



900 mW P1dB, 10 MHz to 6 GHz, Medium Power  
Broadband Amplifier, 13 dB Gain, 5 dB NF, SMA

## TECHNICAL DATA SHEET

PE15A4031

The PE15A4031 single stage amplifier operates across a wide frequency range from 10 MHz to 6 GHz. The design utilizes GaAs PHEMT MMIC technology for high efficiency and high linearity. Typical performance includes 13 dB of small signal gain, +40 dBm output IP3, and up to +30 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 both the negative and positive voltage supplies. 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 13 dB
- High Output IP3 +40 dBm
- Saturated Output Power up to + 30 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, VDC1 = 15 Vdc, VDC2 = -5 Vdc)

Description	Minimum	Typical	Maximum	Units
Frequency Range	0.01		6	GHz
Gain		13		dB
Output at 1 dB Compression Point		+29.5		dBm
Noise Figure		5		dB
Operating DC Voltage 1		15		Volts
Operating DC Voltage 2		-5		Volts
Operating Temperature Range (OTR)	-55		+85	°C

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### Performance by Frequency

Description	Min.	Typ.	Max.	Units
Frequency Range		0.01 - 6		GHz
Gain	11.5	13		dB
Gain Flatness		±0.75		dB
Gain Variation Over Temperature		0.02		dB/ °C
Input Return Loss		17		dB
Output Return Loss		17		dB
Output Power For 1 dB Compression (P1dB)	27.5	29.5		dBm
Saturated Output Power (Psat)		30		dBm
Output Third Order Intercept (IP3)		40		dBm
Noise Figure		5		dB
Supply Current (+15V)		450	500	mA
Supply Current (-5V)		5		mA

### Mechanical Specifications

<b>Size</b>	
Length	2.305 in [58.55 mm]
Width	2.6 in [66.04 mm]
Height	0.54 in [13.72 mm]
Weight	0.305 lbs [138.35 g]
Connector Option	Field Replaceable
Input Connector	SMA Female
Output Connector	SMA Female

### Environmental Specifications

<b>Temperature</b>	
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<sup>-8</sup> atm cc  
ESD Sensitive Material, Transport material in Approved  
ESD bags. Handle only in ESD Workstation.

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

RoHS Compliant  
REACH Compliant

12/17/2015

### Plotted and Other Data

Notes:

- Values at +25 °C, sea level

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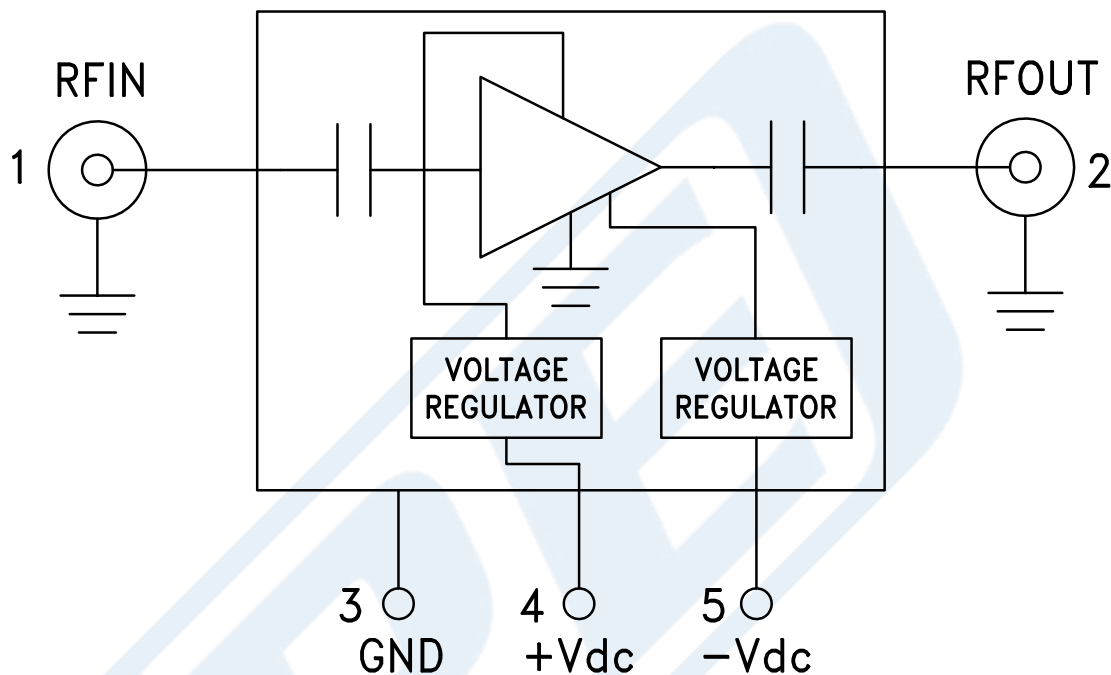


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Functional Block Diagram



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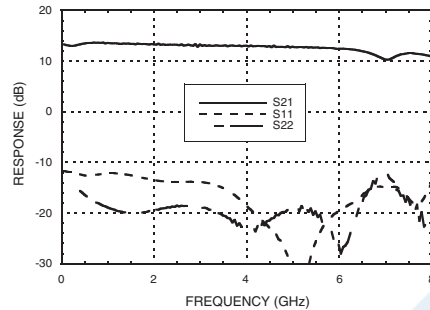
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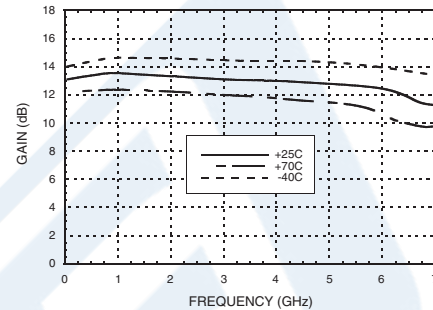
PE15A4031

### Typical Performance Data

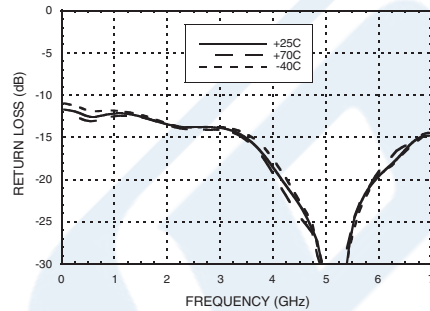
#### Gain & Return Loss



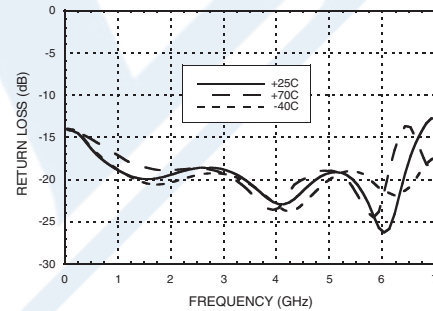
#### Gain vs. Temperature



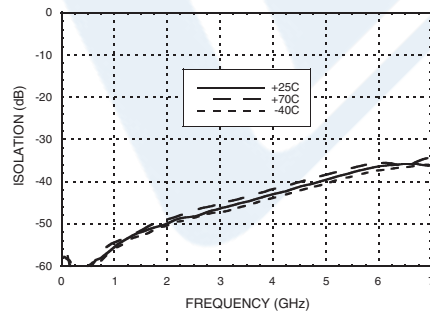
#### Input Return Loss vs. Temperature



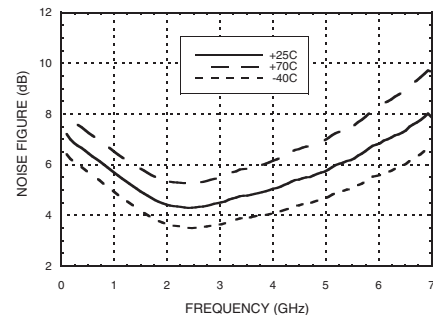
#### Output Return Loss vs. Temperature



#### Reverse Isolation vs. Temperature



#### Noise Figure vs. Temperature



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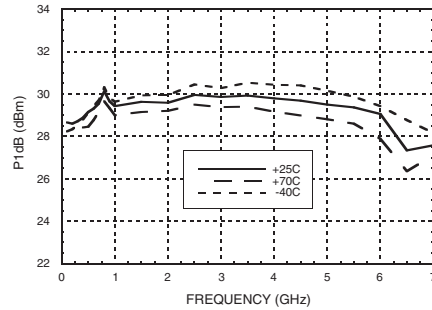


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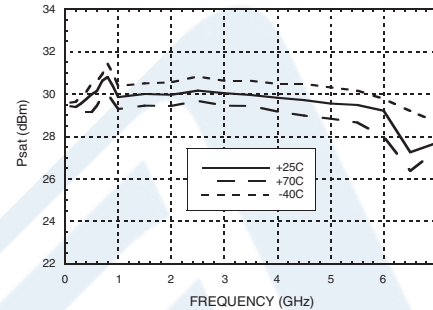
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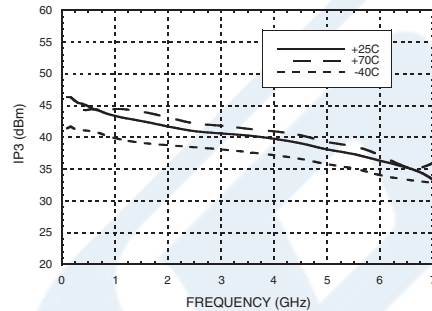
**Output P1dB vs. Temperature**



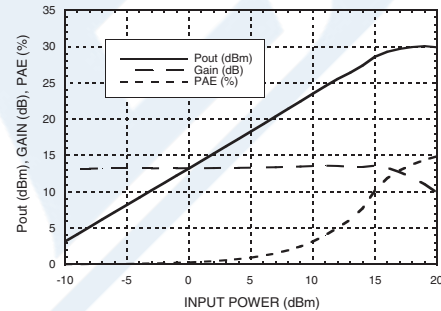
**Output Psat vs. Temperature**



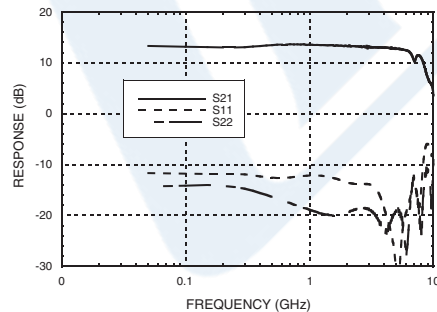
**Output IP3 vs. Temperature**



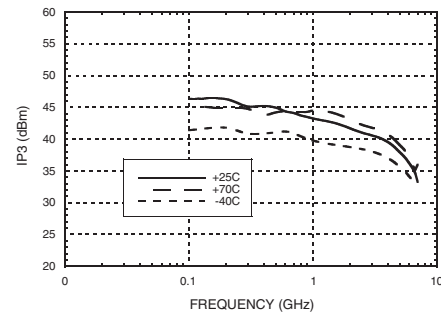
**Power Compression @ 3 GHz**



**Gain & Return Loss vs. Frequency  
Log Scale**



**Output IP3 vs. Temperature  
Log Scale**



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900 mW P1dB, 10 MHz to 6 GHz, Medium Power Broadband Amplifier, 13 dB Gain, 5 dB NF, SMA from Pasternack Enterprises has same day shipment for domestic and International orders. Our RF, microwave and millimeter wave products maintain a 99% availability and are part of the broadest selection in the industry.

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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].

**PE15A4031**

FSCM NO. 53919

CAD FILE 051816

**SIZE A**

2233