



RF-LAMBDA

LEADER OF RF BROADBAND SOLUTIONS

R10M20GSA

Ultra Wide Band Low Noise Amplifier DC~20GHz



Features

- Gain: 14dB Typical
- Noise Figure: 2.5dB Typical
- P1dB Output Power : +12dBm Typical
- Supply Voltage: +8V

Typical Applications

- Wireless Infrastructure
- RF Microwave & VSAT
- Military & Aerospace
- Test Instrument
- Fiber Optics

Electrical Specifications, TA = +25°C, Vdd = +8V, Vgg=-5V

Parameter	Min.	Typ.	Max.	Min.	Typ.	Max.	Units
Frequency Range	DC		10	10		20	GHz
Gain	12	14		11	13		dB
Gain Flatness		±2.0			±2.0		dB
Gain Variation Over Temperature (-45 ~ +85)		±1.0			±1.0		dB
Noise Figure		2.5	5.0		2.5	4.0	dB
Input VSWR		1.5	2.5		1.6	1.8	:1
Output VSWR		1.5	1.8		1.6	1.8	:1
Output 1dB Compression Point (P1dB)	16	17		12	15		dBm
Saturated Output Power (Psat)		18			17		dBm
Output Third Order Intercept (IP3)		27.5			27		dBm
Supply Current (Vdd=+8V;Vgg=-5V)		60	85		60	85	mA
Isolation S12		-40			-35		dB
Weight	1.06						ounces
Impedance	50						Ohms
Input / Output Connectors	SMA-Female						
Finish	Standard: Gold 40 micron; Nickel 220 micron thickness						
	Option: Gold 80 micron; Nickel 180 micron thickness						
Material	Aluminum						
Package Sealing	Epoxy Sealing (Standard)						
	Hermetically Sealed (Optional)						

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Absolute Maximum Ratings

Operating Voltage	+9V
RF Input Power	+15dBm

Biasing Up Procedure

Step 1	Connect Ground Pin
Step 2	Connect Input and Output
Step 3	Connect -5V biasing
Step 4	Connect +8V biasing
Power OFF Procedure	
Step 1	Turn off +8V biasing
Step 2	Turn off -5V biasing
Step 3	Remove RF connection
Step 4	Remove Ground.

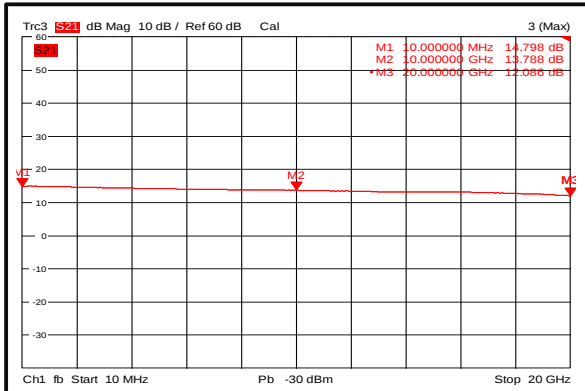
Environmental Specifications and Test Standards

Parameter	Standard	Description
Operational Temperature	MIL-STD-39016	-40°C~+85°C
Storage Temperature		-55°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)

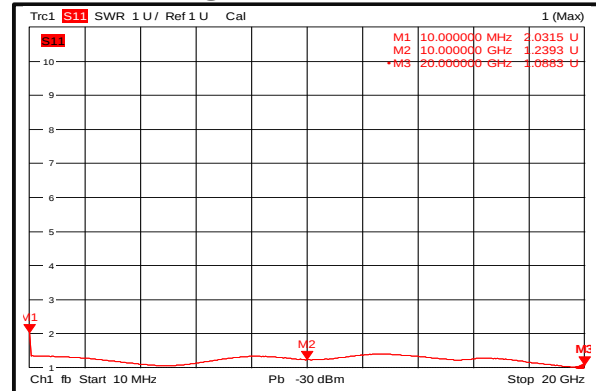


Typical Performance Plots

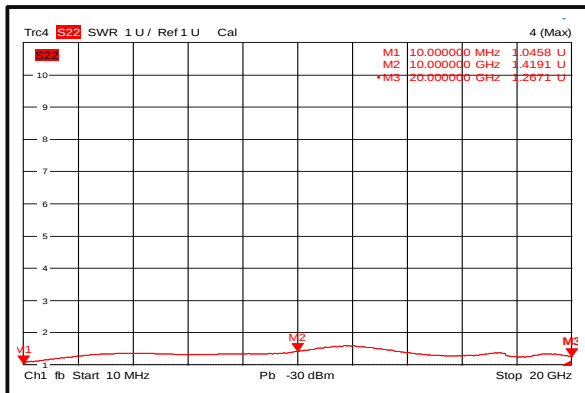
Gain @+25°C



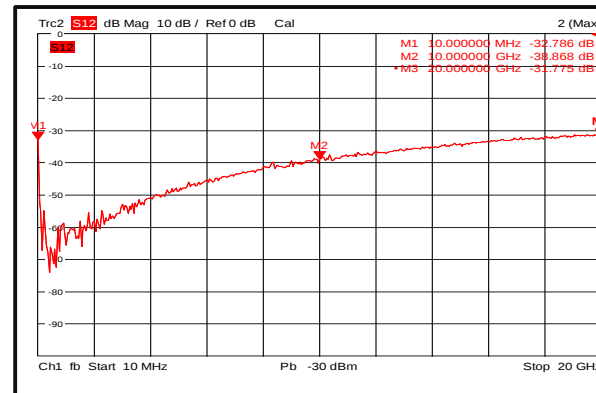
Input VSWR @+25°C



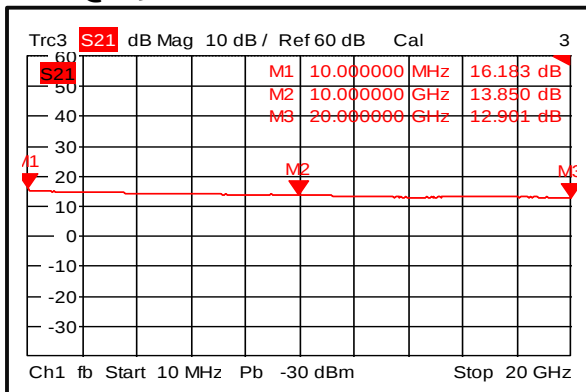
Output VSWR @+25°C



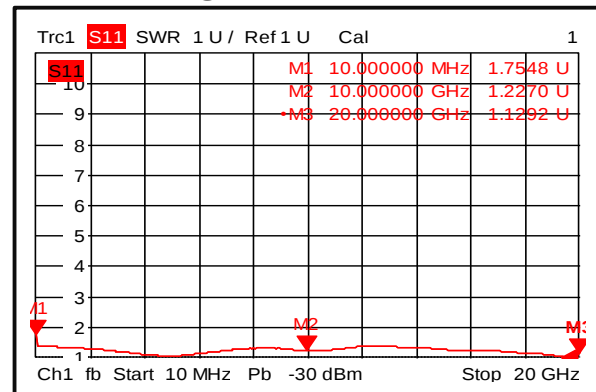
Isolation @+25°C



Gain @-45°C



Input VSWR @-45°C



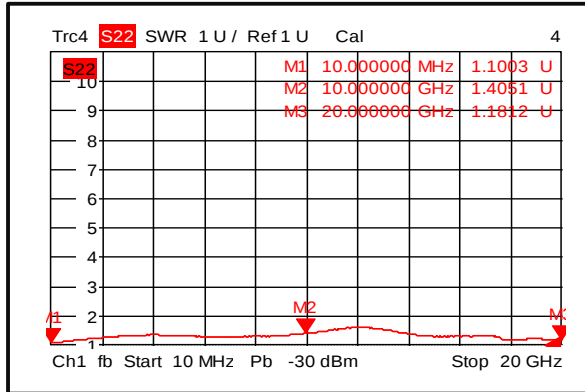


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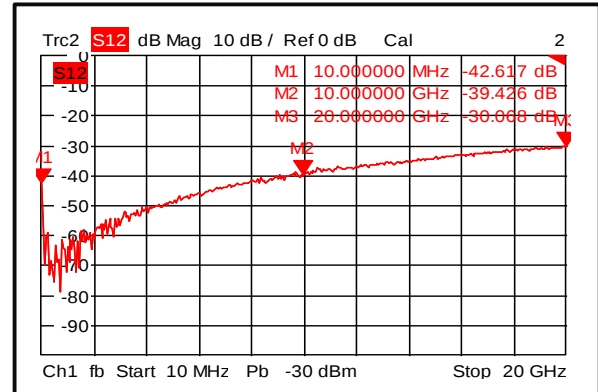
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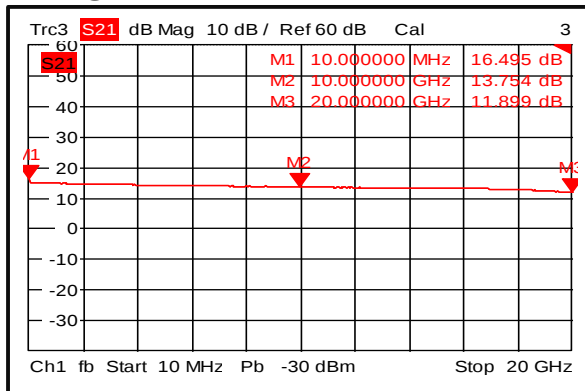
Output VSWR @-45°C



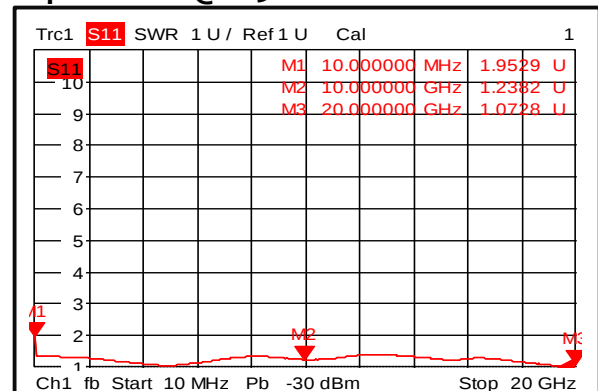
Isolation @-45°C



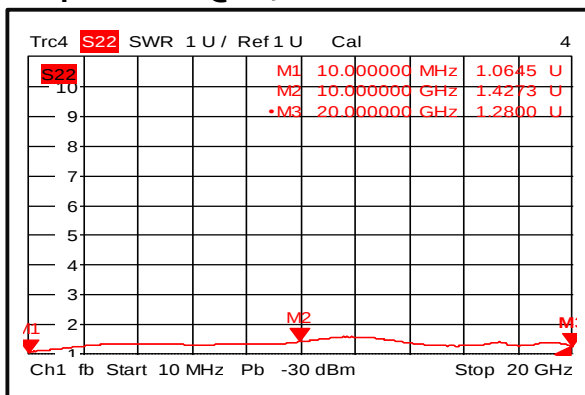
Gain @+85°C



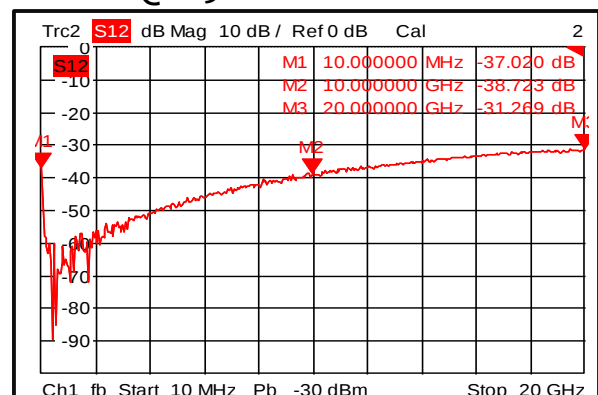
Input VSWR @+85°C



Output VSWR @+85°C



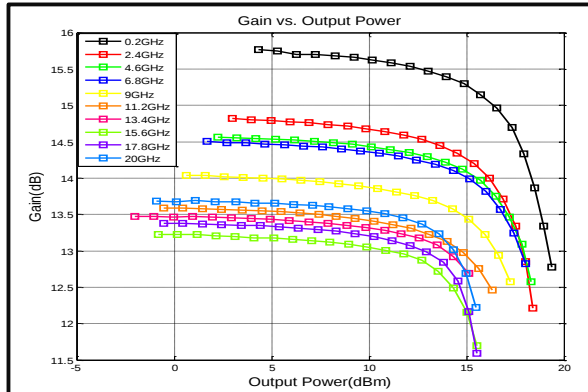
Isolation @+85°C



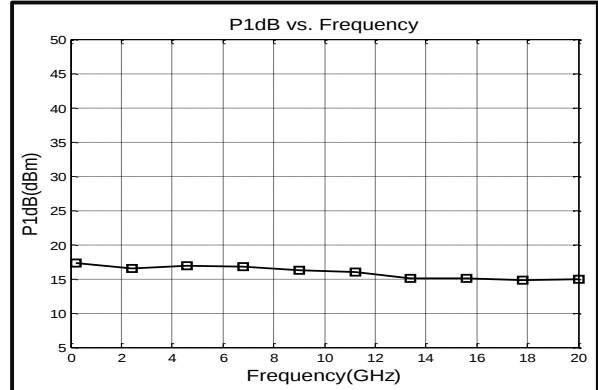
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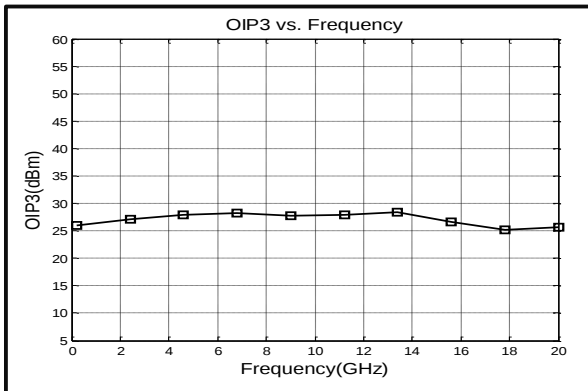
Gain vs. Output Power



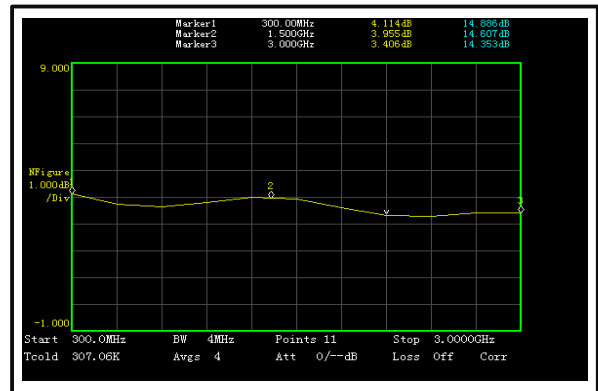
P1dB vs. Frequency



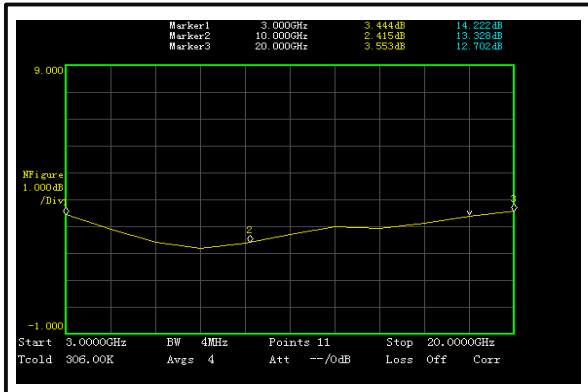
Output Third Order Intercept (IP3)



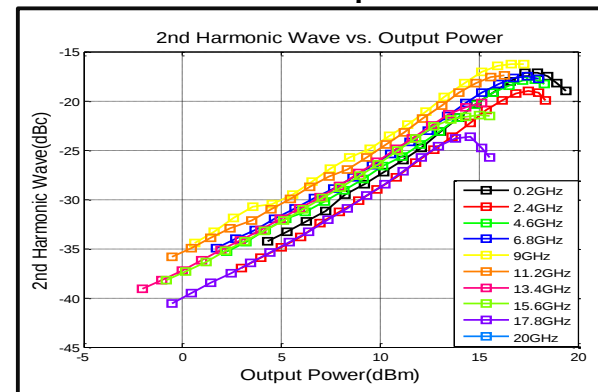
Noise Figure (0.3-3GHz)



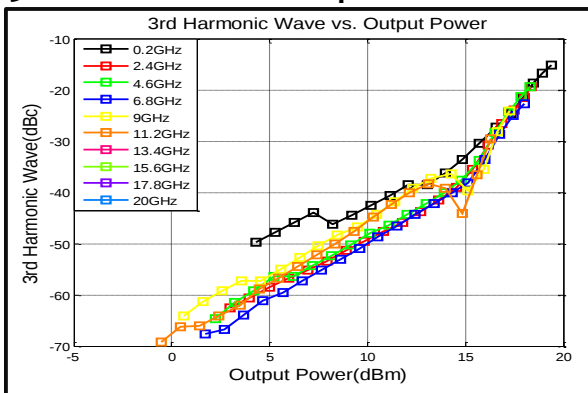
Noise Figure (3-20GHz)



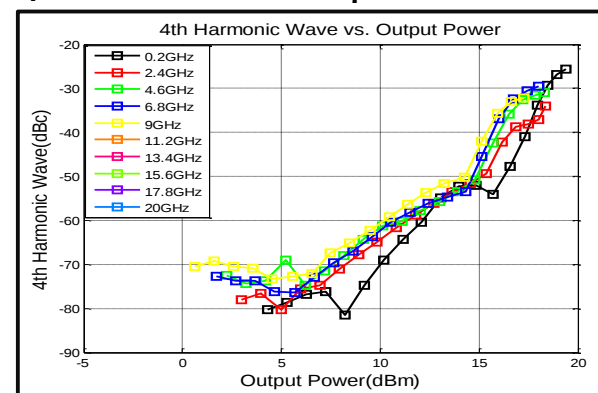
2nd Harmonic Wave Output Power



3rd Harmonic Wave Output Power



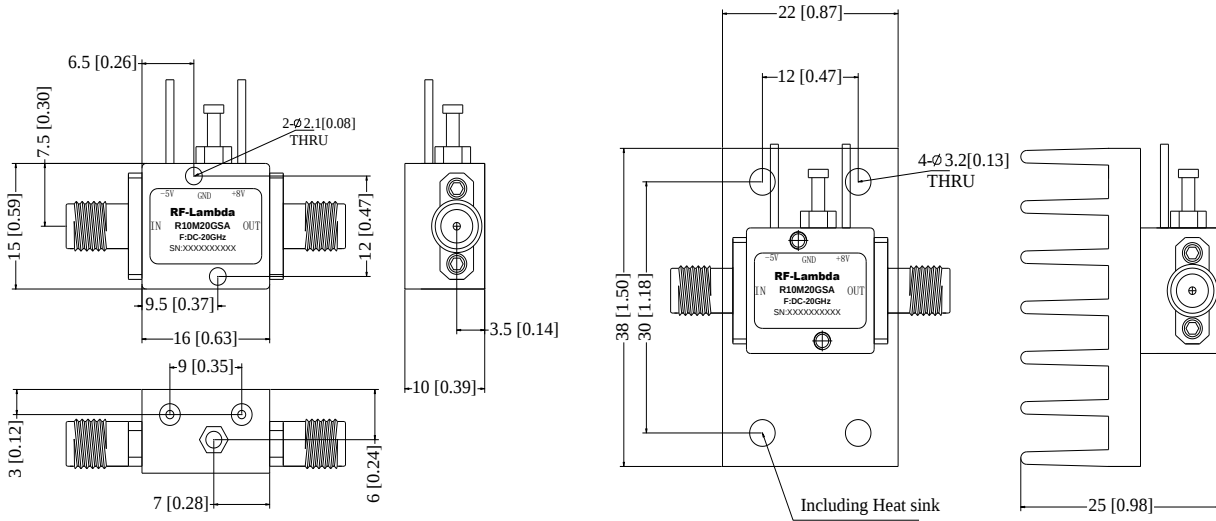
4th Harmonic Wave Output Power





Outline Drawing:

All Dimensions in mm [inches]



Heat Sink required during operation (Sold Separately)



Ordering Information

Part No.	ECCN	Description
R10M20GSA	EAR99	DC-20GHz Low Noise Amplifier

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