

## Broadband Quadrature Mixer or Phase Detector, 20 to 42 GHz

### Description:

**Model SFQ-20342315-KFKFSF-N1-M** is a broadband quadrature mixer that covers the frequency range of 20 to 42 GHz. The typical conversion loss of the quadrature mixer is 15 dB with an LO driving power of +18 dBm. The typical LO to RF port isolation is 35 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	20 GHz		42 GHz
LO Frequency	20 GHz		42 GHz
LO Pumping Power	+16 dBm	+18 dBm	+20 dBm
IF Frequency	DC		5 GHz
Conversion Loss		15 dB	
I/Q Phase Unbalance		±11°	
I/Q Amplitude Unbalance		±3.0 dB	
LO to RF Port Isolation		35 dB	
LO to IF Port Isolation		45 dB	
RF to IF Port Isolation		25 dB	
IP1dB		+10 dBm	
Image Rejection (with IF Hybrid)		18 dB	
Combined RF & LO Power			+20 dBm

### Mechanical Specifications:

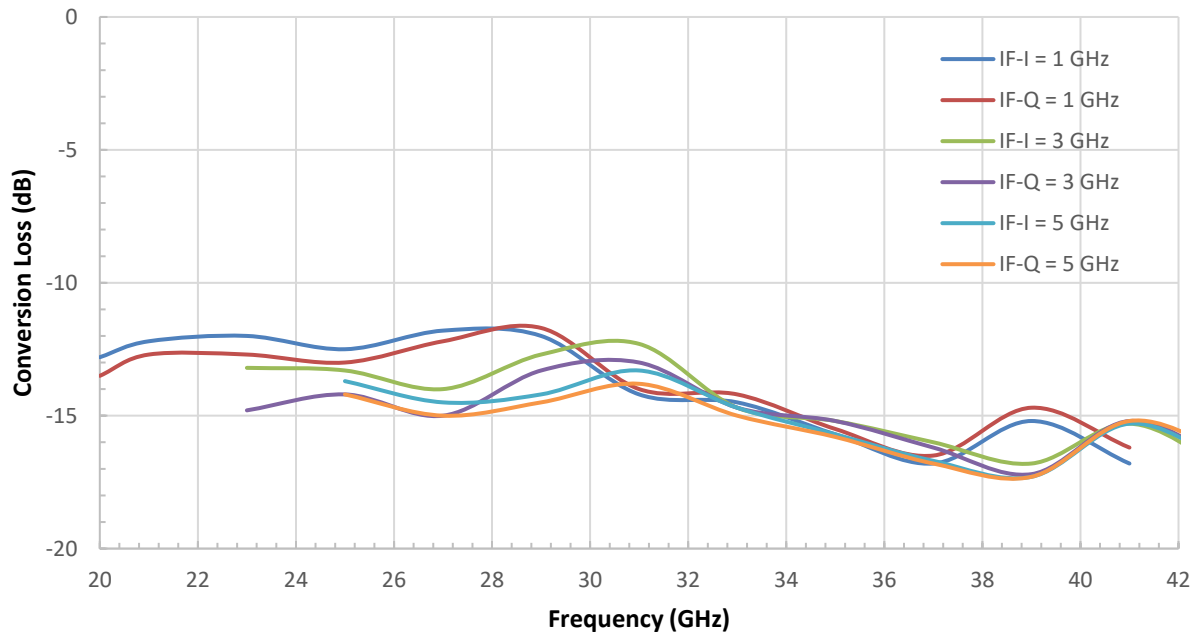
Item	Specification
RF (Port 3)	2.92 mm (F)
LO (Port 2)	2.92 mm (F)
IF-I (Port 1)	SMA (F)
IF-Q (Port 4)	SMA (F)
Case Material	Aluminum
Finish	Gold Plated
Weight	0.68 Oz
Size	0.8" (L) 0.8" (W) X 0.39" (H)
Outline	UH-235-4C



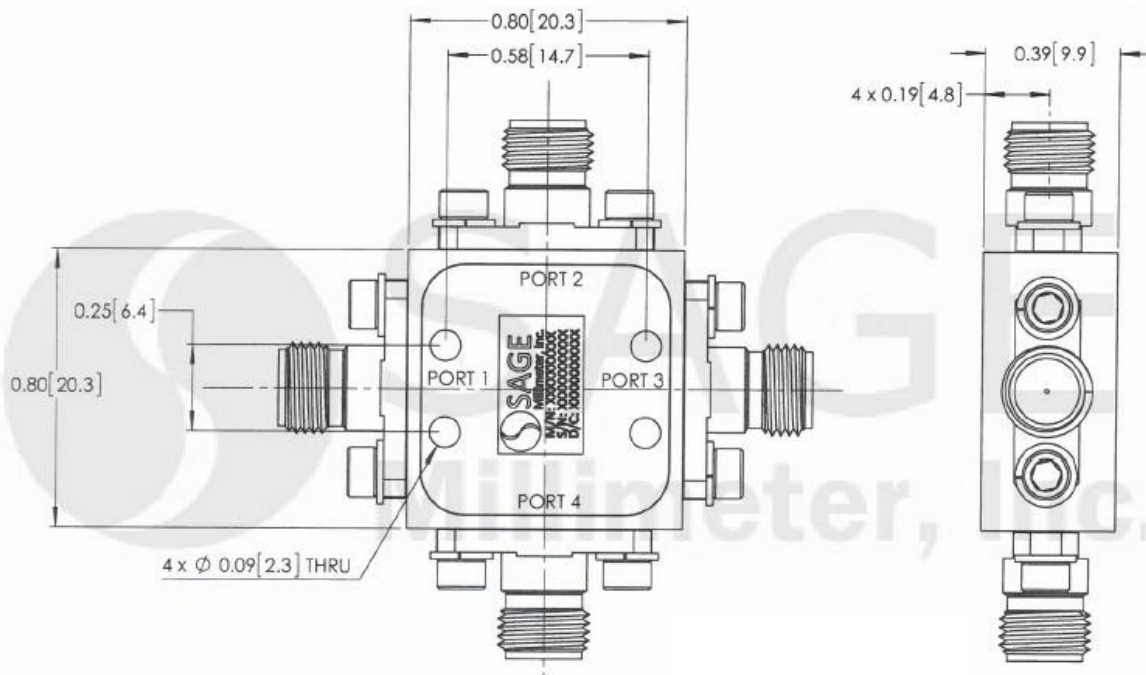
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### Conversion Loss vs. Frequency

LO: 18 dBm; RF: -20 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.
- Eravant 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,  $8.0 \pm 0.15$  inch-pounds ( $0.92 \pm 0.05$  Nm), should be applied. **Eravant torque wrench, model SCH-08008-S1, is highly recommended.**

