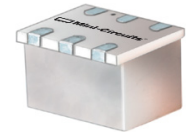


# Frequency Mixer

Level 7 (LO Power +7 dBm) 10 to 1000 MHz



CASE STYLE: TT240

### Maximum Ratings

Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power	200mW
IF Current	40mA
Permanent damage may occur if any of these limits are exceeded.	

### Pin Connections

LO	1
RF	4
IF	5
GROUND	2,3,6

### Features

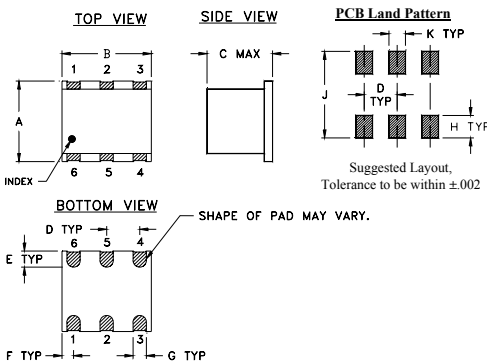
- excellent L-R isolation, 40 dB typ.
- conversion loss, 6.79 dB typ.
- small size, 0.25"x0.31"x0.2"

### Applications

- cellular
- ISM/GSM

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

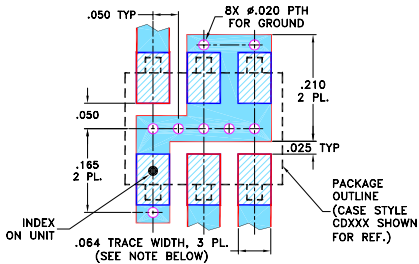
### Outline Drawing



### Outline Dimensions (inch/mm)

A	B	C	D	E	F			
.250	.31	.20	.100	.050	.055			
6.35	7.87	5.08	2.54	1.27	1.40			
G	H	J	K			wt		
.040	.070	.270	.050			grams		
1.02	1.78	6.86	1.27			0.50		

### Demo Board MCL P/N: TB-03 Suggested PCB Layout (PL-052)



- NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS .030" ± .002"; 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

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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](http://www.minicircuits.com/MCLStore/terms.jsp)

### Electrical Specifications

FREQUENCY (MHz)	CONVERSION LOSS (dB)			LO-RF ISOLATION (dB)						LO-IF ISOLATION (dB)						IP3 at center band (dBm)		
	LO/RF	IF	Total Range	L		M		U		L		M		U				
$f_L - f_U$	$\bar{X}$	$\sigma$	Max.	Max.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.			
10-1000	10-750	6.79	.16	8.0	9.5	55	40	40	30	30	25	55	30	35	25	30	22	10

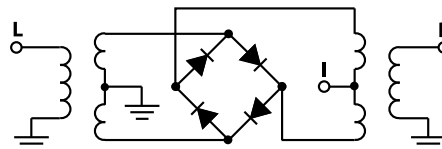
1 dB COMP: +1 dBm typ.  
For phase detection, DC output positive with in-phase RF & LO.

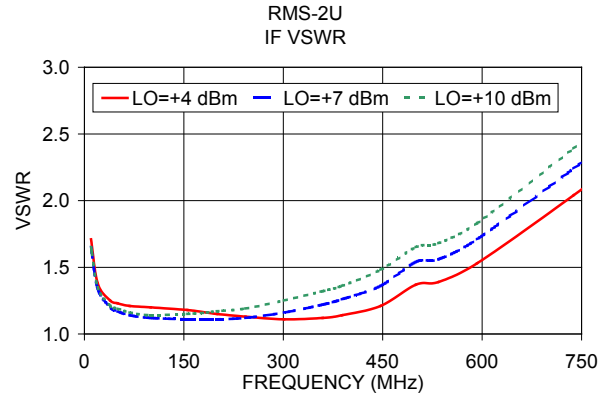
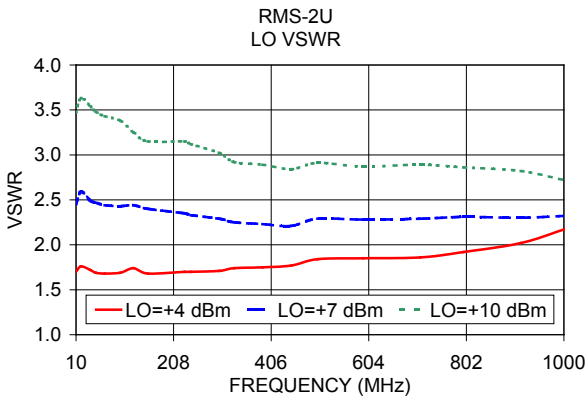
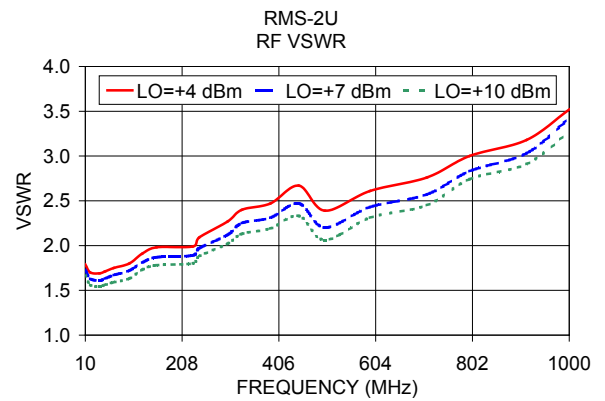
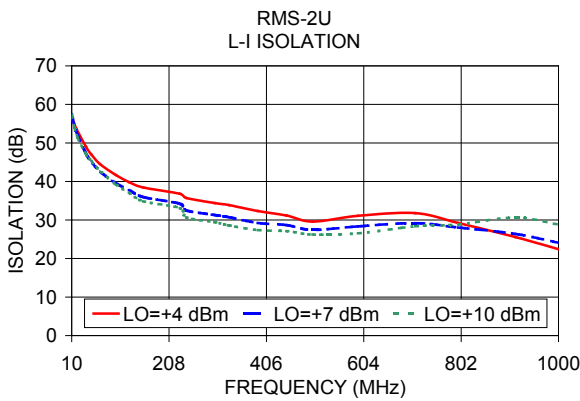
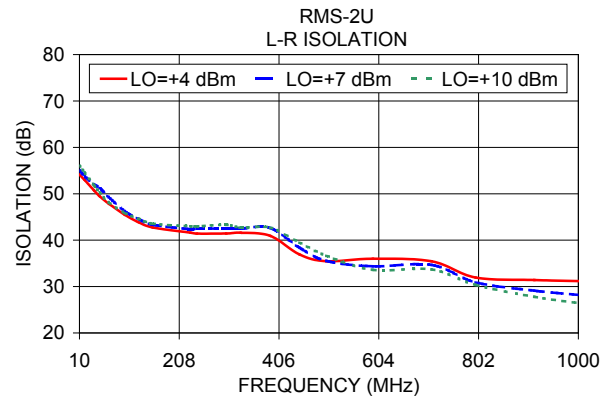
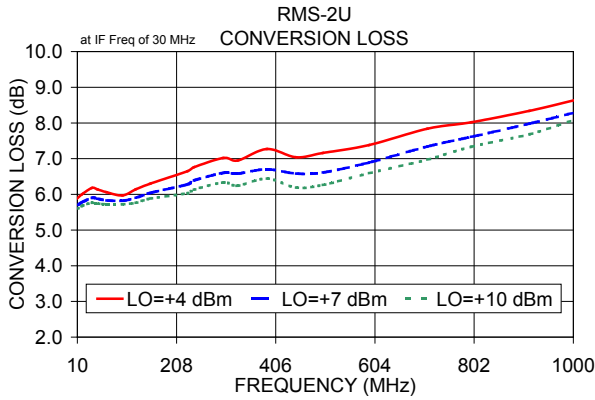
L = low range [ $f_L$  to 10  $f_L$ ]      M = mid range [10  $f_L$  to  $f_U/2$ ]      U = upper range [ $f_U/2$  to  $f_U$ ]  
m = mid band [ $2f_L$  to  $f_U/2$ ]

### 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 +7dBm	LO +7dBm	LO +7dBm	LO +7dBm	LO +7dBm
10.00	40.00	5.69	55.08	57.44	1.73	2.45
20.00	50.00	5.78	53.83	52.73	1.63	2.59
39.12	69.12	5.90	51.99	47.22	1.61	2.49
50.00	80.00	5.88	51.27	45.11	1.63	2.47
68.24	98.24	5.83	49.27	42.51	1.67	2.44
100.00	70.00	5.82	46.22	39.55	1.72	2.43
126.47	96.47	5.90	44.61	37.77	1.81	2.44
155.59	125.59	6.04	43.33	35.95	1.87	2.40
230.00	170.00	6.28	42.36	34.23	1.89	2.35
242.94	212.94	6.39	42.52	32.47	1.97	2.33
301.18	271.18	6.60	42.44	31.27	2.12	2.29
330.29	300.29	6.58	42.50	30.71	2.25	2.25
388.53	358.53	6.70	42.62	29.23	2.31	2.23
446.77	416.77	6.58	38.36	28.68	2.47	2.21
500.00	470.00	6.61	35.52	27.43	2.20	2.29
592.35	562.35	6.89	34.35	28.33	2.43	2.28
708.82	678.82	7.34	34.65	29.18	2.57	2.29
796.18	766.18	7.61	30.87	28.03	2.83	2.31
912.65	882.65	7.98	29.10	26.37	3.03	2.30
1000.00	970.00	8.28	28.18	24.07	3.42	2.32

### Electrical Schematic





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