

## Q-Band, X4 Active Frequency Multiplier, 33 to 50 GHz, +20 dBm

### Description:

**Model SFA-224SF-S1** is an active X4 frequency multiplier. The multiplier has an input frequency of 8.25 to 12.50 GHz with a typical input power of -10 dBm and an output frequency of 33 to 50 GHz with a typical output power of +20 dBm. The multiplier also has a typical harmonic suppression of -15 dBc. The DC power requirement for the multiplier is +8 V<sub>DC</sub>/1,000 mA. The input port configuration is a SMA connector and the output is a WR-22 waveguide with a UG-383/U flange. Other port configurations are available under different model numbers.



### Features:

- Low Harmonic Emission
- High Output Power
- Low Harmonic Components

### Applications:

- Frequency Extenders
- Source Module
- Communication Systems

### Electrical Specifications:

| Parameter                 | Minimum            | Typical            | Maximum             |
|---------------------------|--------------------|--------------------|---------------------|
| Input Frequency           | 8.25 GHz           |                    | 12.50 GHz           |
| Input Power               |                    | +5 dBm             | +20 dBm             |
| Output Frequency          | 33 GHz             |                    | 50 GHz              |
| Output Power              |                    | +20 dBm            |                     |
| Harmonic Suppression      |                    | -15 dBc            |                     |
| Spurious                  |                    | -60 dBc            |                     |
| Port Return Loss          |                    | 10 dB              |                     |
| DC Voltage                | +6 V <sub>DC</sub> | +8 V <sub>DC</sub> | +10 V <sub>DC</sub> |
| DC Supply Current         |                    | 1,000 mA           |                     |
| Specification Temperature |                    | +25°C              |                     |
| Operating Temperature     | 0°C                |                    | +50°C               |

### Mechanical Specifications:

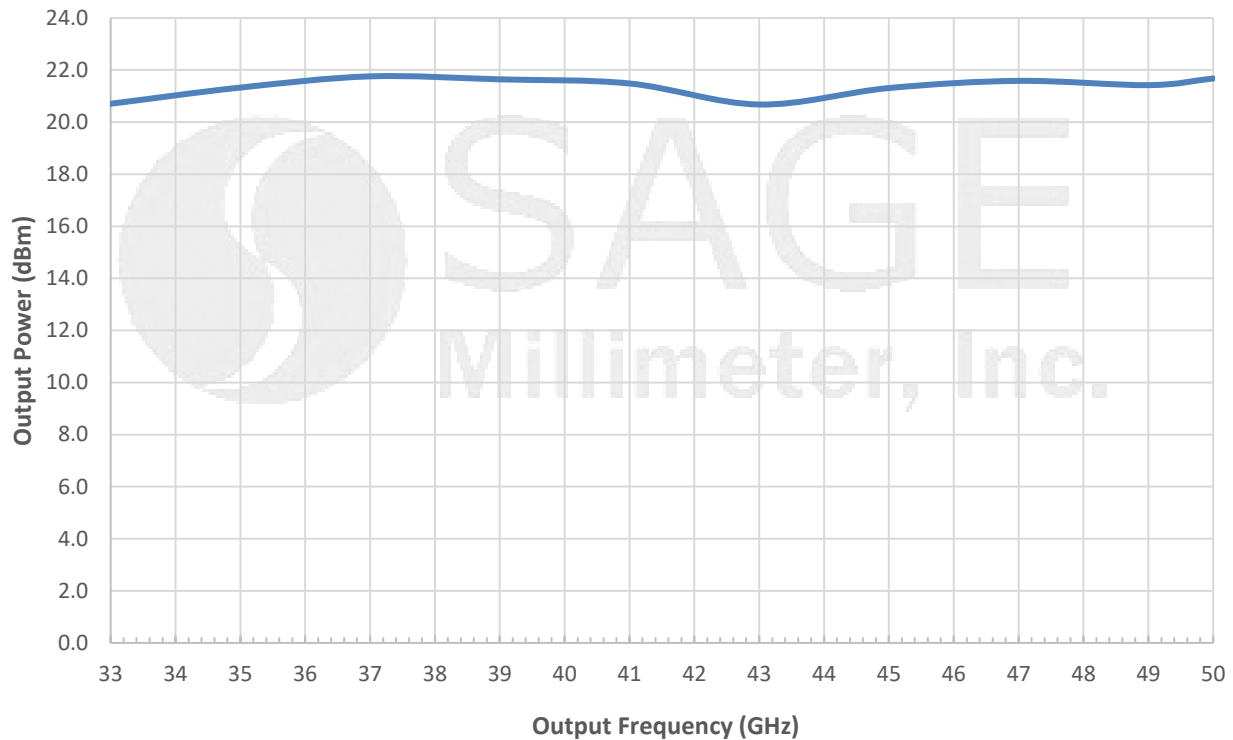
| Item          | Specification                        |
|---------------|--------------------------------------|
| Input         | SMA (F)                              |
| Output        | WR-22 Waveguide with UG-383/U Flange |
| Bias          | Solder Pin                           |
| Case Material | Aluminum                             |
| Finish        | Gold Plated                          |
| Weight        | 1.6 Oz                               |
| Size          | 1.20" (W) X 2.00" (L) X 0.50" (H)    |
| Outline       | FA-SQ-1-A                            |



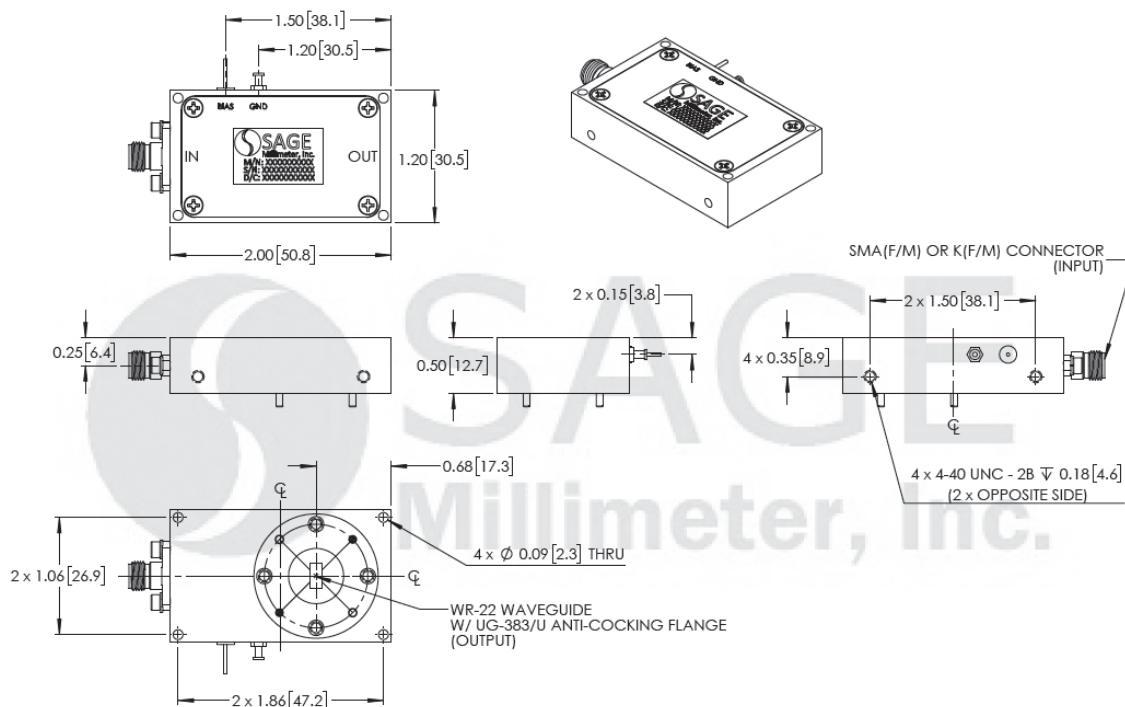
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### Output Power vs. Frequency

Bias: +8 V<sub>DC</sub>/1,000 mA; Input Power: +5 dBm



**Mechanical Outline:** (Unless otherwise specified, all dimensions are in inches [millimeters])



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### Note:

- All data presented is collected from a sample lot. Actual data may vary unit to unit.
- All testing was performed under +25 °C case temperature.
- SAGE Millimeter, Inc. reserves the right to change the information presented without notice.
- Other mechanical configurations are available under different model numbers.

### Caution:

- Exceeding absolute maximum ratings shown will damage the device.
- The device is static sensitive. Always follow ESD rules when working with the device.
- The case temperature of the device shall never exceed +50 °C. Use proper heatsink or fan if necessary.
- Any foreign objects in the waveguide will cause performance degradation and may damage the device.
- Proper torque,  $8.0 \pm 0.15$  inch-pounds ( $0.90 \pm 0.02$  Nm), should be applied. **SAGE Millimeter torque wrench, model SCH-08008-S1, is highly recommended.**

