



25 dBm IP3, 1.75 dB NF, 16.7 dBm Psat, 5 GHz to 9 GHz, Low Noise Amplifier, 22.5 dB Gain, SMA

TECHNICAL DATA SHEET

PE15A9002

The PE15A9002 is a low noise amplifier that operates across the frequency range from 5 GHz to 9 GHz. The design utilizes GaAs HBT MMIC technology and exhibits high dynamic range with typical performance that includes 22 dB of small signal gain, 1.75 dB noise figure, up to +14.8 dBm of output power at P1dB, +25 dBm output IP3, while using a +12V 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 Noise Amplifier
- Noise Figure 1.75 dB typ
- Highly Linear GaAs HBT MMIC Technology
- Gain 22 dB typ
- High Output IP3 +25 dBm
- P1dB up to +14.8 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 = 12Vdc, DC Current = 105mA)

Description	Minimum	Typical	Maximum	Units
Frequency Range	5		9	GHz
Small Signal Gain	18.5	22.5		dB
Gain Variance at OTR*			±0.02	dB
Output at 1 dB Compression Point		+14.8		dBm
Saturated Output Power (Psat)		+16.7		dBm
Output 3rd Intercept Point		+25		dBm
Noise Figure		1.75	2.3	dB
Input VSWR		1.5:1		
Output VSWR		1.43:1		
Operating DC Voltage		12		Volts
Operating DC Current		105	140	mA
Operating Temperature Range	-55		+85	°C

*OTR= Base Plate Operating Temperature Range

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Performance by Frequency

Parameter	Min.	Typ.	Max.	Units
Frequency Range		5 - 9		GHz
Gain	18.5	22.5		dB
Gain Variation Over Temperature		0.015		dB/ °C
Noise Figure		1.75	2.3	dB
Input Return Loss		14		dB
Output Return Loss		15		dB
Output Power for 1dB Compression (P1dB)	12	14.8		dBm
Saturated Output Power (PSAT)		16.7		dBm
Output Third Order Intercept (IP3)		25		dBm
Supply Current		105	140	mA

Mechanical Specifications

Size

Length	1.086 in [27.58 mm]
Width	0.85 in [21.59 mm]
Height	0.36 in [9.14 mm]
Weight	0.09 lbs [40.82 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 in Approved ESD
bags. Handle only in approved ESD Workstation.

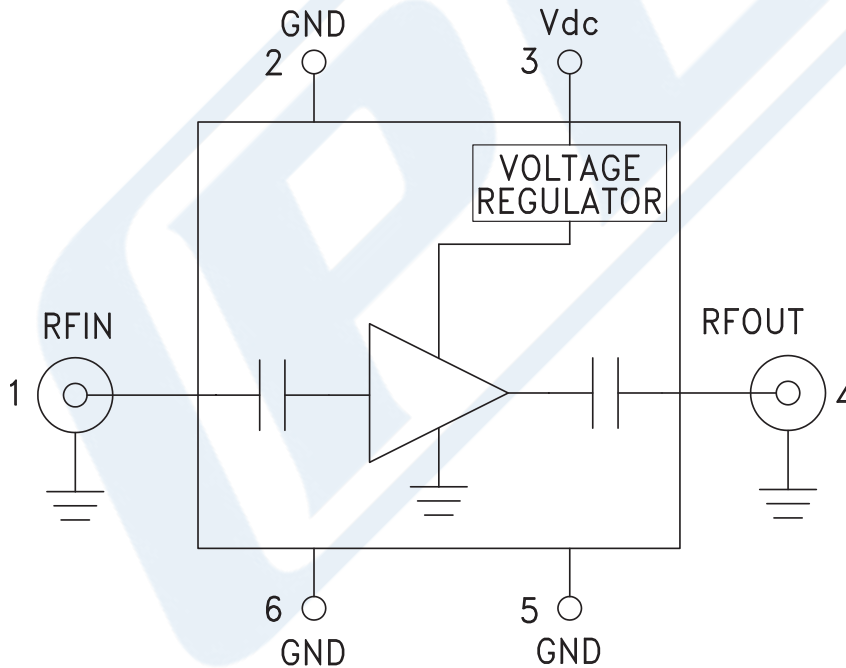
Compliance Certifications (see [product page](#) for current document)

Plotted and Other Data

Notes:

- Values at +25 °C, sea level

Functional Block Diagram



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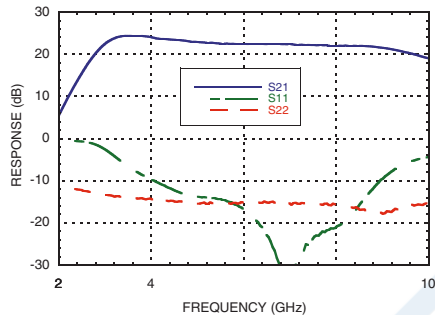
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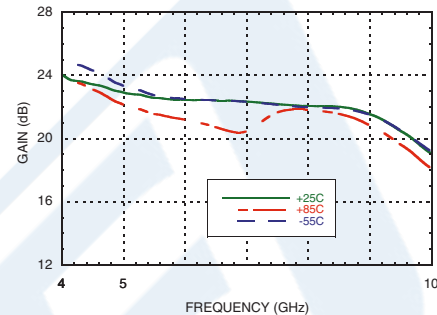
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Typical Performance Data

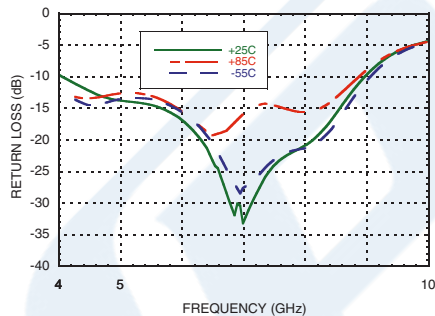
Broadband Gain & Return Loss



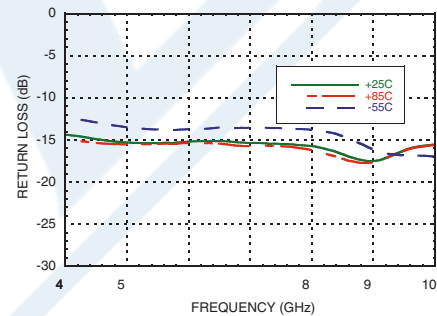
Gain vs. Temperature



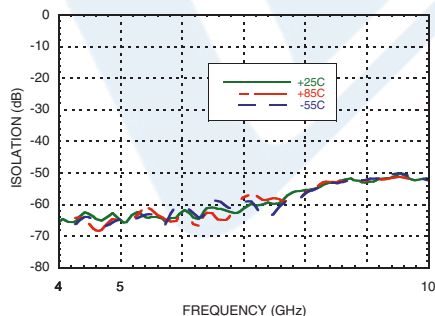
Input Return Loss vs. Temperature



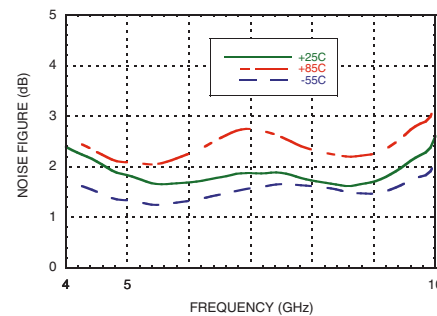
Output Return Loss vs. Temperature



Reverse Isolation vs. Temperature



Noise Figure vs. Temperature



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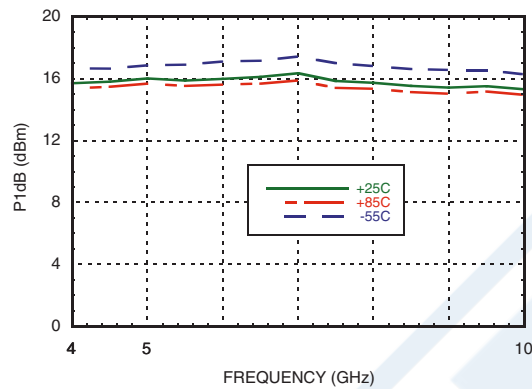


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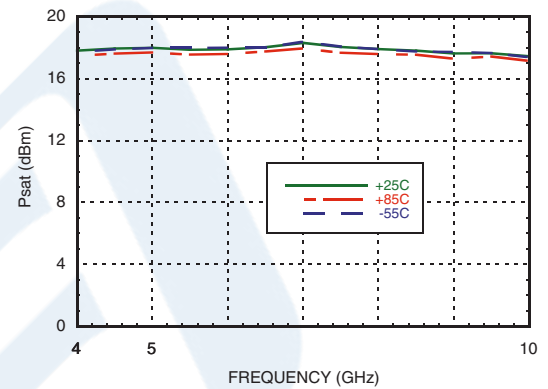
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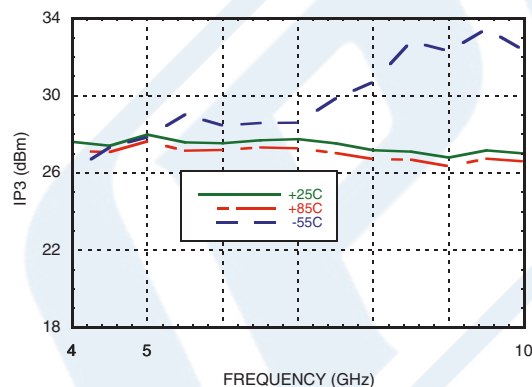
Output P1dB vs. Temperature



Psat vs. Temperature



Output IP3 vs. Temperature



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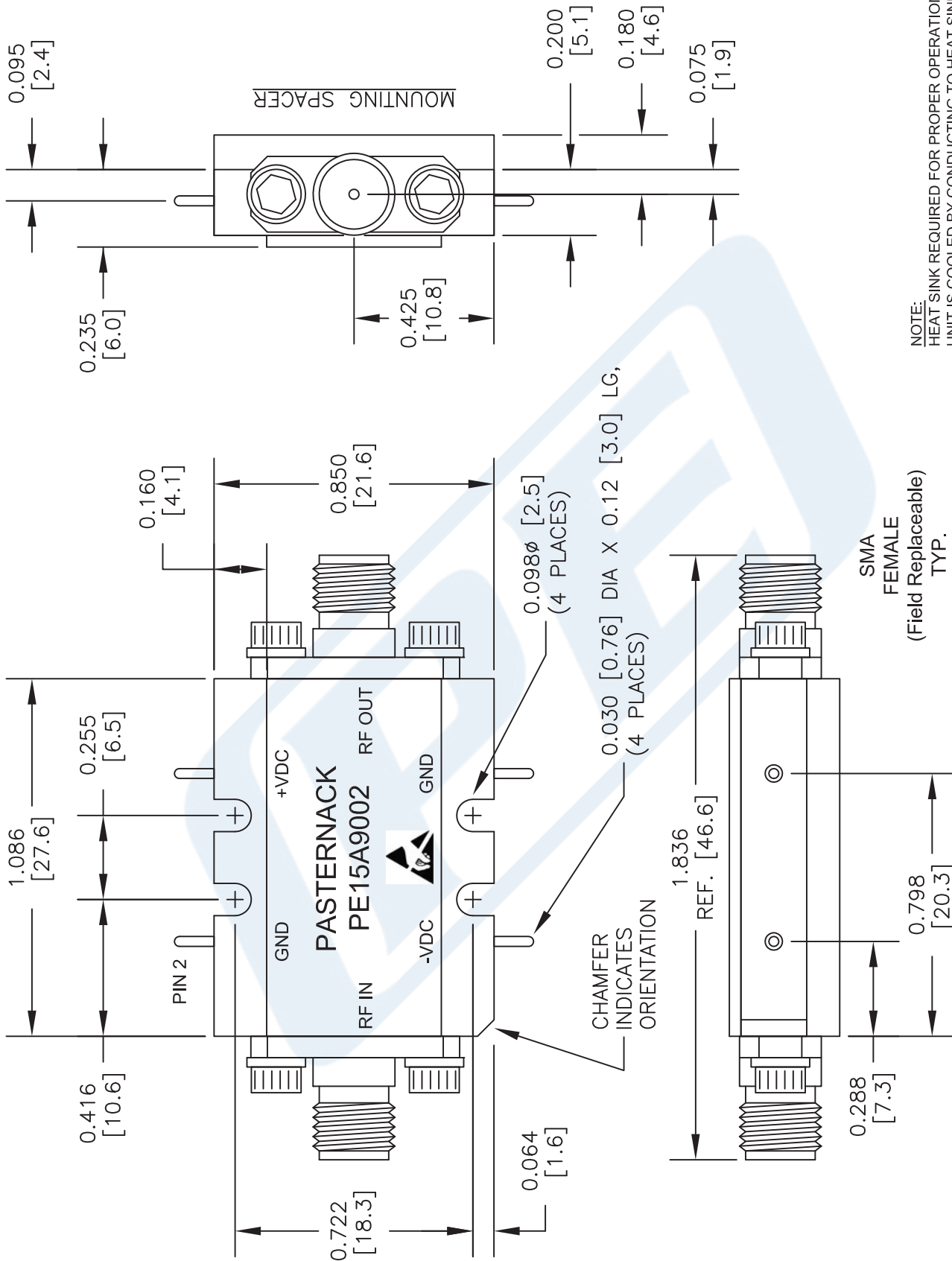
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PE15A9002 CAD Drawing

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

DWG TITLE

PE15A9002

PE PASTERNAK®
THE ENGINEER'S RF SOURCE

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FSCM NO. 53919

CAD FILE 042216

SCALE N/A

SIZE A

2233