

## Double-Balanced Mixer

Rev. V2

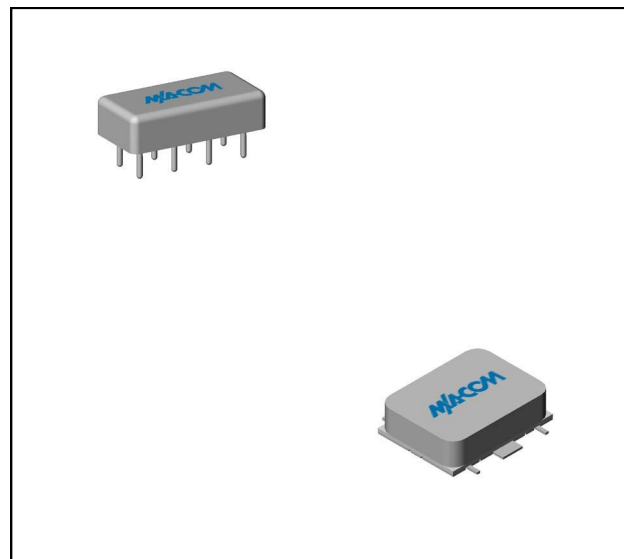
### Features

- LO 5 to 750 MHz
- RF 5 to 500 MHz
- IF DC to 500 MHz
- LO Drive +20 dBm (nominal)
- High Intercept Point +28.5 dBm (typ)
- High Isolation 45 dB (typ)

### Description

The M6EH/SM6EH is a double balanced mixer, designed for use in military, commercial and test equipment applications. The design utilizes Schottky ring quad diodes and broadband ferrite baluns to attain excellent performance. This mixer can also be used as a phase detector and/or bi-phase modulator since the IF port is DC coupled to the diodes. Environmental screening available to MIL-STD-883, MIL-STD-202, or MIL-DTL-28837, consult factory.

### Product Image



### Ordering Information

| Part Number | Package       |
|-------------|---------------|
| M6EH        | Relay Header  |
| SM6EH       | Surface Mount |

### Electrical Specifications: $Z_0 = 50\Omega$ $L_o = +20$ dBm (Downconverter application only)

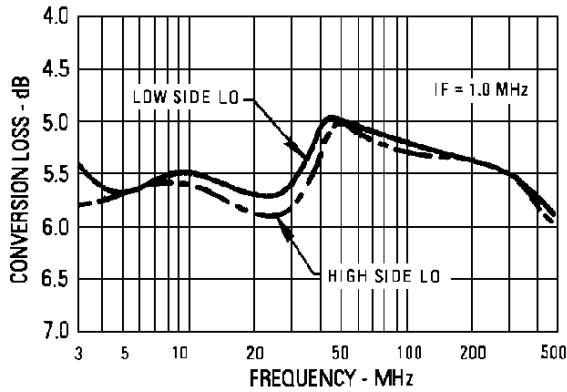
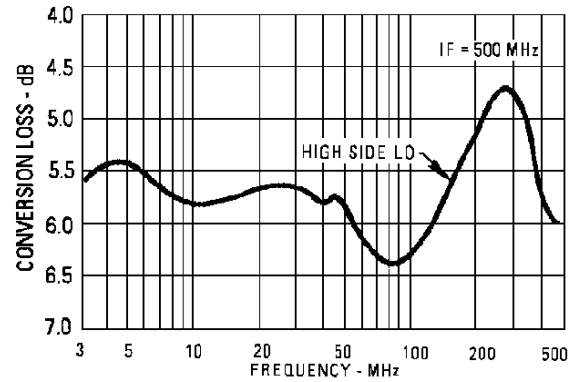
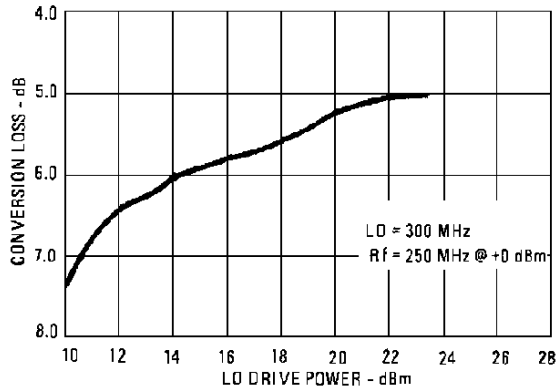
| Parameter                 | Test Conditions   | Units | Typical | Guaranteed |               |
|---------------------------|---|-------|---------|------------|---------------|
|                           |   |       |         | +25°C      | -54° to +85°C |
| SSB Conversion Loss (max) | fR = 10 to 100 MHz, fL = 10 to 100 MHz, fI = 10 to 100 MHz<br>fR = 100 to 250 MHz, fL = 100 to 250 MHz, fI = 10 to 250 MHz<br>fR = 5 to 500 MHz, fL = 5 to 750 MHz, fI = 0.5 to 500 MHz | dB    | 5.5     | 7.0        | 7.3           |
|                           |   |       | 6.0     | 7.5        | 7.8           |
|                           |   |       | 6.5     | 8.5        | 8.8           |
| SSB Noise Figure (max)    | Within 1 db of conversion loss  | dB    | —       | —          | —             |
| Isolation, L to R (min)   | fL = 5 to 200 MHz<br>fL = 200 to 500 MHz<br>fL = 500 to 750 MHz   | dB    | 60      | 40         | 39            |
|                           |   |       | 45      | 30         | 29            |
|                           |   |       | 35      | 20         | 19            |
| Isolation, L to I (min)   | fL = 5 to 200 MHz<br>fL = 200 to 500 MHz<br>fL = 500 to 750 MHz   | dB    | 55      | 40         | 39            |
|                           |   |       | 40      | 25         | 24            |
|                           |   |       | 30      | 18         | 17            |
| 1 dB Conversion Comp.     | fL = +20 dBm  | dBm   | +13     |            |               |
| Input IP3                 | fR1 = 250 MHz 0 dBm, fR2 = 260 MHz 0 dBm, fL = 300 MHz +20 dBm  | dBm   | +28.5   |            |               |

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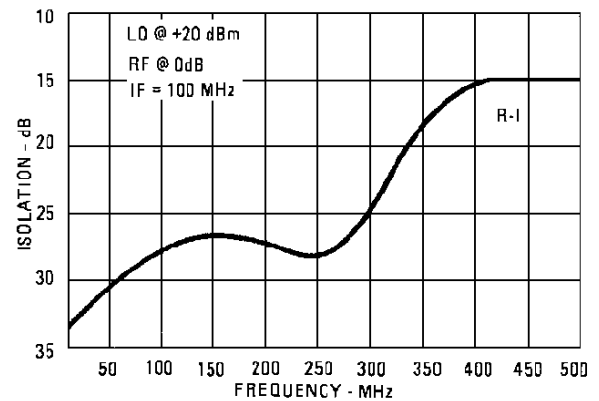
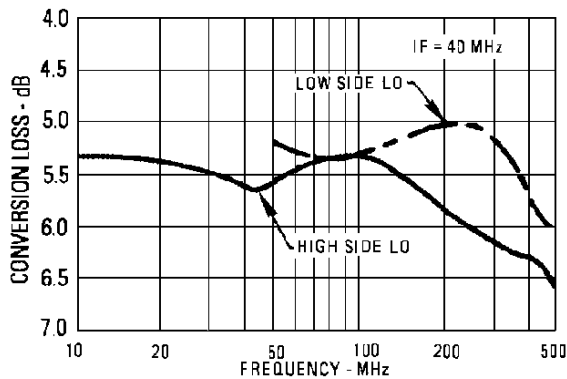
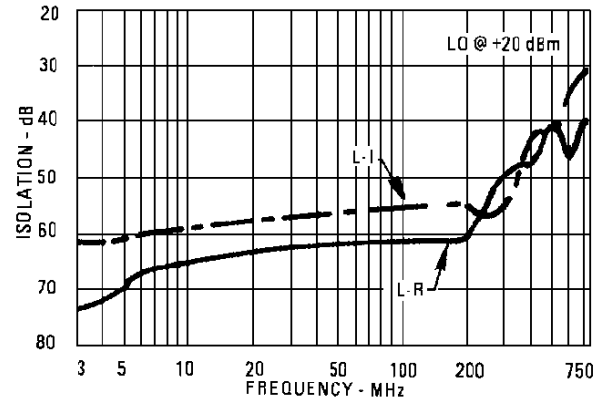
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### Typical Performance Curves

*Conversion Loss vs. LO Drive Level*



### Isolation



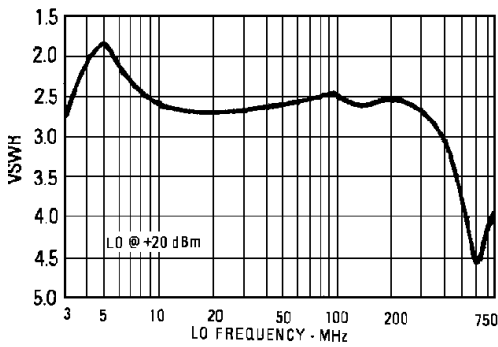
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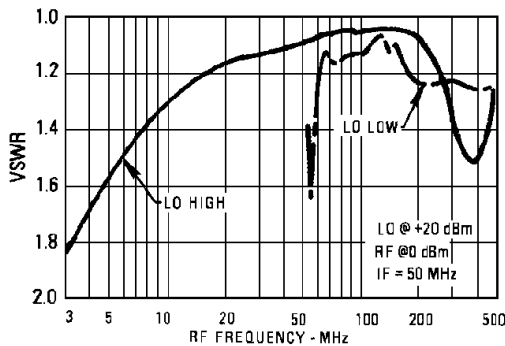
### Absolute Maximum Ratings

| Parameter             | Absolute Maximum    |
|-----------------------|---------------------|
| Operating Temperature | -54°C to +100°C     |
| Storage Temperature   | -65°C to +100°C     |
| Peak Input Power      | +26 dBm max @ +25°C |
| Peak Input Current    | 50 mA DC            |

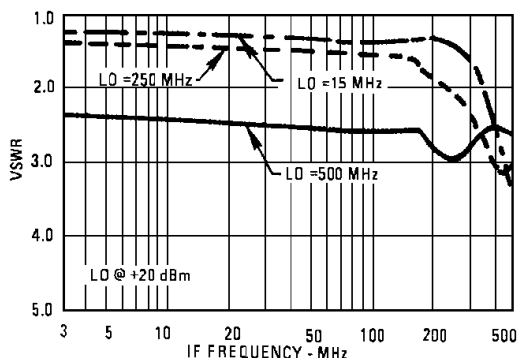
### L-Port VSWR



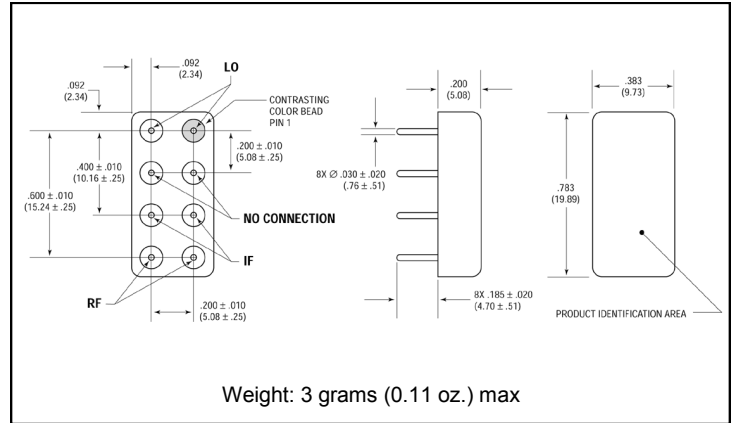
### R-Port VSWR



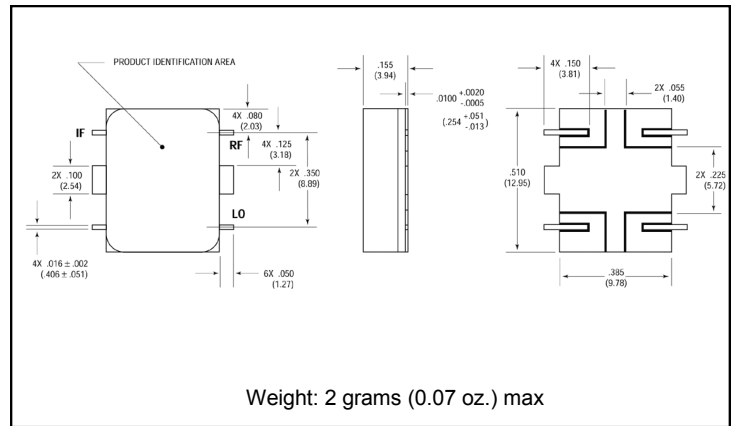
### I-Port VSWR



### Outline Drawing: Relay Header \*



### Outline Drawing: Surface Mount \*



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

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