



60 dB Gain, 10 Watt Psat, 100 MHz to 6 GHz, High Power GaN Amplifier, SMA Input, SMA Output, 10 dB NF

## TECHNICAL DATA SHEET

PE15A5027

The PE15A5027 is a 10W high gain GaN power amplifier operating in the 0.1 to 6 GHz frequency range. The amplifier offers 40 dBm typical of saturated power and 60 dB typical small signal gain with gain flatness of  $\pm 1.25$  dB typical. This excellent technical performance is achieved through the use of advanced GaN devices. The amplifier requires typically a +28V DC power supply. The connectorized SMA module is unconditionally stable and includes built-in voltage regulation, bias sequencing, DC On/Off TTL Logic control, current shutdown and over temp shutdown at +85°C for added reliability. The amplifier operates over the temperature range of -40°C and +85°C. The RF Input/Output Connectors are SMA Female. Along with a 15 Pin Micro-D Female Control Socket.

### Features

- 0.1 GHz to 6 GHz Frequency Range
- Psat 40 dBm typ
- Small Signal Gain: 60 dB min
- Gain Flatness  $\pm 1.25$  dB typical
- 50 Ohms Input and Output Matched
- Unconditionally Stable
- Regulated Supply & Bias Sequencing
- Hermetically Sealed Module
- Over Current Shutdown
- Mismatch Handling 5.0:1 max
- Over Temp Shutdown
- Designed to meet MIL-STD-810 Conditions

### Applications

- Military Radio
- Communication Systems
- High Gain Driver Power Amplifier
- High Gain Output Power Amplifier

### Electrical Specifications (TA = +25°C, DC Voltage = 28Volts, DC Current = 2.2A)

Description	Minimum	Typical	Maximum	Units
Frequency Range	0.1		6	GHz
Small Signal Gain	60			dB
Gain Flatness		$\pm 1.25$		dB
Pout at Sat.	+39	+40		dBm
Efficiency (PAE)		20		%
Harmonics @10 Watts		-15		dBc
Noise Figure			10	dB
Spurious @10 Watts		-70		dBc
Impedance (Input)		50		Ohms
Impedance (Output)		50		Ohms
Input VSWR		2:1		
Output VSWR		2:1		
TTL Control	"1": Off, "0": On (Blanking), Enable: 0V, Disable: 5V			
Operating DC Voltage		28		Volts
Operating DC Current		2.2		A
Operating Temperature Range	-40		+85	°C

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [60 dB Gain, 10 Watt Psat, 100 MHz to 6 GHz, High Power GaN Amplifier, SMA Input, SMA Output, 10 dB NF PE15A5027](#)



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### Mechanical Specifications

#### Size

Length	2.5 in [63.5 mm]
Width	2.75 in [69.85 mm]
Height	0.45 in [11.43 mm]
Weight	0.2665 lbs [120.88 g]
Input Connector	SMA Female
Output Connector	SMA Female
Cooling	HEATSINK REQUIRED use PE15A5990

### Environmental Specifications

#### Temperature

Operating Range	-40 to +85 deg C
Storage Range	-40 to +85 deg C
Humidity	IAW MIL-STD-810F, up to 95%
Shock	IAW MIL-STD-202G method 214, condition C
Vibration	IAW MIL-STD-810F, Method 514.5, Table
Altitude	up to 30,000 ft
Salt Fog	5%, +35°C 96 hrs IAW MIL-STD- 810G method
Fungus	IAW MIL-STD-810G method 508.6

**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.) Perform 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.

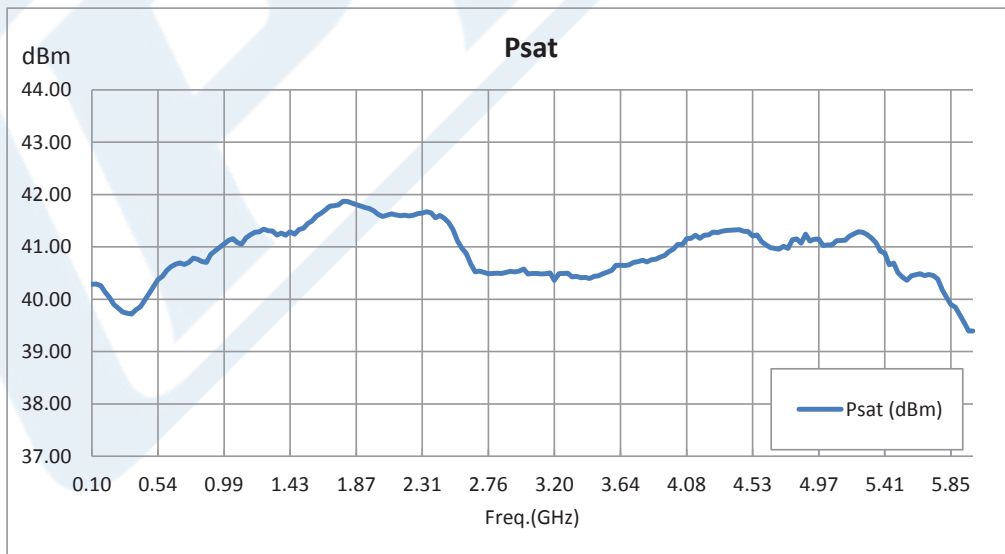
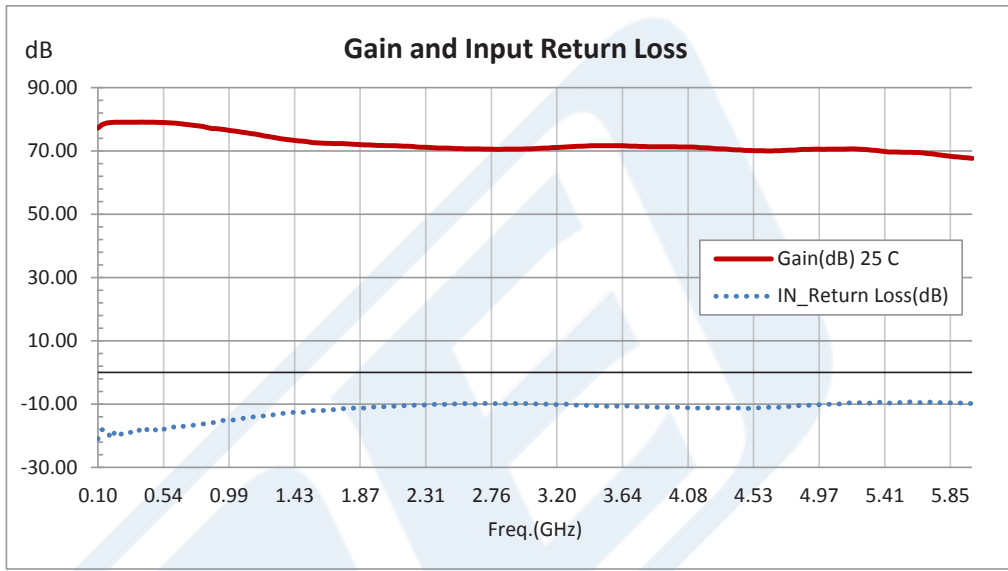
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Typical Performance Data



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60 dB Gain, 10 Watt Psat, 100 MHz to 6 GHz, High Power GaN Amplifier, SMA Input, SMA Output, 10 dB NF from Pasternack Enterprises has same day shipment for domestic and International orders. Our RF, microwave and millimeter wave products maintain a 99.4% availability and are part of the broadest selection in the industry.

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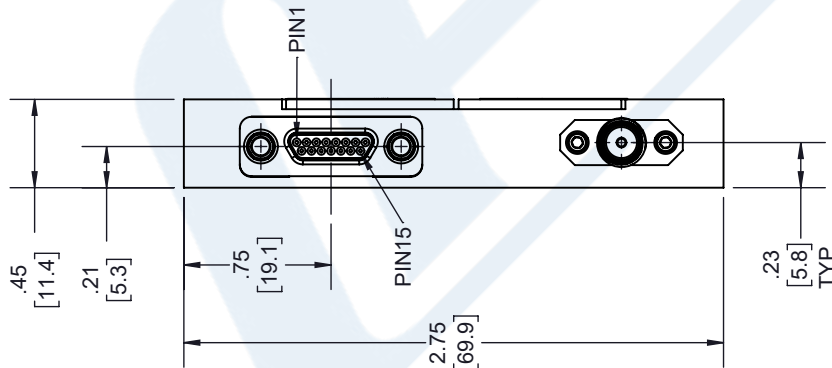
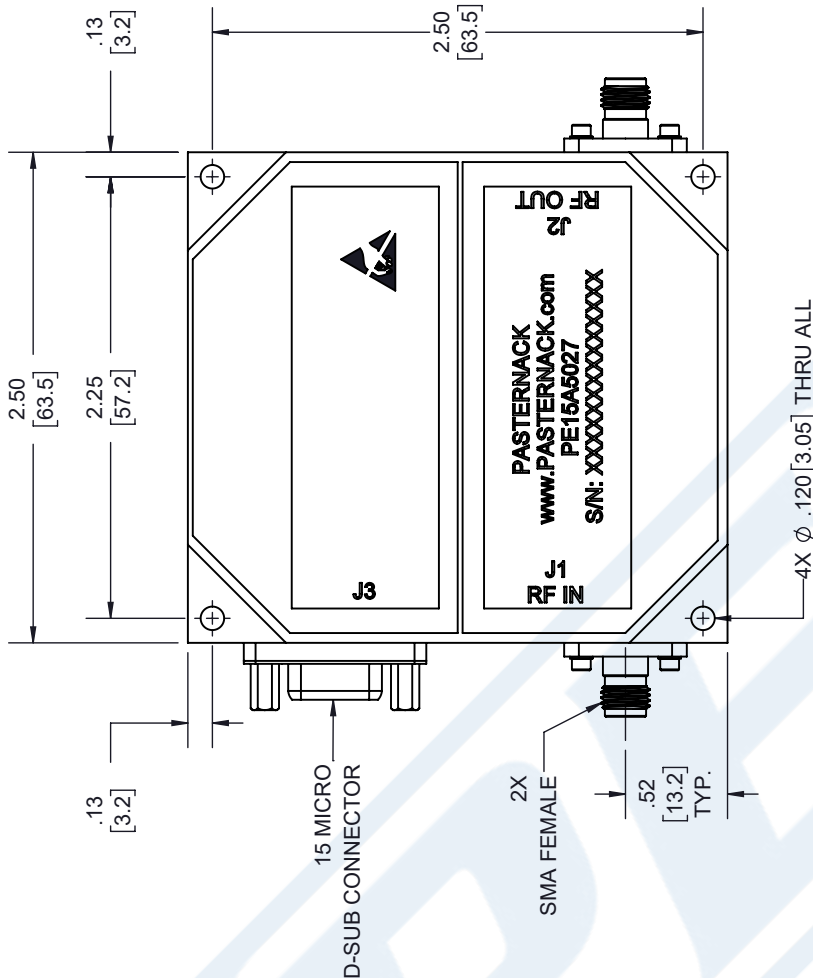
URL: <https://www.pasternack.com/60-db-gain-6-ghz-high-power-high-gain-amplifier-sma-pe15a5027-p.aspx>

The information contained in this document is accurate to the best of our knowledge and representative of the part described herein. It may be necessary to make modifications to the part and/or the documentation of the part, in order to implement improvements. Pasternack reserves the right to make such changes as required. Unless otherwise stated, all specifications are nominal. Pasternack does not make any representation or warranty regarding the suitability of the part described herein for any particular purpose, and Pasternack does not assume any liability arising out of the use of any part or documentation.

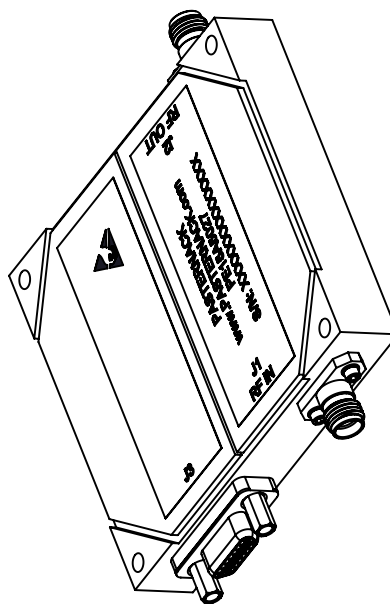
# PE15A5027 CAD Drawing

60 dB Gain, 10 Watt Psat, 100 MHz to 6 GHz, High Power  
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REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	PCR PE15A5027	10/12/2020	T.GALLA



PIN	DESCRIPTION
1	+28V
2	+28V
3	GND
4	GND
5	N/C
6	N/C
7	OVER-CURRENT BIT
8	BLANKING TTL
9	+28V
10	+28V
11	GND
12	GND
13	N/C
14	N/C
15	OVER-TEMP BIT



**NOTE:**

- HEAT SINK REQUIRED FOR PROPER OPERATION, UNIT IS COOLED BY CONDUCTING TO HEAT SINK.

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UNLESS OTHERWISE SPECIFIED LEADING DIMENSIONS ARE INCHES DIMENSIONS IN [ ] ARE MILLIMETERS

TOLERANCES:

FRACTIONS: .X = ±.2 [5.08] ±1/32  
.XX = ±.02 [51] ±.005 [13] ANGLES ± 1°

CABLE LENGTH (L), TOLERANCES:  
L ≤ 12 [305] = +1 [25] / -0  
12 [305] < L ≤ 60 [1524] = +2 [51] / -0  
60 [1524] < L ≤ 120 [3048] = +4 [102] / -0  
120 [3048] < L ≤ 300 [7620] = +6 [152] / -0  
300 [7620] < L = +5% / -0

ALL DIMENSIONS SHOWN ARE FOR REFERENCE ONLY.

THIRD-ANGLE PROJECTION

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SCALE N/A

REV A

ITEM NO. PE15A5027

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