

High IP3

# Frequency Mixer

Level 17 (LO Power +17 dBm) 320 to 550 MHz

HJK-551H+



## Maximum Ratings

|                                                                 |                |
|-----------------------------------------------------------------|----------------|
| Operating Temperature                                           | -40°C to 85°C  |
| Storage Temperature                                             | -55°C to 100°C |
| LO Power                                                        | +19 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 |

## Features

- high IP3, 30 dBm typ.
- excellent L-R isolation, 53 dB typ.;
- L-I isolation, 38 dB typ.

## Applications

- base stations
- communication systems
- wireless application in Health care
- weather instruments/radar/satellites
- general aviation air to ground telephone
- land mobile radio
- aeronautical
- emergency

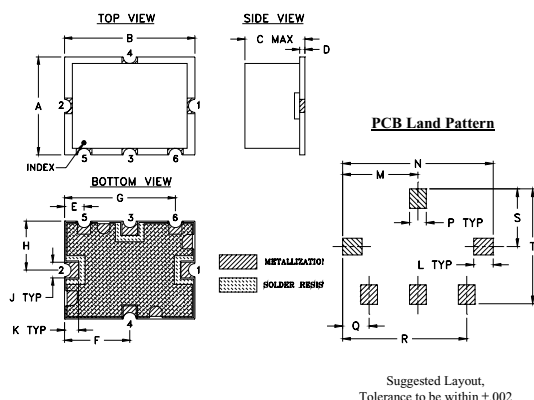
CASE STYLE: TTT881

**+RoHS Compliant**

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

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

## Outline Drawing



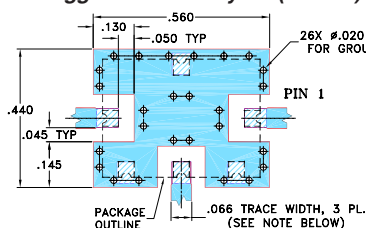
## Outline Dimensions (inch)

| 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)



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.
- DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

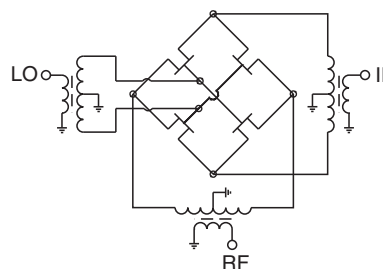
## Electrical Specifications at 25°C

| Parameter                | Condition | Min. | Typ. | Max. | Units |
|--------------------------|-----------|------|------|------|-------|
| Frequency Range, RF      |           | 320  |      | 550  | MHz   |
| Frequency Range, LO      |           | 275  |      | 505  |       |
| Frequency Range, IF      |           | 10   |      | 150  |       |
| Conversion Loss          |           | —    | 7.0  | 8.3  | dB    |
| LO to RF Isolation       |           | 43   | 53   | —    | dB    |
| LO to IF Isolation       |           | 30   | 38   | —    | dB    |
| IP3                      |           | —    | 30   | —    | dBm   |
| 1 dB Compression (Input) |           |      | +20  |      | dBm   |

## Typical Performance Data

| Frequency |        | Conversion Loss (dB) | Isolation L-R | Isolation L-I | VSWR RF Port | VSWR LO Port | IP3 (dBm) |
|-----------|--------|----------------------|---------------|---------------|--------------|--------------|-----------|
| RF MHz    | LO MHz | LO +17dBm            | LO +17dBm     | LO +17dBm     | LO +17dBm    | LO +17dBm    | LO +17dBm |
| 316       | 271    | 6.84                 | 57.84         | 42.84         | 1.99         | 3.00         | 32.72     |
| 340       | 295    | 6.73                 | 56.55         | 41.08         | 1.94         | 2.71         | 32.75     |
| 380       | 335    | 6.75                 | 55.62         | 38.82         | 1.86         | 2.06         | 34.75     |
| 404       | 359    | 6.65                 | 55.97         | 37.93         | 1.85         | 1.66         | 37.26     |
| 412       | 367    | 6.68                 | 56.16         | 37.86         | 1.82         | 1.54         | 35.33     |
| 420       | 375    | 6.57                 | 56.22         | 37.86         | 1.80         | 1.45         | 37.63     |
| 460       | 415    | 6.63                 | 56.44         | 38.55         | 1.74         | 1.43         | 36.38     |
| 492       | 447    | 6.76                 | 58.22         | 39.37         | 1.78         | 1.71         | 34.45     |
| 500       | 455    | 6.79                 | 58.62         | 39.51         | 1.79         | 1.78         | 37.29     |
| 508       | 463    | 6.79                 | 58.51         | 39.94         | 1.81         | 1.85         | 36.32     |
| 516       | 471    | 6.81                 | 58.62         | 40.05         | 1.83         | 1.91         | 35.57     |
| 524       | 479    | 6.84                 | 59.47         | 40.29         | 1.86         | 1.97         | 33.94     |
| 532       | 487    | 6.87                 | 60.05         | 40.92         | 1.87         | 2.03         | 34.83     |
| 540       | 495    | 6.91                 | 60.08         | 41.21         | 1.91         | 2.08         | 34.18     |
| 548       | 503    | 6.98                 | 59.66         | 41.58         | 1.95         | 2.12         | 34.86     |
| 556       | 511    | 7.05                 | 57.21         | 42.05         | 1.99         | 2.17         | 31.13     |

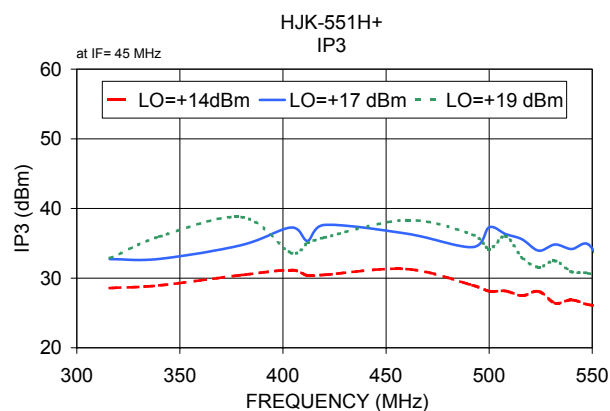
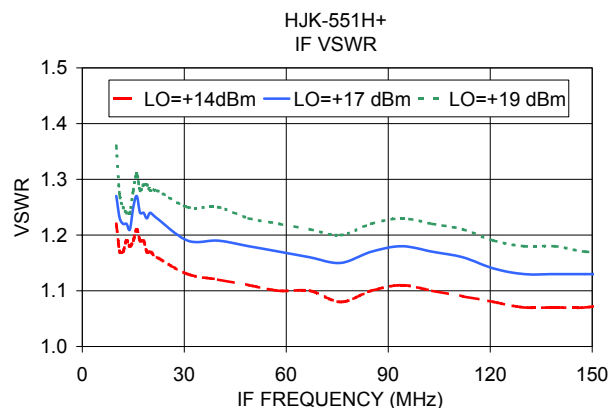
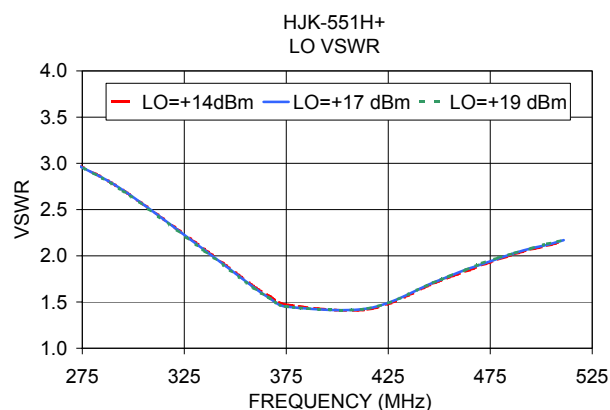
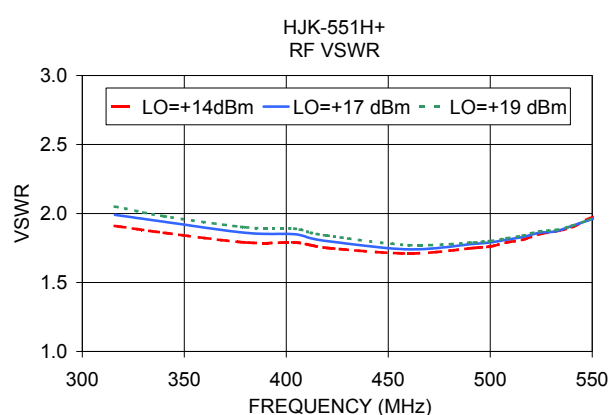
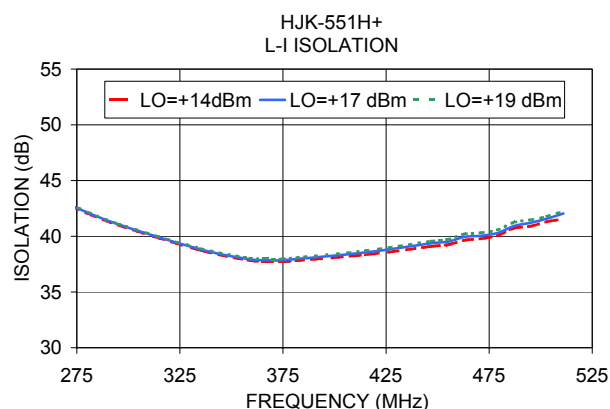
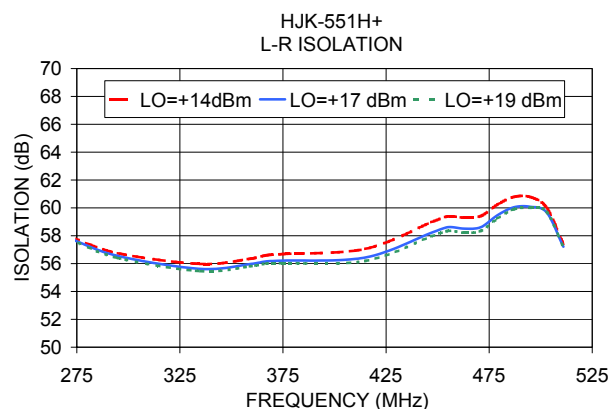
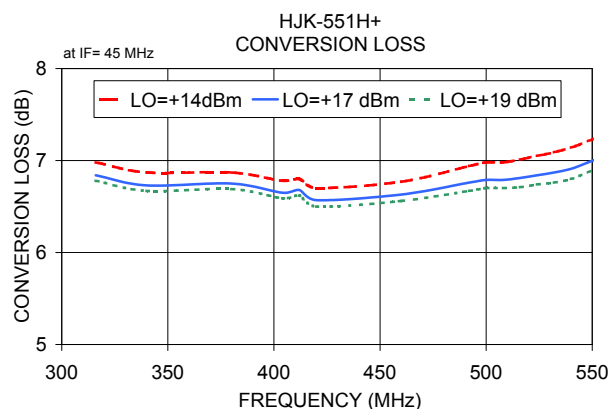
## Electrical Schematic



## 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.
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