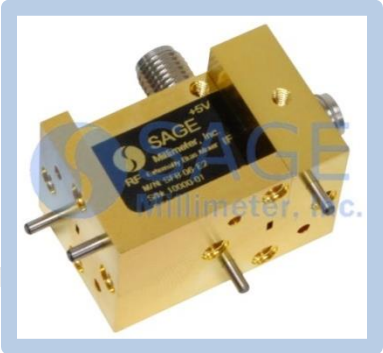
SFB-06-E2-WP

Rev. 1.0

D-Band Externally Biased Balanced Mixer

Description:



Model SFB-06-E2-WP is a D-Band, externally biased balanced mixer. The mixer supports the full waveguide band operation for both LO and RF frequencies from 110 to 170 GHz with an extremely broad IF output from DC to 40 GHz. The mixer offers a typical conversion loss of 13 dB and a high RF to LO port isolation. The main advantage of using an externally biased mixer is that it only requires a local oscillator (LO) power of 0 to +3 dBm when a bias of +5 V_{DC} is applied. This eliminates the need for an expensive local oscillator, making system integrations more affordable.

Features:

- Full Waveguide Band Coverage
- Low LO Power Requirement
- Low Conversion Loss
- IF Frequency up to 40 GHz

Applications:

- Radar Systems
- Communication Systems
- Test Equipment

Electrical Specifications:

Parameter	Minimum	Typical	Maximum
RF Frequency	110 GHz		170 GHz
LO Frequency	110 GHz		170 GHz
IF Frequency	DC		40 GHz
LO Pumping Power	+0 dBm	+3 dBm	+10 dBm
Conversion Loss		13 dB	17 dB
RF Input P-1 dB		-10 dBm	
RF to LO Isolation		30 dB	
Combined RF and LO Power			+13 dBm
External Bias Voltage/Current		+5 V_{DC}/2 mA	
Specification Temperature		+25 °C	
Operating Temperature	-40 °C		+85 °C

Mechanical Specifications:

Item	Specification
RF Port	WR-06 Waveguide with UG 387/U-M Flange
LO Port	WR-06 Waveguide with UG 387/U-M Flange
IF Port	K(F)
External Bias Port	SMA (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-ED-2

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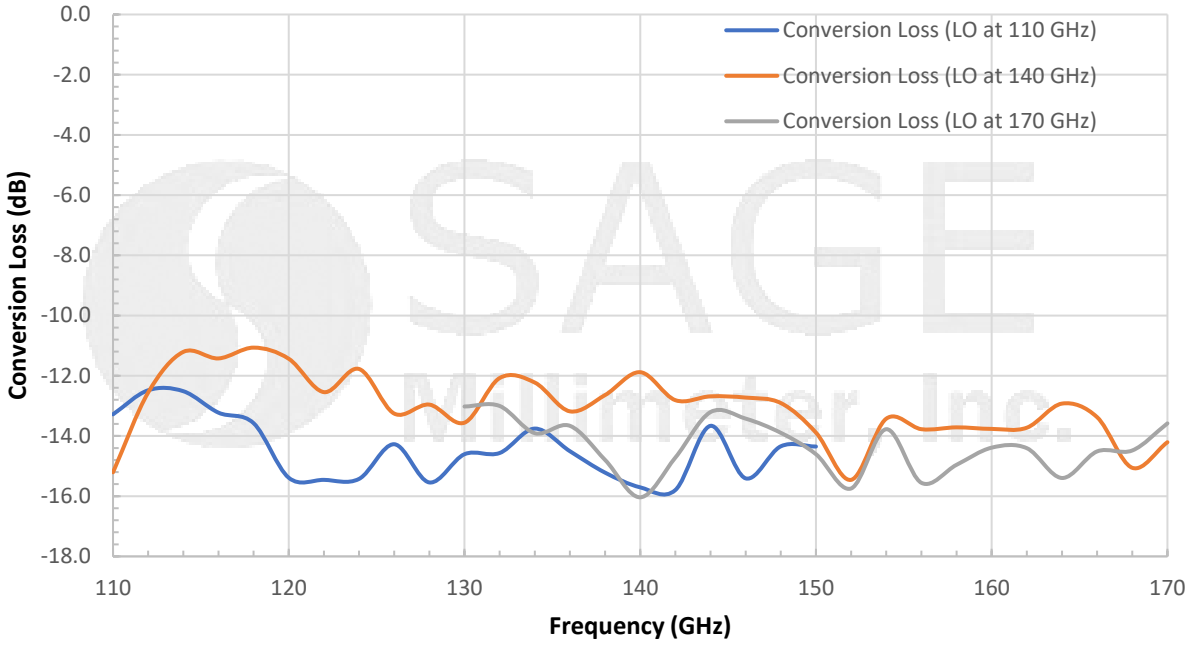
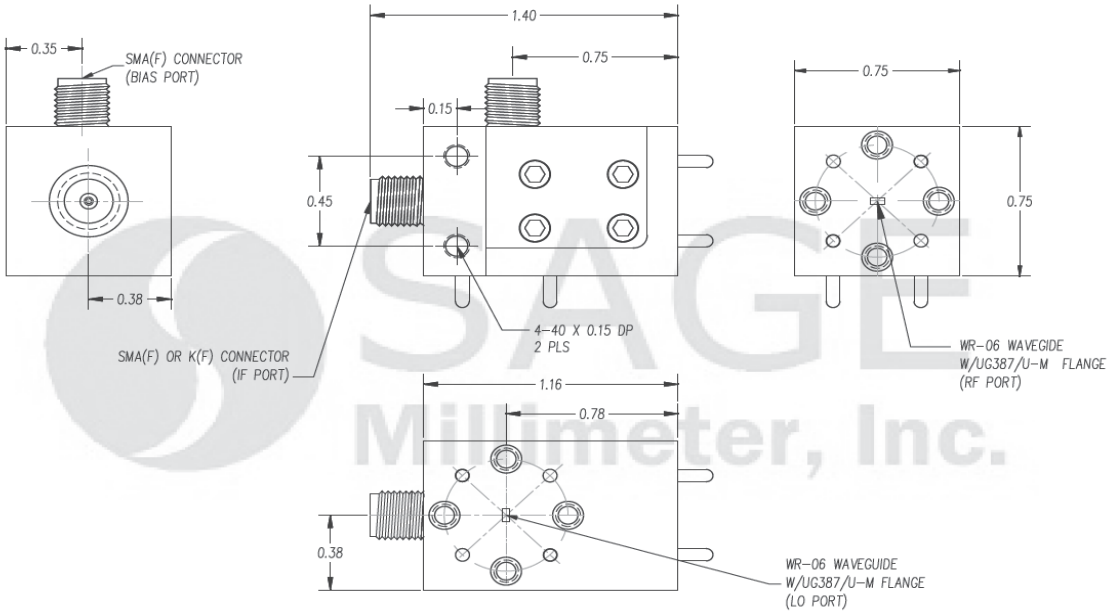
Typical Conversion Loss vs. Frequency

RF: -20 dBm; LO: +3 dBm Bias: +5V/2mA



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.
- Eravant 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 externally biased mixer is DC coupled. Due to the external bias, it has a small DC offset voltage (+0.7 V_{DC}), which could upset the connecting device performance or even damage the device. 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. **Eravant torque wrench, model SCH-08008-S1, is highly recommended.**

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