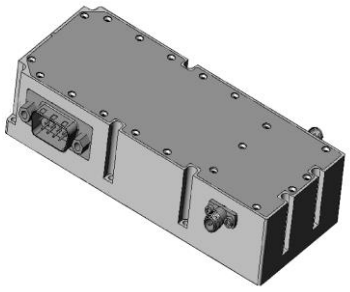
WR28 Waveguide Power Amplifier
27GHz~31GHz



Note: Please refer to the outline drawing.

Features

- Wideband Solid State Power Amplifier
- Psat: + 43dBm Typical
- Gain: 40dB Typical
- Supply Voltage: +28V

Typical Applications

- Wireless Infrastructure
- Military & Aerospace Applications
- Test Instrumentation

Electrical Specifications, T_A = +25°C, Vcc = +28V

Parameter	Min.	Typ.	Max.	Units
Frequency Range		27 – 31		GHz
Gain		40		dB
Gain Flatness		+/-2		dB
Input Return Loss		20		dB
Output Return Loss		25		dB
Saturated Output Power (Psat)		43		dBm
Supply Current (Vcc=+28V)		2		A
Input Max Power (No damage)		Psat – Gain		dBm
Weight		5500		g
Impedance		50		Ohms
Input / Output Connectors		WR28		
Finish		Nickel Plated		
Material		Aluminum / Copper		
Package Sealing		Epoxy Sealed (Standard)		
		Hermetically Sealed (Optional)		

* P1dB, P3dB and Psat power test signal: 200μs pulse width with 10% duty cycle.
* For average CW power testing or increased duty cycle, a 5dB back off from Psat is required unless water/oil cooling system is applied.

Absolute Maximum Ratings

Supply Voltage	+30Vdc
RF Input Power (RFIN) Pin_max = Psat - Gainsat	Psat – Gain
Storage Temperature (°C)	-50 to +125

Note: Maximum RF input power is set to assure safety of amplifier. Input power may be increased at own risk to achieve full power of amplifier. Please reference gain and power curves.

Biasing Up Procedure

Step 1	Connect ground
Step 2	Connect input and output with 50 Ohm source/load. (in band VSWR<1.9:1 or >10dB return loss)
Step 3	Connect +24V
Power OFF Procedure	
Step 1	Turn off +24V
Step 2	Remove RF connection
Step 3	Remove ground

Note: The operating temperature for the unit is specified at the package base. It is the user's responsibility to ensure the part is in an environment capable of maintaining the temperature within the specified limits

Environmental Specifications and Test Standards

Parameter	Description
Operational Temperature	-40°C~+85°C (Case Temperature)
Storage Temperature	-55°C~+125°C
Thermal Shock	-40°C → +85°C (5 Cycles / 10 hours)
Random Vibration	MIL-STD-202G Table 214-I, Test Condition Letter C 1.5 Hours Per Axis
High Temperature Burn In	Temperature +85°C for 72 Hours
Shock	1. Weight >20g, 50g half sine wave for 11ms, Speed variation 3.44m/s 2. Weight <=20g, 100g Half sine wave for 6ms, Speed variation 3.75m/s 3. Total 18 times (6 directions, 3 repetitions per direction).
Altitude	Standard: 30,000 Ft (Epoxy Sealed Controlled Environment) Optional: Hermetically Sealed (60,000 ft. 1.0 PSI min)
Hermetically Sealed (Optional)	MIL-STD-883 (For Hermetically Sealed Units)

Ordering Information

Part No.	Description
RFLUPA27G32GAW28	27GHz~31GHz Power Amplifier

Amplifier Use

Ensure that the amplifier input and output ports are safely terminated into a proper 50 ohm load before turning on the power. Never operate the amplifier without a load. A proper 50 ohm load is defined as a load with impedance less than 1.9:1 or return loss larger than 10dB relative to 50 Ohm within the specified operating band width.

Power Supply Requirements
Power supply must be able to provide adequate current for the amplifier. Power supply should be able to provide 1.5 times the typical current or 1.2 times the maximum current (whichever is greater).

In most cases, RF - Lambda amplifiers will withstand severe mismatches without damage. However, operation with poor loads is discouraged. If prolonged operation with poor or unknown loads is expected, an external device such as an isolator or circulator should be used to protect the amplifier.

Ensure that the power is off when connecting or disconnecting the input or output of the amp.

Prevent overdriving the amplifier. Do not exceed the recommended input power level.

Adequate heat-sinking required for RF amplifier modules. Please inquire.

Amplifiers do not contain Thermal protection, Reverse DC polarity or Over voltage protection with the exception of a few models. Please inquire.

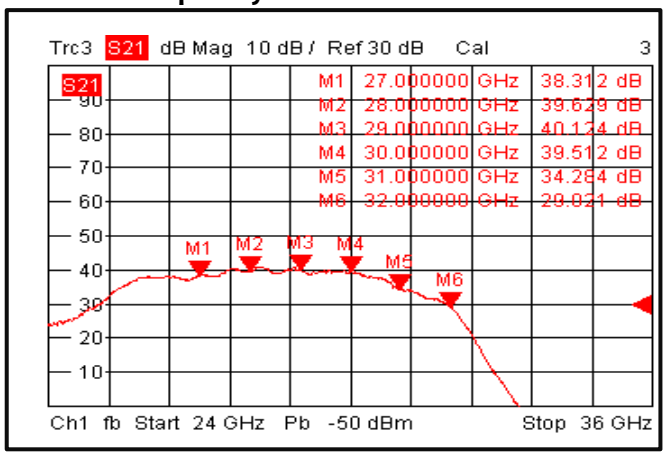
Proper electrostatic discharge (ESD) precautions are recommended to avoid performance degradation or loss of functionality.

What is not covered with warranty?

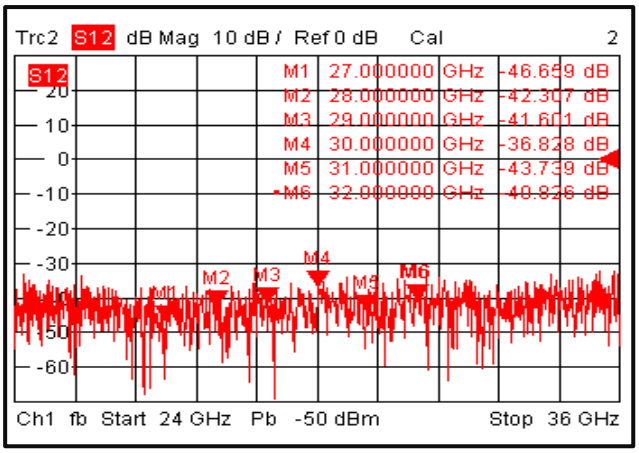
Each RF - Lambda amplifier will go through power and temperature stress testing.
Since the die, ICs or MMICs are fragile, these are not covered by warranty. Any damage to these will NOT be free to repair.

Typical Performance Plots

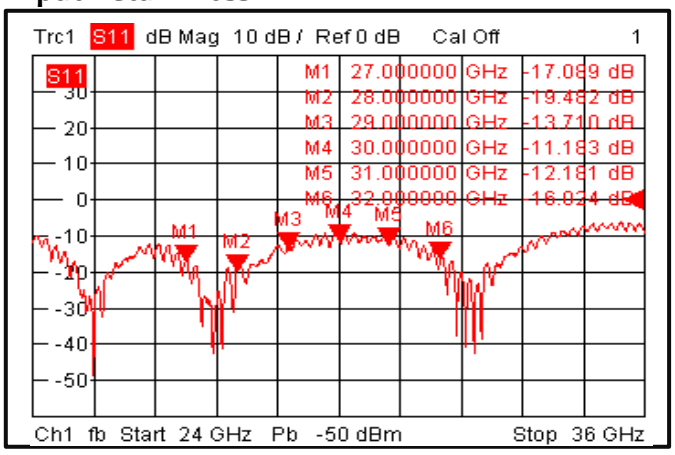
Gain vs. Frequency



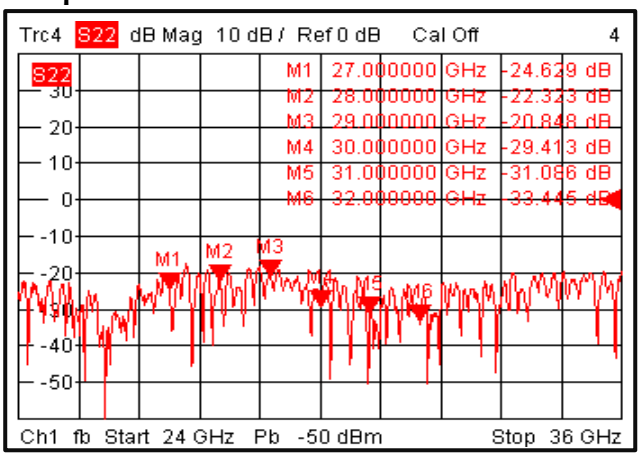
Isolation



Input Return Loss



Output Return Loss



Note: Input / Output return loss measurements include attenuators to protect equipment

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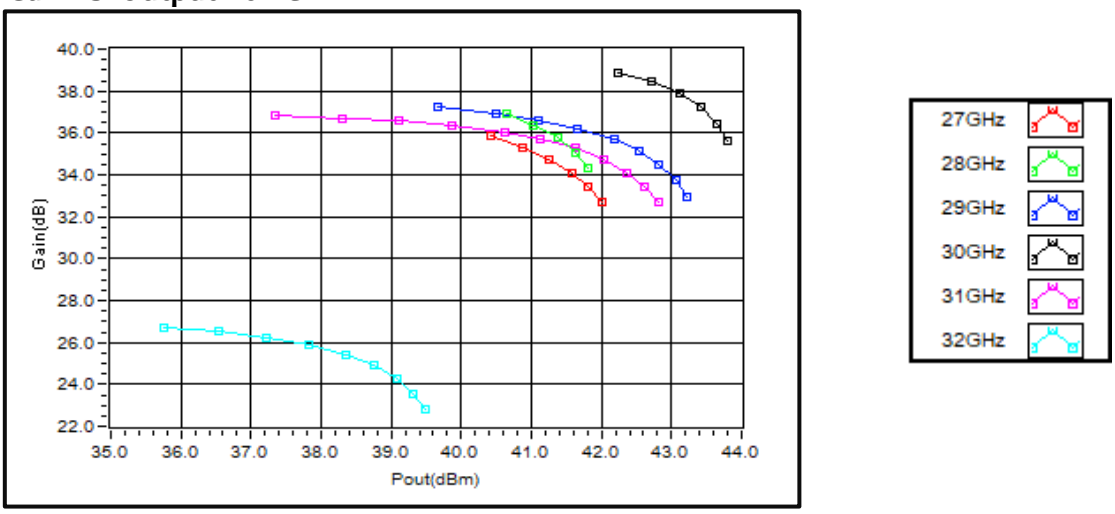
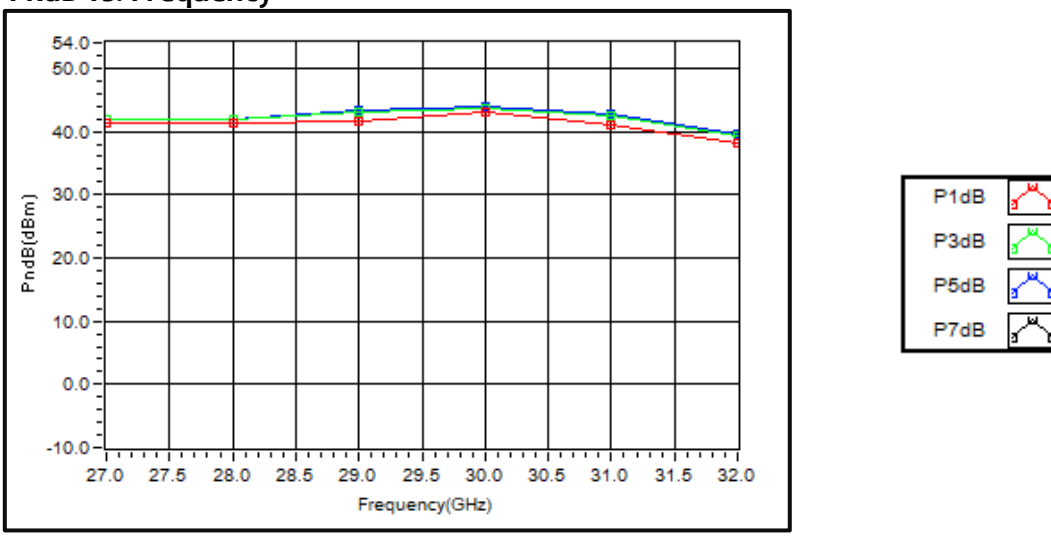
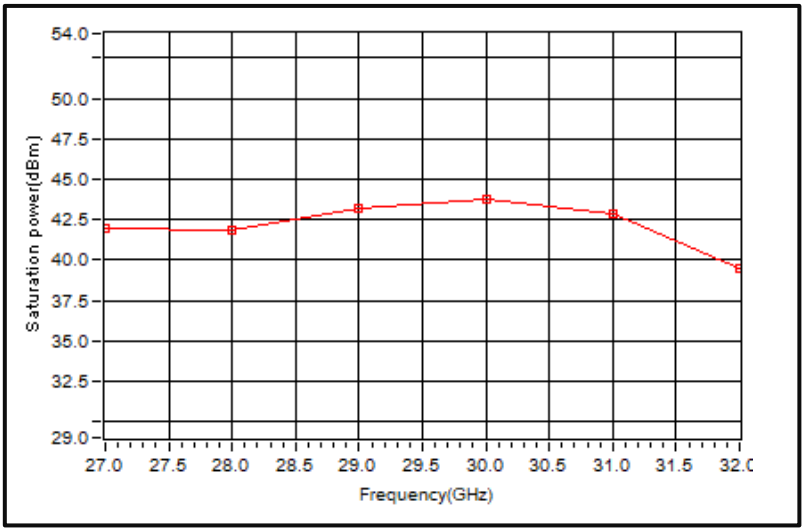
Gain vs. Output Power



PxdB vs. Frequency



Psat vs. Frequency



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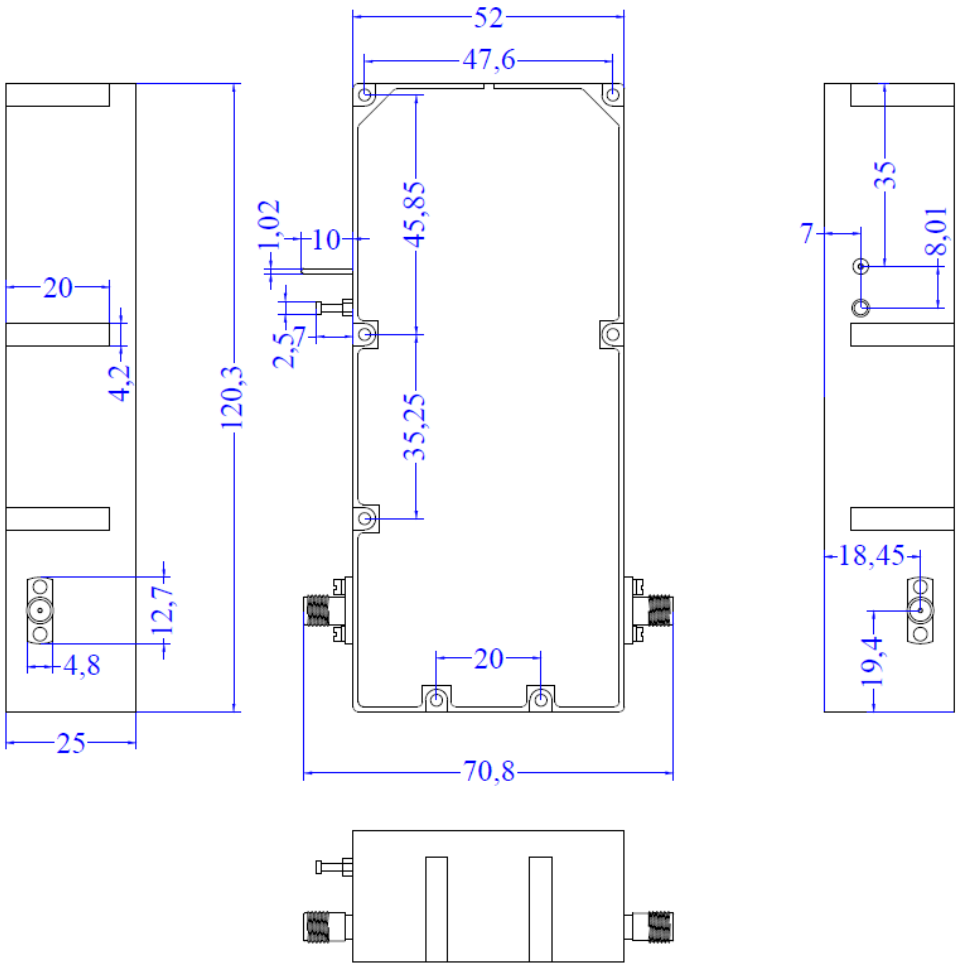
Outline Drawing:

All Dimensions in mm [inches]



Coaxial Version Shown.
RFLUPA27G32GAW28 version can have WR28 interface at output only or both input and output. Please inquire.

Heat Sink required during operation (Sold Separately)