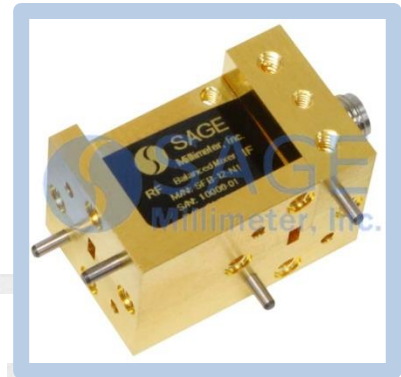




## E-Band Balanced Mixer

### Description:

**Model SFB-12-N1** is an E-Band balanced mixer that utilizes high performance GaAs Schottky beam-lead diodes and a balanced circuit configuration to offer superior RF performance. The mixer supports the full waveguide band operation for both LO and RF frequencies from 60 to 90 GHz with an extremely broad IF output from DC to 30 GHz. The mixer offers a conversion loss of 9 dB typical and a high RF to LO port isolation of 30 dB.



### Features:

- Low LO Power Requirement
- Broad Band Coverage
- Compact Package

### Applications:

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

### Electrical Specifications:

Parameter	Minimum	Typical	Maximum
RF Frequency	60 GHz		90 GHz
LO Frequency	60 GHz		90 GHz
IF Frequency	DC		30 GHz
LO Pumping Power	+10 dBm	+13 dBm	+15 dBm
Input P <sub>1dB</sub>		-3 dBm	
Conversion Loss		9 dB	12 dB
RF to LO Isolation		30 dB	
Combined Damage RF and LO Power			+18 dBm
Specification Temperature		+25 °C	
Case Temperature	0 °C		+50 °C

### 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 Port	K(F)
Case Material	Aluminum
Finish	Gold Plated
Weight	0.8 Oz
Size	1.16" (L) X 0.75" (W) X 0.75" (H)
Outline	FB-NE

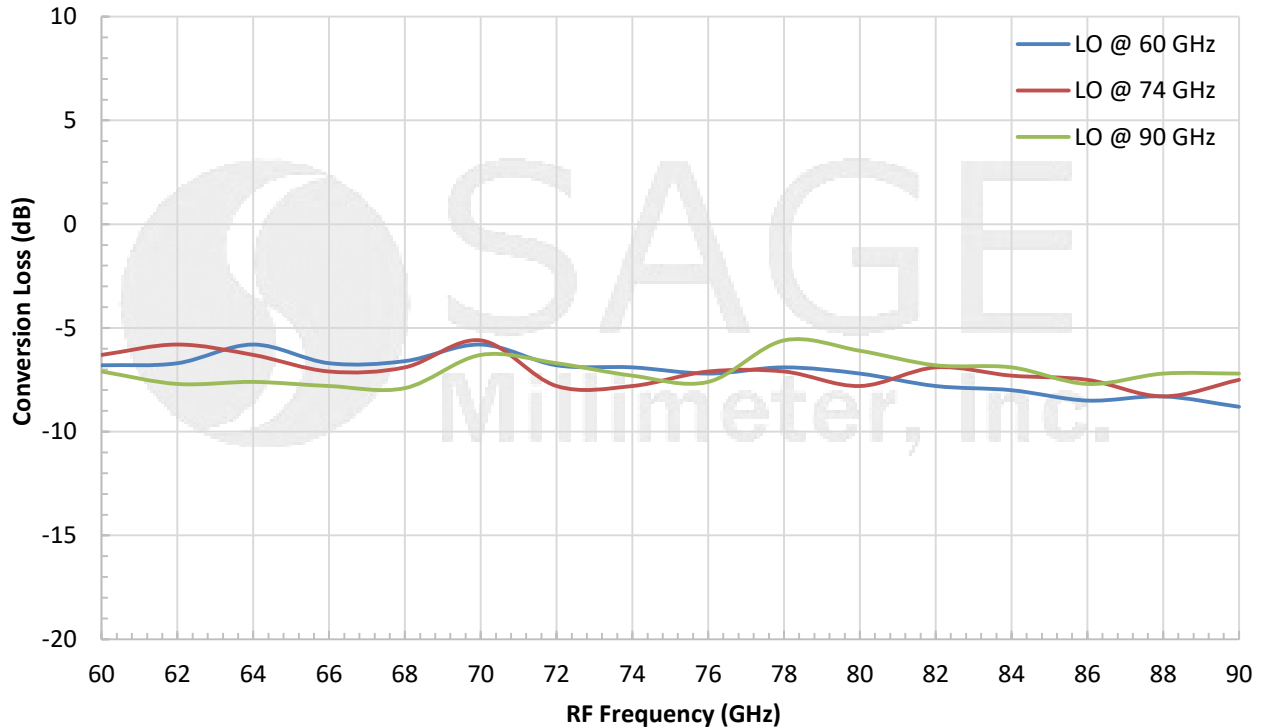




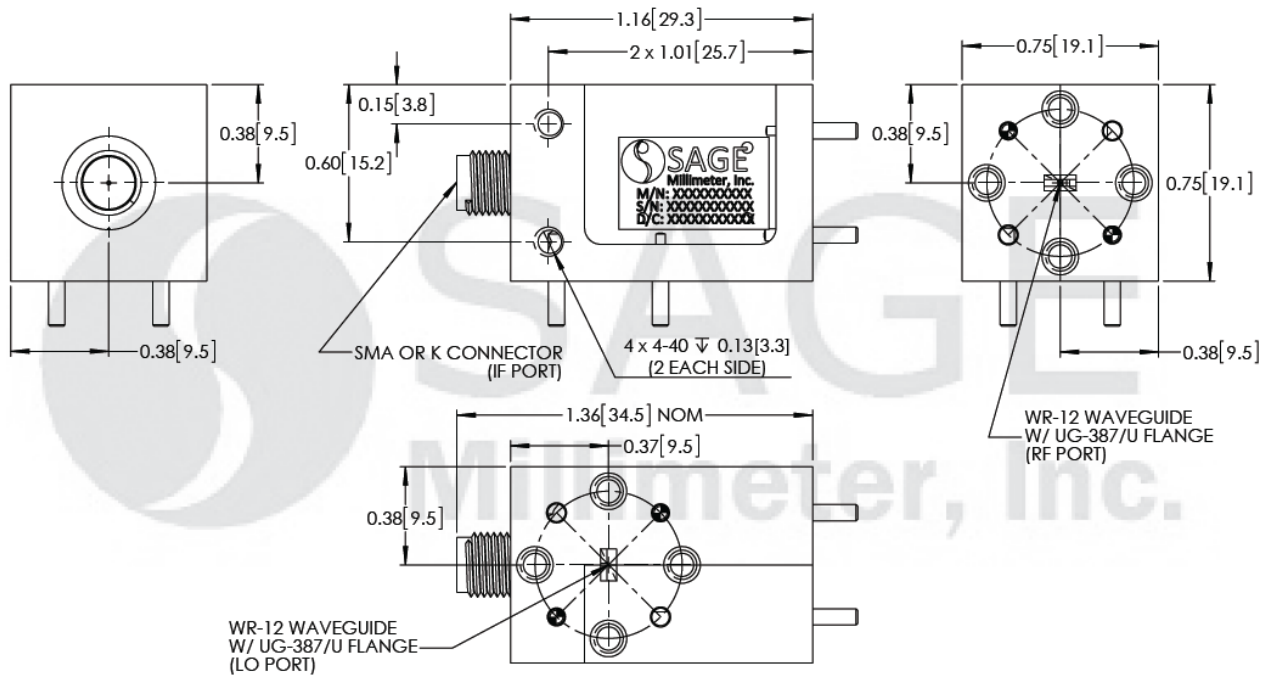
## E-Band Balanced Mixer

### Typical Conversion Loss vs. Frequency

LO: +13 dBm, RF: -20 dBm



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





## E-Band Balanced Mixer

### 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.
- SAGE Millimeter, Inc. reserves the right to change the information presented without notice.

### Caution:

- Exceeding absolute maximum ratings shown will damage the device.
- 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. **Do not apply an external bias voltage to the IF port.**
- Any foreign objects in the waveguide will cause performance degradation and can possibly damage the device.
- 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.**

