



1.75 dB NF, 17 dBm P1dB, 1 GHz to 12 GHz,
Low Noise Amplifier, 16 dB Gain, SMA

TECHNICAL DATA SHEET

PE15A1031

The PE15A1031 is a low noise amplifier that operates across the frequency range from 1 GHz to 12 GHz. The design utilizes GaAs HBT MMIC technology. The design also exhibits high dynamic range with typical performance at 8 GHz that includes 16 dB of small signal gain, 1.75 dB noise figure, up to +17 dBm typ of output power at P1dB, +31 dBm output IP3, while using +6V DC supply and -5V DC supply. The wideband distributed amplifier design input/output ports are internally matched to 50 ohms and are DC blocked. The drop-in package is hermetically sealed with field replaceable SMA connectors and has an operating temperature range of -55°C to +85°C. And for added confidence, this rugged package assembly is designed to meet MIL-STD-883 test conditions for Hermeticity and Temperature Cycle.

Features

- Low Noise Amplifier
- Wide Frequency Band
- Highly Linear GaAs HBT MMIC Technology
- Gain 16 dB
- Noise Figure 1.75 typ
- High Output IP3 +31 dBm
- P1dB up to +17 dBm
- Hermetically Sealed Module
- Mil Spec Compliant
- Field Replaceable SMA Connectors
- -55°C to +85°C Operating Temperature

Applications

- Electronic Warfare
- Microwave Radio
- VSAT
- Radar
- Space Systems
- Test Instrumentation
- Telecom Infrastructure

Electrical Specifications (TA = +25°C, DC Voltage = 6Vdc, DC Current = 60mA)

| Description | Minimum | Typical | Maximum | Units |
|----------------------------------|---------|---------|---------|-------|
| Frequency Range | 1 | | 12 | GHz |
| Small Signal Gain | | 16 | | dB |
| Output at 1 dB Compression Point | | +17 | | dBm |
| Noise Figure | | 1.75 | | dB |
| Operating DC Voltage | | 6 | | Volts |
| Operating DC Current | | 60 | | mA |
| Operating Temperature Range | -55 | | +85 | °C |

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [1.75 dB NF, 17 dBm P1dB, 1 GHz to 12 GHz, Low Noise Amplifier, 16 dB Gain, SMA PE15A1031](#)



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Performance by Frequency

| Description | Min. | Typ. | Max. | Min. | Typ. | Max. | Units |
|--|------|-------|------|--------|-------|------|--------|
| Frequency Range | | 1 - 8 | | 8 - 12 | | | GHz |
| Gain | 14 | 16 | | 12 | 14 | | dB |
| Gain Flatness | | ±1 | | | ±1.25 | | dB |
| Gain Variation Over Temperature | | 0.005 | | | 0.005 | | dB/ °C |
| Noise Figure | | 1.75 | 2.25 | | 2.5 | 3 | dB |
| Input Return Loss | | -12 | | | -7 | | dB |
| Output Return Loss | | -17 | | | -15 | | dB |
| Output Power For 1 dB Compression (P1dB) | | 17 | | | 14 | | dBm |
| Saturated Output Power (Psat) | | 19 | | | 17 | | dBm |
| Output Third Order Intercept (IP3) | | 31 | | | 29 | | dBm |
| Positive Supply Current (+Idc) | | 60 | 70 | | 60 | 70 | mA |
| Negative Supply Current (-Idc) | | 1.5 | | | 1.5 | | mA |

Mechanical Specifications

Size

| | |
|--------|---------------------|
| Length | 1.14 in [28.96 mm] |
| Width | 1.9 in [48.26 mm] |
| Height | 0.56 in [14.22 mm] |
| Weight | 0.091 lbs [41.28 g] |

Connector Option

| | |
|-------------------|-------------------|
| Field Replaceable | Field Replaceable |
| Input Connector | SMA Female |
| Output Connector | SMA Female |

Environmental Specifications

Temperature

| | |
|-----------------|-------------------|
| Operating Range | -55 to +85 deg C |
| Storage Range | -65 to +150 deg C |

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Temperature Cycling
Hermetic Seal

ESD Sensitivity



MIL-STD-883, Method 101C, Cond B
Gross Leak MIL-STD-883 Method 1014C1/Fine Leak
MIL-STD-883, Method 1014A2, 5 x 10⁻⁸ atm cc
ESD Sensitive Material, Transport material in Approved
ESD bags. Handle only in ESD Workstation.

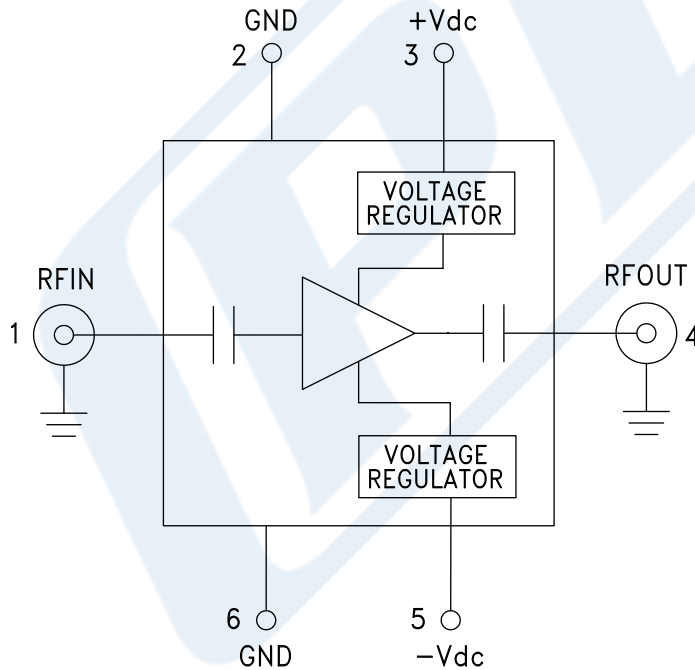
Compliance Certifications (see [product page](#) for current document)

Plotted and Other Data

Notes:

- Values at +25 °C, sea level

Functional Block Diagram



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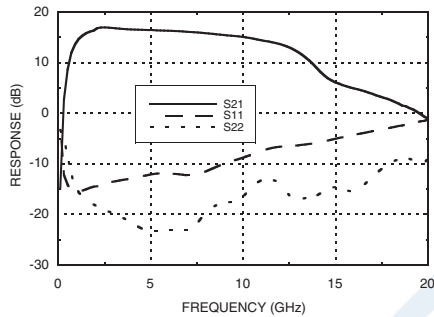
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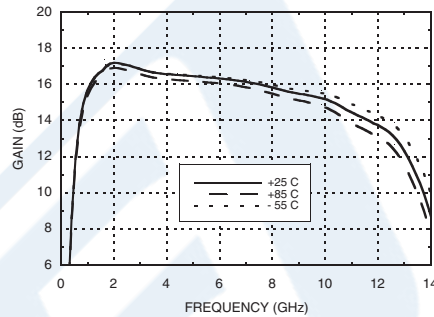
PE15A1031

Typical Performance Data

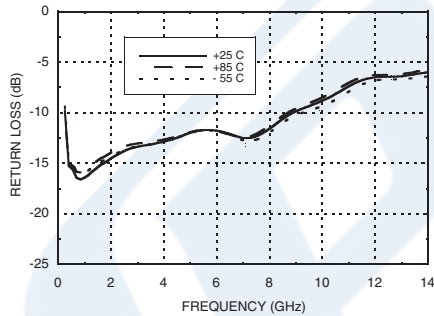
Broadband Gain & Return Loss



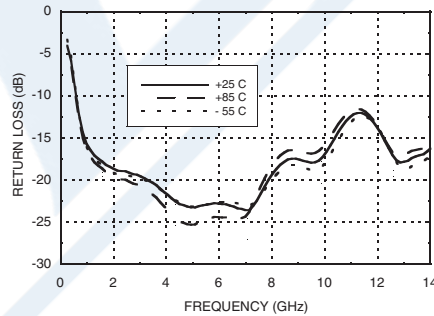
Gain vs. Temperature



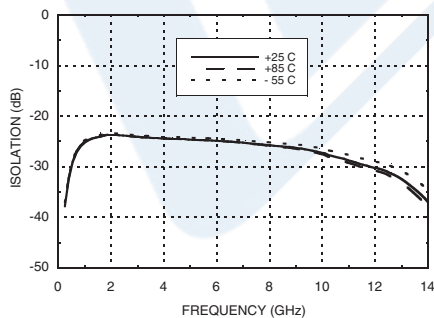
Input Return Loss vs. Temperature



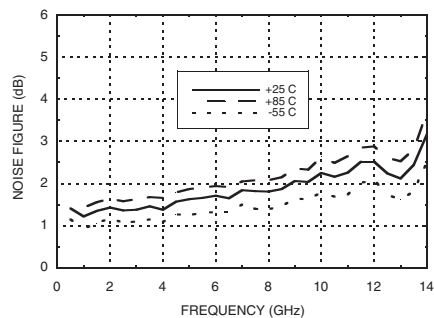
Output Return Loss vs. Temperature



Reverse Isolation vs. Temperature



Noise Figure vs. Temperature



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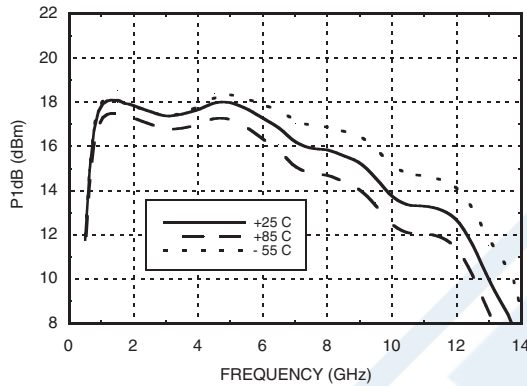


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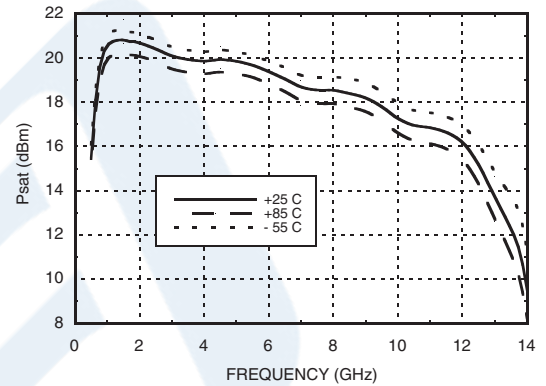
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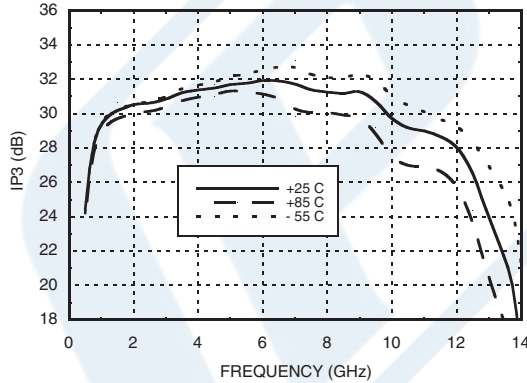
P1dB vs. Temperature



Psat vs. Temperature



Output IP3 vs. Temperature



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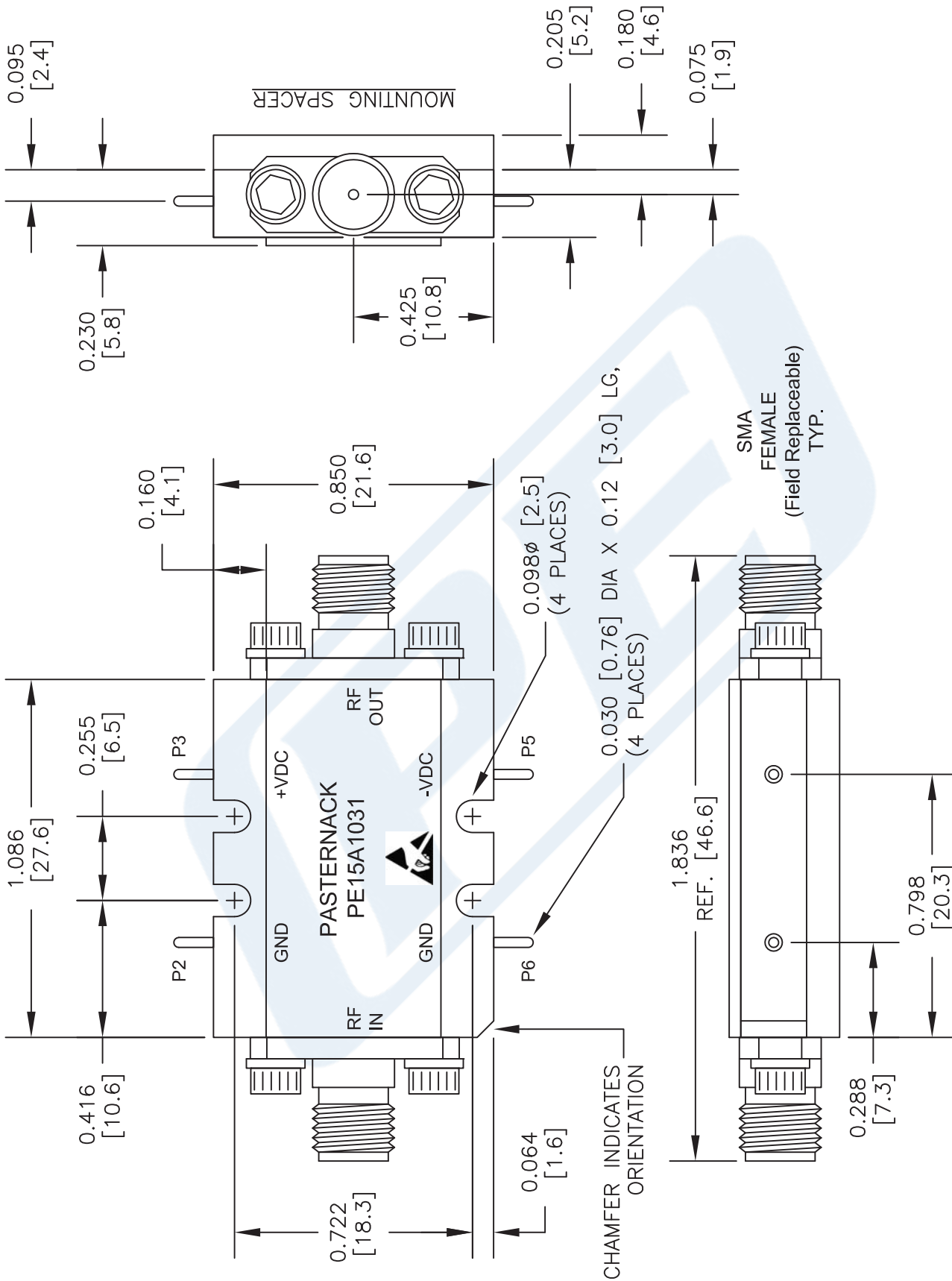
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URL: <https://www.pasternack.com/1.75-db-12-ghz-low-noise-amplifier-16-db-gain-sma-pe15a1031-p.aspx>

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PE15A1031 CAD Drawing

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DWG TITLE

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- 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].

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CAD FILE 093016

SCALE N/A

SIZE A

2233