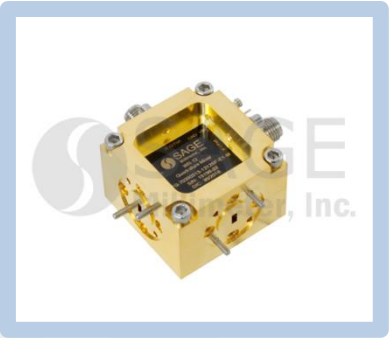
SFQ-75384315-1212SF-E1-M

Rev. 1.0

E-Band Quadrature Mixer with External Bias, 75 to 84 GHz

Description:



Model SFQ-75384315-1212SF-E1-M is a E Band quadrature mixer that covers the frequency range of 75 to 84 GHz. The mixer requires an external DC bias of +4.5 V_{DC} and an LO power of +8 dBm, without the requirement of additional port filtering, offering a cost effective option for LO power requirement. A DC coupled IF port allows the mixer to be used as a phase detector. In addition, the mixer can readily be configured into an image rejection mixer or single side-band modulator by adding an IF quadrature. The typical LO to RF port isolation of the mixer is 30 dB, which is high enough for most applications.

Features:

- Low required LO power
- Broadband operation
- Good gain flatness

Applications:

- Phase detector
- Directional radar systems
- Communication systems

Electrical Specifications:

Parameter	Minimum	Typical	Maximum
RF Frequency	75 GHz		84 GHz
RF Input P1dB		5 dBm	
LO Frequency	75 GHz		84 GHz
IF Frequency	DC		12 GHz
LO Pumping Power		+8 dBm	+12 dBm
Combined Damage RF and LO Power			+15 dBm
External Bias		+4.5 V_{DC}/2 mA	
Conversion Loss		15 dB	
I/Q Phase Unbalance		±15˚	
LO to RF Port Isolation		30 dB	
Specification Temperature		+25 °C	
Operating Temperature	0 °C		+50 °C

Mechanical Specifications:

Item	Parameter
RF Port	WR-12 Waveguide with UG-387/U Anti-Cocking Flange
LO Port	WR-12 Waveguide with UG-387/U Anti-Cocking Flange
IF-I, IF-Q Ports	SMA(F), SMA(F)
DC Bias	Solder Pins
Case Material	Aluminum
Finish	Gold Plated
Weight	1.8 Oz
Size	1.25” (L) 1.25” (W) X 0.88” (H)
Outline	FQ-EEM-A

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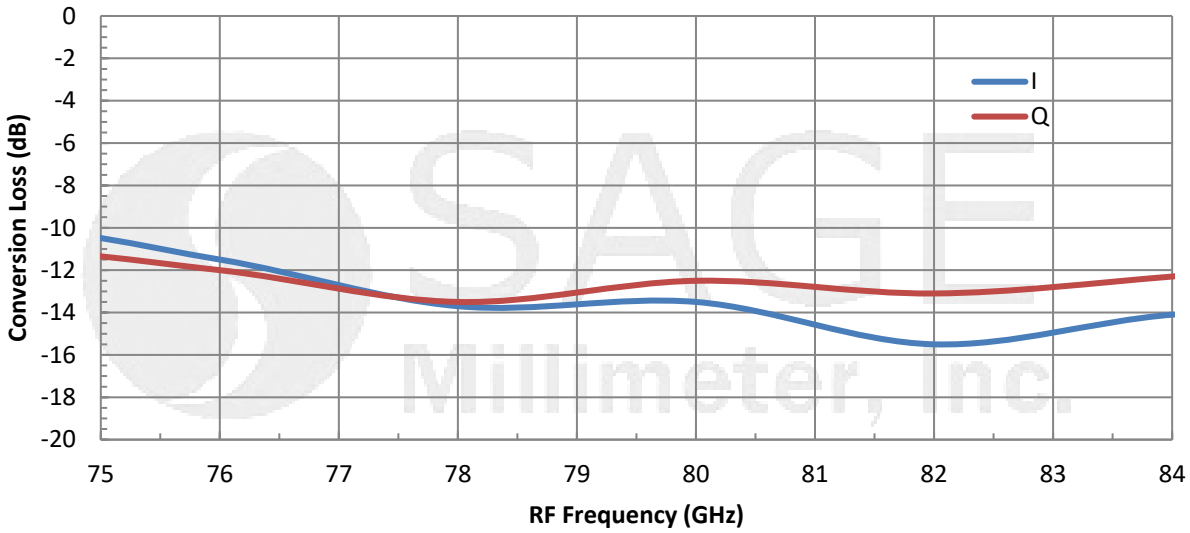
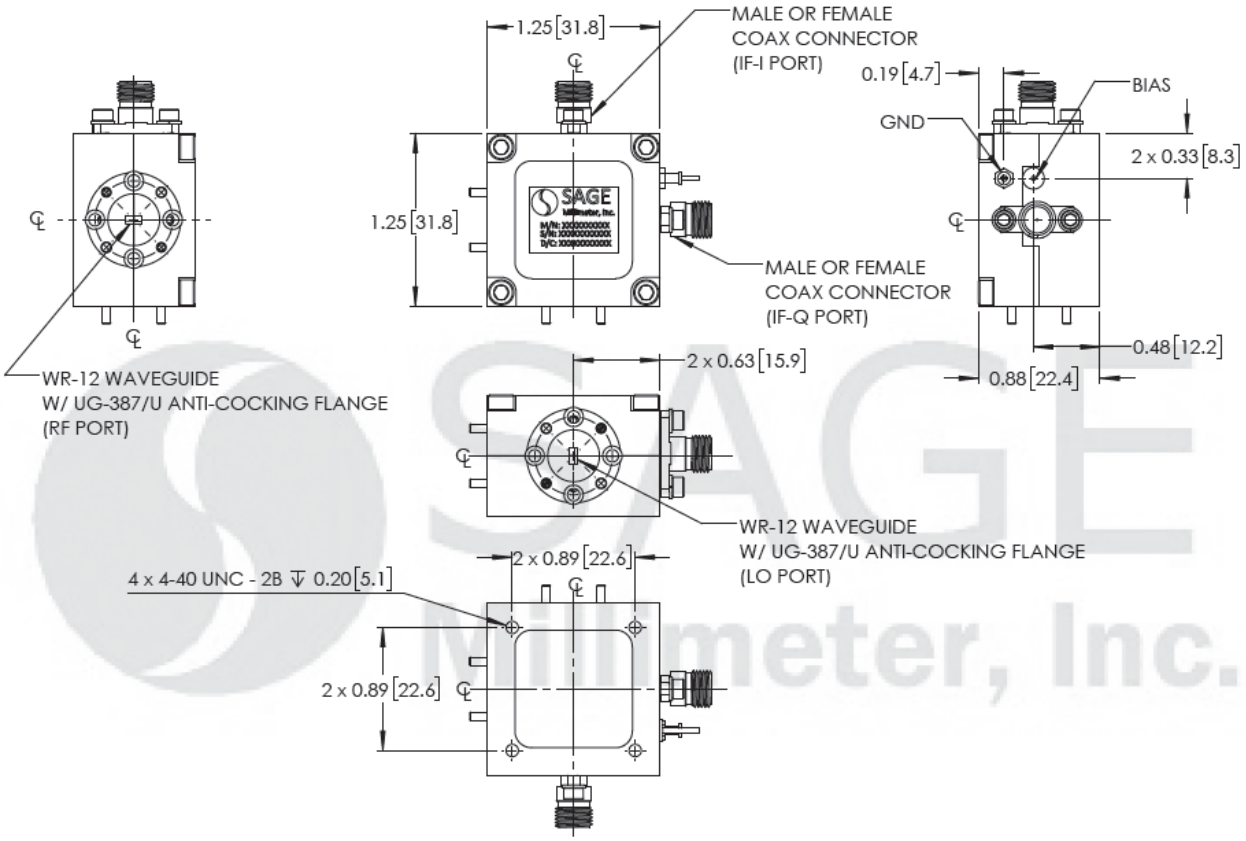
Typical Conversion Loss vs. Frequency

Bias: +4.5 V_{DC}, IF = 2 GHz, LO @ +8 dBm, RF @ -20 dBm



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



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Note:

- 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 degrade performance and/or damage the device.