Surface Mount

High Reliability Mixer

TUF-R5SM+

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

CASE STYLE: NNN150
PRICE: $13.45 ea. QTY (10)

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

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

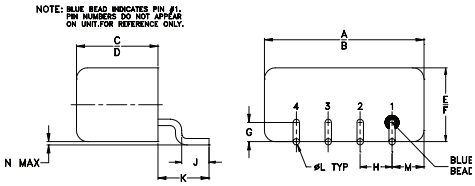
Features

- 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

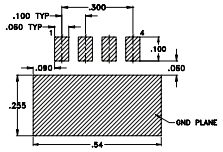
Applications

- satellite distribution
- cellular
- ISM/GSM

Outline Drawing



PCB Land Pattern



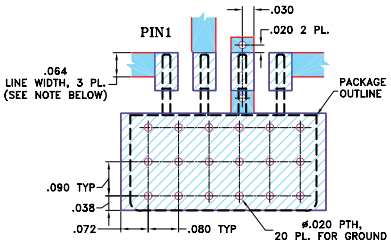
Suggested Layout,
Tolerance to be within ±.002

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

Electrical Specifications

FREQUENCY (MHz)		CONVERSION LOSS (dB)				LO-RF ISOLATION (dB)						LO-IF ISOLATION (dB)						IP3 at center band (dBm)
LO/RF	IF	Mid-Band m			Total Range	L		M		U		L		M		U		
f_L-f_U		$\overline{X}$	σ	Max.	Max.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.
20-1500	DC-1200	6.5	0.05	9.0	9.0	55	42	48	35	43	32	40	25	30	18	23	10	12

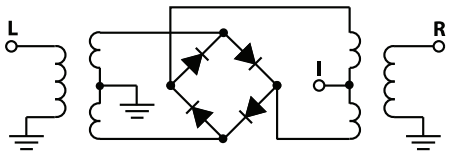
1 dB COMP.: +1 dBm typ.

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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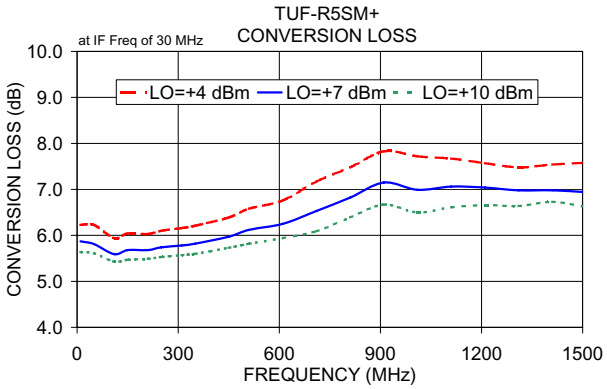
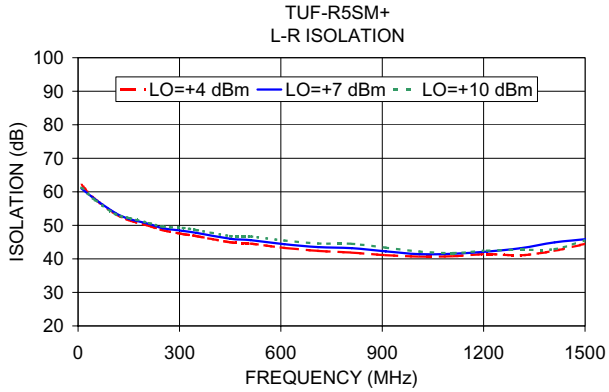
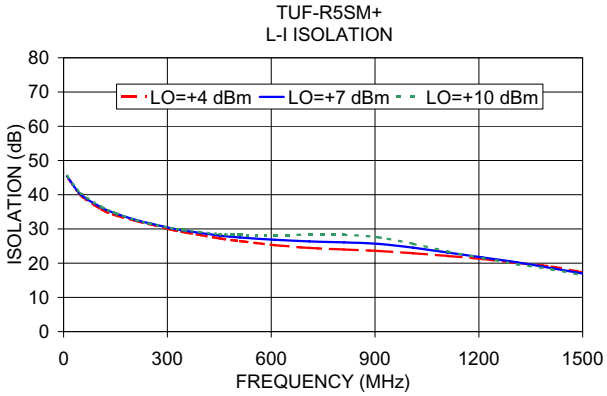
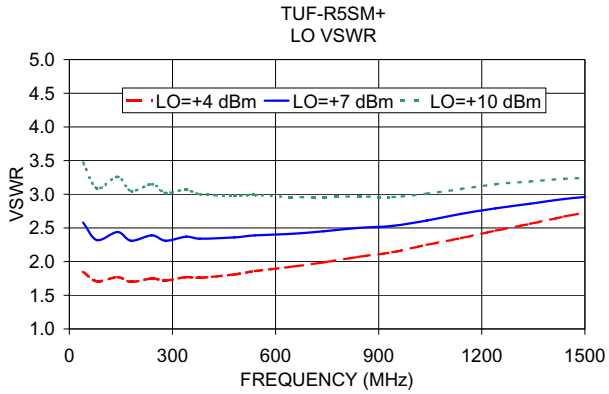
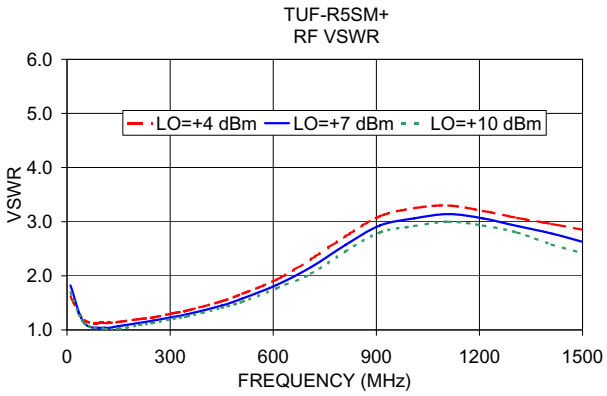
REV. OR
M109914
TUF-R5SM+
ED-12916/4
DJ/TD/AM
130502

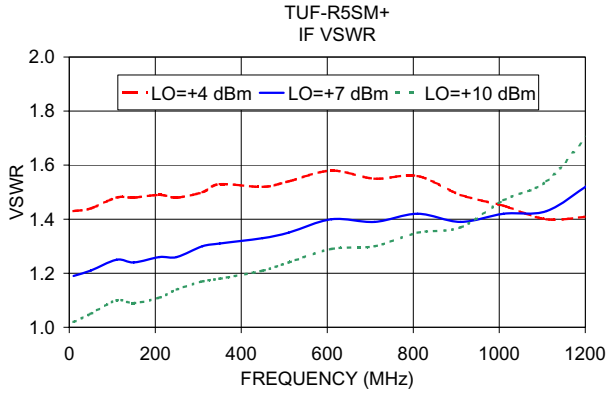












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