



0.8W Psat, 40 dB Gain, 20 GHz to 47 GHz, AC Powered
Broadband GaAs Power Amplifier with Heatsink,
Bench-Top, 110/240VAC, 2.92mm

TECHNICAL DATA SHEET

PE15A5098

The PE15A5098 is an AC powered Bench-Top Power Amplifier that operates across a wideband frequency range from 20 GHz to 47 GHz. This 50 Ohm linear design utilizes GaAs semiconductor technology and exhibits impressive typical performance that includes 40 dB gain, +28 dBm P1dB, and +29 dBm Psat. Maximum RF input power (CW) is 0 dBm. The rugged MIL Grade aluminium package is finished in gray paint with 2.92mm Female connectors at the RF input and output ports on the front panel, and carrying handles on the sides. The rear panel supports an IEC 320-C14 AC power socket (IEC 320-C13 plug required), a fuse compartment, an On/Off switch, a dedicated package common ground connector, and an indicator light. The module supports a wide operating AC voltage range from 110VAC to 240VAC with 70 mA supply current. Designed for high reliability, the package supports an integrated heatsink and cooling fan and is suitable for outdoor operation (moisture exposure dependent on temperature and humidity conditions). The amplifier has an operational temperature range from -40°C to +85°C and meets a series of environmental test conditions including Altitude, Vibration, Humidity, and Shock.

Features

- AC Powered Bench-Top Power Amplifier
- 20 GHz to 47 GHz
- Highly Linear GaAs Semiconductor Design
- Output Psat +29 dBm typ
- Output P1dB +28 dBm typ
- Small Signal Gain 40 dB typ
- VSWR 1.7:1 typ
- AC Supply 110-240VAC @ 70 mA
- Max RF Input Power (CW) 0 dBm
- 50 Ohm Design
- Integrated Heatsink and Cooling Fan
- RF Input and Output 2.92mm Female Connectors
- On/Off Switch with Indicator Light
- Operational Temperature Range -40°C to +85°C
- Rugged MIL Grade Aluminum Package Design with Gray Paint finish
- Guaranteed Environmental Test Conditions Altitude, Vibration, Humidity, Shock

Applications

- Test & Measurement
- 5G Communication
- Wireless Infrastructure
- Military & Commercial Communications
- Military Electronic Systems
- Research & Development
- Microwave Radio
- VSAT
- Fiber Optics

Electrical Specifications (TA = +25°C, AC Current = 70 mA)

Description	Minimum	Typical	Maximum	Units
Frequency Range	20		47	GHz
Small Signal Gain	28	40		dB
Gain Flatness		±3		dB
Gain Variation Over Temp.		±83		dB
Input Power (CW)			+0	dBm
Pout at Sat.		+29		dBm
Output Power at 1 dB Compression Point	+24	+28		dBm
Reverse Isolation		60		dB
Impedance (Input)		50		Ohms
Impedance (Output)		50		Ohms
Input VSWR		1.7:1		
Supply Current (AC 110-220V)		70		mA
Operating Temperature Range	-40		+85	°C

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [0.8W Psat, 40 dB Gain, 20 GHz to 47 GHz, AC Powered Broadband GaAs Power Amplifier with Heatsink, Bench-Top, 110/240VAC, 2.92mm PE15A5098](#)



0.8W Psat, 40 dB Gain, 20 GHz to 47 GHz, AC Powered
Broadband GaAs Power Amplifier with Heatsink,
Bench-Top, 110/240VAC, 2.92mm

TECHNICAL DATA SHEET

PE15A5098

Performance by Frequency

Biassing Up Procedure

Step 1 Connect input and output with 50 Ohm source and load with in band return loss better than 10dB.

Step 2 Connect AC Plug

Step 3 Flip switch to "ON" position

Power OFF Procedure

Step 1 Flip switch to "OFF" position

Step 2 Remove AC Plug

Step 3 Remove RF Connection

Absolute Maximum Rating

Parameter	Rating
Operating Voltage	110 to 240V AC
RF Input Power (RFIN)*	0dBm

*Note: Maximum RF input power is defined to protect the amplifier from damage. Input power may be increased at the users own risk to achieve the full output power of the amplifier. Please reference gain and power curves and monitor the temperature

Mechanical Specifications

Size	
Length	10 in [254 mm]
Width	8.27 in [210.06 mm]
Height	5.14 in [130.56 mm]
Weight	12 lbs [5.44 kg]
Input Connector	2.92mm Female
Output Connector	2.92mm Female

Environmental Specifications

Temperature	
Operating Range	-40 to +85 deg C
Storage Range	-50 to +105 deg C
Humidity	100% RH at 35°C, 95% RH at 40°C
Shock	20G for 11 msec half sinewave, 3 axis both directions

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [0.8W Psat, 40 dB Gain, 20 GHz to 47 GHz, AC Powered Broadband GaAs Power Amplifier with Heatsink, Bench-Top, 110/240VAC, 2.92mm PE15A5098](#)



0.8W Psat, 40 dB Gain, 20 GHz to 47 GHz, AC Powered
Broadband GaAs Power Amplifier with Heatsink,
Bench-Top, 110/240VAC, 2.92mm

TECHNICAL DATA SHEET

PE15A5098

Vibration
Altitude

25g RMA (15 degrees 2KHz) endurance, 1 hour per axis
30,000 ft

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

Plotted and Other Data

Notes:

- Values at +25 °C, sea level

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [0.8W Psat, 40 dB Gain, 20 GHz to 47 GHz, AC Powered Broadband GaAs Power Amplifier with Heatsink, Bench-Top, 110/240VAC, 2.92mm PE15A5098](#)



0.8W Psat, 40 dB Gain, 20 GHz to 47 GHz, AC Powered
Broadband GaAs Power Amplifier with Heatsink,
Bench-Top, 110/240VAC, 2.92mm

TECHNICAL DATA SHEET

PE15A5098

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: [0.8W Psat, 40 dB Gain, 20 GHz to 47 GHz, AC Powered Broadband GaAs Power Amplifier with Heatsink, Bench-Top, 110/240VAC, 2.92mm PE15A5098](#)



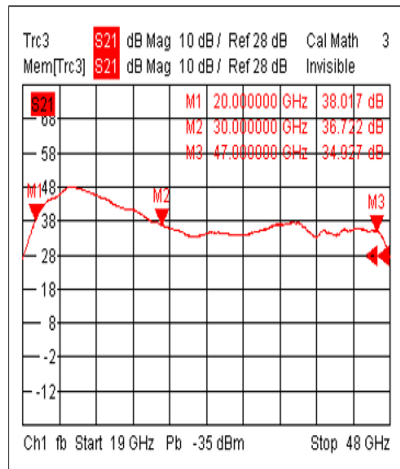
0.8W Psat, 40 dB Gain, 20 GHz to 47 GHz, AC Powered
Broadband GaAs Power Amplifier with Heatsink,
Bench-Top, 110/240VAC, 2.92mm

TECHNICAL DATA SHEET

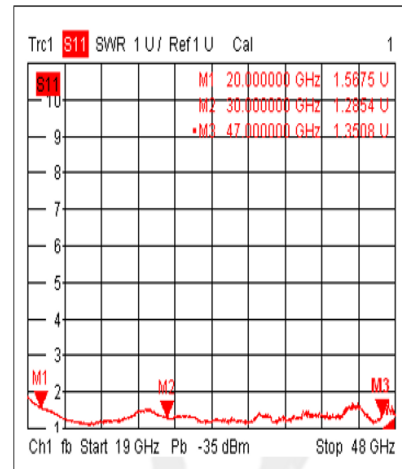
PE15A5098

Typical Performance Data

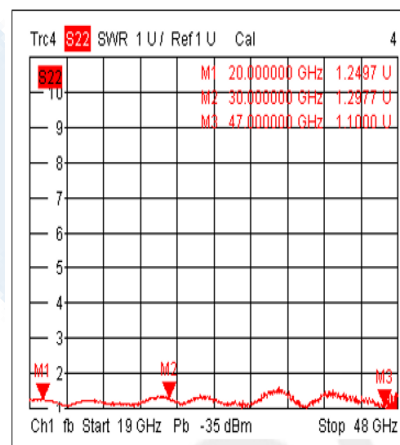
Gain



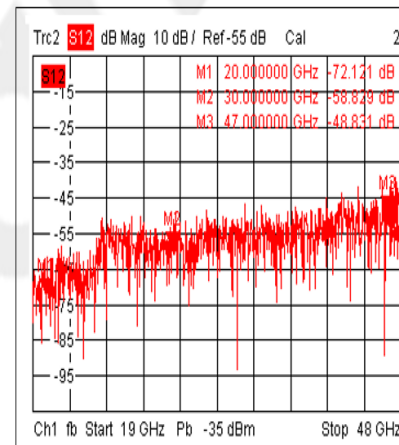
Input VSWR



Output VSWR



Isolation



Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [0.8W Psat, 40 dB Gain, 20 GHz to 47 GHz, AC Powered Broadband GaAs Power Amplifier with Heatsink, Bench-Top, 110/240VAC, 2.92mm PE15A5098](#)

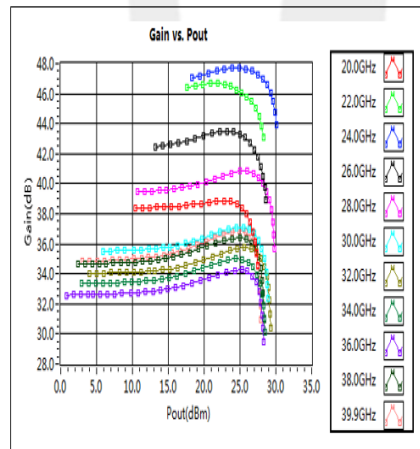


0.8W Psat, 40 dB Gain, 20 GHz to 47 GHz, AC Powered
Broadband GaAs Power Amplifier with Heatsink,
Bench-Top, 110/240VAC, 2.92mm

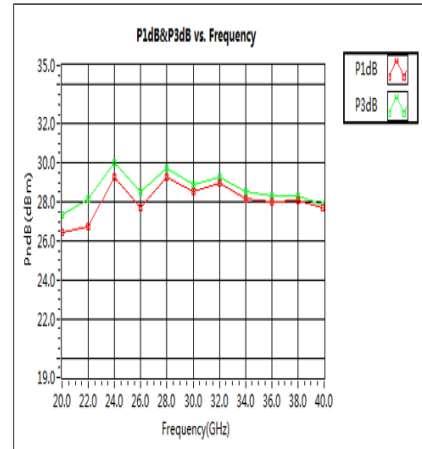
TECHNICAL DATA SHEET

PE15A5098

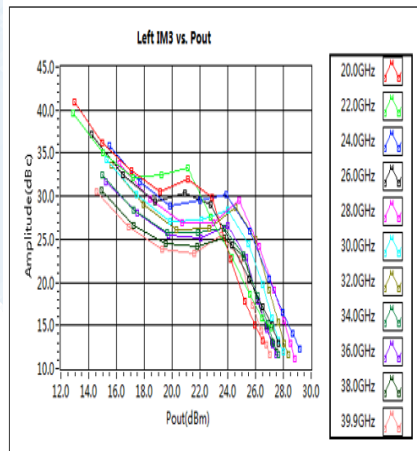
Gain vs. Output Power



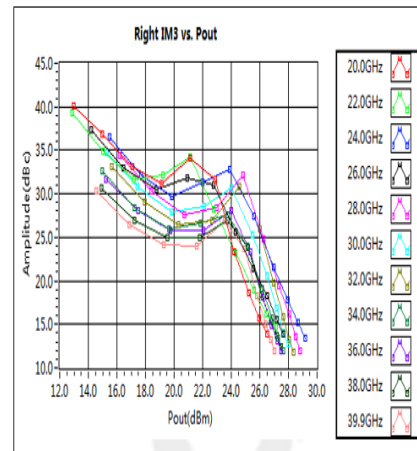
P1dB & P3dB vs. Frequency



Left IM3 vs. Pout



Right IM3 vs. Pout



Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [0.8W Psat, 40 dB Gain, 20 GHz to 47 GHz, AC Powered Broadband GaAs Power Amplifier with Heatsink, Bench-Top, 110/240VAC, 2.92mm PE15A5098](#)

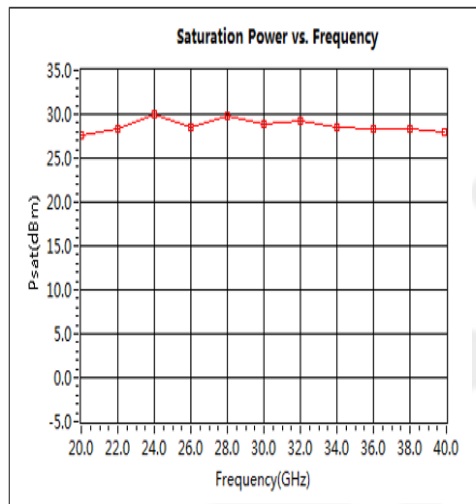


0.8W Psat, 40 dB Gain, 20 GHz to 47 GHz, AC Powered
Broadband GaAs Power Amplifier with Heatsink,
Bench-Top, 110/240VAC, 2.92mm

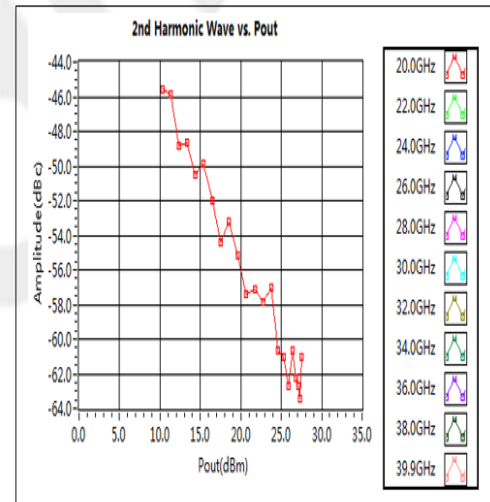
TECHNICAL DATA SHEET

PE15A5098

Saturated Power vs. Frequency



2nd Harmonic Wave Output Power



0.8W Psat, 40 dB Gain, 20 GHz to 47 GHz, AC Powered Broadband GaAs Power Amplifier with Heatsink, Bench-Top, 110/240VAC, 2.92mm 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: [0.8W Psat, 40 dB Gain, 20 GHz to 47 GHz, AC Powered Broadband GaAs Power Amplifier with Heatsink, Bench-Top, 110/240VAC, 2.92mm PE15A5098](https://www.pasternack.com/40-db-gain-47-ghz-medium-power-high-gain-amplifier-2.92mm-pe15a5098-p.aspx)

URL: <https://www.pasternack.com/40-db-gain-47-ghz-medium-power-high-gain-amplifier-2.92mm-pe15a5098-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.

PE15A5098 CAD Drawing

0.8W Psat, 40 dB Gain, 20 GHz to 47 GHz, AC Powered Broadband GaAs
Power Amplifier with Heatsink, Bench-Top, 110/240VAC, 2.92mm

