

Surface Mount High Reliability Mixer

TUF-R3SM+

Level 7 (LO Power +7 dBm) 0.25 to 400 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, 5.0 dB typ.
- good IP3, 11 dBm typ.
- excellent L-R isolation, 60 dB typ. and L-I, 45 dB typ.
- rugged welded construction
- shielded metal case

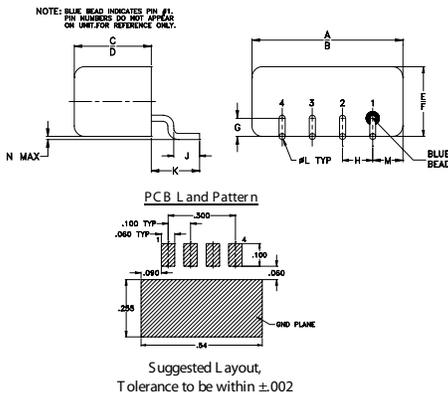
Applications

- HF/VHF
- defense & federal communications

+RoHS Compliant

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

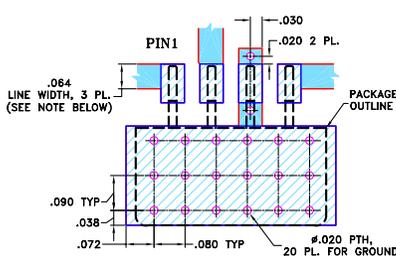
Outline Drawing



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: 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

- A. 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.
- B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- C. The parts covered by this specification document are subject to Mini-Circuits 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-Circuits' 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							
0.25-400	DC-400	70	55	60	40	55	35	62	45	45	30	38	25	11

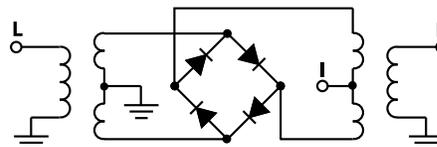
1 dB COMP.: +1 dBm typ.

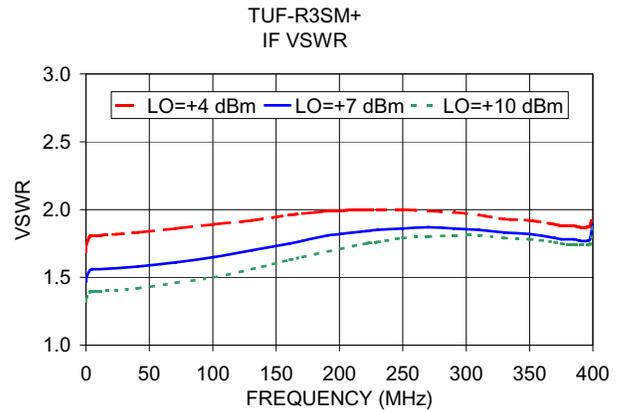
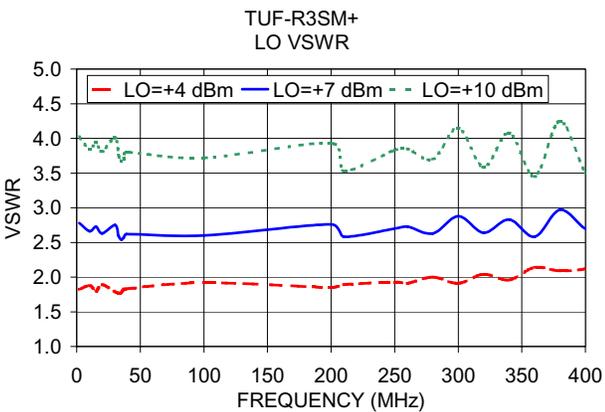
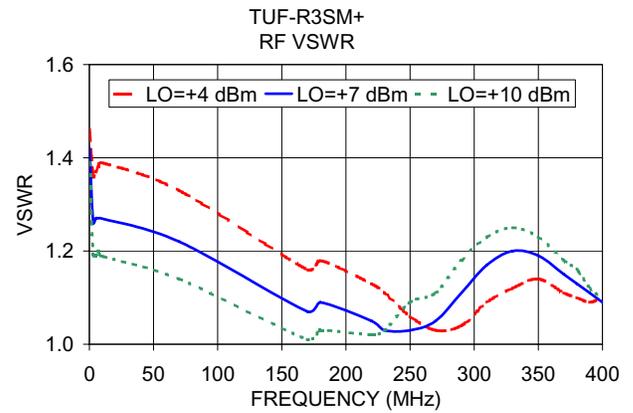
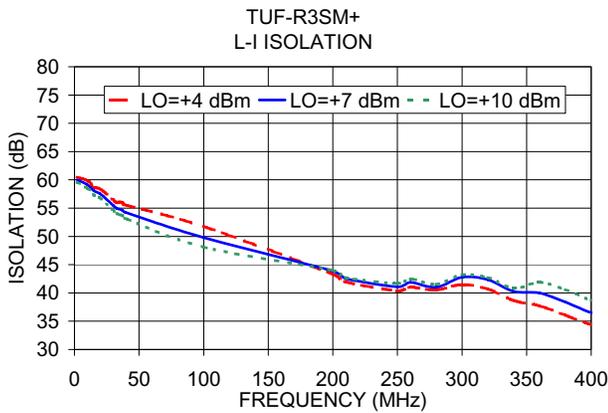
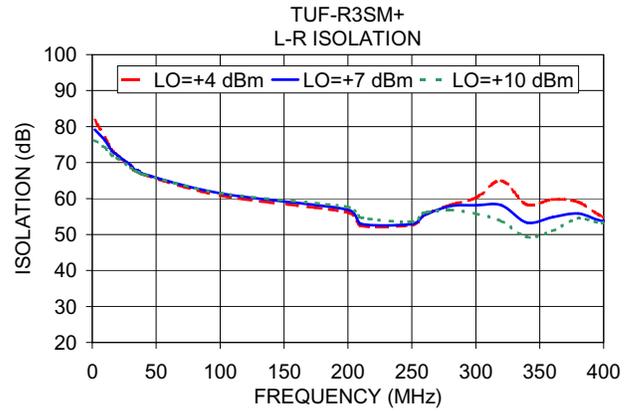
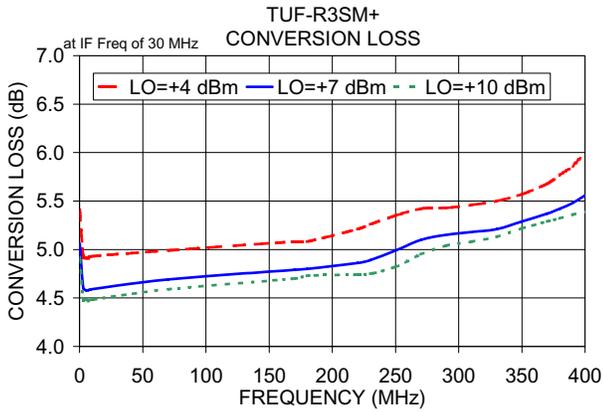
L = low range [f_L to $10 f_L$] M = mid range [$10 f_L$ to $f_U/2$] U = upper range [$f_U/2$ to f_U]
m = mid band [$2f_L$ to $f_U/2$]

Typical Performance Data

Frequency (MHz)	Conversion Loss (dB)	Isolation L-R (dB)	Isolation L-I (dB)	VSWR RF Port (:1)	VSWR LO Port (:1)
0.19	30.19	5.06	69.28	1.42	2.75
3.00	33.00	4.60	68.03	1.26	2.59
5.00	35.00	4.58	67.90	1.27	2.54
7.00	37.00	4.58	67.62	1.27	2.57
9.00	39.00	4.59	66.93	1.27	2.62
70.00	100.00	4.69	61.43	1.22	2.60
170.00	200.00	4.79	56.89	1.07	2.76
180.00	210.00	4.80	52.94	1.09	2.58
220.00	250.00	4.86	52.88	1.05	2.70
230.00	260.00	4.89	55.41	1.03	2.73
250.00	280.00	4.99	57.89	1.03	2.63
270.00	300.00	5.10	58.15	1.05	2.88
290.00	320.00	5.15	58.15	1.11	2.64
310.00	340.00	5.18	53.30	1.17	2.83
330.00	360.00	5.21	54.80	1.20	2.58
350.00	380.00	5.29	55.87	1.19	2.97
370.00	400.00	5.37	53.78	1.15	2.70
380.00	410.00	5.42	56.98	1.13	2.76
390.00	420.00	5.48	55.72	1.11	3.03
400.00	430.00	5.56	52.45	1.09	3.16

Electrical Schematic





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