

# Surface Mount Frequency Mixer

## MBA-15L+ MBA-15L

Level 4 (LO Power +4 dBm) 1200 to 2400 MHz



### 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

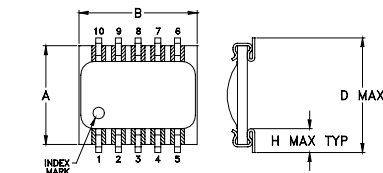
- wireless local loop
- PCN/PCS/wideband CDMA
- WLAN
- satellite communication
- ISM band
- PCMCIA

CASE STYLE: SM2  
PRICE: \$6.95 ea. QTY (10-49)

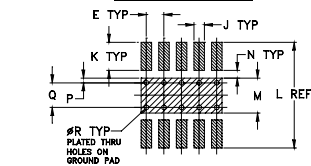
**+ RoHS compliant in accordance with EU Directive (2002/95/EC)**

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

### Outline Drawing



### PCB Land Pattern

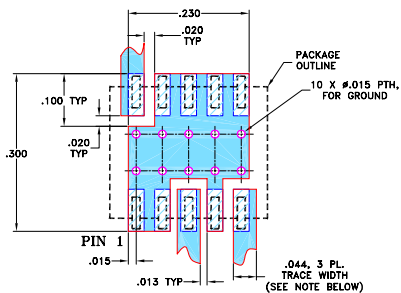


Suggested Layout,  
Tolerance to be within ±0.002  
ADJACENT GROUND PINS SHALL BE CONNECTED TO EACH OTHER AND TO GROUND PAD

### 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

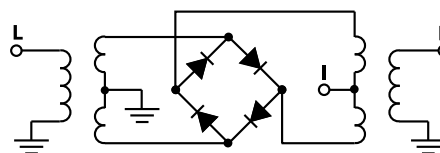
FREQUENCY (MHz)		CONVERSION LOSS (dB)			LO-RF ISOLATION (dB)		LO-IF ISOLATION (dB)		IP3 at center band (dBm)
LO/RF	IF	$\bar{X}$	$\sigma$	Max.	Typ.	Min.	Typ.	Min.	Typ.
1200-2400	DC-600	6.5	0.1	8.5	27	15	20	10	10

1 dB COMP.: 0 dBm typ.

### 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 +4dBm	LO +4dBm	LO +4dBm	LO +4dBm	LO +4dBm
1200.00	1230.00	7.05	30.80	13.30	3.79	3.71
1250.00	1280.00	7.08	30.00	14.10	3.21	3.57
1300.00	1330.00	6.41	30.10	14.90	3.06	3.50
1350.00	1380.00	6.42	29.80	16.10	2.72	3.01
1400.00	1430.00	6.02	29.60	16.80	2.49	2.76
1450.00	1480.00	6.12	29.00	17.50	2.37	2.55
1500.00	1530.00	5.89	27.90	18.70	2.25	2.37
1600.00	1630.00	5.74	27.00	20.20	1.94	1.99
1700.00	1730.00	5.56	27.50	21.70	1.73	1.66
1800.00	1830.00	5.69	27.00	22.00	1.52	1.46
1900.00	1930.00	5.64	27.00	21.70	1.35	1.25
2000.00	2030.00	5.79	27.10	21.00	1.29	1.11
2100.00	2130.00	5.78	26.50	19.90	1.26	1.03
2150.00	2180.00	5.82	25.70	19.30	1.26	1.02
2200.00	2230.00	6.01	25.60	19.10	1.32	1.02
2250.00	2280.00	6.13	25.20	18.40	1.44	1.02
2300.00	2330.00	6.43	25.30	17.60	1.64	1.02
2350.00	2380.00	6.88	25.00	17.00	1.80	1.06
2400.00	2430.00	7.16	24.60	16.30	1.87	1.09
2500.00	2530.00	6.70	24.10	14.90	1.94	1.21

### Electrical Schematic



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Notes: 1. Performance and quality attributes and conditions not expressly stated in this specification sheet are intended to be excluded and do not form a part of this specification sheet. 2. Electrical specifications and performance data contained herein are based on Mini-Circuits' applicable established test performance criteria and measurement instructions. 3. The parts covered by this specification sheet 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](http://www.minicircuits.com/MCLStore/terms.jsp).

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## Performance Charts

