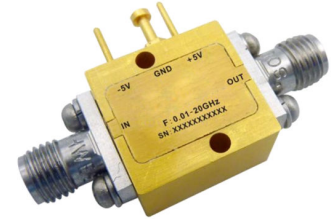




Ultra Wide Band Low Noise Amplifier  
0.01GHz~20GHz

**Features**

- Gain: 15dB Typical
- Noise Figure: 2.5dB Typical
- P1dB Output Power: +21dBm Typical
- Supply Voltage: + 5V & -5V



**Typical Applications**

- Wireless Infrastructure
- 5G communication
- Test and measurement Instrument

RF Microwave & VSAT  
Fiber Optics

Parameter	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Units
Frequency Range	0.01		6	6		12	12		20	GHz
Gain	14.5	16		14	15		14	15		dB
Gain Flatness		±1.5			±0.5	±1.0		±0.5	±1.0	dB
Gain Variation Over Temperature (-40°C~+85°C)		±1.0			±1.0			±1.0		dB
Noise Figure		3.5	5.5		2.0	3.5		2.5	5.0	dB
Input VSWR		1.3			1.4	1.8		1.5	1.8	:1
Output VSWR		1.3			1.5	1.8		1.5	1.8	:1
Output 1dB Compression Point (P1dB)	20	21		19.5	21		17.5	19		dBm
Saturated Output Power (Psat)		22			22			20		dBm
Output Third Order Intercept (OIP3)		28			28			26		dBm
Supply Current (Vcc=+5V,Vgg=-5V)		160			160			160		mA
Isolation S12		-40			-35			-30		dB

Weight	0.38(Max) ounces	Impedance	50ohms
Input / Output Connectors	SMA-Female	Material	Aluminum
Finish	Gold Plated	Package Sealing	Epoxy Sealed (Standard)
			Hermetically Sealed (Option with extra charge)



### Absolute Maximum Ratings

Operating Voltage	+8V @25°C
RF Input Power (RFIN)	+20dBm @25°C

### Biasing Up Procedure

Step 1	Connect Ground Pin
Step 2	Connect input and output
Step 3	Connect -5V biasing
Step 4	Connect +5V biasing

### Power OFF Procedure

Step 1	Turn off +5V biasing
Step 2	Turn off -5V biasing
Step 3	Remove RF connection
Step 4	Remove Ground

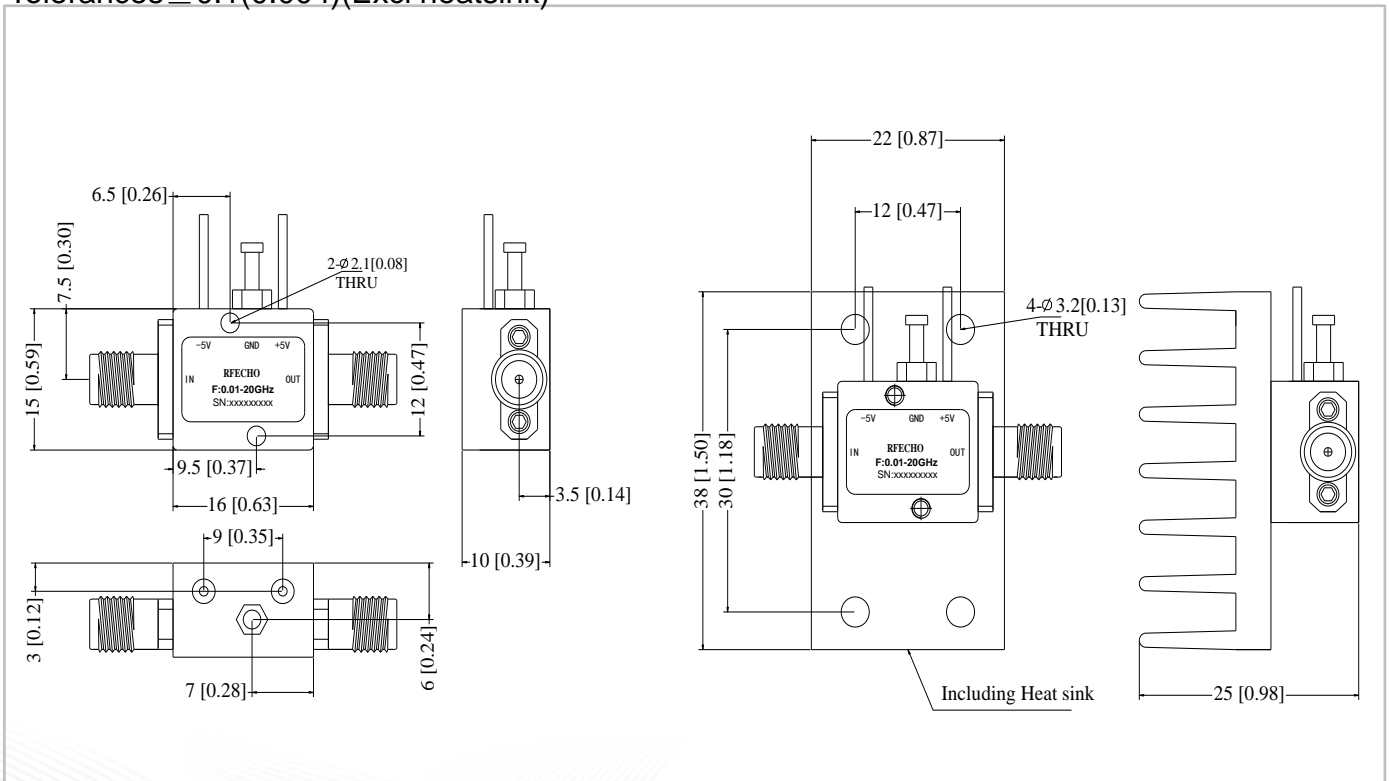
### Environmental Specifications

Operational Temperature	-40°C~+85°C
Storage Temperature	-50°C~+105°C
Altitude	30,000 ft. (Epoxy Sealed Controlled environment)
	60,000 ft. 1.0psi min (Hermetically Sealed Un-controlled environment) (Optional)
Vibration	25g RMS (15 degrees 2KHz) endurance, 1 hour per axis
Humidity	100% RH at 35°C, 95%RH at 40°C
Shock	20G for 11msec half sine wave, 3 axis both directions

### Outline Drawing:

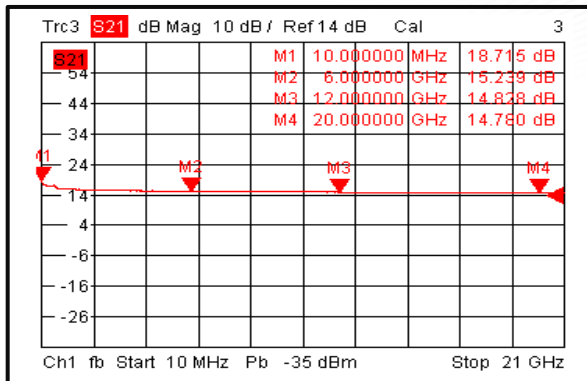
All Dimensions in mm (inches)  
Tolerances  $\pm 0.1(0.004)$ (Excl heatsink)

Heat Sink required during operation(Sold Separately)

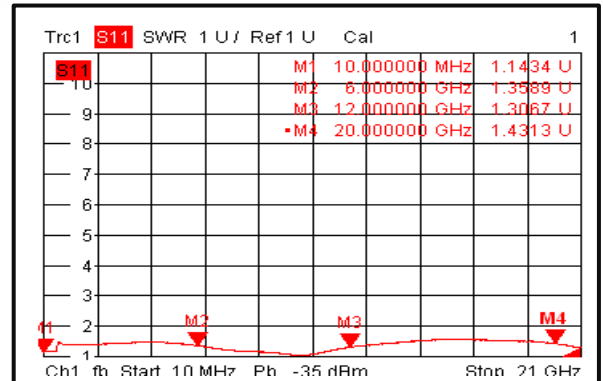




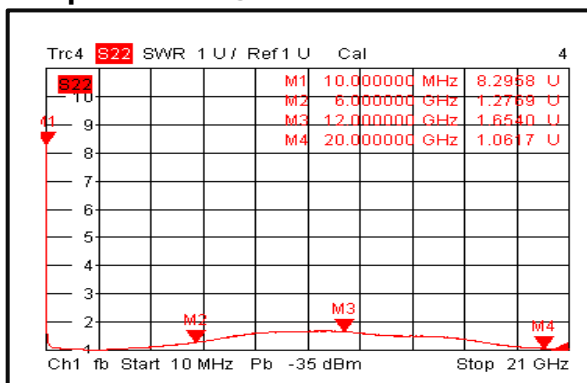
### Gain@+25°C



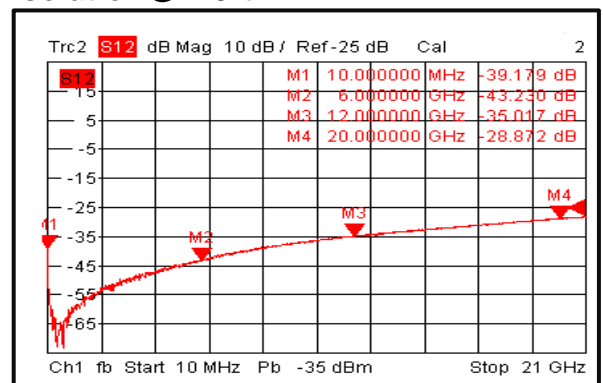
### Input VSWR@+25°C



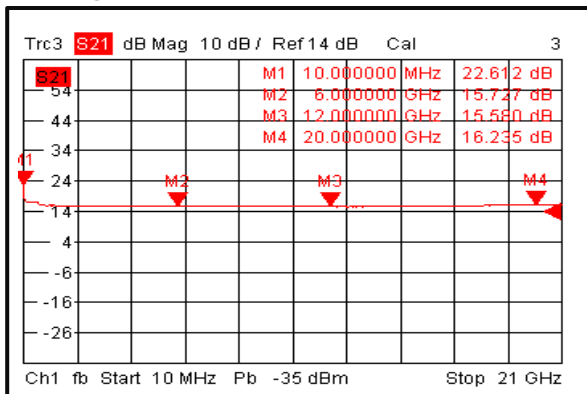
### Output VSWR@+25°C



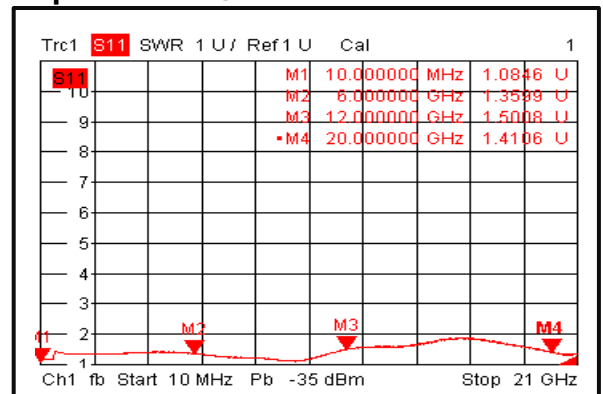
### Isolation@+25°C



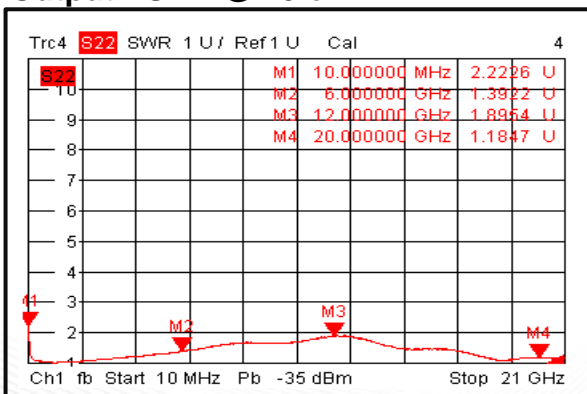
### Gain@-40°C



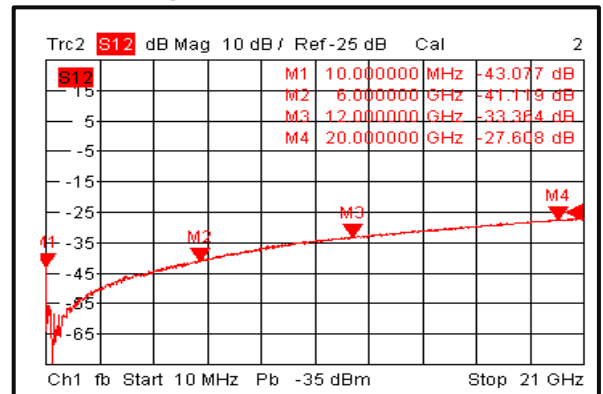
### Input VSWR@-40°C



### Output VSWR@-40°C

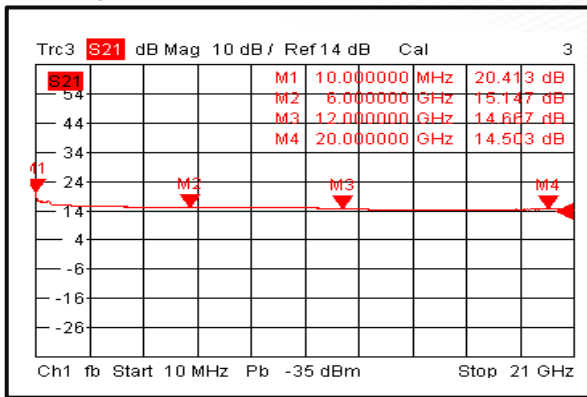


### Isolation@-40°C

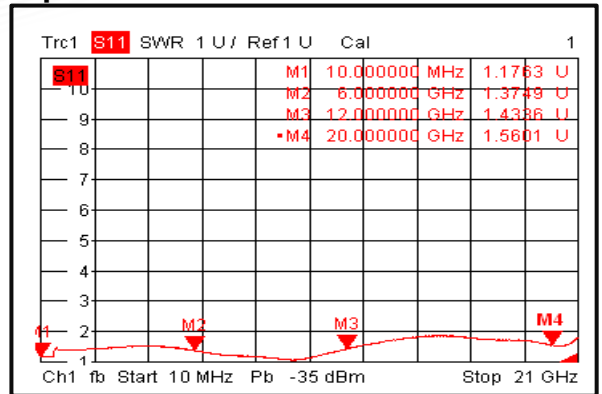




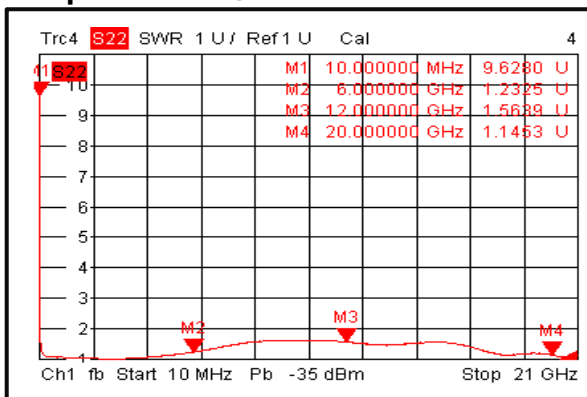
### Gain@+85°C



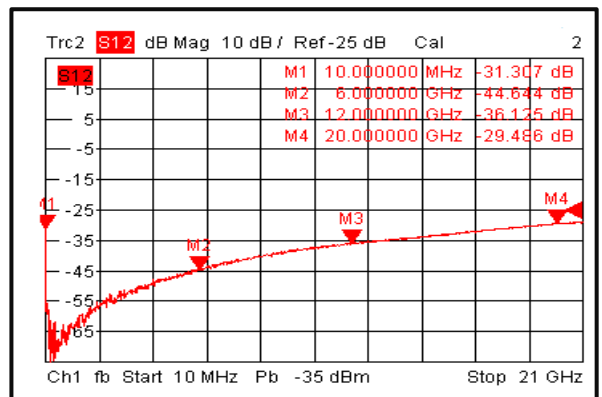
### Input VSWR@+85°C



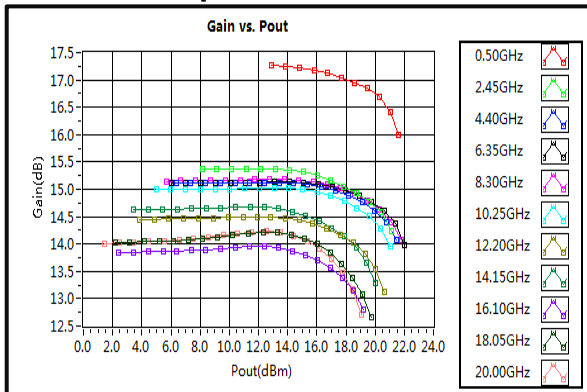
### Output VSWR@+85°C



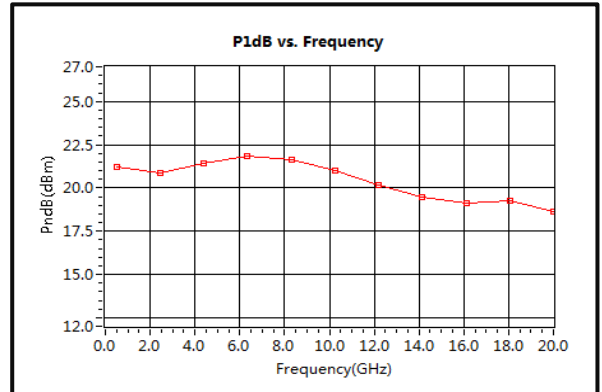
### Isolation@+85°C



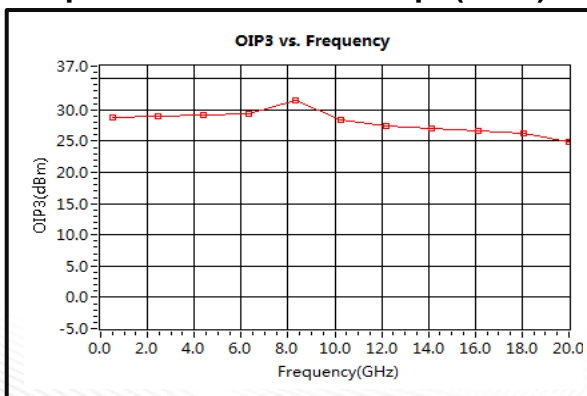
### Gain vs. Output Power



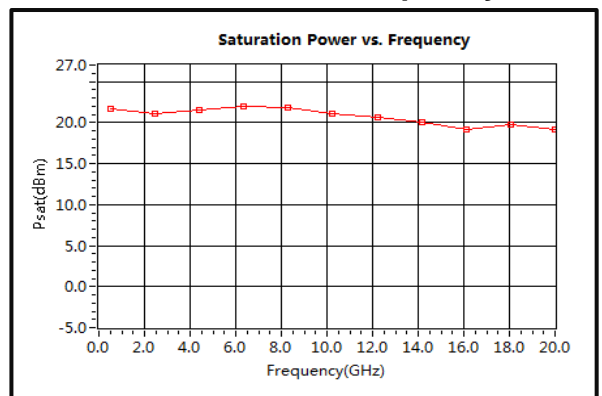
### P1dB vs. Frequency



### Output Third Order Intercept (OIP3)

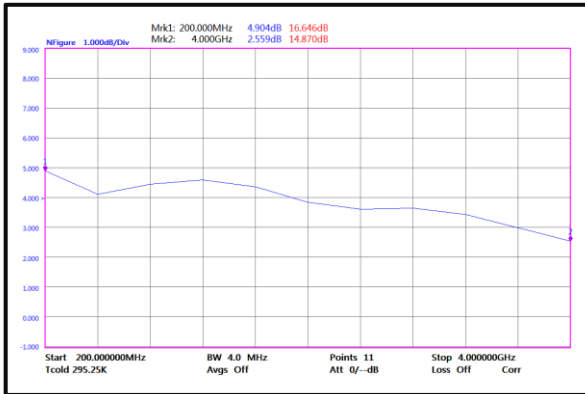


### Saturation Power vs. Frequency

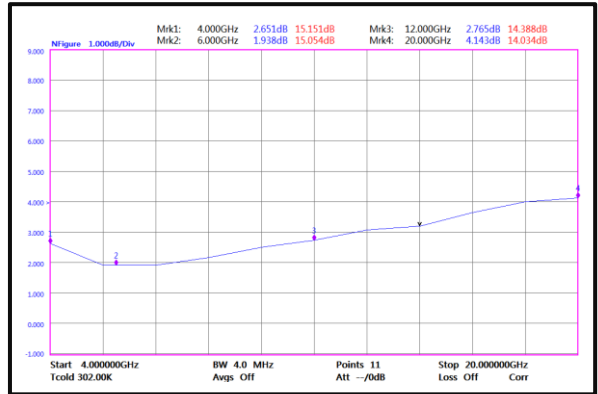




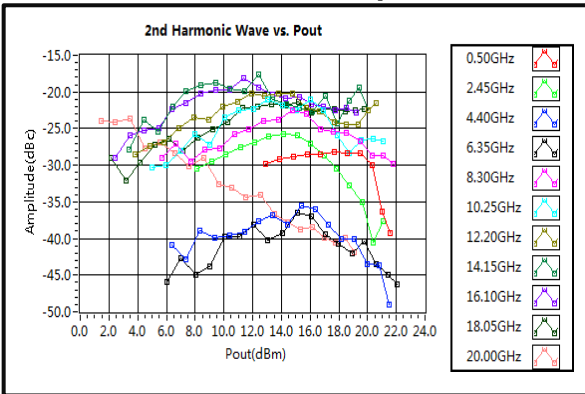
### Noise Figure (200MHz-4GHz)



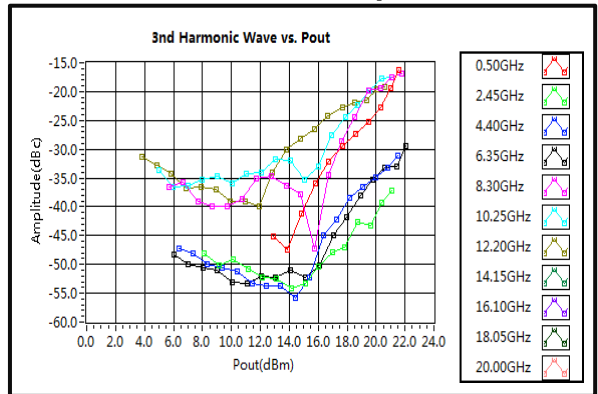
### Noise Figure (4GHz-20GHz)



### 2nd Harmonic Wave Output Power



### 3rd Harmonic Wave Output Power



### 4th Harmonic Wave Output Power

