

Frequency Mixer

Level 20 (LO Power +20 dBm) 1090 to 1950 MHz

HJK-20VH+



CASE STYLE: TTT167

+RoHS Compliant

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



Available Tape and Reel
at no extra cost

Reel Size	Devices/Reel
7"	10, 20, 50, 100, 200
13"	500

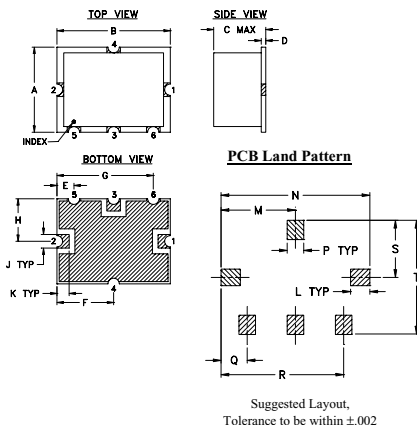
Maximum Ratings

Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
LO Power	+22 dBm
Permanent damage may occur if any of these limits are exceeded.	

Pin Connections

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

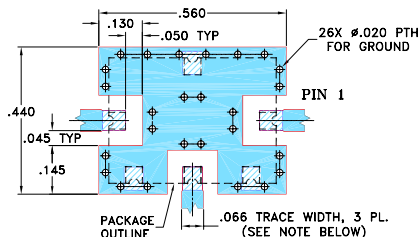
Outline Drawing



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:

- 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.
 - 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.
 - BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER), SEE NOTE 2.

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/VCLStore/terms.jsp

Features

- high IP3, up to 30 dBm typ.
- low spurious
- 2RF-LO, -73 dBc typ.
- 2LO-2RF, -73 dBc typ.

Applications

- for cable tv up converter (second mixer)
- communication systems

Electrical Specifications (T_{AMB}=25°C)

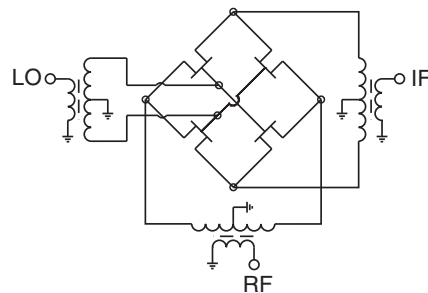
FREQUENCY (MHz)			CONVERSION LOSS (dB)			SECOND ORDER I.M. (Note 1) (dBc) Max.		RF in at 1dB Compr (dBm)	IP3 (dBm)	LO-RF ISOLATION (dB)		LO-IF ISOLATION (dB)	
RF	LO	IF	$\bar{X}$	σ	Max.	2RF-LO	2LO-2RF	Typ.	Typ.	Typ.	Min.	Typ.	Min.
1090	1167-1950	77-870	7.2	0.2	8.5	-65	-63	15	30	32	26	34	26
1090	1183-1590	93-500	7.16	0.18	8.2	-73	-73	15	29	34	26	35	28
1090	1590-1800	500-710	7.24	0.10	8.5	-73	-70	15	27	34	26	38	26
1090	1800-1900	710-810	7.37	0.11	8.5	-68	-65	15	27	35	28	38	28
1090	1900-1950	810-860	7.37	0.13	8.5	-65	-63	15	27	37	28	35	28

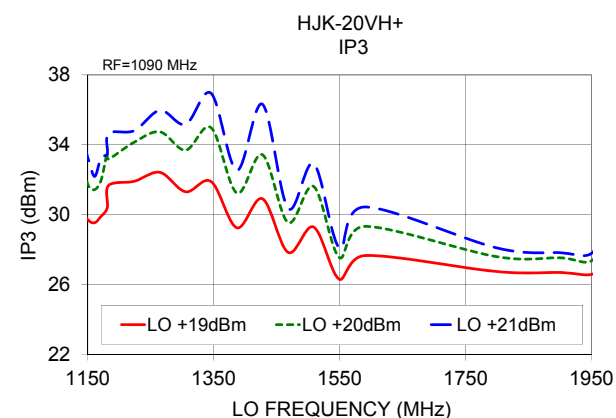
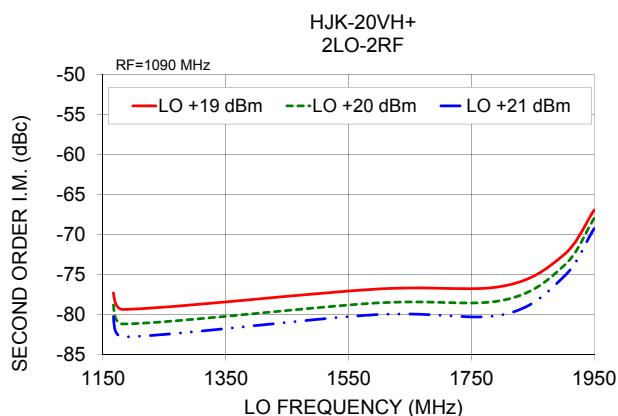
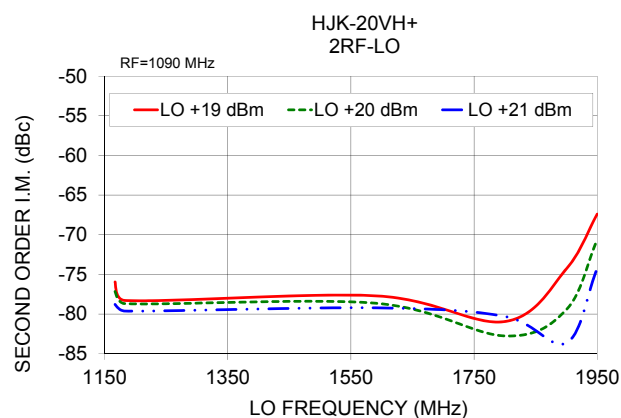
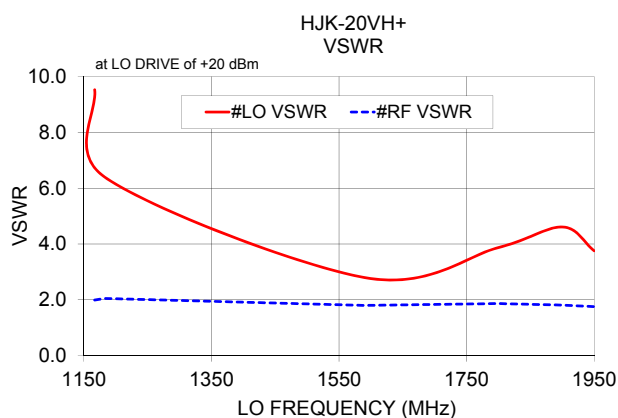
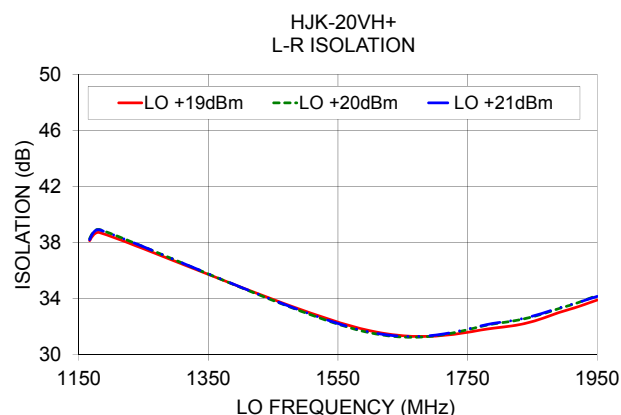
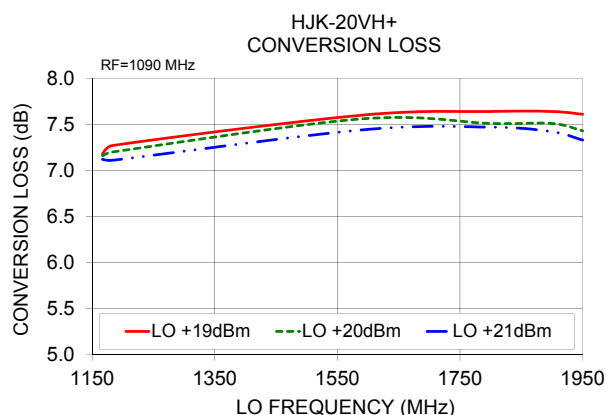
Note 1. Measured at -14 dBm RF. High order spurious 3RF-2LO, 4RF-2LO, 4RF-3LO, 3RF-2LO, 3RF-2LO (dBc) typ. < -80 dBc

Typical Performance Data

Frequency (MHz)		Conversion Loss (dB)	Isolation L-R (dB)	Isolation L-I (dB)	VSWR RF Port (:1)	VSWR LO Port (:1)	2RF-LO (dBc)	2LO-2RF (dBc)	IP3 (dBm)
RF	LO	LO +20dBm	LO +20dBm	LO +20dBm	LO +20dBm	LO +20dBm	LO +20dBm	LO +20dBm	LO +20dBm
1090	1167	7.2	38	32	2.0	9.5	-77	-79	32
1090	1183	7.2	39	33	2.0	6.4	-79	-81	34
1090	1590	7.6	32	42	1.8	2.8	-79	-79	29
1090	1800	7.5	32	39	1.9	3.9	-83	-78	28
1090	1900	7.5	33	33	1.8	4.6	-79	-74	28
1090	1950	7.4	34	32	1.8	3.8	-71	-68	27

Electrical Schematic





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