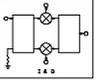
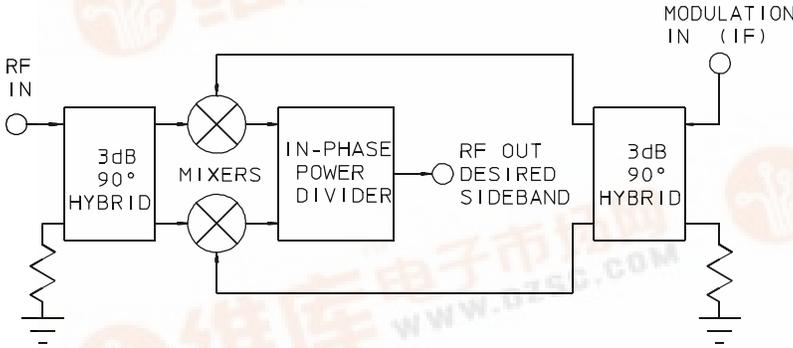


## SSF-2 Series

## SINGLE SIDEBAND MODULATOR

10 to 4000 MHz / Image Rejection to 30 dB / Internal Second Quad / High Sideband Rejection



### PRINCIPAL SPECIFICATIONS

Model Number	LO Center Frequency, $f_0$	Bandwidth, MHz	Outline Style
SSF-2F-*** /	10 - 1000 MHz	10% of $f_0$	F
SSF-2L-*** /	1000 - 4000 MHz	10% of $f_0$	L

A complete Model Number will be assigned with center frequency (\*\*= $f_0$ ) and slash number, once a full specification is established with factory.

### GENERAL SPECIFICATIONS

(when used as an Up Converter)

#### RF/IF Input Characteristics

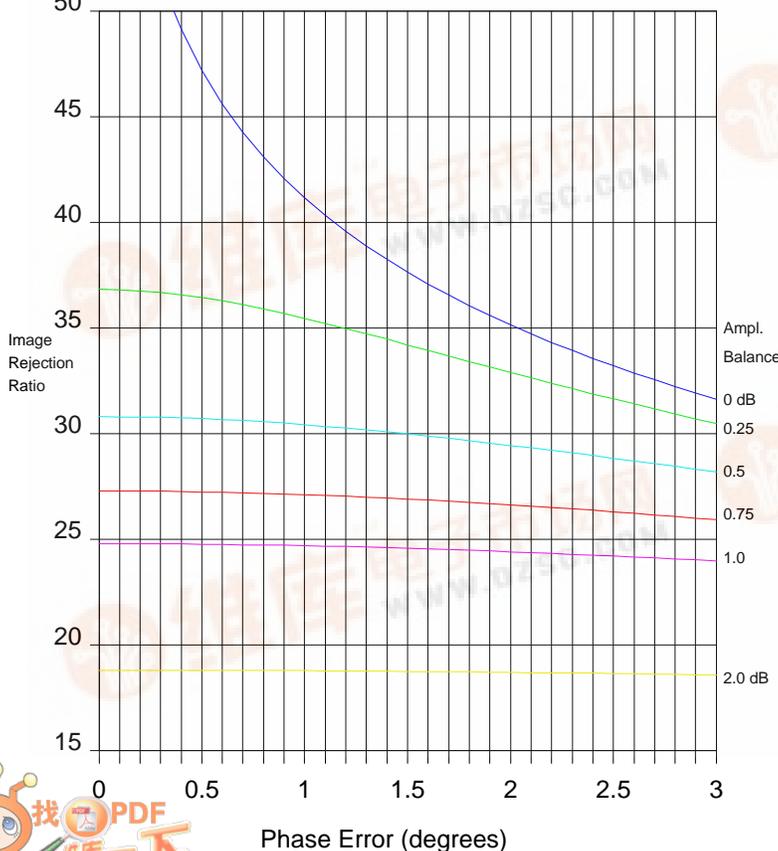
Impedance:	50 $\Omega$ nom.
VSWR:	1.5:1 max.
RF Power Level:	+10 dBm
IF Power Level:	0 dBm nom.
IF Bandwidth:	up to an octave
RF Bandwidth:	10%

#### Output Characteristics

Conversion Loss:	9 dB max.
Sideband Suppression:	25 dB min.
Operating Temperature:	-55 to +85°C

### SIDEBAND REJECTION

for a given Amplitude and Phase Balance



#### General Notes:

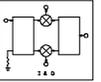
1. Single Sideband Modulators are integrated networks composed of an in-phase power divider, two double balanced mixers and two 90° quadrature hybrids. The primary function of the circuit is to amplitude modulate a carrier such that all the energy is in either the upper or lower sideband.
2. These units are especially useful in modulator applications where the desired and undesired RF sidebands are so close in frequency that it is not practical to use a bandpass filter to separate them or where minimum group delay is required.
3. By vector subtraction, the undesired sideband is canceled within the unit (internally terminated) and the desired sideband is reinforced at the output. The level of cancellation is usually expressed as sideband rejection ratio in dB.
4. The schematic diagram shows how the desired receiver signals from the two mixers are combined in-phase at the *real* (RF/LO) port, while the undesired spurious signals cancel each other out. At the image port the reverse occurs and the unwanted sideband signal is absorbed by the load resistor. (Continued, next page)



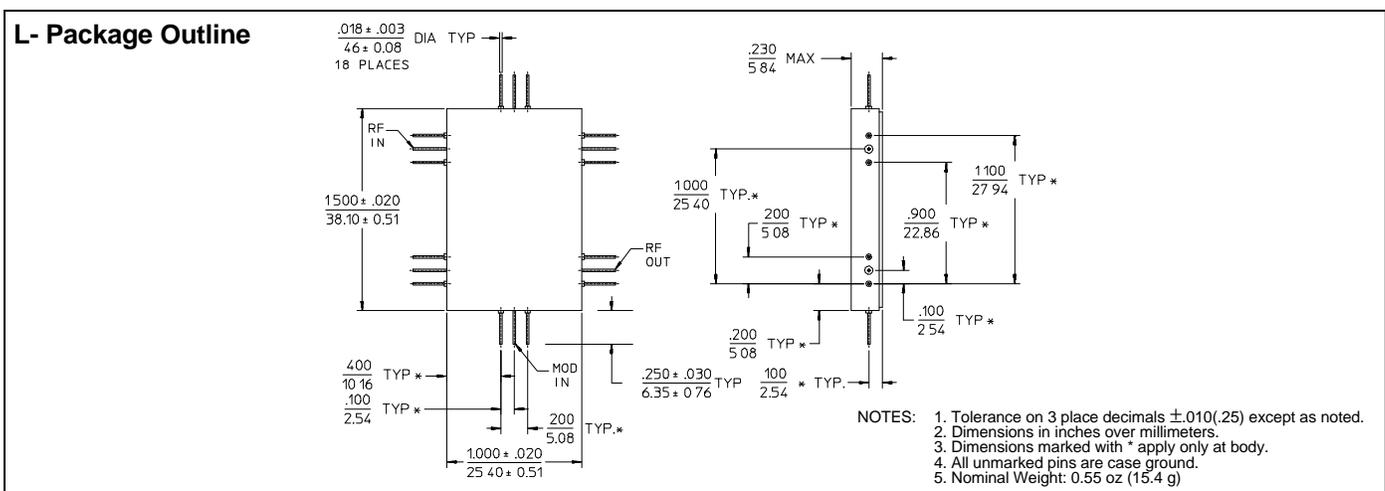
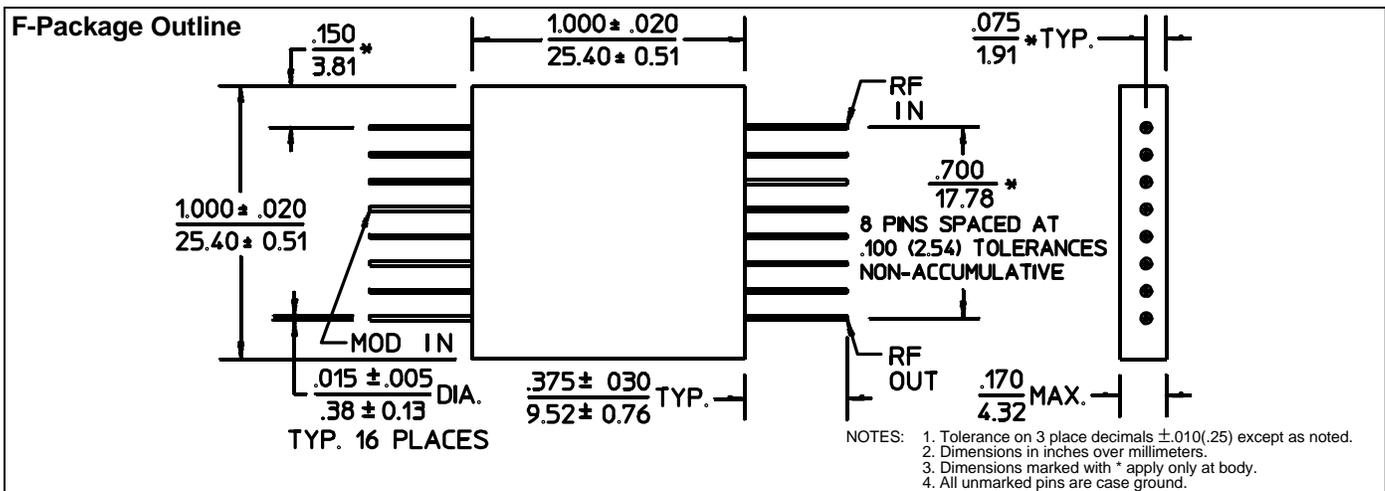
# SSF-2 Series

# SINGLE SIDEBAND MODULATOR

10 to 4000 MHz / Image Rejection to 30 dB / Internal Second Quad / High Sideband Rejection



## SSF-2L series



### General Notes (Continued)

5. From a practical standpoint, there are many considerations affecting sideband suppression, such as the phase and amplitude balances of the individual components chosen, mixer sensitivity, VSWR interaction, bandwidth, etc.
6. The most useful guide to how much signal rejection may be expected for a given phase error and amplitude balance is shown in the graph. These curves allow determination of the trade-off between the allowable phase and amplitude errors for a desired image rejection ratio.
7. Merrimac offers a wide range of Single Sideband Modulators to a variety of specifications. The parameters quoted for the SSF series are a basis only for more exacting requirements. The minimum image rejection and package size will be impacted most by an increase in bandwidth requirements.
8. Merrimac Single Sideband Modulators comply with applicable portions of MIL-M-28837 and can be supplied screened for additional specifications you specify for military and aerospace applications requiring higher reliability.