

# Frequency Mixer

Level 7 (LO Power +7 dBm) 1 to 1000 MHz

## Maximum Ratings

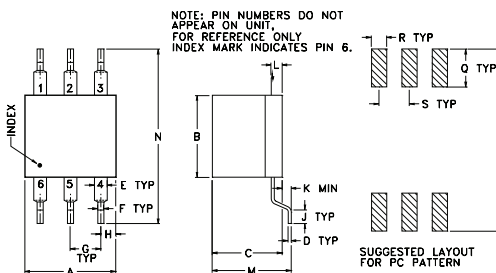
|                       |                |
|-----------------------|----------------|
| Operating Temperature | -40°C to 85°C  |
| Storage Temperature   | -55°C to 100°C |
| RF Power              | 50mW           |
| IF Current            | 40mA           |

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

## Pin Connections

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

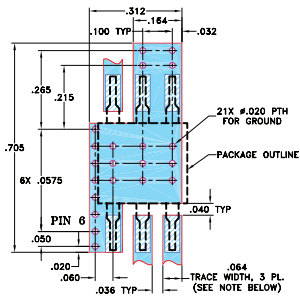
## Outline Drawing



### Outline Dimensions ( $\frac{\text{inch}}$ )

| A    | B    | C    | D     | E     | F    | G    | H    | J     |
|------|------|------|-------|-------|------|------|------|-------|
| .30  | .27  | .23  | .010  | .042  | .020 | .100 | .05  | .05   |
| 7.62 | 6.86 | 5.84 | 0.25  | 1.07  | 0.51 | 2.54 | 1.27 | 1.27  |
| K    | L    | M    | N     | P     | Q    | R    | S    | wt    |
| .020 | .036 | .26  | .575  | .600  | .125 | .050 | .100 | grams |
| 0.51 | 0.91 | 6.60 | 14.61 | 15.24 | 3.18 | 1.27 | 2.54 | 0.50  |

**Demo Board MCL P/N: TB-174**  
**Suggested PCB Layout (PL-082)**



NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS 0.030"  $\pm$  0.002". COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.

2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

 DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)

 DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

## Features

- low conversion loss, 6.79 dB typ.
- wideband, 1 to 1000 MHz

## Applications

- HF/VHF/UHF
- cellular
- federal & defense communications



CASE STYLE: KK81

PRICE: \$8.25 ea. QTY (1-9)

**+RoHS Compliant**

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

## Electrical Specifications

| FREQUENCY<br>(MHz)      |         | CONVERSION LOSS<br>(dB) |          |      |                        | LO-RF ISOLATION<br>(dB) |      |      |      |      |      | LO-IF ISOLATION<br>(dB) |      |      |      |      |      | IP3<br>at center<br>band<br>(dBm) |
|-------------------------|---------|-------------------------|----------|------|------------------------|-------------------------|------|------|------|------|------|-------------------------|------|------|------|------|------|-----------------------------------|
| LO/Rf                   | IF      | Mid-Band                |          |      | Total<br>Range<br>Max. | L                       |      | M    |      | U    |      | L                       |      | M    |      | U    |      |                                   |
|                         |         | $\bar{X}$               | $\sigma$ | Max. |                        | Typ.                    | Min. | Typ. | Min. | Typ. | Min. | Typ.                    | Min. | Typ. | Min. | Typ. | Min. |                                   |
| 1-1000<br>$f_L$ - $f_U$ | DC-1000 | 6.79                    | .10      | 8.0  | 9.8                    | 60                      | 40   | 35   | 18   | 26   | 16   | 50                      | 30   | 25   | 17   | 15   | 10   | 12                                |

1 dB COMPR.: +1 dBm typ.

For phase detection, DC output positive polarity with in-phase LO&RF

L = low range [ $f_c$  to  $10 f_c$ ]

m= mid band [ $2f_c$  to  $f_c/2$ ]

M = mid range [ $10 f_1$  to  $f_2/2$ ]

11. The range is  $[-10, 10]$ .

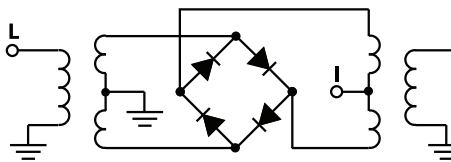
U = upper range [ $f_u/2$  to  $f_u$ ]

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### Typical Performance Data

| Frequency (MHz) |        | Conversion Loss (dB) | Isolation L-R (dB) | Isolation L-I (dB) | VSWR RF Port (:1) | VSWR LO Port (:1) |
|-----------------|--------|----------------------|--------------------|--------------------|-------------------|-------------------|
| RF              | LO     | LO +7dBm             | LO +7dBm           | LO +7dBm           | LO +7dBm          | LO +7dBm          |
| 1.00            | 31.00  | 7.37                 | 83.47              | 91.97              | 1.38              | 2.66              |
| 2.00            | 32.00  | 7.07                 | 80.37              | 87.67              | 1.29              | 2.56              |
| 5.00            | 35.00  | 6.73                 | 72.27              | 82.47              | 1.24              | 2.67              |
| 10.00           | 40.00  | 6.62                 | 66.17              | 77.87              | 1.23              | 2.56              |
| 20.00           | 50.00  | 6.55                 | 61.04              | 73.34              | 1.23              | 2.51              |
| 50.00           | 80.00  | 6.57                 | 52.51              | 61.14              | 1.22              | 2.53              |
| 97.68           | 67.68  | 6.59                 | 47.22              | 54.12              | 1.23              | 2.51              |
| 100.00          | 70.00  | 6.59                 | 47.11              | 53.57              | 1.23              | 2.49              |
| 194.36          | 164.36 | 6.53                 | 41.80              | 49.32              | 1.24              | 2.49              |
| 200.00          | 170.00 | 6.53                 | 41.66              | 49.33              | 1.27              | 2.49              |
| 291.03          | 261.03 | 6.57                 | 38.25              | 47.35              | 1.32              | 2.44              |
| 387.71          | 357.71 | 6.67                 | 35.81              | 42.38              | 1.34              | 2.56              |
| 484.39          | 454.39 | 6.68                 | 33.54              | 37.69              | 1.35              | 2.55              |
| 500.00          | 470.00 | 6.68                 | 33.24              | 36.29              | 1.40              | 2.64              |
| 581.07          | 551.07 | 6.87                 | 31.64              | 32.31              | 1.52              | 3.03              |
| 677.74          | 647.74 | 7.12                 | 29.02              | 27.88              | 1.69              | 3.49              |
| 774.42          | 744.42 | 7.40                 | 26.95              | 24.13              | 1.93              | 3.33              |
| 871.10          | 841.10 | 7.80                 | 25.84              | 20.52              | 2.20              | 3.00              |
| 967.77          | 937.77 | 8.22                 | 25.87              | 17.33              | 2.45              | 2.97              |
| 1000.00         | 970.00 | 8.38                 | 25.95              | 16.29              | 2.58              | 2.98              |

## Electrical Schematic



For detailed performance specs  
& shopping online see web site

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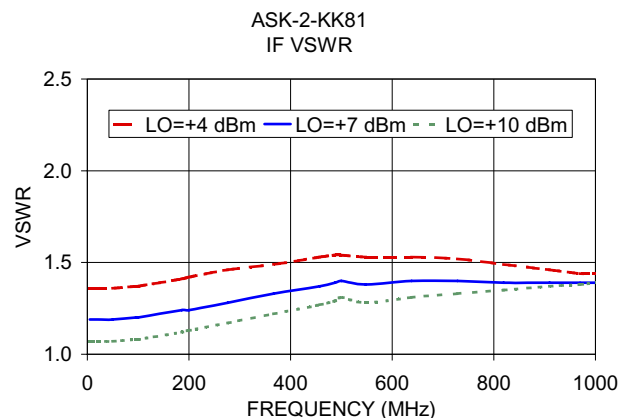
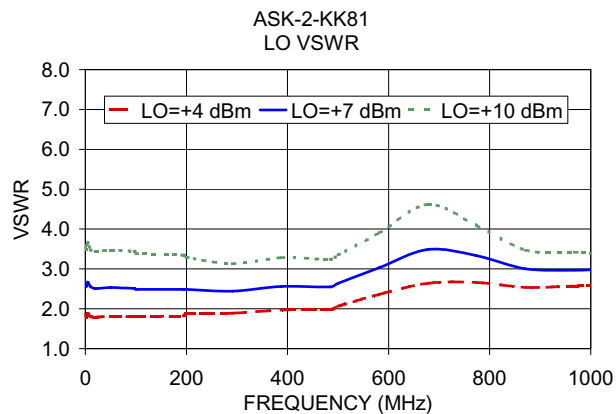
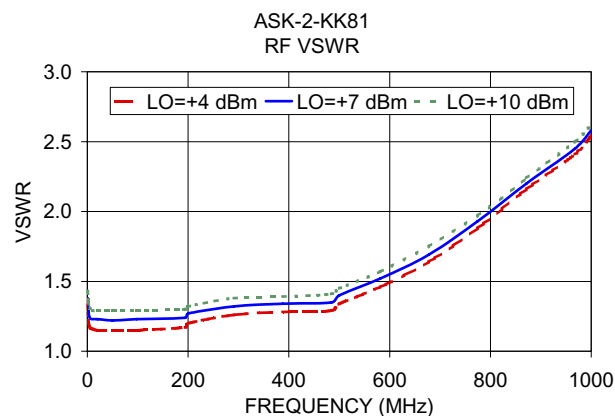
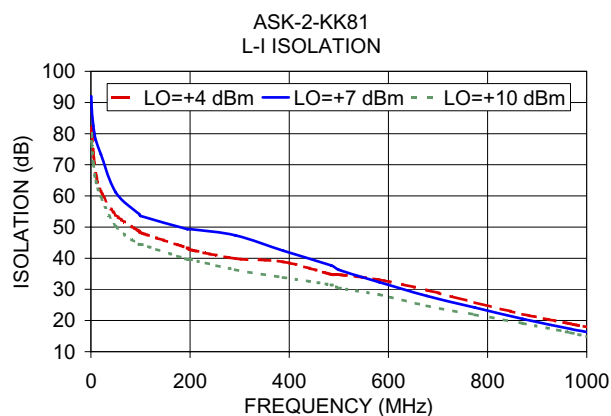
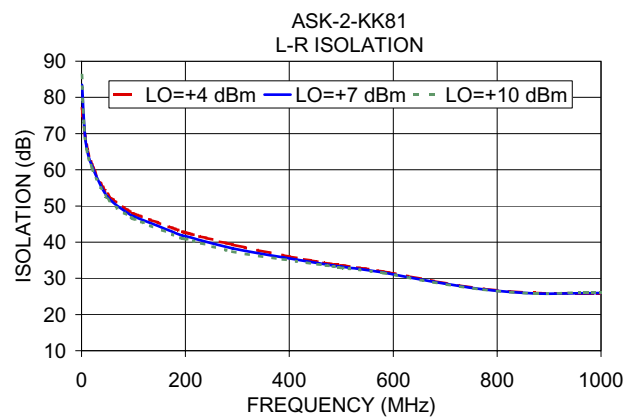
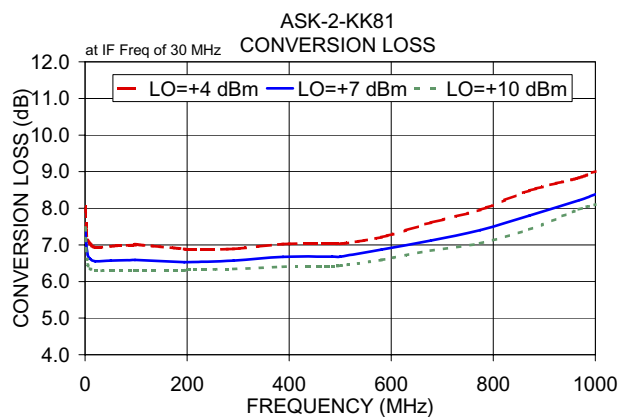
## IF/RF MICROWAVE COMPONENTS

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## Performance Charts

# ASK-2-KK81+ ASK-2-KK81



For detailed performance specs  
& shopping online see web site

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