PASTERNACK®
THE ENGINEER'S RF SOURCE

7 Watt Psat, 2.5 GHz to 4 GHz, High Power Amplifier, 19 dB Gain, 45 dBm IP3, 8 dB NF, SMA

TECHNICAL DATA SHEET PE15A5006

PE15A5006 is a broadband high IP3 7 W GaAs PHEMT MMIC-based coaxial power amplifier module designed to be used in a wide range of commercial and defense applications in the 2.5 to 4.0 GHz frequency range. The amplifier offers 19 dB small signal gain with the typical gain flatness of ±0.5 dB, along with high IP3 performance of 45 dBm. This performance is achieved through the use of advanced GaAs PHEMT MMIC circuitry. The amplifier operates over the temperature range of -40°C to 85°C, and characterized by a light weight (45 g) and small size (1.5"x1.2"x0.56"). To facilitate an effective heat dissipation structure, the amplifier module has 4 screw slots for mounting to a heat sink.

Features

- 2.5 GHz to 4 GHz Frequency Range
- P1dB Output Power: 37.5 dBm
- Psat: 38.5 dBm
- Small Signal Gain: 19 dB
- Gain Flatness: ±0.5 dB
- High IP3: 45 dBm
- Power Added Efficiency @Psat: 36%
- 50 Ohm Input and Output Matched
- -40 to +85°C Operating Temperature
- Small Size & Light Weight
- EAR99 (No Export License Required)

Applications

- Telecom Infrastructure
- Fixed Microwave Backhaul
- Wireless Internent Access
- Wireless Local Loop
- GPS Applications
- WLAN Repeaters
- Microwave Radio Systems
- Military & Space
- Radar & Sensors
- Commercial 2-Way Radio
- Driver Amplifier
- High Power Output Amplifier
- General Purpose Amplification

Electrical Specifications (TA = +25°CVdd1,2 = +12V, Iddq1 = 0.25A, Iddq2 = 1.05A, Vgs1,2 = -0.82V)

Description	Minimum	Typical	Maximum	Units
Frequency Range	2.5		4	GHz
Small Signal Gain		19		dB
Gain Flatness		±0.5		dB
Psat		+38.5		dBm
Efficiency Psat		36		%
Output Power at 1 dB Compression Point		+37.5		dBm
Output 3rd Order Intercept Point		+45		dBm
Noise Figure		8		dB
Input Return Loss		10		dB
Output Return Loss		7		dB
Operating Temperature Range	-40		+85	°C
Thermal Resistance		6		°C/W

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: 7 Watt Psat, 2.5 GHz to 4 GHz, High Power Amplifier, 19 dB Gain, 45 dBm IP3, 8 dB NF, SMA PE15A5006

Pasternack Enterprises, Inc. • P.O. Box 16759, Irvine, CA 92623
Phone: (866) 727-8376 or (949) 261-1920 • **Fax:** (949) 261-7451
Sales@Pasternack.com • Techsupport@Pasternack.com

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Absolute Maximum Rating

Parameter	Rating	Units
Drain Source Voltage	+13	Volts
Gate Source Voltage	-5	Volts
Drain Source Current	0.4	A
Gate Source Current	1.6	A
Continuous Dissipation at 25°C	25	W
Channel Temperature	175	°C
Operating Temperature (base-plate)	-40 to +85	°C
Storage Temperature	-55° to +135	°C

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

Mechanical Specifications

Size

Input Connector	SMA Female
Output Connector	SMA Female

Environmental Specifications

Temperature

Operating Range	-40 to +85 deg C
Storage Range	-55 to +135 deg C

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Compliance Certifications (visit www.Pasternack.com for current document)

RoHS Compliant
REACH Compliant 12/17/2014

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.

- GaAs PHEMT MMIC-Based Power up sequence
  1. Connect common ports
     a. Connect single GND lead
     b. Connect all –Vg ports together
     c. Connect all +Vd ports together
  2. Connect the load, attenuator to protect the VNA.
  3. Connect the input port, may have an attenuator at the input (perform the CAL with the loads before connecting the amplifier to the VNA).
  4. Apply the –Vg voltage at close to –Vg Pinch off (Start at -1.9Volts, except for PE15A4014 and PE15A4015 use -3.0).
  5. Apply the +Vd voltage.
  6. Adjust the –Vg to the ideal negative voltage (approximately -1.1Volts to -0.97Volts, except for PE15A4014 and PE15A4015 use -2.6 to -2.4 see datasheet), observe the gain and power output.

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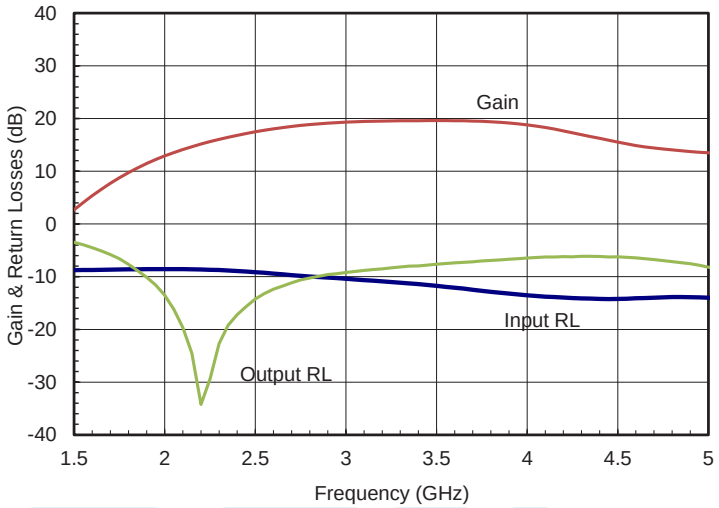
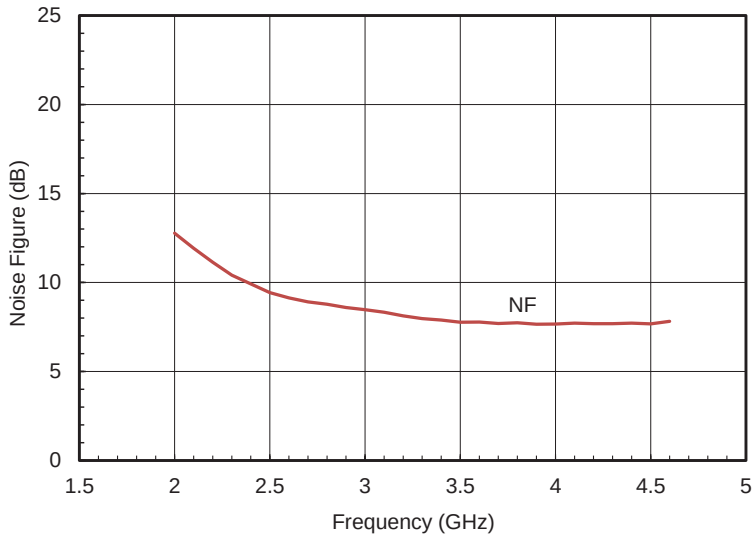
TECHNICAL DATA SHEET PE15A5006

Typical Performance Data



* Data shown is for $V_{dd1,2}$=+12V, I_{ddq1}=0.25A, I_{ddq2}=1.05A, $V_{gs1,2}$=-0.82V.



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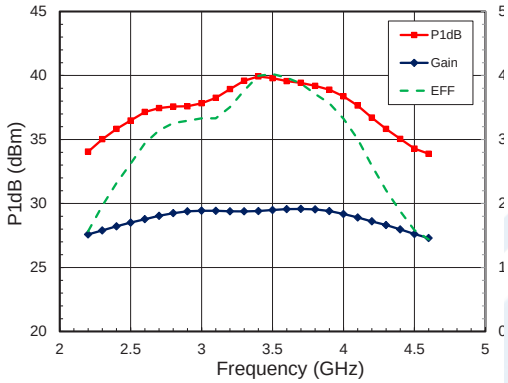

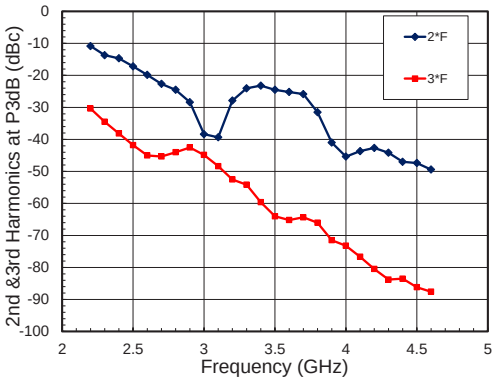

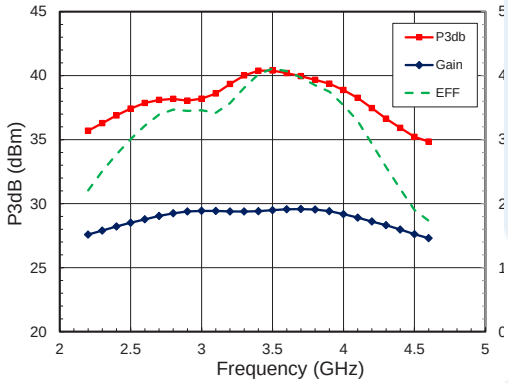

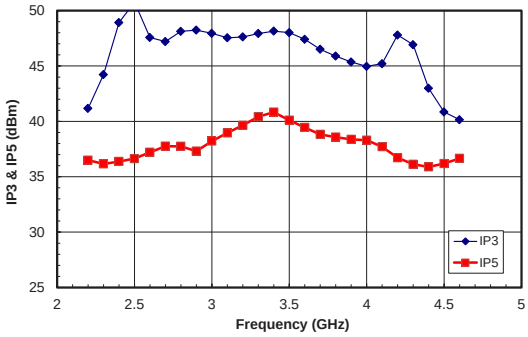

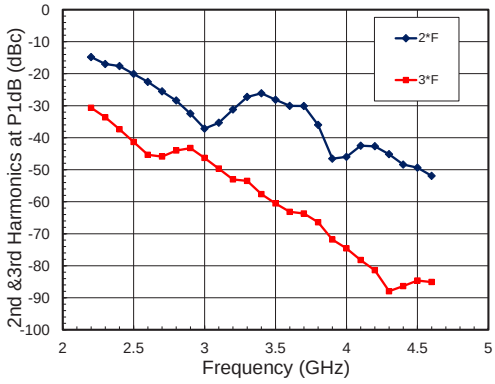

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URL: http://www.pasternack.com/4-ghz-high-power-amplifier-19-db-gain-ip3-8-db-sma-pe15a5006-p.aspx

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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PE15A5006 CAD Drawing

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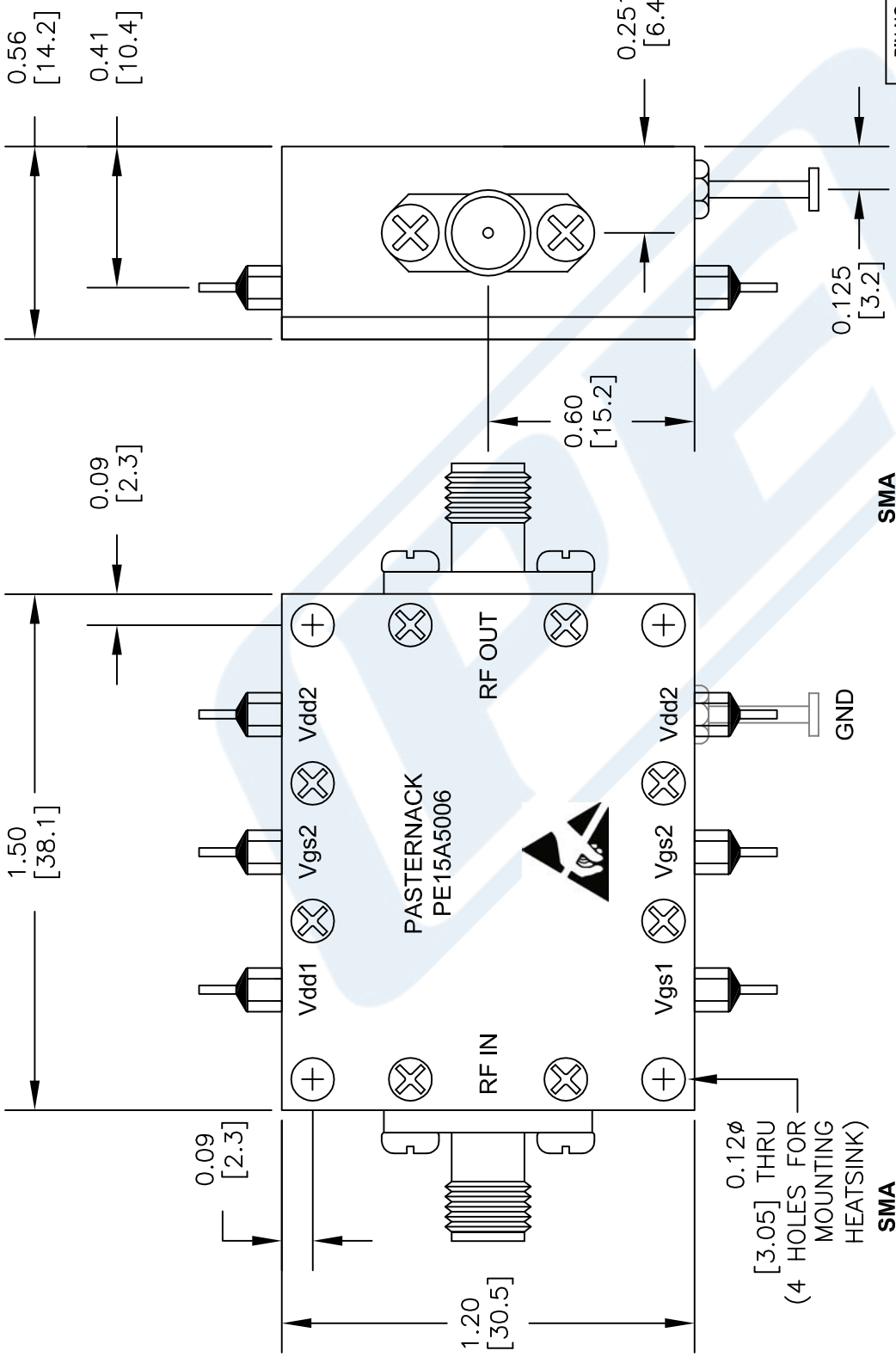

PIN NO.	FUNCTION	BIAS
1	V_{gs1}	-0.82V
2	V_{gs2}	-0.82V
3	V_{dd2}	+12V
4	V_{dd2}	+12V
5	V_{gs2}	-0.82V
6	V_{dd1}	+12V

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].
4. FITS MIL-C-17 AND EQUIVALENT CABLES.

NOTE:

1. Recommended currents are : I_{dsq1}=0.25A & I_{dsq2}=1.05A for the first & second stage respectively.
2. Gate $V_{gs1,2}$ bias of -0.82V are for reference only. $V_{gs1,2}$ could be adjusted to vary currents going thru the module.
3. Do **NOT** apply V_{dd1} & V_{dd2} without proper negative voltages.

DWG TITLE: **PE15A5006**

CAD FILE 073014 | SCALE N/A | SIZE A | 150

FSCM NO. 53919

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