

# Surface Mount Frequency Mixer

## ADE-1

Level 7 (LO Power +7 dBm) 0.5 to 500 MHz



CASE STYLE: CD636

### Maximum Ratings

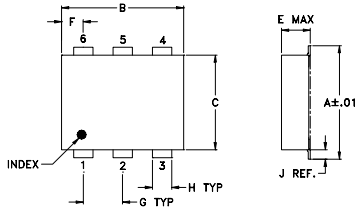
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power	50mW
IF Current	40mA

Permanent damage may occur if any of these limits are exceeded. These electrical ratings are not intended for continuous normal operation.

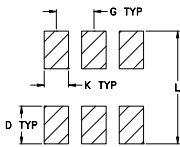
### Pin Connections

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

### Outline Drawing



### PCB Land Pattern

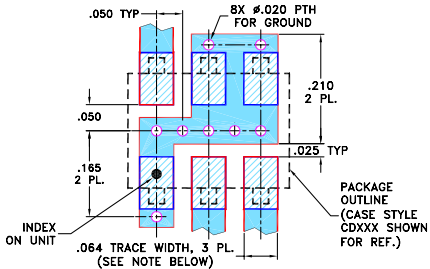


Suggested Layout,  
Tolerance to be within ±.002

### Outline Dimensions (inch/mm)

A	B	C	D	E	F	G
.272	.310	.220	.100	.162	.055	.100
6.91	7.87	5.59	2.54	4.11	1.40	2.54
H	J	K	L	wt		
.030	.026	.065	.300	grams		
0.76	0.66	1.65	7.62	0.25		

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



- NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B 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

- 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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### Features

- low conversion loss, 5.0 dB typ.
- excellent L-R isolation, 55 dB typ.
- excellent IP3, 15 dBm typ.
- low profile package
- aqueous washable
- protected by US patent 6,133,525

### Applications

- VHF/UHF

### Electrical Specifications

FREQUENCY (MHz)	CONVERSION LOSS (dB)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)			IP3 at center band (dBm)										
		L	M	U	L	M	U											
LO/RF $f_L - f_U$	Mid-Band $m$ Total Range Max.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.										
0.5-500	DC-500	5.0	0.10	6.5	7.8	70	50	55	35	45	30	65	45	40	25	30	20	15

1 dB COMP.: +1 dBm typ.

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

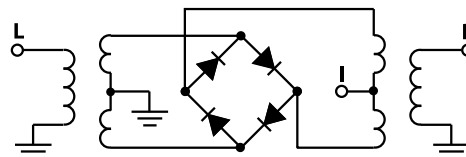
M = mid range [ $10 f_L$  to  $f_U/2$ ]

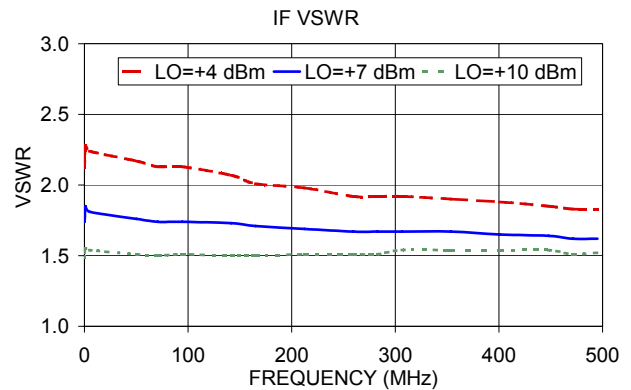
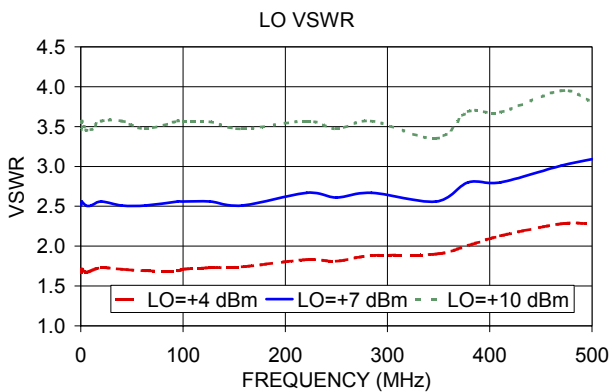
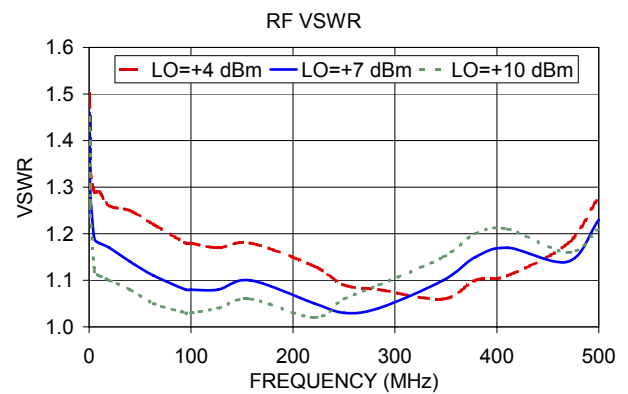
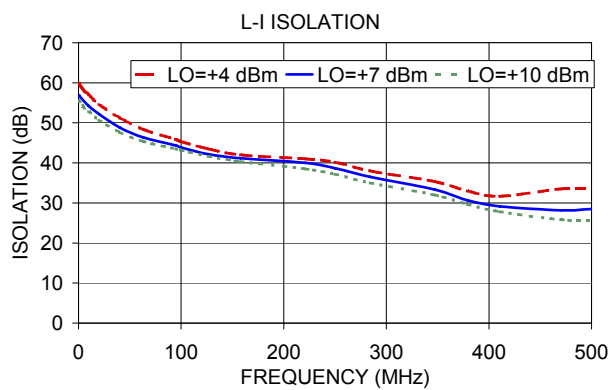
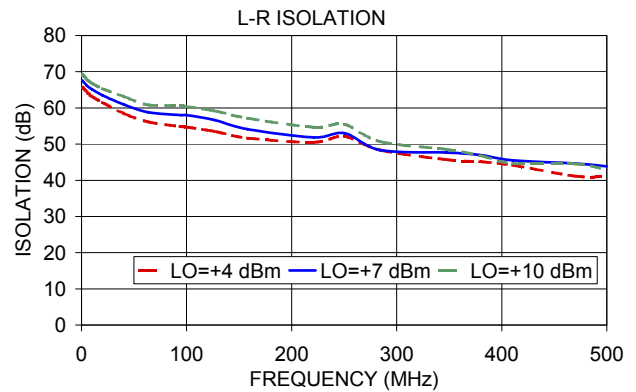
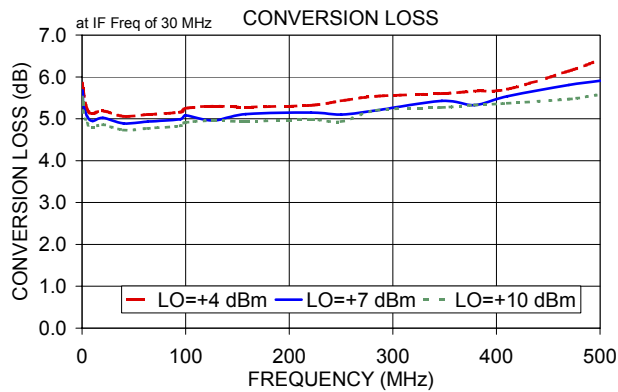
U = upper range [ $f_U/2$  to  $f_U$ ]

### 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
0.50	30.50	5.68	67.49	56.67	1.46	2.51
0.80	30.80	5.55	67.50	56.83	1.32	2.56
1.00	31.00	5.35	67.51	56.67	1.29	2.56
5.00	35.00	5.06	66.17	55.50	1.19	2.51
10.00	40.00	4.95	65.17	54.17	1.18	2.51
20.00	50.00	5.02	63.50	52.17	1.17	2.56
40.00	70.00	4.89	61.00	48.83	1.14	2.51
63.25	93.25	4.93	58.84	46.33	1.11	2.51
94.82	124.82	4.99	58.00	44.34	1.08	2.56
100.00	130.00	5.08	58.00	43.84	1.08	2.56
126.39	156.39	4.96	56.67	42.17	1.08	2.56
157.97	187.97	5.11	54.16	41.16	1.10	2.51
221.12	251.12	5.15	51.84	40.00	1.05	2.67
250.00	280.00	5.10	53.00	38.67	1.03	2.61
284.26	314.26	5.20	48.33	36.50	1.04	2.67
347.41	377.41	5.43	47.66	33.34	1.10	2.56
378.98	408.98	5.33	47.00	30.67	1.15	2.80
410.56	440.56	5.54	45.50	29.17	1.17	2.80
470.00	500.00	5.81	44.67	28.16	1.14	3.01
500.00	530.00	5.91	43.82	28.50	1.23	3.09

### Electrical Schematic





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