Ultra Wide Band Low Noise Amplifier
0.01 - 50GHz

RoHS Compliant

Features

- Low Noise Figure 4.5dB Typical.
- Output power > 24dBm.
- High Output P1dB > 21dBm.
- No External Matching Required.

Typical Applications

- Telecom Infrastructure.
- Aerospace and Military Applications.
- LMDS multi-carrier operation.

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

Parameter	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Units
Frequency Range	0.01 ~ 20			20 ~ 50			@50			GHz
Gain		45		29	35		29		33	dB
Gain Variation Over Temperature		±3			±3			±3		dB
Noise Figure		4.5			6			8		dB
Input Return Loss	10	15		10	15		10			: 1
Output Return Loss	10	19		10	15		10			: 1
Output 1dB Compression Point (P1dB)		21			20		7			dBm
Saturated Output Power (Psat)		22		14	18			12		dBm
Output Third Order Intercept (IP3)		31			28			20		dBm
Supply Current (Vcc = +12V)		550			550			550		mA
DC Voltage		12			12			12		V
Isolation S12		60			60			60		dB
Maximum Input Power	P1dB - Gain			P1dB - Gain			P1dB - Gain			dBm
Weight	125									g
Impedance	50									Ohms
Input / Output Connectors	2.4 – Female									
Finish	Gold Plated									
Material	Aluminum / Copper									

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Absolute Maximum Ratings	
Supply Voltage	+12 VDC
RF Input Power	Psat – Gain

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 3	Connect VDC
Power OFF Procedure	
Step 1	Turn Off VDC
Step 2	Remove RF Connection
Step 3	Remove Ground

Environmental Specifications and Test Standards

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

Ordering Information	
Part No.	Description
RLNA00M50GA2	Ultra Wide Band Low Noise Amplifier 0.01 - 50GHz

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.

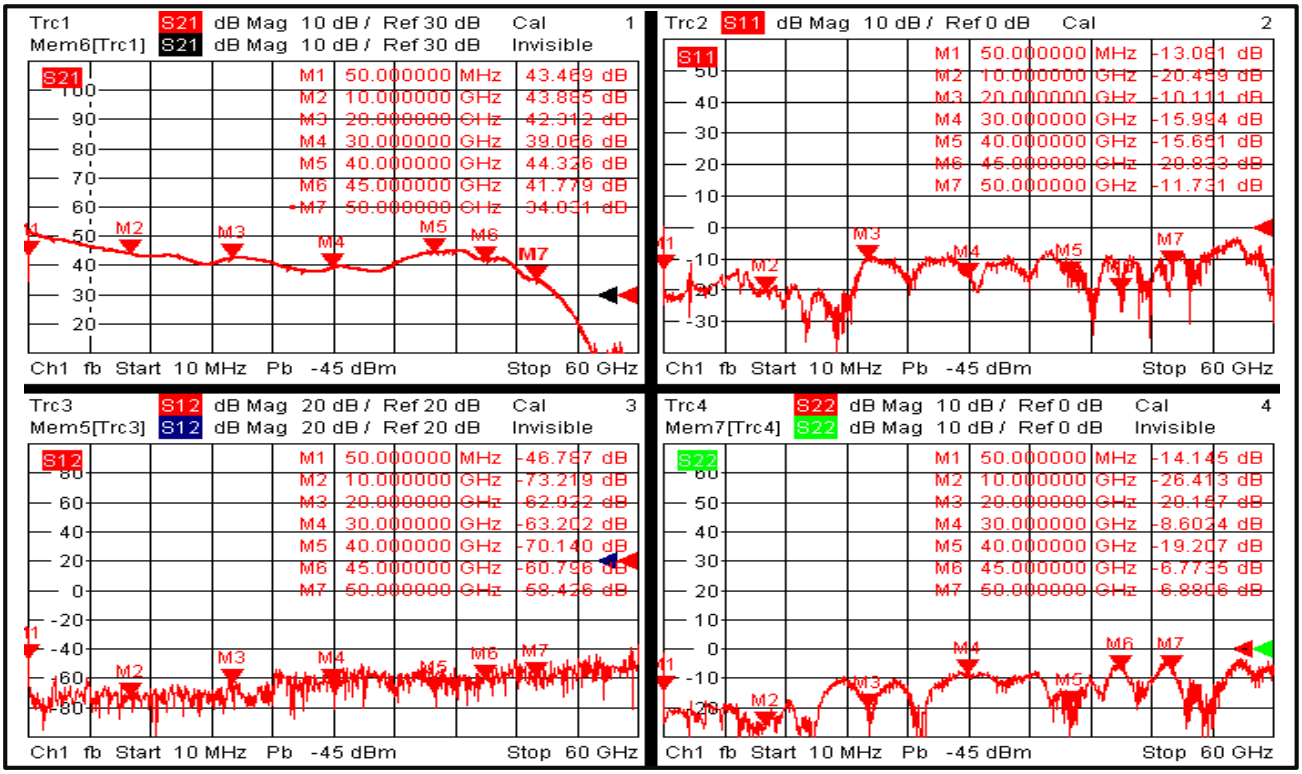
Amplifiers do not contain Thermal protection, Reverse DC polarity or Over voltage protection with the exception of a few models. Please inquire.

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

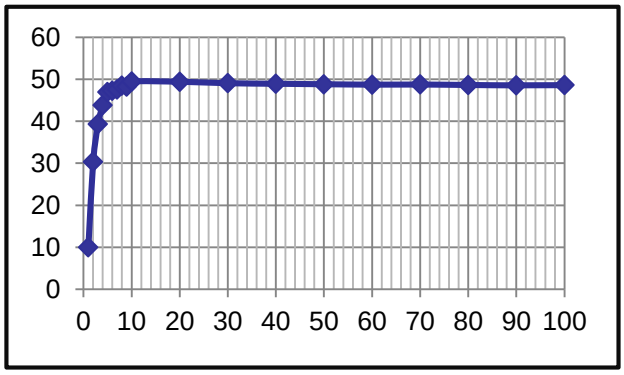
What is not covered with warranty?

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.

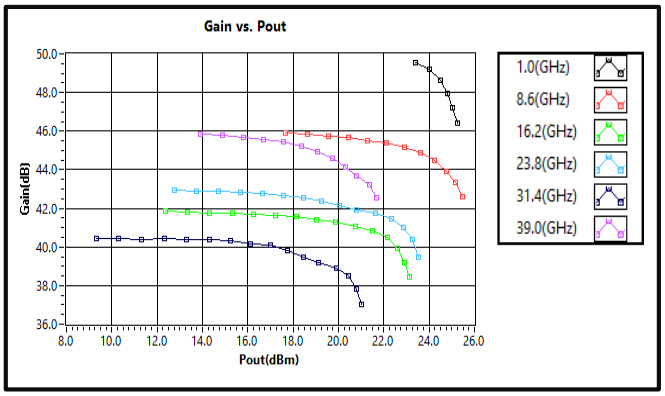
Wideband S-Parameters



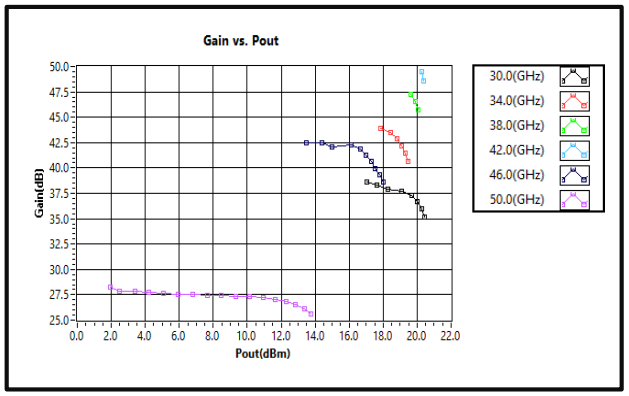
Gain (10MHz to 100MHz) dB



Gain vs. Output Power (Up to 39GHz)

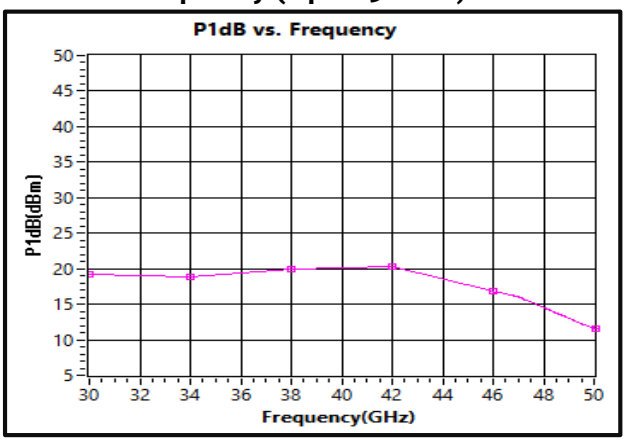


Gain vs. Output Power (30 to 50GHz)

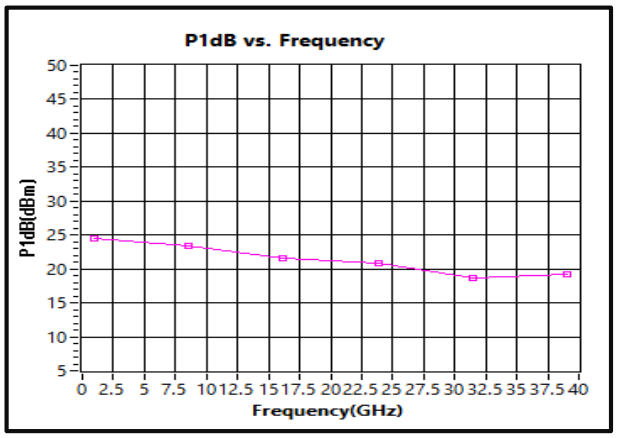


Ultra Wide Band Low Noise Amplifier 0.01 - 50GHz

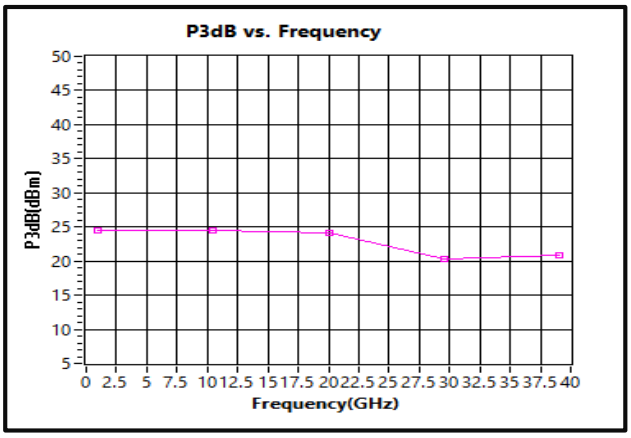
P1dB vs. Frequency (Up to 50GHz)



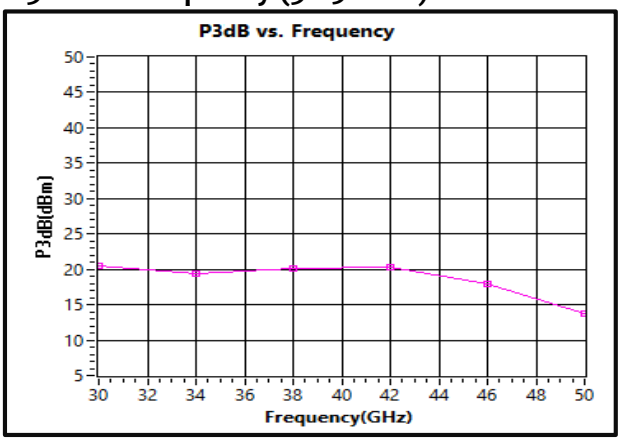
P1dB vs. Frequency (Up to 40GHz)



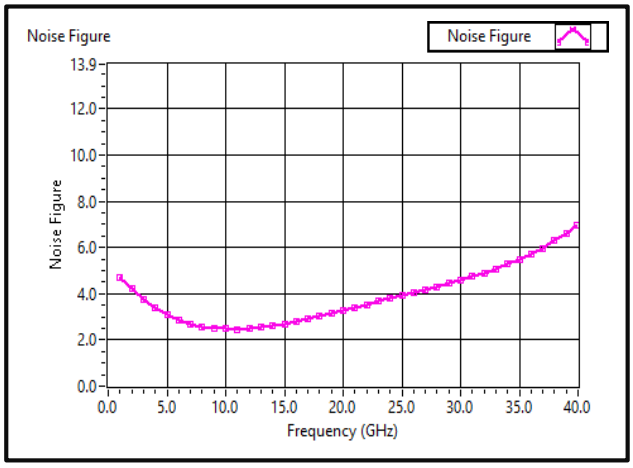
P3dB vs. Frequency (Below 40GHz)



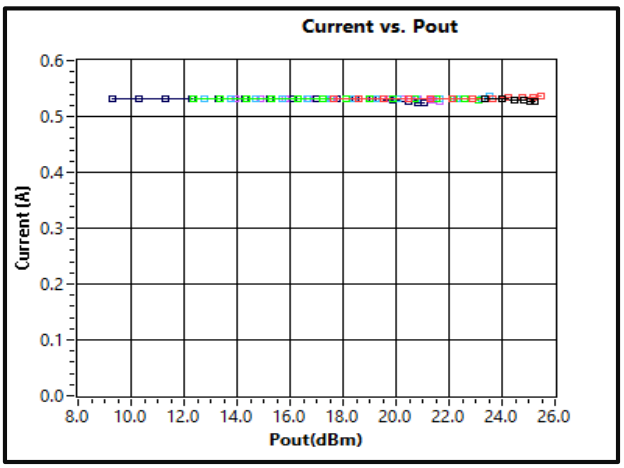
P3dB vs. Frequency (30-50GHz)



Noise Figure vs. Frequency

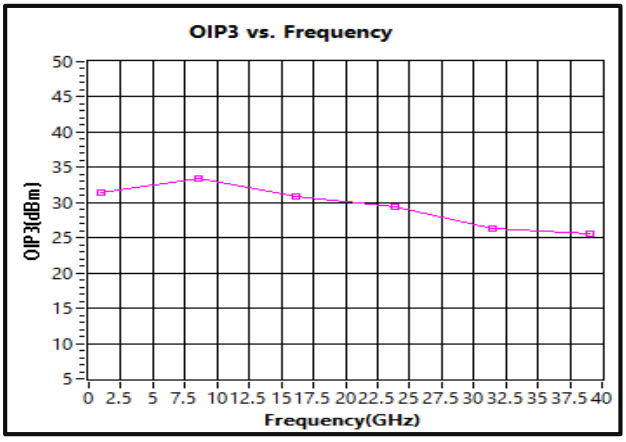


Current vs. Pout

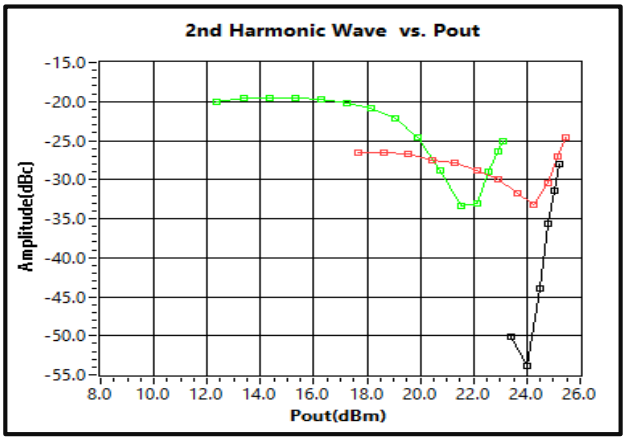


Ultra Wide Band Low Noise Amplifier 0.01 - 50GHz

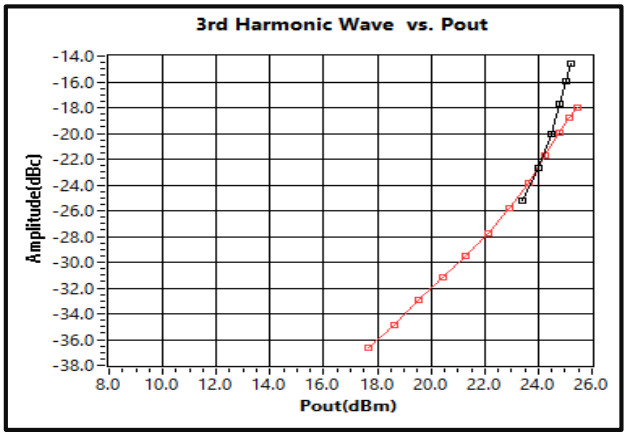
OIP3 vs. Frequency



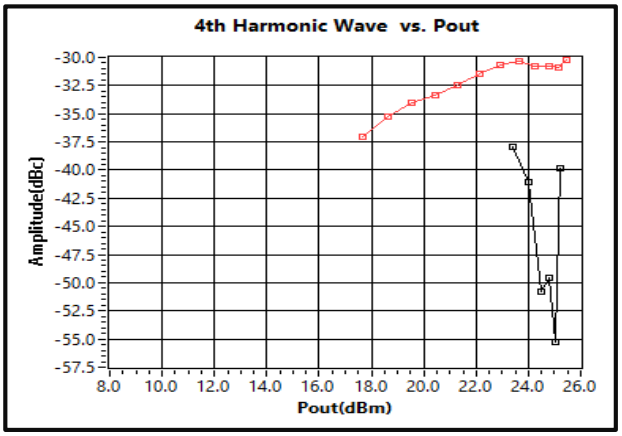
2nd Harmonic Wave Output Power



3rd Harmonic Wave Output Power



4th Harmonic Wave Output Power



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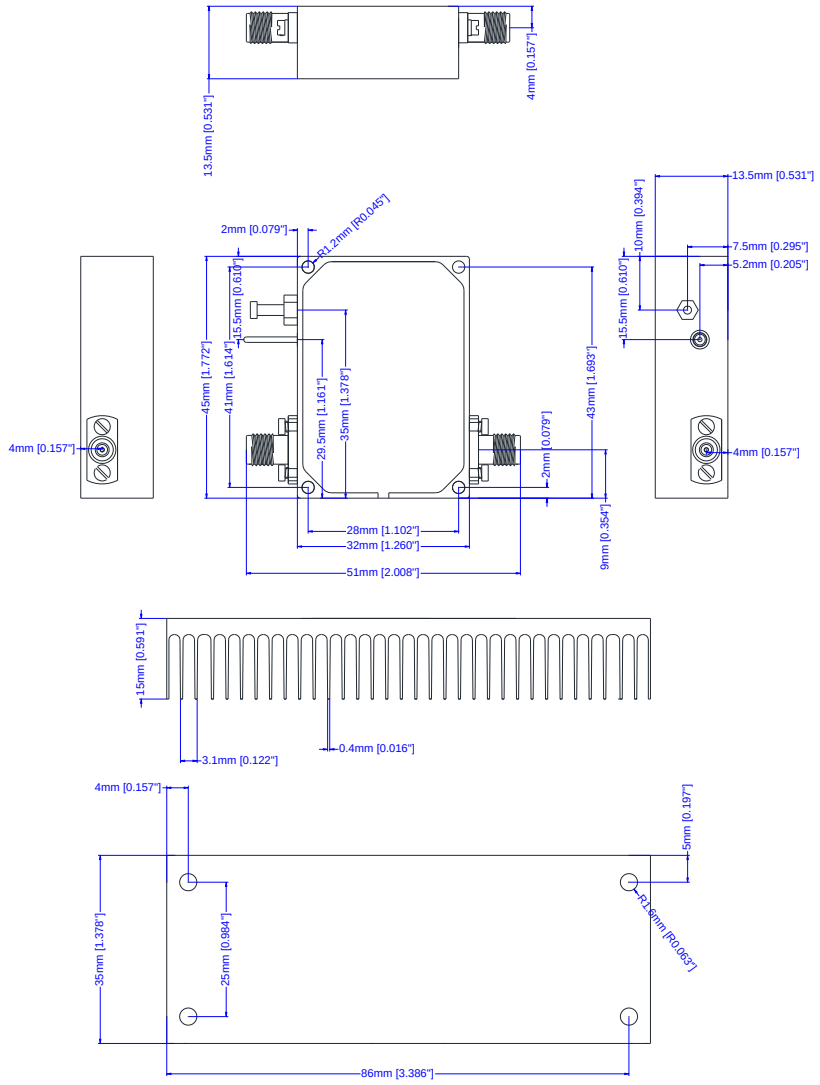
Outline Drawing:

All Dimensions in mm [inches]



***** Heat Sink required during operation. *****

Important Notice

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