



Broadband Quadrature Mixer or Phase Detector, 30 to 50 GHz

Description:

Model SFQ-30350313-2F2FSF-N1-M is a broadband quadrature mixer that covers the frequency range of 30 to 50 GHz. The typical conversion loss of the quadrature mixer is 13 dB with an LO driving power of +17 dBm. The typical LO to RF port isolation is 30 dB. Since the IF port of the quadrature mixer is DC coupled, the mixer can be used as a phase detector. In addition, the mixer can be readily configured into an image rejection mixer or single sideband modulator by adding an IF quadrature coupler.



Features:

- Compact Package
- Low Conversion Loss
- High Port Isolations
- IF Port DC Coupled for Phase Detection

Applications:

- Phase Detection
- Speed and Ranging Radar Systems
- Communication Systems
- Test Equipment

Electrical Specifications:

| Parameter | Minimum | Typical | Maximum |
|-------------------------|---------|---------|---------|
| RF Frequency | 30 GHz | | 50 GHz |
| LO Frequency | 30 GHz | | 50 GHz |
| LO Pumping Power | +16 dBm | +17 dBm | +20 dBm |
| IF Frequency | DC | | 2.0 GHz |
| Conversion Loss | | 13 dB | 15 dB |
| I/Q Phase Unbalance | | ±15° | |
| I/Q Amplitude Unbalance | | ±1.0 dB | |
| LO to RF Port Isolation | 20 dB | 30 dB | |
| LO to IF Port Isolation | | 15 dB | |
| RF to IF Port Isolation | | 20 dB | |
| IP1dB | | +4 dBm | |
| IP3dB | | +13 dBm | |
| Combined RF & LO Power | | | +20 dBm |

Mechanical Specifications:

| Item | Specification |
|---------------|-------------------------------|
| RF Port | 2.4 mm (F) |
| LO Port | 2.4 mm (F) |
| IF-I Port | SMA (F) |
| IF-Q Port | SMA (F) |
| Case Material | Aluminum |
| Finish | Gold Plated |
| Weight | 0.68 Oz |
| Size | 0.8" (L) 0.8" (W) X 0.39" (H) |
| Outline | UH-235-4C |

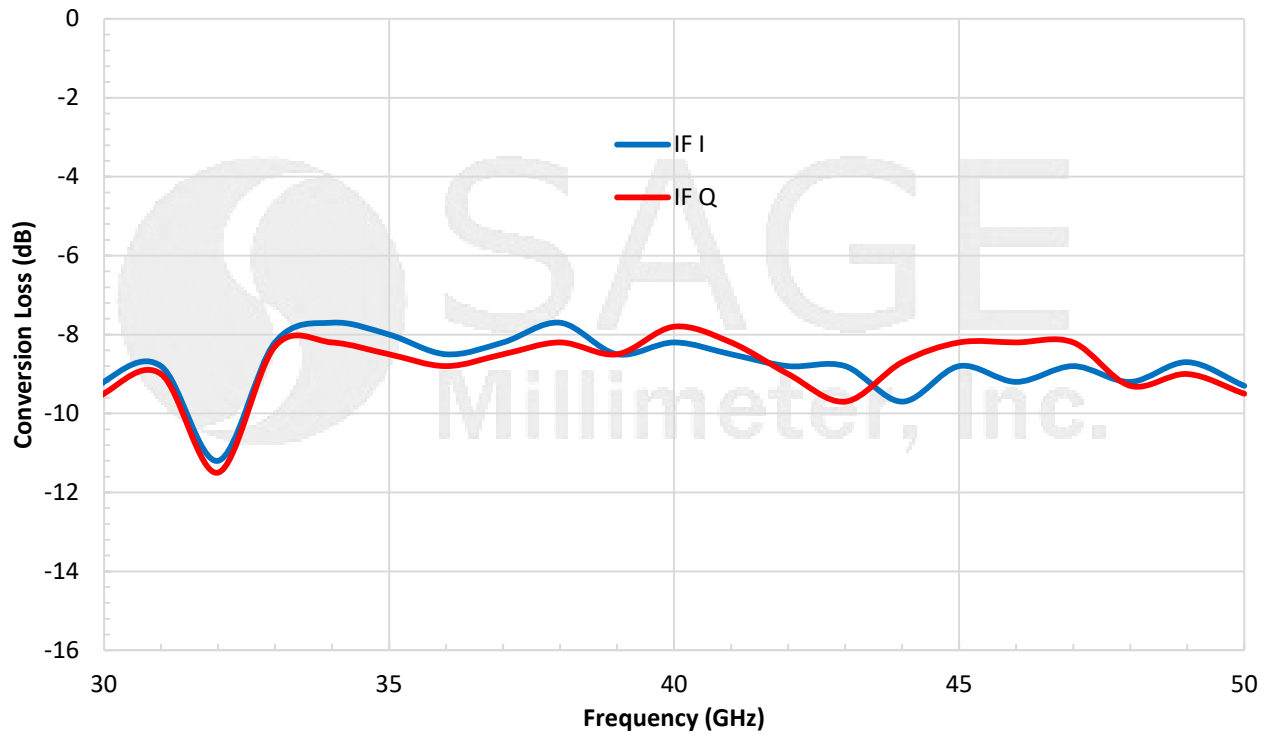




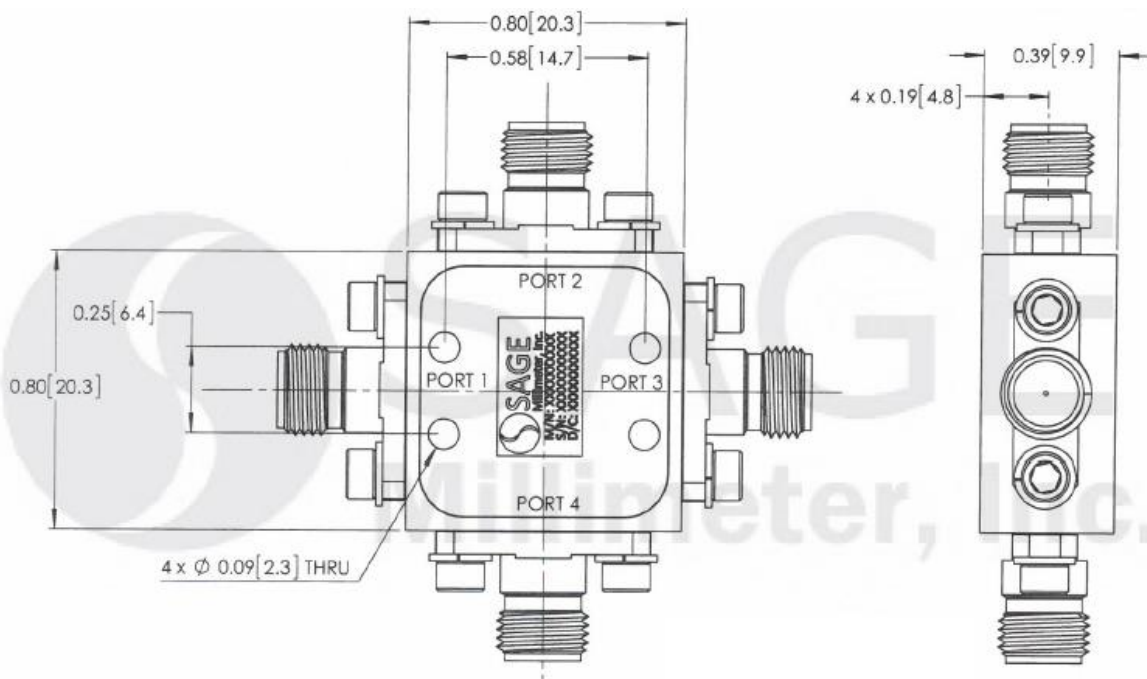
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Typical Conversion Loss vs. Frequency

LO Power: +17 dBm



Mechanical Outline: (Unless otherwise specified, all dimensions are in inches [millimeters])





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Note:

- All data presented is collected from a sample lot. Actual data may vary unit to unit, slightly.
- All testing was performed under +25°C case temperature.
- The I/Q mixer can be configured as an image rejection mixer or used as an I/Q up-converter, single sideband modulator and phase detector.
- SAGE Millimeter, Inc. reserves the right to change the information presented without notice.

Caution:

- Exceeding absolute maximum ratings will damage the device.
- The mixer is a static sensitive device. Always follow ESD rules when working with the device.
- The IF ports are DC coupled. Use DC blocks if necessary. **Do not apply an external bias voltage to the IF port.**
- Proper torque, 8.0 ± 0.15 inch-pounds (0.92 ± 0.05 Nm), should be applied. **SAGE Millimeter torque wrench, model SCH-08008-S1, is highly recommended.**

