



### Wide Band Low Noise Amplifier 20GHz~40GHz



Note: The photo is for illustration only.  
Please refer to the outline drawing.



#### Features

- Wide band Low Noise Amplifier
- High Gain: 30dB Typical
- Output Power :+20dBm Typical

#### Typical Applications

- Aerospace and military applications
- Test and Measurement
- Wireless Infrastructure

Electrical Specifications,  $T_A=25\text{ }^\circ\text{C}$ ,  $V_{dd}=+4\text{V}$

Parameter	Typical	Units
Frequency Range	20 ~ 40	GHz
Gain	30	dB
Gain Variation Over Temperature	$\pm 3$	dB
Noise Figure	6.0	dB
Input VSWR	1.5	:1
Output VSWR	1.5	:1
Output 1dB Compression Point (P1dB)	18	dBm
Saturated Output Power (Psat)	20	dBm
Supply Current (Vdd = +4V)	270	mA
DC Voltage	Vd = +4V	V
Isolation S12	44	dB
Maximum Input Power	Psat - Gain	dBm
Weight	50	g
Impedance	50	Ohms
Input / Output Connectors	2.92mm – Female	
Finish	Gold Plated	
Material	Aluminum / Copper	

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Absolute Maximum Ratings	
Supply Voltage	+4 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 Vdd
Power OFF Procedure	
Step 1	Turn Off Vdd
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 85C)
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



Ordering Information	
Part No.	Description
R20G40GSMB-S	Wide Band Low Noise Amplifier 20 - 40GHz

### 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.

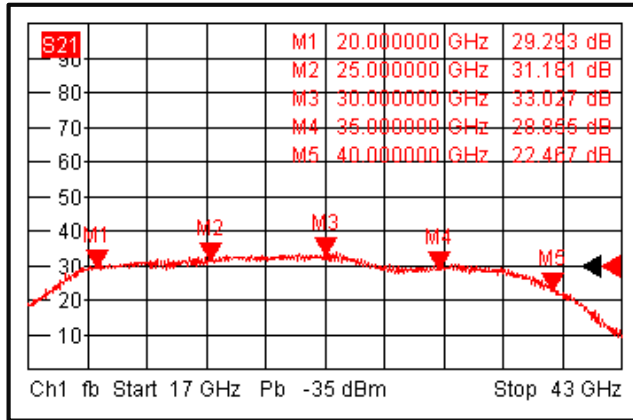
#### What is not covered with warranty?

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

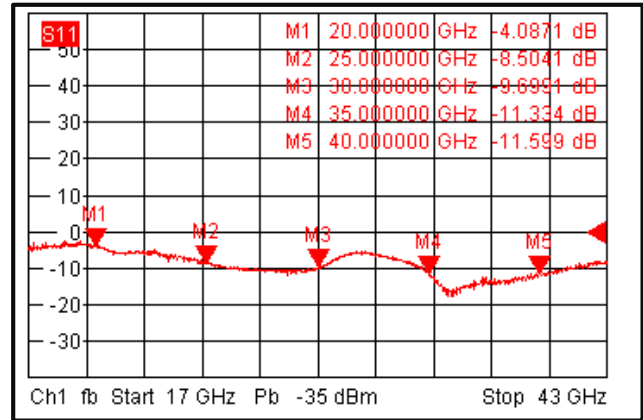
Since the die, ICs or MMICs are fragile, these are not covered by warranty. Any damage to these will NOT be free to repair.



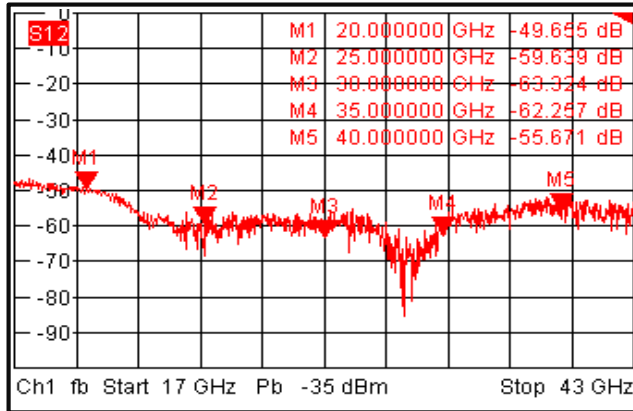
### Gain



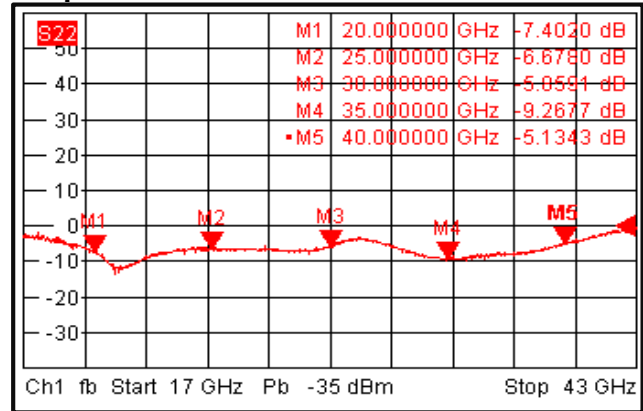
### Input Return Loss



### Isolation



### Output Return Loss



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

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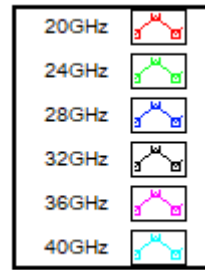
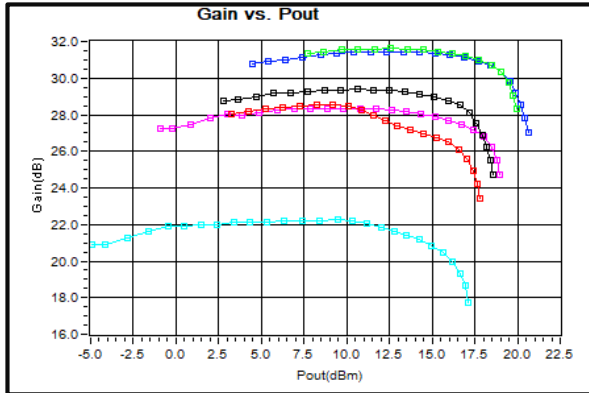


# RF-LAMBDA

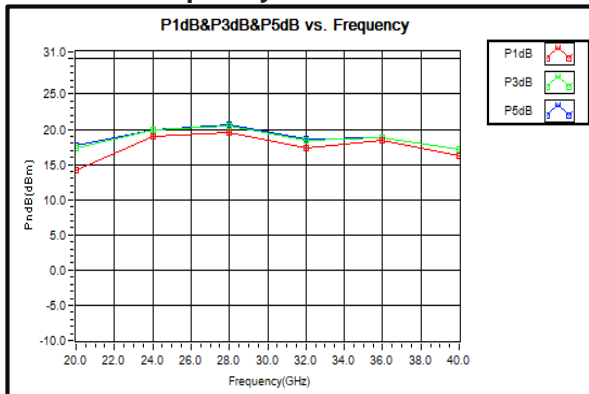
The power beyond expectations

## R20G40GSMB-S

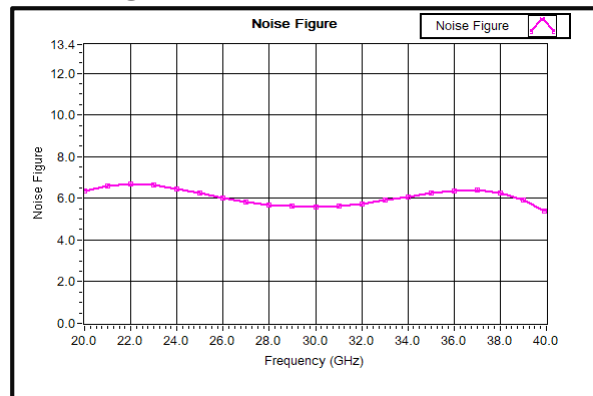
### Gain vs. Output Power



### PxdB vs. Frequency



### Noise Figure vs. Frequency

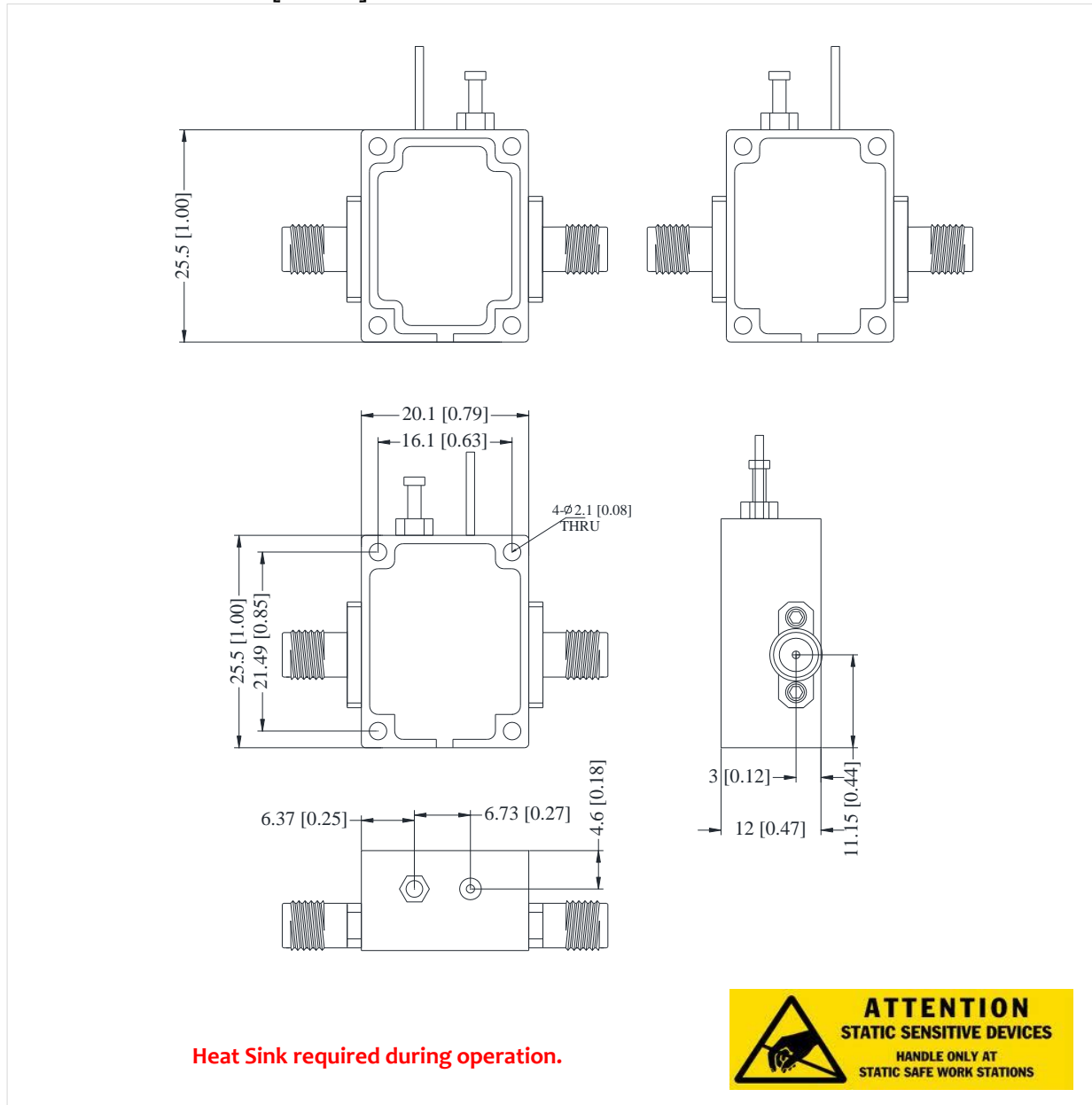


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### Outline Drawing:

All Dimensions in mm [inches]



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### Important Notice

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