PASTERNACK
an INFINITE brand

High Power Bi-Directional Amplifier, 5/20 Watts, 2.4 GHz to 2.5 GHz, 1 us switching, 20 dB Gain, SMA

TECHNICAL DATA SHEET PE15B5000

PE15B5000 is an S-Band bi-directional half duplex module that delivers high quality TX signals while amplifying the RX signal with an advanced LNA to produce the highest possible data rates. The amplifier operates in the 2.4 to 2.5 GHz frequency range and offers 5 Watts typ Power for 802.11g and 20 Watts typ Power for 802.11b. High efficiency devices and advanced switching technology meets the requirements of some of the most demanding RF radio systems. The module provides 20 dB typical small signal gain with the gain flatness of ±0.5 dB typical. The connectorized SMA module is unconditionally stable, requires typically a +28V DC and operates over the temperature range of -40°C and +80°C. A Cable Assembly with DC Socket connector is available (PE15K5000) as an accessory specific to this model. See the illustration below.

Features

- 2.4 GHz to 2.5 GHz Frequency Range
- 20 Watts typ Power for 802.11b
- 5 Watts typ Power for 802.11g
- Small Signal Gain: 20 dB min
- Gain Flatness: ±0.5 typical
- 50 Ohms Input and Output Matched
- Unconditionally Stable
- Half Duplex Design

Applications

- L-band Military Radio
- Communication Systems
- High Gain Driver Power Amplifier
- High Gain Output Power Amplifier
- Unmanned Aerial Vehicles (UAV)
- Unmanned Ground Vehicles
- L and S Band Radar
- Commercial Air Traffic Control
- Weather and Earth Observation
- Satellites

Electrical Specifications (TA = +25°C, DC Voltage = 28Volts DC Current = 2.4A)

Transmit

Description	Minimum	Typical	Maximum	Units
Frequency Range	2.4		2.5	GHz
Power for 802.11b		20		Watts
Power for 802.11g		5		Watts
RF Input			28	dBm
Gain	19	20	21	dB
Gain Flatness		±0.5	±1.3	dB
Input Return Loss		-12		dB
Operating DC Voltage	24	28	30	Volts
Current Draw 802.11b		2.4		mA
Current Draw		2.4		A
Current Draw 802.11g		900		mA
Switching Time		1	2	uSec

Receive

Description	Minimum	Typical	Maximum	Units
1 dB Compression Point		+0		dBm
Gain		11		dB

Click the following link (or enter part number in “SEARCH” on website) to obtain additional part information including price, inventory and certifications: High Power Bi-Directional Amplifier, 5/20 Watts, 2.4 GHz to 2.5 GHz, 1 us switching, 20 dB Gain, SMA PE15B5000

Pasternack Enterprises, Inc. • P.O. Box 16759, Irvine, CA 92623
Phone: (866) 727-8376 or (949) 261-1920 • **Fax:** (949) 261-7451
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Gain Flatness	±0.5	±1.3	dB
Input Return Loss	-10		dB
Noise Figure	2.5		dB
Current Draw	50	70	mA

Protections

Environmental / Protections				
Parameter	**Min**	**Typ.**	**Max**	**Unit**
Operating Temp. (Housing Temp.)	-40		+80	°C
Storage Temp Range	-65		+150	°C
Weatherproofing	IP 64 Rating			--
Altitude	0-30,000			ft.
Max RF Input	+28			dBm
Load VSWR @ P1dB	∞ at all amplitudes / phase angles			--

Mechanical Specifications

Size

Length	3.33 in [84.58 mm]
Width	2.69 in [68.33 mm]
Height	0.69 in [17.53 mm]
Weight	0.5 lbs [226.8 g]
RF Connector (Input)	SMA Female
RF Connector (Output)	SMA Female
DC Connector	
Cooling	HEATSINK REQUIRED use PE15C5013 or PE15G5011F

Environmental Specifications

Temperature

Operating Range	-40 to +80 deg C
Storage Range	-65 to +150 deg C
Altitude	0-30,000
Weatherproofing	IP 64 Rating

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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.
- Heat Sink Required for Proper Operation, Unit is cooled by conduction to heat sink.

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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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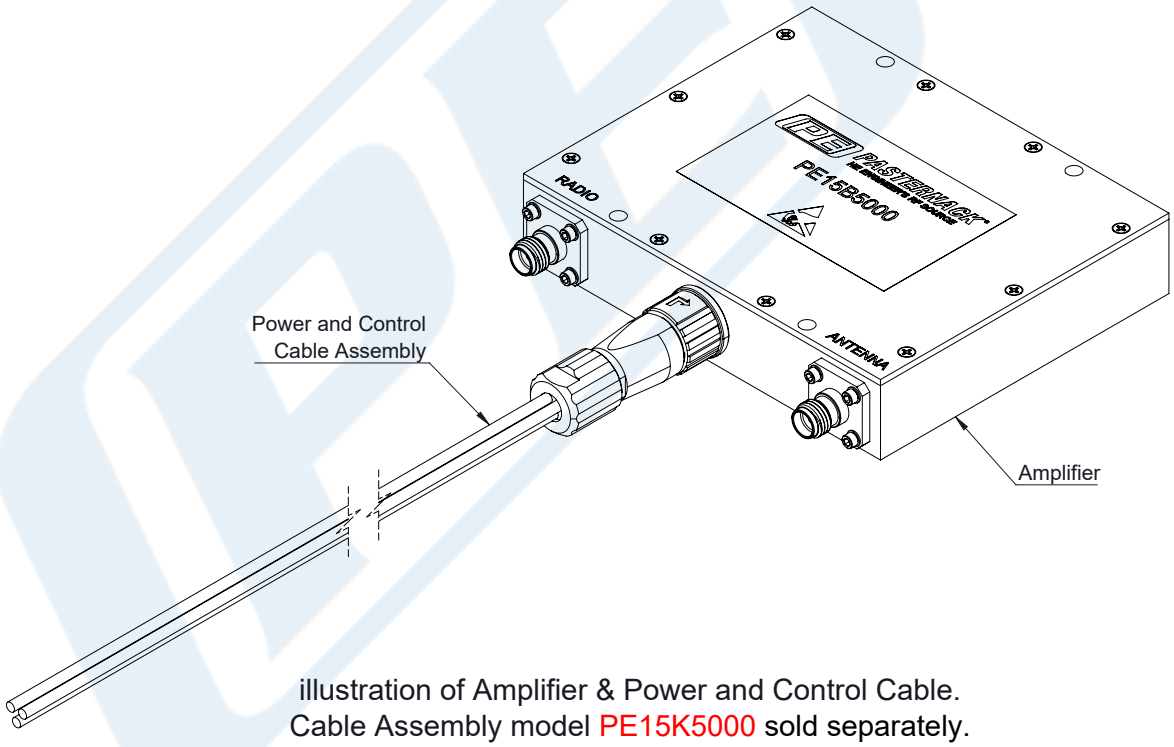

illustration of Amplifier & Power and Control Cable.
Cable Assembly model PE15K5000 sold separately.
(Picture shown for Reference Only)

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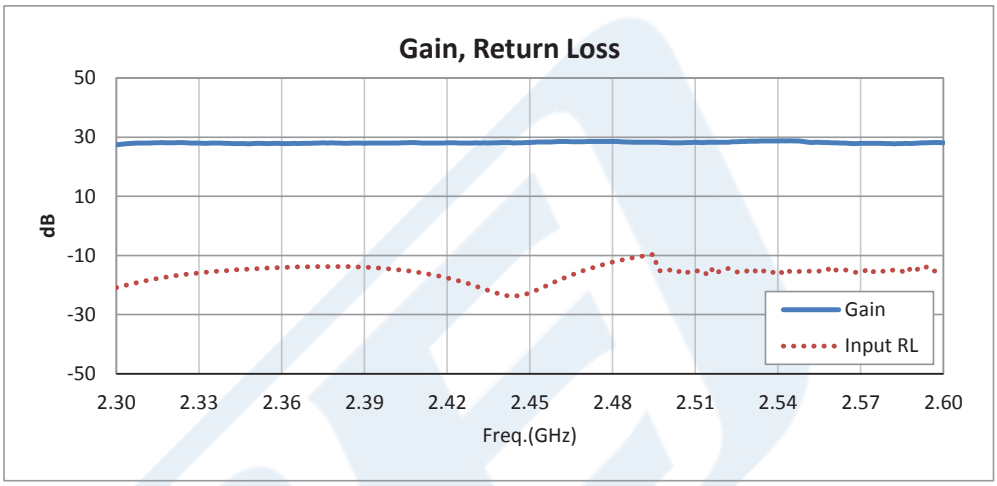
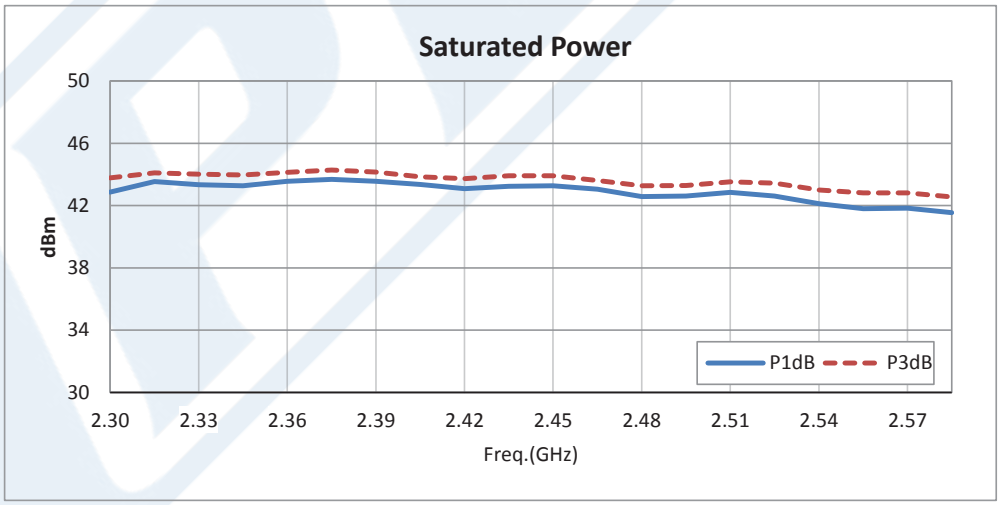
Typical Performance Data





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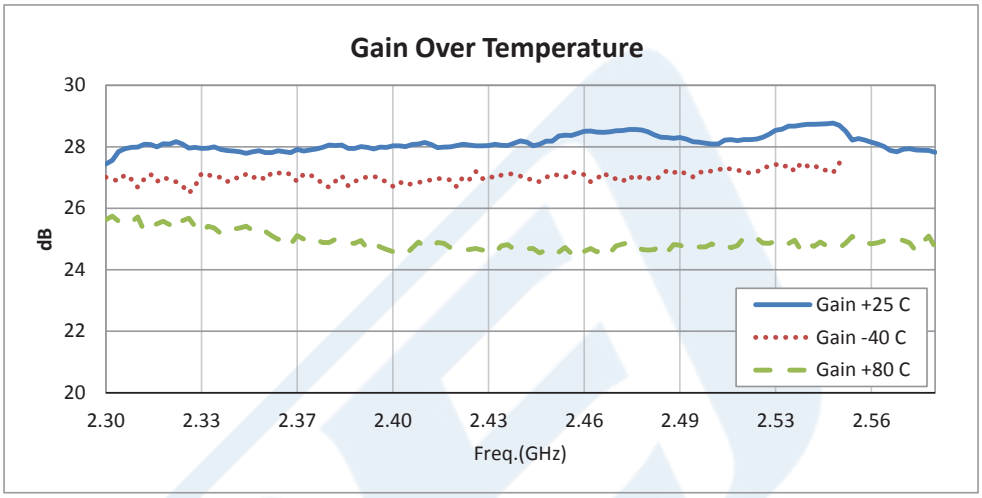

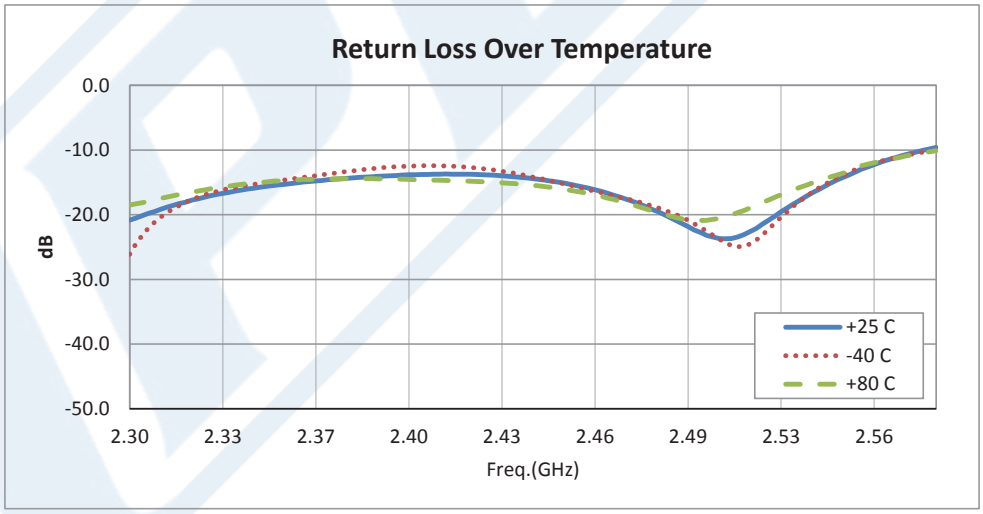

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High Power Bi-Directional Amplifier, 5/20 Watts, 2.4 GHz to 2.5 GHz, 1 us switching, 20 dB Gain, SMA from Pasternack Enterprises has same day shipment for domestic and International orders. Our RF, microwave and millimeter wave products maintain a 99.4% availability and are part of the broadest selection in the industry.

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URL: https://www.pasternack.com/high-power-bi-directional-amplifier-5-20-watts-2.5-ghz-sma-pe15b5000-p.aspx

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PE15B5000 CAD Drawing

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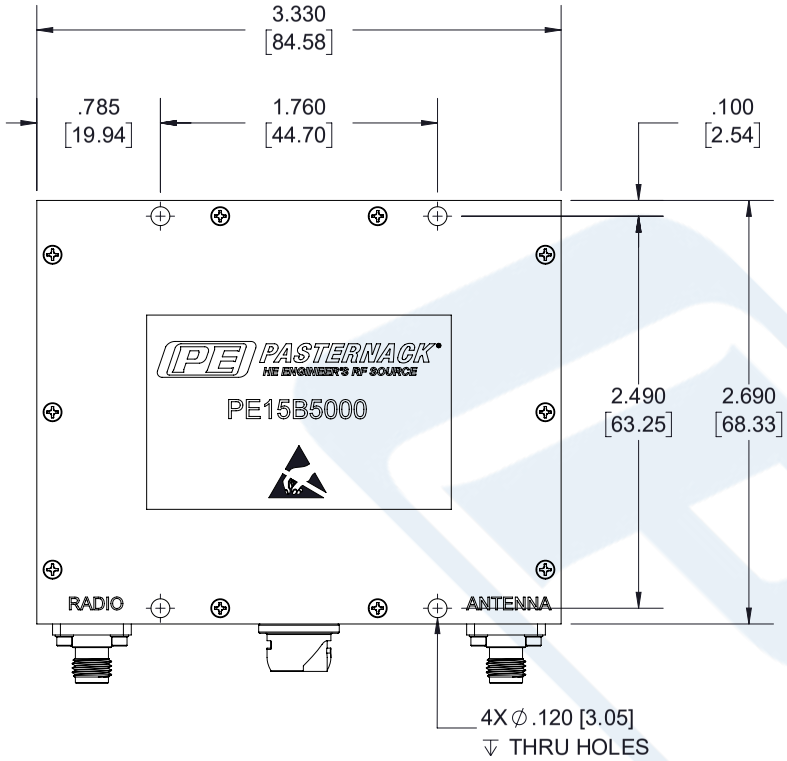
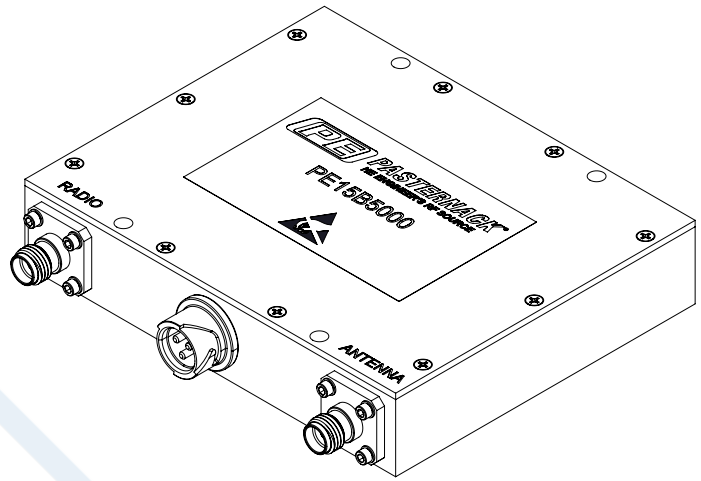
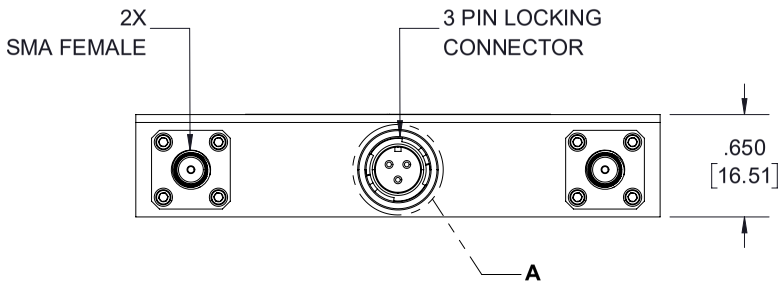
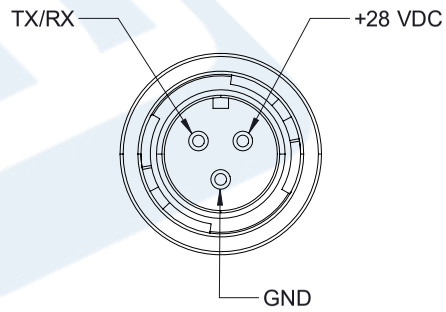
REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	09/27/19	T.GALLA









DETAIL A

Note:

A heatsink and optional cooling fan is required for reliable operation of this device. Unit is cooled by conducting to heatsink. Operation above +80 °C will likely cause eventual damage to the device.

UNLESS OTHERWISE SPECIFIED
LEADING DIMENSIONS ARE INCHES
DIMENSIONS IN [ ] ARE MILLIMETERS

TOLERANCES:

.X=± .2 [5.08]	FRACTIONS ± 1/32
.XX=± .01 [.25]	ANGLES ± 1°
.XXX=± .005 [.13]	

ALL DIMENSIONS SHOWN ARE FOR REFERENCE ONLY.

THIRD-ANGLE PROJECTION

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SHEET 1 OF 2

SCALE N/A

SIZE	CAGE CODE	DRAWN BY	PART NUMBER	REV
A	53919	K.DANG	PE15B5000	A