

High IP3

# Frequency Mixer

MCA-352+

Level 17 (LO Power+17 dBm) 2230 to 3490 MHz



CASE STYLE: DZ883

## Maximum Ratings

Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
LO & RF Power	20 dBm
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

- wideband
- excellent IP3, 30 dBm typ.
- excellent IP2, 58 dBm typ.
- excellent L-R isolation, 40 dB typ.
- excellent 1dB compression, RF>LO power
- industry standard foot print
- LTCC design for excellent temperature stability, performance repeatability and small size
- aqueous washable
- double balanced mixer
- low price
- protected by US Patent 6,959,180

## Applications

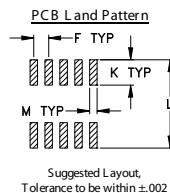
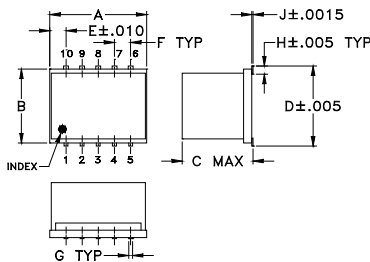
- radar
- differential GPS
- bluetooth
- amateur radio
- WiMAX

+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

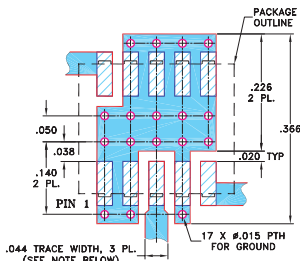
## Outline Drawing



## Outline Dimensions (inch/mm)

A	B	C	D	E	F	G
.30	.250	.190	.266	.050	.050	.012
7.62	6.35	4.83	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		0.5

## 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.  
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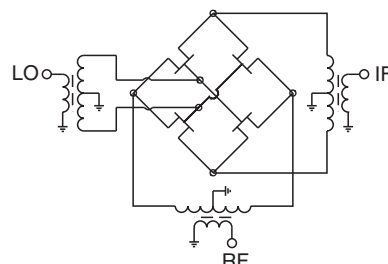
## Electrical Specifications (T<sub>AMB</sub>=-55°C to 100°C)

FREQUENCY (MHz)			IP3 (dBm)	IP2 (dBm)	RF in at 1 dB compr. (dBm)	CONVERSION LOSS (dB)	LO-RF ISOLATION (dB)	LO-IF ISOLATION (dB)
RF	LO	IF	Typ.	Typ.	Min.	Typ. Max.	Typ. Min.	Typ. Min.
2230-3490	2070-3330	10-330	30	58	17	7.5 9.5	40 25	30 18

## Typical Performance Data

Frequency (MHz)		Conversion Loss (dB)	Isolation L-R (dB)	Isolation L-I (dB)	VSWR RF Port (:1)	VSWR LO Port (:1)	IP3 (dBm)	IP2 (dBm)
RF	LO	LO +17dBm	LO +17dBm	LO +17dBm	LO +17dBm	LO +17dBm	LO +17dBm	LO +17dBm
2229.75	2069.75	7.68	39.44	33.19	1.49	5.77	26.68	57.03
2275.00	2115.00	7.70	39.20	34.50	1.40	5.20	31.18	54.62
2318.50	2158.50	7.74	38.52	35.27	1.34	4.96	28.47	58.58
2407.25	2247.25	7.86	34.78	36.99	1.26	4.44	30.00	53.39
2496.00	2336.00	7.89	32.12	37.41	1.20	4.00	31.07	53.51
2544.50	2384.50	7.81	31.19	37.02	1.19	4.03	31.53	53.14
2593.00	2433.00	7.70	30.54	35.90	1.19	3.55	31.18	54.62
2620.00	2460.00	7.68	30.20	34.20	1.19	3.50	31.30	55.00
2641.50	2481.50	7.63	30.06	33.85	1.19	3.45	31.66	56.45
2690.00	2530.00	7.61	30.79	32.10	1.18	3.27	31.69	57.76
2790.00	2630.00	7.59	36.10	29.28	1.18	3.17	32.04	63.17
2890.00	2730.00	7.56	46.80	27.89	1.24	3.36	30.82	68.35
2940.00	2780.00	7.55	45.00	27.60	1.30	3.60	30.20	61.00
2990.00	2830.00	7.56	43.23	27.53	1.37	3.97	29.39	57.38
3090.00	2930.00	7.65	40.07	26.40	1.46	4.80	28.18	55.69
3190.00	3030.00	7.74	39.39	24.81	1.48	4.80	27.62	54.33
3290.00	3130.00	7.89	37.55	23.70	1.48	4.10	26.93	57.96
3340.00	3180.00	8.20	37.30	23.60	3.80	1.50	26.30	59.00
3390.00	3230.00	8.12	37.41	23.68	1.52	3.68	25.74	60.44
3490.00	3330.00	8.16	37.56	24.01	1.65	3.94	25.24	68.26

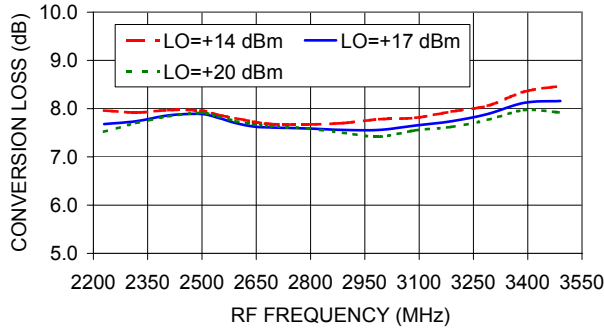
## Electrical Schematic



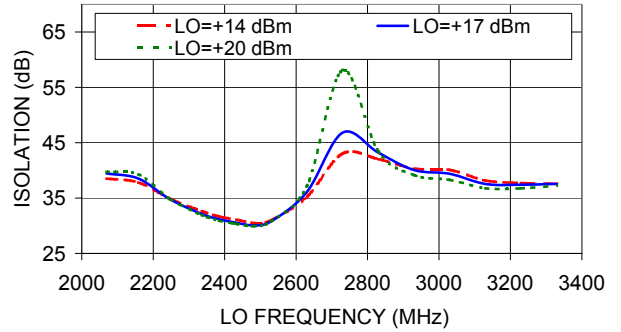
# Performance Charts

# MCA-352+

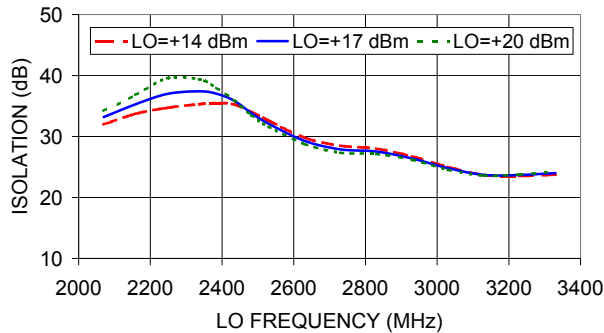
MCA-352+  
CONVERSION LOSS



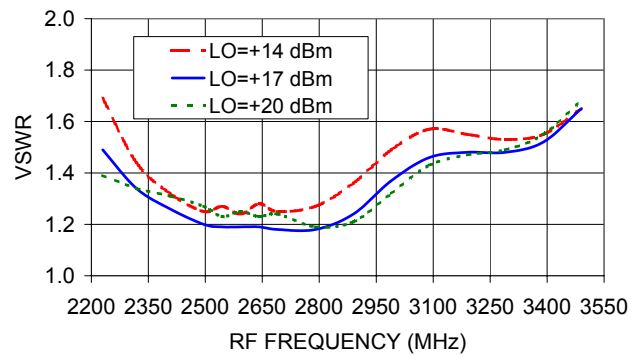
MCA-352+  
L-R ISOLATION



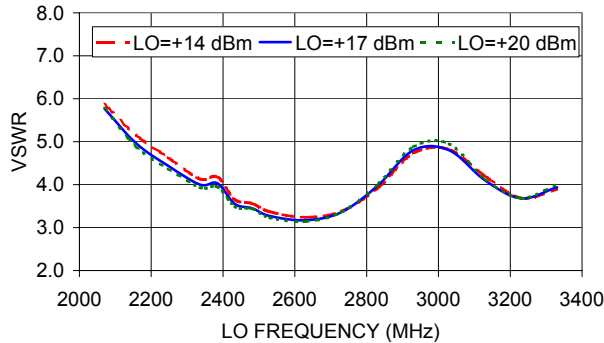
MCA-352+  
L-I ISOLATION



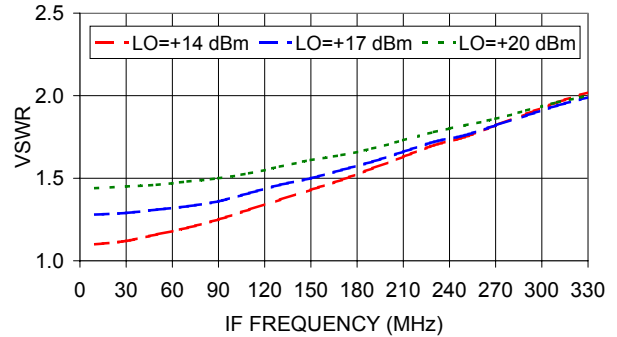
MCA-352+  
RF VSWR



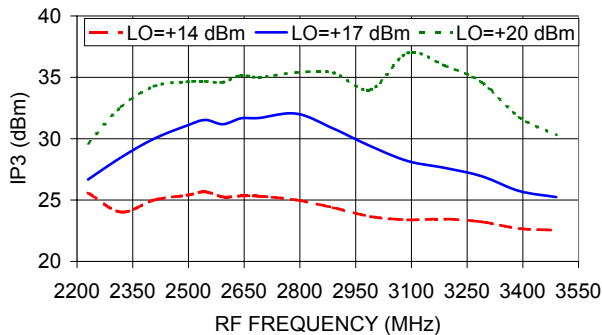
MCA-352+  
LO VSWR



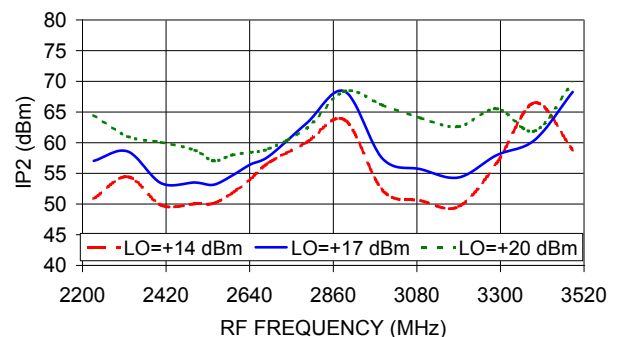
MCA-352+  
IF VSWR



MCA-352+  
IP3



MCA-352+  
IP2



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