

Single Side Band Modulators, SFM Series



FEATURES:

- ◆ Frequency coverage: 18 to 110 GHz
- ◆ Balanced configuration for low conversion loss
- ◆ Readily to be configured as image rejection mixers
- ◆ IF port DC coupling for phase detection
- ◆ Standard temperature range: -10 to +60 °C

APPLICATIONS:

- ◆ Phase detector
- ◆ Ranging radar systems
- ◆ Communication systems
- ◆ Test instrumentations

DESCRIPTION:

When the IF frequency is used as pumping source, the frequency converters become single side band modulators. These modulators are also known as single side band up-converters if near RF frequency is used as LO pumping source. **SFM series** single side band modulators are GaAs Schottky beamlead diode or MMIC based modulators. These modulators are offered in seven common waveguide bands in the frequency range from 18 to 110 GHz. The IF quadrature hybrid is not included in these modulators. Instead, the separate I and Q ports are provided. Thus, either an external IF quadrature hybrid or two IF orthogonal, equal amplitude signals are required in order to produce a single side band signal. The typical image rejection of these modulators is 20 dB. The catalog models are designed for narrow bandwidth operations to address industry focused frequencies. While the focus of the catalog models is on specific operation frequencies and package styles, custom designed models are available to meet customers' unique application needs.

CATALOG MODELS:

Band	Model Number	RF In / Out Frequency Range (GHz)	IF Frequency Range (GHz)	Conversion Loss (dB)	IF Power (dBm)	Image Rejection (dB)	RF Connectors	Outline
K	SFM-42-NC	23.0 to 25.0	DC to 5.0	11.0	16	20.0	K(F)	FQ-KC
Ka	SFM-28-NC	34.0 to 36.0	DC to 5.0	12.0	16	20.0	K(F)	FQ-AC
K	SFM-42-N1	23.0 to 25.0	DC to 5.0	11.0	16	20.0	WR-42	FQ-K1
Ka	SFM-28-N1	34.0 to 36.0	DC to 5.0	12.0	16	20.0	WR-28	FQ-A1
Q	SFM-22-N1	41.0 to 45.0	DC to 3.0	12.0	16	20.0	WR-22	FQ-Q1
U	SFM-19-N1	49.0 to 51.0	DC to 3.0	13.0	16	20.0	WR-19	FQ-U1
V	SFM-15-N1	58.0 to 62.0	DC to 3.0	14.0	16	20.0	WR-15	FQ-V1
E	SFM-12-N1	75.0 to 79.0	DC to 1.0	15.0	16	20.0	WR-12	FQ-E1
W	SFM-10-N1	92.0 to 96.0	DC to 1.0	16.0	16	20.0	WR-10	FQ-W1

CUSTOM DESIGNED MODELS:

Sage Millimeter's custom designed single side band modulator model numbers are configured per following format. Customers may refer to the format and specify their own model numbers accordingly when placing the order.

SFM - RFN IFN CL - C1 C2 CI - XY

RFN is the center frequency of RF in MHz x 10N. For example: 58.0 GHz = 583

IFN is the center frequency of IF in MHz x 10N. For example: 1.0 GHz = 013

CL is the small signal conversion loss in dB. For example: 14 dB = 14

C1 is the input connector type of RF port

C2 is the output connector type of RF port

CI is the connector type of IF port

X is for modulator type. "N" is for non external biased and "E" is for external biased.

Y is for factory reserve.

Example: SFM-58301314-1515SF-N1 is a custom designed single side band modulator with RF frequency centered at 58.0 GHz and IF frequency centered at 1.0 GHz, conversion loss 14 dB. The input and output of the RF connectors are WR-15 waveguide and IF connector is SMA(F). It is a non external biased single side band modulator. "1" is a factory assigned sequential number.

