



## Balanced Mixer, 11 to 40 GHz, 12 dB Conversion Loss

### Description:

**Model SFB-11340312-KFKFSF-N1-M** is a balanced mixer that utilizes a high performance pHEMT-based MMIC chip and a balanced circuit configuration to offer superior RF performance. The mixer supports the wide waveguide band operation from 11 to 40 GHz for both LO and RF ports. The mixer also supports a broad IF output from DC to 10 GHz. The mixer offers a typical conversion loss of 12 dB when the LO port is pumped at +15 dBm. The mixer is ideal for high linearity digital communication links.



### Features:

- Wide Waveguide Band Coverage
- Low Conversion Loss
- DC to 10 GHz IF Bandwidth

### Applications:

- 5G Systems
- Radar Systems
- Communication Systems
- Test Equipment

### Electrical Specifications:

Parameter	Minimum	Typical	Maximum
RF Frequency	11 GHz		40 GHz
LO Frequency	11 GHz		40 GHz
IF Frequency	DC		10 GHz
LO Pumping Power	+13 dBm	+15 dBm	+18 dBm
Conversion Loss		12 dB	
RF Input P-1dB		+9 dBm	
RF to LO Isolation		30 dB	
LO to IF Isolation		25 dB	
RF to IF Isolation		25 dB	
Combined LO and RF Power			+21 dBm
Specification Temperature		+25 °C	
Operating Temperature	-40 °C		+85 °C

Note: The RF input P-1 dB is LO pumping power related. The value shown is at LO power +15 dBm. The higher the LO power, the higher the input P-1dB.

### Mechanical Specifications:

Item	Specification
RF (Port 1)	K(F)
LO (Port 3)	K(F)
IF (Port 2)	SMA(F)
Case Material	Aluminum
Finish	Gold Plated
Weight	0.6 Oz
Size	0.80" (L) X 0.80" (W) X 0.39" (H)
Outline	UH-235-3C

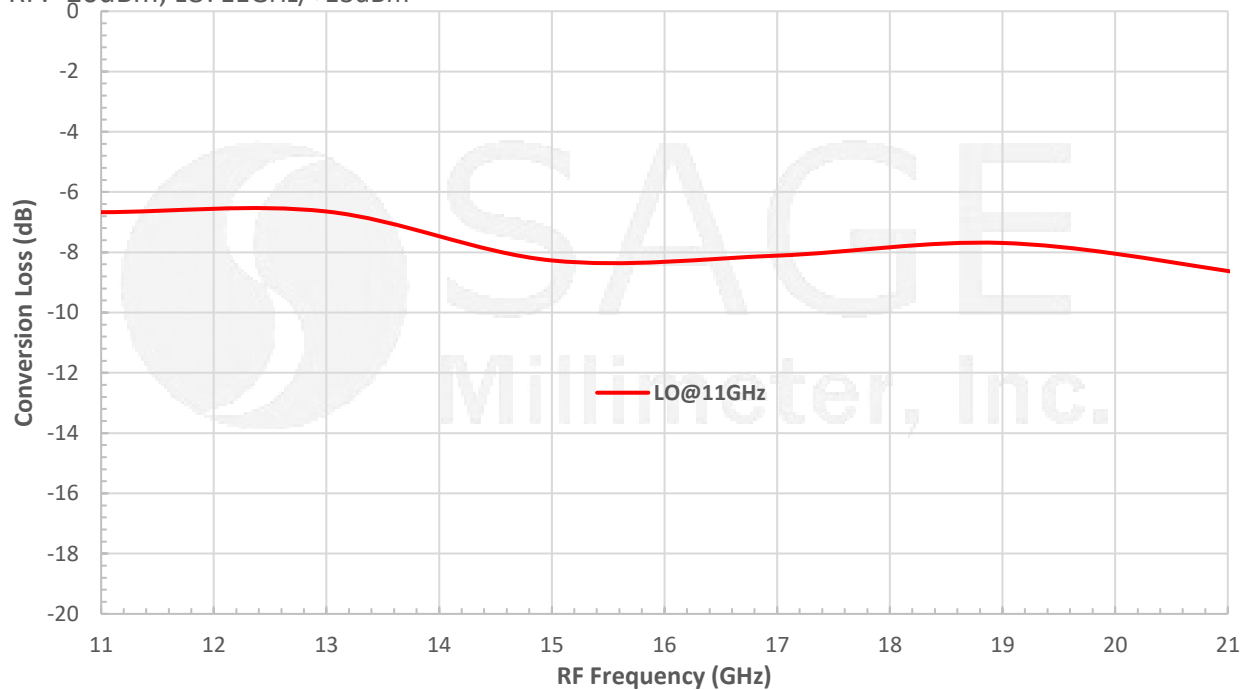




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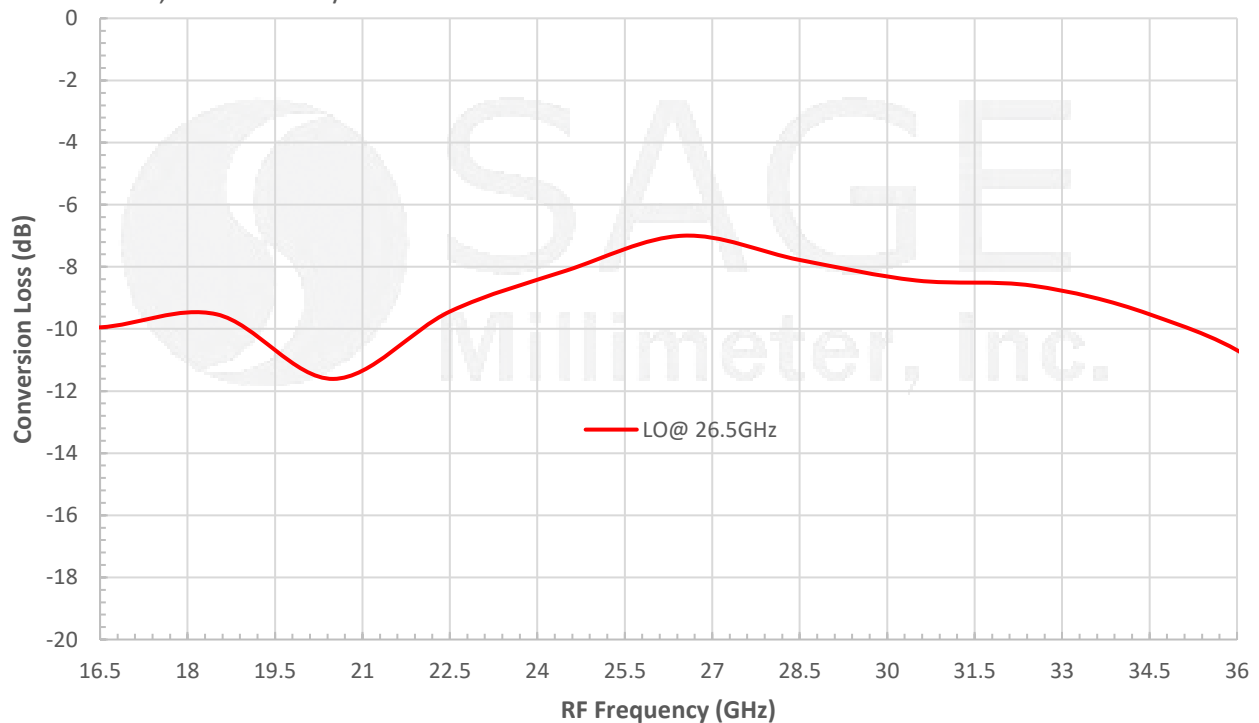
### Typical Conversion Loss vs Frequency

RF: -20dBm; LO: 11GHz/+13dBm



### Typical Conversion Loss vs Frequency

RF: -20dBm; LO: 26.5GHz/+13dBm

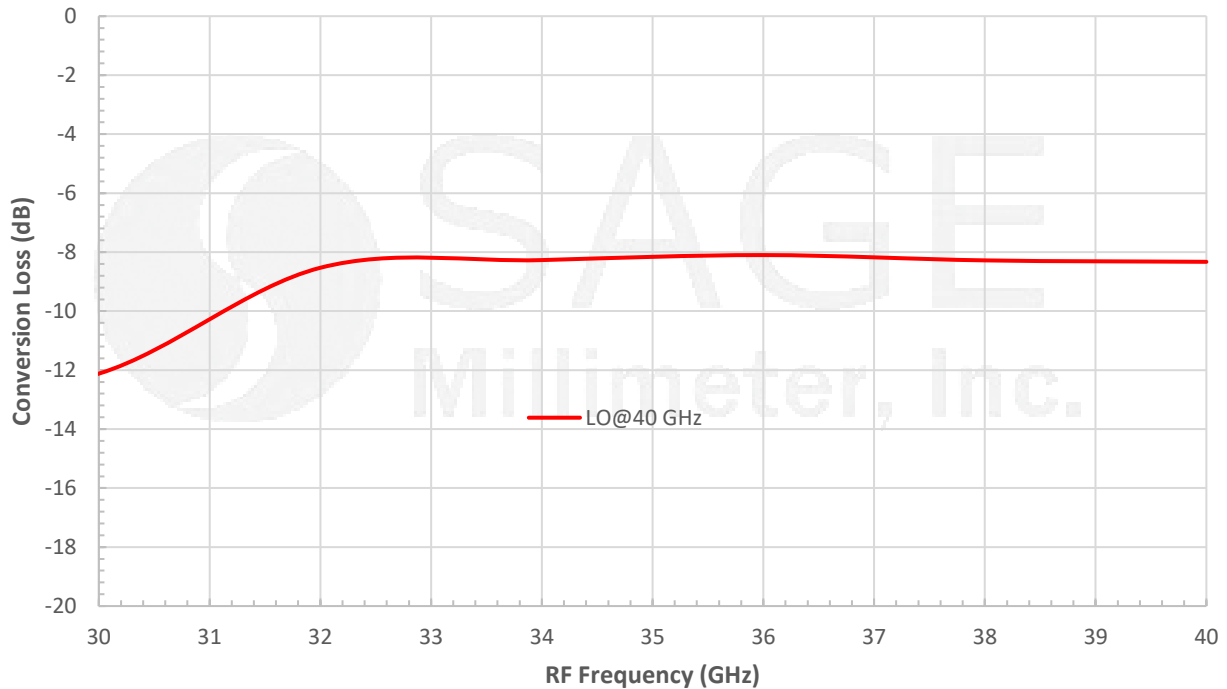




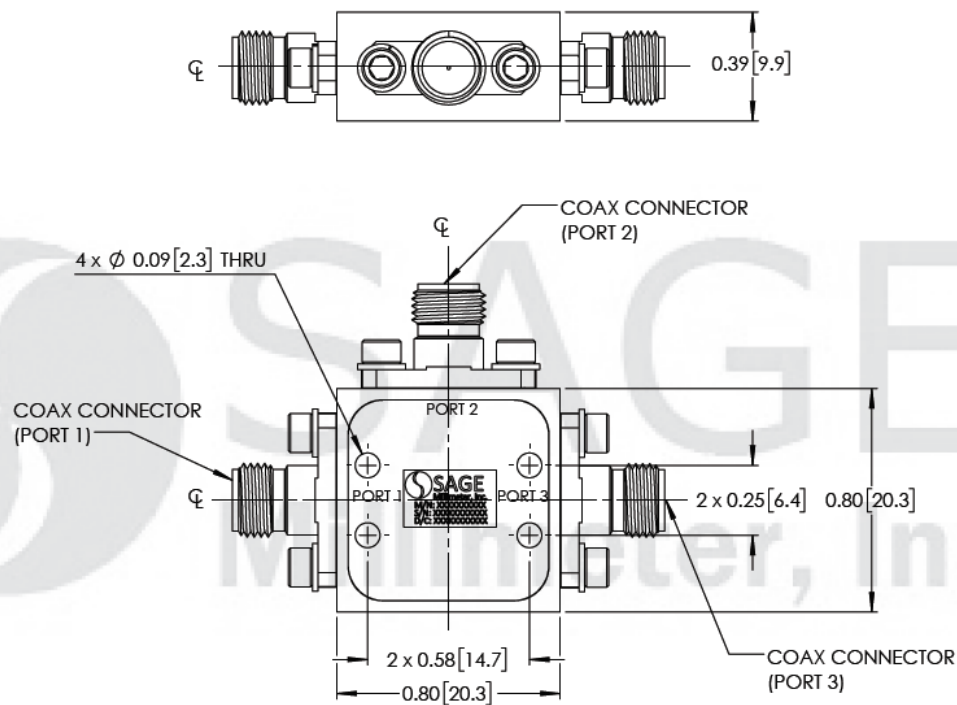
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### Typical Conversion Loss vs Frequency

RF: -20dBm; LO: 40GHz/+13dBm



**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.
- A DC block at IF port may be required when connecting to a device, such as an IF low noise amplifier or a base band mixer which input port is DC coupled.
- SAGE Millimeter, Inc. reserves the right to change the information presented without notice.

### Caution:

- Exceeding absolute maximum ratings shown will damage the device.
- **The mixer is a small signal device. The typical RF input level is 0 dBm or lower.**
- The device is static sensitive. Always follow ESD rules when working with the device.
- The IF port of the mixer is DC coupled. Use a DC block when connecting to other devices.
- **Never apply an external bias voltage to the IF port because the mixer will be damaged.**
- Proper torque,  $8.0 \pm 0.15$  inch-pounds ( $0.92 \pm 0.05$  Nm), should be applied. **SAGE Millimeter torque wrench, model SCH-08008-S1, is highly recommended.**

