



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.

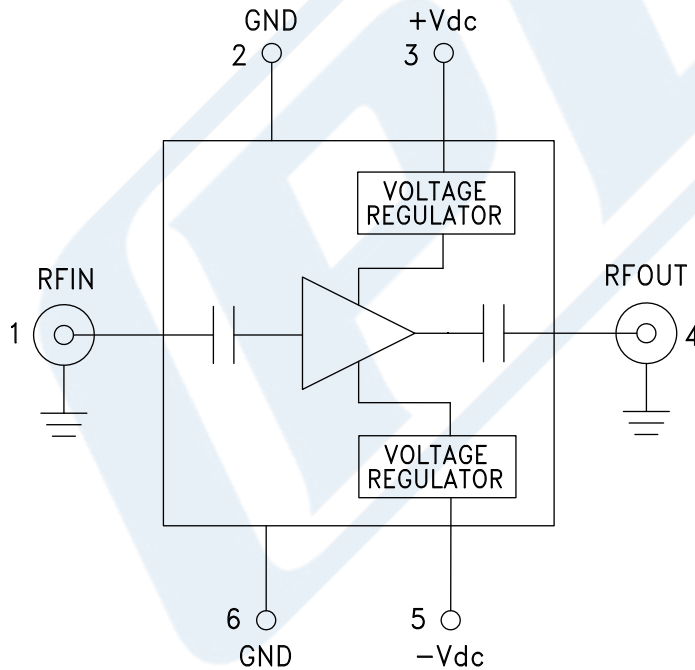
**Compliance Certifications** (see [product page](#) for current document)

**Plotted and Other Data**

Notes:

- Values at +25 °C, sea level

**Functional Block Diagram**



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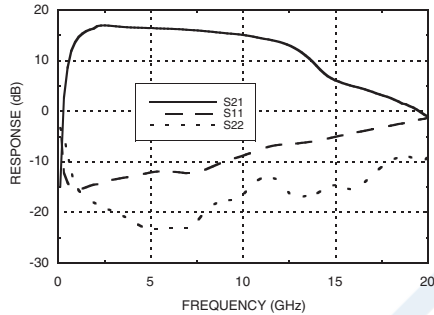
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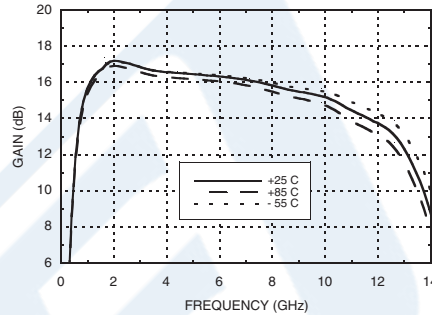
PE15A1031

Typical Performance Data

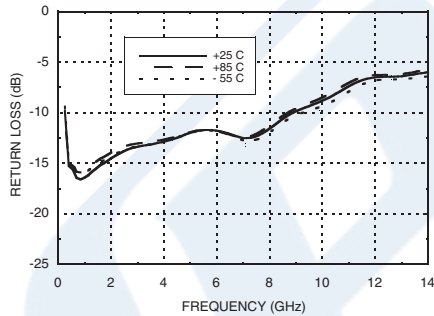
**Broadband Gain & Return Loss**



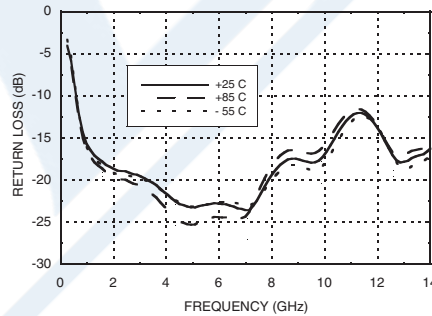
**Gain vs. Temperature**



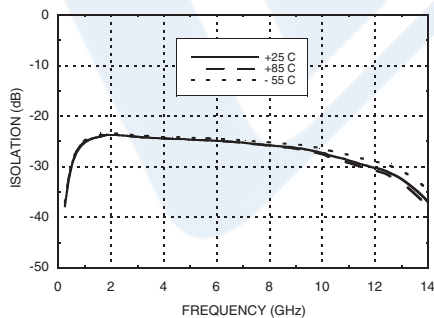
**Input Return Loss vs. Temperature**



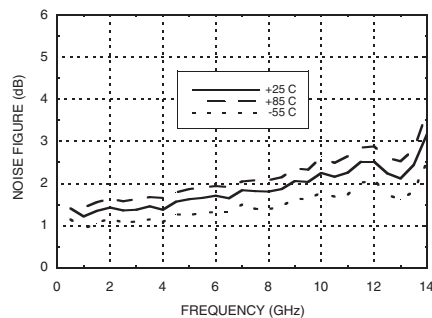
**Output Return Loss vs. Temperature**



**Reverse Isolation vs. Temperature**



**Noise Figure vs. Temperature**



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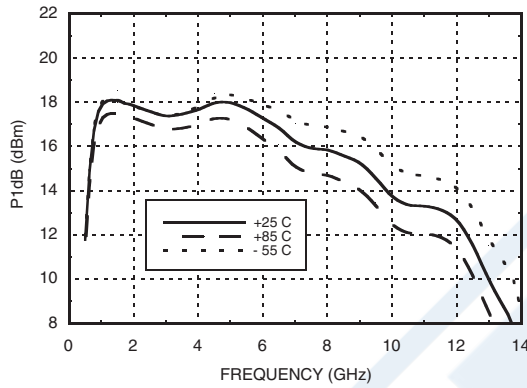


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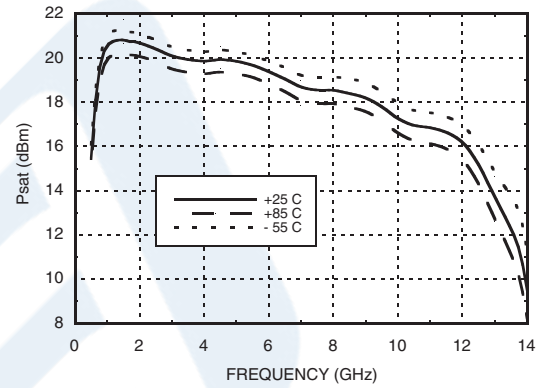
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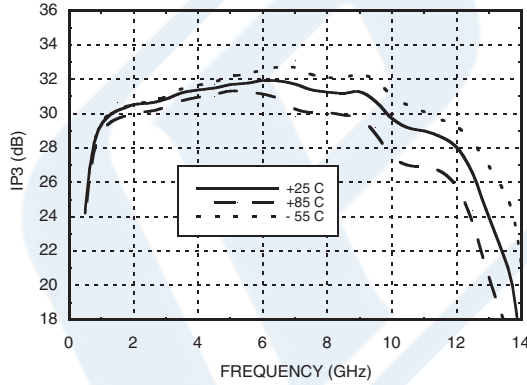
**P1dB vs. Temperature**



**Psat vs. Temperature**



**Output IP3 vs. Temperature**



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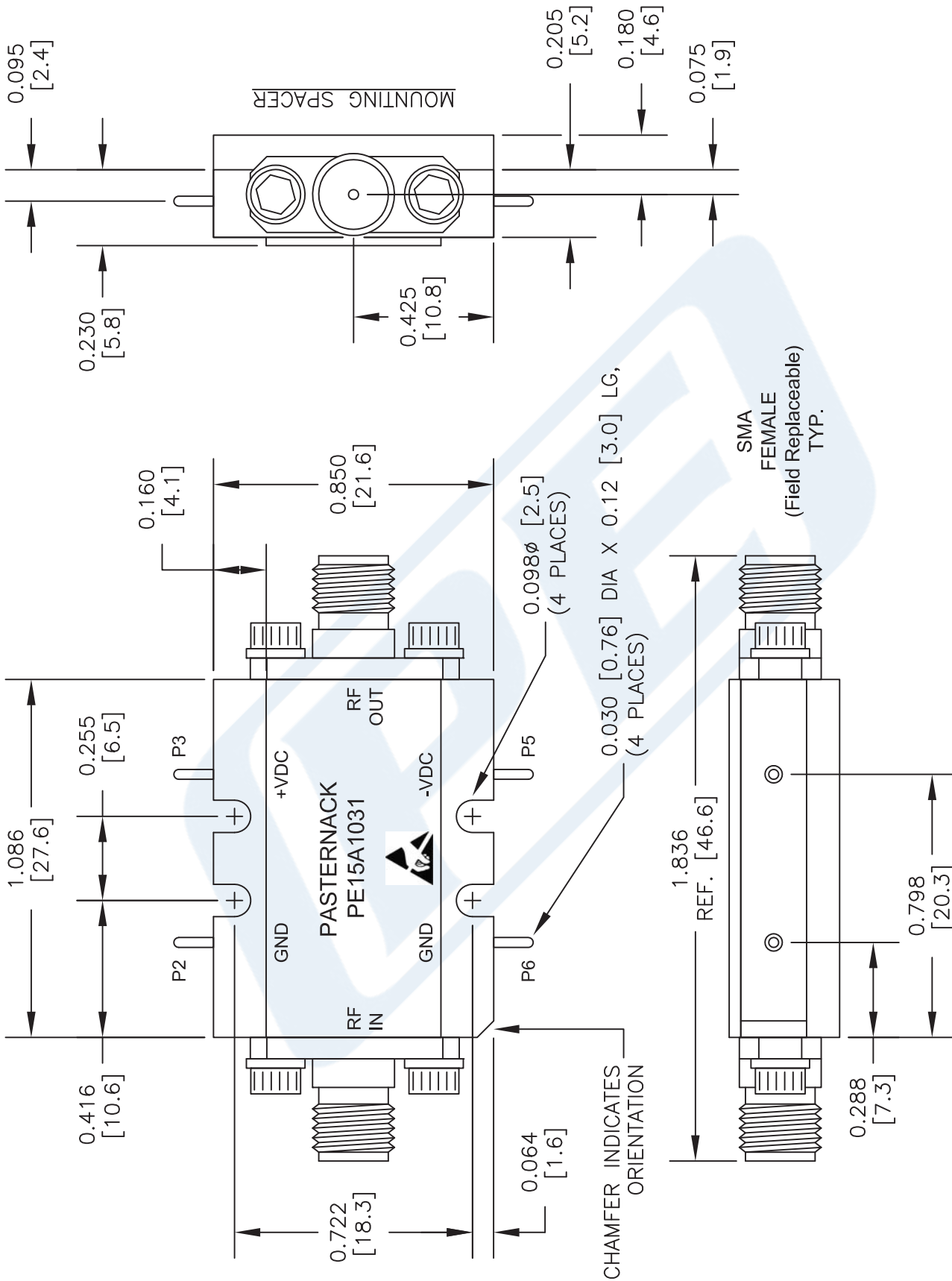
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# PE15A1031 CAD Drawing

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DWG TITLE

**PE15A1031**

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].

FSCM NO. 53919

CAD FILE 093016

SCALE N/A

SIZE A

2233





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