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Solid State Power Amplifier
27GHz~34GHz



Features

- Solid State Power Amplifier
- Gain: 25dB Typical.
- Psat: +38dBm Typical

Typical Applications

- Military & Defense Applications
- Wireless Infrastructure
- Test and Measurement

Electrical Specifications, T_A = +25°C, Vcc = +20V

Parameter	Min.	Typ.	Max.	Units
Frequency Range		27 – 34		GHz
Gain		25		dB
Gain Flatness		±3		dB
Gain Variation Over Temperature (-45 ~ +85)		5		dB
Input Return Loss		10		dB
Output Return Loss		12		dB
Output 1dB Compression Point (P1dB)		32		dBm
Output 3dB Compression Point (P7dB)		38		dBm
IM3 @ Pout/Tone = 33 dBm		-42		dBc
IM5 @ Pout/Tone = 33 dBm		-42		dBc
Supply Current (Vdd=+20V)	280	360	2000	mA
Isolation S12		55		dB
Input Max Power (10:1 VSWR, CW)		25		dBm
Weight		0.18		ounces
Impedance		50		Ohms
Input / Output Connectors		2.92mm-Female		
Finish		Gold Plated		
Material		Aluminum / Copper		

* 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.

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Absolute Maximum Ratings

Supply Voltage	+22Vdc
RF Input Power	25dBm

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 input and output with 50 Ohm source/load. (in band VSWR<1.9:1 or >10dB return loss) Connect ground.
Step 2	Connect -5V biasing
Step 3	Connect +20V biasing
Power OFF Procedure	
Step 1	Turn off +20V biasing
Step 2	Turn off -5V biasing
Step 3	Remove RF connection and then ground

Environmental Specifications and Test Standards

Parameter	Description
Operational Temperature	-45°C~+55°C (Case Temperature less than +85°C)
Storage Temperature	-50°C~+125°C
Thermal Shock	-45°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)

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

Ordering Information

Part No.	Description
RP27G34GSPA	27GHz~34GHz 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.

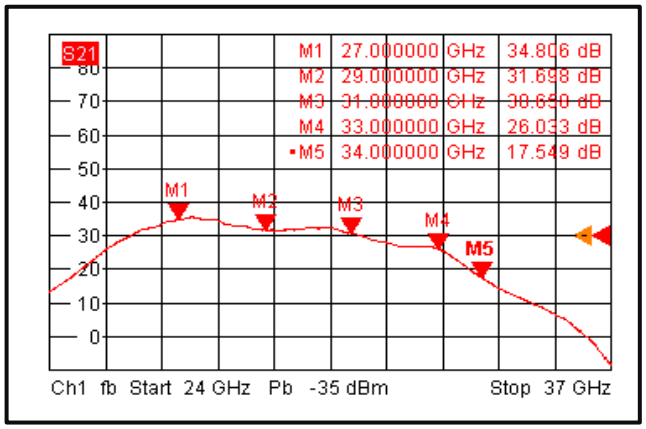
Proper electrostatic discharge (ESD) precautions are recommended to avoid performance degradation or loss of functionality.

What is not covered with warranty?

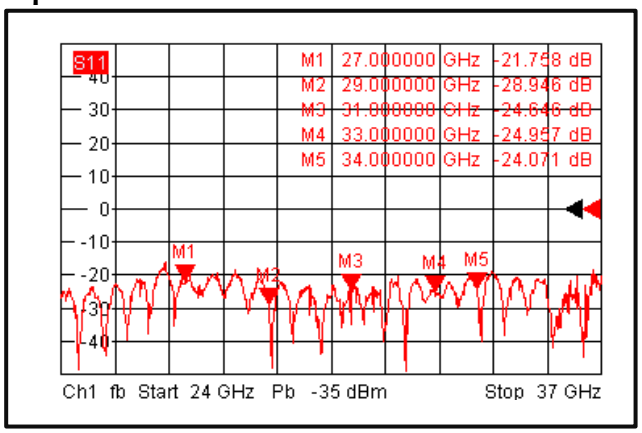
Each RF - Lambda amplifier will go through power and temperature stress testing.
Since the die, ICs or MMICs are fragile, these are not covered by warranty. Any damage to these will NOT be free to repair.

Typical Performance Plots

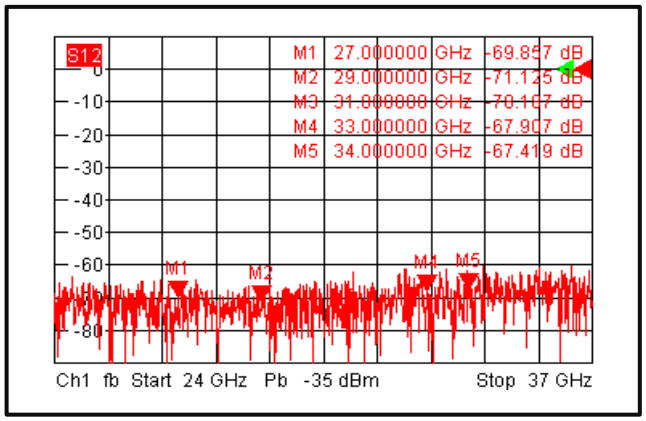
Gain



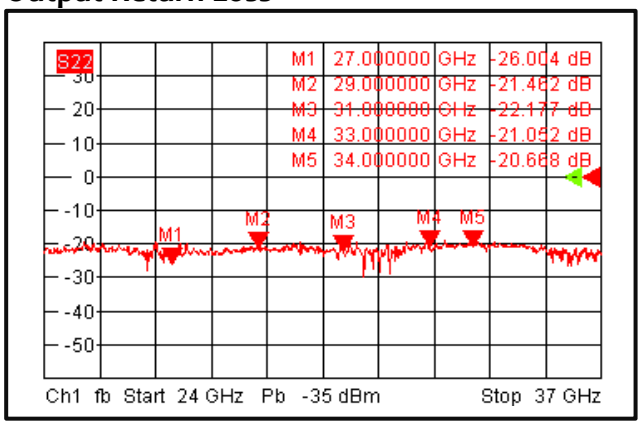
Input Return Loss



Isolation

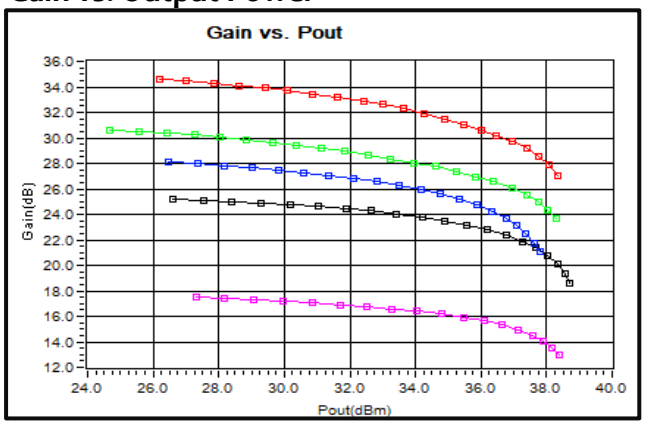


Output Return Loss

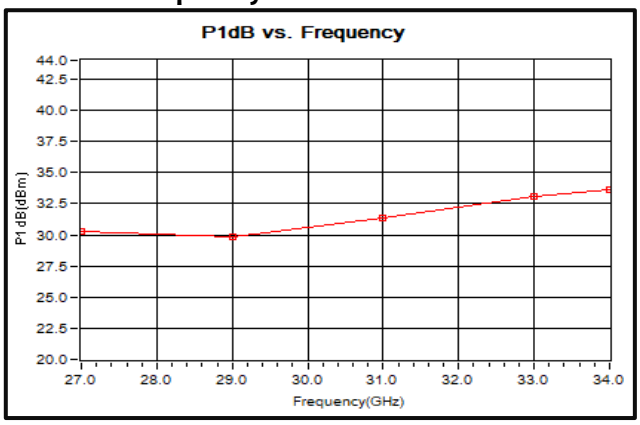


Note: Input/output return loss measurements include attenuators to protect equipment

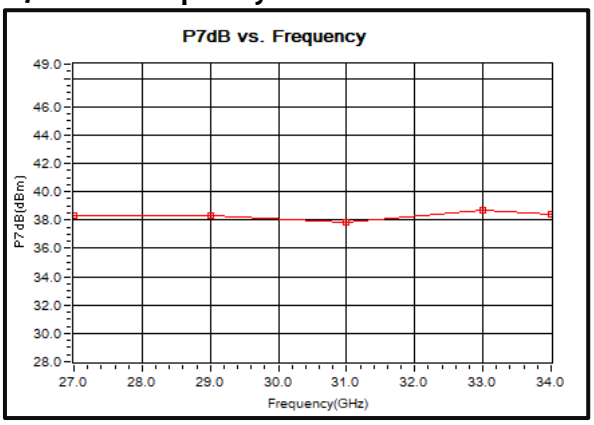
Gain vs. Output Power



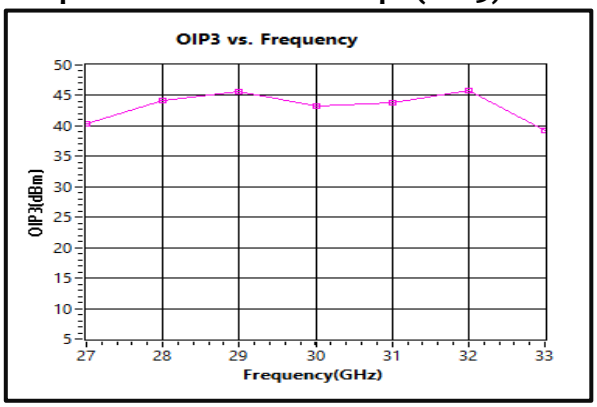
P1dB vs. Frequency



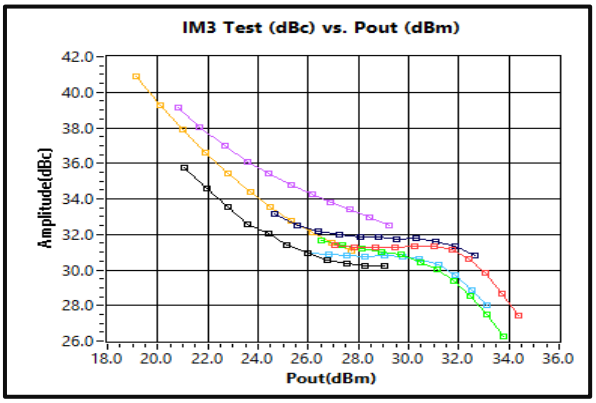
P7dB vs. Frequency



Output Third Order Intercept (OIP3)



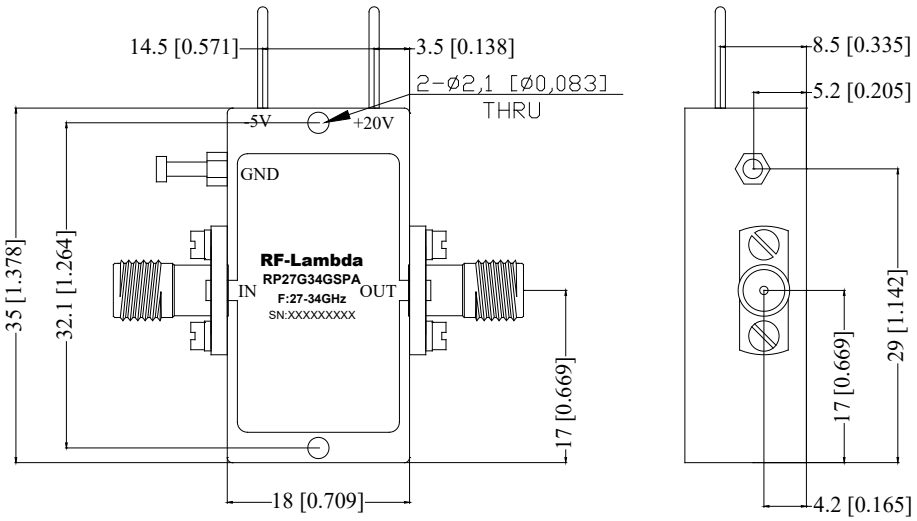
IM3 Test (dBc) vs. Pout



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Outline Drawing:

All Dimensions in mm [inches]



Heat Sink required during operation (Sold Separately)
Standard torque wrench must be used to secure RF connectors.



Important Notice

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