1. Key Features

- Operating Frequency: 0.5–3GHz
- Saturated Output Power: 100W (CW)
- Gain Reduction Adjustment: ⩾20dB
- Class AB Operation
- Forced Air Cooling
- Supports Continuous Wave (CW) & Pulse
- Over-Temperature, Over-Current Protection with Alarm Indication
- Real-time Display of Drain Current, Module Temperature and Gain Setting
- Bridge-Type Power Combining Technology Delivering Superior Output VSWR Tolerance



P2250A-PDS-F01

Figure 1: Product Outline

2. Applications

- Industrial Testing
- Reliability Testing
- Active Load-Pull System
- RF Power Stress Testing
- Laboratory Test Instrument
- Antenna and Component Testing
- Radiated and Conducted EMC Testing

3. Product Introduction

This datasheet describes the P2250A solid-state power amplifier, a broadband unit covering 0.5–3GHz with a saturated output power of 100W. The P2250A adopts a hybrid architecture of GaAs driver devices and GaN final-stage power transistors. It delivers outstanding high-temperature tolerance, high reliability and high power efficiency, and supports continuous wave (CW), pulse waveforms and various broadband modulated signals. The unit utilizes bridge-type power combining technology to achieve superior output VSWR performance.

Built-in over-temperature and over-current protection circuits are integrated inside the unit. If an over-temperature or over-current fault is detected, the internal power supply will automatically shut down, with corresponding alarm messages displayed on the front panel screen. The front-panel gain knob provides a gain adjustment range of over 20dB. The unit defaults to maximum gain after power-on. The front panel screen continuously monitors the drain current and module temperature of the final-stage amplifier and displays the real-time gain setting. Equipped with forced-air cooling, the unit maintains stable full-power continuous operation.

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4. Specifications

Table 1: Electrical Specifications*

Parameter	Min.	Typ.	Max.	Unit
Operating Frequency	0.5	-	3	GHz
Small Signal Gain	-	55	-	dB
Gain Reduction Adjustment	20	-	-	dB
Gain Flatness	-	-	±3	dB
Output Power @P1dB	-	47	-	dBm
Output Power @P3dB	-	49.5	-	dBm
Saturated Output Power (P_{SAT})	-	50	-	dBm
Saturated Output Power (P_{SAT})	-	100	-	W
Input Power @P_{SAT}	-	-	2	dBm
Input Impedance	-	50	-	Ohm
Input VSWR (50Ω)	-	-	2:1	-
Output Impedance	-	50	-	Ohm
Output VSWR (50Ω)	-	-	2:1	-
Harmonic Distortion @P1dB	-	-	-12	dBc
Spurious @P1dB	-	-70	-	dBc
AC Supply Voltage (50Hz)	-	220	-	V
Power Consumption	-	-	400	W
Operating Temperature	0	-	40	°C
Storage Temperature	-40	-	70	°C

* Test results under CW operation

Table 2: Mechanical Specifications

Parameter	Nominal	Unit
Weight	14	kg
Dimensions (incl. handles and stands) (W×H×D)	485.0×104.9×651.0	mm
Dimensions, 2U for 19” Rack	432.0×88.9×580.0	mm
Cooling	Forced air	-

5. Connector Interfaces

Table 3: Front Panel Interfaces

Function	Type	Notice
RF Input	N, female (50Ω)	-
RF Output	N, female (50Ω)	Do not operate with the RF output unloaded
Gain Knob	Mechanical knob	Short press to enable gain adjustment; Short press again to lock the gain value
Power	Mechanical button	Power on; Power off

Table 4: Rear Panel Interfaces

Function	Type	Notice
GPIB	24-Pin	-
Ethernet	RJ-45	-
USB	2×Type-A, 1×Type-C	-
AC	220V, 50Hz	-
J30J	15-Pin	-
GND	Ground terminal	Ground connection required before power-on

6. Typical Performance

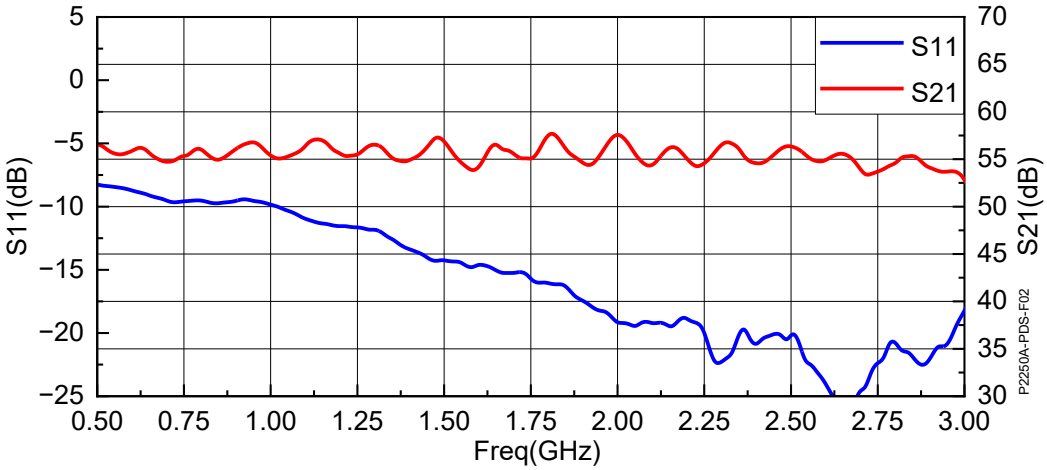


Figure 2. S21 and S11

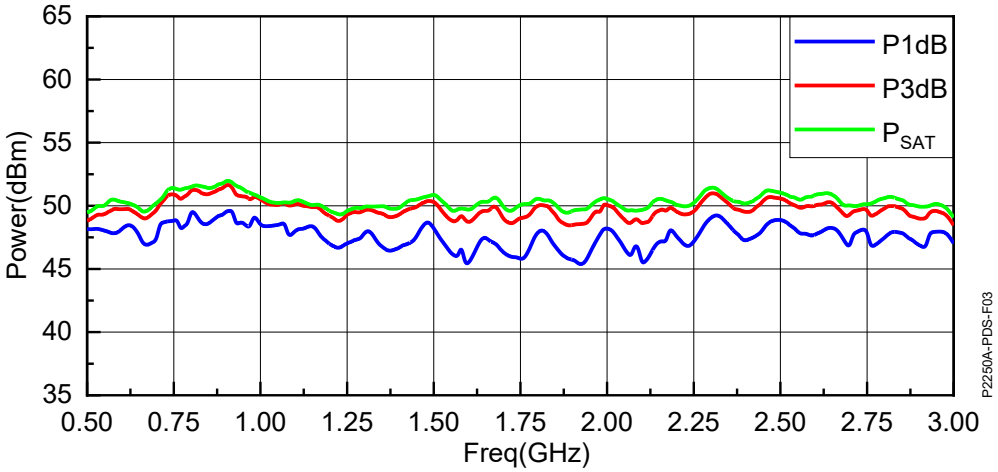


Figure 3. P1dB, P3dB, and P_{SAT}

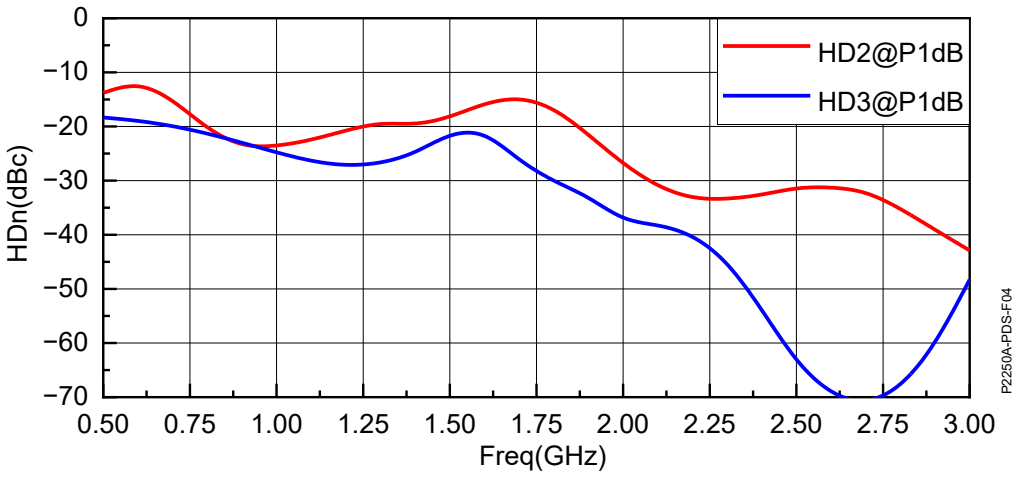


Figure 4. Harmonic Distortion @P1dB

Notes: test conditions, AC220V, 50ohm matching device, 25°C

7. Dimensions

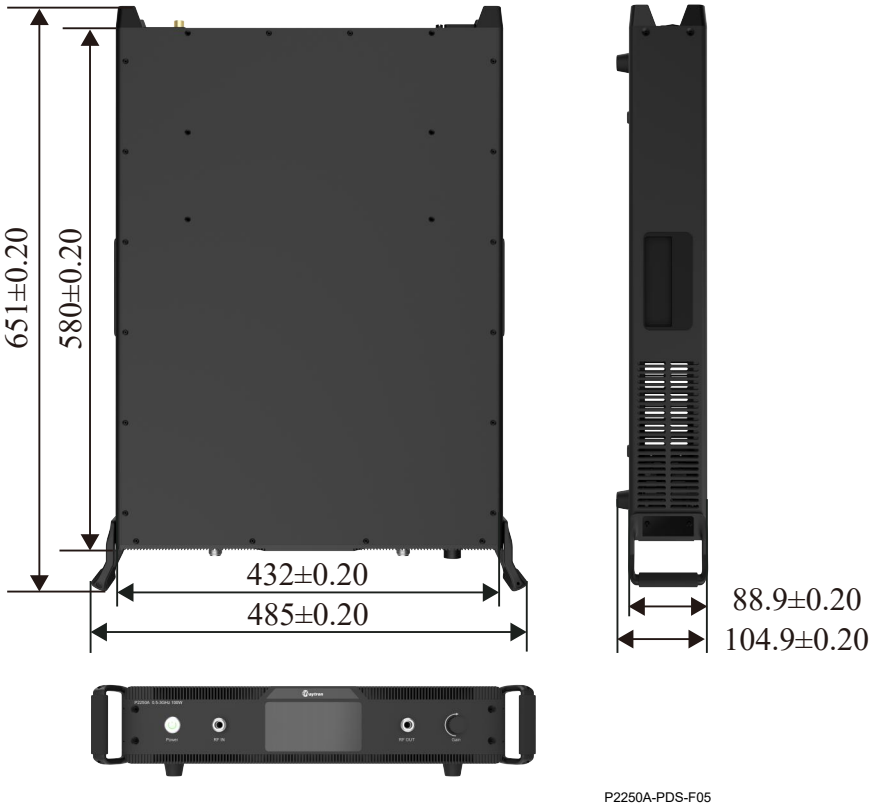


Figure 5. Outline Dimensions

8. Contact Information

For the latest specifications, additional product information, technical support and sales support, please contact:

- **Email:** RF.support@raytrontek.com
- **Web:** www.raytrontek.com

9. Disclaimer

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