

# Ceramic Surface Mount Frequency Mixer WIDE BAND

## SIM-73L+

### Level 4 (LO Power +4 dBm) 2400 to 7000 MHz

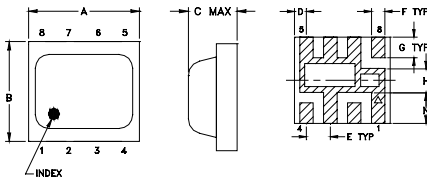
#### Maximum Ratings

|                                                                                                                     |                |
|---------------------------------------------------------------------------------------------------------------------|----------------|
| Operating Temperature                                                                                               | -40°C to 85°C  |
| Storage Temperature                                                                                                 | -55°C to 100°C |
| RF Power                                                                                                            | 50mW           |
| For extended temperature range, consult factory.<br>Permanent damage may occur if any of these limits are exceeded. |                |

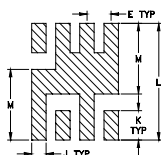
#### Pin Connections

|        |           |
|--------|-----------|
| LO     | 8         |
| RF     | 4         |
| IF     | 2         |
| GROUND | 1,3,5,6,7 |

#### Outline Drawing



#### PCB Land Pattern

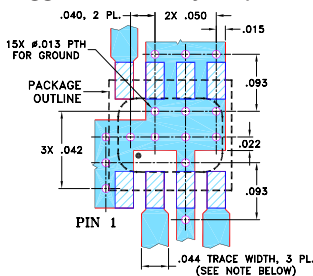


Suggested Layout,  
Tolerance to be within ±0.002

#### Outline Dimensions (inch)

| A    | B    | C    | D     | E     | F     | G     |
|------|------|------|-------|-------|-------|-------|
| .200 | .180 | .087 | .025  | .050  | .028  | .043  |
| 5.08 | 4.57 | 2.21 | 0.64  | 1.27  | 0.71  | 1.09  |
| H    | J    | K    | L     | M     | N     | wt    |
| .050 | .030 | .060 | 0.238 | 0.144 | 0.065 | grams |
| 1.27 | 0.76 | 1.52 | 6.05  | 3.66  | 1.65  | 0.08  |

#### Demo Board MCL P/N: TB-382 Suggested PCB Layout (PL-239)



#### NOTES:

- TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .020" ± .0015"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
  - 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

#### 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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#### Features

- wide bandwidth, 2400 to 7000 MHz
- low conversion loss, 6.2 dB typ.
- excellent IF BW, DC to 3000 MHz
- LTCC double balanced mixer
- tiny size, low profile, 0.08"
- useable as up and down converter
- aqueous washable
- protected by US patent 7,027,795

#### Applications

- satellite up and down converters
- defense radar and communications
- line of sight links
- WIFI
- blue tooth
- VSAT
- ISM

#### Electrical Specifications

| FREQUENCY (MHz)   |         | CONVERSION LOSS* (dB) |          |      | LO-RF ISOLATION (dB) |      | LO-IF ISOLATION (dB) |      | IP3 at center band (dBm) |
|-------------------|---------|-----------------------|----------|------|----------------------|------|----------------------|------|--------------------------|
| LO/RF $f_L - f_U$ | IF      | Typ.                  | $\sigma$ | Max. | Typ.                 | Min. | Typ.                 | Min. |                          |
| 2400-7000         | DC-3000 |                       |          |      |                      |      |                      |      |                          |
| 2400-3200         |         | 6.3                   | 0.1      | 8.5  | 35                   | 28   | 20                   | 14   | 10                       |
| 3200-4200         |         | 6.1                   | 0.1      | 7.8  | 32                   | 27   | 26                   | 20   | 12                       |
| 4200-7000         |         | 6.0                   | 0.2      | 8.5  | 23                   | 17   | 18                   | 11   | 9                        |

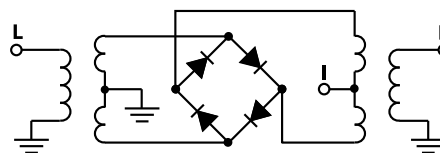
1 dB Compression: +1 dBm typ.

\* Conversion loss at 30 MHz IF.  $\sigma$  is a measure of repeatability from unit to unit.

#### 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 +4dBm             | LO +4dBm           | LO +4dBm           | LO +4dBm          | LO +4dBm          |
| 2400.00         | 2431.00 | 6.89                 | 35.71              | 17.07              | 2.65              | 2.95              |
| 2500.00         | 2531.00 | 6.57                 | 37.21              | 17.53              | 2.82              | 2.44              |
| 2700.00         | 2731.00 | 6.19                 | 39.47              | 19.32              | 2.87              | 1.96              |
| 2900.00         | 2931.00 | 6.05                 | 34.89              | 22.18              | 2.83              | 1.72              |
| 3100.00         | 3131.00 | 5.90                 | 32.79              | 24.37              | 2.73              | 1.74              |
| 3300.00         | 3331.00 | 6.11                 | 32.25              | 27.18              | 2.76              | 1.88              |
| 3500.00         | 3531.00 | 6.29                 | 31.58              | 28.20              | 2.70              | 2.03              |
| 3700.00         | 3731.00 | 6.19                 | 31.36              | 29.17              | 2.41              | 2.29              |
| 4000.00         | 4031.00 | 6.26                 | 33.62              | 35.84              | 2.70              | 2.11              |
| 4400.00         | 4431.00 | 6.28                 | 30.28              | 21.82              | 3.38              | 1.87              |
| 4800.00         | 4831.00 | 7.37                 | 30.30              | 16.05              | 4.73              | 2.03              |
| 5200.00         | 5231.00 | 6.64                 | 28.00              | 17.21              | 3.43              | 2.77              |
| 5600.00         | 5631.00 | 6.18                 | 25.85              | 20.00              | 2.75              | 2.66              |
| 5900.00         | 5931.00 | 5.89                 | 25.08              | 22.79              | 2.20              | 2.60              |
| 6100.00         | 6131.00 | 5.78                 | 24.38              | 26.07              | 2.05              | 3.49              |
| 6300.00         | 6331.00 | 5.73                 | 23.41              | 29.97              | 1.68              | 2.46              |
| 6500.00         | 6531.00 | 5.84                 | 23.16              | 29.13              | 1.61              | 1.72              |
| 6700.00         | 6731.00 | 5.88                 | 23.17              | 26.55              | 1.61              | 1.54              |
| 6900.00         | 6931.00 | 5.73                 | 22.21              | 26.06              | 1.36              | 1.25              |
| 7000.00         | 7031.00 | 5.78                 | 21.68              | 24.72              | 1.44              | 1.20              |

#### Electrical Schematic



CASE STYLE: HV1195

#### +RoHS Compliant

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



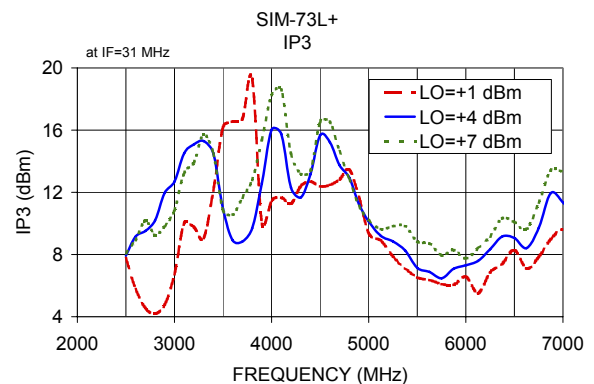
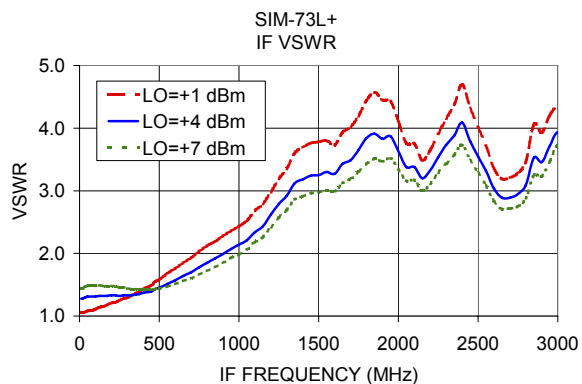
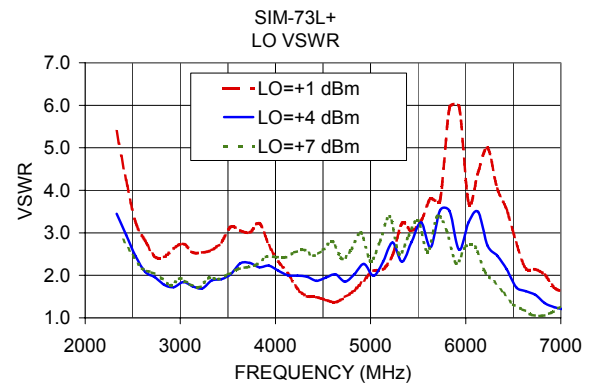
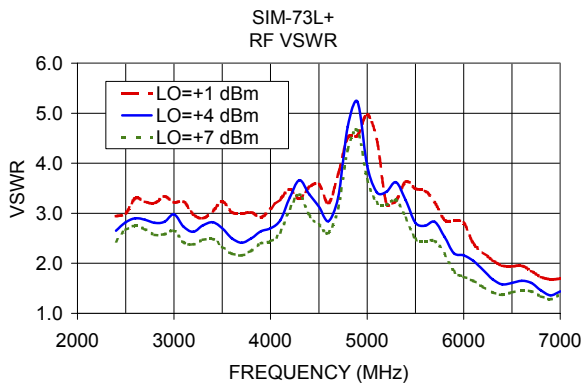
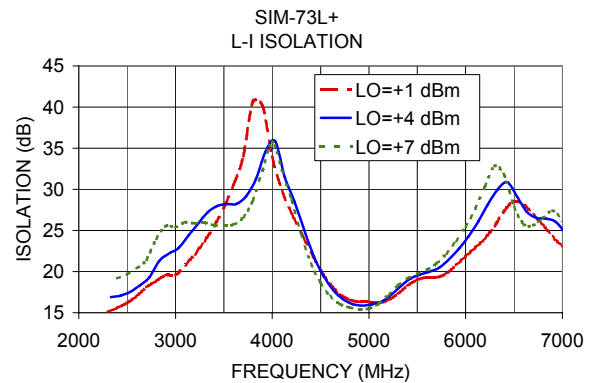
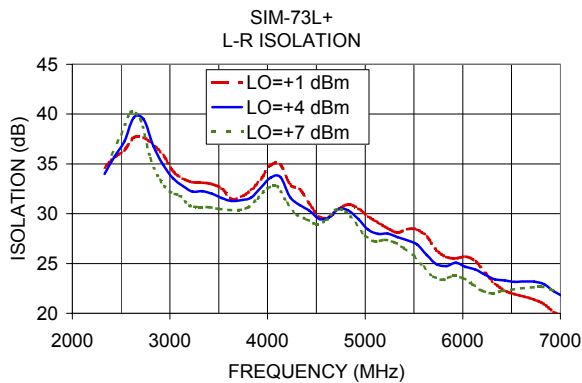
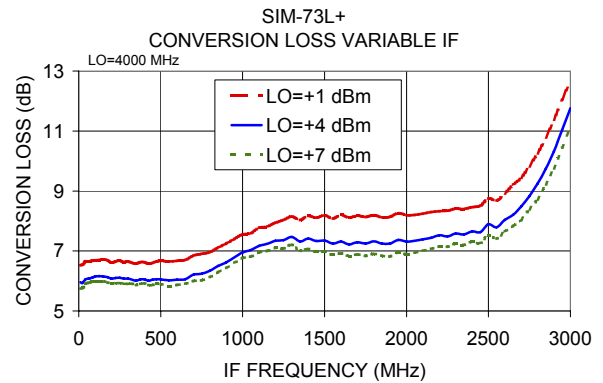
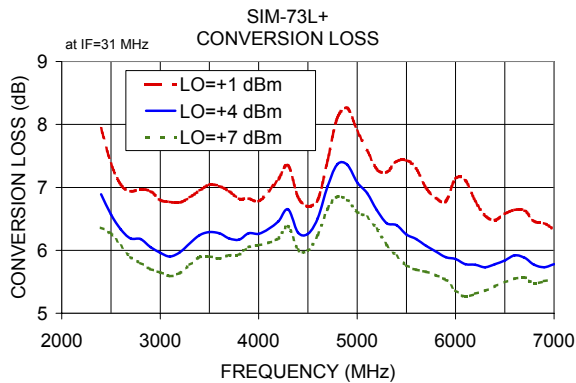
Available Tape and Reel at no extra cost

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



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REV. A  
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DJ/RS/CP  
151001



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