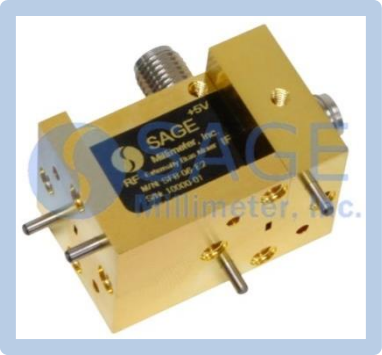
SFB-06-E2

Rev. 1.0

D-Band Externally Biased Balanced Mixer

Description:



Model SFB-06-E2 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 20 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 +5 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 20 GHz

Applications:

- Radar Systems
- Communication Systems
- Test Equipment

Electrical Specifications:

Parameter	Minimum	Typical	Maximum
RF Frequency Range	110 GHz		170 GHz
LO Frequency Range	110 GHz		170 GHz
IF Frequency Range	DC		20 GHz
LO Pumping Power	+0 dBm	+3 dBm	
Conversion Loss		13 dB	16 dB
RF to LO Isolation		30 dB	
Combined RF and LO Power			+18 dBm
External Bias Voltage		+5 V_{DC}	
Bias Current		2 mA	
Specification Temperature		+25°C	
Case Temperature	-40°C		+85°C

Mechanical Specifications:

Item	Specification
RF	WR-06 Waveguide with UG 387/U-M Flange
LO	WR-06 Waveguide with UG 387/U-M Flange
IF	K (F)
External Bias	SMA (F)
Case Material	Aluminum
Finish	Gold Plated
Weight	0.8 Oz
Outline	FB-ED-2

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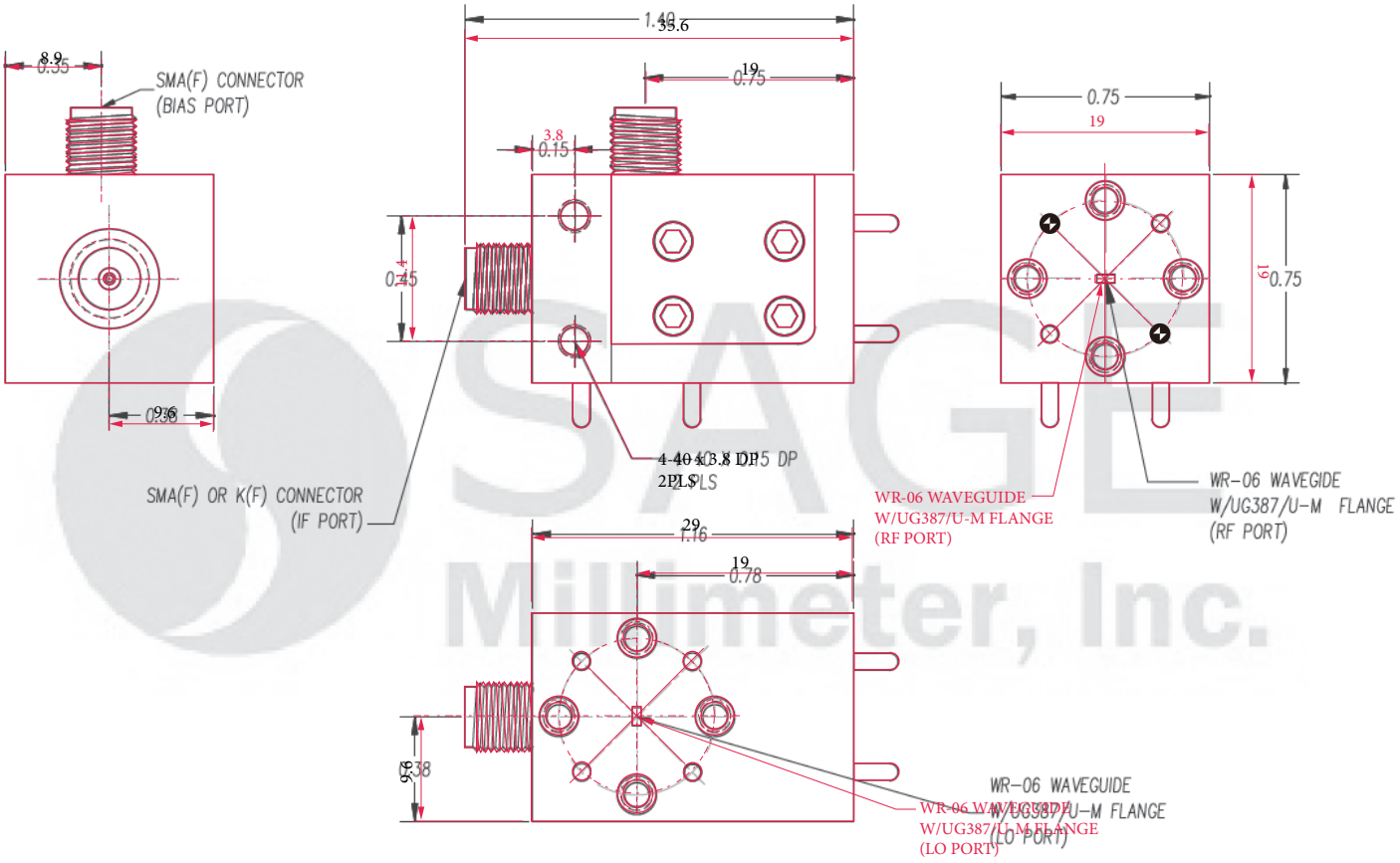
8.9
0.35
SMA(F) CONNECTOR
(BIAS PORT)
9.6
0.38
SMA(F) OR K(F) CONNECTOR
(IF PORT)
1.40
35.6
19
0.75
3.8
0.15
11.4
0.45
4-40 x 3.8 DP
2PLS
0.75
19
19
0.75
WR-06 WAVEGUIDE
W/UG387/U-M FLANGE
(RF PORT)
WR-06 WAVEGIDE
W/UG387/U-M FLANGE
(RF PORT)
29
1.16
19
0.78
9.6
0.38
WR-06 WAVEGUIDE
W/UG387/U-M FLANGE
(LO PORT)
WR-06 WAVEGUIDE
W/UG387/U-M FLANGE
(LO PORT)

D-Band Externally Biased Balanced Mixer

Note:

- All data are presented using a limited sample lot, actual data may vary unit to unit.
- The mixer will work full band. Due to the limitations of the test equipment, only partial band at a fixed LO frequency is measured.
- 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 externally biased mixer has a small offset bias and 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 ± 0.15 inch-pounds (0.92 ± 0.05 Nm), should be applied. **SAGE Millimeter torque wrench, model SCH-08008-S1, is highly recommended.**

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