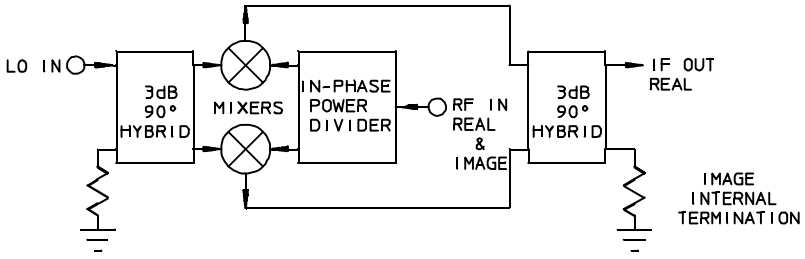
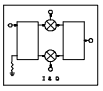
**Custom Component**

# IMM & IMB Series IMAGE REJECT MIXERS

***20 to 1000 MHz / Image Rejection Up to 30 dB / Internal Summing Quad Hybrid / Connectorized Pkg***



## *PRINCIPAL SPECIFICATIONS*

| SMA Model* Number | BNC Model* Number | RF Center Frequency, $f_o$ | LO Bandwidth |
|---|---|---|---|
| IMM-2D-***/ | IMB-2D-***/ | 20 to 1000 MHz | 10% of $f_o$ |
| IMM-4D-***/ | IMB-4D-***/ | 20 to 300 MHz | Octave |

### *Model Numbering Note*

**A complete model number shall be assigned upon establishment of a full performance specification by the factory in conjunction with the customer. The model number shall include an indicator of the center frequency ($f_0$) and a special "slash" number to distinguish it from related units. The format of model numbers is as above where *** = $f_0$.*

## *GENERAL SPECIFICATIONS*

| | |
|---|---|
| Impedance: | 50 Ω |
| VSWR: | 1.5:1 max. |
| RF Input Power: | 0 dBm max. |
| LO Power: | +10 t+13 dBm nom. |
| Conversion Loss: | 6 dB typ, 9 dB max. |
| Image Rejection: | 25 dB typ, 20 dB min. |
| IF Band: | (See worksheet) |
| RF Frequencies: | (See worksheet) |
| LO Bandwidth: | (See worksheet) |
| Weight: | 7.9 oz ( 223 g) |
| Operating Temp: | – 55 to + 85°C |

**General Notes:**

1. Image Rejection Mixers are integrated networks composed of an in-phase power divider, two double balanced mixers and two 90° quadrature hybrids. Their principal function is the separation of two signals closely spaced in the frequency domain in, for example, a receiver's IF stage.

2. An *image* is a spurious signal occurring in a receiver's IF stage together with the *real* signal. Both result from the mixing process. Normally, a passband filter selects the real signal while rejecting the image. However, when the frequency difference between the real and image signals is relatively small, conventional bandpass filters are generally inadequate.

3. In an Image Reject Mixer, the image is separated from the real signal by vector subtraction. The resulting attenuation of the image is usually expressed as the "Image Rejection Ratio'' in dB. (See graph).

4. Several factors affect attainable image rejection. For example, image rejection is a function of bandwidth, the phase and amplitude balances of the individual components chosen, mixer sensitivity and VSWR interaction among other factors. The graph allows estimating attainable image rejection under the variables of phase error and amplitude imbalance.

5. All Merrimac Image Reject Mixers comply with applicable sections of MIL-M-28837 and may be supplied screened for compliance with additional specifications for military and space applications requiring the highest reliability.

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