

## DESCRIPTION

The HBM series of broadband balanced mixers covers the waveguide bands from 18–110 GHz. They utilize a low loss structure mated to a matched pair of GaAs Schottky beam lead diodes for minimum conversion loss and maximum bandwidth. Superior LO noise suppression and LO-RF isolation values are inherent design features.

Biased versions are available for use with lower LO drive levels. Related components also available from HXI include LO frequency multipliers and Gunn oscillators/VCOs. An up-converter version of this mixer is available as series HBUC. (These mixers are not reciprocal and cannot operate as upconverters.)



## Applications

- Frequency Converters
- Signal Processing
- General RF Detection
- Receiver Front Ends
- Frequency Measurement

## Features

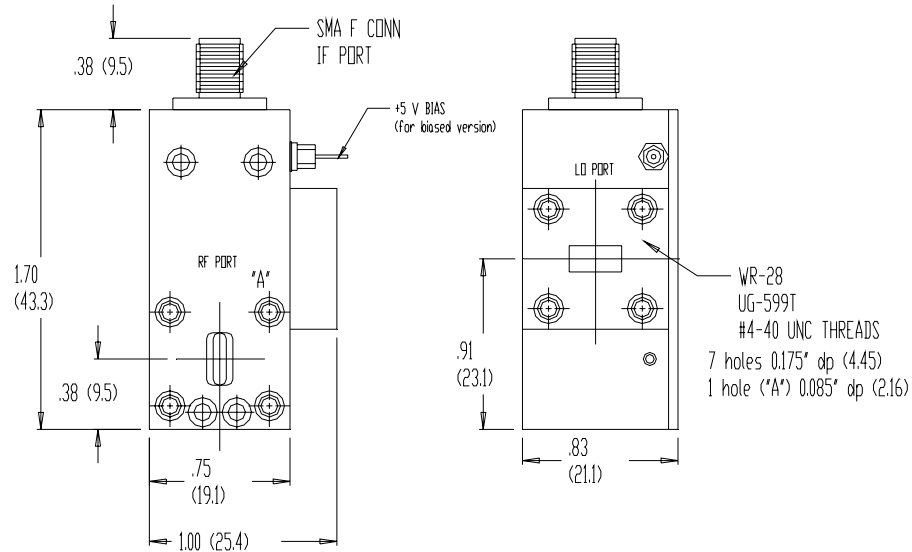
- High IF Bands
- Low LO Drive Level
- Compact Design
- Low Conversion Loss
- Optional IF Amplifiers

Specifications @ 35°C T<sub>CASE.</sub> Specifications subject to change w/o notice.

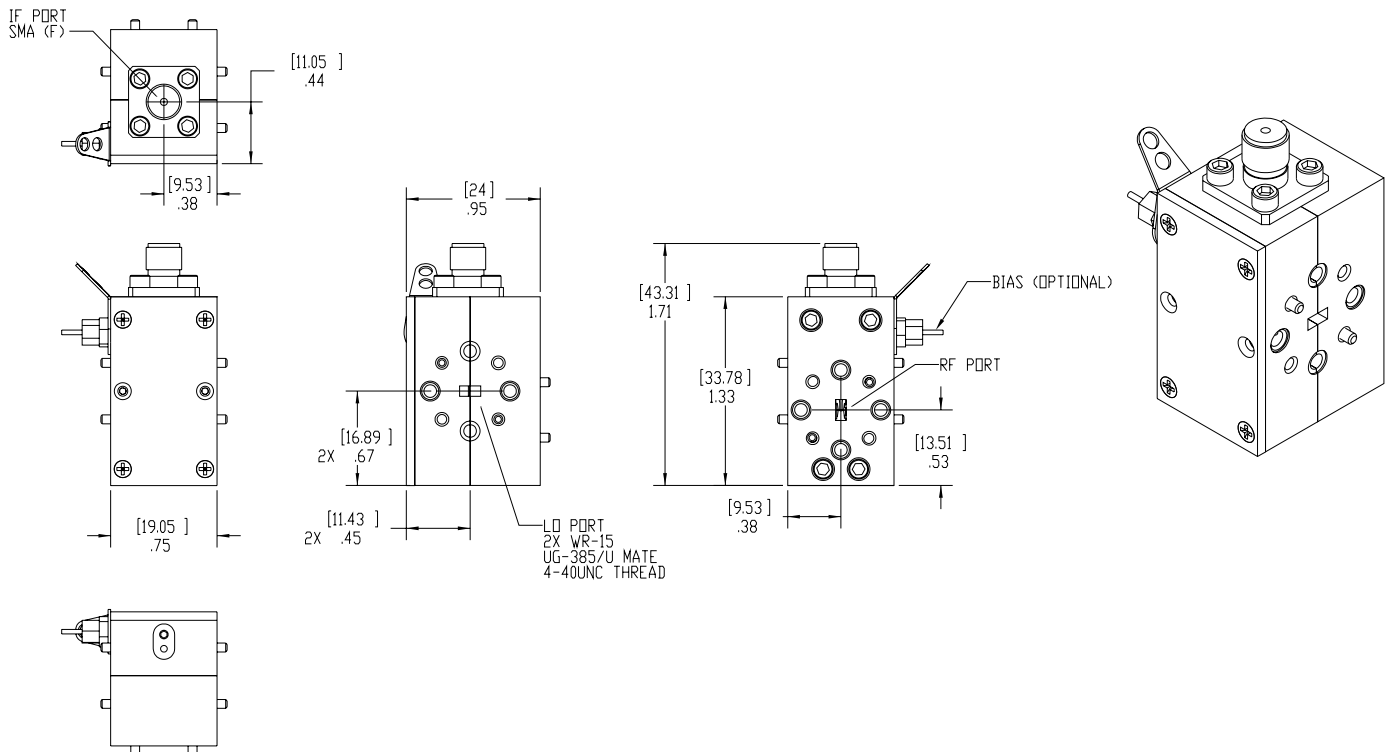
Model Number	Frequency* (GHz)	Waveguide	SSB Conversion Loss (typ) Narrowband, Fixed LO, Low IF		SSB Conversion Loss (typ) Wideband, Swept LO, High IF
			RF Bandwidth	Loss	Loss (typical)
HBM42	18.0 – 26.5	WR – 42	3 GHz	6.0 dB	8.0 dB
HBM28	26.5 – 40.0	WR – 28	3 GHz	6.0 dB	8.0 dB
HBM22	33.0 – 50.0	WR – 22	3 GHz	6.0 dB	9.0 dB
HBM19	40.0 – 60.0	WR – 19	2 GHz	6.5 dB	9.5 dB
HBM15	50.0 – 75.0	WR – 15	7 GHz	6.5 dB	9.5 dB
HBM12	60.0 – 90.0	WR – 12	5 GHz	7.0 dB	10.0 dB
HBM10	75.0 – 110.0	WR – 10	4 GHz	7.0 dB	10.0dB

\*Please specify desired RF, LO and IF frequency ranges when inquiring about balanced mixers.

## Balanced Mixer Outlines

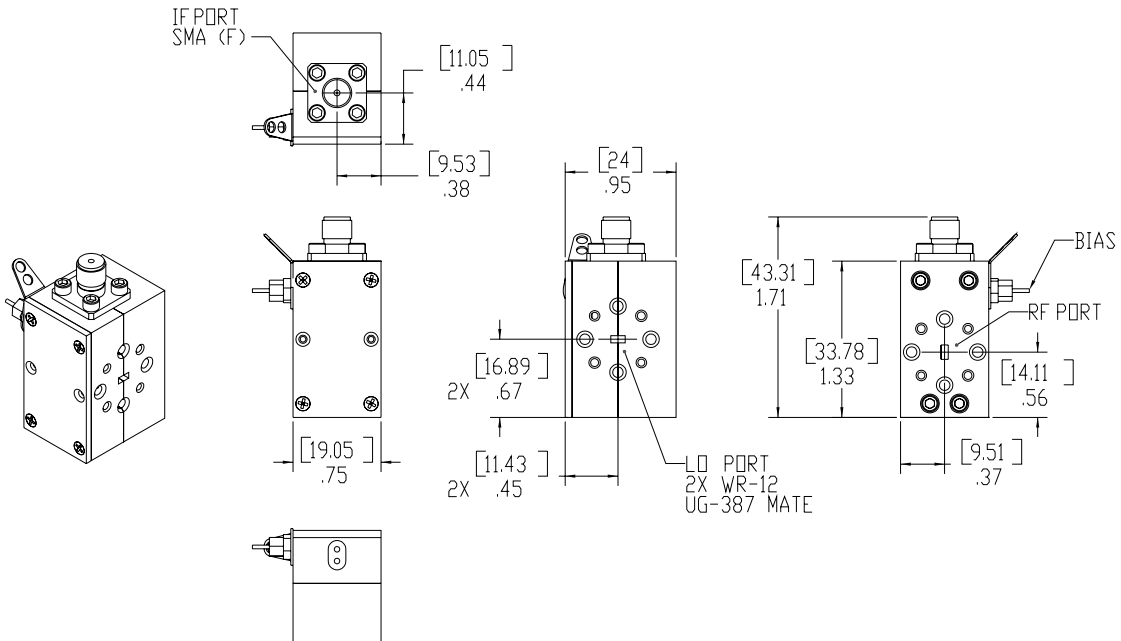


## Ka-Band Balanced Mixer

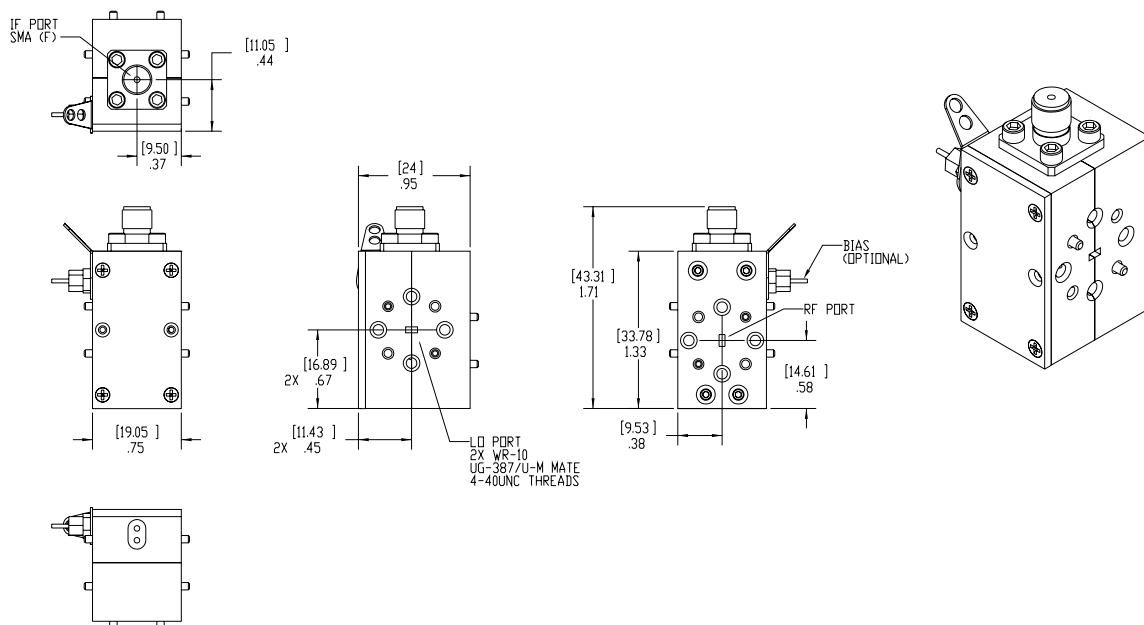


## V-Band Balanced Mixer

## Balanced Mixer Outlines

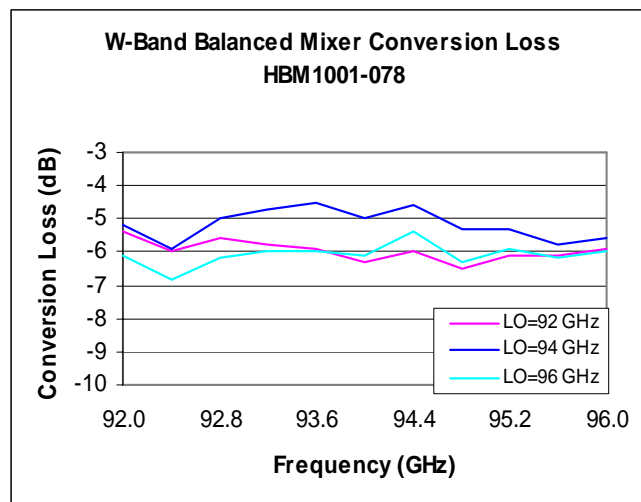
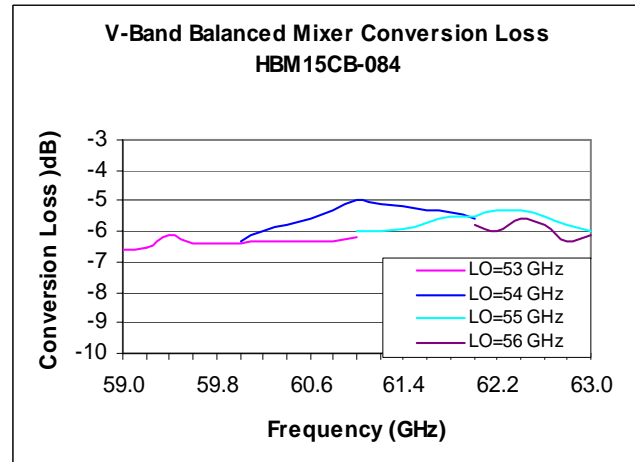
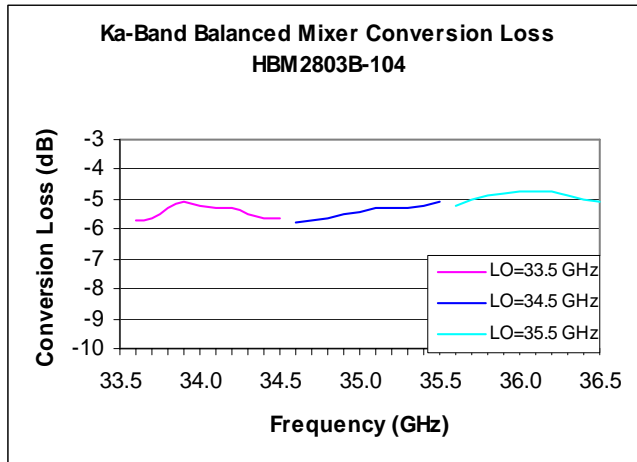


## E-Band Balanced Mixer



## W-Band Balanced Mixer

## Sample Conversion Loss Data for HBM Balanced Mixers



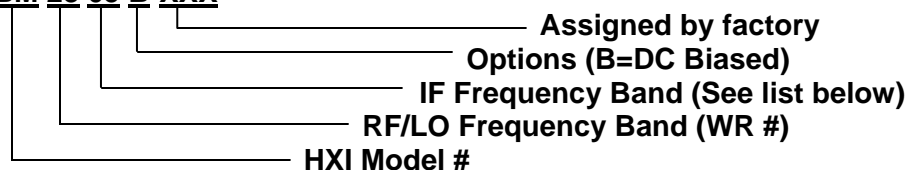
## General Specifications

LO to RF Isolation	20 dB typical
VSWR (RF, LO, IF)	2.0:1 typical
LO Drive Level ( $P_{LO}$ ) unbiased	+13 dBm nominal
LO Drive Level, biased	+7 dBm nominal
$P_{1dB}$ compression point	+3 dBm typical with +13 dBm LO Drive
$P_{RF}$ Maximum	+20 dBm CW, + 24 dBm pulsed
Diode Bias (option)	+6.0 VDC @ 5 mA

## Requesting quotes

When requesting a quote for HBM Balanced Mixers, please specify required RF, LO and IF frequency ranges and any other required specifications. HBM mixers are built to order and will be optimized for the bandwidths specified by the customer. The part number guide below can also be used as a reference for requesting quotes.

### HBM 28 05 B-XXX



For UG-383/U Flange in B & U bands - add /383 after options

## IF Frequency Band Options:

01 (10-100 MHz)	02 (10-500 MHz)	03 (10-1000 MHz)	04 (10-1500 MHz)
05 (1-4 GHz)	06 (1-6 GHz)	08 (1-8 GHz)	L (1-2 GHz)
S (2-4 GHz)	C (4-8 GHz)	X (8-12.4 GHz)	Ku (12.4-18)

Others IF bands available upon request.

Please note that full band units (RF & LO) do not operate with an IF frequency above 100 MHz.