

23 dBm P1dB, 50 MHz to 4 GHz, Gain Block  
Amplifier, 26 dB Gain, 35 dBm IP3, 5 dB NF, SMA



## PE15A8000

### Features

- 50 MHz to 4 GHz Frequency Range
- P1dB: 23 dBm
- High Small Signal Gain: 26 dB
- IP3: 35 dBm
- 50 Ohm Input and Output Matched
- -40 to +75°C Operating Temperature
- Unconditionally Stable
- Single DC Positive Supply
- Built-in Voltage Regulator

### Applications

- Laboratory Applications
- R&D Labs
- Military Radio
- Radar Systems
- Telecom Infrastructure
- Test Instrumentation
- Military & Space
- Communication Systems
- Wireless Communication
- Microwave Radio Systems
- Cellular Base Stations
- Low Noise Amplifier
- General Purpose Amplification
- General Purpose Wireless
- Wideband Gain Block
- IF Amplifier/RF Driver Amplifier
- RF Wideband Front Ends
- RF Pre-amplification

### Description

The PE15A8000 is wideband general purpose RF coaxial gain block amplifier operating in the 0.05 GHz to 4 GHz frequency range. The amplifier offers 23 dBm of P1dB, 26 dB of Gain, IP3 of 35 dBm. This exceptional technical performance is achieved through the use of hybrid MIC design and advanced GaAs PHEMT devices. This gain block amplifier requires only a single positive supply, typically a +12V DC power supply and includes built-in voltage regulation, is unconditionally stable and operates over the temperature range of -40°C and +75°C.

### Electrical Specifications

(TA = +25°C, DC Voltage = 11.5 and 12 Volts, DC Current = 120mA)

Description	Minimum	Typical	Maximum	Units
Frequency Range	0.05		4	GHz
Small Signal Gain	24	26	28	dB
Gain Flatness		±1	±1.25	dB
Gain Variance at OTR*			±1	dB
Output at 1 dB Compression Point	+22	+23		dBm
Output 3rd Intercept Point	+32	+35		dBm
Noise Figure		5	6.5	dB
Input VSWR		1.6:1	1.8:1	
Output VSWR		1.6:1	1.8:1	
Reverse Isolation	45	55		dB
Operating DC Voltage	11.5	12	13	Volts
Operating DC Current		120	220	mA
Quiescent Current		150		mA
Operating Temperature	-40		+75	°C

23 dBm P1dB, 50 MHz to 4 GHz, Gain Block  
Amplifier, 26 dB Gain, 35 dBm IP3, 5 dB NF, SMA

## PE15A8000



\*OTR= Base Plate Operating Temperature Range

### Absolute Maximum Rating

Parameter	Rating	Units
Source Voltage	+13	Volts
RF input Power	+10	dBm
Operating Temperature (base-plate)	-40 to +75	°C
Storage Temperature	-55 to +125	°C



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

### Mechanical Specifications

#### Size

Length	2.08 in [52.83 mm]
Width	1.08 in [27.43 mm]
Height	0.5 in [12.7 mm]
Weight	0.059 lbs [26.76 g]
Input Connector	SMA Female
Output Connector	SMA Female

### Environmental Specifications

#### Temperature

Operating Range	-40 to +75 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.

23 dBm P1dB, 50 MHz to 4 GHz, Gain Block  
Amplifier, 26 dB Gain, 35 dBm IP3, 5 dB NF, SMA

## PE15A8000



### Amplifier Power-up Precautions

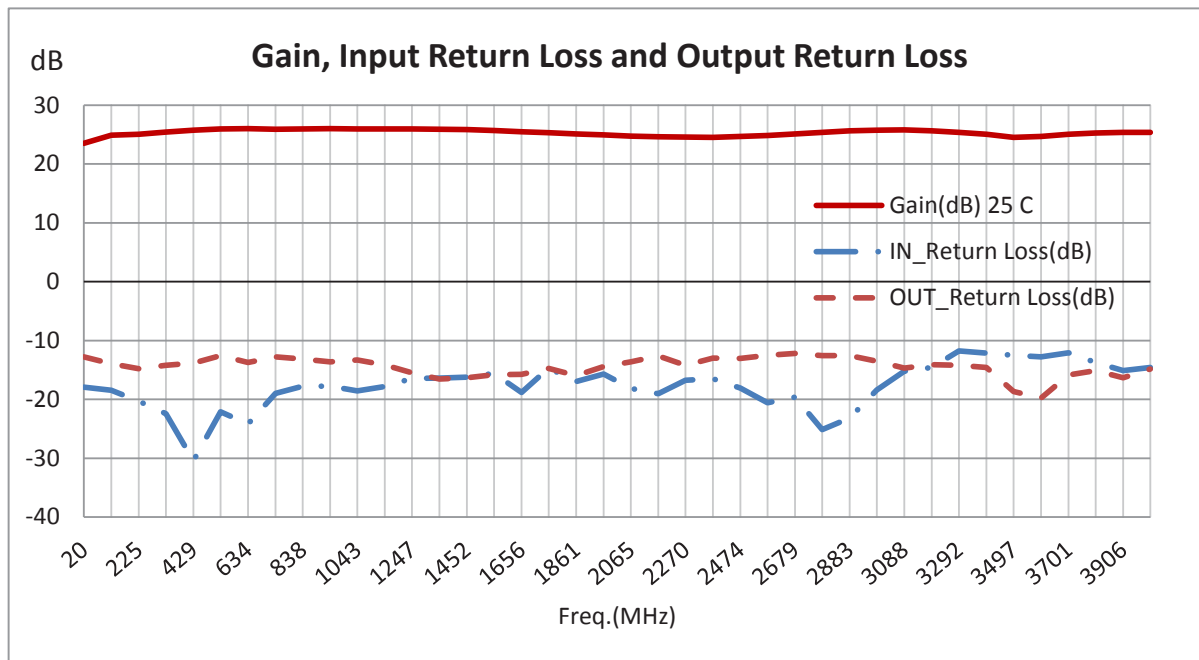
- 1.) Confirm that proper ESD precautions and controls are always in place before handling any Amplifier module.
- 2.) Confirm adequate thermal management is in place to effectively dissipate heat away from the Amplifier package. The Amplifier operational baseplate temperature must be within the operational 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.

23 dBm P1dB, 50 MHz to 4 GHz, Gain Block  
Amplifier, 26 dB Gain, 35 dBm IP3, 5 dB NF, SMA



## PE15A8000

### Typical Performance Data



23 dBm P1dB, 50 MHz to 4 GHz, Gain Block Amplifier, 26 dB Gain, 35 dBm IP3, 5 dB NF, SMA 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.

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [23 dBm P1dB, 50 MHz to 4 GHz, Gain Block Amplifier, 26 dB Gain, 35 dBm IP3, 5 dB NF, SMA PE15A8000](https://www.pasternack.com/4-ghz-gain-block-amplifier-26-db-gain-35-dbm-ip3-sma-pe15a8000-p.aspx)

URL: <https://www.pasternack.com/4-ghz-gain-block-amplifier-26-db-gain-35-dbm-ip3-sma-pe15a8000-p.aspx>

The information contained within 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 Enterprises reserves the right to make such changes as required. Unless otherwise stated, all specifications are nominal. Pasternack Enterprises does not make any representation or warranty regarding the suitability of the part described herein for any particular purpose, and Pasternack Enterprises does not assume liability arising out of the use of any part or document.

PE15A8000 CAD Drawing

23 dBm P1dB, 50 MHz to 4 GHz, Gain Block Amplifier, 26 dB Gain, 35 dBm IP3, 5 dB NF, SMA

