

## Balanced Harmonic Mixers, SFH Series



### FEATURES:

- ◆ Frequency coverage: 26.5 to 140 GHz
- ◆ Balanced configuration for low conversion loss
- ◆ Broadband operation
- ◆ Separate RF, LO and IF ports

### APPLICATIONS:

- ◆ Phase lock loops
- ◆ Spectrum analyzers without built-in diplexer

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### DESCRIPTION:

**SFH series** balanced harmonic mixers are GaAs beam lead Schottky diode-based mixers. The harmonic mixers employ a broadband circuitry and balanced structure to offer low conversion loss and continuous frequency coverage for up to full waveguide band operations. These harmonic mixers are used to extend the frequency of spectrum analyzers and frequency counters. Unlike waveguide harmonic mixers (STH series), these mixers possess an internally integrated frequency diplexer so that the RF, LO and IF ports are configured separately. This feature allows for a convenient connection when used with spectrum analyzer models that do not have built-in diplexers, such as the models offered by Keysight (Agilent) Technologies. The below offering covers the frequency range of 26.5 to 140 GHz and is specially designed and manufactured for Keysight equipment.

### CATALOG MODELS:

Band	Model Number	RF Frequency Range (GHz)	Harmonic Number	IF Frequency Range (GHz)	LO Frequency Range (GHz)	LO Power Range (dBm)	Conversion Loss (dB)	Outline
Ka	SFH-28SF-SF-A1	26.5 to 40.0	8	DC to 1.3	3.0 to 6.1	+14 to +16	25.0	FH-A2
Q	SFH-22SF-SF-A1	33.0 to 50.0	10	DC to 1.3	3.0 to 6.1	+14 to +16	28.0	FH-Q2
U	SFH-19SF-SF-A1	40.0 to 60.0	12	DC to 1.3	3.0 to 6.1	+14 to +16	30.0	FH-U2
V	SFH-15SF-SF-A1	50.0 to 75.0	14	DC to 1.3	3.0 to 6.1	+14 to +16	40.0	FH-V2
E	SFH-12SF-SF-A1	60.0 to 90.0	16	DC to 1.3	3.0 to 6.1	+14 to +16	45.0	FH-E2
W	SFH-10SF-SF-A1	75.0 to 110.0	18	DC to 1.3	3.0 to 6.1	+14 to +16	47.0	FH-W2
F	SFH-08SF-SF-A1	90.0 to 140.0	24	DC to 1.3	3.0 to 6.1	+14 to +16	50.0	FH-F2

### CUSTOM MODELS:

**SAGE Millimeter's** balanced harmonic mixer model numbers are configured per the following format. Customers may refer to the format and specify their own model numbers accordingly when placing an order.

**SFH - F1N F2N MM CL - CR CO CI - XY**

**F1N** is the RF start frequency in MHz x 10N. For example: 26.0 GHz = 263

**F2N** is the RF stop frequency in MHz x 10N. For example: 40.0 GHz = 403

**MM** is the harmonic number. For example: 4th harmonic = 04

**CL** is the small signal conversion loss in dB. For example: 20 dB = 20

**CR** is the RF port connector type. For example: WR-15 = 15

**CO** is the LO port connector type. For example: SMA (F) = SF

**CI** is the IF port connector type. For example: SMA (F) = SF

**X** is the mixer type. "S" is for a standard package and finish with an external bias, "N" is for no external bias and "C" is for a custom design.

**Y** is for factory reserve.

Example: SFH-2434030420-28SF-SF-S1 is a harmonic mixer with an RF frequency range of 24 to 40 GHz, a harmonic number of 4 and a conversion loss of 20 dB. The mixer has a WR-28 waveguide at the RF port and female SMA connectors at the LO and IF, and a standard package and finish. "1" is a factory assigned number.