

Frequency Mixer

TUF-5HSM+

Level 17 (LO Power +17dBm) 20 to 1500 MHz

Features

- low conversion loss, 7.5 dB typ.
- high L-R isolation, 50 dB typ.
- good IP3, 20 dBm typ.
- wideband, 20 to 1500 MHz
- rugged welded construction, non-hermetic

Applications

- satellite distribution
- cellular
- GSM/ISM



CASE STYLE: NNN150
PRICE: \$15.45 ea. QTY (1-9)

**+ RoHS compliant in accordance
with EU Directive (2002/95/EC)**

The +suffix has been added in order to identify RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications.

Mixer Electrical Specifications

MODEL NO.	FREQUENCY (MHz)		CONVERSION LOSS (dB)				LO-RF ISOLATION (dB)				LO-IF ISOLATION (dB)				IP3@ center band Typ. (dBm)	E FACTOR
	LO/RF $f_L - f_U$	IF	Mid-Band m $\bar{x}$ σ Max.	Total Range Max.			L Typ. Min.	M Typ. Min.	U Typ. Min.		L Typ. Min.	M Typ. Min.	U Typ. Min.			
TUF-5HSM+	20-1500	DC-1000	7.50 .17 8.5	9.0			62 55	50 40	38 25		40 25	29 18	20 8		20	0.3

1 dB COMP.: +14 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 $f_U/2$]

E = $(IP3(dBm) - LO Power(dBm))/10$

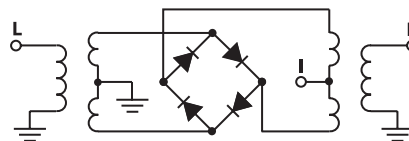
Pin Connections

PORT	Z
LO	4
RF	1
IF	2
GROUND EXT.	3
CASE GROUND	3

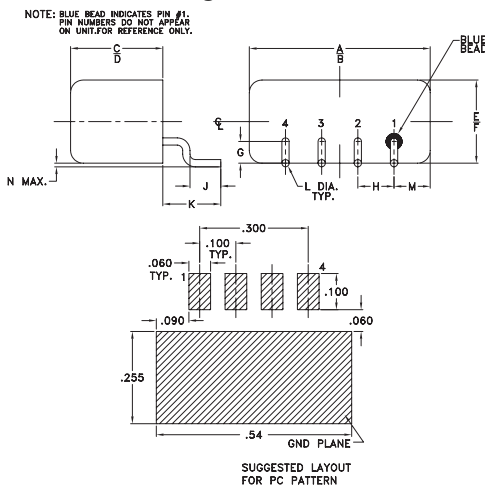
Maximum Ratings

Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
RF Power	200mW
IF Current	40mA

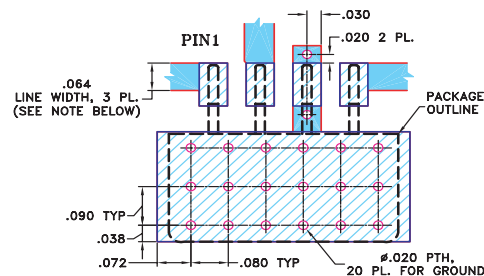
electrical schematic



Outline Drawing



Demo Board MCL P/N: 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

Outline Dimensions (inch)

A	B	C	D	E	F	G	H	J	K	L	M	N	wt.
.50	.48	.255	.240	.23	.21	.06	.100	.09	.16	.020	.09	.005	grams
12.70	12.19	6.48	6.10	5.84	5.33	1.52	2.54	2.29	4.06	.51	2.29	.13	1.9

Typical Performance Data

Frequency		Conversion Loss (dB)	Isolation L-R (dB)	Isolation L-I (dB)	VSWR RF port (:1)	VSWR LO port (:1)
RF MHz	LO MHz	LO +17dBm	LO +17dBm	LO +17dBm	LO +17dBm	LO +17dBm
20.00	50.00	6.69	76.70	54.80	1.64	1.69
50.00	80.00	6.37	69.50	48.00	1.53	1.71
110.00	140.00	5.99	65.00	43.50	1.61	1.63
200.00	230.00	5.98	61.10	39.10	1.64	1.63
320.00	350.00	6.13	58.30	36.40	1.80	1.58
500.00	530.00	6.49	56.50	33.60	1.94	1.62
635.00	665.00	6.96	50.80	31.50	2.02	1.62
740.00	770.00	7.59	47.20	30.20	2.32	1.69
845.00	875.00	8.29	46.10	29.80	2.73	1.77
950.00	980.00	8.38	44.20	28.60	3.05	1.89
1000.00	1030.00	8.21	41.40	27.80	3.16	1.86
1055.00	1085.00	7.97	38.90	27.10	3.29	1.84
1100.00	1130.00	7.98	36.60	25.20	3.59	1.93
1200.00	1230.00	7.63	37.20	24.10	3.70	2.03
1250.00	1280.00	7.55	36.30	22.90	3.65	2.08
1300.00	1330.00	7.47	35.00	21.70	3.58	2.08
1350.00	1380.00	7.23	34.50	21.10	3.45	2.14
1400.00	1730.00	7.30	34.00	19.90	3.21	2.24
1470.00	1500.00	7.17	33.80	19.30	3.06	2.24
1500.00	1470.00	7.21	33.30	17.00	2.92	2.37

Performance Charts

