PASTERNACK®
THE ENGINEER'S RF SOURCE


# 14 dBm P1dB, DC to 17 MHz, DC Coupled Amplifier, 30 dB Gain, 25 dBm IP3, SMA

## TECHNICAL DATA SHEET PE15A86002

The PE15A86002 is general purpose DC coupled amplifier operates with 3 dB Bandwidth of 17 MHz, designed for wideband signal processing applications. The amplifier offers +14 dBm typ of P1dB, 30 dB typ Gain, IP3 +25 dBm typ with Input/output ports are matched for 50 ohms. This DC coupled amplifier requires only a single positive supply, typically a +12VDC power supply and includes built-in voltage regulation, is unconditionally stable and operates over the temperature range of -30°C and +70°C. The rugged compact package assembly is designed to meet MIL-STD-202 environmental test conditions for Humidity, Shock, Vibration and Altitude.

### Features

- 3 dB Bandwidth of 17 MHz
- P1dB: +14 dBm typ
- Small Signal Gain: 30 dB typ
- IP3: +25 dBm min
- 50 Ohm Input and Output Matched
- -40 to +85°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

### Electrical Specifications (TA = +25°C, + , DC Current = 45mA)

| Description | Minimum | Typical | Maximum | Units |
|---|---|---|---|---|
| Frequency Range | DC | | 17 | MHz |
| Small Signal Gain | | 30 | | dB |
| Output 3rd Intercept Point | | +25 | | dBm |
| Operating DC Current | | 45 | | mA |
| 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: 14 dBm P1dB, DC to 17 MHz, DC Coupled Amplifier, 30 dB Gain, 25 dBm IP3, SMA PE15A86002

Pasternack Enterprises, Inc. • P.O. Box 16759, Irvine, CA 92623
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| Parameter | Unit | Minimum | Typical | Maximum |
|---|---|---|---|---|
| Frequency Range (-3dB) | MHz | 0 | | 17 |
| Power Gain f = 0Hz<br>f = 1MHz<br>f = 17MHz | dB<br>dB<br>dB | | 30<br>29.9<br>27.3 | |
| Voltage Gain (RL=∞) f = 0 Hz | | | 64 | |
| $P_{1dB}$ f = 100KHz<br>f = 17MHz | dBm<br>dBm | | +14<br>+14 | |
| IP3 f= 17MHz | dBm | | +25 | |
| Input Voltage Noise | nV/√Hz | | 0.92 | |
| Output Voltage f = 100KHz RL=∞<br>Pin= -14dBm f = 17MHz RL=∞ | Vp-p<br>Vp-p | | 8.0<br>6.0 | |
| VSWR f = 300KHz – 17MHz<br>Input VSWR<br>Output VSWR | | | <br>1.12:1<br>1.15:1 | |
| DC Power Supply | V | 8 | 12 | 15 |
| Supply Current | mA | | 45 | |

**Absolute Maximum Rating**

| Parameter | Rating | Units |
|---|---|---|
| RF Input Power | +13 | dBm |
| Input DC Voltage | ±2 | V |
| Supply Voltage | ±16 | V |
| Operating Temperature | -40 to +85 | °C |
| Storage Temperature | -55 to +125 | °C |

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

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### Mechanical Specifications

| | |
|---|---|
| **Size** | |
| Length | 1.25 in [31.75 mm] |
| Width | 1.25 in [31.75 mm] |
| Height | 0.56 in [14.22 mm] |
| Input Connector | SMA Female |
| Output Connector | SMA Female |

### Environmental Specifications

| | |
|---|---|
| **Temperature** | |
| Operating Range | -40 to +85 deg C |
| Storage Range | -55 to +125 deg C |
| Humidity | MIL-STD-202F, Method 103B, Condition B |
| Shock | MIL-STD-202F, Method 213B, Condition B |
| Vibration | MIL-STD-202F, Method 204D, Condition B |
| Altitude | MIL-STD-202F, Method 105C, Condition B |

### 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.

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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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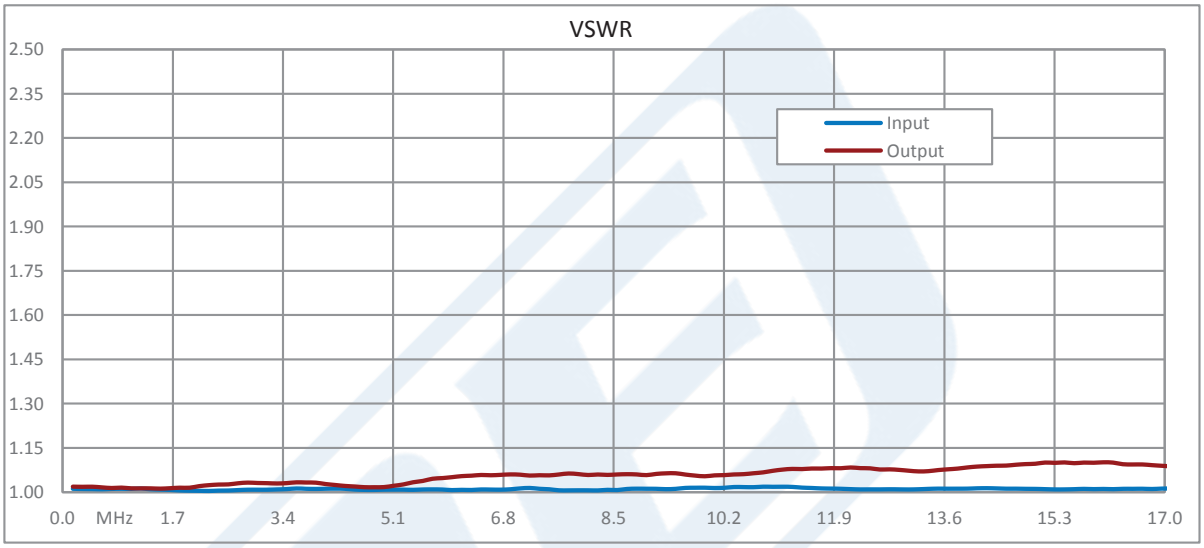
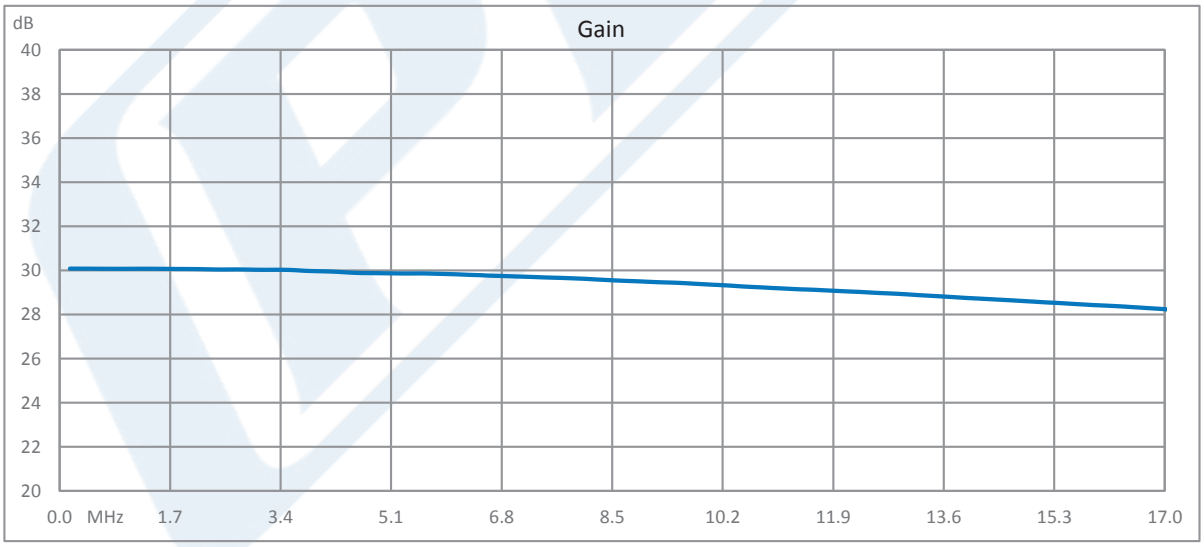
**Typical Performance Data**

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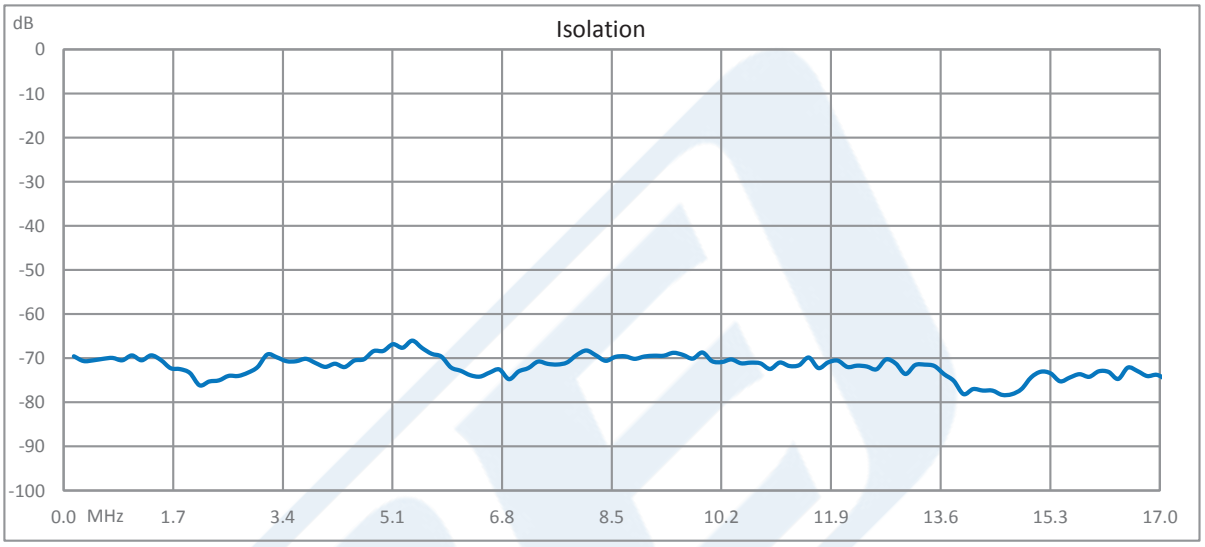


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URL: https://www.pasternack.com/17-mhz-gain-block-amplifier-30-db-gain-sma-pe15a86002-p.aspx



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# PE15A86002 CAD Drawing

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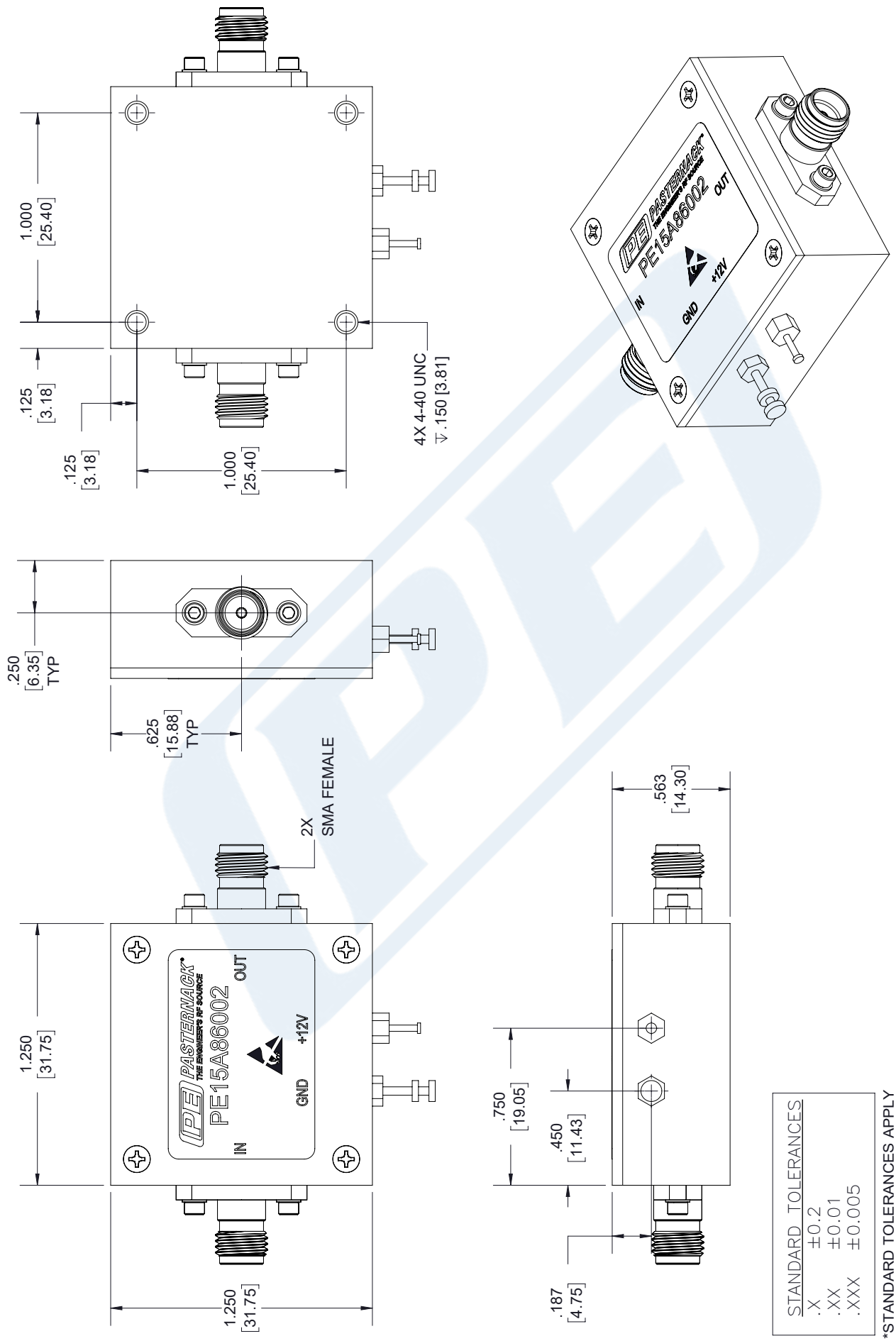


STANDARD TOLERANCES
.X ±0.2
.XX ±0.01
.XXX ±0.005

*STANDARD TOLERANCES APPLY ONLY TO DIMENSIONS IN INCHES

NOTES:
1. UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE NOMINAL.
2. ALL SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE AT ANY TIME.
3. DIMENSIONS ARE IN INCHES [mm].

DWG TITLE: PE1586002

CAD FILE 04/23/18 | SCALE N/A | SIZE A | 7361

CAGE CODE 53919


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