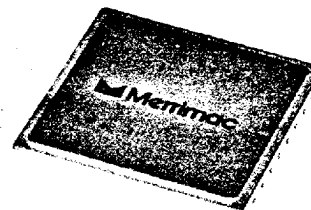
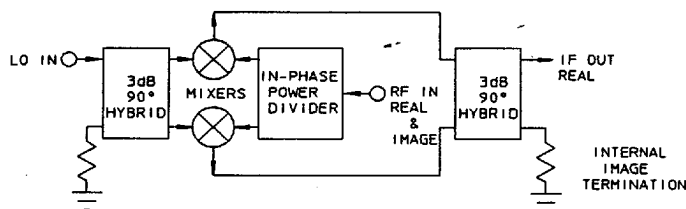




IMF-2 series

IMAGE REJECT MIXERS

High Rejection Ratios



IMF-2F series

- Custom frequencies from 10 to 4000 MHz
- Image Rejection up to 30 dB
- Includes internal summing quadrature
- Low profile, high reliability package

2.45

| Model Number | LO Center Frequency, f_0 | Bandwidth MHz | Outline Style |
|--------------|----------------------------|---------------|---------------|
| IMF-2F-***/ | 10 - 1000 MHz | 10% of f_0 | F |
| IMF-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.

Image Rejection Mixers are integrated networks composed of an in-phase power divider, two double balanced mixers and two 90° quadrature hybrids.

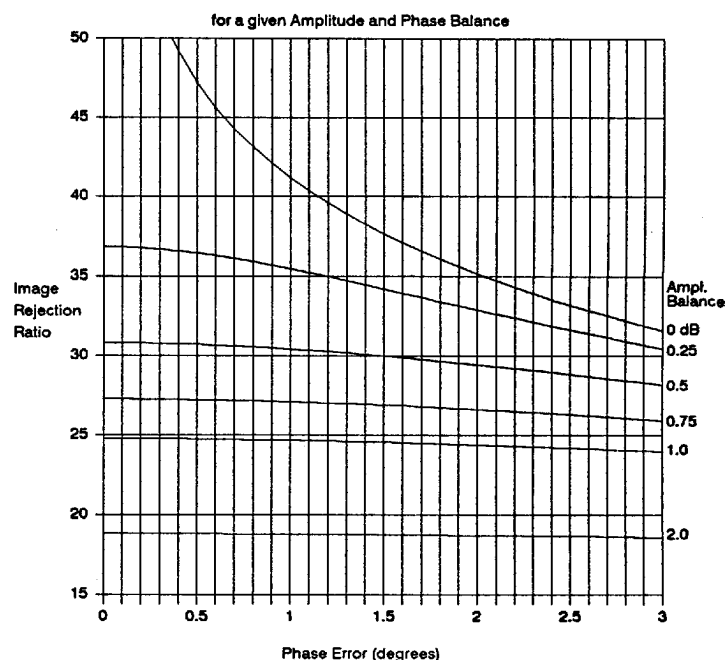
The primary function of the circuit is to separate a desired (real) signal from its image signal. The Image Reject Mixer is especially useful in receiving applications where the desired and undesired RF sidebands are so close in frequency that it is not practical to use a bandpass filter to separate them.

An *image condition* occurs during mixing when both the sum and difference output signals appears in the intermediate frequency band. In the image reject mixer the image is separated from the real signal by vector subtraction, with the level of cancellation obtained usually expressed as a rejection ratio in dB.

The schematic diagram shows how the desired receiver signals from the two mixers are combined in-phase at the *real* 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.

From a practical standpoint, there are many considerations affecting image rejection, such as the phase and amplitude balances of the individual components chosen, mixer sensitivity, VSWR interaction, bandwidth, etc. 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.

IMAGE REJECTION



MERRIMAC offers a wide range of Image Reject Mixers to a variety of specifications. The parameters quoted for the flatpack IMF series are a basis only for more exacting requirements. It should be noted that the minimum image rejection and package size will be impacted most by an increase in bandwidth requirements.

All Merrimac Image Reject Mixers are designed for high reliability in accordance with MIL-M-28837 requirements. All may be supplied screened to meet specific military and space applications.

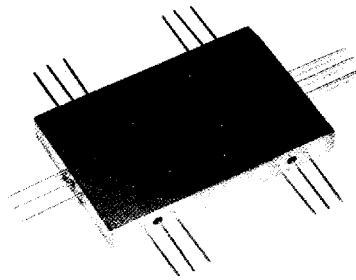
41 Fairfield Place, West Caldwell, N.J. 07006 • (201) 575-1300 • FAX: (201) 575-0531



IMF-2 series

IMAGE REJECT MIXERS

High Rejection Ratios



IMF-2L series

TYPICAL SPECIFICATIONS (as a Down Converter)

RF/LO Input Characteristics

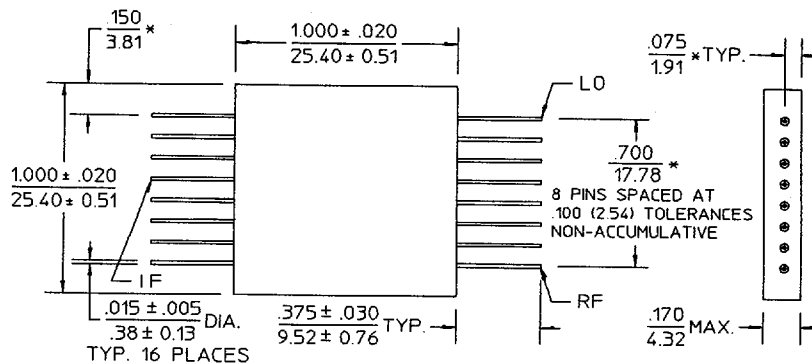
| | |
|-----------------|-------------------|
| Impedance: | 50 Ω nom.. |
| VSWR: | 1.5:1 max. |
| RF Power Level: | 0 dBm nom. |
| LO Power Level: | +10 dBm nom. |
| IF Bandwidth: | up to an octave |
| RF Bandwidth: | up to an octave |
| LO Bandwidth: | 10% |

Output Characteristics

| | |
|--------------------|---------------|
| Conversion Loss: | 9 dB max. |
| Image Rejection: | 25 dB min. |
| Temperature Range: | -55° to +85°C |

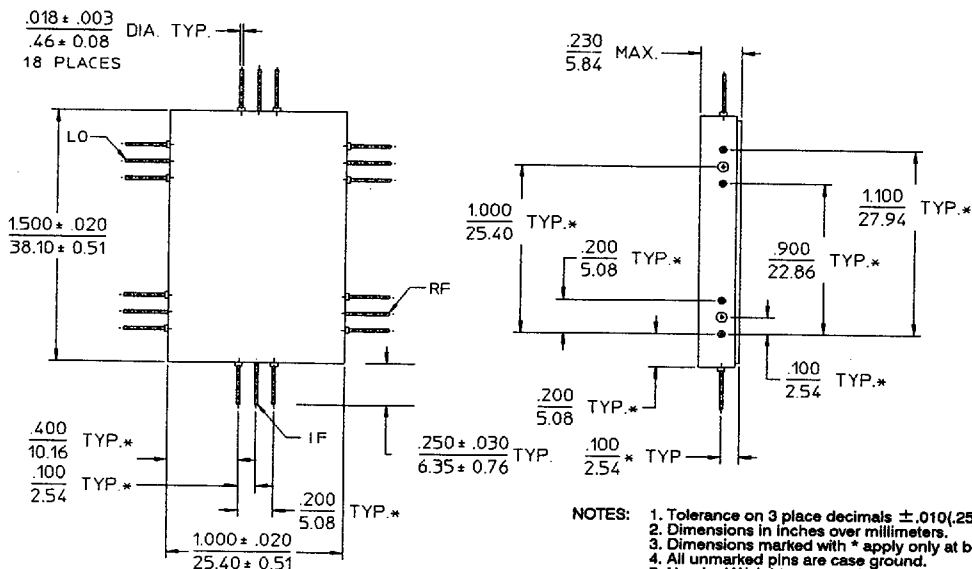
Contact Merrimac for further details. (1/92)

F-Package Outline



- NOTES:
1. Tolerance on 3 place decimals $\pm .010(.25)$ except as noted.
 2. Dimensions in inches over millimeters.
 3. Dimensions marked with * apply only at body.
 4. All unmarked pins are case ground.
 5. Nominal Weight: 0.35 oz. (10 g).

L- Package Outline



- NOTES:
1. Tolerance on 3 place decimals $\pm .010(.25)$ except as noted.
 2. Dimensions in inches over millimeters.
 3. Dimensions marked with * apply only at body.
 4. All unmarked pins are case ground.
 5. Nominal Weight: 0.55 oz. (15.4 g).

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