

Frequency Mixer WIDE BAND

SIM-193H+

Level 17 (LO Power +17 dBm) 7.3 to 19 GHz

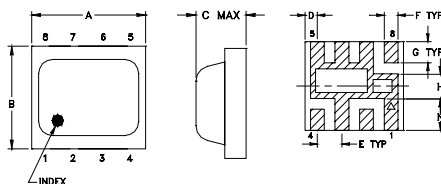
Maximum Ratings

Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power	120mW
For extended temperature range, consult factory.	
Permanent damage may occur if any of these limits are exceeded.	

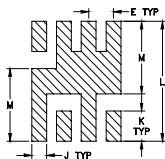
Pin Connections

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

Outline Drawing



PCB Land Pattern

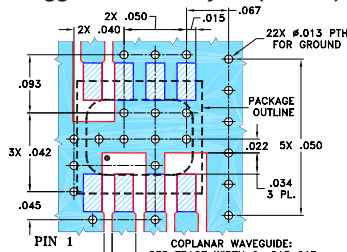


Suggested Layout,
Tolerance to be within ±0.002

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-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

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, 7.3 to 19 GHz
- low conversion loss, 6.2 dB typ.
- high L-R isolation, 33 dB typ.
- excellent IF BW, DC to 7.5 GHz
- 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

Electrical Specifications at 25°C

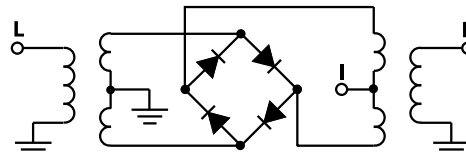
Parameter	Condition (GHz)	Min.	Typ.	Max.	Unit
Frequency Range, LO/RF		7.3	—	19	GHz
Frequency Range, IF		DC	—	7.5	GHz
Conversion Loss ¹	7.3-10	—	8.6	10.5	dB
	10-15	—	7.6	10.0	
	15-18	—	9.7	11.8	
	18-19	—	10.0	13.0	
LO to RF Isolation	7.3-10	24	32	—	dB
	10-15	20	28	—	
	15-18	16	21	—	
	18-19	20	26	—	
LO to IF Isolation	7.3-10	13	18	—	dB
	10-15	13	18	—	
	15-18	8	11	—	
	18-19	12	17	—	
IP3	7.3-10	—	17	—	dBm
	10-15	—	19	—	
	15-18	—	16	—	
	18-19	—	25	—	
RF Input Power at 1 dB Compression	7.3-19	—	+14	—	dBm

1. Conversion loss at 30 MHz IF.

Typical Performance Data

Frequency (MHz)		Conversion Loss (dB)	Isolation L-R (dB)	Isolation L-I (dB)	VSWR RF Port (:1)	VSWR LO Port (:1)
RF	LO	LO +17dBm	LO +17dBm	LO +17dBm	LO +17dBm	LO +17dBm
7300.10	7330.00	7.07	42.48	17.69	4.20	10.62
8500.10	8530.00	8.48	37.26	22.30	4.64	3.67
9000.10	9030.00	8.13	41.03	21.66	4.38	3.72
9500.10	9530.00	7.44	43.94	20.41	4.15	3.39
10000.10	10030.00	6.54	44.16	20.71	3.79	3.26
11000.10	11030.00	6.32	40.24	19.18	2.23	2.34
11500.10	11530.00	5.89	38.41	18.90	2.17	3.62
12000.10	12030.00	5.81	37.27	18.55	2.39	2.98
12500.10	12530.00	5.74	34.00	20.03	2.23	2.03
13000.10	13030.00	6.00	32.41	20.42	1.39	2.90
14000.10	14030.00	6.89	33.02	20.39	2.29	3.72
14500.10	14530.00	7.16	32.23	22.45	3.00	2.84
15000.10	15030.00	7.02	30.11	24.95	3.34	2.77
15500.10	15530.00	7.39	25.82	22.24	2.22	3.08
16000.10	16030.00	8.48	21.35	16.00	2.67	3.72
16500.10	16530.00	8.95	21.99	14.20	3.74	2.73
17000.10	17030.00	8.62	26.46	14.84	3.61	2.14
17500.10	17530.00	8.32	29.85	19.38	4.43	2.36
18000.10	18030.00	8.47	31.75	24.25	4.67	1.44
19000.10	19030.00	9.02	25.80	24.87	2.89	1.62

Electrical Schematic



CASE STYLE: HV1195

+RoHS Compliant

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications



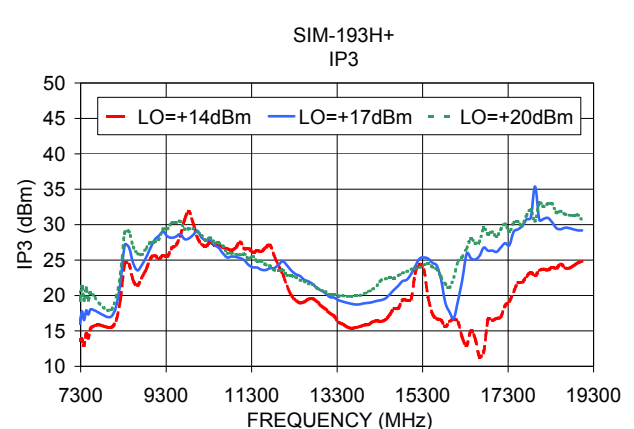
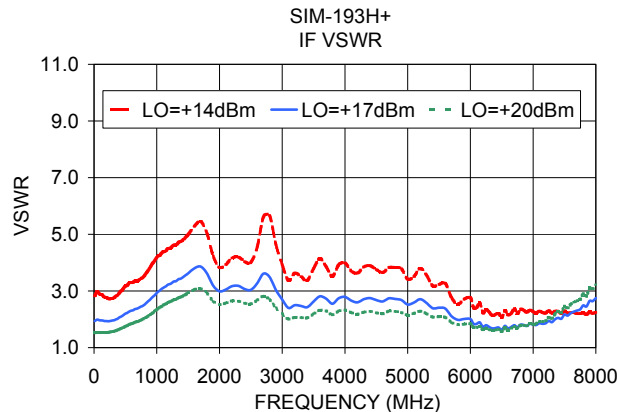
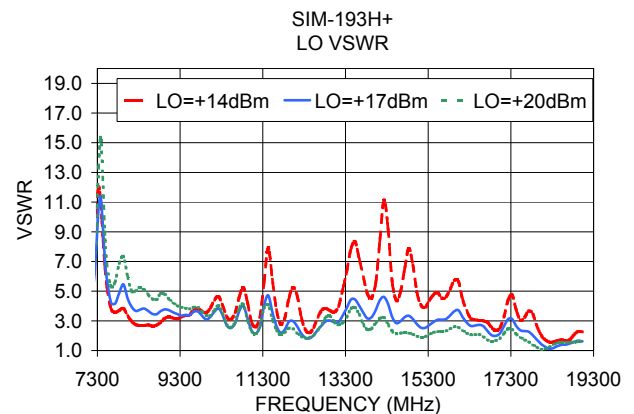
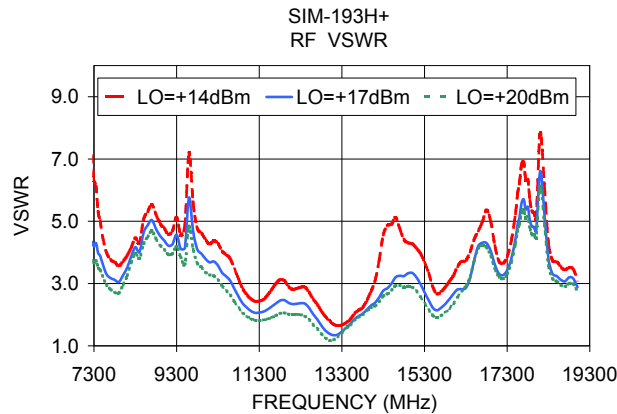
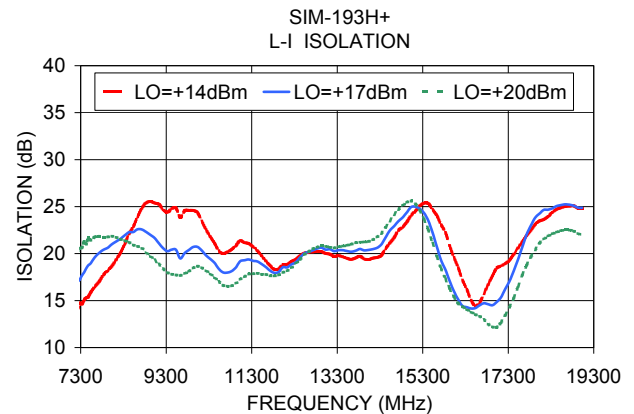
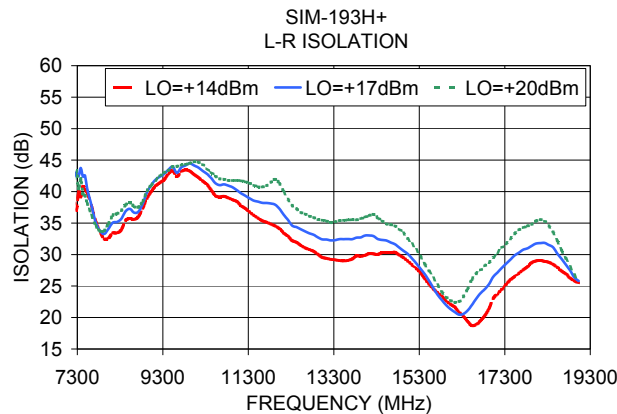
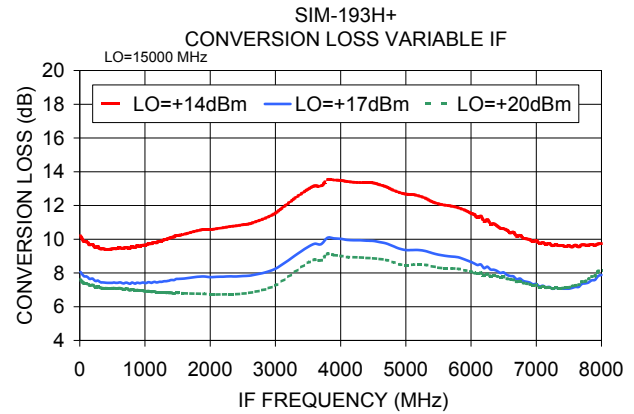
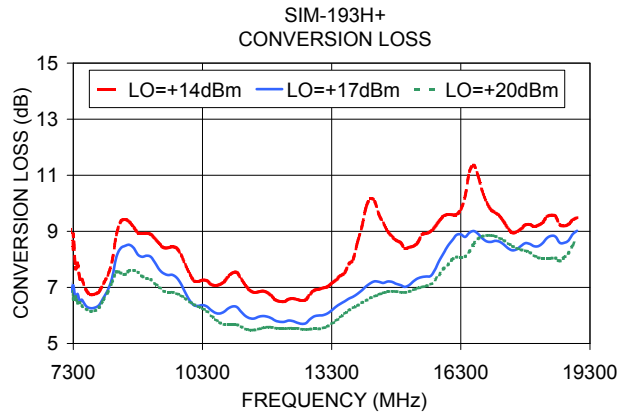
Available Tape and Reel
at no extra cost

Reel Size	Devices/Reel
7"	10, 20, 50, 100, 200, 500



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REV. A
M151107
SIM-193H+
ED-14252/1
DJ/CP/AM
151001



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