

# Surface Mount High Reliability Mixer

## ADE-R1LH+

### Level 10 (LO Power +10 dBm) 1 to 500 MHz



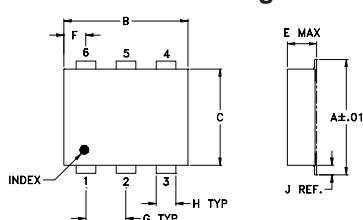
#### Maximum Ratings

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.	

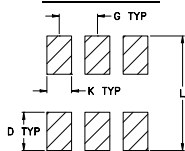
#### Pin Connections

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

#### Outline Drawing



#### PCB Land Pattern

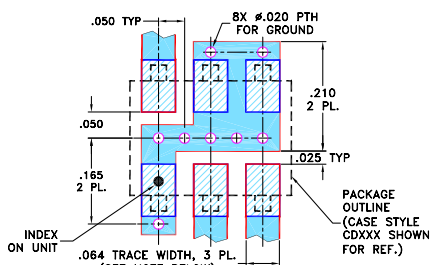


Suggested Layout,  
Tolerance to be within ±.002

#### Outline Dimensions (inch/mm)

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

#### Features

- hermetically sealed ceramic quad
- low conversion loss, 5.2 dB typ.
- excellent L-R isolation, 60 dB typ. and L-I isolation, 45 dB typ.
- good IP3, 15 dBm typ.
- low profile package
- aqueous washable
- protected by US Patent 6,133,525

#### Applications

- VHF/UHF receivers

#### Electrical Specifications

FREQUENCY (MHz)		CONVERSION LOSS (dB)				LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)			IP3 at center band (dBm)						
LO/RF	IF	Mid-Band m		Total Range Max.	L	M	U	L	M	U	Typ.							
$f_L$ - $f_U$		$\bar{X}$	$\sigma$	Max.	Typ. Min.	Typ. Min.	Typ. Min.	Typ. Min.	Typ. Min.	Typ. Min.								
1-500	DC-500	5.2	0.10	6.5	8.2	70	55	60	45	47	32	65	45	45	28	34	20	15

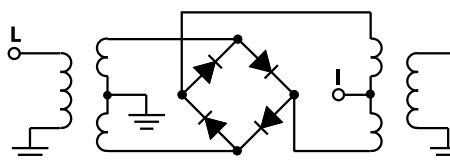
1 dB COMP.: +5 dBm typ.

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 +10dBm	LO +10dBm	LO +10dBm	LO +10dBm	LO +10dBm
1.00	31.00	5.74	67.64	54.38	1.43	2.25
2.80	32.80	5.29	67.42	53.90	1.24	2.25
6.40	36.40	5.07	66.61	53.33	1.19	2.25
8.20	38.20	5.01	65.84	52.86	1.18	2.25
10.00	40.00	4.86	65.97	52.56	1.18	2.25
12.00	42.00	4.98	66.11	52.18	1.18	2.24
37.00	67.00	5.01	63.03	47.76	1.15	2.24
62.00	92.00	5.02	61.12	44.77	1.14	2.22
87.00	117.00	5.05	59.81	42.86	1.12	2.21
112.00	142.00	5.07	58.70	41.66	1.11	2.26
120.00	150.00	5.08	58.36	41.21	1.11	2.27
210.00	180.00	5.16	58.09	40.10	1.08	2.26
250.00	220.00	5.20	55.11	38.90	1.06	2.31
300.00	270.00	5.30	54.56	38.23	1.05	2.34
350.00	320.00	5.47	49.49	36.88	1.03	2.47
400.00	370.00	5.58	45.89	35.18	1.05	2.41
425.00	395.00	5.56	44.38	33.02	1.09	2.43
450.00	420.00	5.61	43.62	30.95	1.11	2.56
475.00	445.00	5.63	43.19	29.44	1.09	2.52
500.00	470.00	5.73	42.63	28.27	1.06	2.53

#### Electrical Schematic



**Mini-Circuits**  
ISO 9001 ISO 14001 AS 9100 CERTIFIED  
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IF/RF MICROWAVE COMPONENTS

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Page 1 of 2

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