



25 dBm IP3, 6 dB NF, 14 dBm P1dB, 3 GHz to 8 GHz,  
Low Phase Noise Amplifier 11 dB Gain, SMA

## TECHNICAL DATA SHEET

PE15A1035

The PE15A1035 is a low phase noise amplifier that operates across the frequency range from 3 GHz to 8 GHz. The design utilizes GaAs HBT MMIC technology and exhibits ultra low phase noise of -162 dBc/Hz @ 1 kHz offset frequency. The design also exhibits high dynamic range with typical performance that includes 11 dB of small signal gain, 6 dB noise figure, up to +14 dBm of output power at P1dB, +25 dBm output IP3, while using a +7V single 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 Phase Noise Amplifier
- Wide Frequency band
- Highly Linear GaAs HBT MMIC Technology
- Phase Noise -162 dBc/Hz @ 1KHz offset
- Gain 11 dB
- High Output IP3 +25 dBm
- P1dB up to +14 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 = 7Vdc, DC Current = 250mA)

Description	Minimum	Typical	Maximum	Units
Frequency Range	3		8	GHz
Small Signal Gain		11		dB
Output at 1 dB Compression Point		+14		dBm
Output 3rd Intercept Point		+25		dBm
Noise Figure		6		dB
Operating DC Voltage		7		Volts
Operating DC Current			250	mA
Operating Temperature Range	-55		+85	°C

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### Performance by Frequency

Description	Min.	Typ.	Max.	Units
Frequency Range		3 - 8		GHz
Vdc Range	6.5	7	8	V
Gain	9	11		dB
Gain Variation Over Temperature		0.01		dB/ °C
Noise Figure		6		dB
Input Return Loss		18		dB
Output Return Loss		20		dB
Output Power For 1 dB Compression (P1dB)	+11	+14		dBm
Saturated Output Power (Psat)		+21		dBm
Output Third Order Intercept (IP3)		+25		dBm
Phase Noise @ 100 Hz, Psat, 6 GHz		-148		dBc/Hz
Phase Noise @ 1 KHz, Psat, 6 GHz		-162		dBc/Hz
Phase Noise @ 10 KHz, Psat, 6 GHz		-168		dBc/Hz
Supply Current (Quiescent)		110	150	mA
Supply Current (Under RF Drive)			250	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

0.417 lbs [189.15 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

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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.

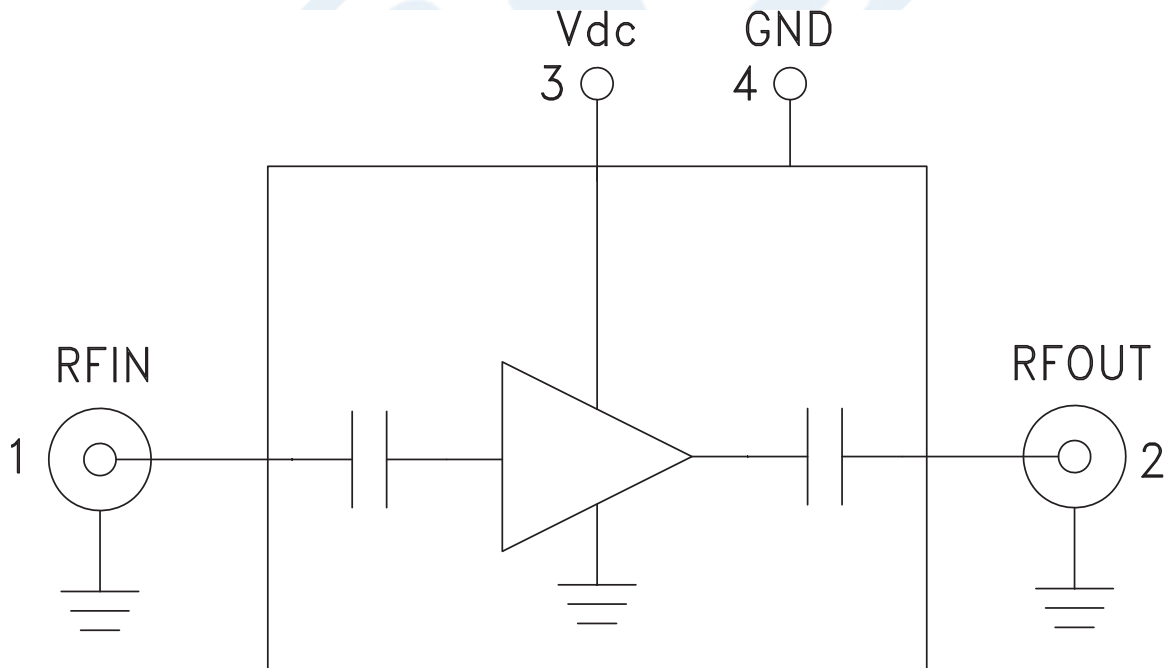
**Compliance Certifications** (see [product page](#) for current document)

### Plotted and Other Data

Notes:

- Values at +25 °C, sea level

### Functional Block Diagram



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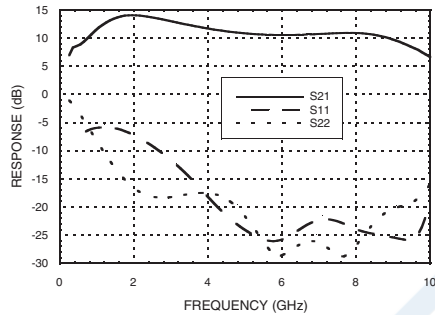
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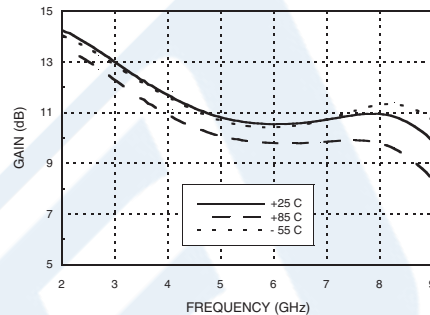
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### Typical Performance Data

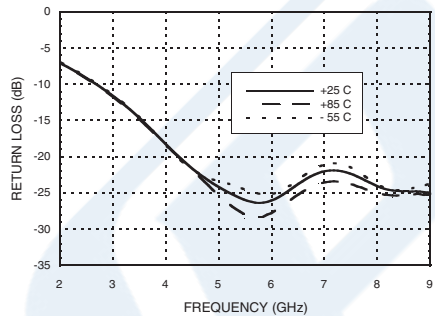
#### Broadband, Gain & Return Loss



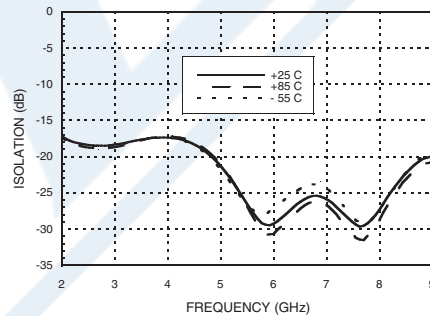
#### Gain vs. Temperature



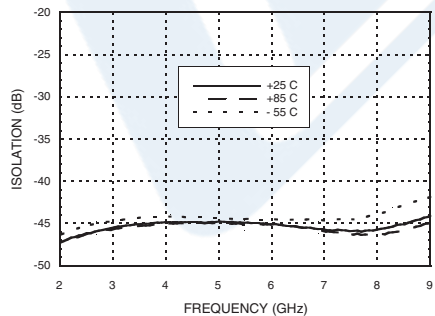
#### Input Return Loss vs. Temperature



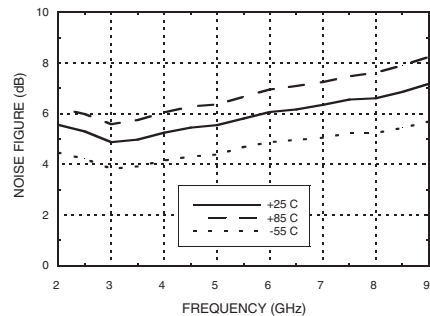
#### Output Return Loss vs. Temperature



#### Reverse Isolation vs. Temperature



#### Noise Figure vs. Temperature



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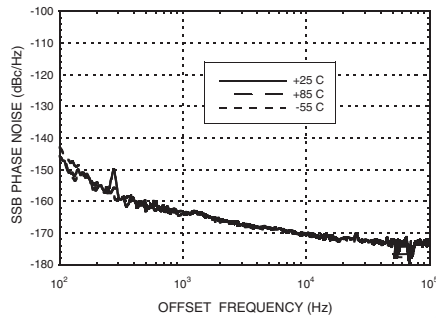


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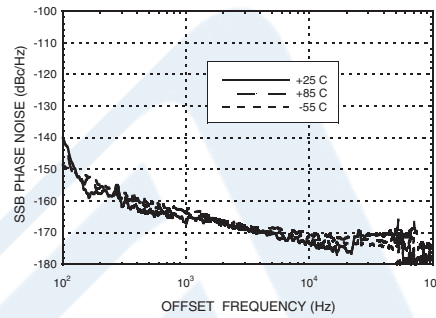
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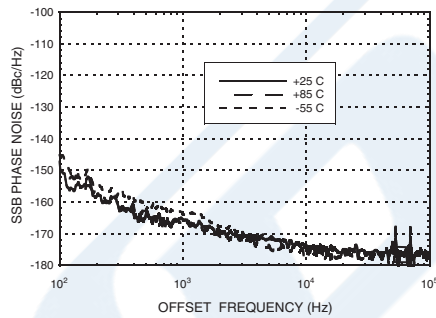
**Phase Noise at Pout = 10 dBm @ 5.12 GHz**



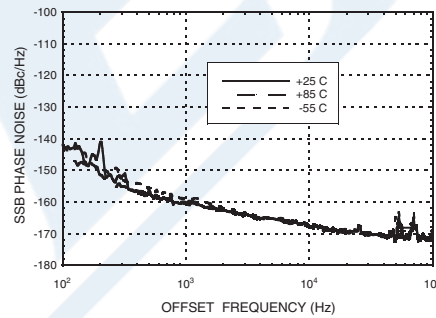
**Phase Noise at Pout = P1dB @ 5.12 GHz**



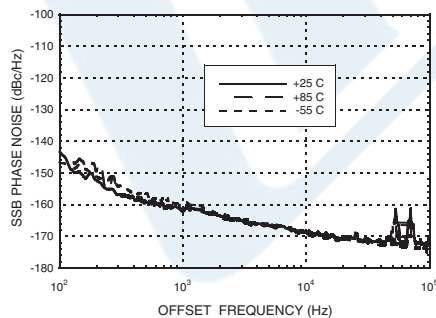
**Phase Noise at Pout = Psat @ 5.12 GHz**



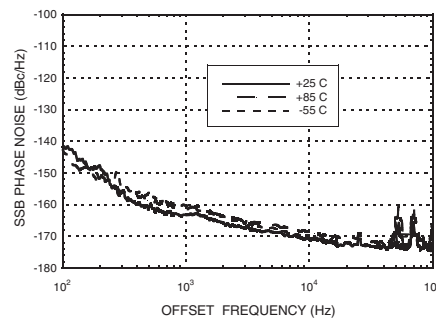
**Phase Noise at Pout = 10 dBm @ 7 GHz**



**Phase Noise at Pout = P1dB @ 7 GHz**



**Phase Noise at Pout = Psat @ 7 GHz**



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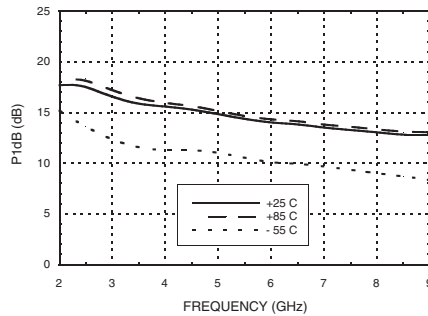


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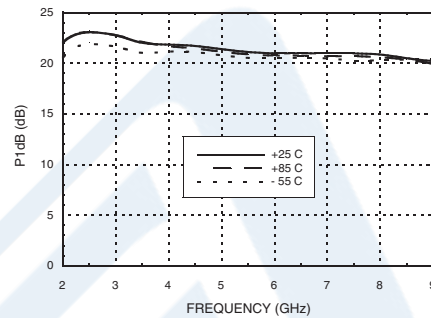
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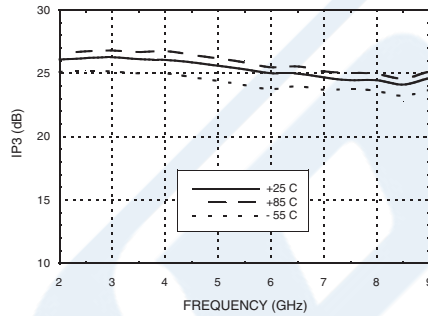
**Output P1dB vs. Temperature**



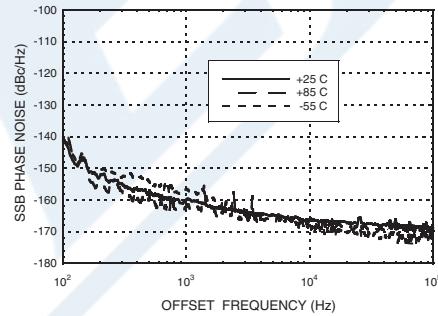
**Output Psat vs. Temperature**



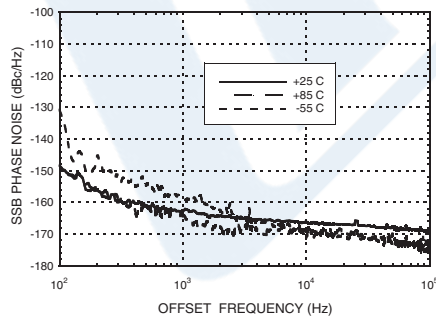
**Output IP3 vs. Temperature**



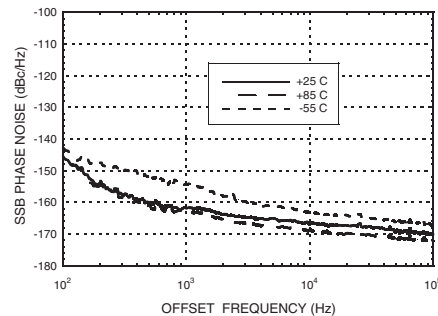
**Phase Noise at Pout = 10 dBm @ 3.5 GHz**



**Phase Noise at Pout = P1dB @ 3.5 GHz**



**Phase Noise at Pout = Psat @ 3.5 GHz**



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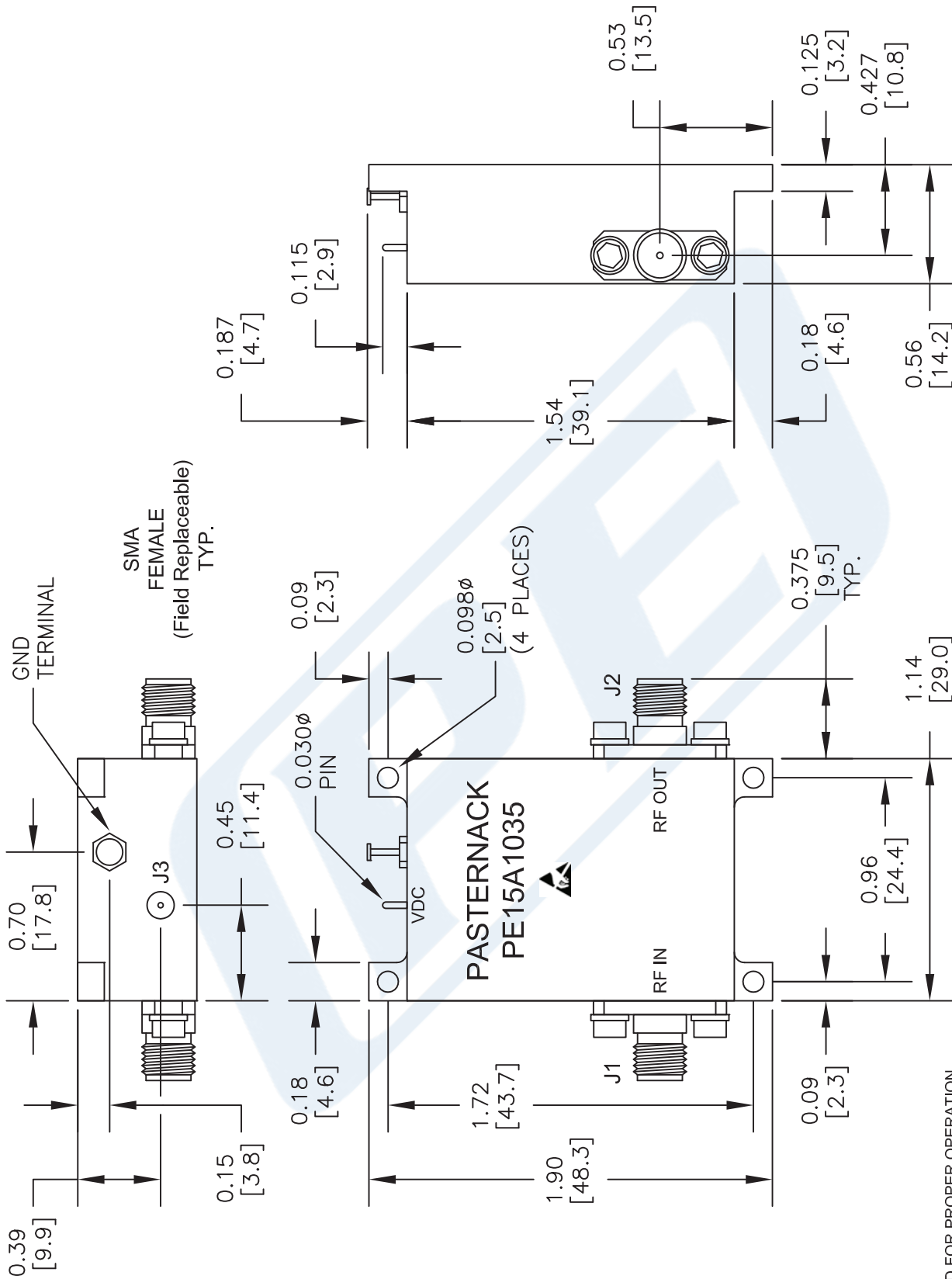
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# PE15A1035 CAD Drawing

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

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DWG TITLE

**PE15A1035**

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 070816

SCALE N/A

SIZE A

2233