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22 dBm Psat, 26.5 GHz to 40 GHz, Medium Power Amplifier, 2.92mm Input, 2.92mm Output, 35 dB Gain, 28 dBm IP3, 4.5 dB NF

TECHNICAL DATA SHEET PE15A4050

The PE15A4050 is a Ka-Band coaxial power amplifier, operating in the 26.5 to 40 GHz frequency range. This amplifier utilizes high power devices that provide excellent linearity and high gain. The amplifier offers 20 dBm of P1dB typical and 30 dB small signal gain typ, with the gain flatness of ±2 dB max. This power amplifier requires a +12 Volt DC supply, is unconditionally stable, operates over the temperature range of -40°C to 75°C, and is Hermetically sealed.

Features

- 26.5 to 40 GHz Frequency Range
- P1dB: 20 dBm typ
- Small Signal Gain: 35 dB typ
- Gain Flatness: ±3 dB max
- 50 Ohm Input and Output Matched
- -40 to 75°C Operating Temperature
- Unconditionally Stable
- Single +12VDC Supply
- Voltage Regulator

Applications

- Ka-band Satellite Communication
- Commercial SATCOM
- Point-to-Point Radio
- Point-to-Multipoint Radio
- Communication Systems
- VSAT
- R&D Labs
- Radar Systems
- Communication Systems
- High Power Output Amplifier

Electrical Specifications (TA = +25°C, DC Voltage = 12Volts, DC Current = 270mA)

Description	Minimum	Typical	Maximum	Units
Frequency Range	26.5		40	GHz
Small Signal Gain	30	35	40	dB
Gain Flatness		±3	±4	dB
Gain Variation at OTR*		±2.5		dB
Input Power (CW)			+6	dBm
Pout at Sat.	+20	+22		dBm
Output Power at 1 dB Compression Point	+19	+20	+25	dBm
Output 3rd Intercept Point	+25	+28		dBm
Reverse Isolation		50		dB
Noise Figure		4.5	5.5	dB
Spurious			-70	dBc
Impedance (Input)		50		Ohms
Impedance (Output)		50		Ohms
Input VSWR		1.7:1	2:1	
Output VSWR		2.5:1	3.5:1	
Operating DC Voltage	8	12	15	Volts
Operating DC Current	240	270	320	mA
Operating Temperature Range	-40		+75	°C

*OTR= Base Plate Operating Temperature Range

Click the following link (or enter part number in “SEARCH” on website) to obtain additional part information including price, inventory and certifications: 22 dBm Psat, 26.5 GHz to 40 GHz, Medium Power Amplifier, 2.92mm Input, 2.92mm Output, 35 dB Gain, 28 dBm IP3, 4.5 dB NF PE15A4050

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Absolute Maximum Rating

Parameter	Rating	Units
DC Voltage	+18	Volts
RF Input Power	+10	dBm
Storage Temperature	-55 to +125	°C
Operating Temperature	-40 to +85	°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	1 in [25.4 mm]
Height	0.4 in [10.16 mm]
Weight	0.072 lbs [32.66 g]
Input Connector	2.92mm Female
Output Connector	2.92mm Female

Environmental Specifications

Temperature

Operating Range	-40 to +75 deg C
Storage Range	-45 to +125 deg C

Compliance Certifications (see product page for current document)

Plotted and Other Data

Notes:

- Values at +25 °C, sea level
- Small Signal Gain at +25°C Base Plate Temperature

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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.) Preform 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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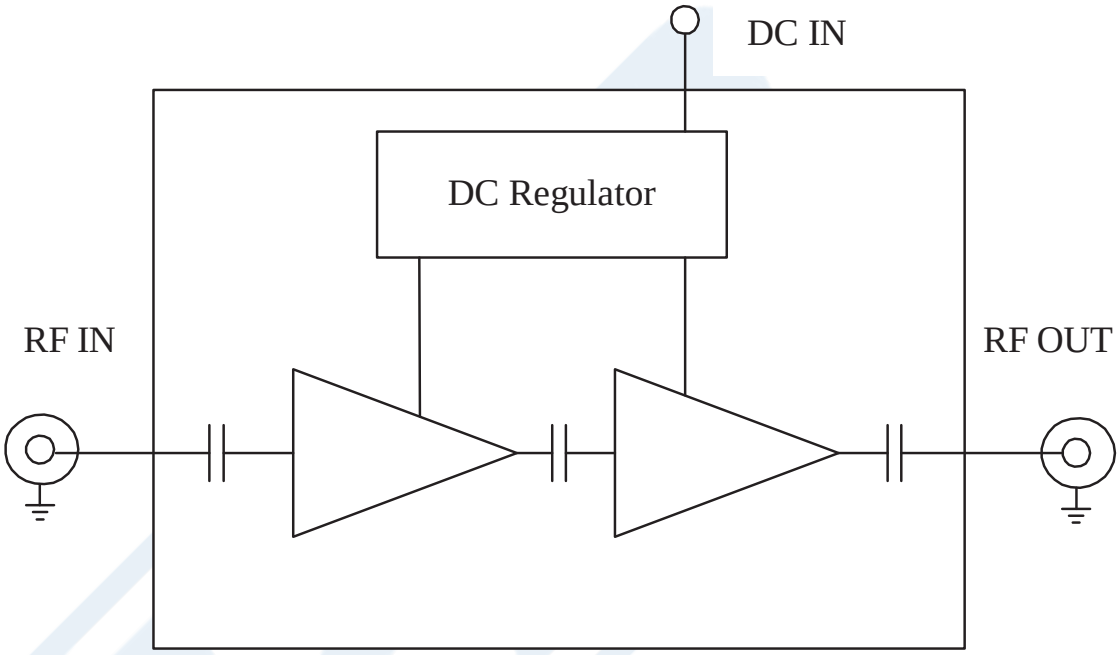
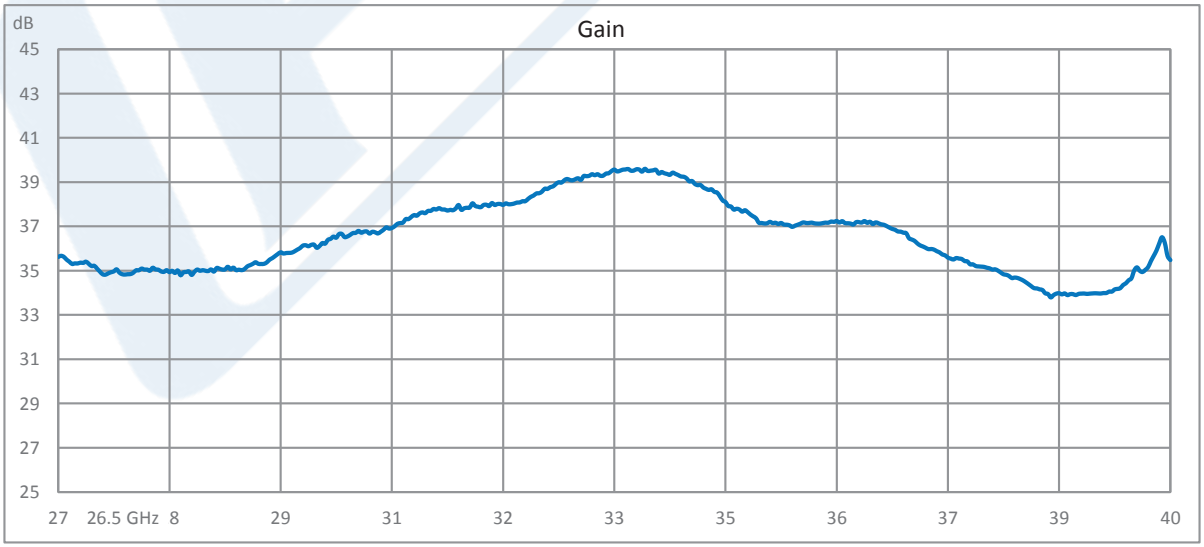
TECHNICAL DATA SHEET PE15A4050

Functional Block Diagram



Typical Performance Data



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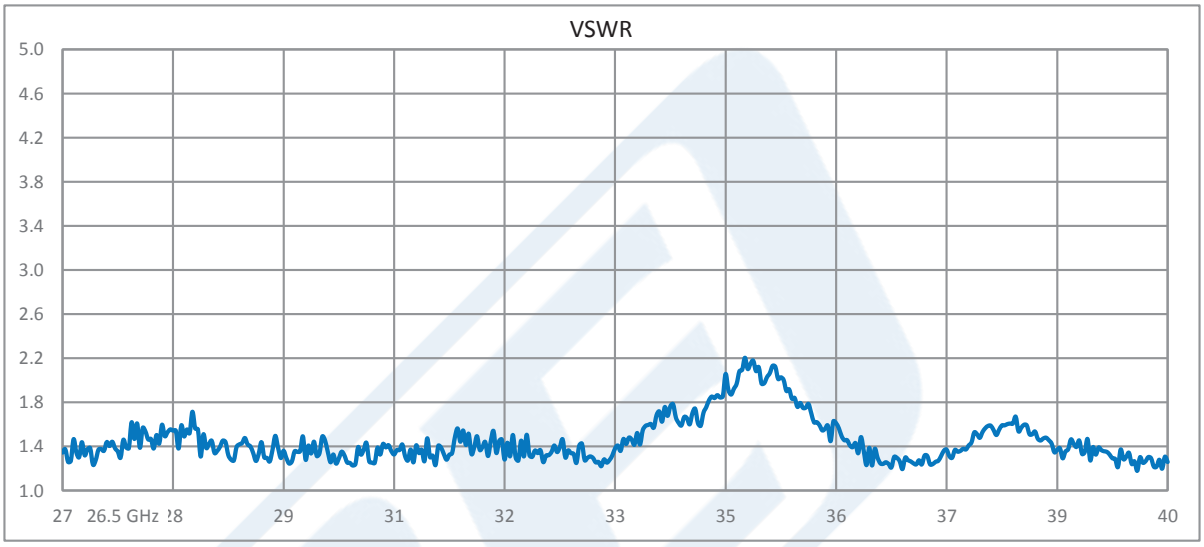

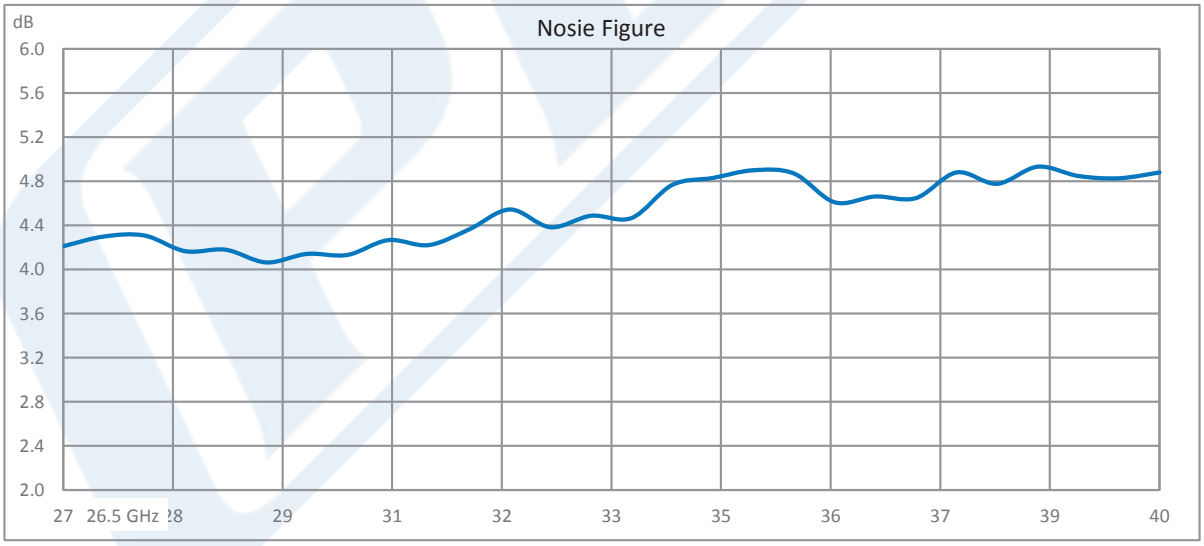

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URL: https://www.pasternack.com/40-ghz-medium-power-amplifier-35-db-gain-ip3-2.92mm-pe15a4050-p.aspx

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.

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PE15A4050 CAD Drawing

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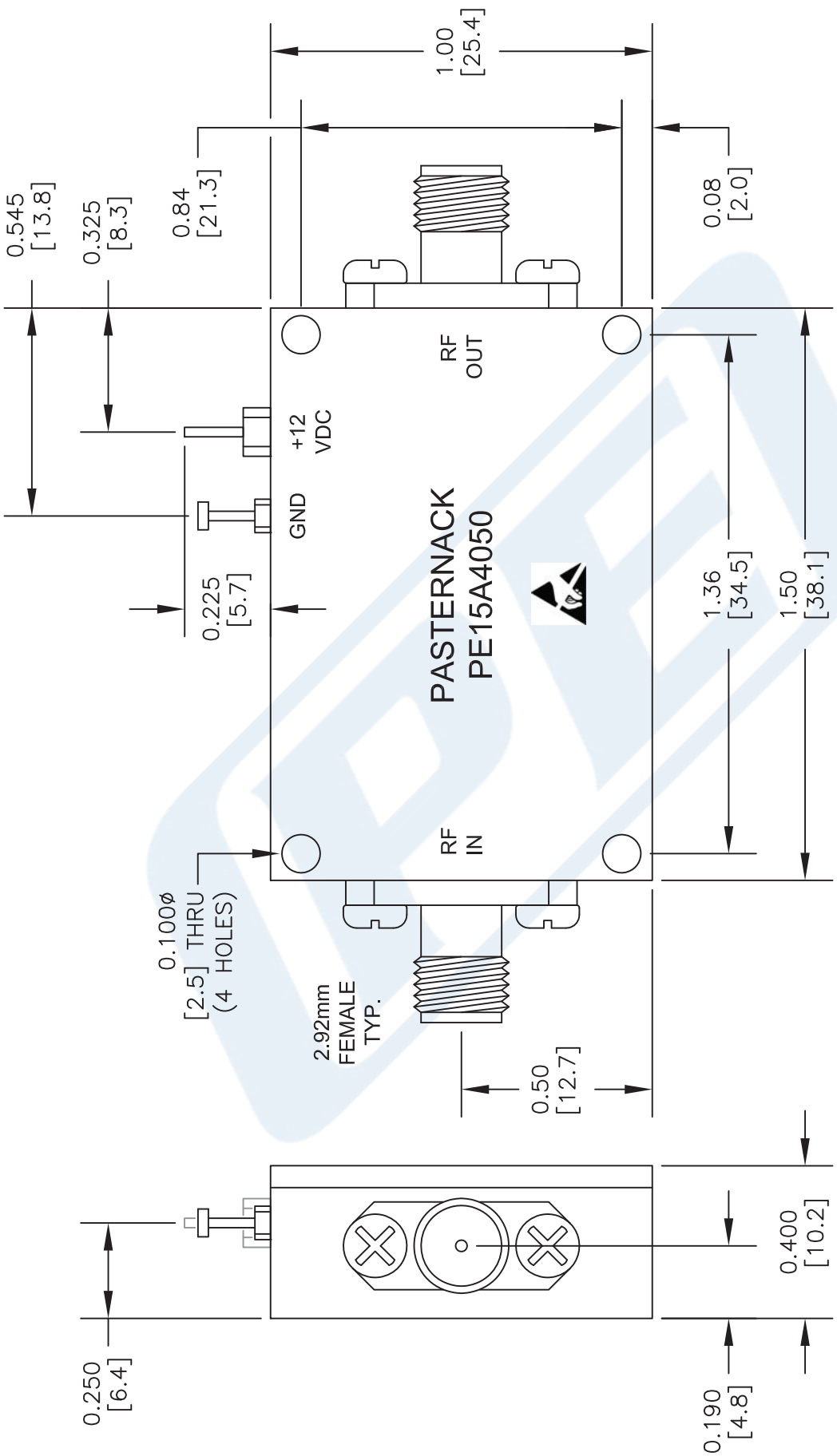

NOTE:
HEAT SINK REQUIRED FOR PROPER OPERATION,
UNIT IS COOLED BY CONDUCTING TO HEAT SINK.

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].

DWG TITLE: PE15A4050

FSCM NO. 53919 | CAD FILE 071816 | SCALE N/A | SIZE A | 2233

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