PASTERNACK
an INFINITE brand

47 dB Gain, 20 Watt P1dB, 3.1 GHz to 3.5 GHz, High Power Amplifier, SMA Input, SMA Output, 3.5 dB NF

TECHNICAL DATA SHEET PE15A5003

PE15A5003 is a 20W S-band high gain, high power coaxial amplifier operating in the 3.1 to 3.5 GHz frequency range. The amplifier offers 42 dBm minimum of saturated output power and high 47 dB typical small signal gain with the gain flatness of ±1.5dB. This excellent technical performance is achieved through the use of hybrid MIC design and advanced GaAs PHEMT devices. The high power amplifier amplifier requires typically a +12V DC power supply. The connectorized SMA module is unconditionally stable and includes built-in voltage regulation, bias sequencing, and reverse bias protection for added reliability. The amplifier operates over the temperature range of -10°C and +50°C.

Features

- 3.1 GHz to 3.5 GHz Frequency Range
- Saturated Output Power: 40 dBm min
- Small Signal Gain: 45 dB typical
- Gain Flatness: ± 1.5 dB max
- Noise Figure: 3.5 dB
- 50 Ohms Input and Output Matched
- Unconditionally Stable
- Regulated Supply & Bias Sequencing
- Hermetically Sealed Module
- Overvoltage External Protection for Easy Repair

Applications

- S-band Military Radar
- Commercial Air Traffic Control
- Radar & Communication Systems
- High Gain Driver Power Amplifier
- High Gain Output Power Amplifier

Electrical Specifications (TA = +25°C, DC Voltage = 12Volts, DC Current = 9A)

Description	Minimum	Typical	Maximum	Units
Frequency Range	3.1		3.5	GHz
Small Signal Gain	43	47		dB
Gain Flatness			±1.5	dB
Output Power @ Pin = -3 dBm	42			dBm
Output Power at 1 dB Compression Point	+42	+43		dBm
Noise Figure			3.5	dB
Impedance (Input)		50		Ohms
Impedance (Output)		50		Ohms
Input VSWR		1.7:1	2:1	
Output VSWR		1.7:1	2:1	
Operating DC Voltage		12		Volts
Operating DC Current		9		A
Quiescent Current		12		A
Operating Temperature Range	-10		+50	°C
Fault Indication	RF Input > -3 dBm; RF Output < 40 dBm			

Click the following link (or enter part number in “SEARCH” on website) to obtain additional part information including price, inventory and certifications: 47 dB Gain, 20 Watt P1dB, 3.1 GHz to 3.5 GHz, High Power Amplifier, SMA Input, SMA Output, 3.5 dB NF PE15A5003

Pasternack Enterprises, Inc. • P.O. Box 16759, Irvine, CA 92623
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Absolute Maximum Rating

Parameter	Rating	Units
Source Voltage	+15	Volts
RF input Power	+17	dBm
Operating Temperature (base-plate)	-10 to +50	°C
Storage Temperature	-55 to +85	°C

ESD Sensitive Material, Transport material in Approved ESD bags. Handle only in approved ESD Workstation.

Mechanical Specifications

Size

Length	2.85 in [72.39 mm]
Width	7.99 in [202.95 mm]
Height	0.63 in [16 mm]
Weight	0.0126 lbs [5.72 g]
Input Connector	SMA Female
Output Connector	SMA Female

Environmental Specifications

Temperature

Operating Range	-10 to +50 deg C

Compliance Certifications (see product page for current document)

Plotted and Other Data

Notes:

- Values at +25 °C, sea level
- ESD Sensitive Material, Transport material in Approved ESD bags. Handle only in approved ESD Workstation.
- Heat Sink Required for Proper Operation, Unit is cooled by conduction to heat sink.

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Amplifier Power-up Precautions

1.) Confirm that proper ESD precautions and controls are always in place before handling any Amplifier module.

2.) Confirm adequate thermal management is in place to effectively dissipate heat away from the Amplifier package. The Amplifier operational baseplate temperature must be within the operational temperature range stated in the Amplifier datasheet. Depending on the design and thermal requirements, using a heatsink with cooling fan is always recommended for safe reliable operation. A heat sink without a cooling fan may also be used. Damage caused from overheating will void the warranty.

3.) Confirm adequate system grounding is established. The DC power supply and Amplifier must have a common ground in order to operate properly.

4.) Power Amplifiers may require additional DC Current when initially powered-up. Depending on the design, the input current draw could range from an additional 10% to 100% above the maximum rated DC current of the Amplifier. This varies based on product part number.

5.) Confirm the DC power supply, if limited, is set to allow for additional start-up current that's rated for the Power Amplifier.

6.) Confirm the system is designed and calibrated for 50 ohms. Any impedance mismatch may cause performance issues.

7.) Preform a CALIBRATION (if required) with the loads before connecting the Amplifier to the Network Analyzer to ensure proper performance.

8.) Use a fixed attenuator between the signal source and input port of the Amplifier to optimize the input VSWR match.

9.) Confirm the input power level at the input port of the amplifier does not exceed the maximum rated limit for input power (as stated in the Amplifier datasheet).
P_{in} for Small Signal Gain = P1dB-SSG-10 dB
P_{in} for P1dB = P1dB-SSG+1 dB

10.) Confirm the Network Analyzer is always connected to the Amplifier first before DC power is applied to the Amplifier.

11.) As long as the input and output ports of the amplifier are connected to a 50Ohm load and RF signal power is applied, the Amplifier can be powered up with DC voltage.

12.) Confirm the Amplifier output load is matched for a 50 Ohm impedance and will not exceed the maximum rated VSWR or Return Loss limit for the Amplifier. Exceeding the maximum rated VSWR or Return Loss limit will result in reflected signal power that could damage the Amplifier and void the warranty.

13.) **Power Amplifier connected to an Antenna for signal transmission** - It's strongly recommended to use a high power fixed attenuator pad or an Isolator between the output port of the Amplifier and input port to the antenna. Any reflected signal power due to impedance mismatch will likely damage the Amplifier and void the warranty.

14.) The attenuator or isolator used at the output port of the Amplifier must be rated to handle the output power level and operational frequency band of the amplifier.

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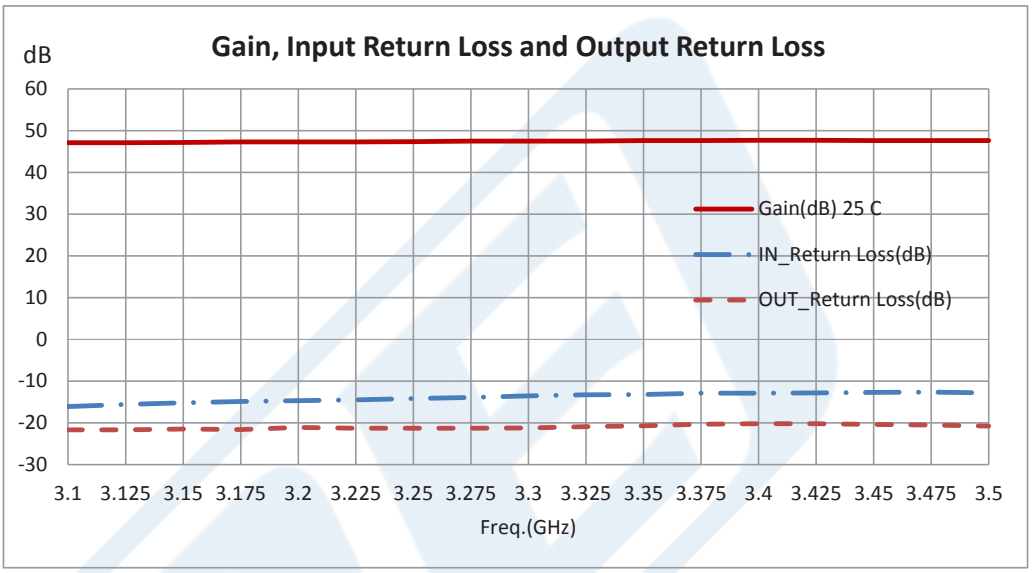
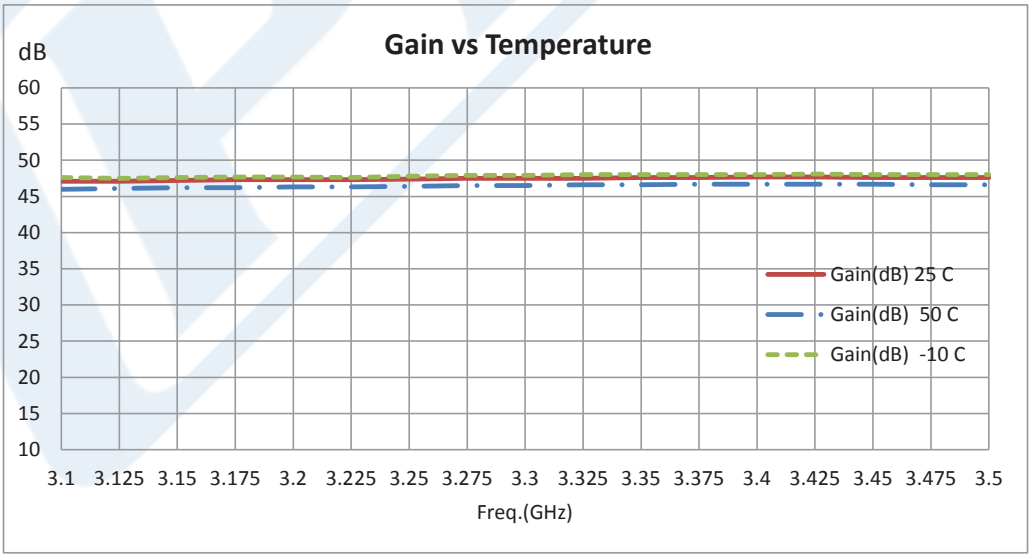
Typical Performance Data





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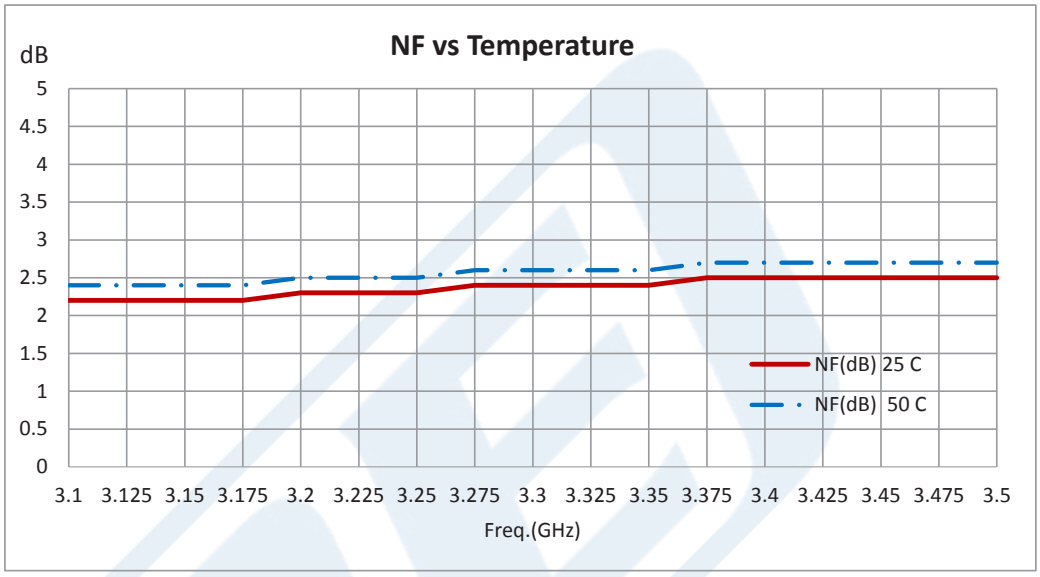

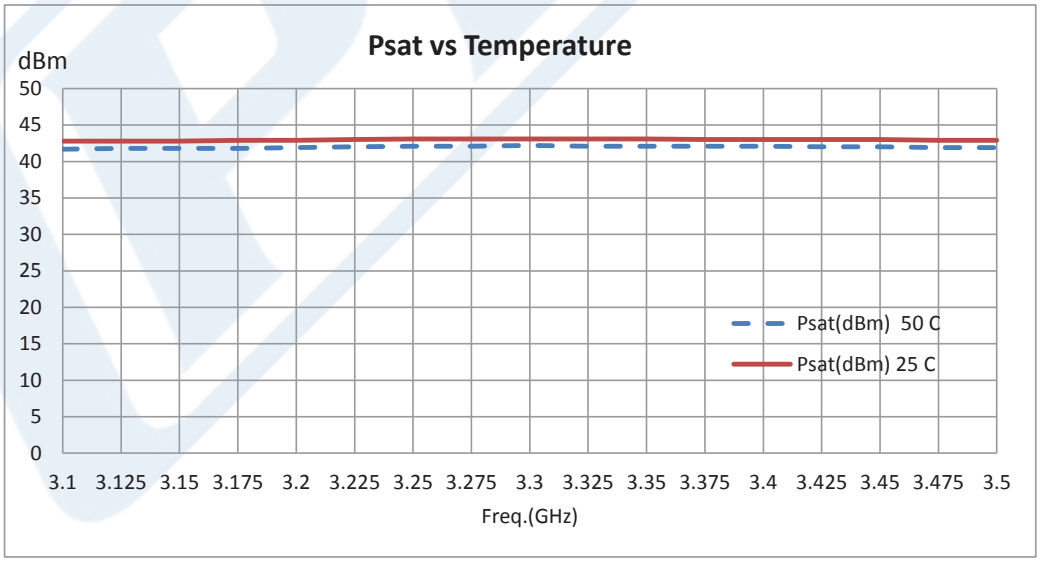

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URL: https://www.pasternack.com/47-db-gain-3.5-ghz-high-power-high-gain-amplifier-sma-pe15a5003-p.aspx

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PE15A5003 CAD Drawing

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