# SFB-28-N1

Rev. 1.0

## Ka-Band Balanced Mixer

### Description:

**Model SFB-28-N1** is a Ka 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 26.5 to 40 GHz with an IF output from DC to 13.5 GHz. The mixer offers a conversion loss of 7.5 dB typical and a high RF to LO port isolation of 30 dB.

### Features:

- Full Waveguide Band Coverage
- Low Conversion Loss
- High IF Frequency up to 13.5 GHz

### Applications:

- Radar Systems
- Communication Systems
- Test Equipment

### Electrical Specifications:

| Parameter | Minimum | Typical | Maximum |
|---|---|---|---|
| RF Frequency | 26.5 GHz | | 40 GHz |
| LO Frequency | 26.5 GHz | | 40 GHz |
| IF Frequency | DC | | 13.5 GHz |
| LO Pumping Power | +10 dBm | +13 dBm | +18 dBm |
| Input $P_{1dB}$ | | -3 dBm | |
| Conversion Loss | | 7.5 dB | 10 dB |
| RF to LO Isolation | | 30 dB | |
| Combined RF and LO Power | | | +20 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 +13 dBm. The higher the LO power, the higher the input P-1dB.

### Mechanical Specifications:

| Item | Specification |
|---|---|
| RF | WR-28 Waveguide with UG-599/U Flange |
| LO | WR-28 Waveguide with UG-599/U Flange |
| IF | SMA (F) |
| Case Material | Aluminum |
| Finish | Gold Plated |
| Weight | 0.6 Oz |
| Size | 1.00” (L) X 0.75” (W) X 0.75” (H) |
| Outline | FB-NA |

www.sagemillimeter.com | 3043 Kashiwa Street, Torrance, CA 90505
Phone: 424-757-0168 | Fax: 424-757-0188 | Email: sales@sagemillimeter.com

Copyright © 2018 by SAGE Millimeter, Inc.

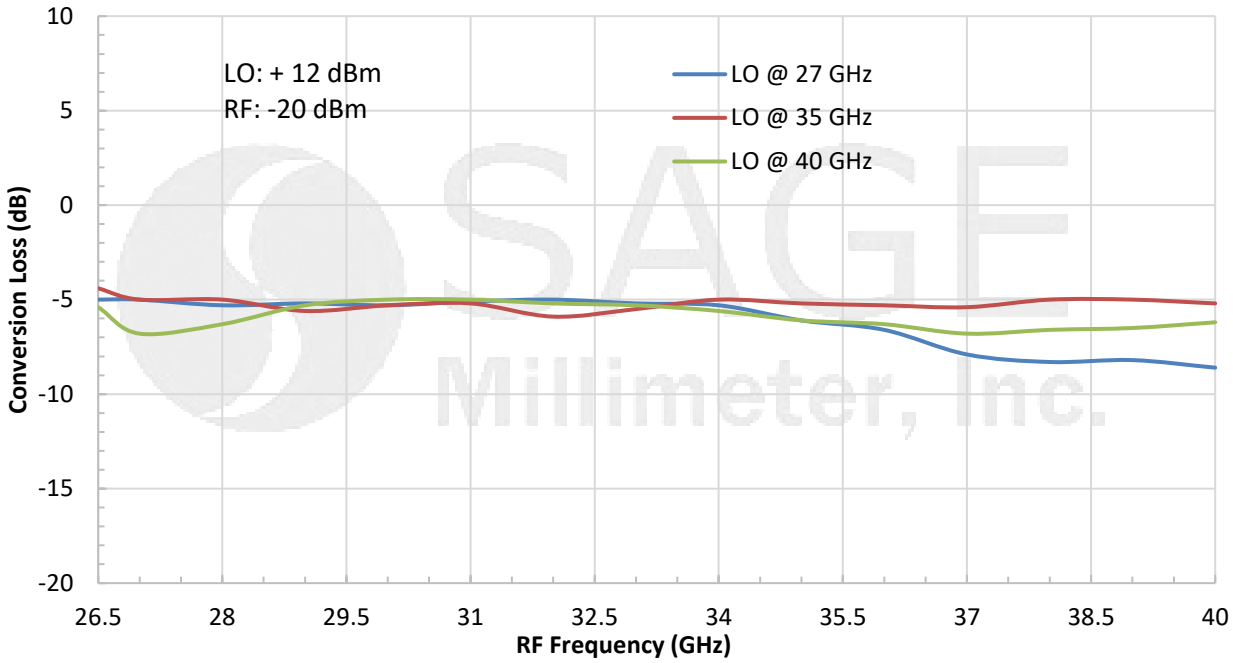


SAGE Millimeter, Inc.

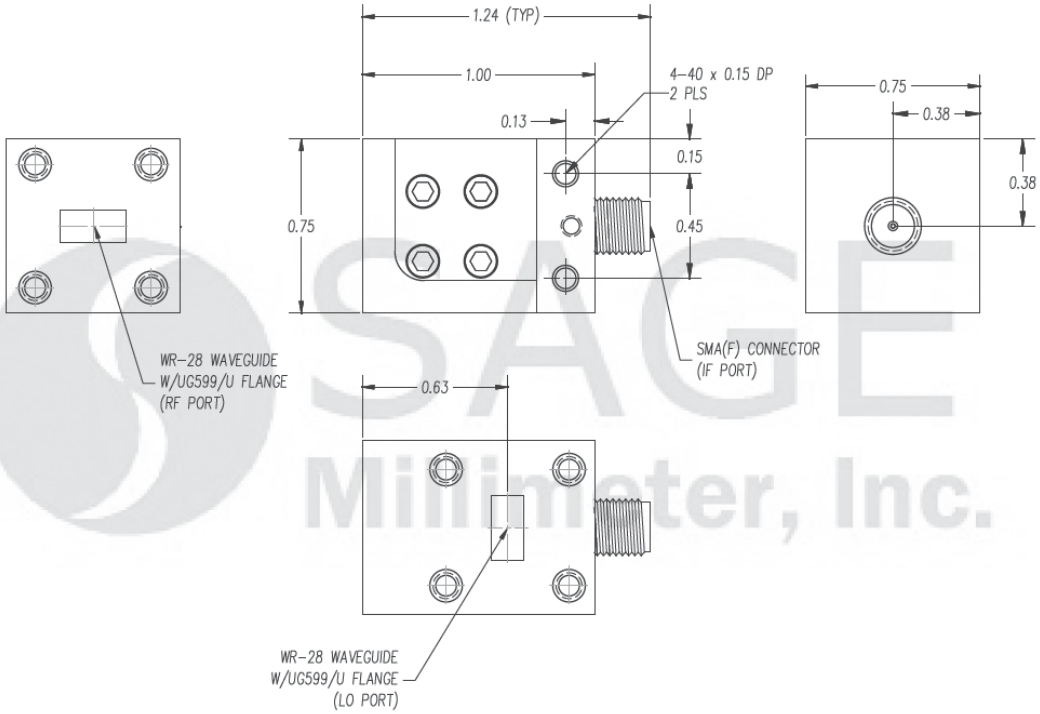
## Ka-Band Balanced Mixer

### Typical Conversion Loss vs. Frequency

RF: -20 dBm; LO: +12 dBm




### Mechanical Outline: (Unless otherwise specified, all dimensions are in inches)




www.sagemillimeter.com | 3043 Kashiwa Street, Torrance, CA 90505
Phone: 424-757-0168 | Fax: 424-757-0188 | Email: sales@sagemillimeter.com

Copyright © 2018 by SAGE Millimeter, Inc.



SAGE Millimeter, Inc.

## Ka-Band Balanced Mixer

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

www.sagemillimeter.com | 3043 Kashiwa Street, Torrance, CA 90505
Phone: 424-757-0168 | Fax: 424-757-0188 | Email: sales@sagemillimeter.com

Copyright © 2018 by SAGE Millimeter, Inc.



SAGE Millimeter, Inc.