

Frequency Mixer

WIDE BAND

MCA1-113H+

Level 17 (LO Power+17 dBm) 3800 to 11000 MHz

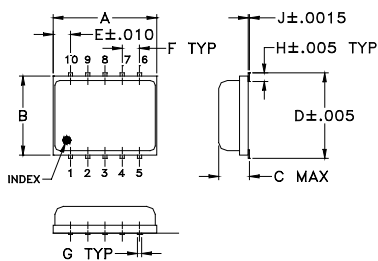
Maximum Ratings

Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
RF Power	50 mW
IF Current	40 mA
Permanent damage may occur if any of these limits are exceeded.	

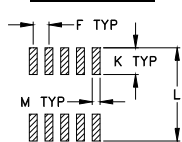
Pin Connections

LO	10
RF	5
IF	3
GROUND	1,2,4,6,7,8,9

Outline Drawing



PCB Land Pattern



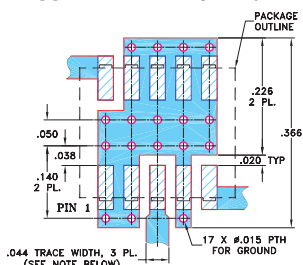
Suggested Layout,
Tolerance to be within ±.002

Outline Dimensions (inch)

A	B	C	D	E	F	G
.30	.250	.085	.266	.050	.050	.012
7.62	6.35	2.16	6.76	1.27	1.27	0.30
H	J	K	L	M	N	wt
.029	.004	.085	.296	.030		grams
0.74	0.10	2.16	7.52	0.76		0.25

Demo Board MCL P/N: TB-144

Suggested PCB Layout (PL-045)



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/MCLStore/terms.jsp

Features

- wide bandwidth, 3800 to 11000 MHz
- low conversion loss, 6.8 dB typ.
- high L-R isolation, 35 dB typ.
- IF, DC to 1800 MHz
- LTCC double balanced mixer
- low cost
- low profile, 0.08"
- aqueous washable
- protected by US Patent 7,027,795

Applications

- satellite up and down converters
- line of sight links
- defense radar
- defense communication
- federal fixed service

Electrical Specifications

FREQUENCY (MHz)		CONVERSION LOSS* (dB)			LO-RF ISOLATION (dB)		LO-IF ISOLATION (dB)		IP3 at center band (dBm)
LO/RF f_L-f_U	IF	$\bar{X}$	σ	Max.	Typ.	Min.	Typ.	Min.	
3800-11000	DC-1800								
3800-6500	DC-1800	6.7	0.2	8.8	27	17	13	8	23
6500-9500	DC-1800	6.8	0.2	8.8	35	25	32	16	21
9500-11000	DC-1800	6.6	0.2	8.5	28	20	25	16	21

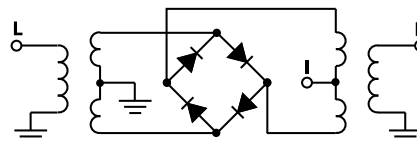
1 dB COMPR. +14 dBm typ.

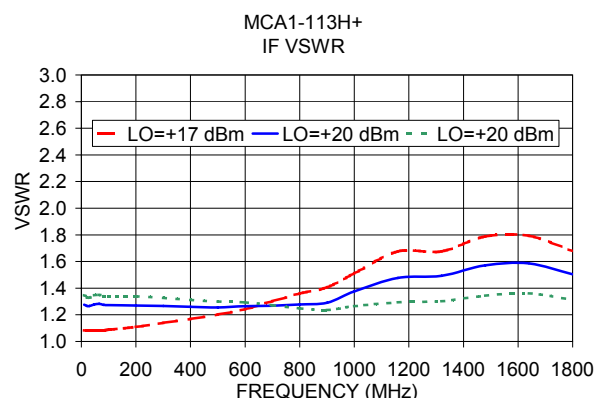
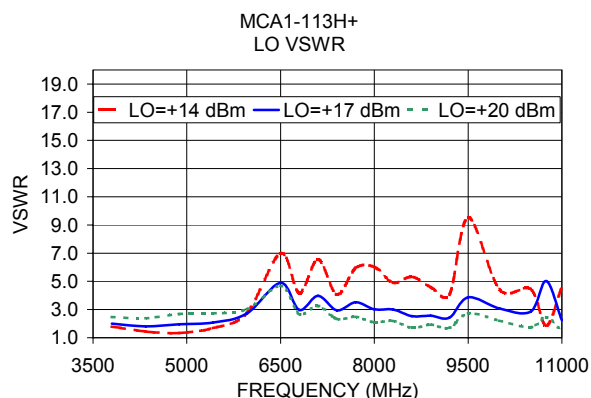
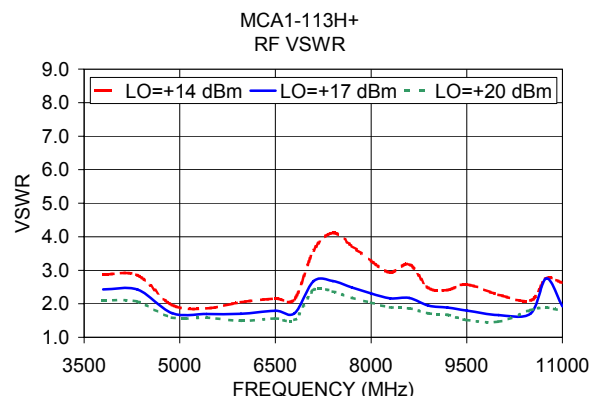
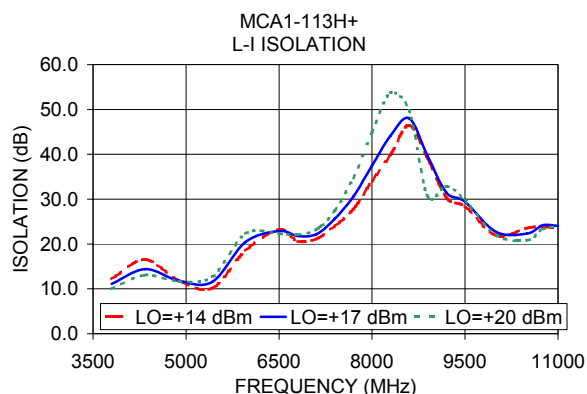
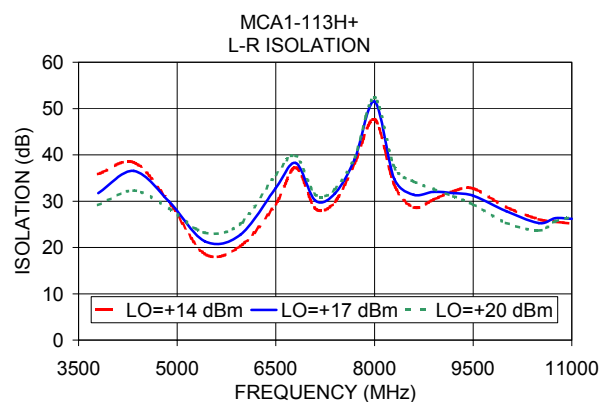
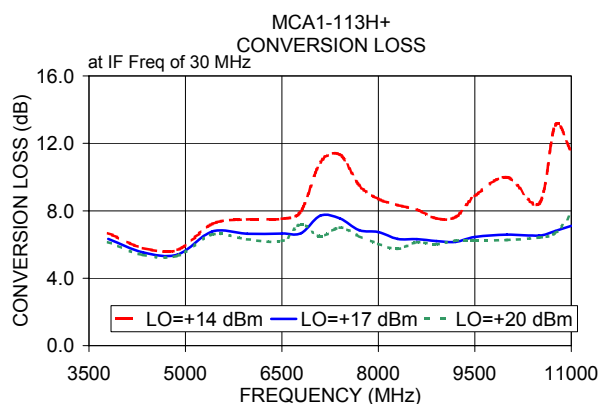
* Conversion loss at 30 MHz IF, increases with IF frequency.

Typical Performance Data at 25°C

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
3800.00	3830.00	6.33	31.72	11.09	2.43	2.01
4340.00	4370.00	5.53	36.54	14.38	2.42	1.81
4880.00	4910.00	5.40	29.89	11.85	1.72	1.95
5420.00	5450.00	6.77	21.32	11.53	1.70	2.08
5960.00	5990.00	6.64	22.71	20.47	1.70	2.72
6500.00	6530.00	6.65	32.83	22.91	1.79	4.89
6800.00	6830.00	6.68	38.25	21.78	1.72	2.97
7100.00	7130.00	7.72	30.12	22.19	2.68	3.97
7400.00	7430.00	7.55	31.69	25.62	2.68	2.94
7700.00	7730.00	6.85	39.07	30.58	2.49	3.52
8000.00	8030.00	6.74	51.51	37.43	2.31	3.01
8300.00	8330.00	6.33	34.76	44.18	2.16	3.00
8600.00	8630.00	6.32	31.34	48.01	2.18	2.54
8900.00	8930.00	6.21	32.00	39.54	1.94	2.56
9200.00	9230.00	6.16	31.72	31.50	1.89	2.42
9500.00	8530.00	6.44	31.16	29.44	1.80	3.87
10000.00	10030.00	6.58	27.87	22.69	1.66	3.08
10500.00	10530.00	6.53	25.25	22.32	1.71	2.85
10750.00	10780.00	6.80	26.33	24.17	2.76	5.02
11000.00	11030.00	7.11	26.19	24.04	1.93	2.25

Electrical Schematic





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