

# High Reliability Mixer

## TUF-R1LHSM+

Level 10 (LO Power +10 dBm) 5 to 600 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, 6.2 dB typ.
- high isolation L-R, 48 dB typ; L-I, 45 dB typ.
- rugged welded construction
- shielded metal case

### Applications

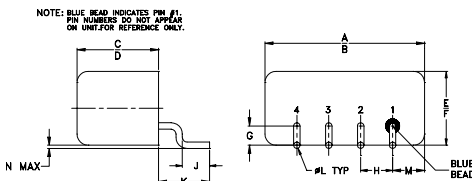
- VHF/UHF
- defense & federal communications

CASE STYLE: NNN150  
PRICE: \$9.90 ea. QTY. (1-9)

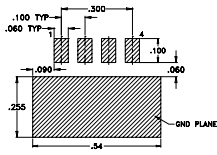
**+ RoHS compliant in accordance with EU Directive (2002/95/EC)**

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

### Outline Drawing



#### PCB Land Pattern

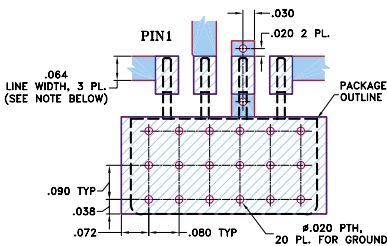


Suggested Layout,  
Tolerance to be within ±.002

### 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 PIN: TB-201**  
**Suggested PCB Layout (PL-081)**



- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
- DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

### 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											
5-600	DC-600	6.2	0.03	7.2	8.5	53	40	48	30	40	24	50	40	45	30	38	21	18

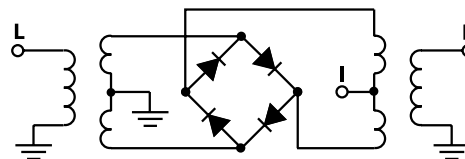
1 dB COMP.: +5 dBm typ.

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)
4.00	34.00	6.40	54.24	51.36	1.43
6.00	36.00	6.17	53.84	51.17	1.30
10.00	40.00	6.03	53.07	50.79	1.18
33.00	63.00	6.00	49.26	48.20	1.06
41.50	71.50	5.99	48.09	47.25	1.05
50.00	80.00	5.99	47.13	46.51	1.05
67.00	97.00	6.00	45.86	45.45	1.05
75.50	105.50	6.02	45.31	44.99	1.04
84.00	114.00	6.00	44.84	44.60	1.04
92.50	122.50	6.02	44.44	44.22	1.04
101.00	131.00	6.04	44.01	43.85	1.03
151.00	181.00	6.16	41.50	41.97	1.04
171.00	201.00	6.15	40.99	41.84	1.04
211.00	241.00	6.20	39.51	41.02	1.05
251.00	281.00	6.18	38.42	40.51	1.07
345.75	375.75	6.25	36.02	38.44	1.09
420.50	450.50	6.26	34.34	36.08	1.13
495.25	525.25	6.37	32.88	33.82	1.11
585.00	615.00	6.45	31.47	31.69	1.18
600.00	630.00	6.47	31.28	31.39	1.19

### Electrical Schematic



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