



## Q-Band Power Amplifier, 47 to 52 GHz, 30 dB Gain, +18 dBm P<sub>1dB</sub>

### Description:

**Model SBP-4735233018-2222-E1** is a power amplifier with a typical small signal gain of 30 dB and a nominal P<sub>1dB</sub> of +18 dBm across the frequency range of 47 to 52 GHz. The DC power requirement for the amplifier is +8 V<sub>DC</sub>/650 mA. The mechanical configuration offers an inline structure with WR-22 Uni-Guide™ waveguides. Other port configurations, such as a right angle structure with WR-22 waveguides or 2.4 mm connectors, are also available under different model numbers.



### Features:

- High Output Power
- High Gain

### Applications:

- Radar Systems
- VSAT Communication Systems
- Test Equipment

### Electrical Specifications:

| Parameter                 | Minimum | Typical            | Maximum             |
|---------------------------|---------|--------------------|---------------------|
| Frequency                 | 47 GHz  |                    | 52 GHz              |
| Gain                      |         | 30 dB              |                     |
| P <sub>1dB</sub>          |         | +18 dBm            |                     |
| P <sub>sat</sub>          |         | +20 dBm            |                     |
| P <sub>in</sub>           |         |                    | +20 dBm             |
| Input Return Loss         |         | 10 dB              |                     |
| Output Return Loss        |         | 10 dB              |                     |
| DC Voltage                |         | +8 V <sub>DC</sub> | +15 V <sub>DC</sub> |
| DC Supply Current         |         | 650 mA             |                     |
| Specification Temperature |         | +25 °C             |                     |
| Operating Temperature     | 0 °C    |                    | +50 °C              |

### Mechanical Specifications:

| Item          | Specification  |
|---------------|--|
| Input Port    | WR-22 Uni-Guide™ Waveguide with UG-383/U Anti-Cocking Flange |
| Output Port   | WR-22 Uni-Guide™ Waveguide with UG-383/U Anti-Cocking Flange |
| Bias          | Solder Pin   |
| Case Material | Aluminum   |
| Finish        | Gold Plated  |
| Weight        | 2.0 Oz   |
| Size          | 1.95" (L) X 1.20" (W) X 1.13" (H)                            |
| Outline       | BG-SQ-2-A  |

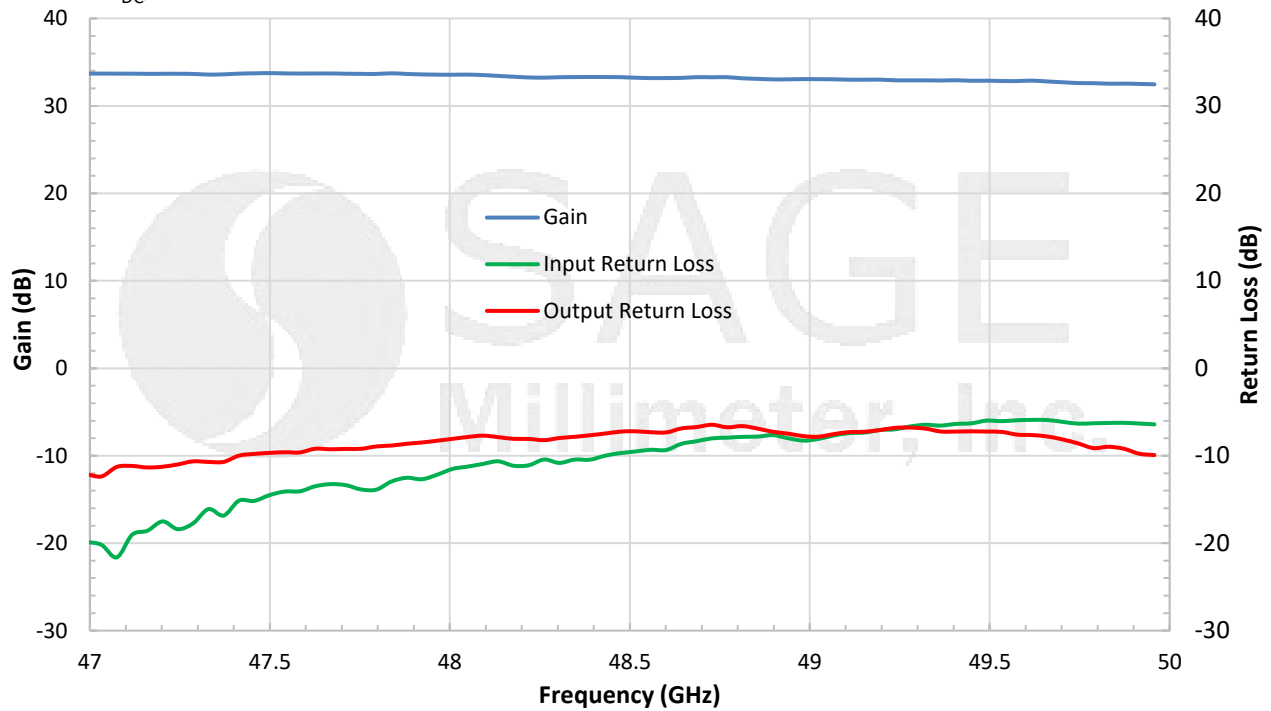




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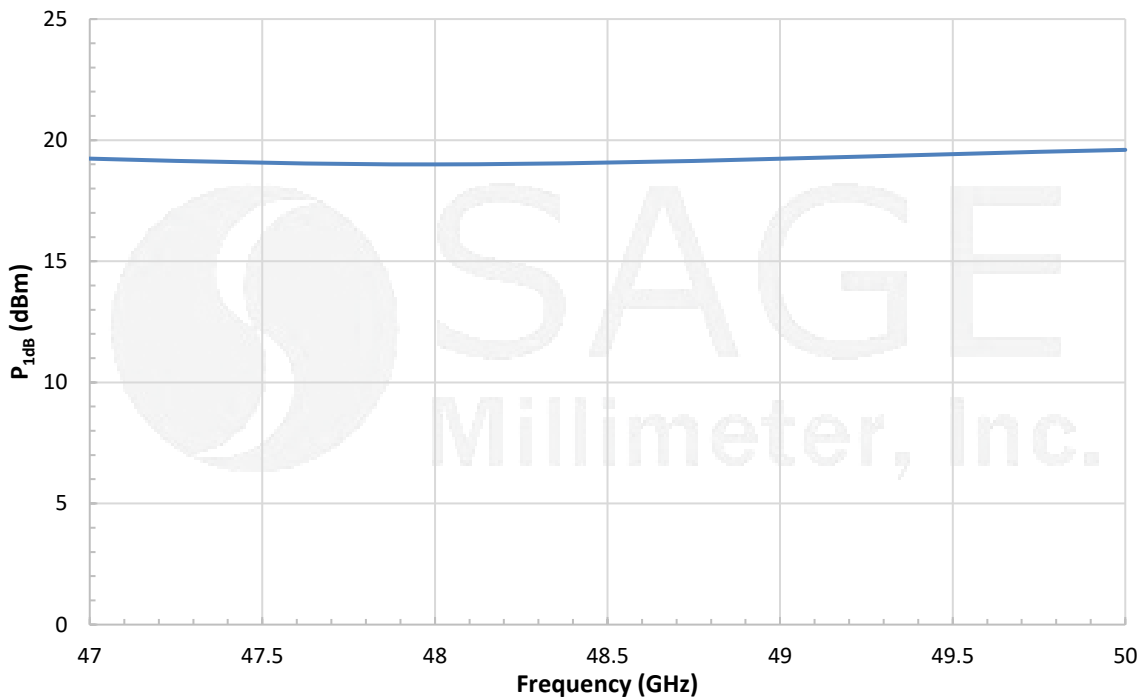
### Gain and Return Loss vs. Frequency

Bias: +8 V<sub>DC</sub>/650 mA



### Typical P<sub>1dB</sub> vs. Frequency

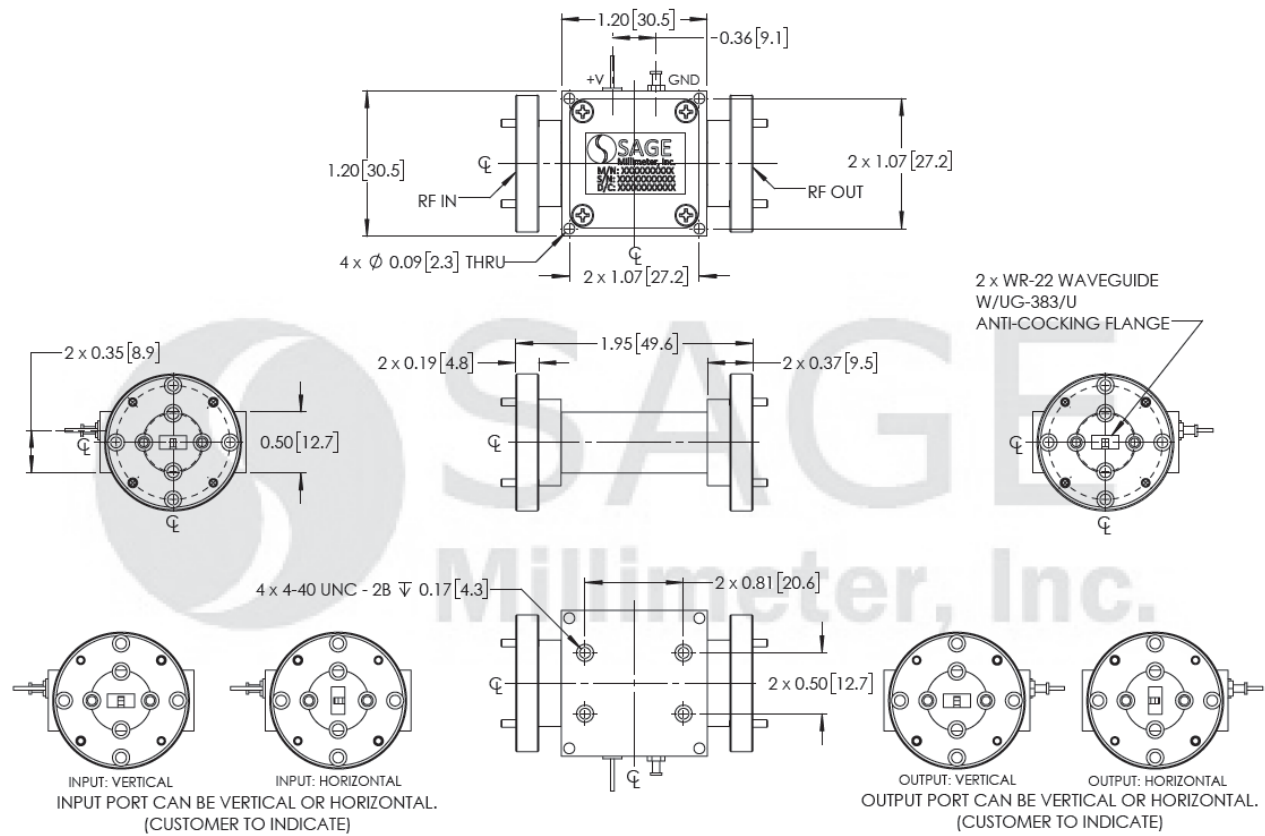
Bias: +8 V<sub>DC</sub>/800 mA





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



**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.
- The amplifier employs SAGE Millimeter’s trademarked and patent pending technology, the **Uni-Guide™**, as its waveguide interfaces. The orientation of the input and the output waveguides can be specified through corresponding model numbers. For example, the model number for a vertical input waveguide and horizontal output waveguide configuration would be **SBP-4735233018-2222H-E1** instead of the default **SBP-4735233018-2222-E1** which indicates vertical orientation for both input and output.
- Other mechanical configurations are available under different model numbers.
- SAGE Millimeter, Inc. reserves the right to change the information presented without notice.

**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.

