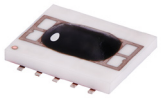
Ceramic

Frequency Mixer WIDE BAND

MCA1-60LH+

Level 10 (LO Power+10 dBm) 1700 to 6000 MHz



Generic photo used for illustration purposes only

CASE STYLE: DZ885

+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
13"	500,1000

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

Features

- wide bandwidth, 1700 to 6000 MHz
- useable to 8000 MHz
- low conversion loss, 6.2 dB typ.
- IF, DC to 2000 MHz
- LTCC double balanced mixer
- aqueous washable
- low cost
- low profile, 0.08"
- protected by US Patent 7,027,795

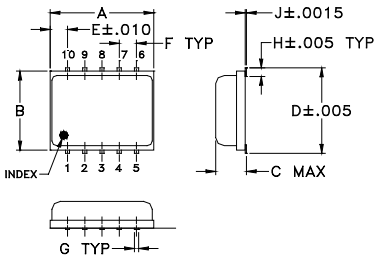
Recommended Replacement:
MAC-60LH+
- *Footprint Compatible*
- *MIL Level Reliability*

Click here for data sheet

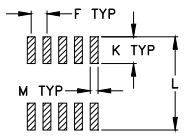
Applications

- PCN
- defense & weather radar
- WCDMA
- defense communications

Outline Drawing



PCB Land Pattern



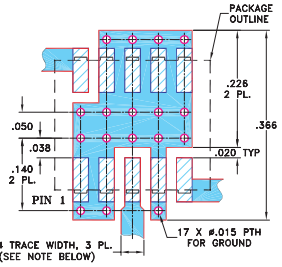
Suggested Layout,
Tolerance to be within ±.002

Outline Dimensions (inch / mm)

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		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

Electrical Specifications (T_{AMB}=-55°C to 100°C)

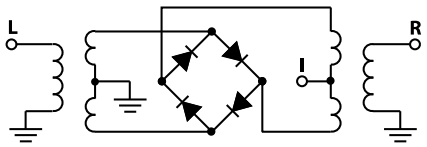
FREQUENCY (MHz)		CONVERSION LOSS (dB)			LO-RF ISOLATION (dB)		LO-IF ISOLATION (dB)		IP3 at center band (dBm)
LO/RF f_L-f_U	IF	$\overline{X}$	σ	Max.	Typ.	Min.	Typ.	Min.	Typ.
1700-4400	DC-2000	6.6	0.1	7.9*	35	23	17	—	13
4400-6000	DC-2000	6.0	0.1	8.3*	27	20	21	—	11

1 dB COMPR. +5 dBm typ.
*Conversion loss at 30 MHz IF, increases with IF frequency. See Graphs

Typical Performance Data

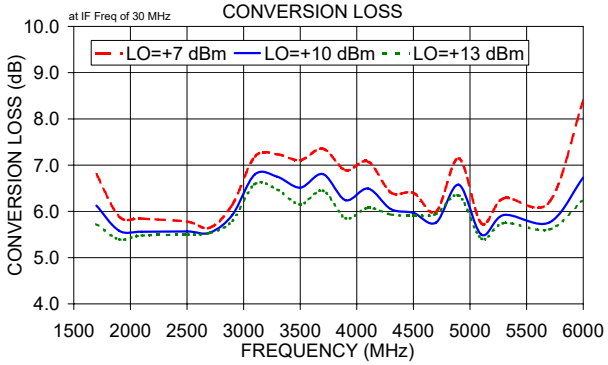
Frequency (MHz)		Conversion Loss (dB)	Isolation L-R (dB)	Isolation L-I (dB)	VSWR RF Port (:1)	VSWR LO Port (:1)
RF	LO	LO +10dBm	LO +10dBm	LO +10dBm	LO +10dBm	LO +10dBm
1700.00	1730.00	6.12	31.11	17.21	2.04	3.80
1900.00	1930.00	5.58	41.49	18.61	2.25	2.23
2100.00	2130.00	5.56	36.04	17.55	2.45	1.85
2500.00	2530.00	5.57	34.25	17.48	2.19	1.72
2700.00	2730.00	5.54	36.00	18.36	2.22	1.90
2900.00	2930.00	5.92	40.21	18.81	3.68	2.18
3100.00	3130.00	6.80	36.38	18.44	5.02	2.63
3300.00	3330.00	6.75	35.64	17.41	3.64	2.73
3500.00	3530.00	6.51	34.52	14.61	4.06	3.26
3700.00	3730.00	6.81	34.43	12.04	3.26	3.62
3900.00	3930.00	6.24	35.17	14.87	2.71	3.93
4100.00	4130.00	6.49	37.36	15.93	2.04	2.62
4300.00	4330.00	6.05	37.95	18.73	1.83	2.45
4500.00	4530.00	5.97	34.27	19.90	1.93	2.66
4700.00	4730.00	5.76	32.31	21.16	1.47	2.76
4900.00	4930.00	6.58	34.11	22.13	2.70	1.96
5100.00	5130.00	5.50	29.13	22.12	1.90	1.35
5300.00	5330.00	5.92	27.47	22.67	2.24	1.37
5700.00	5730.00	5.76	26.99	17.82	1.75	2.61
6000.00	6030.00	6.73	26.82	11.81	2.14	6.10

Electrical Schematic

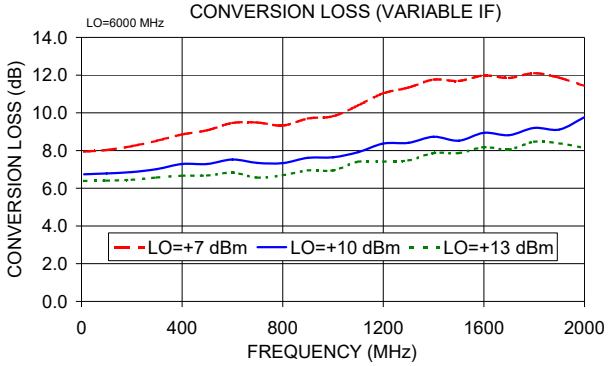


Notes
A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's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

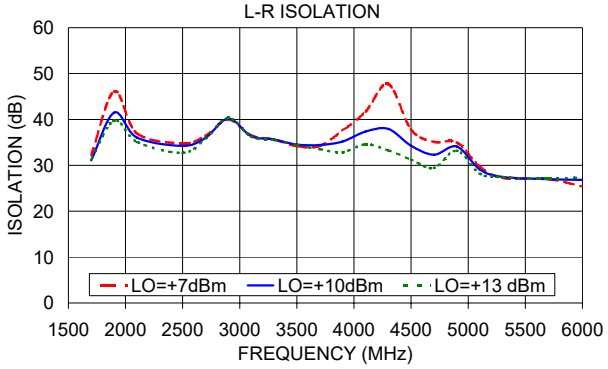
MCA1-60LH+
CONVERSION LOSS



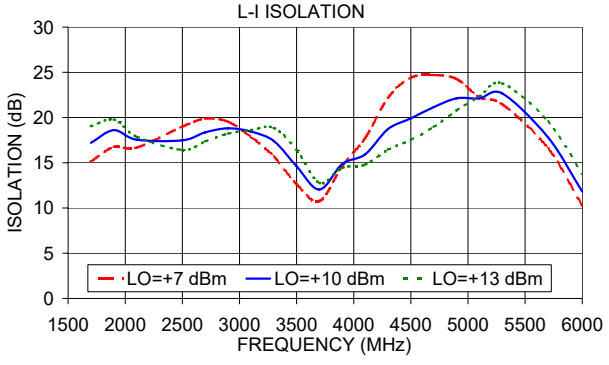
MCA1-60LH+
CONVERSION LOSS (VARIABLE IF)



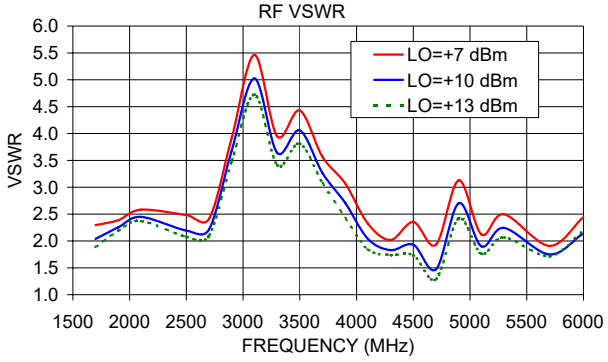
MCA1-60LH+
L-R ISOLATION



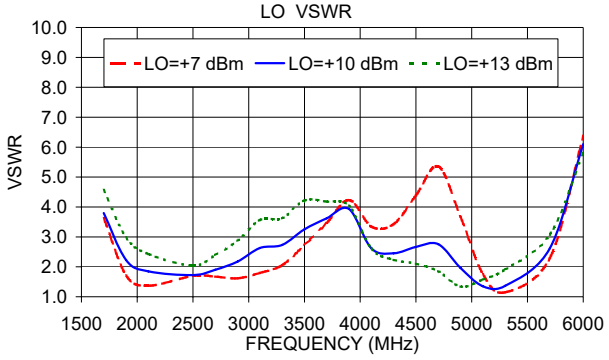
MCA1-60LH+
L-I ISOLATION



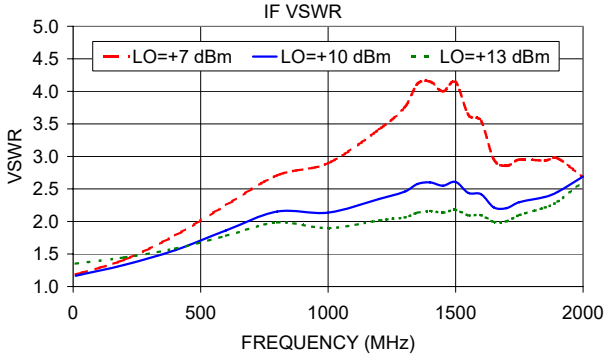
MCA1-60LH+
RF VSWR



MCA1-60LH+
LO VSWR



MCA1-60LH+
IF VSWR



MCA1-60LH+
IP3