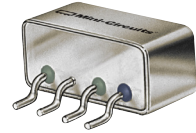


Frequency Mixer

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

TUF-5LHSM+



CASE STYLE: NNN150

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	6.9	53	40	42	30	38	25	40	25	30	18	22	8	14

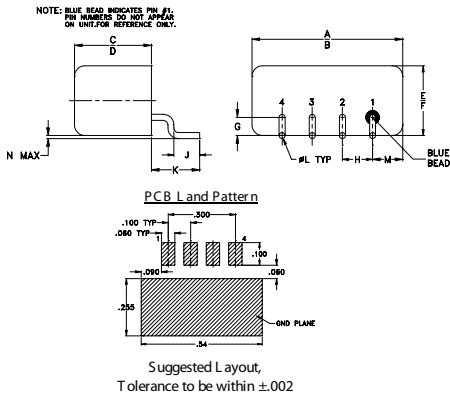
1 dB COMP.: +5 dBm typ.

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 $f_U/2$]

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
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

Outline Drawing

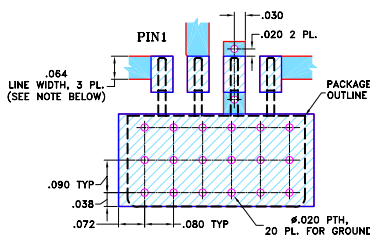


Outline Dimensions (inch/mm)

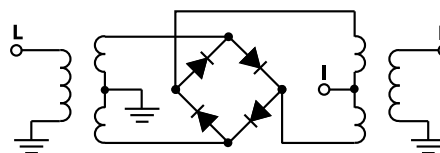
A	B	C	D	E	F	G
.50	.48	.255	.240	.23	.21	.06
12.70	12.19	6.48	6.10	5.84	5.33	1.52

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)



Electrical Schematic

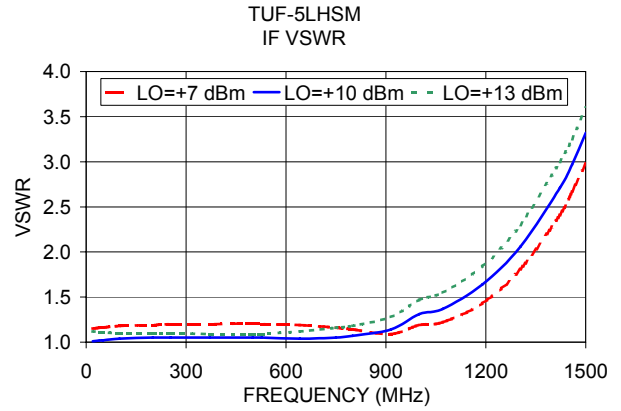
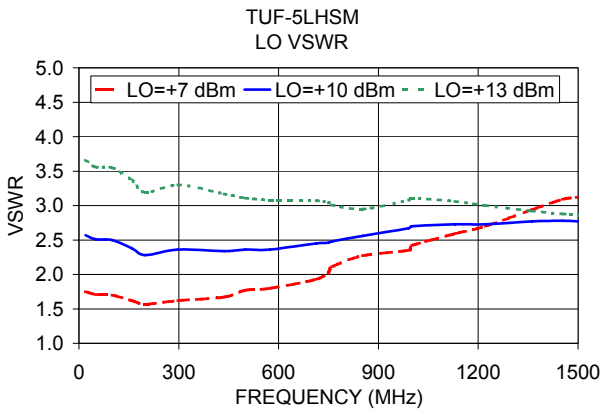
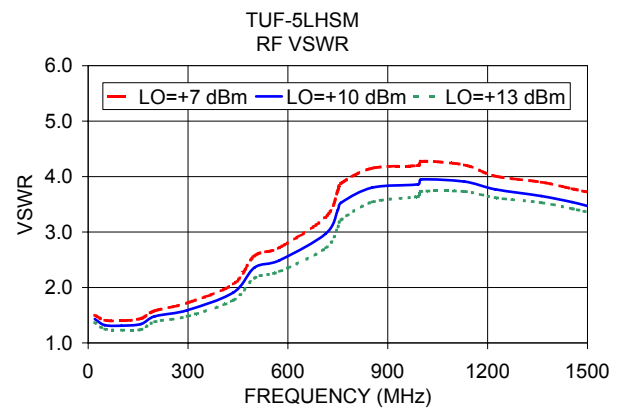
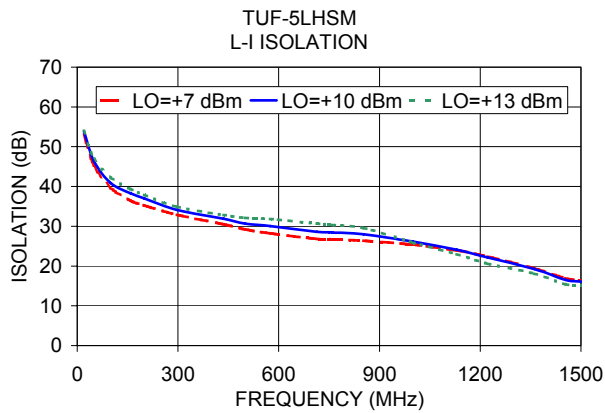
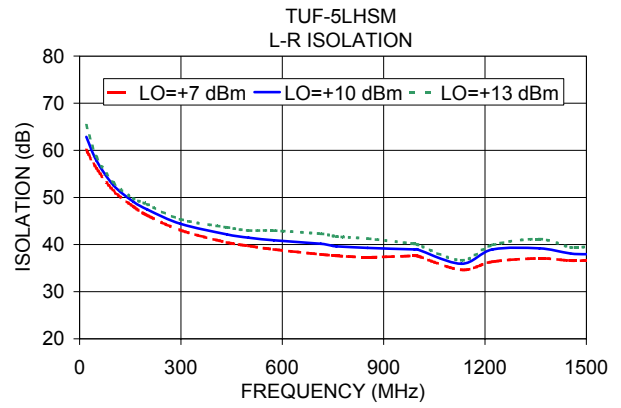
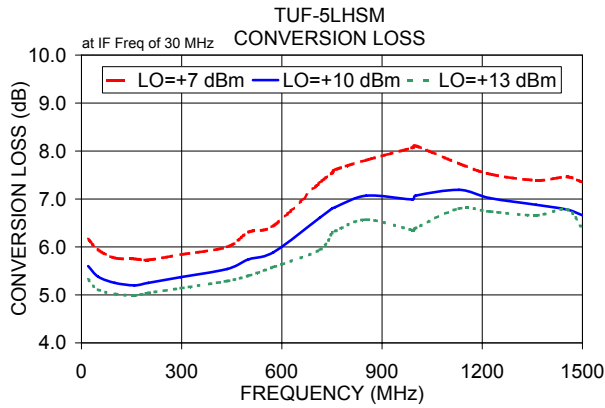


NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS 0.030" ± 0.002"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
■ DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)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

Notes

- 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.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuits' applicable established test performance criteria and measurement instructions.
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