

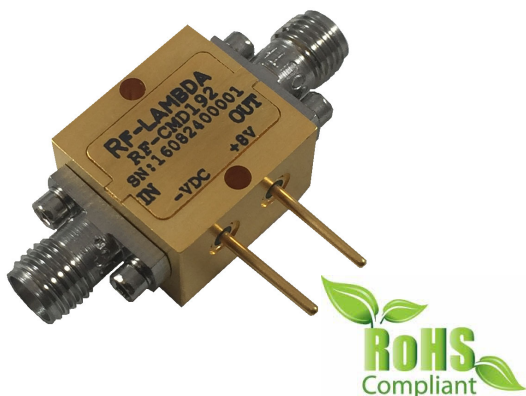


RF-LAMBDA

The power beyond expectations

RSD10M20GSB-D

DC-20 GHz Distributed Driver Amplifier



Features

- Ultra wideband performance
- Positive gain slope
- High output power
- Low noise figure
- Microwave radio and VSAT
- Telecom infrastructure
- Test instrumentation
- Military and space

Electrical Specifications, $T_A=25^\circ\text{C}$

Parameter	Min	Typ	Max	Min	Typ	Max	Units
Frequency Range	0.1 ~ 10			10 ~ 20			GHz
Gain	18	19		19	20		dB
Gain Flatness		± 4			± 4		dB
Gain Variation Over Temperature (-45 ~ +85)		± 3			± 3		dB
Noise Figure		3			3-5		dB
Input Return Loss		-20			-20		dB
Output Return Loss		-15			-15		dB
Output Power for 1 dB Compression (P1dB)	18	22		16	20		dBm
Saturated Output Power (Psat)	22	24		20	23		dBm
Output Third Order Intercept (IP3)		33			29		dBm
Supply Current (8 VDC)		200	300		200	300	mA
Isolation S12		-65			-60		dB
Maximum Input Power (no damage)			+23			+23	dBm
Weight	10						g
Impedance	50						Ohms
Input / Output Connectors	SMA-Female						
Finishing	Gold Plated						
Material	Aluminum / Copper						

* P1dB, P3dB and Psat power testing signal: 200 μ s 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.



RF-LAMBDA

The power beyond expectations

RSD10M20GSB-D

Absolute Maximum Ratings	
Supply Voltage	10 VDC
RF Input Power	+23 dBm
Storage Temperature (°C)	-50 to +125

Note: Maximum RF input power is defined to protect the amplifier from damage.
Input power may be increased at the users own risk to achieve the full output power of the amplifier. Please reference gain and power curves and monitor the temperature.

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 cavity to ground of power supplies
Step 3	Connect -VDC to -3V
Step 4	Connect +8V biasing (Drain)
Step 5	Increase -VDC (less negative) until drain current (+8V supply) = 200mA
Power OFF Procedure	
Step 2	Turn off +8V biasing
Step 3	Turn off -VDC
Step 4	Remove RF connection.

Environmental Specifications	
Operational Temperature (°C)	-45 ~ +85 (Case Temperature below 85)
Altitude	30,000 ft. (Epoxy Sealed Controlled environment) 60,000 ft 1.0psi min (Hermetically Sealed Un-controlled environment) (Optional)
Vibration	25g RMS (15 degree 2KHz) endurance, 1 hour per axis
Humidity	100% RH at 35c, 95%RH at 40°C
Shock	20G for 11msec half sin wave, 3 axis both directions

Ordering Information	
Part No	Description
RSD10M20GSB-D	DC ~ 22GHz 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.

DC-20GHz Distributed Driver Amplifier

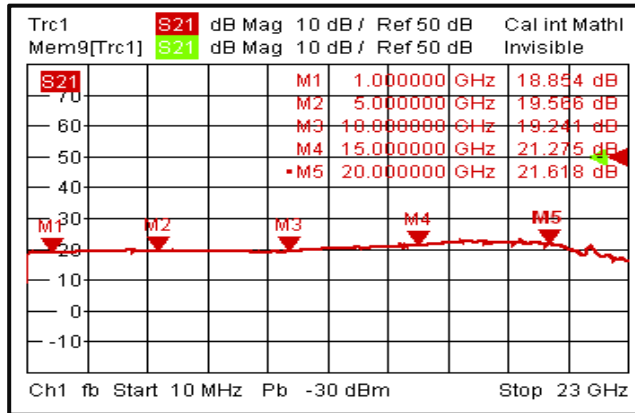


RF-LAMBDA

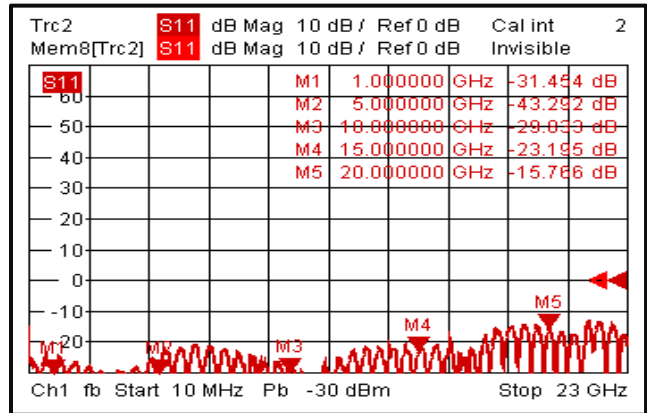
The power beyond expectations

RSD10M20GSB-D

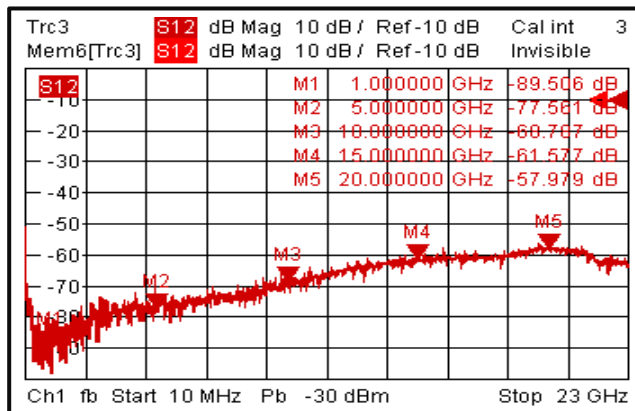
Gain



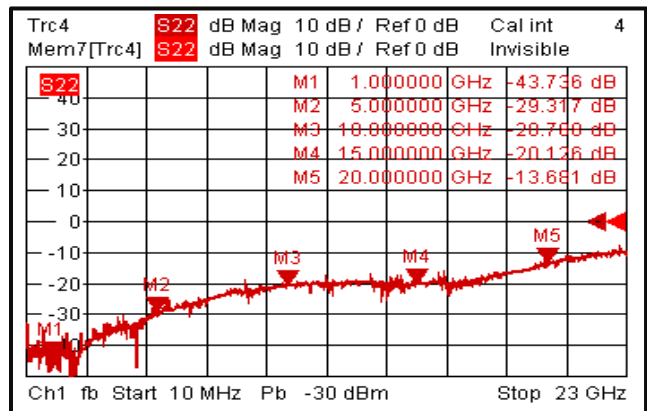
Input Return Loss



Isolation

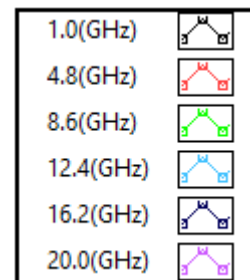
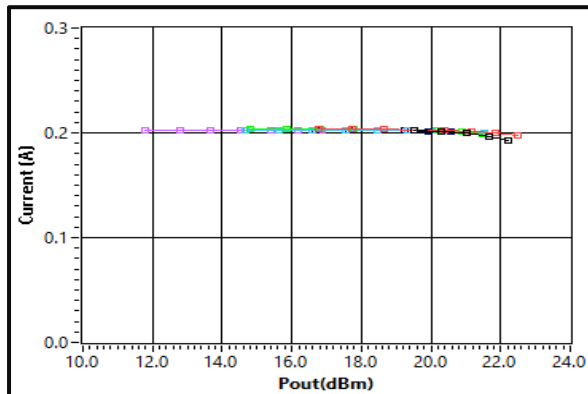


Output Return Loss



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

Current vs Pout



DC-20GHz Distributed Driver Amplifier

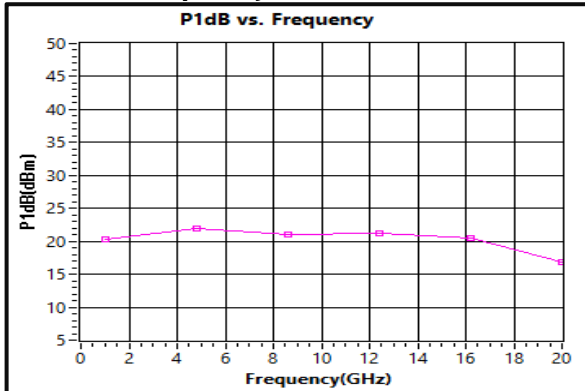


RF-LAMBDA

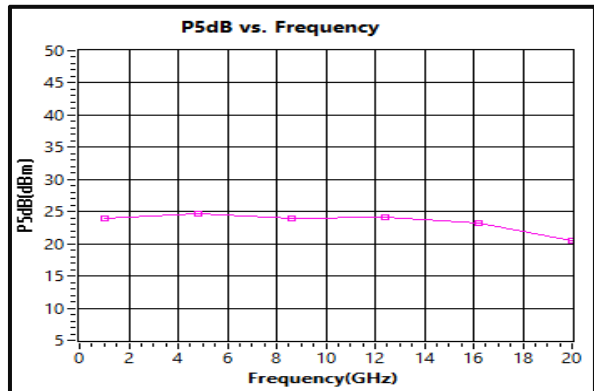
The power beyond expectations

RSD10M20GSB-D

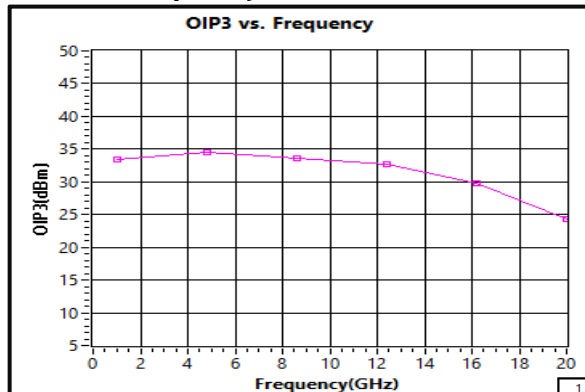
P1dB vs. Frequency



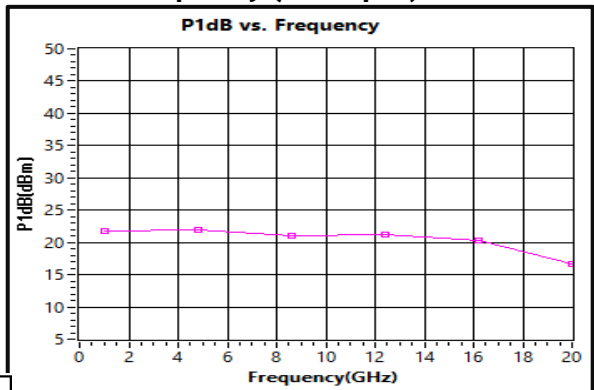
P5dB vs. Frequency



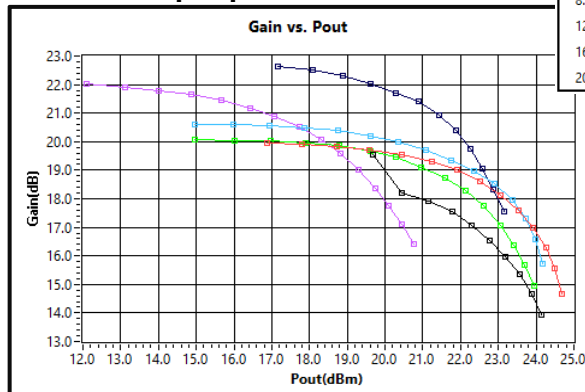
OIP3 vs Frequency



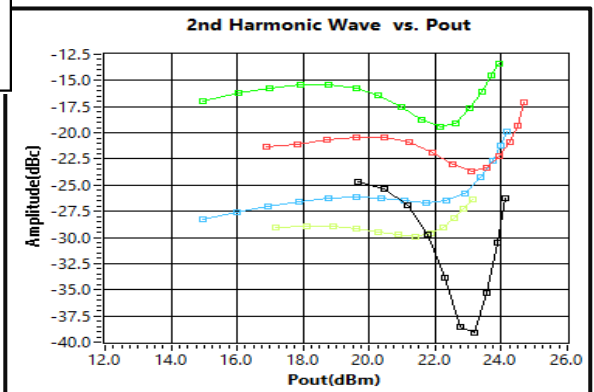
P1dB vs Frequency (CW input)



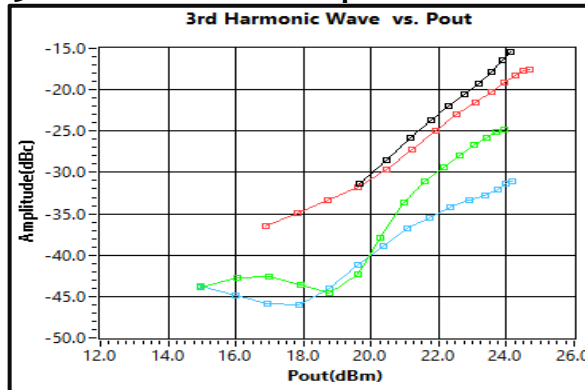
Gain vs. Output power



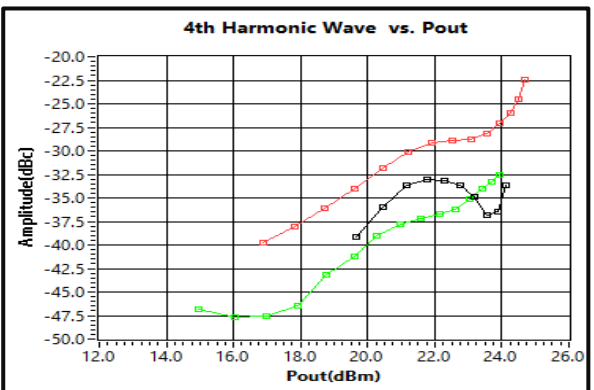
2nd Harmonic Wave Output Power



3rd Harmonic Wave Output Power



4th Harmonic Wave Output Power



DC-20GHz Distributed Driver Amplifier



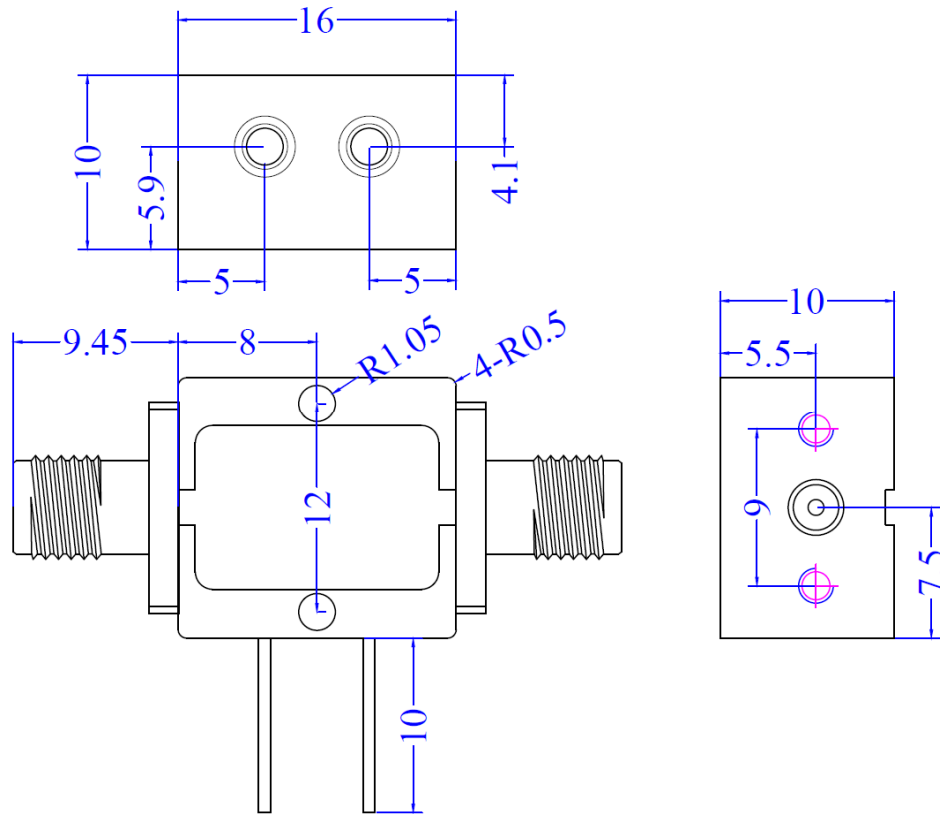
RF-LAMBDA

The power beyond expectations

RSD10M20GSB-D

Outline Drawing:

All Dimensions in mm



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.