

Load Insensitive Mixer

Rev. V5

Features

- LO 1 to 3400 MHz
- RF 1 to 3400 MHz
- IF 1 to 2000 MHz
- LO Drive +10 dBm (nominal)
- Insensitive to VSWR Mismatch
- High Intercept +18 dBm typical
- RoHS* Compliant and 260°C Reflow Compatible

Description

The SM4T is a termination insensitive mixer, designed for use in military, commercial and test equipment applications. The design utilizes Schottky bridge quad diodes, broadband ferrite baluns and internal loads to provide excellent performance without degradation due to external VSWR mismatches. Environmental screening available to MIL-STD-883, MIL-STD-202, or MIL-DTL-28837, consult factory.

Ordering Information

| Part Number | Package |
|-------------|---------------|
| SM4T | Surface Mount |

Product Image



Absolute Maximum Ratings

| Parameter | Absolute Maximum |
|-----------------------|---|
| Operating Temperature | -54°C to +100°C |
| Storage Temperature | -65°C to +100°C |
| Peak Input Power | +27 dBm max @ +25°C +17 dBm max @ +100°C |
| Peak Input Current | 50 mA DC |

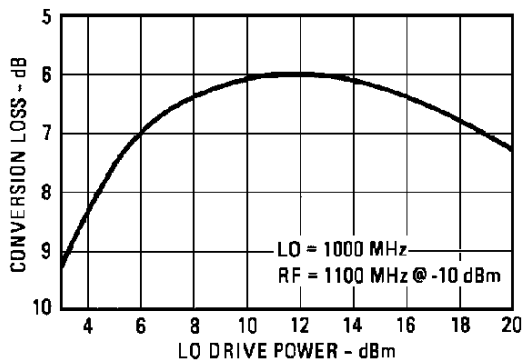
Electrical Specifications: $Z_0 = 50\Omega$ $L_o = +10$ dBm (Downconverter application only)

| Parameter | Test Conditions | Units | Typical | Guaranteed | |
|---------------------------|--|-------|--------------------------------|--------------------|--------------------|
| | | | | +25°C | -54° to +85°C |
| SSB Conversion Loss (max) | fR = 0.005 - 1.0 GHz, fL = 0.005 - 1.0 GHz, fl = 0.001 - 0.5 GHz fR = 0.001 - 3 GHz, fL = 0.001 - 3 GHz, fl = 0.001 - 1.5 GHz fR = 0.001 - 3.4 GHz, fL = 0.001 - 3.4 GHz, fl = 0.001 - 2 GHz | dB | 6.5 8.0 9.0 | 7.5 9.0 10.5 | 8.0 9.5 11.0 |
| SSB Noise Figure | | dB | Within 1 dB of conversion loss | | |
| Isolation, L to R (min) | fL = 0.01 - 1.5 GHz fL = 0.01 - 3.4 GHz | dB | 40 30 | 35 25 | 33 23 |
| Isolation, L to I (min) | fL = 0.01 - 1.5 GHz fL = 0.01 - 3.4 GHz | dB | 40 30 | 35 25 | 33 23 |
| Isolation, R to I (min) | fR = 0.001 - 3.4 GHz | dB | 25 | | |
| 1 dB Conversion Comp. | fL = +10 dBm | dBm | +6 | | |
| Input IP3 | fR1 = 1.9 GHz at -10 dBm, fR2 = 1.91 GHz at -10 dBm, fL = 2 GHz at +10 dBm | dBm | +18 | | |

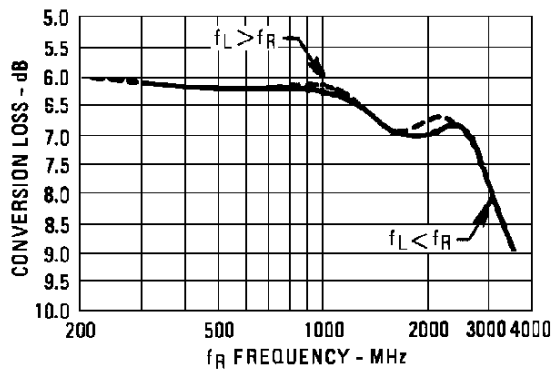
* Restrictions on Hazardous Substances, European Union Directive 2002/95/EC.

Typical Performance Curves

Conversion Loss

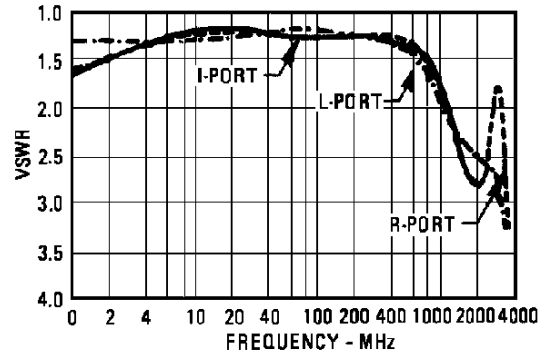


Conversion Loss vs. Drive Level: The minimum recommended drive level is +7 dBm. The maximum recommended drive level is +18 dBm.



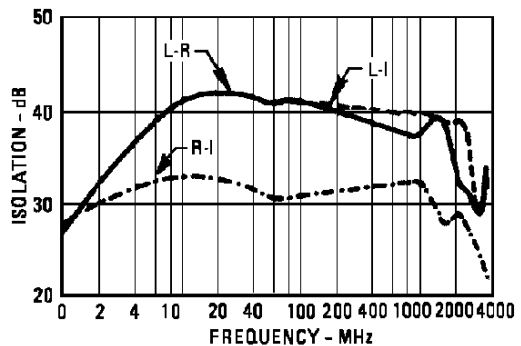
Conversion Loss vs. Input Frequency: Conversion loss of the mixer when used in an SSB system. Data plotted for a f_L of 100 MHz with f_L at +10 dBm.

VSWR



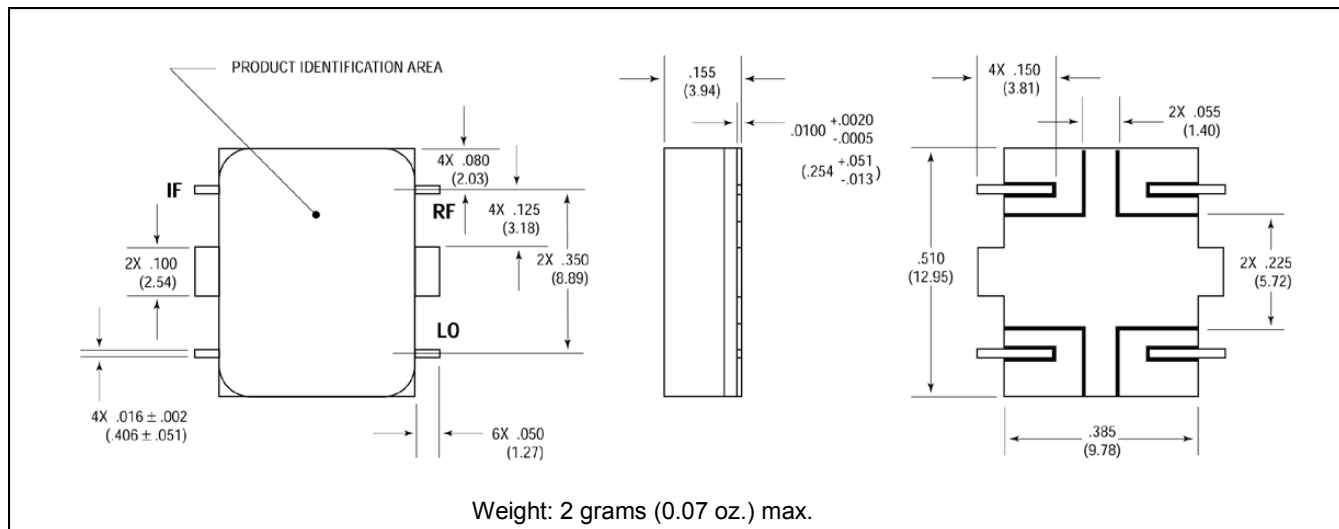
VSWR vs. Frequency: VSWR is the L-, I-, and R-ports in a 50 ohm system with f_L at +10 dBm. R- and I-port VSWR plotted with f_L at 1500 MHz.

Isolation



Isolation vs. Frequency: Level of f_L signal fed through to R- and I-port with respect to the level of the f_L signal at L-port. R-I Isolation plotted with f_L at 1500 MHz.

Outline Drawing: *Lead Free Surface Mount **



* Dimensions are inches (millimeters) ±0.015 (0.38) unless otherwise specified.

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