

# Sub-Harmonic Mixer 312F

## Broadband 220 – 330 GHz

### Non-Biasable Full-band Sub-Harmonic Mixer in WR-3.4 Based on ACST's Mixer Technology.

312x series is a family of passive Sub-Harmonic Mixers which don't require bias. These Mixers are based on ACST Schottky mixer technology, covering the frequency range between 140 and 330 GHz. This series allows for building cost-effective full-band heterodyne receivers in combination with our most powerful commercially available full-band local oscillators (LO) between WR-10 and WR-6.5.

All Mixers designs within this series are based on balanced configuration to suppress undesired harmonics. These Mixers provide a DSB conversion loss (CL) of typically <8 dB within frequency bandwidth of about 40-45 % and LO power requirements below 8 dBm. For even lower conversion loss and LO power requirements, please ask ACST for availability of Ultra-high sensitivity and/or Low Barrier versions.

Model 312F requires input LO signal within frequency range of 110 to 165 GHz generating output signal within frequency range of 220 to 330 GHz. Bias control isn't required.

Various options can optionally be offered and integrated on customer request:

- Horn antenna (for coupling the output signal to free space),
- Waveguide sections compatible with the output RF-port
- Waveguide Variable or fixed Attenuator
- Dedicated LO Source to provide optimal input RF power (1214B)

Please consult [sales@acst.de](mailto:sales@acst.de) for available options for this product type



#### Product Features

- > Compactness, High-Sensitivity & low CL
- > Full Waveguide bandwidth
- > Flat response

#### Application Areas

- > Laboratory instrumentation
- > mm-wave FMCW-Radar
- > Active imaging
- > 5G Telecommunications
- > mm/Submm heterodyne receivers

### Technical Specification

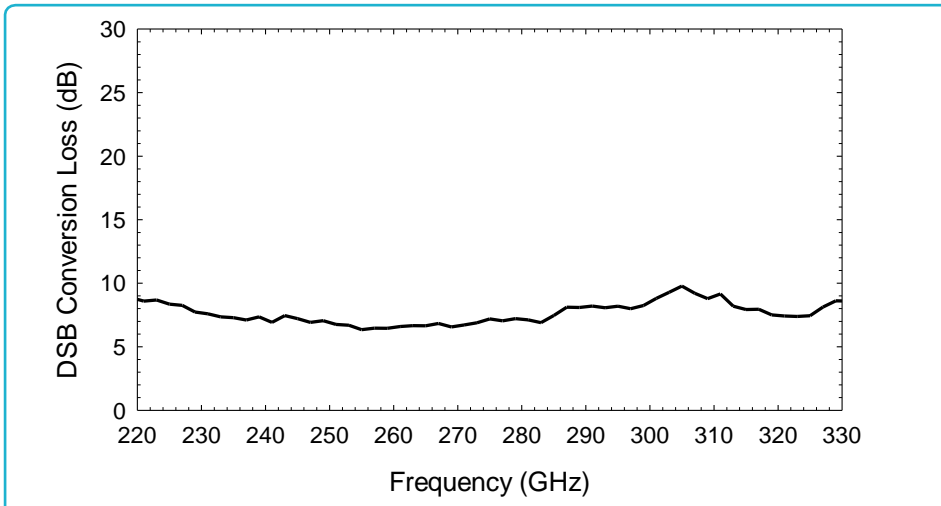
	Minimum	Typ	Maximum
LO Input Port (UG 387/U-M)		WR-6.5	
LO Input Frequency (GHz)	110		165
LO Input Power (dBm)	+7	+9	+12
RF Input Port (UG 387/U-M)		WR-3.4	
RF Input Frequency (GHz)	220		330
RF Input Power (dBm)*			-10
DSB Conversion Loss (dB)	6.5	8	9.5
IF Output Port (Coaxial)		K-Type	
IF Output Frequency (GHz)	0		40
Material		Brass	
Finishing		Gold-Plated	

\* Minimum RF power detectable strongly depends on observed IF bandwidth and calibration settings of the measurement equipment.

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### Typical Performance



#### Notes

- > All plotted data represent typical values. The actual data may vary from unit to unit.
- > All tests are carried out at a room temperature of 24 °C.

### Absolute Maximum Ratings

	Maximum
LO Input Power (dBm)	+12
RF Input Power (dBm)	-10
Operational Temperature and Humidity (at the case)	5 °C to 45 °C // 0% to 80%
Storage Temperature and Humidity	5 °C to 65 °C // 0% to 80%

### Order information

- Please indicate product name and type.
- Please indicate expected input power requirements

#### Caution

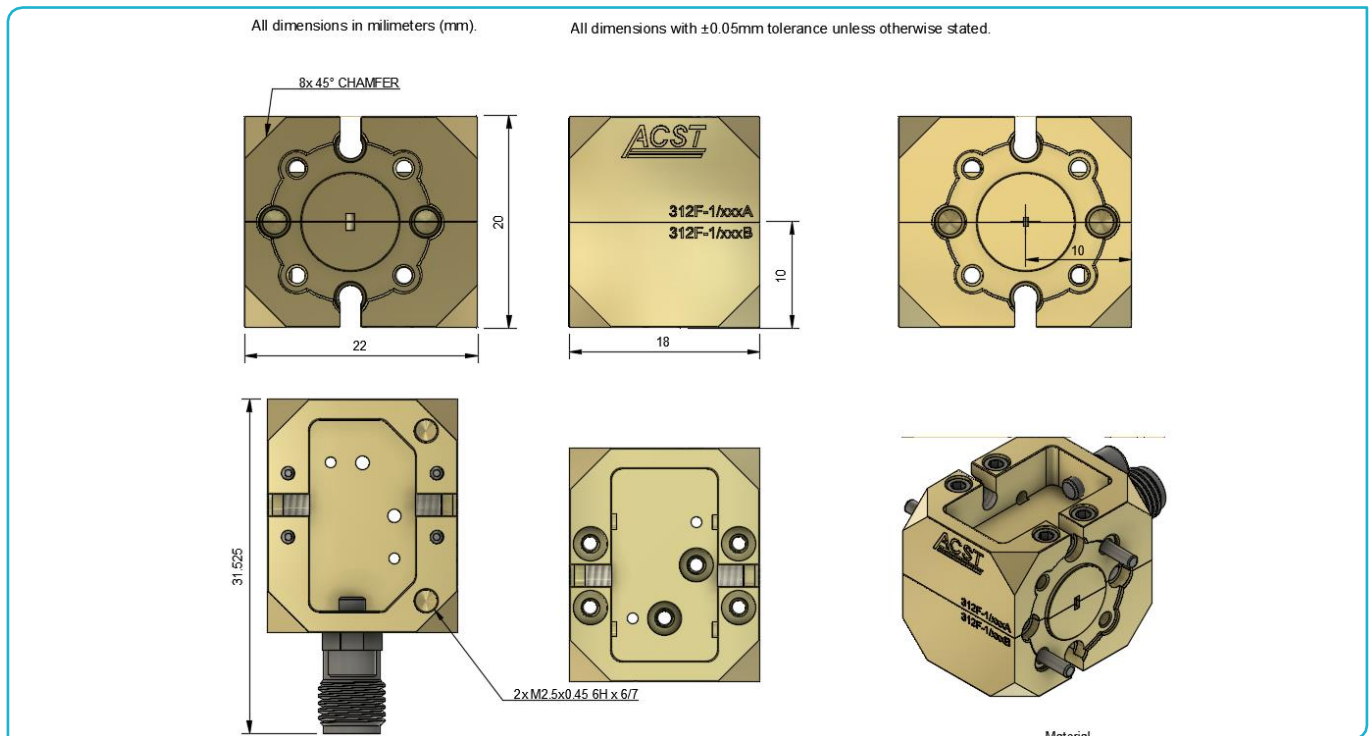
- > Absolute maximum ratings should not be used under normal operating conditions. Exceeding maximum ratings may lead to permanent failure.
- > Any foreign body inserted into the waveguide will cause a loss of performance and may damage the device.



ACST GmbH reserves the right to make changes to the product or information contained herein without notice. Visit [www.acst.de](http://www.acst.de) for additional data sheets and product information.

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## Outline Dimensions



## Mechanical Description

	Maximum
Size (without dowel pin)	18 mm x 22 mm x 20 mm
Output Waveguide Orientation	E-Plane