Fairview Microwave
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FMWGA3219
DATA SHEET

WR-15 Waveguide Power Amplifier, V Band, 50 GHz to 75 GHz, 34 dB Gain, 24 dBm Psat, UG-385/U Flange

The FMWGA3219 is a WR-15 Waveguide Power Amplifier, operating across the V Band from 50 GHz to 75 GHz. This 50 Ohm design exhibits impressive typcial performance which includes 34 dB gain, +22 dBm P1dB, and +24 dBm Psat. Maximum RF input power (CW) is +5 dBm, and DC bias is +6 Vdc at 800 mA typ. The rugged and small size aluminum package design is gold plated with an integrated heatsink to ensure highly reliabile operation. The RF input and output ports support a UG-385/U waveguide flange pattern. Solder pins are used for DC bias voltage and ground. The Power amplifier design is RoHS compliant and operates across a wide temperature range from -10°C to +45°C.

Features:

- WR-15 Waveguide Power Amplifier
- 50 GHz to 75 GHz
- V Band
- Small Signal Gain 34 dB typ
- Ouput P1dB: +22 dBm typ
- Output Psat: +24 dBm typ
- VSWR 1.6:1 typ
- DC Bias +6V @ 800 mA typ
- Max RF Input Power (CW) +5 dBm
- 50 Ohm Design
- RF Input and Output Waveguide Flange UG-385/U
- Solder Pins for DC Bias Voltage and Ground
- Operational Temperature Range -10°C to +45°C
- Rugged and Compact Gold Plated Aluminum Package Design with an Integrated Heatsink
- RoHS Compliant

Applications:

- Test & Measurement
- Military & Commercial Communications
- Military Electronic Systems
- Research & Development

Electrical Specifications

Description	Min	Typ	Max	Units
Frequency	50		75	GHz
Small Signal Gain		34		dB
Saturated Output Power		24		dBm
Output at P1dB		22		dBm
Input VSWR		2:01		
Output VSWR		1.3:1		
Operating DC Voltage	5	6	10	Volts
Operating DC Current		800		mA
Input Power (CW)			5	dBm
Operating Temperature Range	-10		45	°C

Electrical Specification Notes:
1.) DC Supply must be able to source at least 9A DC at startup.
2.) Open and short-circuit loads are not recommended at the amplifier output.
3.) Ensure proper 50 ohm load before turning the amplifier "ON".
4.) Reverse biasing will destroy the amplifier.
5.) Do not put any foreign objects inside the waveguide. Warranty will be voided.

Absolute Maximum Rating

Parameter	Rating
Operating Temperature	-10°C to +45°C
Storage Temperature	-40°C to +100°C
Total Power Dissipation	5W
Input Power (CW)	+5dBm
DC Operating Voltage	+12V

Mechanical Specifications

Size

Length	2 in [50.8 mm]
Width	2 in [50.8 mm]
Height	1.8 in [45.72 mm]
Weight	0.24 lbs [108.86 g]
Body Material and Plating	Aluminum, Gold

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Design
DC Bias Connector Solder Pin

Description	Connector 1	Connector 2
Type	WR-15	WR-15
Flange	UG-385/U	UG-385/U

Environmental Specifications

Biasing Up Procedure

Biasing Up Procedure		Power Down Procedure	
Step 1	Connect Ground Pin	Step 1	Turn OFF RF input
Step 2	Apply DC Supply Voltage	Step 2	Turn OFF DC Supply Voltage
Step 3	Turn ON RF input	Step 3	Remove Ground

Temperature
Operating Range -10 to 45 deg C
Storage Range -40 to 100 deg C

Compliance Certifications (see product page for current document)

Plotted and Other Data

Notes:

Amplifier Power-up Precautions

1.) Confirm that proper ESD precautions and controls are always in place before handling any Amplifier module.

2.) Confirm adequate thermal management is in place to effectively dissipate heat away from the Amplifier package. The Amplifier operational baseplate temperature must be within the operational temperature range stated in the Amplifier datasheet. Depending on the design and thermal requirements, using a heatsink with cooling fan is always recommended for safe reliable operation. A heat sink without a cooling fan may also be used. Damage caused from overheating will void the warranty.

3.) Confirm adequate system grounding is established. The DC power supply and Amplifier must have a common ground in order to operate properly.

4.) Power Amplifiers may require additional DC Current when initially powered-up. Depending on the design, the input current draw could range from an additional 10% to 100% above the maximum rated DC current of the Amplifier. This varies based on product part number.

5.) Confirm the DC power supply, if limited, is set to allow for additional start-up current that's rated for the Power Amplifier.

6.) Confirm the system is designed and calibrated for 50 ohms. Any impedance mismatch may cause performance issues.

7.) Perform a CALIBRATION (if required) with the loads before connecting the Amplifier to the Network Analyzer to ensure proper performance.

8.) Use a fixed attenuator between the signal source and input port of the Amplifier to optimize the input VSWR match.

9.) Confirm the input power level at the input port of the amplifier does not exceed the maximum rated limit for input power (as stated in the Amplifier datasheet).
   P_{in} for Small Signal Gain = P1dB-SSG-10 dB
   P_{in} for P1dB = P1dB-SSG+1 dB

10.) Confirm the Network Analyzer is always connected to the Amplifier first before DC power is applied to the Amplifier.

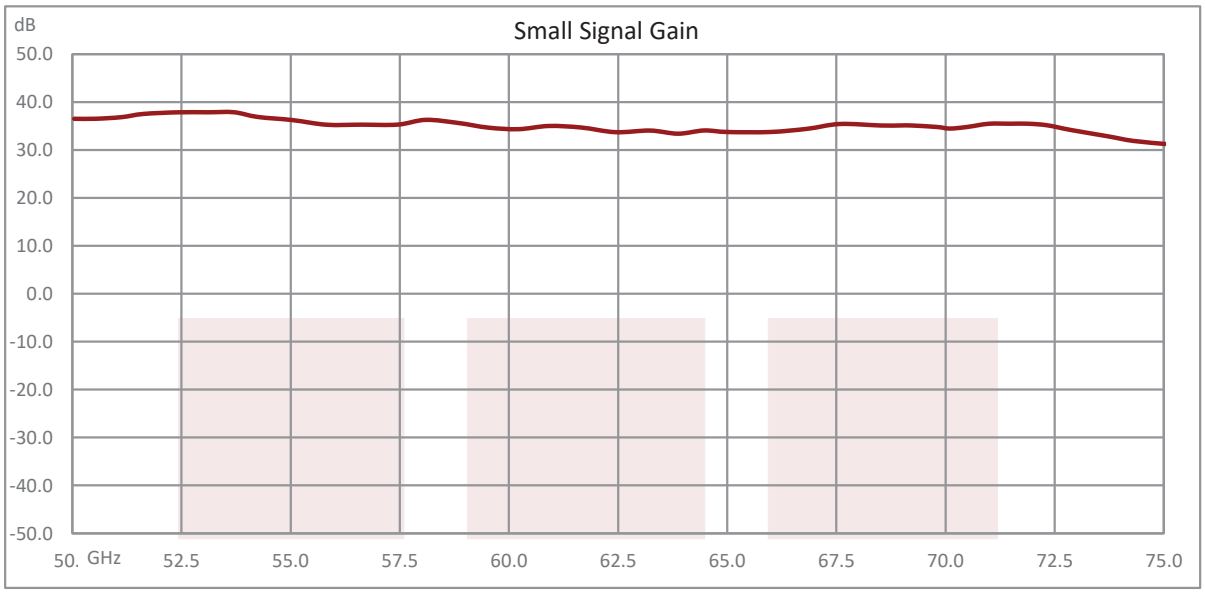
11.) As long as the input and output ports of the amplifier are connected to a 50Ohm load and RF signal power is applied, the Amplifier can be powered up with DC voltage.

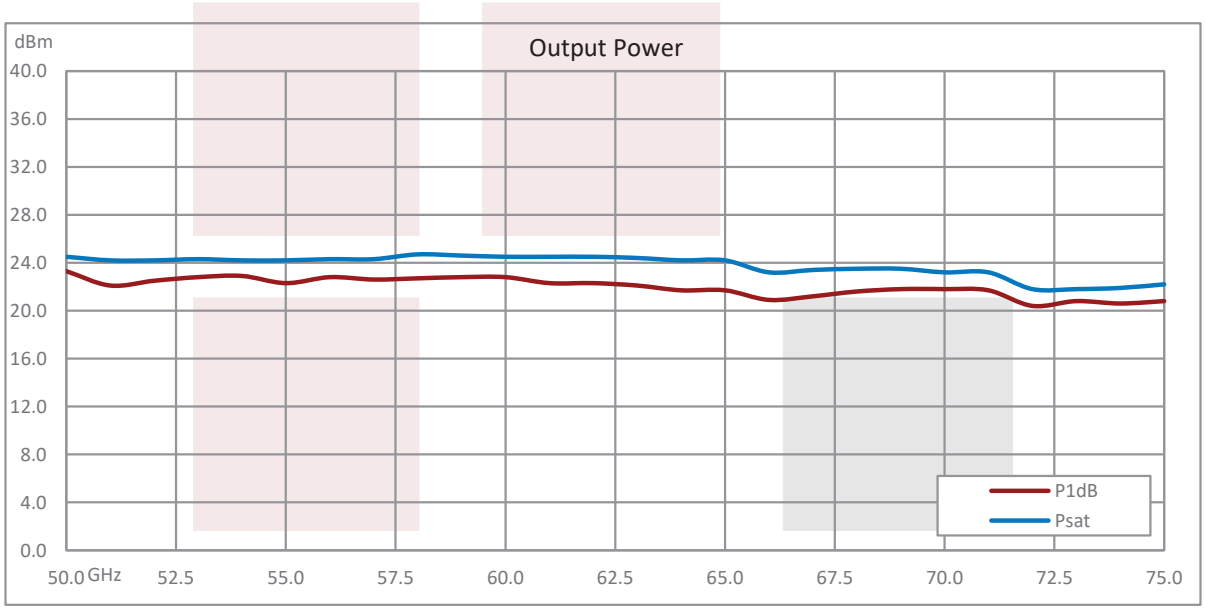
12.) Confirm the Amplifier output load is matched for a 50 Ohm impedance and will not exceed the maximum rated VSWR or Return Loss limit for the Amplifier. Exceeding the maximum rated VSWR or Return Loss limit will result in reflected signal power that could damage the Amplifier and void the warranty.

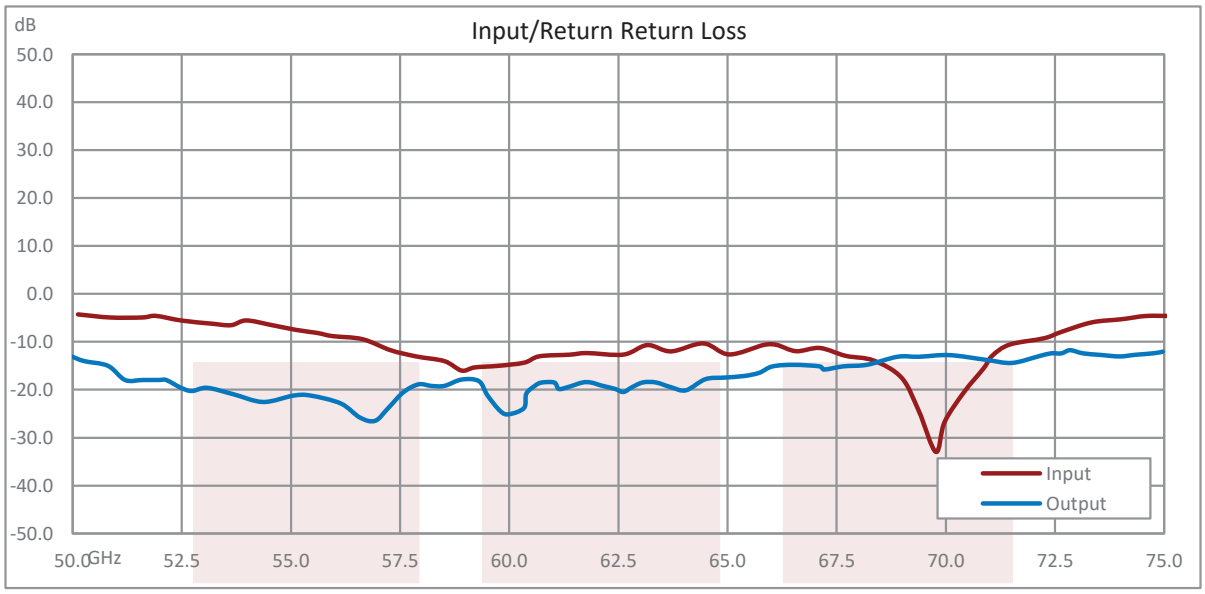
13.) **Power Amplifier connected to an Antenna for signal transmission** - It's strongly recommended to use a high power fixed attenuator pad or an Isolator between the output port of the Amplifier and input port to the antenna. Any reflected signal power due to impedance mismatch will likely damage the Amplifier and void the warranty.

14.) The attenuator or isolator used at the output port of the Amplifier must be rated to handle the output power level and operational frequency band of the amplifier.

Typical Performance Data







WR-15 Waveguide Power Amplifier, V Band, 50 GHz to 75 GHz, 34 dB Gain, 24 dBm Psat, UG-385/U Flange from Fairview Microwave is in-stock and available to ship same-day. All of our RF/microwave products are available off-the-shelf from our ISO 9001:2008 certified facilities in Lewisville, Texas. Fairview Microwave is RF on-demand.

For additional information on this product, please click the following link: WR-15 Waveguide Power Amplifier, V Band, 50 GHz to 75 GHz, 34 dB Gain, 24 dBm Psat, UG-385/U Flange FMWGA3219

URL: https://www.fairviewmicrowave.com/wr-15-waveguide-power-amplifier-75-ghz-v-band-24-dbm-psat-fmwga3219-p.aspx