



44 dB Gain, 8 Watt Psat, 0.5 MHz to 500 MHz, High Power LDMOS Amplifier, SMA Input, SMA Output, 42 dBm IP3, Class A/AB

## TECHNICAL DATA SHEET

**PE15A5029**

The PE15A5029 is a high gain Class A/AB coaxial Linear Power Amplifier operating in the 0.5 to 500 MHz frequency range. The amplifier offers a wide dynamic range with 8 Watts typical saturated power, 44 dB typical small signal gain,  $\pm 1.5$  dB gain flatness maximum, and a high output IP3 of +42 dBm typical. The amplifier requires typically a +28V DC power supply, is unconditionally stable, and operates over the temperature range of 0°C and +50°C.

### Features

- 0.5 MHz to 500 MHz Frequency Range
- Psat 8 Watts typ
- Small Signal Gain: 40 dB min
- Gain Flatness  $\pm 1.5$  dB max
- Class A/AB
- IP3 42 dBm typ
- 50 Ohms Input and Output Matched
- Unconditionally Stable
- Regulated Supply
- RF Input Signal Format CW/AM/FM/PM/Pulse

### 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 = 3A)

| Description                            | Minimum | Typical | Maximum   | Units |
|--|---------|---------|-----------|-------|
| Frequency Range                        | 0.5     |         | 500       | MHz   |
| Small Signal Gain                      | 40      | 44      |           | dB    |
| Gain Flatness                          |         |         | $\pm 1.5$ | dB    |
| Input Power (CW)                       |         |         | -1        | dBm   |
| Pout at Sat.                           |         | +39     |           | dBm   |
| Output Power at 1 dB Compression Point | +36     | +40     |           | dBm   |
| Output 3rd Order Intercept Point       |         | +42     |           | dBm   |
| Harmonics @4 Watts                     |         | -20     |           | dBc   |
| Spurious                               |         | -60     |           | dBc   |
| Impedance (Input)                      |         | 50      |           | Ohms  |
| Impedance (Output)                     |         | 50      |           | Ohms  |
| Input VSWR                             |         |         | 2:1       |       |
| Operating DC Voltage                   |         | +28     |           | Volts |
| Operating DC Current                   |         |         | 3         | A     |
| Operating Temperature Range            | 0       |         | +50       | °C    |

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### Mechanical Specifications

#### Size

Length

6 in [152.4 mm]

Width

3 in [76.2 mm]

Height

1.1 in [27.94 mm]

#### Weight

1.414 lbs [641.38 g]

Input Connector

SMA Female

Output Connector

SMA Female

### Environmental Specifications

#### Temperature

Operating Range

0 to +50 deg C

Humidity

95

Shock

Normal Truck Transport

Vibration

Normal Truck Transport

Altitude

10000

**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 =  $P_{1dB-SSG}-10$  dB  
 $P_{in}$  for  $P_{1dB}$  =  $P_{1dB-SSG}+1$  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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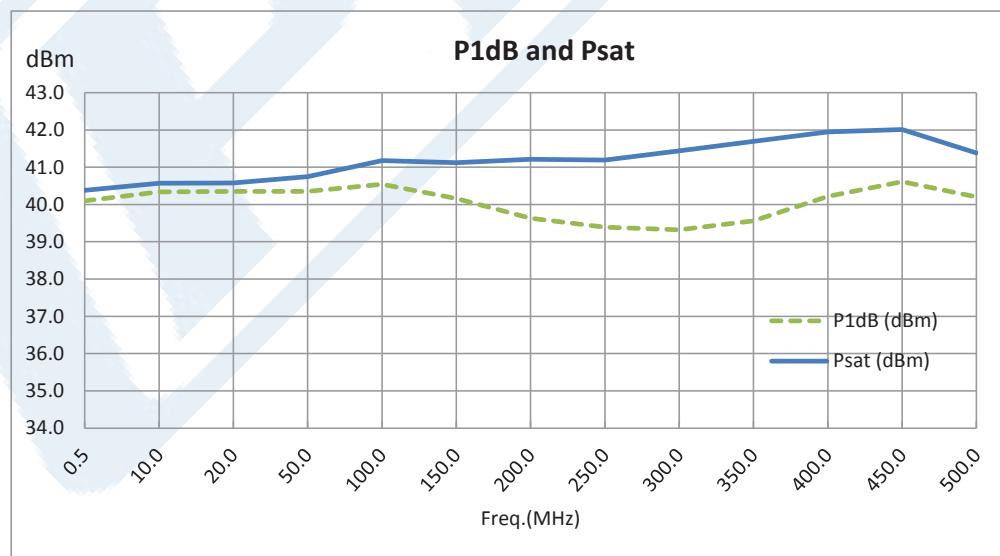
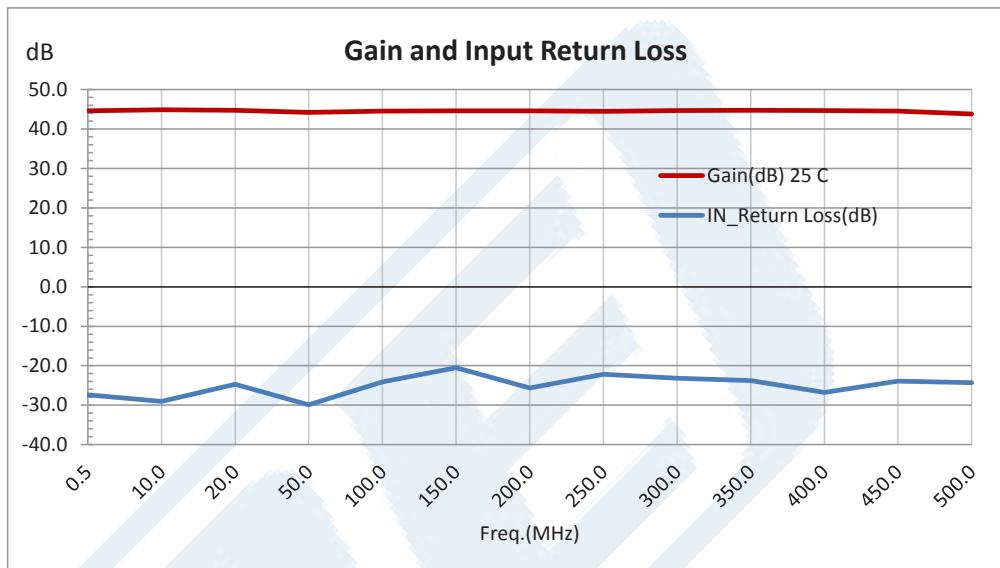
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### Typical Performance Data



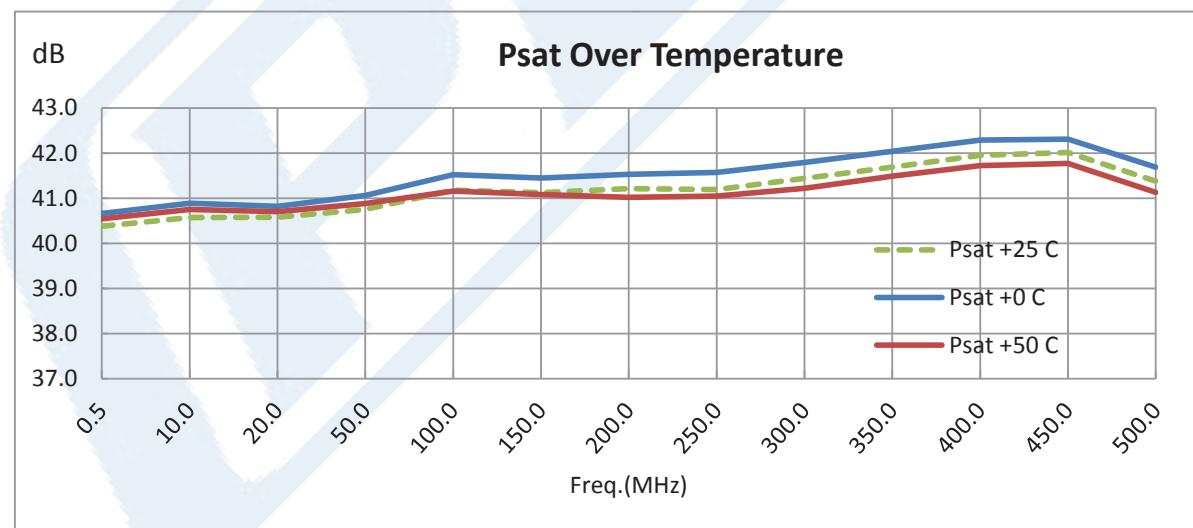
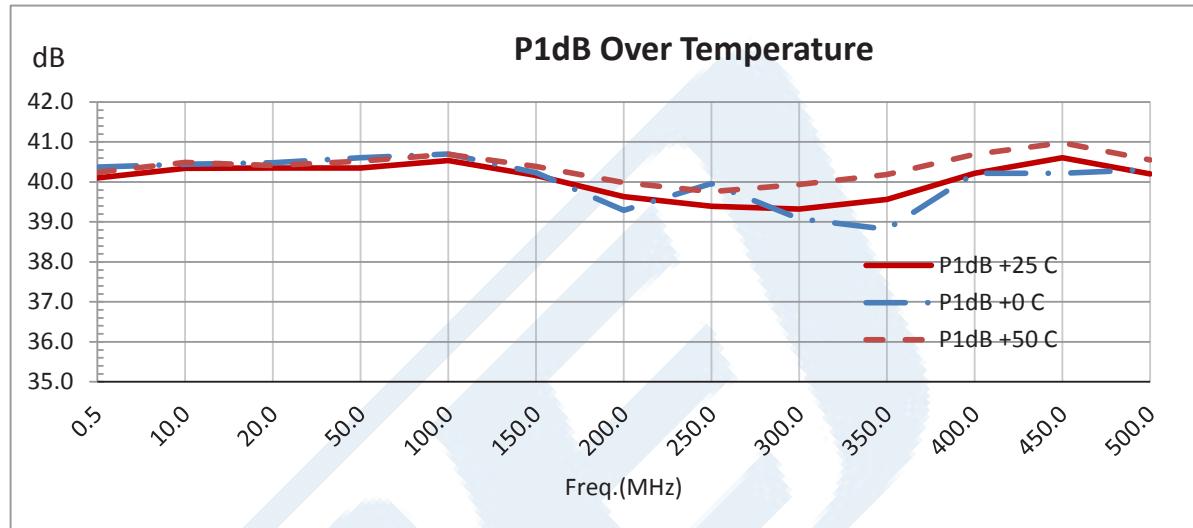
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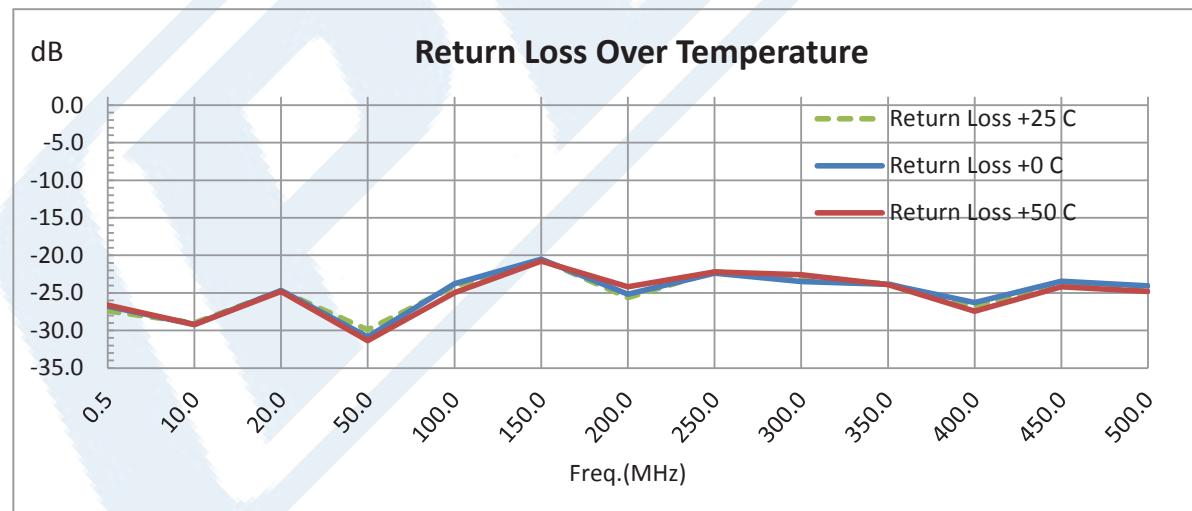
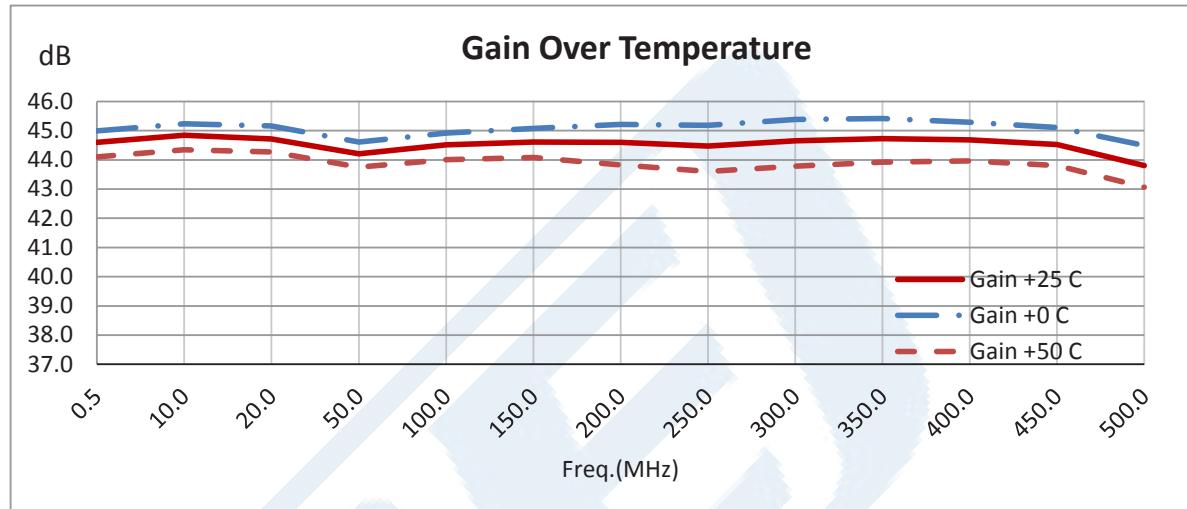
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URL: <https://www.pasternack.com/44-db-gain-500-mhz-high-power-high-gain-amplifier-ip3-sma-pe15a5029-p.aspx>

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# PE15A5029 CAD Drawing

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