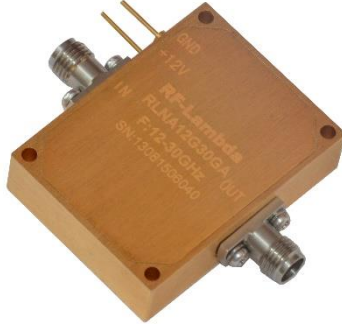




Ultra Wide Band Medium Power Amplifier 20 - 47GHz



Features

- Wide Band High Power Amplifier
- Noise Figure: 6.5 dB
- P3dB: +26 dBm
- Gain: 35 dB
- Supply Voltage: +12V

Typical Applications

- Wireless Infrastructure
- Military & Aerospace
- Test & Measurement

Electrical Specifications, TA = +25°C, Vcc = +12V

Parameter	Min.	Typ.	Max.	Min.	Typ.	Max.	Units
Frequency Range	20		34	35		47	GHz
Gain	31	35	38	32	35	37	dB
Gain Flatness		±3			±3		dB
Gain Variation Over Temperature (-45 ~ +85)		±0.5			±0.5		dB
Noise Figure		6.5			6.5		dB
Input Return Loss		15			15		dB
Output Return Loss (6dB attenuator at Output)		15			15		dB
Output Power for 1dB Compression (P1dB) 200µs pulse width 10% duty cycle	22	23	24	22	23	24	
Output Power for 3dB Compression (P3dB) 200µs pulse width 10% duty cycle	24	25	26	25	25.5	26	dBm
Supply Current		370			370		mA
Input Max Power(no damage)			-16			-16	dBm
Weight	365						g
Impedance	50						Ohms
Input / Output Connectors	2.4-Female						
Finish	Gold Plated						
Material	Aluminum/copper						
Package Sealing	Epoxy Sealed (Standard)						
	Hermetically Sealed (Optional)						

* 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	
Supply Voltage	+13Vdc
RF Input Power (RFIN) Pin max = Psat - Gainsat	-16dBm
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 input and output with 50 Ohm source/load. (in band VSWR<1.9:1 or >10dB return loss)
Step 2	Connect Ground Pin
Step 4	Connect +12V biasing
Power OFF Procedure	
Step 2	Turn off +12V biasing
Step 3	Remove RF connection
Step 4	Remove Ground.

Environmental Specifications and Test Standards

Parameter	Standard	Description
Operational Temperature	MIL-STD-39016	-45°C~+55°C (Case Temperature less than 85°C)
Storage Temperature		-50°C~+125°C
Thermal Shock		1 Hour@ -45°C → 1 Hour @ +85°C (5 Cycles)
Random Vibration		Acceleration Spectral Density 6 (m/s) Total 92.6 RMS
Electrical & 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	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

Wide Band Medium Power Amplifier 20-47GHz



Ordering Information		
Part No.	ECCN	Description
RFLUPA20G47GA	3A001b.4.e.1	20GHz~47GHz 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.

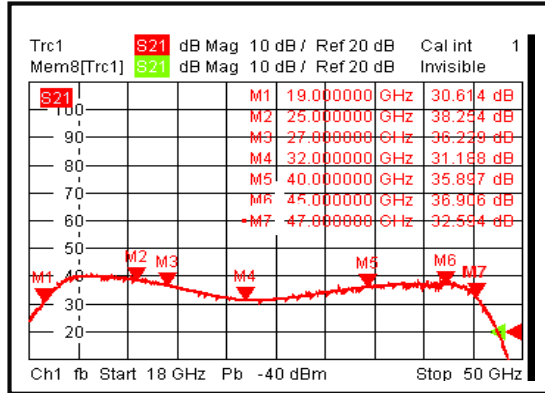
What is not covered with warranty?

Each RF - Lambda amplifier will go through power and temperature stress testing.

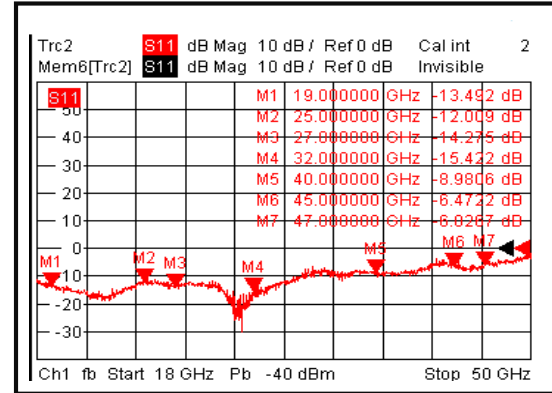
Since the die, ICs or MMICs are fragile, these are not covered by warranty. Any damage to these will NOT be free to repair.



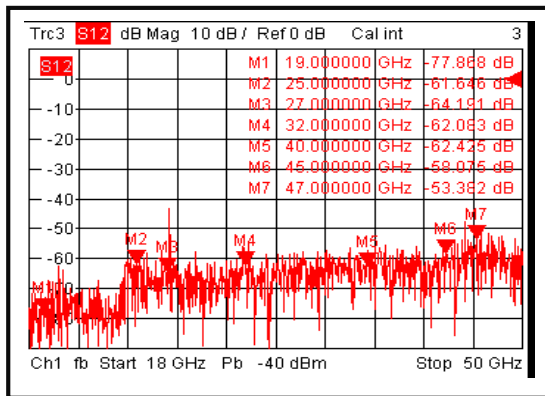
Gain



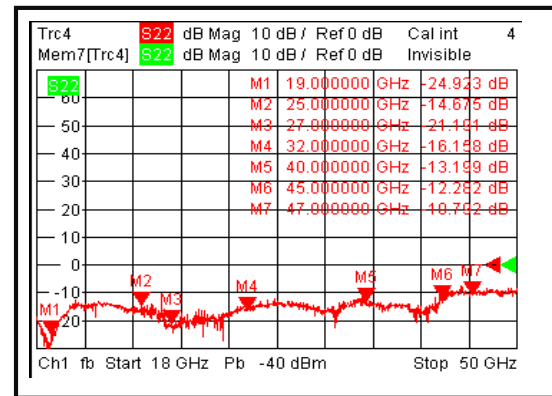
Input Return Loss



Isolation



Output Return Loss

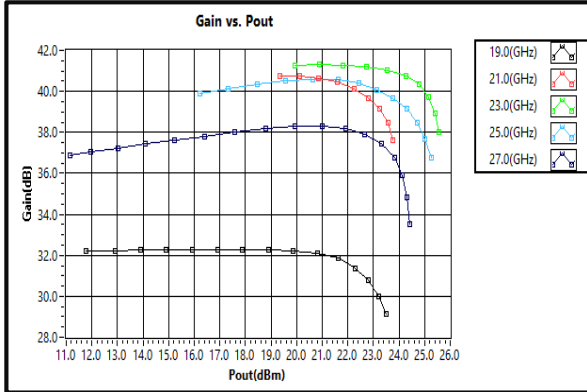


Note: Input/output return loss measurements include attenuators to protect equipment

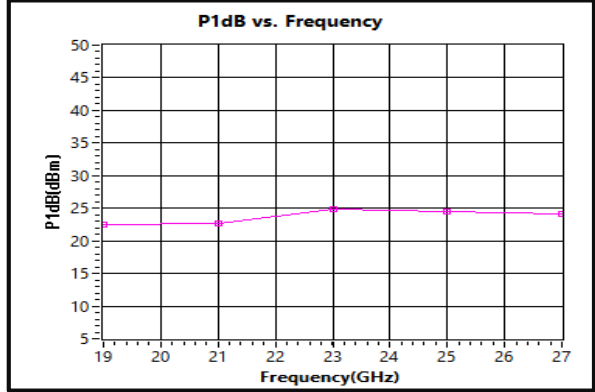
Wide Band Medium Power Amplifier 20-47GHz



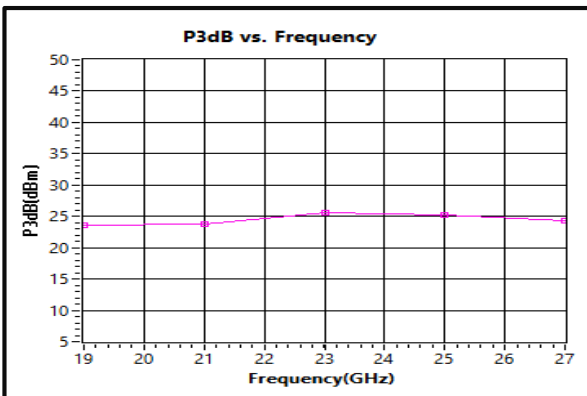
Gain vs. output power 19GHz to 27 GHz



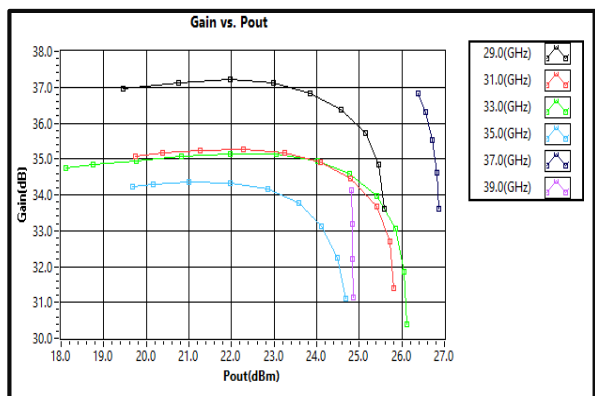
P1dB vs. Frequency 19GHz to 27 GHz



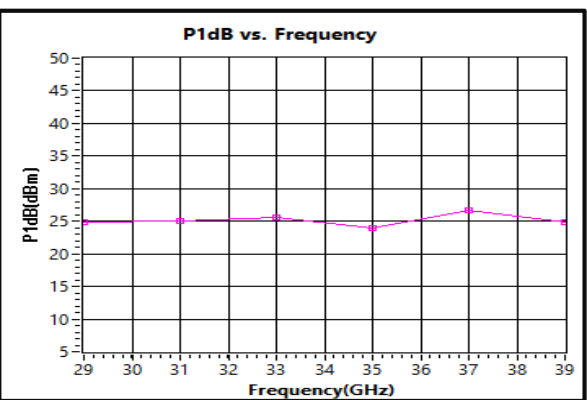
P3dB vs. Frequency 19GHz to 27 GHz



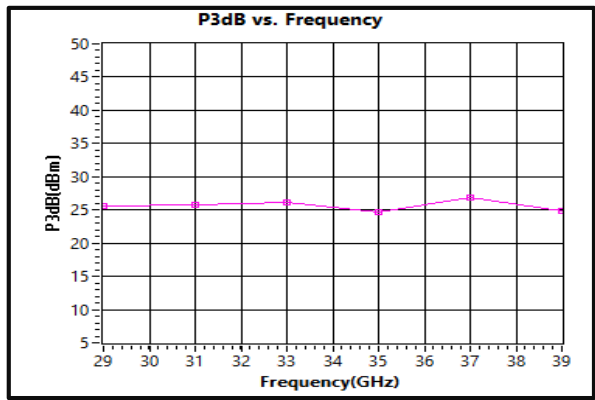
Gain vs. output power 29GHz to 39 GHz



P1dB vs. Frequency 19GHz to 27 GHz



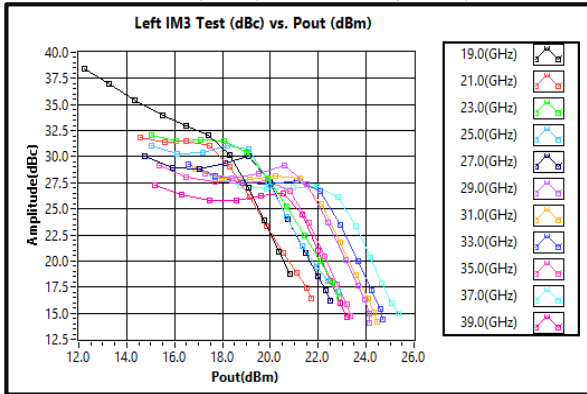
P3dB vs. Frequency 19GHz to 27 GHz



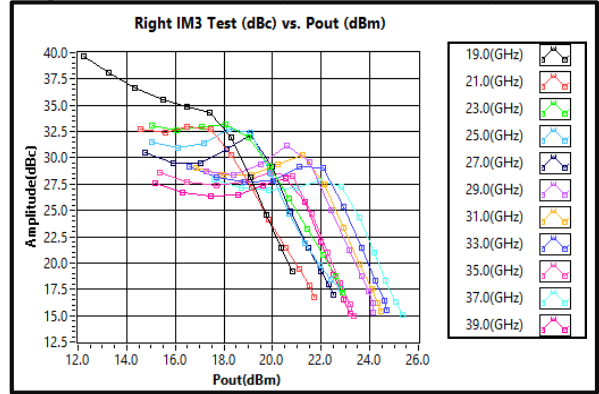
Wide Band Medium Power Amplifier 20-47GHz



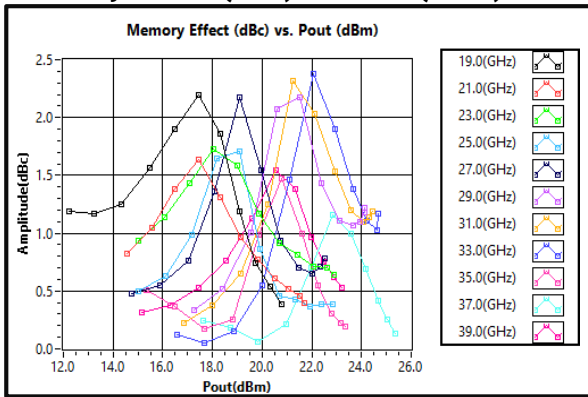
Left IM₃ Test (dBc) vs. Pout (dBm)



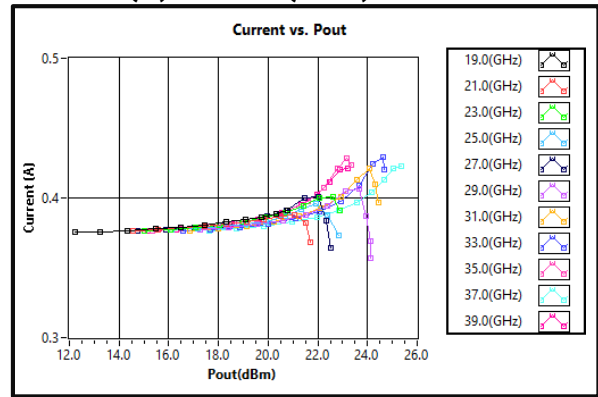
Right IM₃ Test (dBc) vs. Pout (dBm)



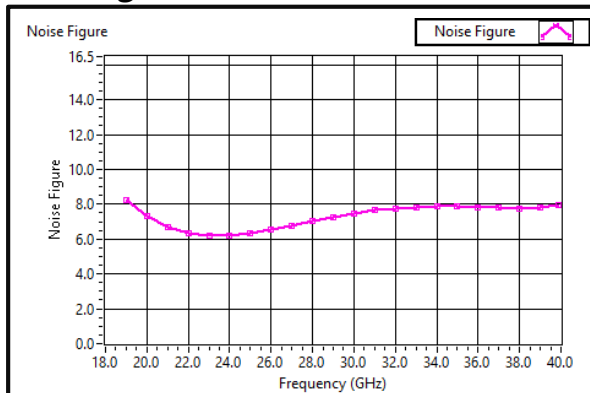
Memory Effect (dBc) vs. Pout (dBm)



Current (A) vs. Pout (dBm)



Noise Figure

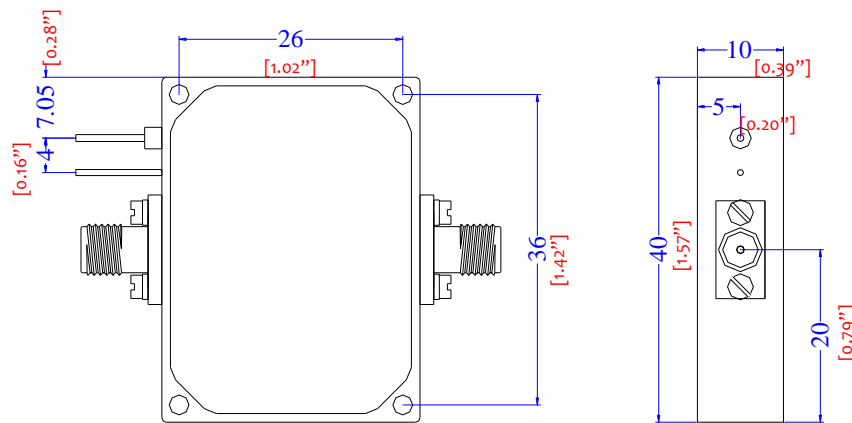


Wide Band Medium Power Amplifier 20-47GHz



Outline Drawing:

All Dimensions in mm [inches]



Heat Sink required during operation (Sold Separately)



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