## Termination Insensitive Mixer

## Features

- LO 1 TO 3400 MHz
- RF 1 TO 3400 MHz
- IF 1 TO 2000 MHz
- LO DRIVE +23 dBm (NOMINAL)
- HIGH INTERCEPT + 29 dBm (TYP.)


## Description

The CSM4TH is a termination insensitive mixer, designed for use in military, wireless, 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. The use of high temperature solder and welded assembly processes used internally makes it ideal for use in semi-automated and automated assembly. Environmental screening available to MIL-STD-883, MIL-STD -202, or MIL-DTL-28837, consult factory.

## Ordering Information

| Part Number | Package |
| :---: | :---: |
| CSM4TH | Surface Mount |

## Product Image



Electrical Specifications: $Z_{0}=50 \Omega$ Lo $=+23 \mathrm{dBm}$ (Downconverter application only)

| Parameter | Test Conditions | Units | Typical | Guaranteed |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | $+25^{\circ} \mathrm{C}$ | $-40^{\circ}$ to $+85^{\circ} \mathrm{C}$ |
|  <br> SSB Noise Figure (max) | $\begin{aligned} & \mathrm{fR}=1 \text { to } 2400 \mathrm{MHz}, \mathrm{fL}=1 \text { to } 2400 \mathrm{MHz}, \mathrm{fl}=1 \text { to } 2000 \mathrm{MHz} \\ & \mathrm{fR}=1 \text { to } 3400 \mathrm{MHz}, \mathrm{fL}=1 \text { to } 3400 \mathrm{MHz}, \mathrm{fl}=1 \text { to } 2000 \mathrm{MHz} \end{aligned}$ | $\begin{aligned} & \mathrm{dB} \\ & \mathrm{~dB} \end{aligned}$ | $\begin{aligned} & 8.0 \\ & 9.0 \end{aligned}$ | $\begin{gathered} 9.5 \\ 10.5 \end{gathered}$ | $\begin{aligned} & 10.0 \\ & 11.0 \end{aligned}$ |
| L-R Isolation (min) | $\begin{gathered} \mathrm{fL}=1 \text { to } 2400 \mathrm{MHz} \\ \mathrm{fL}=2400 \text { to } 3400 \mathrm{MHz} \end{gathered}$ | dB | $\begin{aligned} & 35 \\ & 25 \end{aligned}$ | $\begin{aligned} & 26 \\ & 20 \end{aligned}$ | $\begin{aligned} & 24 \\ & 18 \end{aligned}$ |
| L - I Isolation (min) | $\begin{gathered} \mathrm{fL}=1 \text { to } 2400 \mathrm{MHz} \\ \mathrm{fL}=2400 \text { to } 3400 \mathrm{MHz} \end{gathered}$ | dB | $\begin{aligned} & 38 \\ & 25 \end{aligned}$ | $\begin{aligned} & 27 \\ & 20 \end{aligned}$ | $\begin{aligned} & 25 \\ & 18 \end{aligned}$ |
| R - I Isolation (min) | $f \mathrm{R}=1$ to 3400 MHz | dB | 25 |  |  |
| 1 dB Conversion Comp. | $f L=+23 \mathrm{dBm}$ | dBm | +19 |  |  |
| Input IP3 | $\mathrm{fL}=100$ to $3400 \mathrm{MHz}, \mathrm{fl}=50$ to $2000 \mathrm{MHz}, \mathrm{fR}=100$ to 3400 MHz | dBm | +28 |  |  |
| R-Port VSWR | $f \mathrm{R}=1$ to 3400 MHz |  | 2.0:1 |  |  |
| L-Port VSWR | $\mathrm{fL}=1$ to 3400 MHz |  | 2.0:1 |  |  |
| I-Port VSWR | $\mathrm{fl}=1$ to 2000 MHz |  | 2.0:1 |  |  |

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## Typical Performance Curves




Conversion Loss vs. RF Frequency


LO-Port VSWR vs. Frequency


IF-Port VSWR vs. Frequency


RF-Port VSWR vs. Frequency


Outline Drawing: Surface Mount *


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


## Absolute Maximum Ratings

| Parameter | Absolute Maximum |
| :---: | :---: |
| Operating Temperature | $-54^{\circ} \mathrm{C}$ to $+85^{\circ} \mathrm{C}$ |
| Storage Temperature | $-65^{\circ} \mathrm{C}$ to $+100^{\circ} \mathrm{C}$ |
| Peak Input Power | $+26 \mathrm{dBm} \max @+25^{\circ} \mathrm{C}$ <br> $+23 \mathrm{dBm} \max @+85^{\circ} \mathrm{C}$ |
| Peak Input Current | 50 mA DC |

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