

Ceramic Surface Mount Frequency Mixer WIDE BAND

SIM-43+

Level 7 (LO Power +7 dBm) 750 to 4200 MHz



Generic photo used for illustration purposes only

CASE STYLE: HV1195

Maximum Ratings

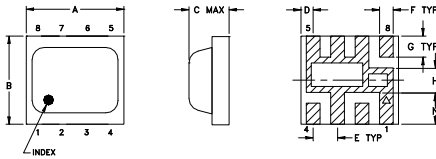
| | |
|-----------------------|----------------|
| Operating Temperature | -40°C to 85°C |
| Storage Temperature | -55°C to 100°C |
| RF Power | 50mW |

For extended temperature range, consult factory.
Permanent damage may occur if any of these limits are exceeded.

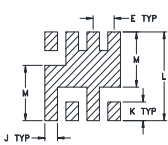
Pin Connections

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

Outline Drawing



PCB Metal Land Pattern

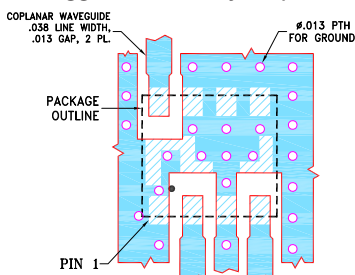


Suggested Layout,
Tolerance to be within ±0.02

Outline Dimensions (inch/mm)

| | | | | | | |
|------|------|--------|------|------|-------|-------|
| A | B | C | D | E | F | G |
| .200 | .180 | .087 | .025 | .050 | .028 | .043 |
| 5.08 | 4.57 | 2.2098 | 0.64 | 1.27 | 0.71 | 1.09 |
| H | J | K | L | M | N | wt |
| .050 | .030 | .043 | .204 | .127 | 0.065 | grams |
| 1.27 | 0.76 | 1.09 | 5.18 | 3.23 | 1.65 | 0.08 |

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



- NOTES:
- TRACE WIDTH AND GAP ARE SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .020±.0015"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH AND GAP 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.

Features

- wide bandwidth, 750 to 4200 MHz
- low conversion loss, 6.1 dB typ.
- excellent L-R isolation, 35 dB typ.
- 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

- cellular
- defense & weather radar
- defense communications
- PCN
- WCDMA
- 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 $f_c - f_u$ | IF | | Typ. | Min. | Typ. | Min. | | |
| 750-4200 | DC-1500 | Typ. | σ | Max. | Typ. | Min. | Typ. | Min. | Typ. |
| 750-2500 | | 6.3 | 0.1 | 7.8 | 37 | 30 | 24 | 11 | 12 |
| 2500-4200 | | 5.7 | 0.1 | 8.1 | 32 | 25 | 20 | 14 | 12 |

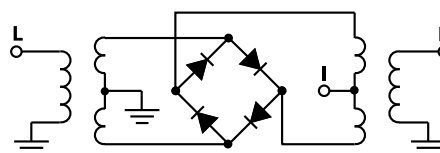
1 dB Compression: +1 dBm typ.

* Conversion loss at 30 MHz IF σ 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) | |
|-----------------|----------------------|--------------------|--------------------|-------------------|-------------------|----------|
| | | | | | | LO +7dBm |
| 740.00 | 771.00 | 6.73 | 40.31 | 25.02 | 2.11 | 7.97 |
| 800.00 | 831.00 | 6.20 | 37.61 | 24.68 | 1.71 | 5.22 |
| 900.00 | 931.00 | 6.25 | 36.50 | 25.33 | 1.97 | 3.55 |
| 1000.00 | 1031.00 | 6.90 | 40.60 | 26.55 | 2.89 | 2.05 |
| 1200.00 | 1231.00 | 6.41 | 42.66 | 31.50 | 3.33 | 1.04 |
| 1400.00 | 1431.00 | 6.28 | 37.92 | 37.58 | 3.68 | 1.43 |
| 1600.00 | 1631.00 | 6.31 | 36.81 | 32.80 | 3.47 | 2.14 |
| 1800.00 | 1831.00 | 6.66 | 38.10 | 22.63 | 3.57 | 2.37 |
| 2000.00 | 2031.00 | 6.62 | 37.15 | 16.13 | 3.31 | 1.77 |
| 2200.00 | 2231.00 | 6.28 | 36.38 | 17.49 | 3.06 | 1.88 |
| 2400.00 | 2431.00 | 5.55 | 35.98 | 20.30 | 2.29 | 2.02 |
| 2700.00 | 2731.00 | 5.33 | 33.12 | 24.66 | 2.02 | 1.74 |
| 3000.00 | 3031.00 | 5.07 | 31.91 | 29.23 | 1.29 | 1.35 |
| 3200.00 | 3231.00 | 5.35 | 31.77 | 28.40 | 1.24 | 1.20 |
| 3400.00 | 3431.00 | 5.63 | 31.28 | 23.23 | 1.55 | 1.18 |
| 3800.00 | 3831.00 | 6.25 | 29.57 | 20.18 | 2.67 | 1.89 |
| 3900.00 | 3931.00 | 6.58 | 30.95 | 20.66 | 3.40 | 2.29 |
| 4000.00 | 4031.00 | 6.97 | 32.47 | 19.31 | 3.53 | 2.54 |
| 4100.00 | 4131.00 | 7.20 | 31.49 | 18.27 | 3.74 | 3.00 |
| 4200.00 | 4231.00 | 7.37 | 32.50 | 17.81 | 4.17 | 3.91 |

Electrical Schematic



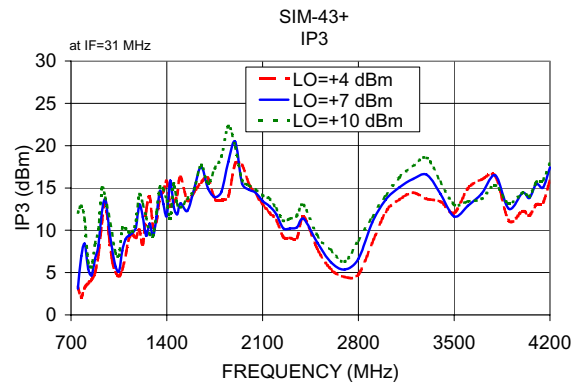
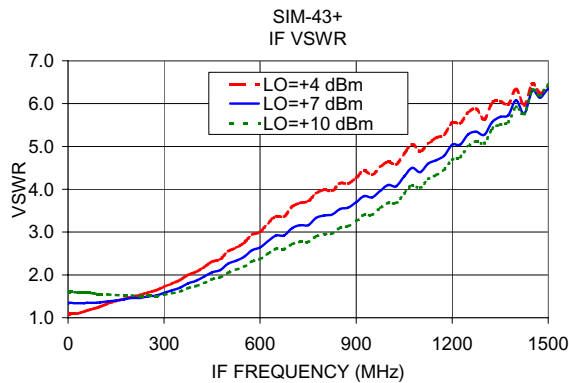
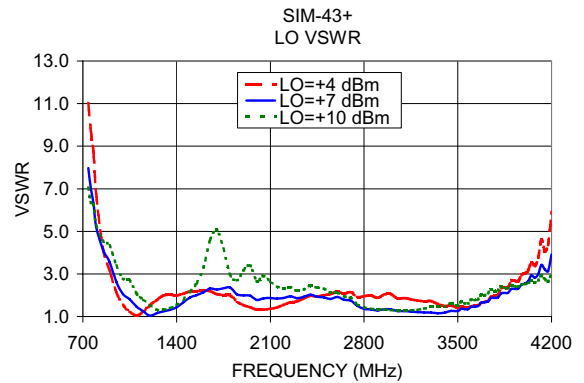
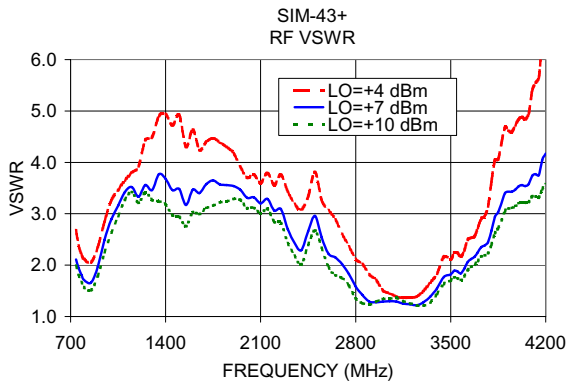
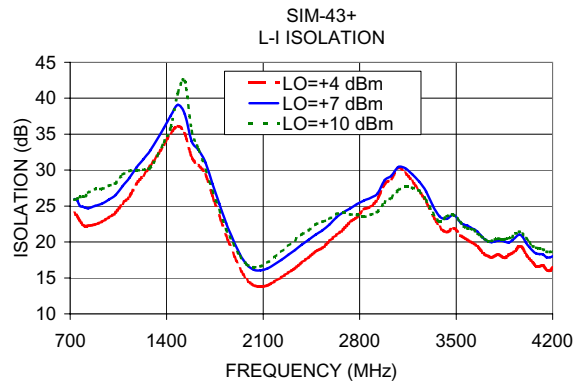
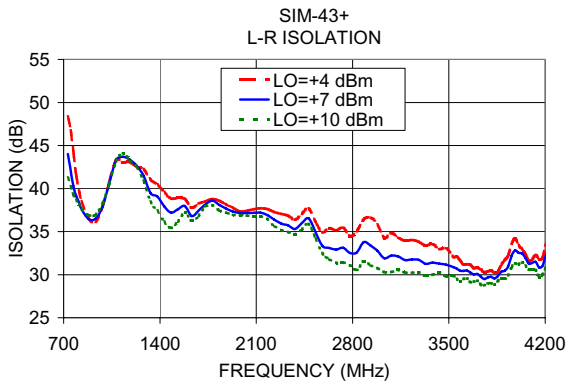
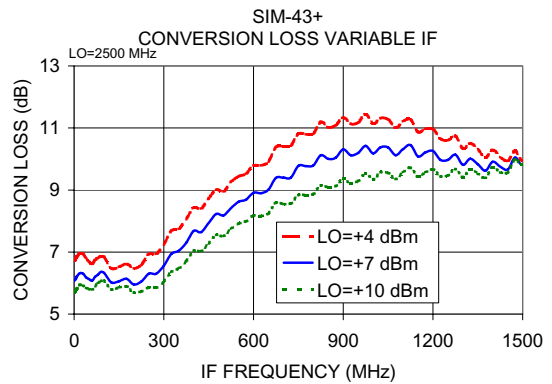
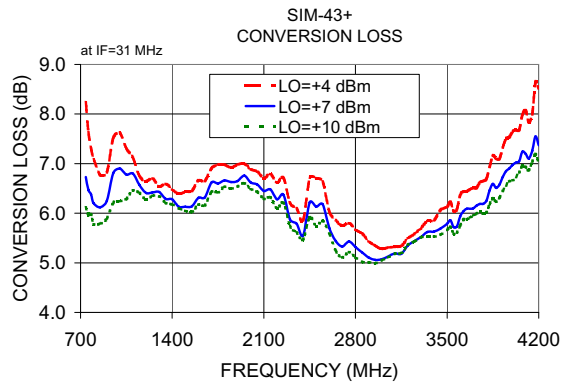
Notes

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