



RF-LAMBDA

The power beyond expectations

R50G69GSA-S

Wide Band Low Noise Amplifier 50-69GHz



Features

- Noise Figure: 3.8dB Typical
- P1dB: +15dBm Typical
- Gain: 10dB Typical
- Single Supply Voltage

Typical Applications

- Wireless Infrastructure
- Test and Measurement
- Military and Aerospace

Electrical Specifications, TA = +25°C. Vd = +5V

Parameter	Min.	Typ.	Max.	Min.	Typ.	Max.	Units
Frequency Range	50		58	59		69	GHz
Gain		20			14		dB
Gain Flatness		±1			±2		dB
Gain Variation Over Temperature(-45 ~ +85)		±0.5			±0.5		dB
Noise Figure		3.8			3.8		dB
Input Return Loss		15			15		dB
Output Return Loss		8			10		dB
Output Power for 1 dB Compression (P1dB)		13			12		dBm
Supply Current (Vcc=+5V)		220			220		mA
Isolation S12		53			53		dB
Input Max Power (No damage)			+2			+2	dBm
Weight	20						g
Impedance	50						Ohms
Input / Output Connectors	1.85mm-Female						
Finish	Gold Plated						
Material	Aluminum / Copper						
Package Sealing	Epoxy Sealed (Standard)						
	Hermetically Sealed (Optional)						

Wide Band Low Noise Amplifier 50-66GHz



RF-LAMBDA

The power beyond expectations

R50G69GSA-S

Absolute Maximum Ratings	
Drain Biasing	+5.2 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.
Step 2	Connect Ground Pin
Step 3	Connect +5Vdc Biasing
Power OFF Procedure	
Step 1	Turn Off +5Vdc Biasing
Step 2	Remove RF Connection
Step 3	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	MIL-STD-883	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

Wide Band Low Noise Amplifier 50-66GHz



RF-LAMBDA

The power beyond expectations

R50G69GSA-S

Ordering Information	
Part No.	Description
R50G69GSA-S	50GHz~69GHz Low Noise 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.

Wide Band Low Noise Amplifier 50-66GHz



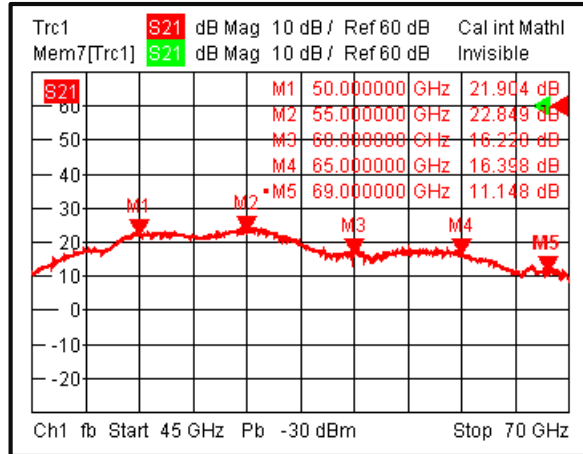
RF-LAMBDA

The power beyond expectations

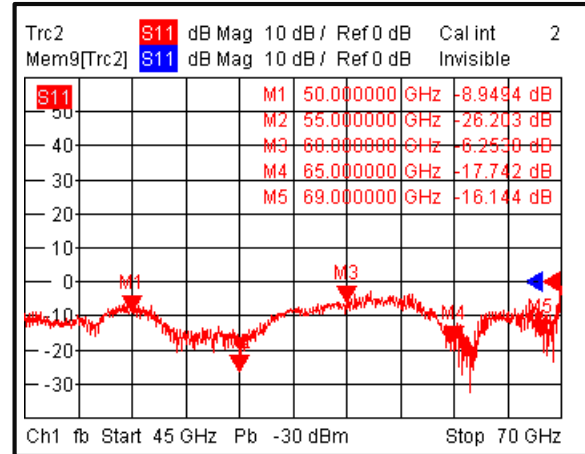
R50G69GSA-S

Typical Performance Plots

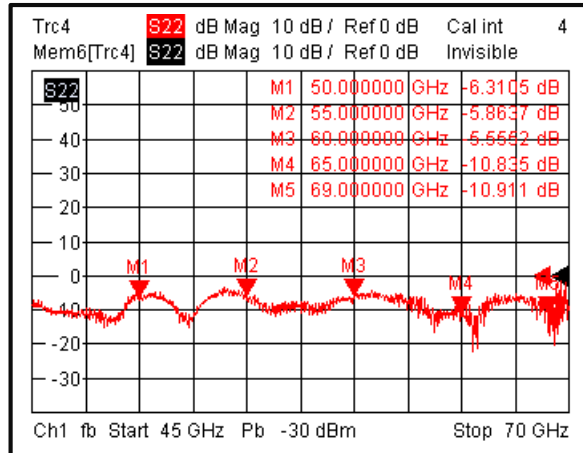
Gain



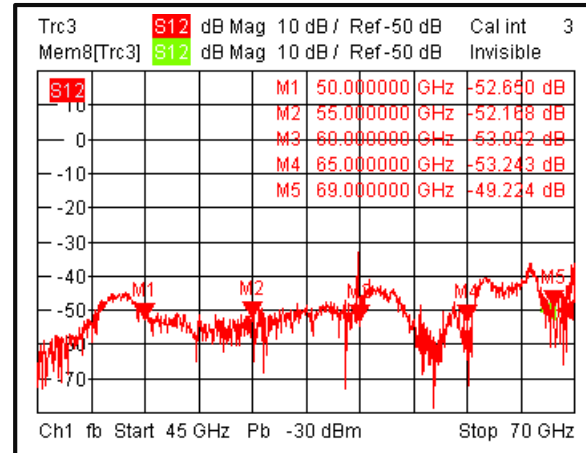
Input Return Loss



Output Return Loss



Isolation



Wide Band Low Noise Amplifier 50-66GHz

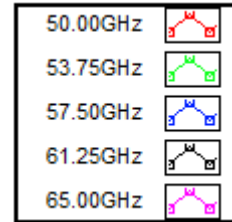
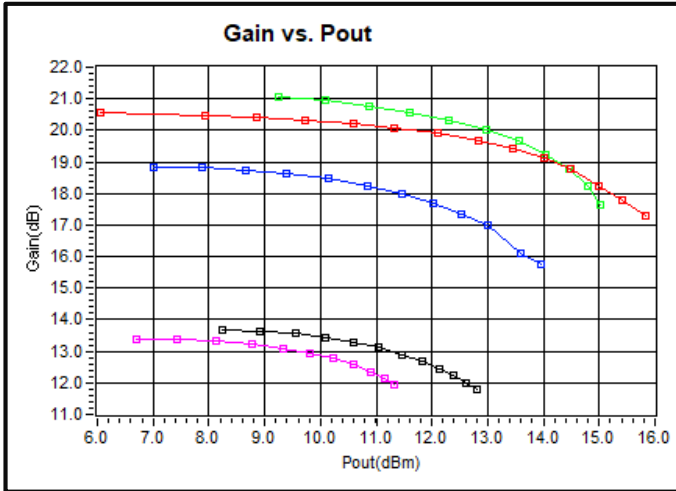


RF-LAMBDA

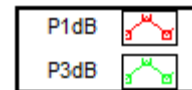
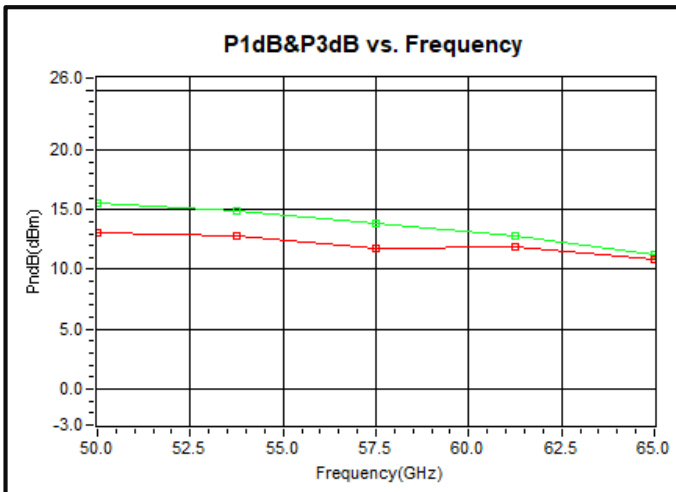
The power beyond expectations

R50G69GSA-S

Gain vs. Output Power



PxdB vs. Frequency



Wide Band Low Noise Amplifier 50-66GHz



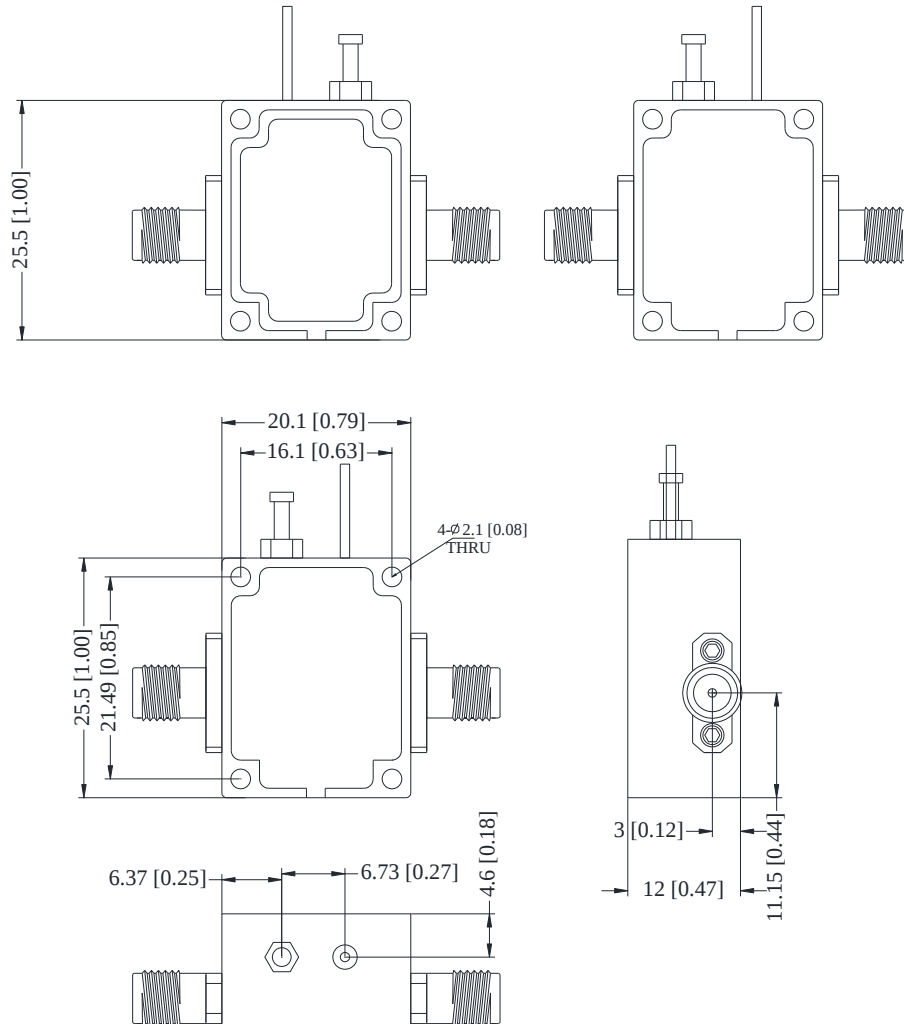
RF-LAMBDA

The power beyond expectations

R50G69GSA-S

Outline Drawing:

All Dimensions in mm [inches]



Heat Sink required during operation.
(Heat Sink sold separately)



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.