

High Reliability Mixer

TUF-R5SM+

Level 7 (LO Power +7 dBm) 20 to 1500 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

- hermetically sealed ceramic quad
- low conversion loss, 6.5 dB typ.
- high isolation L-R, 48 dB typ.
- wideband, 20 to 1500 MHz
- rugged welded construction
- shielded metal case

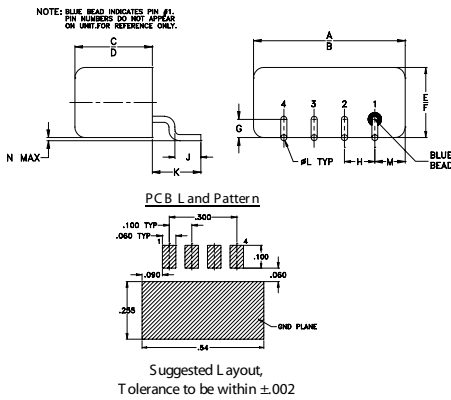
Applications

- satellite distribution
- cellular
- ISM/GSM

+RoHS Compliant

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

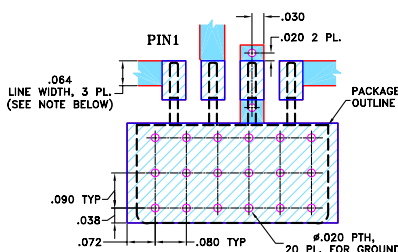
Outline Drawing



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

- 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-Circuit's applicable established test performance criteria and measurement instructions.
- The parts covered by this specification document are subject to Mini-Circuit's standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuit's website at www.minicircuits.com/MCLStore/terms.jsp

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							
20-1500	DC-1200	55	42	48	35	43	32	40	25	30	18	23	10	12

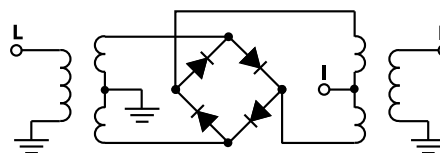
1 dB COMP.: +1 dBm typ.

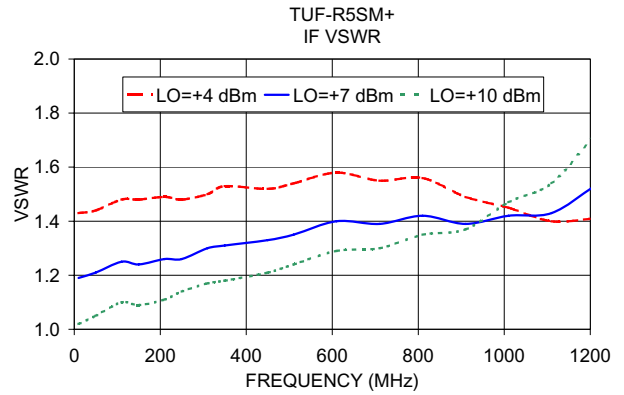
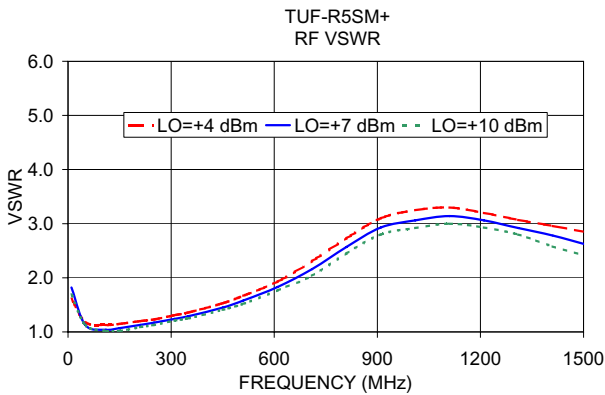
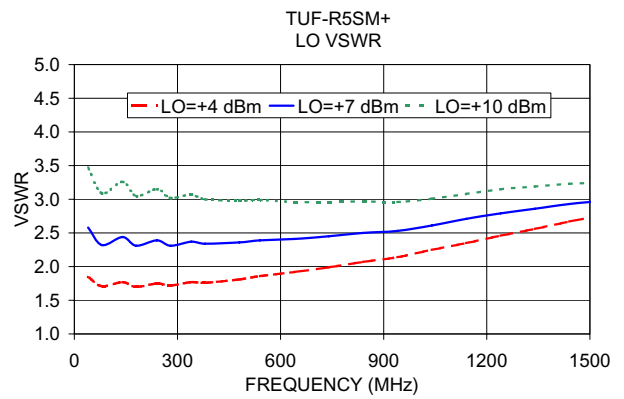
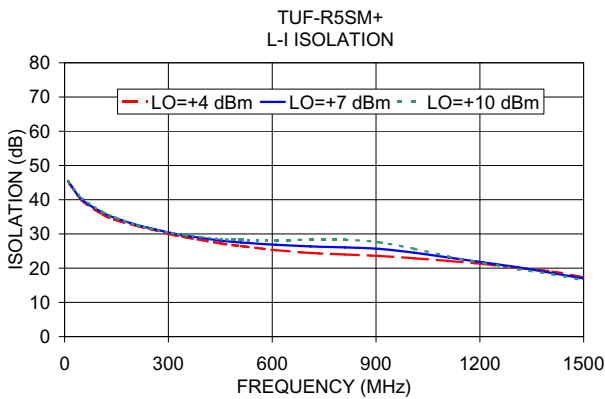
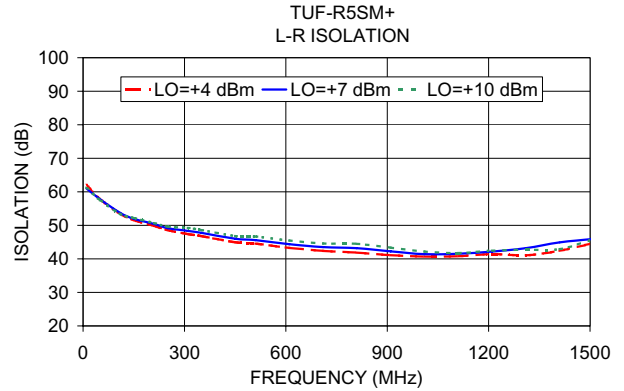
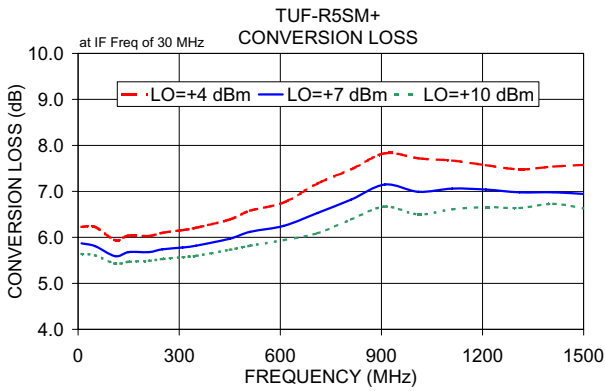
L = low range [f_L to $10 f_L$] M = mid range [$10 f_L$ to $f_U/2$] U = upper range [$f_U/2$ to f_U]
m = mid band [$2f_L$ to $f_U/2$]

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	LO	LO +7dBm	LO +7dBm	LO +7dBm	LO +7dBm	LO +7dBm
10.10	40.10	5.87	61.00	45.39	1.82	2.58
50.10	80.10	5.81	57.81	40.02	1.13	2.32
110.10	140.10	5.59	53.70	36.25	1.04	2.44
150.10	180.10	5.68	51.95	34.52	1.07	2.31
210.10	240.10	5.68	50.41	32.61	1.13	2.39
250.10	280.10	5.74	49.16	31.60	1.17	2.31
310.10	340.10	5.78	48.33	30.21	1.24	2.37
350.10	380.10	5.82	47.76	29.49	1.29	2.34
450.10	480.10	5.97	46.00	28.06	1.45	2.36
510.10	540.10	6.12	45.60	27.50	1.58	2.39
610.10	640.10	6.25	44.37	26.83	1.83	2.41
710.10	740.10	6.53	43.52	26.35	2.16	2.45
810.10	840.10	6.82	43.21	26.08	2.57	2.50
910.10	940.10	7.15	42.23	25.62	2.93	2.53
1010.10	1040.10	6.99	41.42	24.53	3.06	2.61
1110.10	1140.10	7.06	41.53	23.09	3.14	2.71
1210.10	1240.10	7.04	42.18	21.68	3.06	2.79
1310.10	1340.10	6.98	43.21	20.26	2.92	2.86
1410.10	1440.10	6.98	44.92	18.56	2.78	2.93
1510.10	1540.10	6.94	45.94	16.81	2.61	2.98

Electrical Schematic





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