



## 26 dBm P1dB, 2 GHz to 20 GHz, Medium Power Broadband Amplifier, 15 dB Gain, SMA

### TECHNICAL DATA SHEET

PE15A4027

The PE15A4027 distributed amplifier operates across a wide frequency range from 2 GHz to 20 GHz. The design utilizes leading edge GaAs PHEMT MMIC technology for high efficiency and high linearity. Typical performance at 2-6 GHz includes 15 dB of small signal gain, 4.0 dB noise figure, +34 dBm output IP3, and up to +27 dBm of Saturated Power. The design exhibits a very flat gain response across a wide frequency band. Input/output ports are matched for 50 ohms and are DC blocked. The design also incorporates integrated bias sequencing circuitry and voltage regulators to allow for flexible biasing for the positive voltage supply. The drop-in package is hermetically sealed with field replaceable SMA connectors. And for added confidence, this rugged package assembly is designed to meet MIL-STD-883 test conditions for Hermeticity and Temperature Cycle.

#### Features

- Driver Amplifier
- Wide Frequency Band
- GaAs PHEMT MMIC Technology
- Spurious-Free Operation
- Gain 15 dB
- High Output IP3 +34 dBm
- Saturated Output Power up to + 27 dBm typical
- Regulated Supply and Bias Sequencing
- Hermetically Sealed Module
- Mil Spec Compliant
- Field Replaceable SMA Connectors
- -55°C to +85°C Operating Temperature

#### Applications

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

#### Electrical Specifications (TA = +25°C, DC Voltage = 12Volts)

Description	Minimum	Typical	Maximum	Units
Frequency Range	2		20	GHz
Gain		15		dB
Output at 1 dB Compression Point		+26		dBm
Operating DC Voltage 1		12		Volts
Operating Temperature Range (OTR)	-55		+85	°C

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**Performance by Frequency**

Description	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Units
Frequency Range	2.0 - 6.0			6.0 - 18.0			18.0 - 20.0			GHz
Gain	13	15		11	14		9	12		dB
Gain Flatness	±0.25			±0.75			±1.0			dB
Gain Variation Over Temperature	0.02 0.03			0.02 0.03			0.02 0.03			dB/ °C
Noise Figure	4.0			4.0			6.0			dB
Input Return Loss	17			18			10			dB
Output Return Loss	12			10			12			dB
Output Power For 1 dB Compression (P1dB)	23	26		20	24		19	22		dBm
Saturated Output Power (Psat)	27			25			23			dBm
Output Third Order Intercept (IP3)	34			30			25			dBm
Spurious Response	-50			-60			-60			dBc
Supply Current	310 350			310 350			310 350			mA

**Mechanical Specifications**

**Size**

Length 1.5 in [38.1 mm]  
 Width 0.7 in [17.78 mm]  
 Height 0.29 in [7.37 mm]  
 Weight 0.055 lbs [24.95 g]

Connector Option 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

Temperature Cycling MIL-STD-883, Method 101C, Cond B  
 Hermetic Seal Gross Leak MIL-STD-883 Method 1014C1/Fine Leak  
 MIL-STD-883, Method 1014A2, 5 x 10-8 atm cc



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**Compliance Certifications** (visit [www.Pasternack.com](http://www.Pasternack.com) for current document)

RoHS Compliant

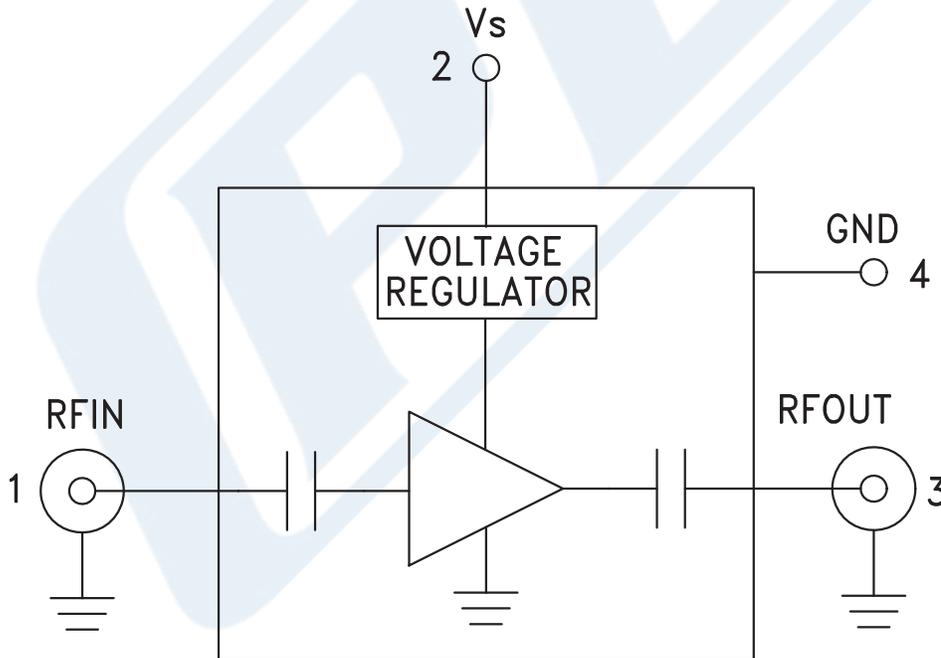
**Plotted and Other Data**

Notes:

- Values at +25 °C, sea level
- ESD Sensitive Material, Transport material in Approved ESD bags. Handle only in approved ESD Workstation.



**Functional Block Diagram**



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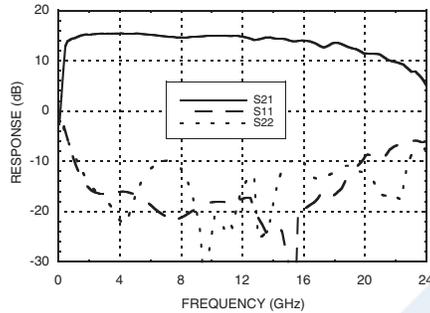
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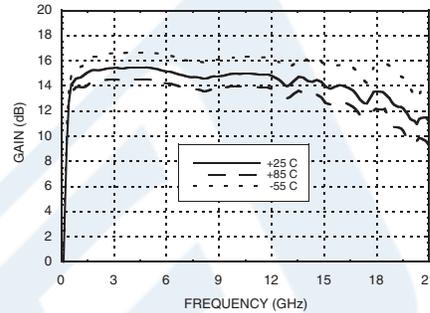
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Typical Performance Data

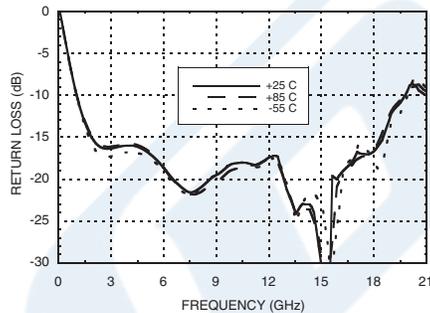
Gain & Return Loss



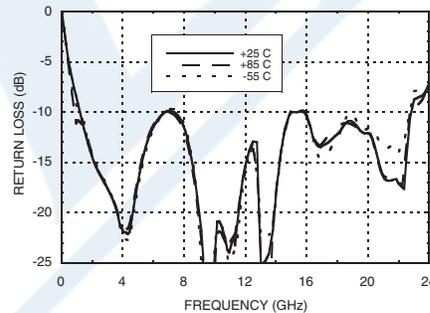
Gain vs. Temperature



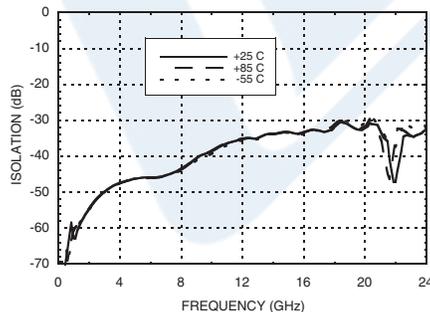
Input Return Loss vs. Temperature



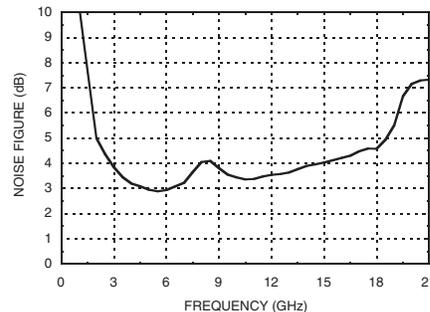
Output Return Loss vs. Temperature



Reverse Isolation vs. Temperature



Noise Figure



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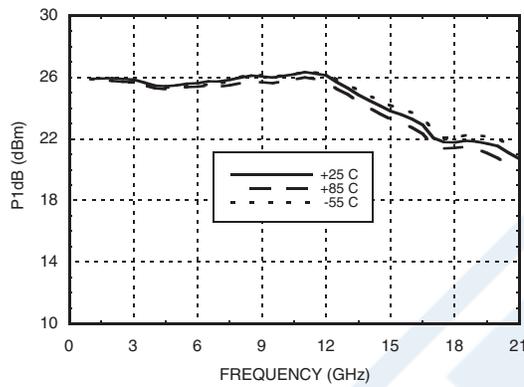


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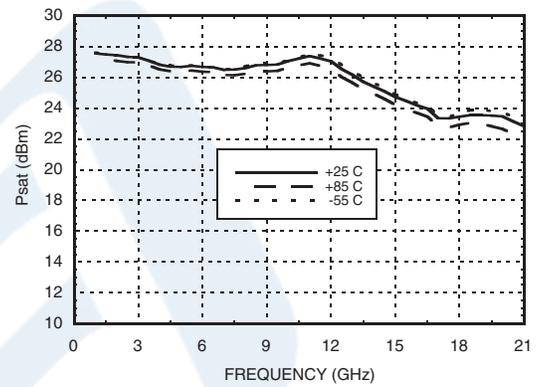
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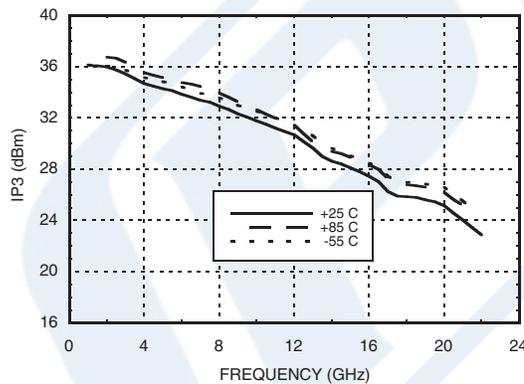
**P1dB vs. Temperature**



**Psat vs. Temperature**



**Output IP3 vs. Temperature**



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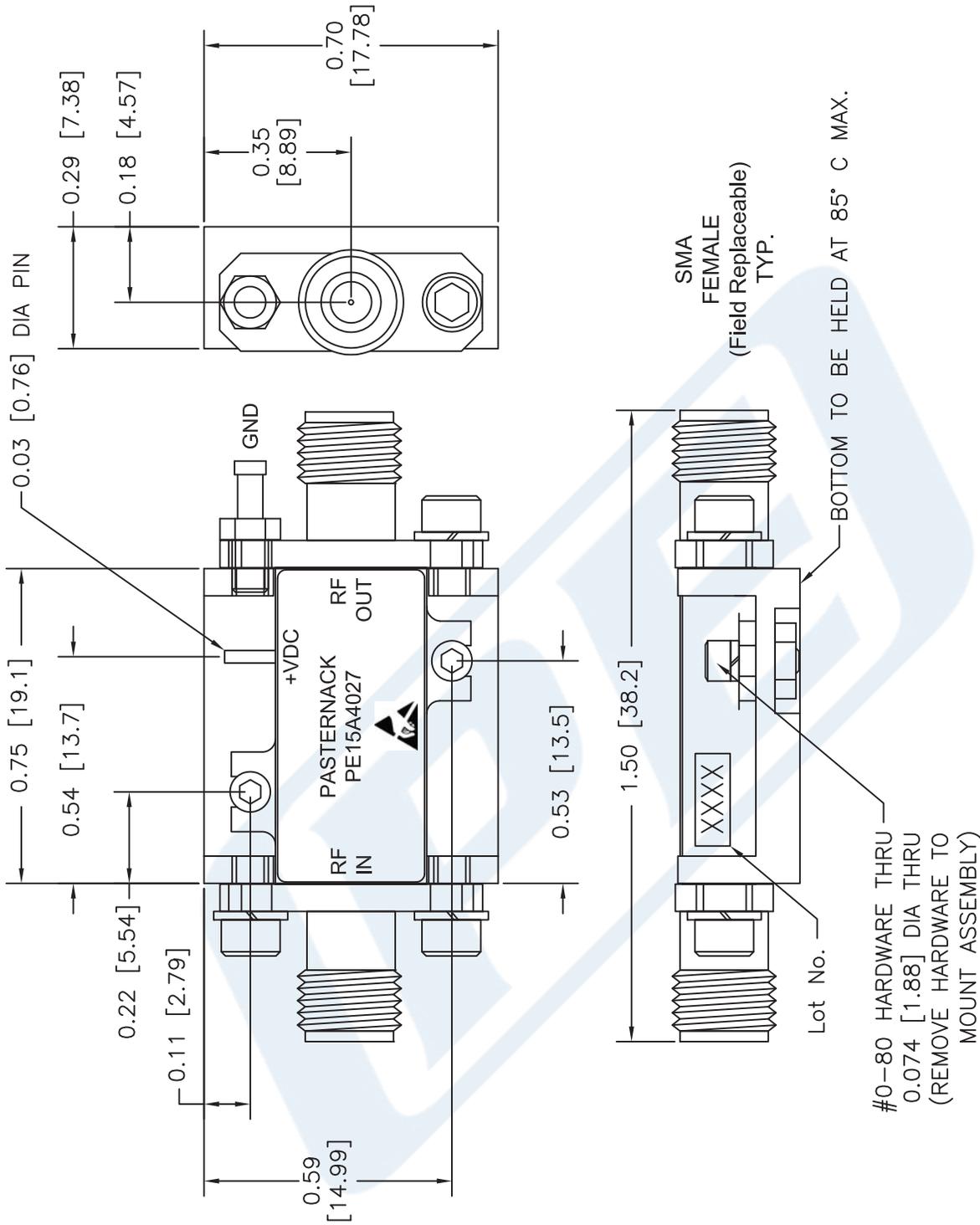
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URL: <http://www.pasternack.com/20-ghz-medium-power-broadband-amplifier-15-db-gain-sma-pe15a4027-p.aspx>

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

# PE15A4027 CAD Drawing

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NOTE:  
HEAT SINK REQUIRED FOR PROPER OPERATION,  
UNIT IS COOLED BY CONDUCTING TO HEAT SINK.



**THE ENGINEER'S RF SOURCE**  
 Pasternack Enterprises, Inc.  
 P.O. Box 16759 | Irvine | CA | 92623  
**Phone:** (949) 261-1920 | **Fax:** (949) 261-7451  
**Website:** www.pasternack.com | **E-Mail:** sales@pasternack.com

DWG TITLE

**PE15A4027**

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 050316

SCALE N/A

SIZE A

2233