



17 dBm P1dB, 10 MHz to 20 GHz, Medium Power  
 Broadband Amplifier, 13 dB Gain, SMA

TECHNICAL DATA SHEET PE15A4029

The PE15A4029 distributed amplifier operates across a wide frequency band from 10 MHz to 20 GHz. The design utilizes GaAs PHEMT MMIC technology for high efficiency and high linearity. Typical performance at 10 GHz includes 13 dB of small signal gain, 3 dB noise figure, +29 dBm output IP3, and +17 dBm of P1dB. The design exhibits a very flat gain response across the entire 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
- Extremely wide frequency band
- GaAs PHEMT MMIC Technology
- Gain 13 dB @ 10 GHz
- High Output IP3 +29 dBm @ 10 GHz
- P1dB +17 dBm
- 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
- Space Systems
- Test Instrumentation
- Telecom Infrastructure

**Electrical Specifications** (TA = +25°C)

Description	Minimum	Typical	Maximum	Units
Frequency Range	0.01		20	GHz
Gain		13		dB
Output at 1 dB Compression Point	+17			dBm
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	0.010 - 6.0			6.0 - 12.0			12.0 - 20.0			GHz
Gain	14	16		13	15		10	13		dB
Gain Flatness	±0.75			±0.75			±1.0			dB
Gain Variation Over Temperature	0.018 0.025			0.018 0.025			0.018 0.025			dB/ °C
Noise Figure	3.5			3			4			dB
Input Return Loss	19			17			10			dB
Output Return Loss	14			14			12			dB
Output Power For 1 dB Compression (P1dB)	20	24		19	23		17	20		dBm
Saturated Output Power (Psat)	26			25			22			dBm
Output Third Order Intercept (IP3)	33			30			25			dBm
Saturated Output Voltage	10			10			8			Vpk-pk
Group Delay	±3			±3			±3			ps
Positive Supply Current (+Idc)	225			225			225			mA
Negative Supply Current (-Idc)	1.6			1.6			1.6			mA

### Mechanical Specifications

Weight	0.06 lbs [27.22 g]
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

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

RoHS Compliant

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### 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.
- Heat Sink Required for Proper Operation, Unit is cooled by conduction to heat sink. The amplifier module has 4 screw slots for mounting to a heat sink.
- DO NOT apply Vds without proper negative voltage on Vgs pins.



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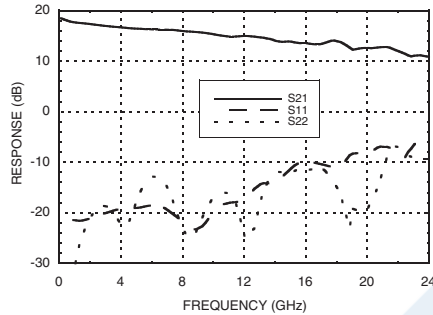


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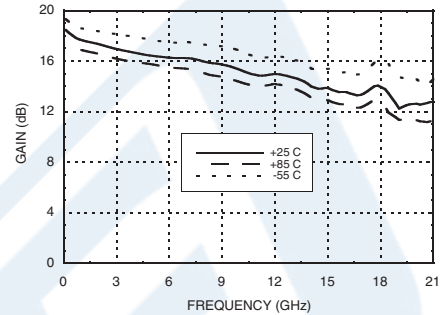
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**Typical Performance Data**

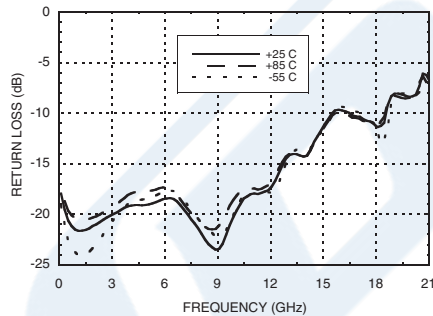
**Gain & Return Loss**



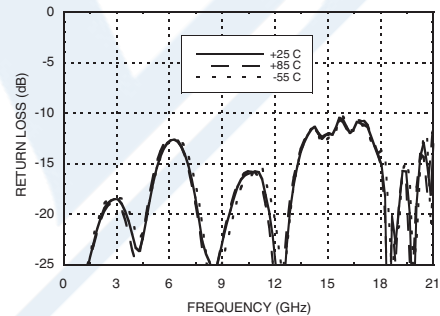
**Gain vs. Temperature**



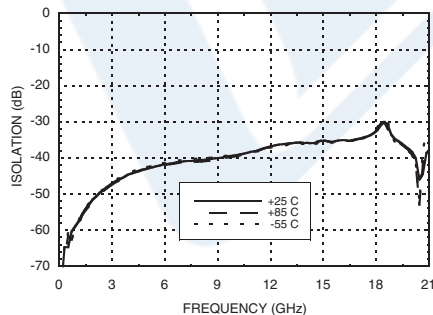
**Input Return Loss vs. Temperature**



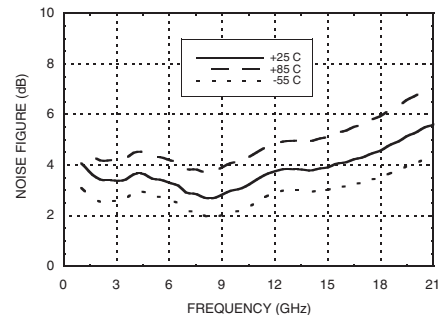
**Output Return Loss vs. Temperature**



**Reverse Isolation vs. Temperature**



**Noise Figure vs. Temperature**



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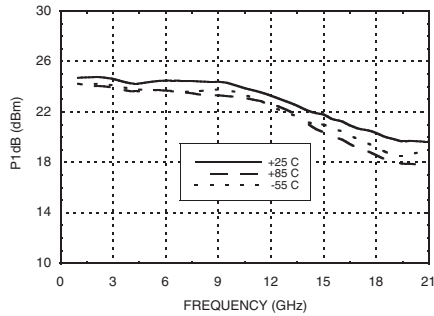


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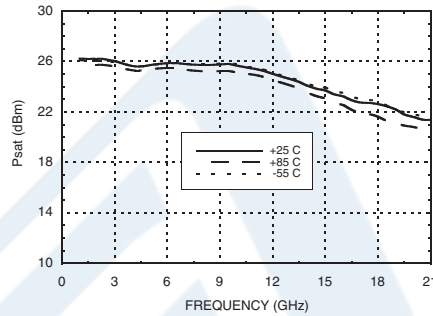
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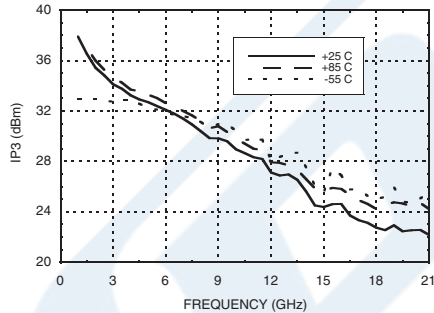
**P1dB vs. Temperature**



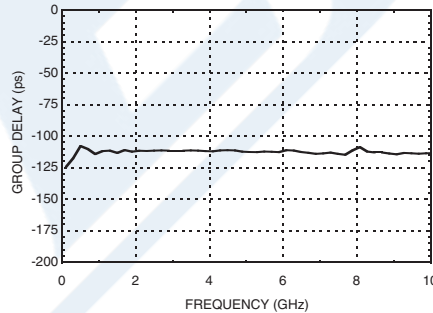
**Psat vs. Temperature**



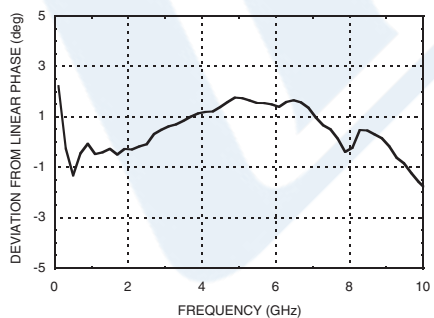
**Output IP3 vs. Temperature**



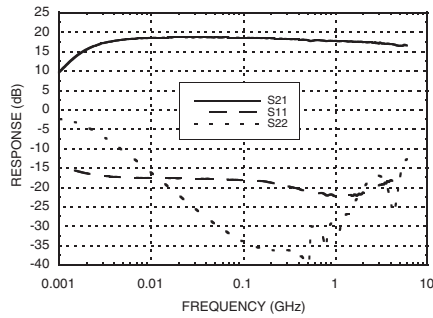
**Group Delay**



**Deviation from Linear Phase**



**Low Frequency Gain and Return Loss**



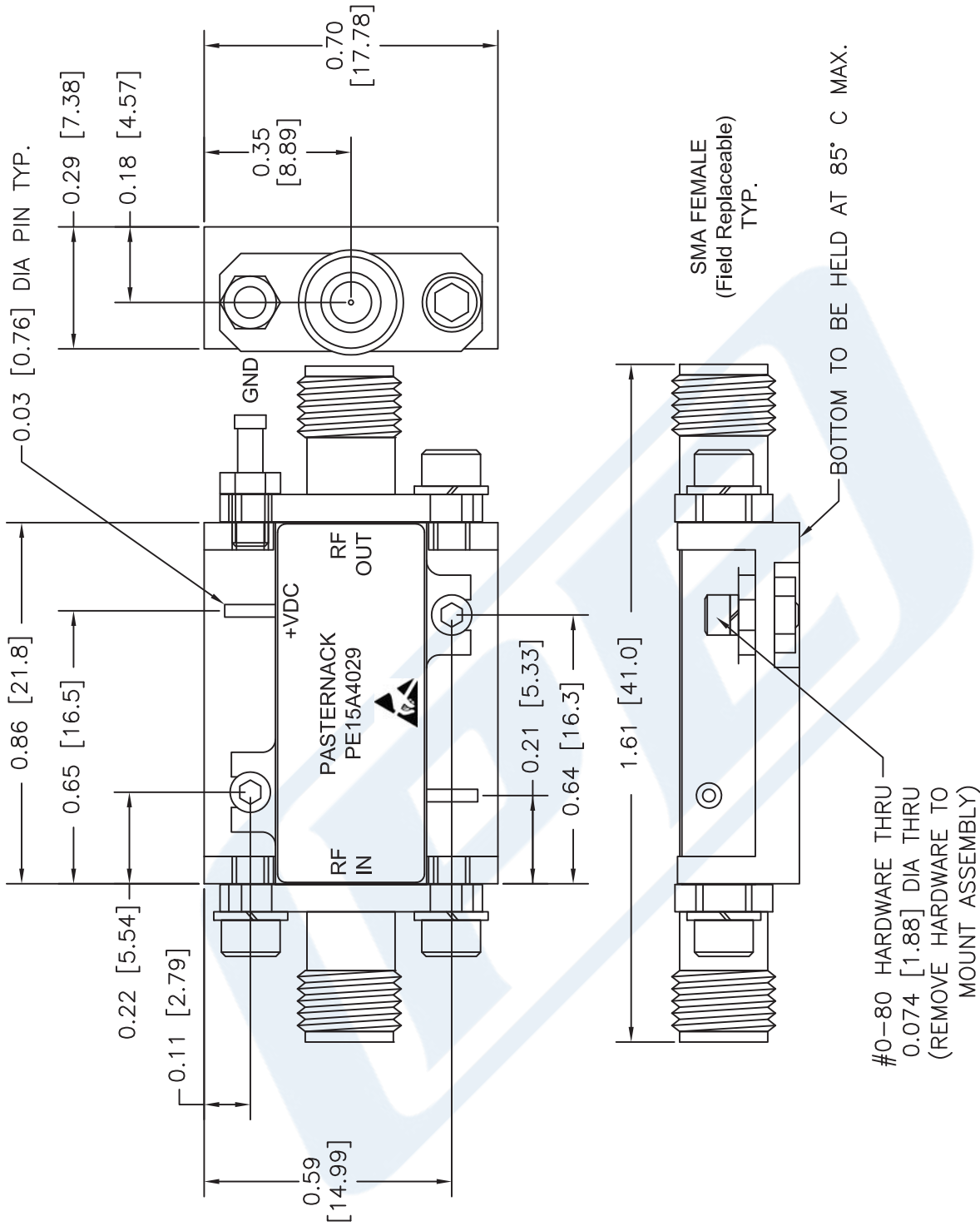
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# PE15A4029 CAD Drawing

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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

**PE15A4029**

FSCM NO. 53919

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].

CAD FILE 033016

SCALE N/A

SIZE A

2233