PASTERNACK
an INFINITE brand



Temperature Compensated Low Noise Amplifier, 0.5 GHz to 4 GHz, 35 dB min Gain, P1dB 21 dBm, SMA, with Heatsink

TECHNICAL DATA SHEET PE15A5101F

The PE15A5101F is a temperature compensated RF amplifier with an integrated heatsink assembly that covers a broadband frequency from 0.5 GHz to 4 GHz. The GaAs FET design utilizes PIN diode compensation circuitry that adjusts gain levels as the device is exposed to temperature variations. At high temperatures, the gain level will be about 1 to 1.5 dB lower and at low temperatures the gain level will be about 1 to 1.5 dB higher. The gain level will always be higher than the minimum specified gain level of 35 dB over the full operational temperature range of -55°C to +85°C. Impressive typical performance for the 50 ohm design includes 3.0dB Noise Figure, +21dBm P1dB, and 1.85:1 VSWR. DC Bias Voltage ranges from +12V to +15V with 350 mA DC current. The rugged and compact Mil Grade aluminum package supports SMA female spark plug connectors, and is designed to meet a series of Mil-STD-202 environmental test conditions including Altitude, Vibration, Humidity, and Shock.

Features

- Temperature Compensated GaAs FET Amplifier Design with Integrated Heatsink
- Frequency Range 0.5 GHz to 4 GHz
- PIN Diode Compensation Circuitry
- Small Signal Gain 39 dB typ
- Operational Temperature Range -55°C to +85°C
- Noise Figure 3 dB typ
- Output P1dB 21 dB typ
- VSWR 1.85:1 typ
- DC Voltage +12 to +15 Vdc
- DC Current 350 mA typ
- SMA Female Connectors
- Rugged Mil Grade Aluminum Package Design
- Designed to meet MIL-STD-202 environmental test conditions

Applications

- Aerospace & Defense
- Test & Measurement
- Microwave Radio Systems
- Military & Commercial Communication Systems
- Research & Development
- RF Front Ends
- SATCOM
- Wireless Communications
- Unmanned Systems

Electrical Specifications (TA = +25°C)

Description	Minimum	Typical	Maximum	Units
Frequency Range	0.5		4	GHz
Small Signal Gain	35*	39		dB
Gain Flatness			±1.75	dB
Input Power (CW)			10	dBm
Output Power at 1 dB Compression Point	20	21		dBm
Noise Figure		3	4.5	dB
Impedance (Input)		50		Ohms
Impedance (Output)		50		Ohms
Input VSWR		1.9:1	2.0:1	
Output VSWR		1.8:1	2.0:1	
Operating DC Voltage	12		15	Volts
Operating DC Current		350		mA
Operating Temperature Range	-55		85	°C

Click the following link (or enter part number in “SEARCH” on website) to obtain additional part information including price, inventory and certifications: Temperature Compensated Low Noise Amplifier, 0.5 GHz to 4 GHz, 35 dB min Gain, P1dB 21 dBm, SMA, with Heatsink PE15A5101F

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

© 2020 Pasternack Enterprises All Rights Reserved



Temperature Compensated Low Noise Amplifier, 0.5 GHz to 4 GHz, 35 dB min Gain, P1dB 21 dBm, SMA, with Heatsink

Electrical Specification Notes:
*Minimum Gain Guaranteed over -55°C to +85°C

Mechanical Specifications

Size

Length	2.756 in [70 mm]
Width	2.756 in [70 mm]
Height	1.187 in [30.149 mm]
Weight	1.2 lbs [544.31 g]
Input Connector	SMA Female
Output Connector	SMA Female

Environmental Specifications

Temperature

Operating Range	-55 to +85 deg C
Storage Range	-40 to +100 deg C
Humidity	MIL-STD-202F, Method 103B, Condition B
Shock	MIL-STD-202F, Method 213B, Condition B
Vibration	MIL-STD-202F, Method 204D, Condition B
Altitude	MIL-STD-202F, Method 105C, Condition B

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.//Excessive reflected power beyond a 3.5:1 VSWR match will damage the amplifier. For safe operation, it's highly recommended a high power isolator or attenuator be used at the output of the power amplifier.

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: Temperature Compensated Low Noise Amplifier, 0.5 GHz to 4 GHz, 35 dB min Gain, P1dB 21 dBm, SMA, with Heatsink PE15A5101F

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

© 2020 Pasternack Enterprises All Rights Reserved



Temperature Compensated Low Noise Amplifier, 0.5 GHz to 4 GHz, 35 dB min Gain, P1dB 21 dBm, SMA, with Heatsink

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.

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: Temperature Compensated Low Noise Amplifier, 0.5 GHz to 4 GHz, 35 dB min Gain, P1dB 21 dBm, SMA, with Heatsink PE15A5101F

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

© 2020 Pasternack Enterprises All Rights Reserved

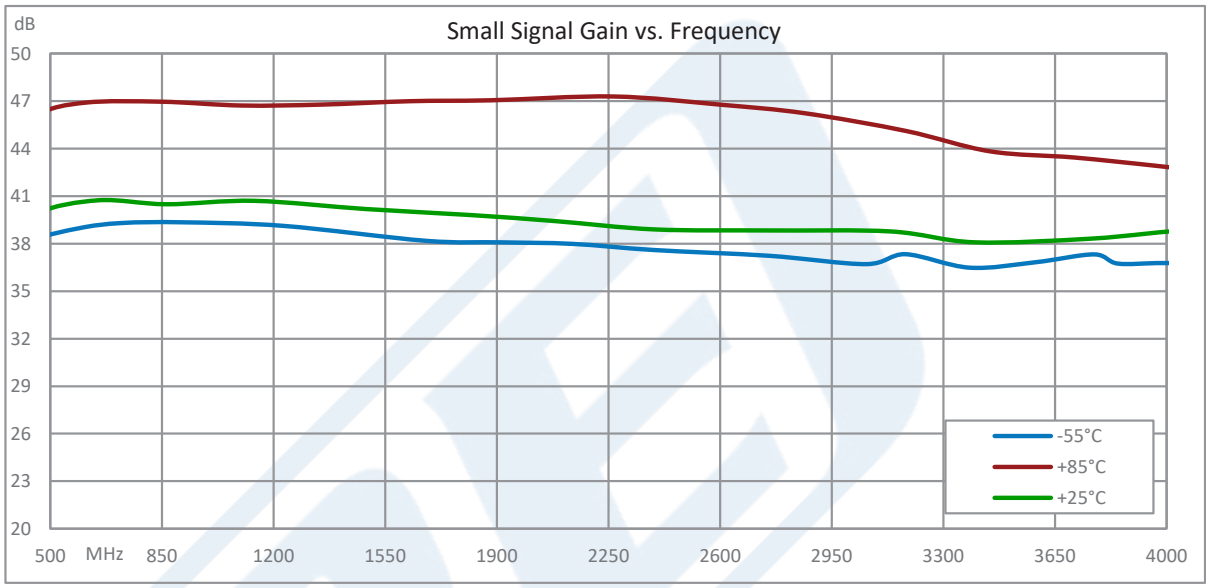
PASTERNACK
an INFINITE brand

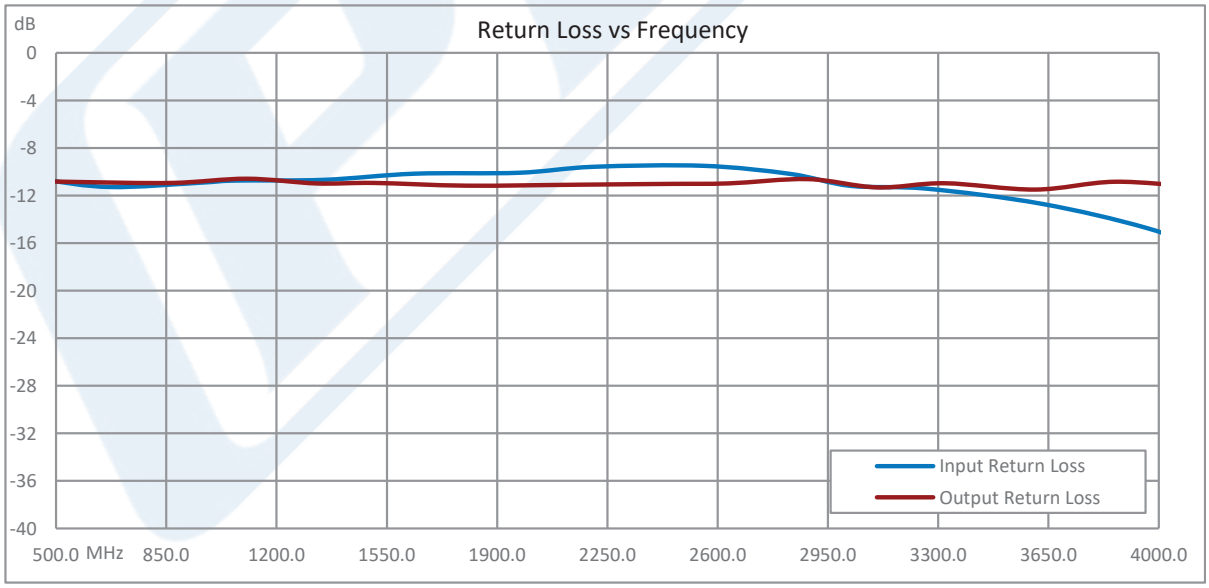


Temperature Compensated Low Noise Amplifier, 0.5 GHz to 4 GHz, 35 dB min Gain, P1dB 21 dBm, SMA, with Heatsink

TECHNICAL DATA SHEET PE15A5101F

Typical Performance Data





Click the following link (or enter part number in “SEARCH” on website) to obtain additional part information including price, inventory and certifications: Temperature Compensated Low Noise Amplifier, 0.5 GHz to 4 GHz, 35 dB min Gain, P1dB 21 dBm, SMA, with Heatsink PE15A5101F

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

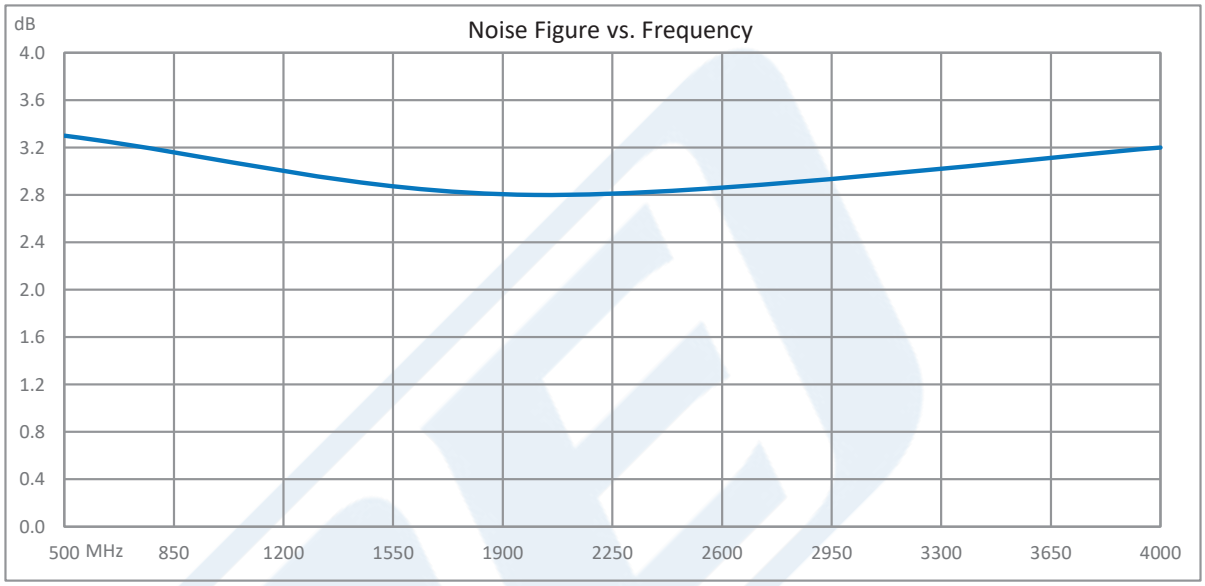
© 2020 Pasternack Enterprises All Rights Reserved

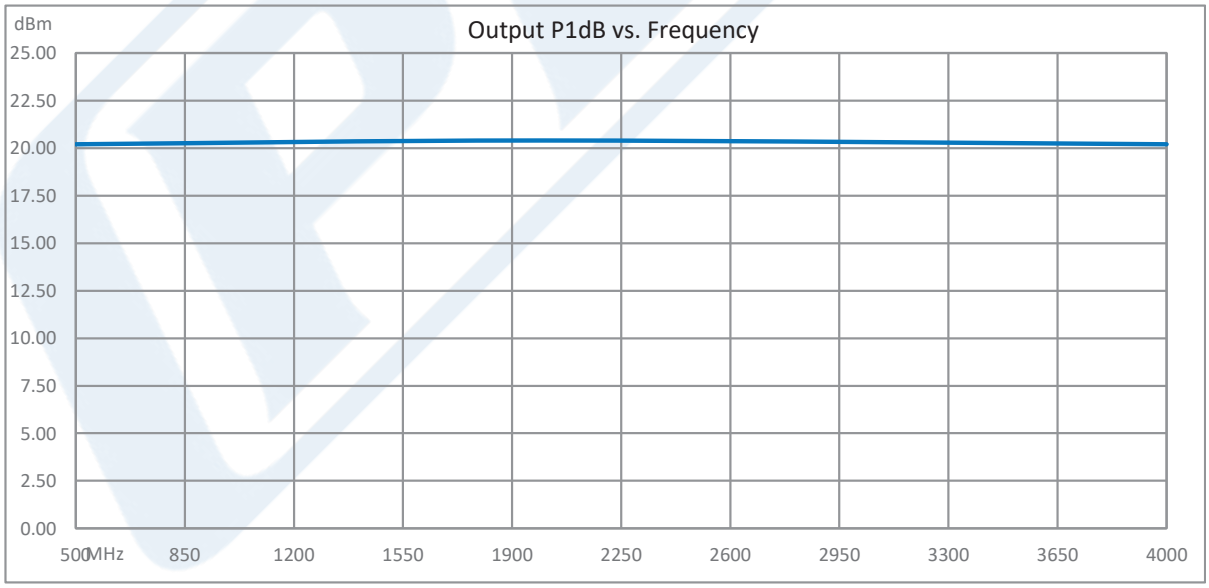
PASTERNACK
an INFINITE brand



Temperature Compensated Low Noise Amplifier, 0.5 GHz to 4 GHz, 35 dB min Gain, P1dB 21 dBm, SMA, with Heatsink

TECHNICAL DATA SHEET PE15A5101F





Click the following link (or enter part number in “SEARCH” on website) to obtain additional part information including price, inventory and certifications: Temperature Compensated Low Noise Amplifier, 0.5 GHz to 4 GHz, 35 dB min Gain, P1dB 21 dBm, SMA, with Heatsink PE15A5101F

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

© 2020 Pasternack Enterprises All Rights Reserved

PASTERNACK
an INFINITE brand



Temperature Compensated Low Noise Amplifier, 0.5 GHz to 4 GHz, 35 dB min Gain, P1dB 21 dBm, SMA, with Heatsink

TECHNICAL DATA SHEET PE15A5101F

Temperature Compensated Low Noise Amplifier, 0.5 GHz to 4 GHz, 35 dB min Gain, P1dB 21 dBm, SMA, with Heatsink 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.

Click the following link (or enter part number in “SEARCH” on website) to obtain additional part information including price, inventory and certifications: Temperature Compensated Low Noise Amplifier, 0.5 GHz to 4 GHz, 35 dB min Gain, P1dB 21 dBm, SMA, with Heatsink PE15A5101F

URL: https://www.pasternack.com/temperature-compensated-low-noise-amplifier-05-ghz-to-4-ghz-35-db-min-gain-p1db-21-dbm-sma-PE15A5101F-p.aspx

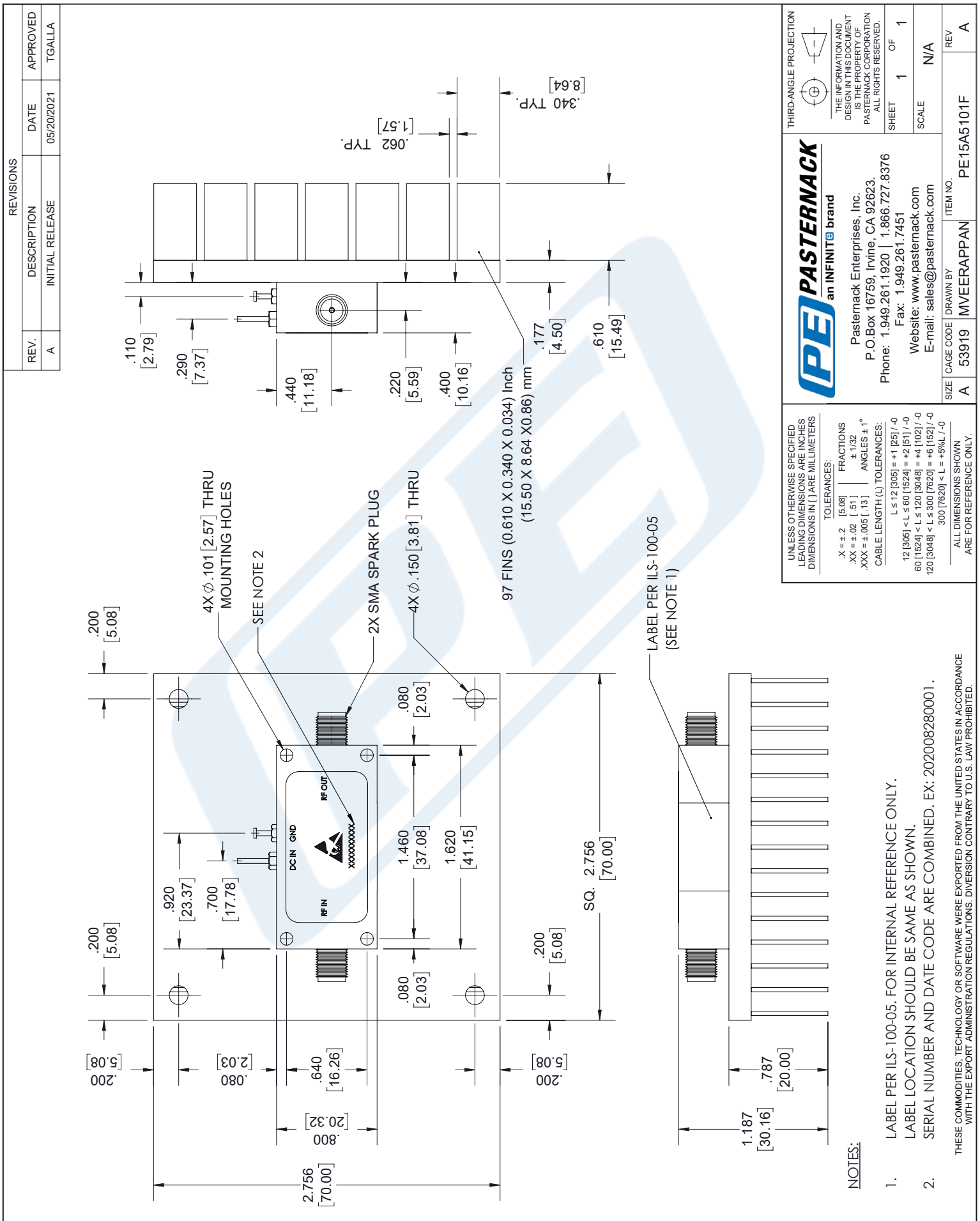
The information contained in this document is accurate to the best of our knowledge and representative of the part described herein. It may be necessary to make modifications to the part and/or the documentation of the part, in order to implement improvements. Pasternack reserves the right to make such 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.

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

© 2020 Pasternack Enterprises All Rights Reserved

PE15A5101F CAD Drawing

Temperature Compensated Low Noise Amplifier, 0.5 GHz to 4 GHz,
35 dB min Gain, P1dB 21 dBm, SMA, with Heatsink



© 2020 Pasternack Enterprises All Rights Reserved