

- Multiplication factor up to 9
- High efficiency
- Broad band operation
- Low spurious harmonic content
- Low phase and AM noise
- Small size, Compact design
- High reliability, rugged construction

## Applications

- Laboratory measurement and test equipment
- Sources of mm-wave power
- AM/PM possibility
- Electronic tuned power sources
- Spectroscopy/Radiometry



## Description

Diode frequency multipliers are widely used in small size solid-state signal sources for use in mm-wave range. Step-recovery and Schottky diodes are used as non-linear elements in the BFM-XX frequency multipliers. The frequency multipliers have multiplication factor 2 or 3 and can be assembled in series. To increase output power an intermediate power amplifier can be used between two multiplier stages. The highest operating frequency reaches 170GHz at multiplication factor 9. Nominal input frequency is within 11GHz - 20GHz frequency range and input power level up to 100 mW. The phase and amplitude stability of the output signal are defined by the quality of the pumping source. The input of a multiplier is a coaxial connector, and the output is a waveguide flange.

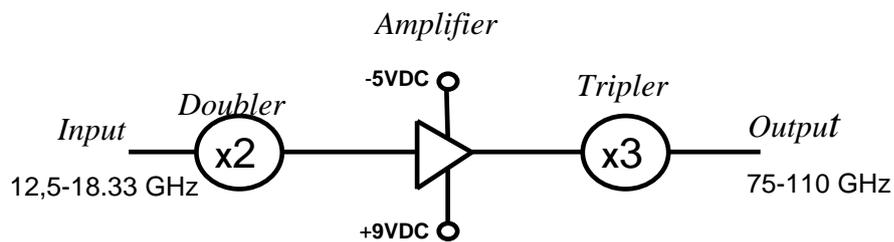
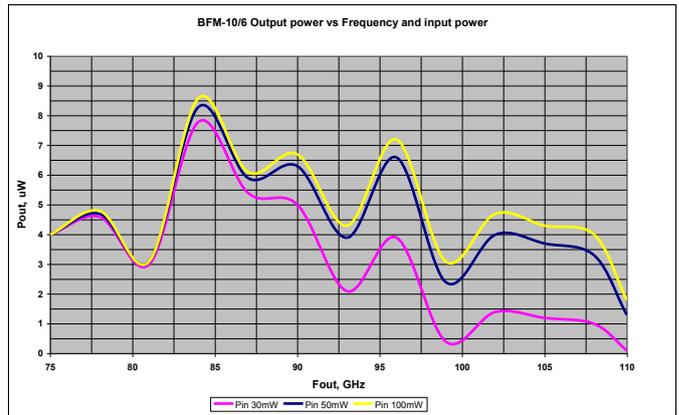
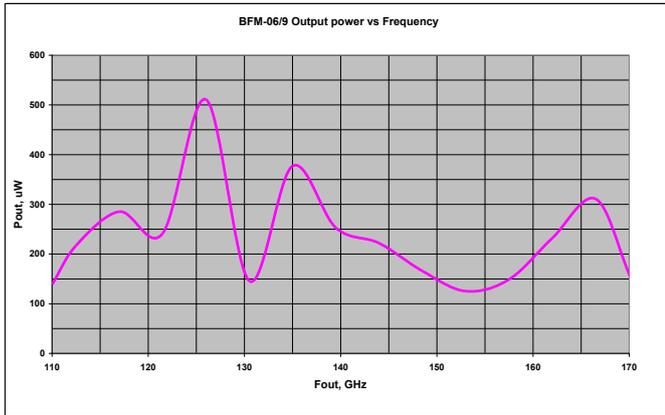
A broad band millimeter-wave voltage controlled oscillator (mm-wave VCO) can be assembled using a BFM-XX multiplier and 11-20GHz VCO.

## Specifications

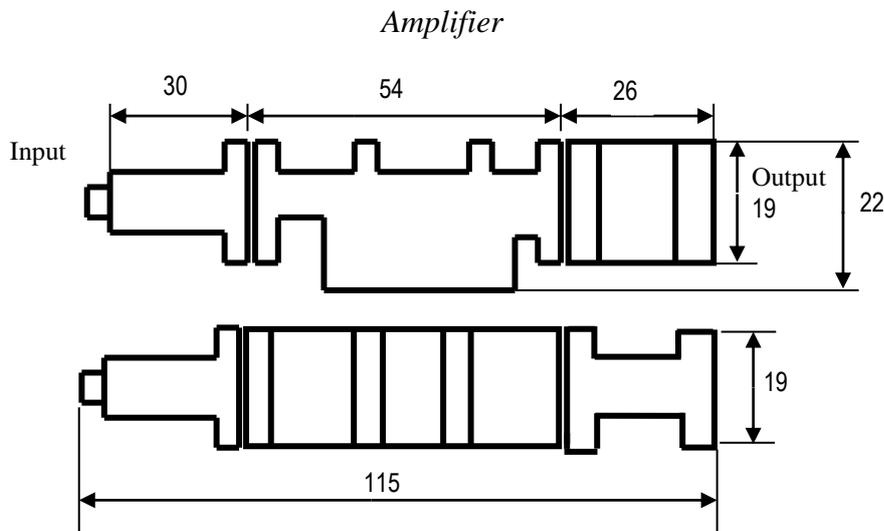
MODEL NUMBER	BFM-28/2	BFM-22/3	BFM-15/4	BFM-10/6	BFM-06/9
Frequency Range (GHz)	26.5-40 GHz	33-50 GHz	50-75 GHz	75-110 GHz	110-170 GHz
Input Waveguide	WR-28	WR-19	WR-15	WR-10	WR-06
Waveguide Flange	UG-599/U	UG-383/U	UG-385/U	UG-387/U-M	UG-387/U-M
Total multiplication factor (first X second stages)	2	3	4(2x2)	6(2x3)	9(3x3)
Signal purity, dBc	>25dB	>20dB	>20dB	>20dB	>10dB
Output power (typ, mW)	7-11	3 - 6	2-5*	1-3*	0.1 – 0.5
Input power (nom, mW)	100	100	1	1	1
Input frequency (GHz)	13.25-20	11-16.66	12.5-18.75	12.5-18.33	12.22-18.88

\*) An intermediate power amplifier is installed between two multiplication stages

Typical data of output frequency are presented in the plots below.



Schematic diagram of BFM-10/6



Outline drawing of BFM-10/6 multiplier (mm)

## How to Order

Specify Model Number BFM-XX/M, where

- **XX** – number of waveguide standard (Ex. 10 for WR-10 and 06 for WR-06)
- **M**- multiplication factor

## Example

**BFM-10/6** (W-band sextupler)

**BFM-06/9** (D-band nanupler)