

# Ceramic Frequency Mixer WIDE BAND

## MCA1-60+

### Level 7 (LO Power+7 dBm) 1600 to 6000 MHz



CASE STYLE: DZ885  
PRICE: \$7.95 ea. QTY (10-49)

#### 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, 1600 to 6000 MHz
- useable to 8000 MHz
- IF, DC to 2000 MHz
- LTCC double balanced mixer
- aqueous washable
- low cost
- low profile, 0.08"
- protected by US Patent 7,027,795

#### Applications

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

#### +RoHS Compliant

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

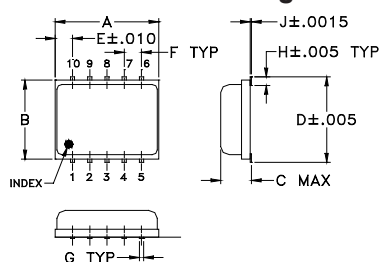
#### Recommended Replacement: MAC-60+

- Footprint Compatible
- MIL Level Reliability
- Price \$7.45 Qty. (10)

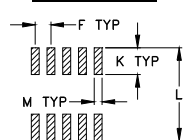


[Click here for datasheet!](#)

#### Outline Drawing



#### PCB Land Pattern

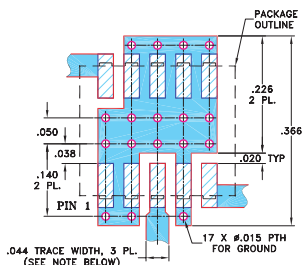


Suggested Layout,  
Tolerance to be within ±.002

#### 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<sub>AMB</sub>=-55°C to 100°C)

FREQUENCY (MHz)	CONVERSION LOSS (dB)	LO-RF ISOLATION (dB)		LO-IF ISOLATION (dB)		IP3 at center band (dBm)			
		Typ.	Min.	Typ.	Min.				
LO/RF f <sub>c</sub> -f <sub>u</sub>	IF	$\bar{X}$	$\sigma$	Max.	Typ.	Min.	Typ.	Min.	Typ.
1600-4400	DC-2000	6.3	0.2	8.3*	32	20	17	—	9
4400-6000	DC-2000	6.2	0.3	8.5*	23	17	18	—	8

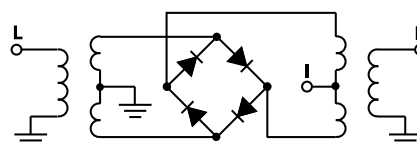
1 dB COMPR. +1 dBm typ.

\*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)	
						LO +7dBm
RF	LO	+7dBm	+7dBm	+7dBm	+7dBm	
1600.00	1630.00	5.85	33.44	18.92	3.21	2.77
1800.00	1830.00	5.57	43.23	20.13	2.72	3.06
2000.00	2030.00	5.67	35.50	19.59	1.52	3.18
2300.00	2330.00	5.57	30.85	17.13	2.55	2.32
2500.00	2530.00	5.67	31.53	16.64	3.70	1.12
3000.00	3030.00	6.65	33.86	17.37	6.40	4.50
3300.00	3330.00	6.51	33.27	17.79	2.35	4.42
3500.00	3530.00	6.26	32.26	16.02	2.17	2.74
3800.00	3830.00	5.85	33.61	14.80	2.21	4.29
4000.00	4030.00	6.13	34.90	16.01	2.03	3.49
4300.00	4330.00	6.05	33.36	17.95	1.97	3.60
4500.00	4530.00	5.95	29.83	18.64	2.31	2.60
4700.00	4730.00	6.02	28.69	19.14	1.78	2.51
4900.00	4930.00	6.11	25.78	19.89	1.91	2.02
5000.00	5030.00	5.99	24.51	20.40	1.50	1.54
5200.00	5230.00	5.88	23.40	21.37	1.53	1.71
5300.00	5330.00	6.06	22.68	21.68	2.25	2.45
5500.00	5530.00	6.00	22.63	19.20	3.70	3.96
5700.00	5730.00	6.14	23.13	15.10	5.34	6.43
6000.00	6030.00	6.61	24.37	13.33	1.73	2.81

#### Electrical Schematic



**Mini-Circuits**  
ISO 9001 ISO 14001 AS 9100 CERTIFIED

For detailed performance specs & shopping online see web site

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 The Design Engineers Search Engine Provides ACTUAL Data Instantly at [minicircuits.com](http://minicircuits.com)

IF/RF MICROWAVE COMPONENTS

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-Circuit's applicable established test performance criteria and measurement instructions. 3. The parts covered by this specification sheet are subject to Mini-Circuit's 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-Circuit's website at [www.minicircuits.com/MCLStore/terms.jsp](http://www.minicircuits.com/MCLStore/terms.jsp).

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