



40 dB Gain, 0.7 dB NF, 14 dBm P1dB, 2 GHz to 4 GHz, Low Noise Amplifier, SMA

TECHNICAL DATA SHEET

PE15A1041

The PE15A1041 is a low noise RF coaxial amplifier operating in the 2 GHz to 4 GHz frequency range. The amplifier offers 0.7 dB typical noise figure, 14 dBm typical P1dB and high 40 dB minimum small signal gain. This performance is achieved through the use of hybrid MIC design and advanced SiGe Bipolar devices. The low noise amplifier requires typically a +12V DC power supply. The amplifier desing input/output ports are internally matched to 50 ohms and are DC blocked. The connectorized SMA module is unconditionally stable and includes built-in voltage regulation. This low noise amplifier requires only a single positive supply, is unconditionally stable and operates over the temperature range of -40°C and +75°C.

Features

- 2 GHz to 4 GHz Frequency Range
- P1dB: 14 dBm
- High Small Signal Gain: 40 dB typical
- Noise Figure: 0.7dB typ
- 50 Ohm Input and Output Matched
- -40 to 75°C Operating Temperature
- Unconditionally Stable
- Single DC Positive Supply
- Built-in Voltage Regulator

Applications

- Laboratory Applications
- R&D Labs
- Radar Systems
- Telecom Infrastructure
- Test Instrumentation
- Communication Systems
- Wireless Communication
- Microwave Radio Systems
- Cellular Base Stations
- Low Noise Amplifier
- General Purpose Amplification
- General Purpose Wireless
- Wideband Gain Block
- IF Amplifier/RF Driver Amplifier
- RF Wideband Front Ends
- RF Pre-amplification
- Fixed and Land Mobile

Electrical Specifications (TA = +25°C, DC Voltage = +12Vdc, DC Current = 100mA)

Description	Minimum	Typical	Maximum	Units
Frequency Range	2		4	GHz
Small Signal Gain	37	40	43	dB
Gain Flatness		±1	±1.25	dB
Gain Variance at OTR*		±1.5		dB
Output at 1 dB Compression Point	+12	+14		dBm
Noise Figure		0.7	0.9	dB
Input VSWR		1.5:1	2:1	
Output VSWR		1.6:1	2:1	
Reverse Isolation	55	60		dB
Spurious			-60	dBc
Input Power (CW)			+10	dBm
Operating DC Voltage	+10	+12	+15	Volts
Operating DC Current	80	100	150	mA
Operating Temperature Range	-40		+75	°C

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [40 dB Gain, 0.7 dB NF, 14 dBm P1dB, 2 GHz to 4 GHz, Low Noise Amplifier, SMA PE15A1041](#)



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*OTR= Base Plate Operating Temperature Range

Absolute Maximum Rating

Parameter	Rating	Units
DC Voltage	+18	V
RF Input Power	+10	dBm
Storage Temperature	-55 - 125	°C
Operating Temperature	-40 - 75	°C



ESD Sensitive Material,
Transport material in
Approved ESD bags.
Handle only in approved
ESD Workstation.

Mechanical Specifications

Size

Length	1.5 in [38.1 mm]
Width	0.85 in [21.59 mm]
Height	0.375 in [9.53 mm]
Weight	0.053 lbs [24.04 g]
Input Connector	SMA Female
Output Connector	SMA Female

Environmental Specifications

Temperature

Operating Range	-40 to +75 deg C
Storage Range	-55 to +125 deg C

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

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.

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Amplifier Power-up Precautions

- 1.) Confirm that proper ESD precautions and controls are always in place before handling any Amplifier module.
- 2.) Confirm adequate thermal management is in place to effectively dissipate heat away from the Amplifier package. The Amplifier operational baseplate temperature must be within the operational temperature range stated in the Amplifier datasheet. Depending on the design and thermal requirements, using a heatsink with cooling fan is always recommended for safe reliable operation. A heat sink without a cooling fan may also be used. Damage caused from overheating will void the warranty.
- 3.) Confirm adequate system grounding is established. The DC power supply and Amplifier must have a common ground in order to operate properly.
- 4.) Power Amplifiers may require additional DC Current when initially powered-up. Depending on the design, the input current draw could range from an additional 10% to 100% above the maximum rated DC current of the Amplifier. This varies based on product part number.
- 5.) Confirm the DC power supply, if limited, is set to allow for additional start-up current that's rated for the Power Amplifier.
- 6.) Confirm the system is designed and calibrated for 50 ohms. Any impedance mismatch may cause performance issues.
- 7.) Perform a CALIBRATION (if required) with the loads before connecting the Amplifier to the Network Analyzer to ensure proper performance.
- 8.) Use a fixed attenuator between the signal source and input port of the Amplifier to optimize the input VSWR match.
- 9.) Confirm the input power level at the input port of the amplifier does not exceed the maximum rated limit for input power (as stated in the Amplifier datasheet).
 P_{in} for Small Signal Gain = P1dB-SSG-10 dB
 P_{in} for P1dB = P1dB-SSG+1 dB
- 10.) Confirm the Network Analyzer is always connected to the Amplifier first before DC power is applied to the Amplifier.
- 11.) As long as the input and output ports of the amplifier are connected to a 50Ohm load and RF signal power is applied, the Amplifier can be powered up with DC voltage.
- 12.) Confirm the Amplifier output load is matched for a 50 Ohm impedance and will not exceed the maximum rated VSWR or Return Loss limit for the Amplifier. Exceeding the maximum rated VSWR or Return Loss limit will result in reflected signal power that could damage the Amplifier and void the warranty.
- 13.) **Power Amplifier connected to an Antenna for signal transmission** - It's strongly recommended to use a high power fixed attenuator pad or an Isolator between the output port of the Amplifier and input port to the antenna. Any reflected signal power due to impedance mismatch will likely damage the Amplifier and void the warranty.
- 14.) The attenuator or isolator used at the output port of the Amplifier must be rated to handle the output power level and operational frequency band of the amplifier.

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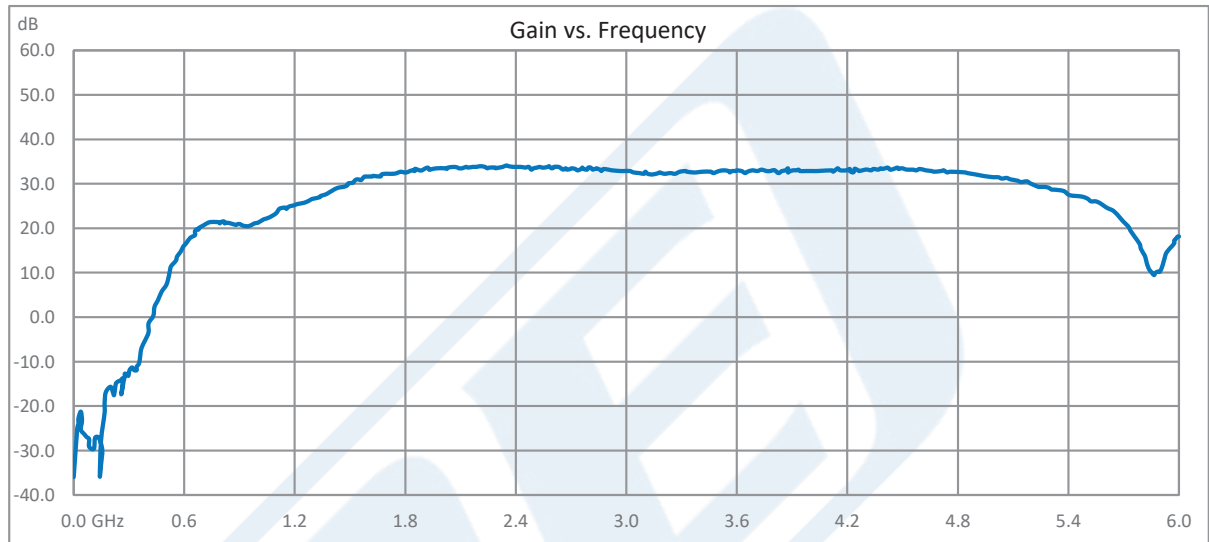


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Typical Performance Data



40 dB Gain, 0.7 dB NF, 14 dBm P1dB, 2 GHz to 4 GHz, Low Noise Amplifier, SMA from Pasternack Enterprises has same day shipment for domestic and International orders. Our RF, microwave and millimeter wave products maintain a 99.4% availability and are part of the broadest selection in the industry.

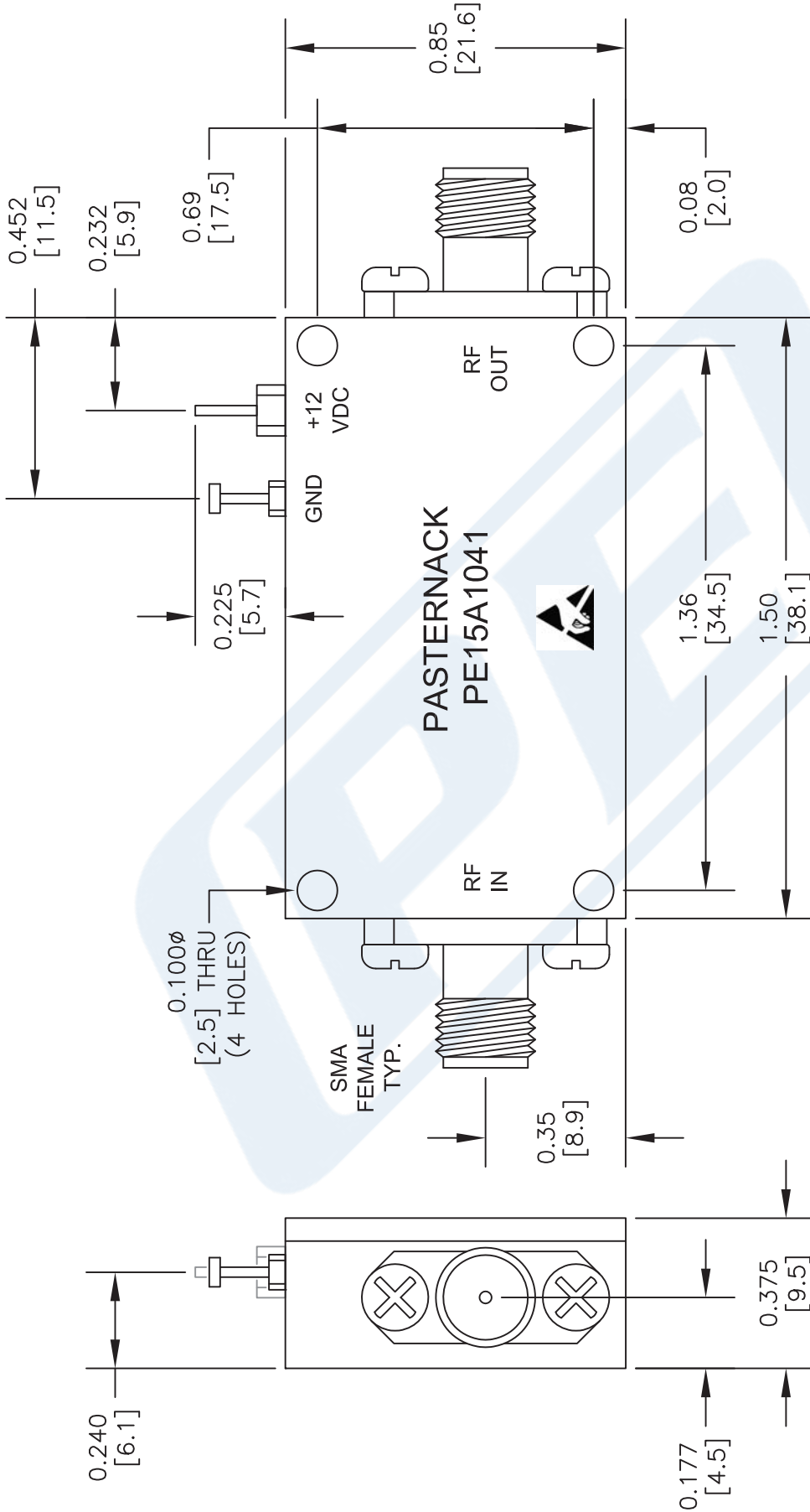
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URL: <https://www.pasternack.com/40-dB-Gain-0.7-dB-NF-14-dBm-P1dB-2-GHz-to-4-GHz-Low-Noise-Amplifier-SMA-PE15A1041-p.asp>

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.

PE15A1041 CAD Drawing

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DWG TITLE

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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].

FSCM NO. 53919

CAD FILE 071816

SCALE N/A

SIZE A

2233



PASTERNAK
 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