SFQ-77382312-1212SF-N1

Rev 1.0

E-Band Quadrature Mixer or Phase Detector, 77 to 82 GHz

Description:

Model SFQ-77382312-1212SF-N1 is an E Band quadrature mixer that covers the frequency range of 77 to 82 GHz. The typical conversion loss of the quadrature mixer is 12 dB with an LO driving power of +16 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	77 GHz		82 GHz
RF Input P_{1dB}		0 dBm	
LO Frequency	77 GHz		82 GHz
LO Pumping Power		+16 dBm	+20 dBm
IF Frequency	DC		1.0 GHz
Conversion Loss		12 dB	14 dB
I/Q Phase Unbalance		±15°	
I/Q Amplitude Unbalance		±1.0 dB	
LO to RF Port Isolations	20 dB	30 dB	
Combined RF & LO Power			+23 dBm

Mechanical Specifications:

Item	Specification
RF Port	WR-12 Waveguide with UG-387/U Flange
LO Port	WR-12 Waveguide with UG-387/U Flange
IF-I Port	SMA(F)
IF-Q Port	SMA(F)
Case Material	Aluminum
Finish	Gold Plated
Weight	1.8 Oz
Size	1.15” (L) 1.15” (W) X 0.88” (H)
Outline	FQ-E1

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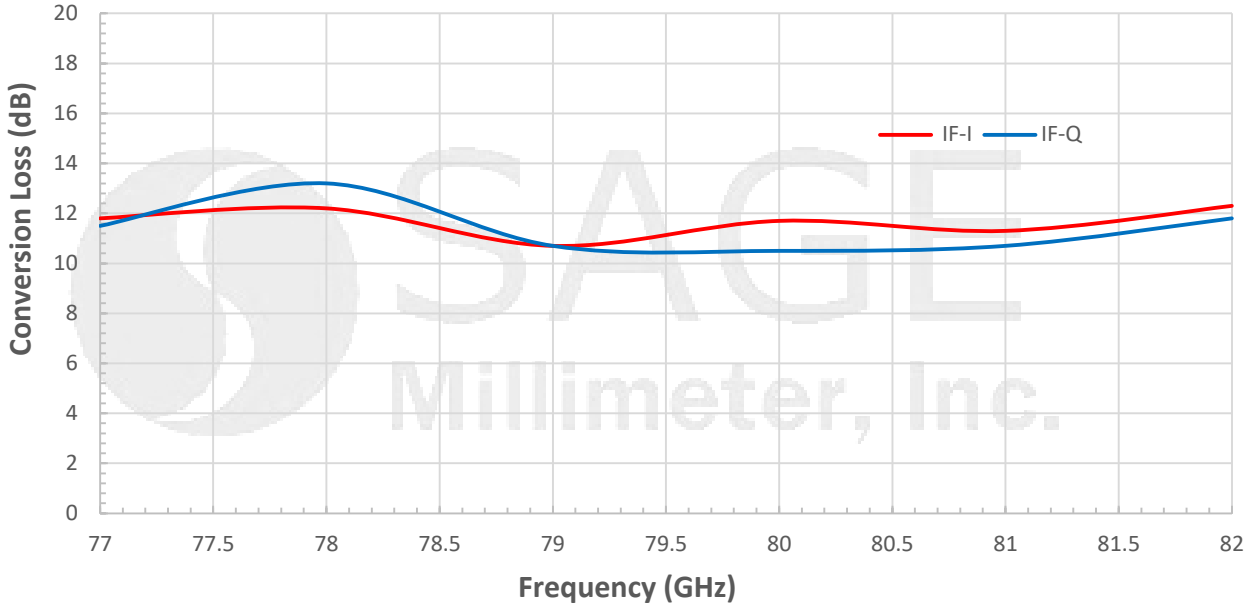
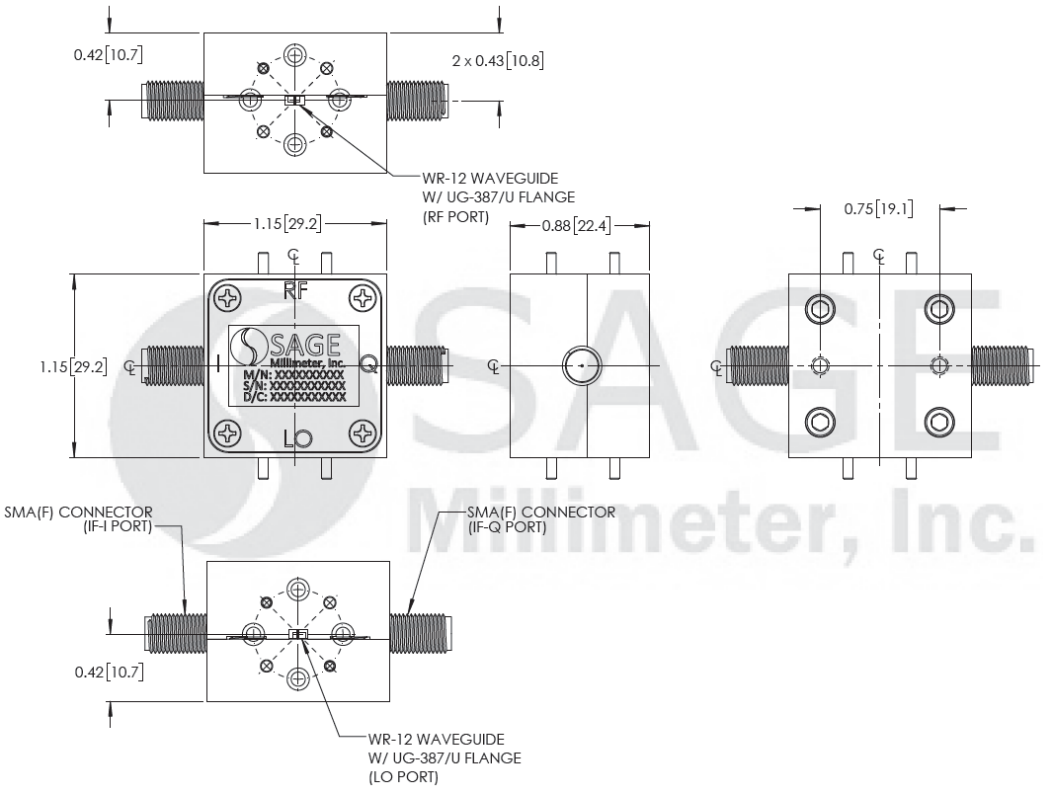
Typical Conversion Loss vs. Frequency

LO: +16 dBm; IF: 1 GHz



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.
- 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.**
- Any foreign objects in the waveguide will cause performance degradation and possible device damage

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