High IP3

Frequency Mixer

HJK-1651H+

Level17 (LO Power +17dBm) 1430 to 1650 MHz

CASE STYLE: TTT881

Maximum Ratings

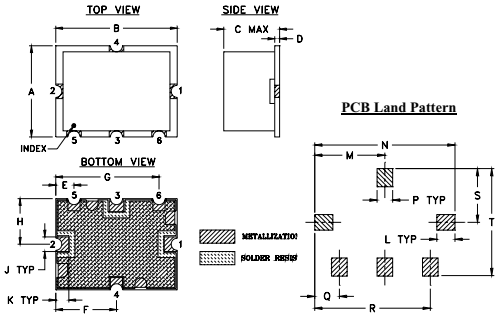
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
LO Power	+20 dBm
RF Power	+20 dBm

Permanent damage may occur if any of these limits are exceeded.

Pin Connections

LO	2
RF	1
IF	3
GROUND	4,5,6

Outline Drawing



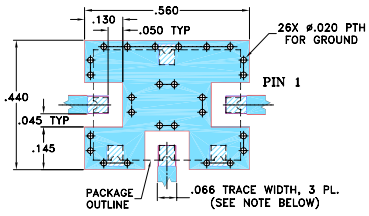
Suggested Layout,
Tolerance to be within ±.002

Outline Dimensions (inch / mm)

A	B	C	D	E	F	G	H	J	K
.38	.50	.23	.020	.075	.250	.425	.187	.050	.050
9.65	12.70	5.84	0.51	1.91	6.35	10.80	4.75	1.27	1.27

L	M	N	P	Q	R	S	T	wt.
.070	.270	.540	.060	.095	.445	.208	.415	grams
1.78	6.86	13.72	1.52	2.41	11.30	5.28	10.54	0.8

Demo Board MCL P/N: TB-12
Suggested PCB Layout (PL-079)



NOTE:

1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .030" ± .002"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. THE USE OF SOLDER MASK OVER THE GROUND AREA UNDER THE UNIT AS SHOWN IS RECOMMENDED TO PREVENT POTENTIAL SHORTING. IF USER CHOOSES TO EXPOSE METAL UNDER THE ENTIRE UNIT GROUND PAD FOR IMPROVED GROUNDING, IT IS RECOMMENDED A SOLDER MASK DAM BE APPLIED AROUND EACH GROUND PAD TO ENSURE FILLET AND CONNECTION AT GROUND PADS.
3. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER), SEE NOTE 2.

Features

- very high IP3, 32 dBm typ.
- excellent L-R isolation, 45 dB typ.; L-I isolation, 32 dB typ.
- compression, 3 dB higher than LO power
- protected by US Patent 6,807,407

Applications

- aeronautical communication
- differential GPS
- fixed satellite
- mobile satellite
- geostationary mobile

+RoHS Compliant

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

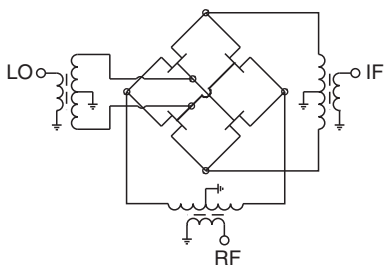
Electrical Specifications at 25°C

Parameter	Min.	Typ.	Max.	Unit
Frequency Range, RF	1430		1650	MHz
Frequency Range, LO	1520	—	1740	MHz
Frequency Range, IF	10	—	300	MHz
Conversion Loss	—	7.3	8.3	dB
LO to RF Isolation	35	45	—	dB
LO to IF Isolation	24	32	—	dB
IP3	—	32	—	dBm
RF Input Power at 1 dB Compression	—	+20	—	dBm

Typical Performance Data

Frequency		Conversion Loss (dB)	Isolation L-R (dB)	Isolation L-I (dB)	VSWR RF Port (:1)	VSWR LO Port (:1)	IP3 (dBm)
RF MHz	LO MHz	LO +17dBm	LO +17dBm	LO +17dBm	LO +17dBm	LO +17dBm	LO +17dBm
1430.00	1520.00	7.14	47.79	31.97	1.42	1.85	30.22
1440.00	1530.00	7.08	47.17	31.70	1.39	1.79	31.18
1450.00	1540.00	7.07	47.12	31.60	1.39	1.73	31.59
1460.00	1550.00	7.02	47.17	31.69	1.38	1.67	32.20
1480.00	1570.00	6.97	47.75	31.92	1.39	1.55	32.20
1500.00	1590.00	7.01	46.48	31.92	1.38	1.43	31.94
1520.00	1610.00	7.13	45.39	32.04	1.37	1.34	33.16
1530.00	1620.00	7.22	45.50	32.03	1.38	1.30	33.71
1538.00	1628.00	7.27	45.31	32.15	1.39	1.28	34.08
1540.00	1630.00	7.28	45.26	32.21	1.39	1.28	34.15
1544.00	1634.00	7.28	45.08	32.35	1.40	1.27	33.68
1560.00	1650.00	7.21	44.51	32.98	1.40	1.26	32.73
1590.00	1680.00	7.24	44.81	33.72	1.39	1.31	32.03
1605.00	1695.00	7.26	44.64	34.20	1.38	1.36	32.23
1635.00	1725.00	7.33	45.43	35.26	1.41	1.46	31.11
1650.00	1740.00	7.32	45.23	35.92	1.39	1.52	30.80

Electrical Schematic



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.
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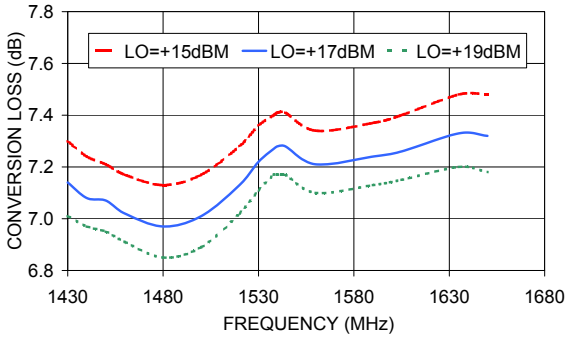
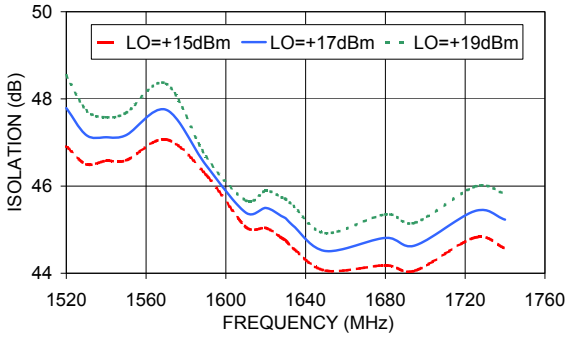
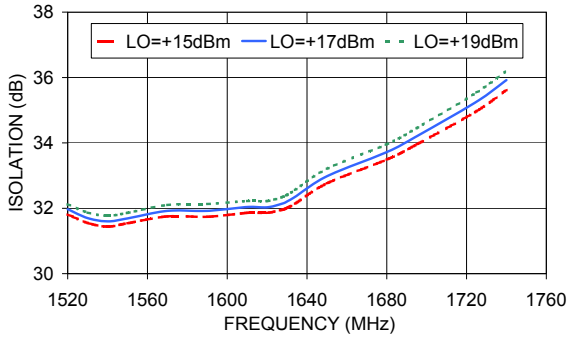
HJK-1651H+
CONVERSION LOSS



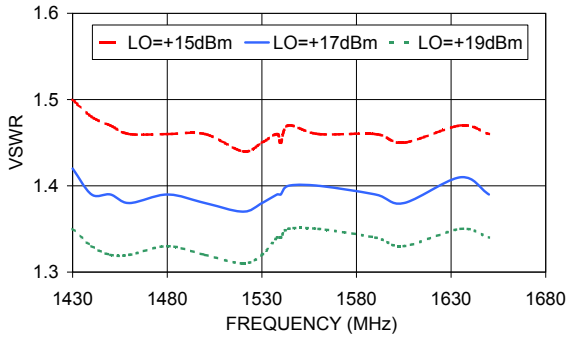
HJK-1651H+
L-R ISOLATION



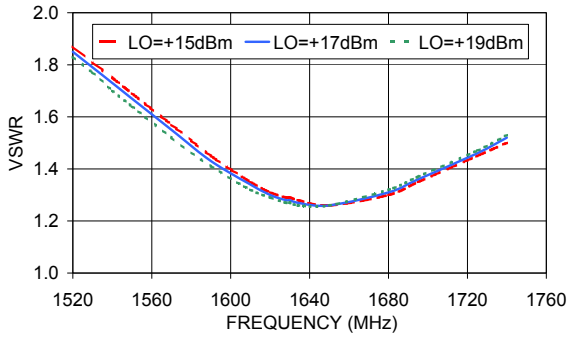
HJK-1651H+
L-I ISOLATION



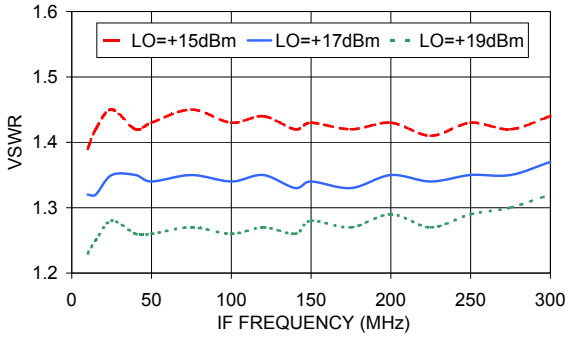
HJK-1651H+
RF VSWR



HJK-1651H+
LO VSWR



HJK-1651H+
IF VSWR



HJK-1651H+
IP3