Surface Mount

Frequency Mixer

MBA-15LH+

Level 10 (LO Power +10 dBm) 1200 to 2400 MHz

CASE STYLE: SM2

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

Maximum Ratings

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

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

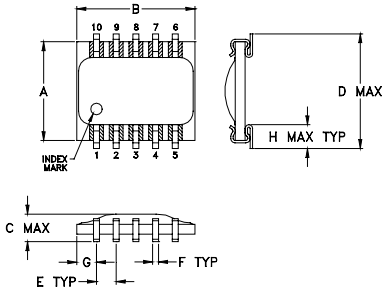
Features

- excellent temperature stability
- excellent performance repeatability
- leads with strain relief
- very low cost
- ultra low height, 0.07"
- aqueous washable
- protected by US Patent 5,534,830

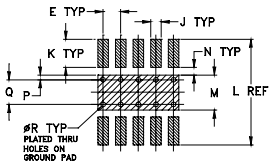
Applications

- PCN/PCS/wideband CDMA
- satellite communication
- wireless local loop
- WLAN
- GPS
- PCMCIA

Outline Drawing



PCB Land Pattern

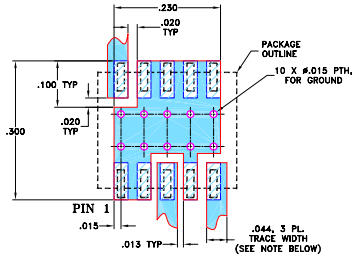


Suggested Layout,
Tolerance to be within ±.002
ADJACENT GROUND PINS SHALL BE CONNECTED TO EACH OTHER AND TO GROUND PAD

Outline Dimensions (inch / mm)

A	B	C	D	E	F	G	H	
.250	.300	.095	.290	.050	.015	.050	.060	
6.35	7.62	2.41	7.37	1.27	0.38	1.27	1.52	
J	K	L	M	N	P	Q	R	wt
.030	.080	.300	.100	.020	.015	.070	.014	grams
0.76	2.03	7.62	2.54	0.51	0.38	1.78	0.36	0.3

Demo Board MCL P/N: TB-99
Suggested PCB Layout (PL-066)



NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS 0.020" ± 0.0015". 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

Electrical Specifications

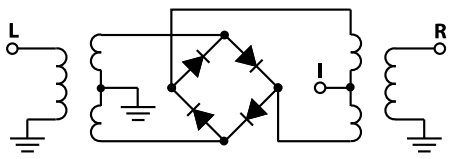
FREQUENCY (MHz)		CONVERSION LOSS* (dB)			LO-RF ISOLATION (dB)		LO-IF ISOLATION (dB)		IP3 at center band (dBm)
LO/RF	IF								
f_L-f_U		$\overline{X}$	σ	Max.	Typ.	Min.	Typ.	Min.	Typ.
1200-2400	DC-600	5.6	0.1	8.5	26	17	22	10	15

1 dB COMP.: +5 dBm typ.
*Conversion loss increases by 0.75 dB below 1250 MHz at -40ºC.

Typical Performance Data

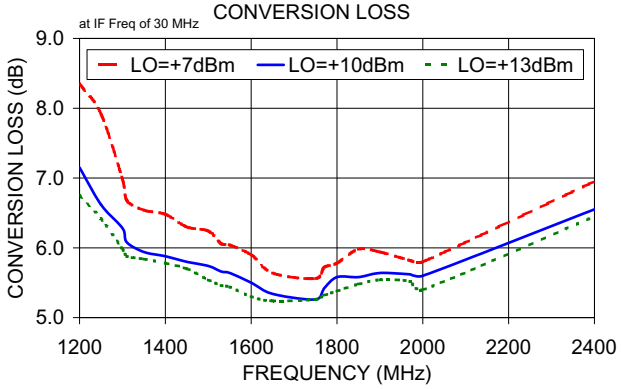
Frequency (MHz)		Conversion Loss (dB)	Isolation L-R (dB)	Isolation L-I (dB)	VSWR RF Port (:1)	VSWR LO Port (:1)
RF	LO	LO +10dBm	LO +10dBm	LO +10dBm	LO +10dBm	LO +10dBm
1200.00	1230.00	7.15	31.20	14.80	3.71	5.66
1250.00	1280.00	6.62	31.20	15.20	3.32	5.03
1300.00	1330.00	6.28	30.80	16.20	3.01	4.64
1310.00	1340.00	6.08	30.80	16.10	2.96	4.53
1350.00	1380.00	5.94	30.50	16.60	2.80	4.32
1400.00	1430.00	5.88	30.00	17.60	2.72	4.12
1450.00	1480.00	5.80	29.70	18.90	2.61	3.95
1500.00	1530.00	5.74	28.80	19.10	2.46	3.44
1530.00	1560.00	5.66	28.30	20.00	2.32	3.32
1550.00	1580.00	5.64	28.30	20.10	2.27	3.26
1600.00	1630.00	5.50	28.10	21.20	2.14	2.80
1650.00	1680.00	5.34	27.90	22.50	1.99	2.61
1750.00	1780.00	5.26	27.20	23.60	1.77	2.23
1770.00	1800.00	5.42	27.00	23.70	1.74	2.03
1800.00	1830.00	5.58	26.70	23.20	1.71	2.12
1850.00	1880.00	5.58	26.10	22.80	1.65	2.04
1900.00	1930.00	5.64	25.90	22.10	1.58	1.92
1970.00	2000.00	5.62	25.20	20.70	1.51	1.81
2000.00	2030.00	5.60	25.20	20.30	1.48	1.80
2400.00	2430.00	6.55	22.30	15.80	1.97	1.58

Electrical Schematic

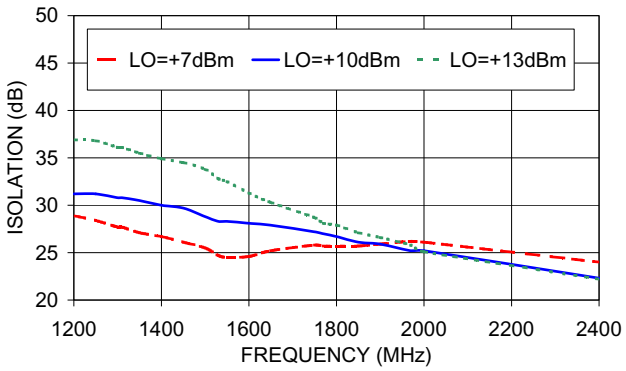


Notes
A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's 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

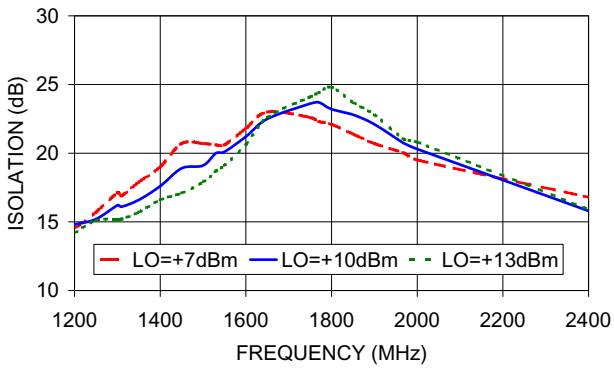
MBA-15LH+
CONVERSION LOSS



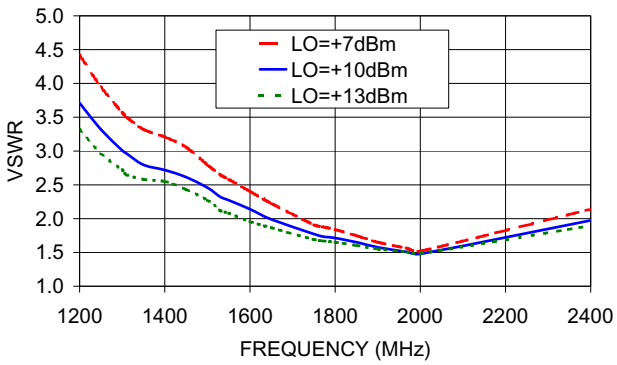
MBA-15LH+
L-R ISOLATION



MBA-15LH+
L-I ISOLATION



MBA-15LH+
RF VSWR



MBA-15LH+
LO VSWR