

## Subharmonically Pumped Mixers, SFS Series

### FEATURES:

- ◆ Frequency coverage: 18 to 110 GHz
- ◆ Balanced configuration for low conversion loss
- ◆ Up to full waveguide band operation
- ◆ LO frequency at half the RF frequency



### APPLICATIONS:

- ◆ Communication systems
- ◆ Radar systems
- ◆ Test instrumentation



### DESCRIPTION:

**SFS series** subharmonically pumped mixers are GaAs beam lead Schottky diode- or MMIC device-based mixers. The subharmonically pumped mixers employ a broadband circuitry and balanced structure to offer low conversion loss and harmonics and are widely used in many communication systems where a superior harmonic and spurious performance is critical. In addition, these mixers have an extremely low LO signal leakage at the RF port. Furthermore, an LO frequency at half the RF frequency reduces the system cost tremendously.

The below standard offering covers the frequency range of 18 to 110 GHz with a typical RF bandwidth that is up to the full waveguide band. Although the non-biased version is the baseline design, externally-biased options are available. Additionally, the standard models focus on full bandwidth operations for most applications, but custom models can be offered to meet specific application needs. Check the website for more models.

### CATALOG MODELS:

Band	Model Number	RF Freq. Range (GHz)	LO Freq. Range (GHz)	IF Freq. Range (GHz)	C. L. (dB)	LO Power (dBm)	Port Isolation (dB)	RF/LO Connectors
Ka	SFS-27340312-28KFSF-N1	26.5 to 40.0	13.3 to 20.0	DC to 5.0	12.0	10 to 15	15.0	WR-28/K(F)
Q	SFS-32342312-22KFSF-N1	32.0 to 42.0	16.0 to 21.0	DC to 3.0	12.0	10 to 15	30.0	WR-22/K(F)
U	SFS-44325413-19KFSF-N1	44.0 to 54.0	22.0 to 27.0	DC to 5.0	13.0	10 to 15	15.0	WR-19/K(F)
V	SFS-54364313-15KFSF-N1	54.0 to 64.0	27.0 to 32.0	DC to 6.0	13.0	10 to 15	15.0	WR-15/K(F)
E	SFS-71378314-122FSF-N1	71.0 to 86.0	29.0 to 43.0	DC to 12.0	14.0	10 to 15	20.0	WR-12/2.4(F)
W	SFS-75311415-10VFSF-N1	75.0 to 110.0	37.5 to 55.0	DC to 5.0	15.0	10 to 15	15.0	WR-10/V(F)

### CUSTOM MODELS:

**SAGE Millimeter's** subharmonically pumped 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.

**SFS - RFL RFH CL - CR CO CI - XY**

- RFL** is the RF low frequency in MHz x 10N. For example: 44.0 GHz = 443
- RFH** is the RF high frequency in MHz x 10N. For example: 54.0 GHz = 543
- CL** is the small signal conversion loss in dB. For example: 13 dB = 13
- CR** is the RF port connector type. For example: WR-19= 19
- CO** is the LO port connector type. For example: K(F) = KF
- CI** is the IF port connector type. For example: SMA (F) = SF
- X** is the mixer type. "N" is for non-externally biased and "E" is for externally-biased.
- Y** is for factory reserve.

Example: SFS-50360314-15KFSF-N1 is a non-externally biased, subharmonically pumped mixer with an RF frequency range of 50 GHz to 60 GHz and a conversion loss of 14 dB. The mixer has a WR-15 waveguide at the RF port, a female K connector at the LO port and a female SMA connector at the IF port. "1" is a factory assigned number.