conversion loss, 6.8 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

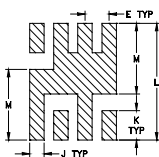
#### Applications

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

#### Outline Drawing



#### PCB Land Pattern

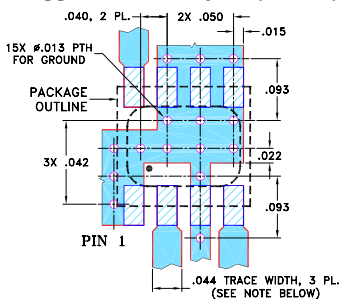


Suggested Layout,  
Tolerance to be within ±0.002

#### 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:

1. 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.
  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

#### Notes

- A. 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.  
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.  
C. The parts covered by this specification document 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/WCLStore/terms.jsp](http://www.minicircuits.com/WCLStore/terms.jsp)

#### 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 $f_1-f_2$	IF	Typ.	$\sigma$	Max.	Typ.	Min.	Typ.		
3400-15000	DC-4000								
3400-10000		6.5	0.3	9.5	36	25	15	12	10
10000-13500		10.0	0.7	13.2	36	27	30	15	—
13500-15000		8.0	0.4	10.4	31	20	27	20	—

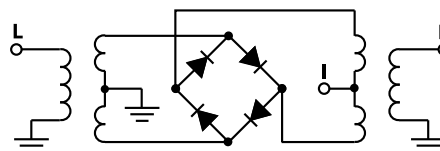
1 dB Compression: +1 dBm typ.

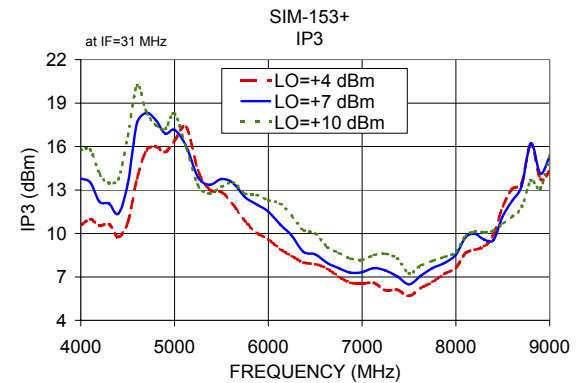
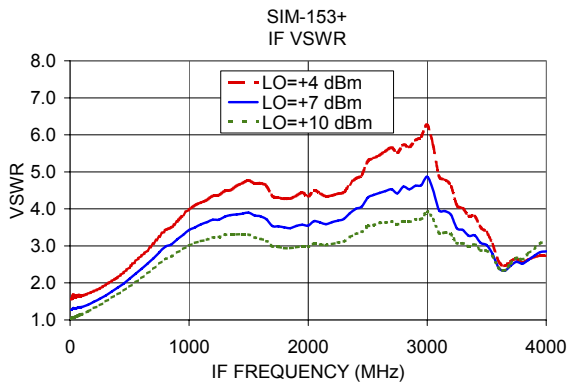
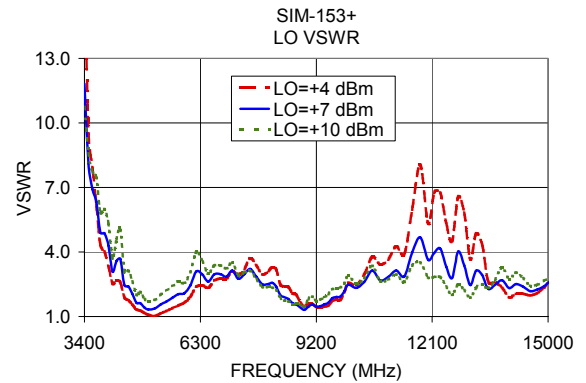
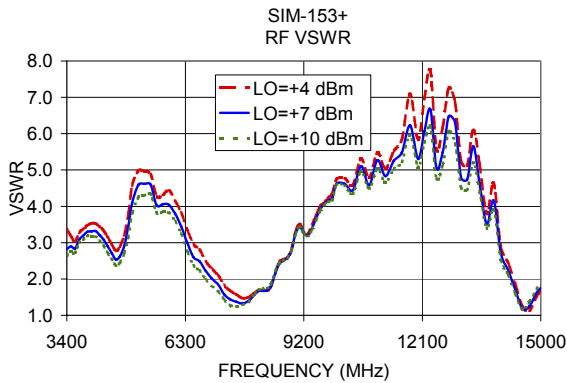
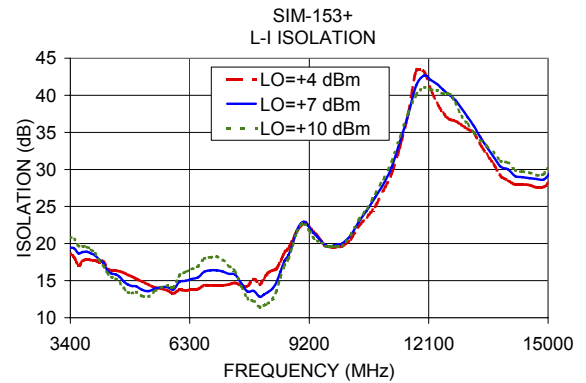
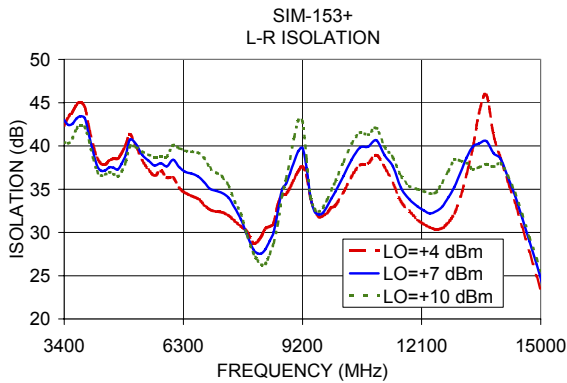
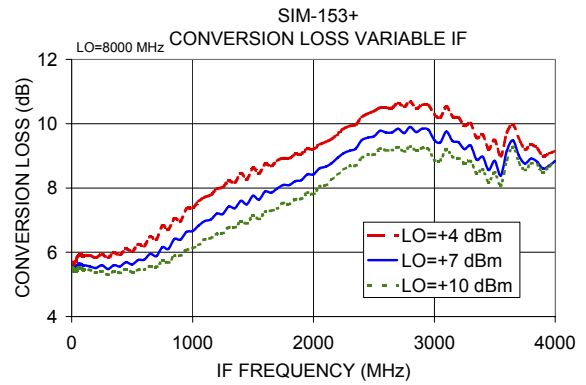
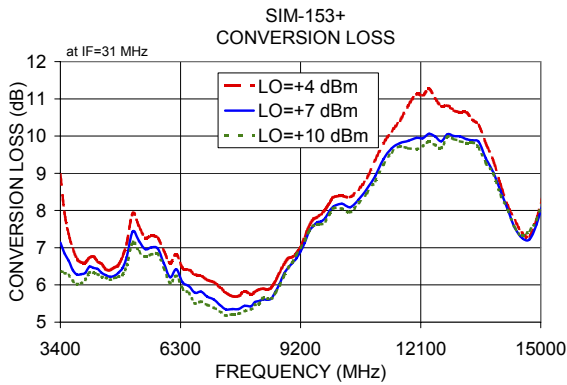
\* Conversion loss at 30 MHz IF  $\sigma$  is a measure of repeatability from unit to unit.

#### 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 +7dBm
RF	LO	LO +7dBm	LO +7dBm	LO +7dBm	LO +7dBm	
3400.00	3431.00	7.14	42.99	19.46	2.82	11.83
4000.00	4031.00	6.32	41.32	18.41	3.31	4.30
4500.00	4531.00	6.26	37.54	15.84	2.71	2.40
5000.00	5031.00	6.75	40.73	14.23	4.10	1.33
5600.00	5631.00	7.01	37.75	14.10	4.02	1.87
6500.00	6531.00	5.97	36.81	15.44	2.60	2.62
7400.00	7431.00	5.34	34.01	15.81	1.44	2.97
8000.00	8031.00	5.43	28.07	12.83	1.58	2.51
8500.00	8531.00	5.64	30.06	16.20	2.15	1.82
9000.00	9031.00	6.59	38.23	22.75	3.25	1.45
9500.00	9531.00	7.58	32.38	20.23	3.67	1.64
10000.00	10031.00	8.11	34.68	20.01	4.62	2.48
11000.00	11031.00	8.92	40.65	27.99	5.27	2.84
12000.00	12031.00	9.95	33.01	42.68	5.30	3.63
13050.00	13081.00	9.99	36.98	37.00	4.78	2.46
13500.00	13531.00	9.85	40.28	33.11	4.65	2.28
14025.00	14056.00	8.53	38.51	30.02	2.71	2.32
14550.00	14581.00	7.26	31.68	28.81	1.18	2.18
15075.00	15106.00	8.28	23.38	29.68	1.84	2.69

#### Electrical Schematic





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