

Frequency Mixers

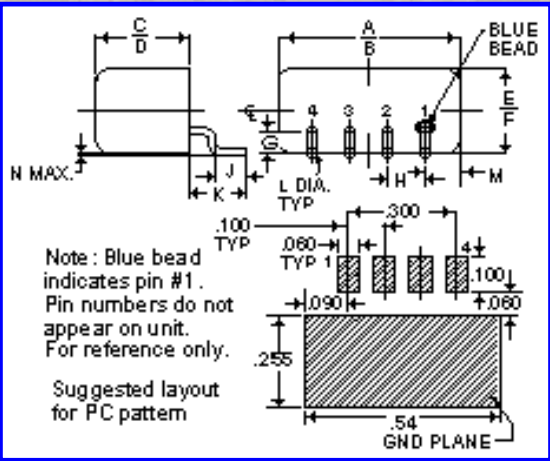
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LO Power Level 13 dBm

Pin Configuration

Port	LO	RF	IF	Gnd Ext.	Case Gnd	Not Used
z	4	1	2	3	3	-

Outline Drawing



Case Style - NNN150 (inch,mm) weight: 1.9 grams.

A	B	C	D	E	F	G	H	J
.50	.48	.255	.240	.23	.21	.06	.100	.09
12.700	12.192	6.477	6.096	5.842	5.334	1.524	2.540	2.286
K	L	M	N	P	Q	R	S	T
.16	.020	.09	.005					
4.064	0.508	2.286	0.127					

Tolerance: .x ± .1 .xx ± .03 .xxx ± .015 inch.

Material and Finish:

Header material: C.R.S. Pin material: #52 alloy. Finish: electro tin, hot-oil flowed. Cover material:upro-nickel.

Mounting:

Pin's meniscus (of header): 0.015" max.

Special Tolerances:

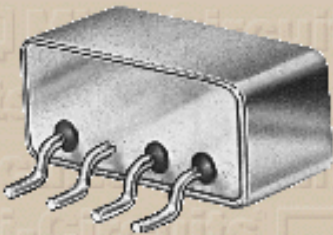
Pin diameter ±.005 inch.

Packaging:

Notes:

- For Surface Mount Environmental Specifications, please click [here](#).
- General Quality Control Procedures and Environmental Specifications are given in [Mini-Circuits Guarantees Quality](#). Hi-Rel, MIL description are given in [Hi-Rel and MIL](#)
- Prices and Specifications subjects to change without notice.

TUF-5MHSM



Electrical Specifications

TUF-5MHSM

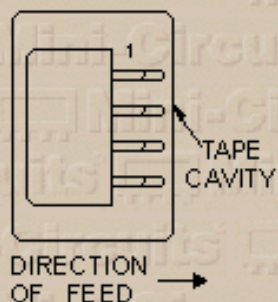
LO Power Level 13 dBm

Frequency MHz		Max. Conversion Loss dB		Min. LO-RF Isolation dB			Min. LO-IF Isolation dB		
LO/RF	IF	Mid-Band	Total Range	L	M	U	L	M	U
20-1500	DC-1000	8.5	9.0	40	30	25	25	18	8

L=low range(f_L to $10f_L$) M=mid range($10f_L$ to $f_U/2$) U=upper range($f_U/2$ to f_U)

Typical Performance Data

TUF-5MHSM		Conversion Loss (dB)			ISO	Isolation L-R (dB)			Isolation L-I (dB)		
RF MHz	LO MHz	LO +10 dBm	LO +13 dBm	LO +16 dBm	LO (MHz)	LO +10 dBm	LO +13 dBm	LO +16 dBm	LO +10 dBm	LO +13 dBm	LO +16 dBm
20.000	50.000	6.39	5.87	5.53	20.000	65.84	65.81	64.84	49.39	50.21	50.60
50.000	80.000	6.10	5.57	5.24	50.000	58.21	58.31	57.35	42.06	42.94	43.60
100.000	70.000	5.91	5.41	5.13	100.000	52.10	52.44	51.84	36.17	37.15	38.07
158.750	128.750	5.89	5.37	5.13	158.750	48.51	48.96	48.57	32.75	34.29	35.15
200.000	170.000	5.95	5.43	5.20	200.000	46.79	47.29	47.65	31.34	32.96	33.26
297.500	267.500	5.93	5.51	5.27	297.500	44.21	45.30	46.22	29.18	30.09	30.33
436.250	406.250	6.23	5.79	5.45	436.250	42.99	45.57	48.43	26.22	27.35	27.95
500.000	470.000	6.44	5.90	5.56	500.000	42.69	45.56	48.33	24.87	26.32	27.21
575.000	545.000	6.77	6.21	5.87	575.000	42.05	44.68	48.92	23.86	25.44	26.70
713.750	683.750	7.78	6.95	6.23	713.750	40.89	43.61	45.83	22.46	24.34	26.31
750.000	720.000	7.96	7.16	6.50	750.000	40.72	43.15	45.02	22.28	24.17	26.13
760.000	730.000	7.97	7.15	6.56	760.000	40.64	43.01	44.85	22.23	24.16	26.18
852.500	822.500	8.07	7.16	6.65	852.500	40.07	41.36	41.87	22.06	23.95	25.76
991.250	961.250	8.34	7.16	6.51	991.250	39.14	39.32	39.27	21.48	22.75	23.21
1000.000	970.000	8.41	7.32	6.53	1000.000	39.04	39.30	39.25	21.38	22.64	23.00
1130.000	1100.000	8.06	7.38	6.79	1130.000	35.74	36.80	37.72	20.32	20.71	20.06
1222.500	1192.500	7.87	7.32	6.89	1222.500	37.55	38.30	39.00	18.83	18.60	17.80
1361.250	1331.250	7.68	7.13	6.85	1361.250	37.36	37.67	38.39	15.95	15.58	14.94
1453.750	1423.750	7.79	7.10	6.82	1453.750	37.48	37.62	38.02	14.11	13.78	13.23
1500.000	1470.000	7.70	7.00	6.71	1500.000	37.18	37.26	37.76	13.23	12.95	12.46

UNIT ORIENTATION

Packaging information:
Tape Width(mm): 24
Reel Size(inches): 13
Device Cavity Pitch(mm): 16
Devices Per Reel: 500

RF/LO	VSWR RF port			VSWR LO port			IF	VSWR IF port			Ø detection		
FREQ. (MHz)	LO +10 dBm	LO +13 dBm	LO +16 dBm	LO +10 dBm	LO +13 dBm	LO +16 dBm	FREQ. (MHz)	LO +10 dBm	LO +13 dBm	LO +16 dBm	FREQ. MHz	max.DC output mV	DC offset mV
20.000	1.66	1.57	1.52	1.71	2.60	3.86	1.000	1.69	1.32	1.13	20.00	-487.40	0.16
50.000	1.48	1.38	1.29	1.67	2.52	3.67	2.000	1.69	1.32	1.13	40.00	-486.80	0.16
100.000	1.50	1.37	1.29	1.59	2.40	3.52	5.000	1.69	1.32	1.13	50.00	-488.70	0.16
200.000	1.60	1.48	1.40	1.53	2.28	3.32	10.000	1.69	1.32	1.13	100.00	-487.30	0.16
250.000	1.71	1.56	1.49	1.57	2.37	3.41	20.000	1.69	1.32	1.13	158.75	-484.10	-0.05
350.000	2.00	1.77	1.71	1.57	2.30	3.29	50.000	1.70	1.32	1.13	200.00	-489.10	-0.09
475.000	2.36	2.15	2.04	1.65	2.34	3.21	100.000	1.70	1.33	1.14	297.50	-488.20	0.12
500.000	2.45	2.23	2.11	1.66	2.33	3.22	167.000	1.70	1.33	1.14	436.25	-450.90	0.60
627.000	3.02	2.70	2.65	1.77	2.39	3.15	200.000	1.70	1.33	1.14	500.00	-426.20	0.46
740.000	3.46	3.13	2.95	1.85	2.40	3.14	278.000	1.68	1.33	1.15	575.00	-410.80	-0.60
750.000	3.50	3.17	2.98	1.87	2.43	3.18	350.000	1.65	1.32	1.14	713.75	-421.90	-0.10
800.000	3.65	3.31	3.15	1.94	2.44	3.09	450.000	1.61	1.30	1.13	750.00	-419.90	-0.05
900.000	3.85	3.52	3.33	2.06	2.50	3.10	500.000	1.57	1.28	1.12	852.50	-404.80	-0.49
1000.000	3.96	3.65	3.48	2.13	2.58	3.16	550.000	1.54	1.26	1.11	991.25	-391.40	-0.86
1045.000	4.01	3.71	3.53	2.16	2.59	3.18	650.000	1.46	1.21	1.10	1000.00	-389.70	-0.60
1158.000	3.95	3.70	3.52	2.28	2.62	3.12	722.000	1.37	1.16	1.10	1130.00	-402.70	0.02
1272.000	3.83	3.63	3.50	2.42	2.70	3.12	800.000	1.31	1.17	1.14	1268.75	-405.20	0.11
1400.000	3.60	3.42	3.31	2.59	2.64	2.97	900.000	1.25	1.21	1.27	1407.50	-409.50	0.29
1462.000	3.49	3.33	3.21	2.76	2.62	2.88	972.000	1.26	1.31	1.40	1453.75	-394.50	0.30
1500.000	3.38	3.23	3.11	2.78	2.57	2.89	1000.000	1.27	1.34	1.44	1500.00	-389.20	0.27

Click Above for Actual Performance Data.

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