

Surface Mount

Frequency Mixer

TUF-2HSM+

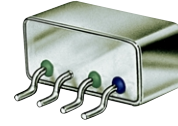
Level 17 (LO Power +17dBm) 50 to 1000 MHz

Features

- low conversion loss, 6.20 dB typ.
- excellent isolation, 47 dB typ. L-R, 44 dB typ. L-I
- good IP3, 21 dBm typ.
- rugged welded construction, non-hermetic

Applications

- UHF/VHF
- cellular
- ISM/GSM



CASE STYLE: NNN150
PRICE: \$11.20 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. There has been no change to the model's material, form, fit, or function. 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 \bar{x}	m σ	Max.	Total Range Max.	L Typ.	M Typ.	U Typ.	L Typ.	M Typ.	U Typ.	L Typ.	M Typ.			U Typ.			
TUF-2HSM+	50-1000	DC-1000	6.20	.22	7.5	9.0	58	40	47	30	42	25	58	35	44	25	28	18	21	0.4

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

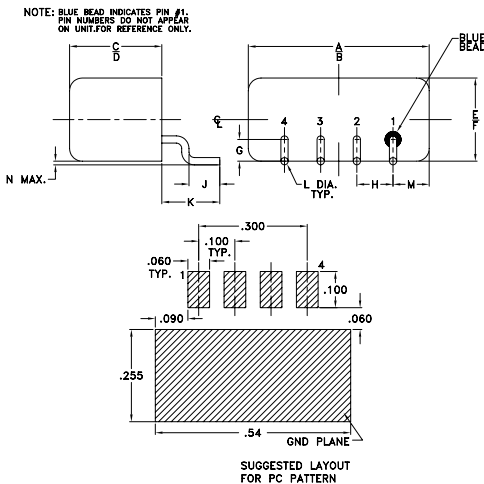
Pin Connections

LO	4
RF	1
IF	2
GROUND	3
CASE GROUND	3

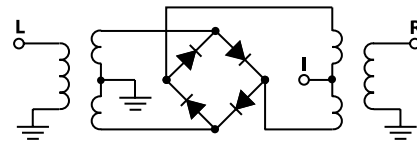
Maximum Ratings

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

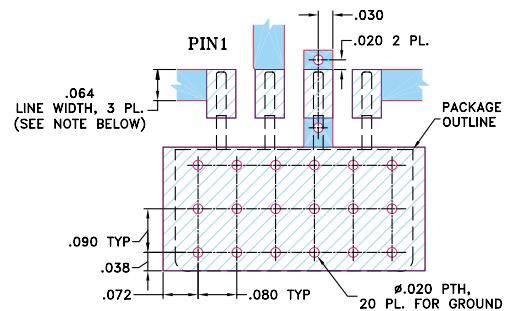
Outline Drawing



electrical schematic



Demo Board MCL P/N: TB-201 Suggested PCB Layout (PL-081)



NOTE: TRACE WIDTH IS SHOWN FOR ROGERS R04350 WITH DIELECTRIC THICKNESS .030" ± .002". COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.

- DENOTES PCB COPPER LAYOUT
- DENOTES COPPER LAND PATTERN FREE OF SOLDERMASK

Outline Dimensions (inch / mm)

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



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M98898
TUF-2HSM+
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050914
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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
5.00	35.00	5.75	73.03	64.57	1.24	1.51
35.15	65.15	5.75	53.95	50.91	1.10	1.53
65.30	95.30	5.78	47.75	44.94	1.10	1.52
125.61	95.61	5.83	45.94	42.85	1.09	1.44
185.91	155.91	5.88	41.73	38.74	1.09	1.43
216.06	186.06	5.87	40.07	37.26	1.10	1.39
276.37	246.37	5.70	37.49	34.59	1.11	1.38
336.67	306.67	5.62	35.70	32.97	1.11	1.40
396.98	366.98	5.78	35.50	32.29	1.12	1.37
457.28	427.28	6.15	33.92	30.55	1.13	1.36
517.58	487.58	5.88	34.70	29.07	1.15	1.37
547.74	517.74	5.91	35.38	29.45	1.15	1.39
608.04	578.04	6.36	34.75	28.29	1.16	1.38
668.34	638.34	6.50	34.53	27.06	1.17	1.38
728.65	698.65	6.30	33.69	25.41	1.20	1.36
788.95	758.95	6.43	32.39	25.21	1.22	1.45
849.26	819.26	7.56	32.23	24.28	1.26	1.49
909.56	879.56	8.59	32.46	23.91	1.34	1.52
969.86	939.86	8.55	32.66	24.30	1.46	1.54
1000.00	970.00	8.57	32.20	24.05	1.62	1.53

Performance Charts

