# SM4T

## 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

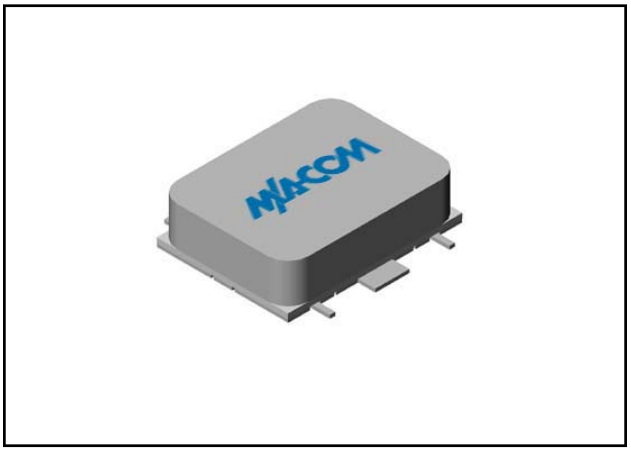
### Description

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 | -54ºC to +100ºC |
| Storage Temperature | -65ºC to +100ºC |
| Peak Input Power | +27 dBm max @ +25ºC<br>+17 dBm max @ +100ºC |
| Peak Input Current | 50 mA DC |

### Electrical Specifications: $Z_0$ = 50Ω Lo = +10 dBm (Downconverter application only)

| Parameter | Test Conditions | Units | Typical | Guaranteed | |
|---|---|---|---|---|---|
| | | | | +25ºC | -54º to +85ºC |
| SSB Conversion Loss (max) | fR = 0.005 - 1.0 GHz, fL = 0.005 - 1.0 GHz, fI = 0.001 - 0.5 GHz<br>fR = 0.001 - 3 GHz, fL = 0.001 - 3 GHz , fI = 0.001 - 1.5 GHz<br>fR = 0.001 - 3.4 GHz, fL = 0.001 - 3.4 GHz, fI = 0.001 - 2 GHz | dB | 6.5<br>8.0<br>9.0 | 7.5<br>9.0<br>10.5 | 8.0<br>9.5<br>11.0 |
| SSB Noise Figure | | dB | Within 1 dB of conversion loss | | |
| Isolation, L to R (min) | fL = 0.01 - 1.5 GHz<br>fL = 0.01 - 3.4 GHz | dB | 40<br>30 | 35<br>25 | 33<br>23 |
| Isolation, L to I (min) | fL = 0.01 - 1.5 GHz<br>fL = 0.01 - 3.4 GHz | dB | 40<br>30 | 35<br>25 | 33<br>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,<br>fR2 = 1.91 GHz at –10 dBm,<br>fL = 2 GHz at +10 dBm | dBm | +18 | | |

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





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• **India** Tel: +91.80.43537383 • **China** Tel: +86.21.2407.1588
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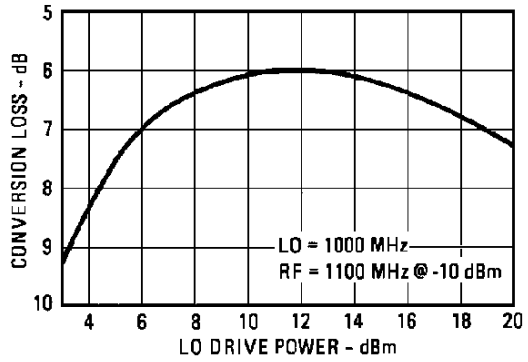
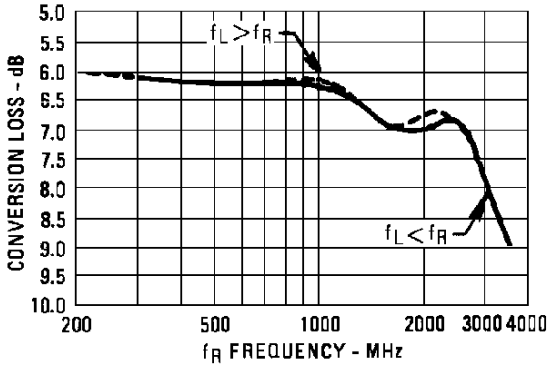
## Typical Performance Curves

### Conversion Loss

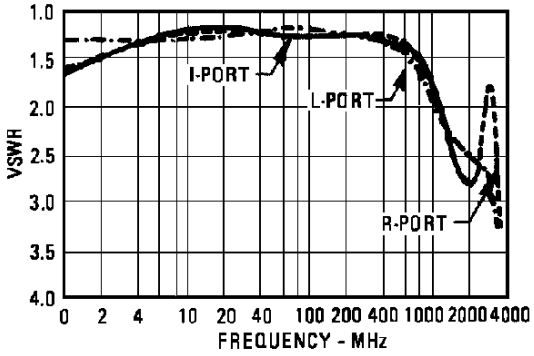



***Conversion Loss vs. Drive Level:*** The minimum recommended drive level is +7 dBm. The maximum recommended drive level is +18 dBm.



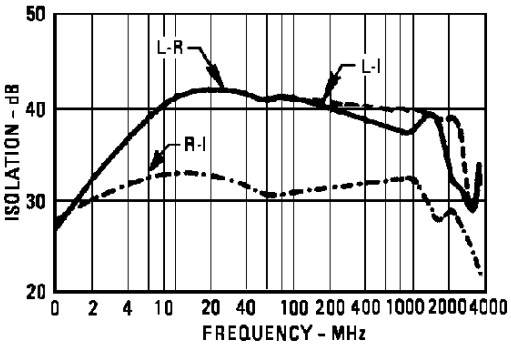

***Conversion Loss vs. Input Frequency:*** Conversion loss of the mixer when used in an SSB system. Data plotted for a $f_I$ of 100 MHz with $f_L$ at +10 dBm.

### 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.





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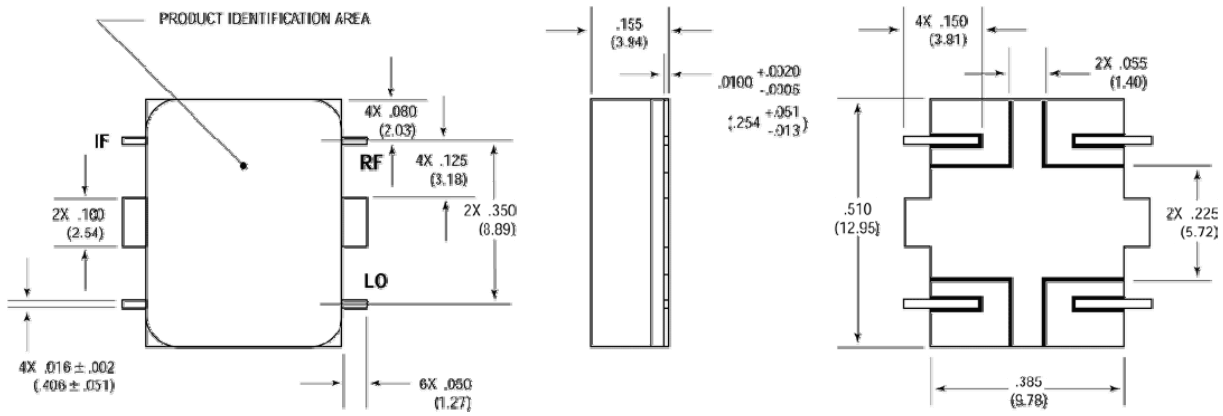
## Outline Drawing: *Lead Free* Surface Mount *




Weight: 2 grams (0.07 oz.) max.

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





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