# Load Insensitive Mixer



Rev. V4

#### 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 (typ)
- +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

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

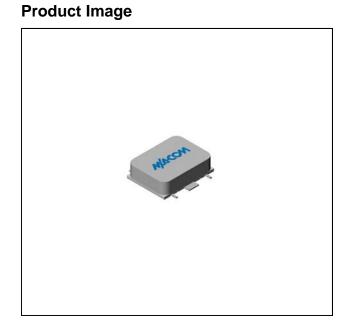
Parameter	Test Conditions	Units	Typical	Guaranteed	
Farameter Test Conditions		Units		+25ºC	-54º to +85ºC
SSB Conversion Loss (max)	fR = 0.005 to 1.0 GHz, fL = 0.005 to 1.0 GHz, fl = 0.001 to 0.5 GHz fR = 0.001 to 3 GHz, fL = 0.001 to 3 GHz , fl = 0.001 to 1.5 GHz fR = 0.001 to 3.4 GHz, fL = 0.001 to 3.4 GHz, fl = 0.001 to 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		
	fL = 0.01 to 1.5 GHz fL = 0.01 to 3.4 GHz	dB	40 30	35 25	33 23
Isolation, L to I (min)	fL = 0.01 to 1.5 GHz fL = 0.01 to 3.4 GHz	dB	40 30	35 25	33 23
Isolation, R to I (min)	fR = 0.001 to 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		



- ADVANCED: Data Sheets contain information regarding a product M/A-COM Technology Solutions is considering for development. Performance is based on target specifications, simulated results, and/or prototype measurements. Commitment to develop is not guaranteed. PRELIMINARY: Data Sheets contain information regarding a product M/A-COM Technology
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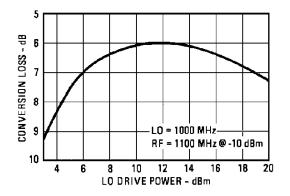


# SM4T

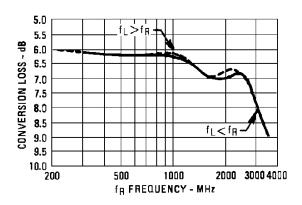


### **Typical Performance Curves**

#### Conversion Loss

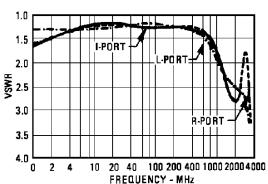


*Conversion Loss vs. Drive Level:* The minimum recommended drive level is +7 dBm. The maximum recommended drive level is +18 dBm.



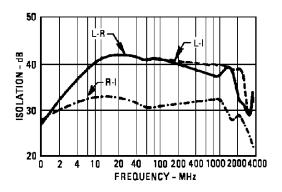
Conversion Loss vs. Input Frequency: Conversion loss of the mixer when used in an SSB system. Data plotted for a  $f_{\parallel}$ of 100 MHz with  $f_{\parallel}$  at +10 dBm.





**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  $f_{1}$  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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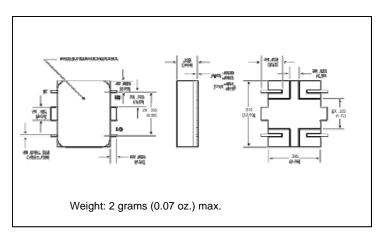
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### **Absolute Maximum Ratings**

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	

## **Outline Drawing: Surface Mount \***



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

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