

High IP3 Frequency Mixer

Level 16 (LO Power +16 dBm) 140 to 180 MHz

HJK-3H+ HJK-3H



CASE STYLE: TTT881

Maximum Ratings

Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
LO & RF Power	19 dBm

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

Pin Connections

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

Features

- high IP3, 37 dBm typ.
- compression, 3 dB higher than LO power
- protected by US Patent 6,807,407

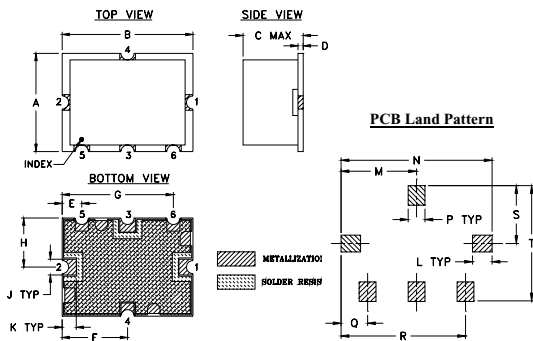
Applications

- base stations
- communication systems
- cellular
- PCS

+RoHS Compliant

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

Outline Drawing

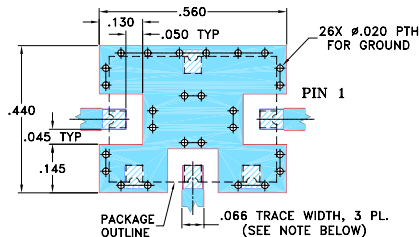


Suggested Layout,
Tolerance to be within ±.002

Outline Dimensions (inch)

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.

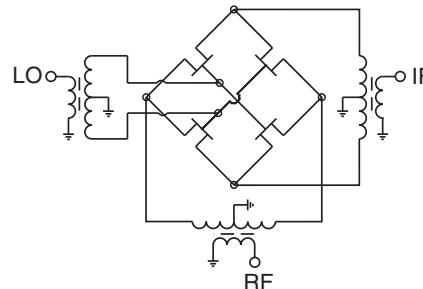
Electrical Specifications

FREQUENCY (MHz)			CONVERSION LOSS (dB)			RF in at 1dB Compr (dBm)	IP3 (dBm)	LO-RF ISOLATION (dB)		LO-IF ISOLATION (dB)	
RF	LO	IF	Typ.	σ	Max.	Typ.	Typ.	Typ.	Min.	Typ.	Min.
140-180	160	0.5-20	8.0	0.1	9.2	+19	37	44	35	44	30

Typical Performance Data

RF Freq. (RF1 for IP3) (MHz)	IF Freq. (MHz)	CONV. LOSS (dB)	RF-2 for IP3 (MHz)	IP3 (dBm)	LO/RF Freq. (MHz)	ISOLATION		VSWR (:1)		IF Freq. FOR VSWR (MHz)	VSWR (:1) IF PORT
						L-R (dB)	L-I (dB)	RF PORT (LO=160MHz)	LO PORT		
139.9	20.1	8.14	140.9	34.1	140	50.78	52.78	1.27	15.53	0.3	1.10
144.9	15.1	8.16	145.9	34.1	145	50.70	48.36	1.27	9.33	0.4	1.09
149.9	10.1	8.17	150.9	34.3	150	51.06	44.92	1.28	6.13	0.5	1.10
154.9	5.1	8.17	155.9	34.2	155	52.09	42.08	1.27	4.16	0.8	1.13
156.9	3.1	8.17	157.9	34.5	160	54.10	39.91	1.28	3.20	1.1	1.14
157.9	2.1	8.19	158.0	34.4	165	55.81	38.41	1.27	3.09	3.1	1.16
158.9	1.1	8.21	159.0	34.7	170	54.88	37.59	1.27	3.62	5.1	1.15
159.5	0.5	8.24	159.6	34.2	175	52.76	37.23	1.28	4.57	8.1	1.15
160.5	0.5	8.26	160.6	34.6	180	51.28	37.20	1.28	5.74	10.1	1.15
161.1	1.1	8.22	161.2	34.6						15.1	1.16
162.1	2.1	8.19	162.2	34.3						20.1	1.16
163.1	3.1	8.19	164.1	34.0							
165.1	5.1	8.18	166.1	34.2							
170.1	10.1	8.19	171.1	34.2							
175.1	15.1	8.23	176.1	34.1							
180.1	20.1	8.25	181.1	34.4							

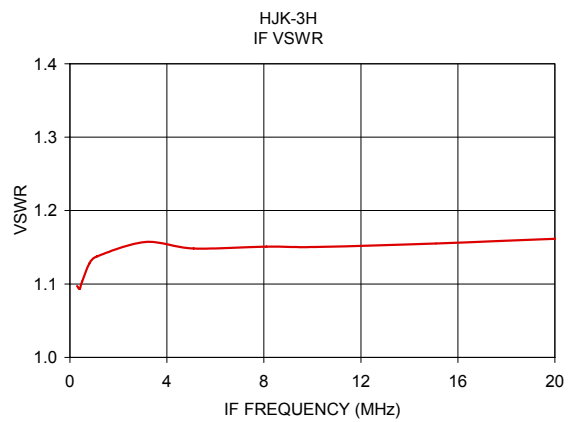
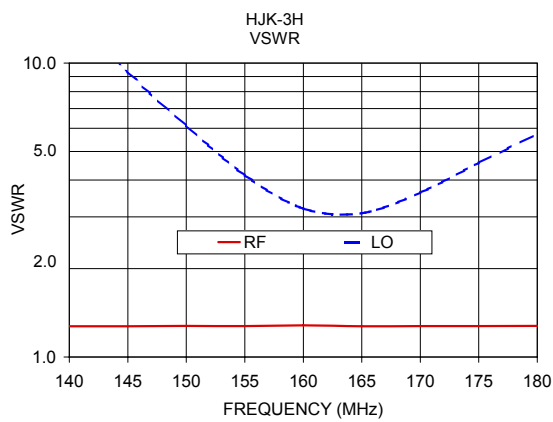
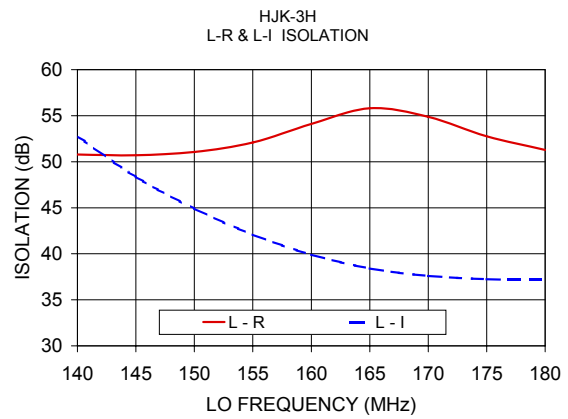
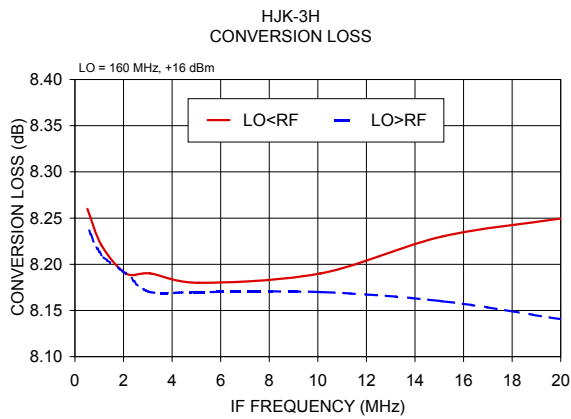
Electrical Schematic



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-Circuits' applicable established test performance criteria and measurement instructions.
- C. The parts covered by this specification document are subject to Mini-Circuits' standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/MCLStore/terms.jsp





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.
- C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/MCLStore/terms.jsp