

# Frequency Mixer

Level 10 (LO Power +10dBm) 20 to 1500 MHz

## TUF-5LHSM+



CASE STYLE: NNN150  
PRICE: \$15.20 ea. QTY (10)

### Maximum Ratings

Operating Temperature	-55°C to 100°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	4
RF	1
IF	2
GROUND	3
CASE GROUND	3

### Features

- low conversion loss, 6.9 dB typ.
- high L-R isolation, 42 dB typ.
- rugged welded construction

### Applications

- cellular
- satellite distribution
- GSM/ISM

### +RoHS Compliant

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

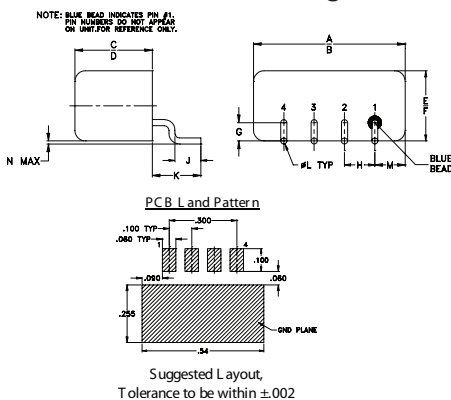
### Electrical Specifications

FREQUENCY (MHz)	CONVERSION LOSS (dB)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)			IP3 @ CENTER BAND (dBm)										
		L	M	U	L	M	U											
20-1500	DC-1000	6.9	0.27	8.5	9.0	53	40	42	30	38	25	40	25	30	18	22	8	14

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  $f_U/2$ ]

### Outline Drawing



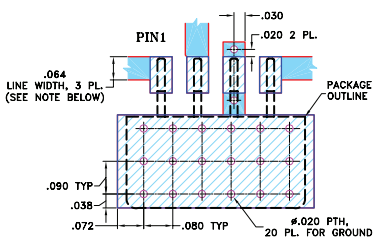
### Outline Dimensions (inch/mm)

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)

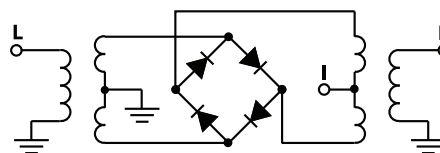


- NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS 0.030" ± 0.002"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.  
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.  
■ DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)  
■ DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

### Typical Performance Data

Frequency (MHz)	Conversion Loss (dB)	Isolation L-R (dB)	Isolation L-I (dB)	VSWR RF Port (:1)	VSWR LO Port (:1)	
						LO +10dBm
20.00	50.00	5.60	62.84	53.91	1.43	2.57
50.00	80.00	5.38	57.81	46.30	1.32	2.51
100.00	70.00	5.25	52.60	40.86	1.31	2.50
158.75	128.75	5.20	49.11	38.29	1.34	2.38
200.00	170.00	5.25	47.45	36.98	1.48	2.28
297.50	267.50	5.37	44.43	34.13	1.59	2.36
436.25	406.25	5.54	42.14	31.89	1.91	2.34
500.00	470.00	5.74	41.47	30.68	2.36	2.36
575.00	545.00	5.89	40.90	30.02	2.49	2.36
713.75	683.75	6.61	40.16	28.61	2.97	2.45
750.00	720.00	6.80	39.71	28.48	3.40	2.46
760.00	730.00	6.83	39.62	28.42	3.53	2.48
852.50	822.50	7.07	39.30	28.00	3.80	2.56
991.25	961.25	6.99	38.97	26.26	3.86	2.67
1000.00	970.00	7.07	38.98	26.16	3.95	2.70
1130.00	1100.00	7.19	35.93	24.11	3.91	2.73
1222.50	1192.50	7.02	38.98	22.14	3.77	2.73
1361.25	1331.25	6.88	39.21	19.23	3.65	2.77
1453.75	1423.75	6.78	38.09	16.51	3.54	2.78
1500.00	1470.00	6.66	37.95	16.08	3.47	2.77

### Electrical Schematic

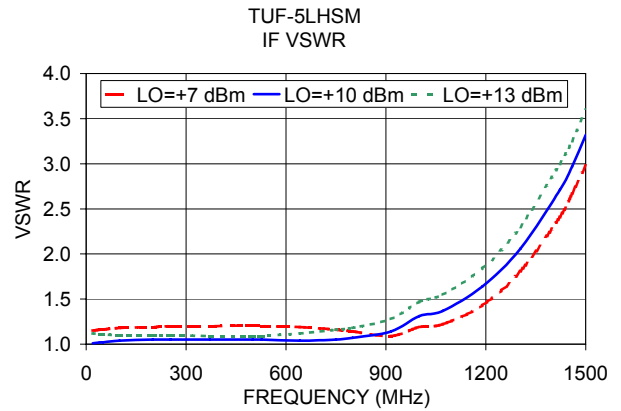
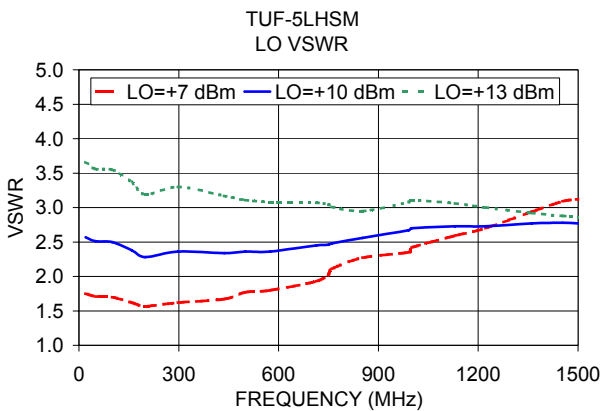
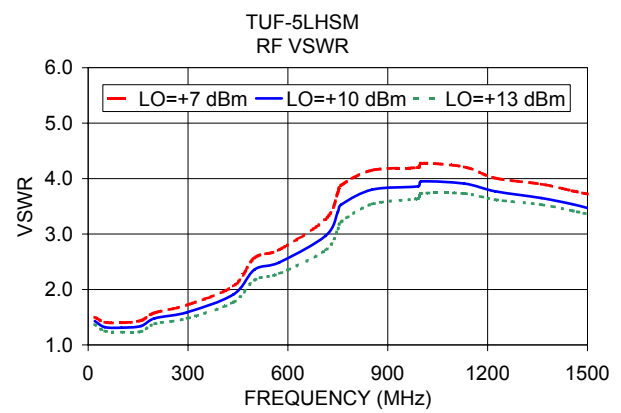
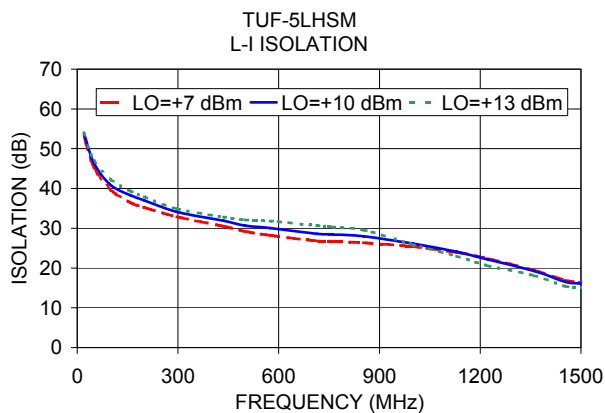
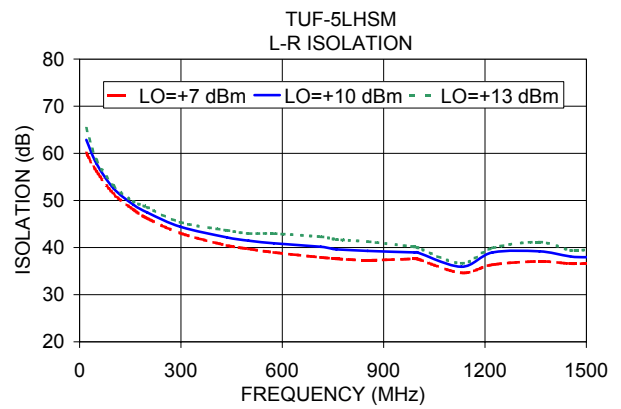
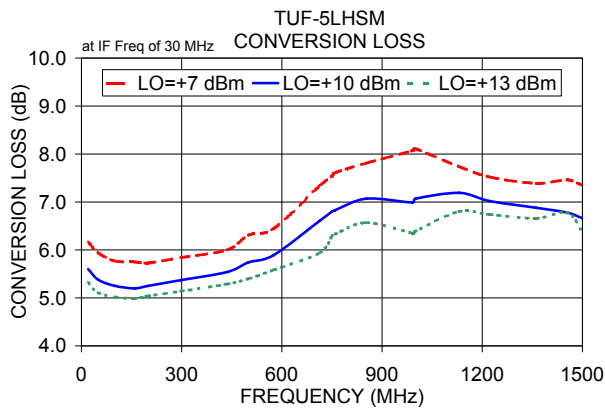


For detailed performance specs & shopping online see web site

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