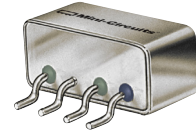


# Frequency Mixer

## TUF-2SM+

Level 7 (LO Power +7 dBm) 50 to 1000 MHz



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, 5.85 dB typ.
- excellent L-R isolation, 47 dB typ.; L-I, 44 dB typ.
- wideband, 50 to 1000 MHz
- rugged welded construction

### Applications

- VHF/UHF
- cellular
- ISM/GSM

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

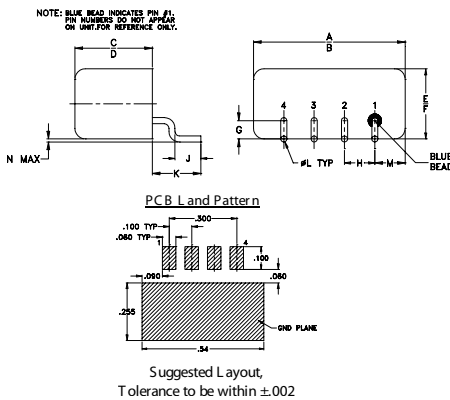
### Electrical Specifications

FREQUENCY (MHz)	CONVERSION LOSS (dB)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)			IP3 @ CENTER BAND (dBm)										
		L	M	U	L	M	U											
50-1000	DC-1000	5.85	0.07	7.5	9.0	58	40	47	30	42	25	50	35	44	20	29	18	16

1 dB COMP: +1 dBm typ.

L = 50-100 MHz M = 100-500 MHz U = upper range [ $f_c/2$  to  $f_u$ ]  
m = mid band [ $2f_l$  to  $f_u/2$ ]

### Outline Drawing



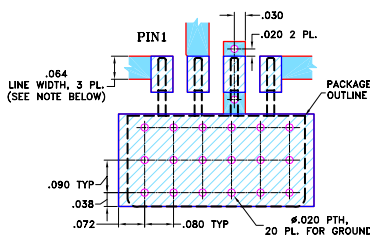
### Outline Dimensions (inch/mm)

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

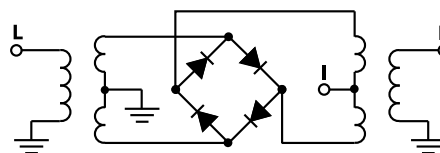
#### Notes

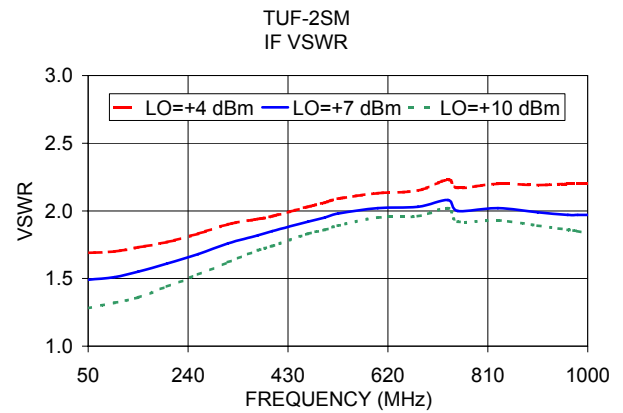
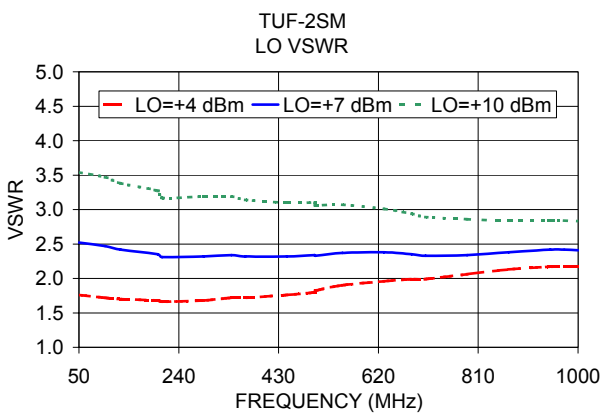
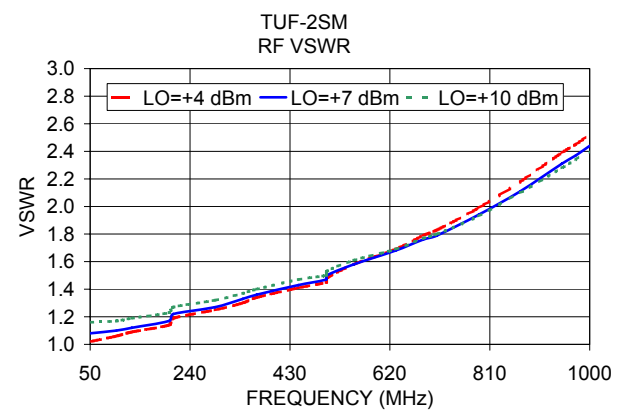
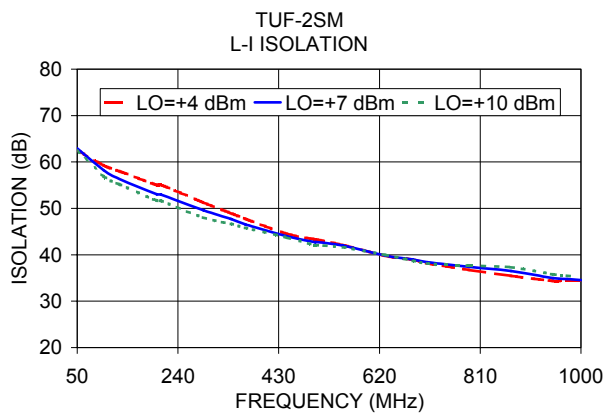
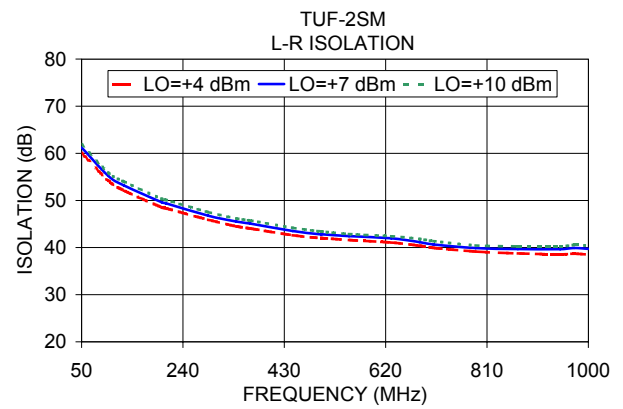
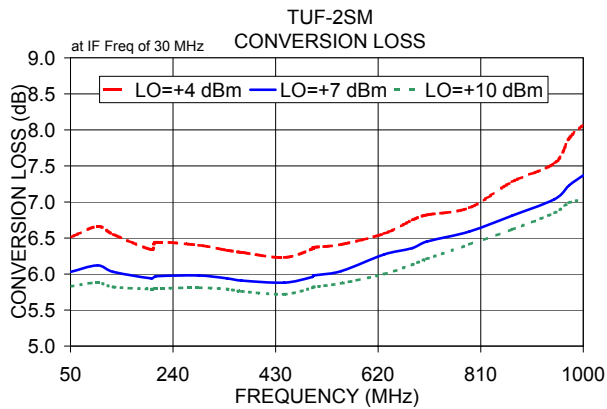
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### Typical Performance Data

Frequency (MHz)	Conversion Loss (dB)	Isolation L-R (dB)	Isolation L-I (dB)	VSWR RF Port (:1)	VSWR LO Port (:1)
50.00	80.00	6.03	61.24	1.08	2.52
100.00	70.00	6.12	55.20	1.10	2.47
129.17	99.17	6.03	53.19	1.12	2.42
200.00	170.00	5.94	49.63	1.17	2.35
208.33	178.33	5.97	49.40	1.22	2.31
287.50	257.50	5.98	46.76	1.27	2.32
340.28	310.28	5.94	45.51	1.33	2.34
366.67	336.67	5.91	45.07	1.36	2.32
445.83	415.83	5.88	43.51	1.43	2.32
498.61	468.61	5.96	42.80	1.47	2.34
500.00	470.00	5.98	42.81	1.50	2.33
551.39	521.39	6.04	42.43	1.58	2.37
630.56	600.56	6.27	41.96	1.68	2.38
683.33	653.33	6.36	41.15	1.76	2.35
709.72	679.72	6.45	40.66	1.79	2.33
788.89	758.89	6.59	39.89	1.94	2.34
868.06	838.06	6.81	39.69	2.11	2.38
947.22	917.22	7.04	39.66	2.31	2.42
973.61	943.61	7.23	39.91	2.37	2.42
1000.00	970.00	7.37	39.73	2.44	2.41

### Electrical Schematic





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