

Wide Band Power Amplifier 18GHz ~ 28GHz



Features

- Gain: 38dB typical
- Output power +32dBm typical
- High P1dB: +31 dBm typical
- Supply Voltage: +24V

Typical Applications

- Wireless Infrastructure
- Military & Aerospace
- Test and Measurement

Electrical Specifications, TA = +25°C, Vcc = +24V

Parameter	Min.	Typ.	Max.	Min.	Typ.	Max.	Units
Frequency Range	18		26	26		28	GHz
Gain	35	38		33	36		dB
Gain Flatness		±1.5			±1.5		dB
Gain Variation Over Temperature (-40°C~+85°C)		±2.0			±2.0		dB
Input VSWR		1.5	1.8		1.5	1.8	:1
Output 1dB Compression Point (P1dB)	31	32		31	32		dBm
Saturated Output Power (Psat)		33			33		dBm
3 rd Order Intermodulation Product (IM3) @P1dB		15			15		dBc
Supply Current (Vcc=+24V)		1000	1500		1000	1500	mA
Efficiency at Psat (RF Output Power / DC Power Consumption)		12			12		%
Weight	10 Max.						Ounces
Impedance	50						Ohms
Input / Output Connectors	2.92mm - Female						
Finish	Nickel Plated						
Material	Copper						
Package Sealing	Epoxy Sealed						

* P1dB, P3dB and Psat power testing signal: 200µs pulse width with 10% duty cycle.

* For average CW power testing, a 5dB back off from Psat is required unless water/oil cooling system is applied.

Absolute Maximum Ratings

Operating Voltage	+28V
RF Input Power	+2dBm

Biasing Up Procedure

Step 1	Connect Ground Pin
Step 2	Connect input and output
Step 3	Connect +24V biasing
Power OFF Procedure	
Step 1	Turn off +24V biasing
Step 2	Remove RF connection
Step 3	Remove Ground.

Environmental Specifications and Test Standards

Parameter	Description
Operational Temperature	-40°C~+85°C (Case Temperature less than 85°C)
Storage Temperature	-50°C~+105°C
Thermal Shock	-40°C → +70°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
RFLUPA18G28GA	18-28GHz 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.

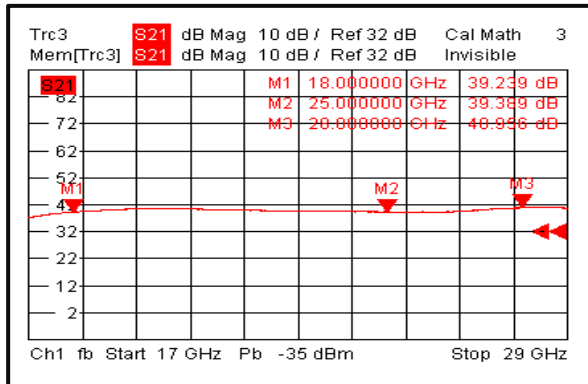
Proper electrostatic discharge (ESD) precautions are recommended to avoid performance degradation or loss of functionality.

What is not covered with warranty?

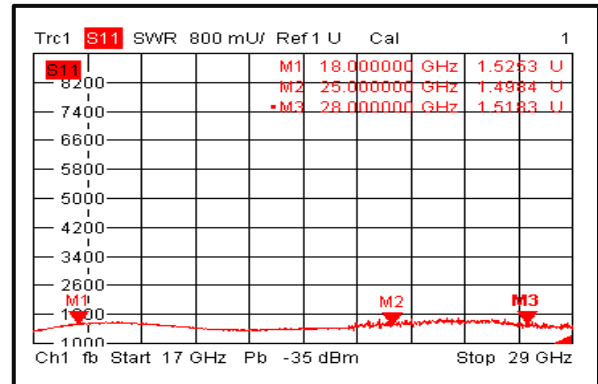
Each RF - Lambda amplifier will go through power and temperature stress testing. Since the die, ICs or MMICs are fragile, these are not covered by warranty. Any damage to these will NOT be free to repair.

Typical Performance Plots

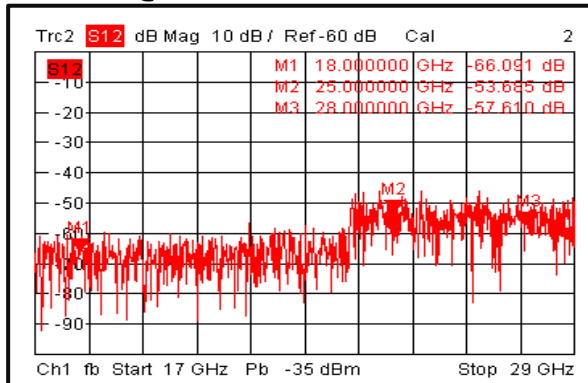
Gain@+25°C



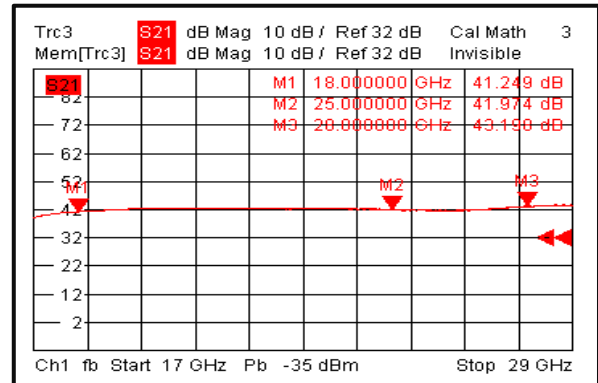
Input VSWR @+25°C



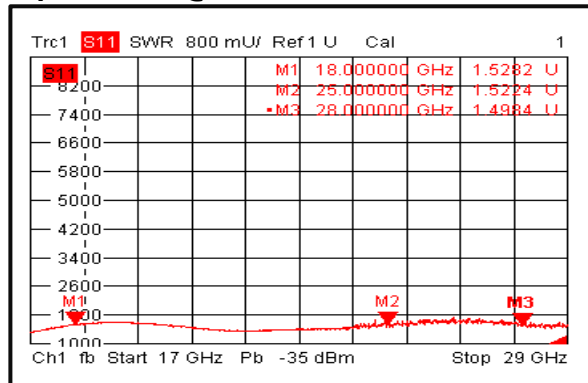
Isolation@+25°C



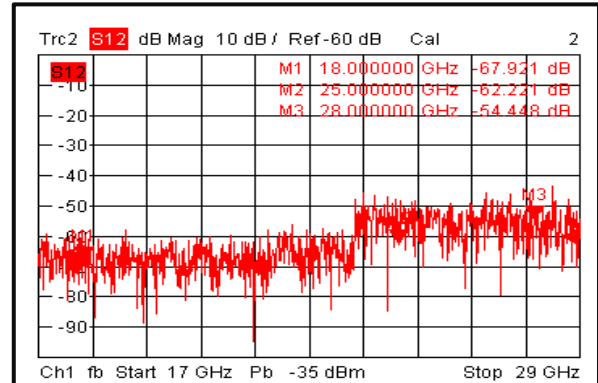
Gain@-40°C



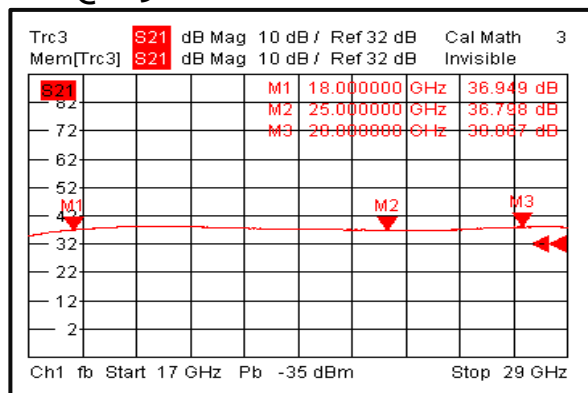
Input VSWR @-40°C



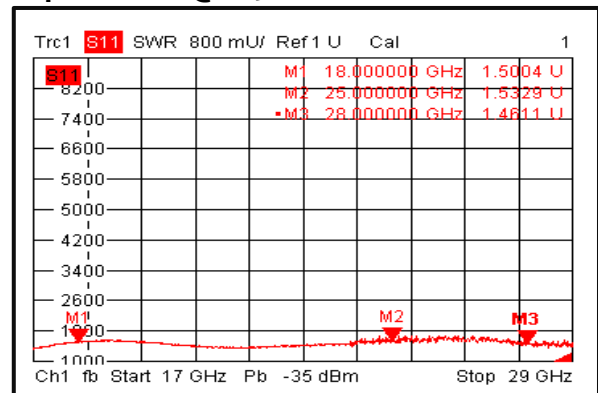
Isolation@-40°C



Gain@+85°C

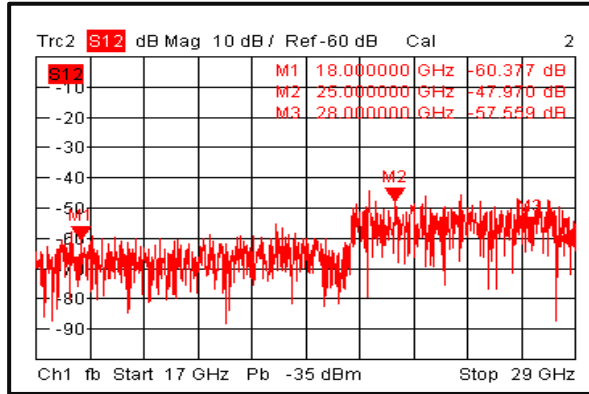


Input VSWR @+85°C

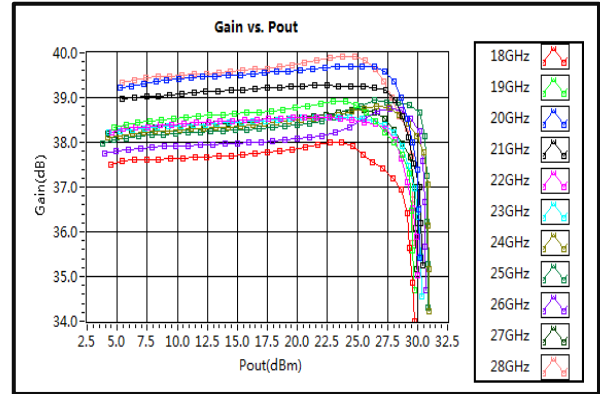


Wide Band Power Amplifier 18GHz ~ 28GHz

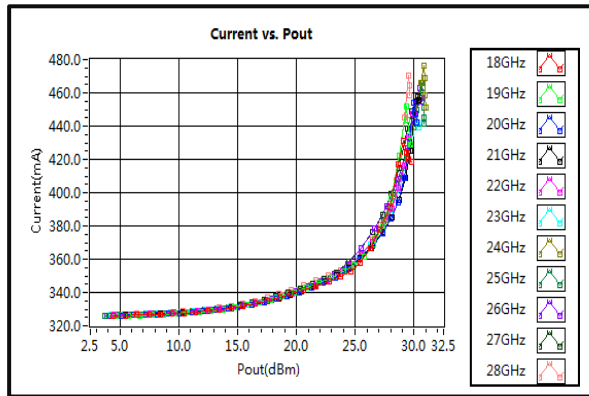
Isolation@+85°C



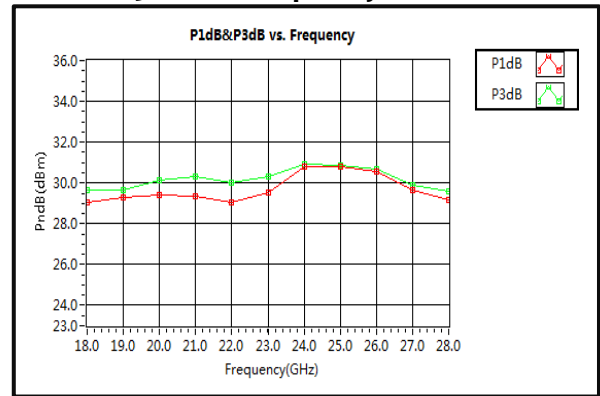
Gain vs. Output Power



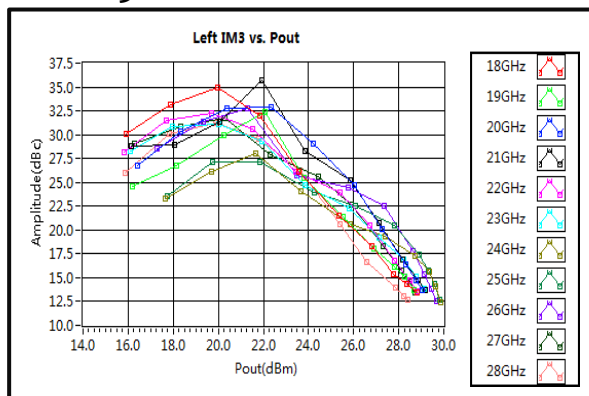
Current



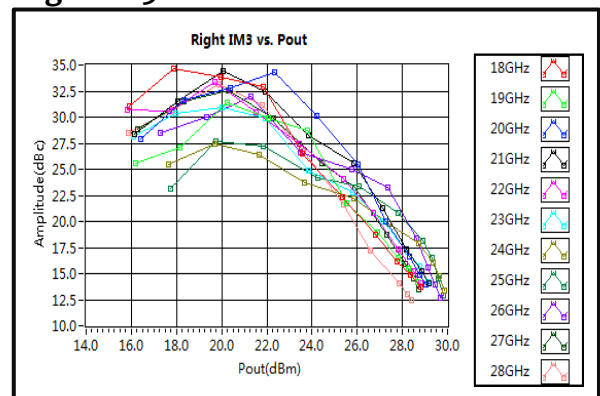
P1dB & P3dB vs. Frequency



Left IM3 vs. Pout



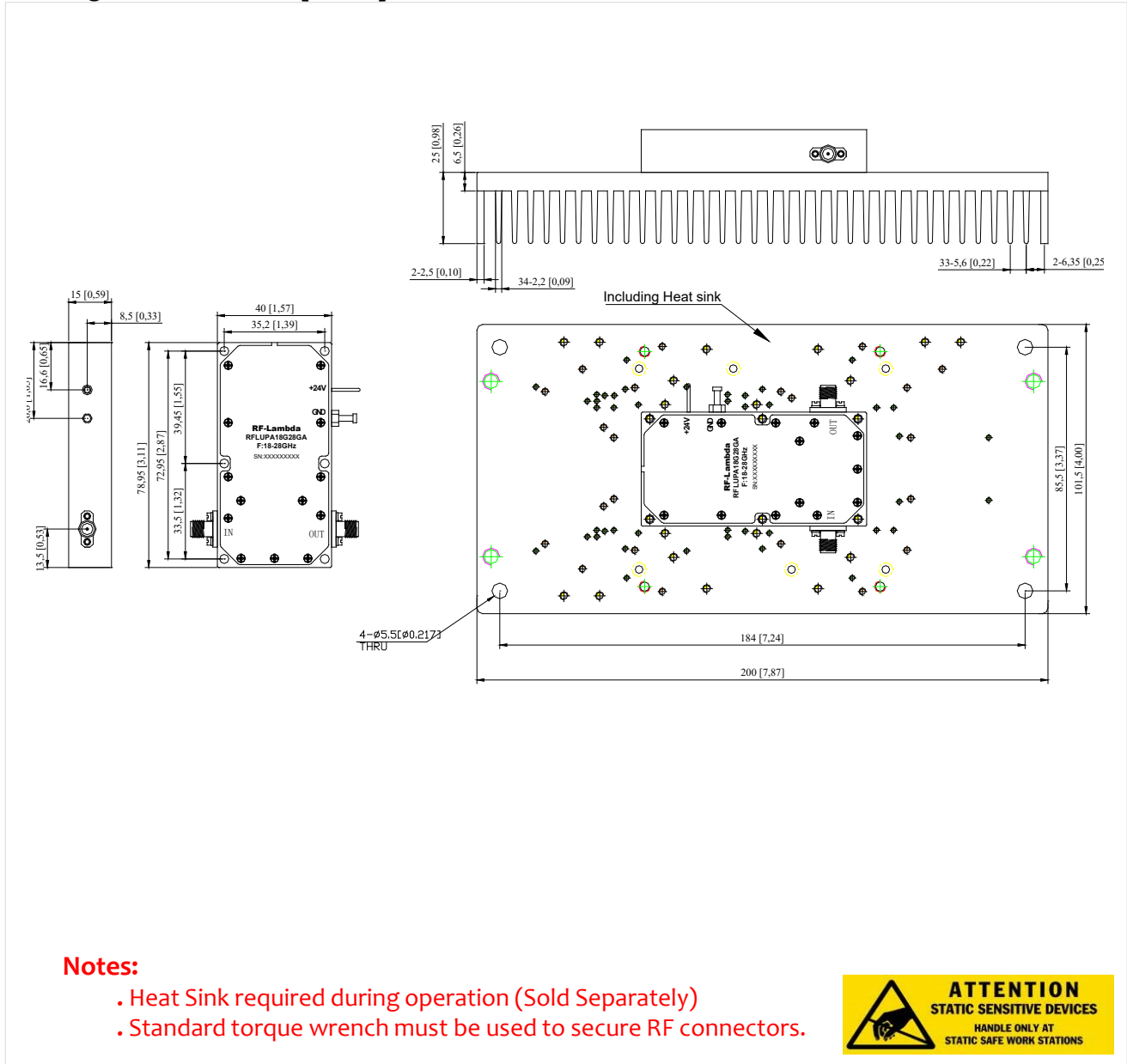
Right IM3 vs. Pout



Wide Band Power Amplifier 18GHz ~ 28GHz

Outline Drawing:

All Dimensions in mm [inches]
Housing Tolerances ± 0.2 [0.008]



Wide Band Power Amplifier 18GHz ~ 28GHz

Important Notice

The information contained herein is believed to be reliable. RF-Lambda makes no warranties regarding the information contained herein. RF-Lambda assumes no responsibility or liability whatsoever for any of the information contained herein. RF-Lambda assumes no responsibility or liability whatsoever for the use of the information contained herein. The information contained herein is provided "AS IS, WHERE IS" and with all faults, and the entire risk associated with such information is entirely with the user. All information contained herein is subject to change without notice. Customers should obtain and verify the latest relevant information before placing orders for RF-Lambda products. The information contained herein or any use of such information does not grant, explicitly or implicitly, to any party any patent rights, licenses, or any other intellectual property rights, whether with regard to such information itself or anything described by such information. RF-Lambda products are not warranted or authorized for use as critical components in medical, life-saving, or life sustaining applications, or other applications where a failure would reasonably be expected to cause severe personal injury or death.