

# Surface Mount High Reliability Mixer

## TUF-R3SM+

Level 7 (LO Power +7 dBm) 0.25 to 400 MHz



### Maximum Ratings

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

### Pin Connections

LO	4
RF	1
IF	2
GROUND	3
CASE GROUND	3

### Features

- hermetically sealed ceramic quad
- low conversion loss, 5.0 dB typ.
- good IP3, 11 dBm typ.
- excellent L-R isolation, 60 dB typ. and L-I, 45 dB typ.
- rugged welded construction
- shielded metal case

### Applications

- HF/VHF
- defense & federal communications

CASE STYLE: NNN150  
PRICE: \$9.70 ea. QTY. (1-9)

**+ RoHS compliant in accordance with EU Directive (2002/95/EC)**

The +Suffix has been added in order to identify RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications.

### 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											
0.25-400	DC-400	5.0	0.06	7.0	8.0	70	55	60	40	55	35	62	45	45	30	38	25	11

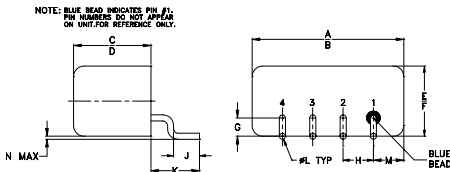
1 dB COMP.: +1 dBm typ.

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  $f_U/2$ ]

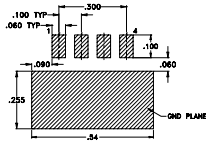
### Typical Performance Data

Frequency (MHz)	Conversion Loss (dB)	Isolation L-R (dB)	Isolation L-I (dB)	VSWR RF Port (:1)	VSWR LO Port (:1)	
						RF
0.19	30.19	5.06	69.28	55.44	1.42	2.75
3.00	33.00	4.60	68.03	54.92	1.26	2.59
5.00	35.00	4.58	67.90	54.80	1.27	2.54
7.00	37.00	4.58	67.62	54.60	1.27	2.57
9.00	39.00	4.59	66.93	54.30	1.27	2.62
70.00	100.00	4.69	61.43	49.77	1.22	2.60
170.00	200.00	4.79	56.89	43.87	1.07	2.76
180.00	210.00	4.80	52.94	42.55	1.09	2.58
220.00	250.00	4.86	52.88	41.07	1.05	2.70
230.00	260.00	4.89	55.41	41.87	1.03	2.73
250.00	280.00	4.99	57.89	41.02	1.03	2.63
270.00	300.00	5.10	58.15	42.79	1.05	2.88
290.00	320.00	5.15	58.15	42.34	1.11	2.64
310.00	340.00	5.18	53.30	40.28	1.17	2.83
330.00	360.00	5.21	54.80	40.01	1.20	2.58
350.00	380.00	5.29	55.87	38.40	1.19	2.97
370.00	400.00	5.37	53.78	36.55	1.15	2.70
380.00	410.00	5.42	56.98	36.73	1.13	2.76
390.00	420.00	5.48	55.72	36.06	1.11	3.03
400.00	430.00	5.56	52.45	35.70	1.09	3.16

### Outline Drawing



### PCB Land Pattern



Suggested Layout,  
Tolerance to be within ±.002

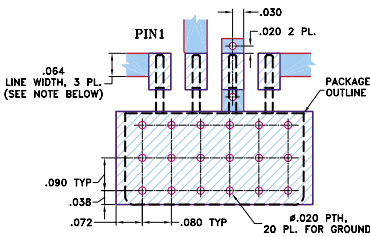
### Outline Dimensions (inch/mm)

A	B	C	D	E	F	G
.50	.48	.255	.240	.23	.21	.06
12.70	12.19	6.48	6.10	5.84	5.33	1.52

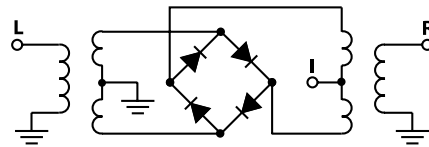
H	J	K	L	M	N	wt
.100	.09	.16	.020	.09	.005	grams
2.54	2.29	4.06	0.51	2.29	0.13	1.9

### Demo Board MCL P/N: TB-201 Suggested PCB Layout (PL-081)



- NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS  $0.030 \pm 0.002$ ; 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

### Electrical Schematic



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