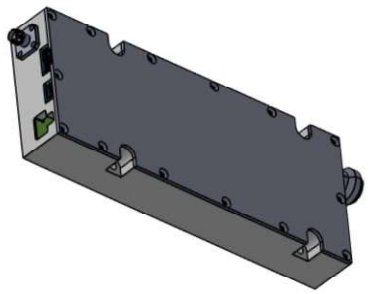
LPA Concepts

LINEAR POWER AMPLIFIER	LPA-AH11-250AB-2400M-2500M-48-00
P3200	

FEATURES

- ♦ 2400-2500MHz Gain 55dB
- ♦ Class AB; Psat=300W
- ♦ 48V / 11A at 250W
- ♦ Fast On/Off (<1µs)
- ♦ Internal ALC
- ♦ Output VSWR protection
- ♦ Overcurrent, Over temperature protection
- ♦ Visual status with LEDs
- ♦ USB monitoring & controls
- ♦ RoHS compliant

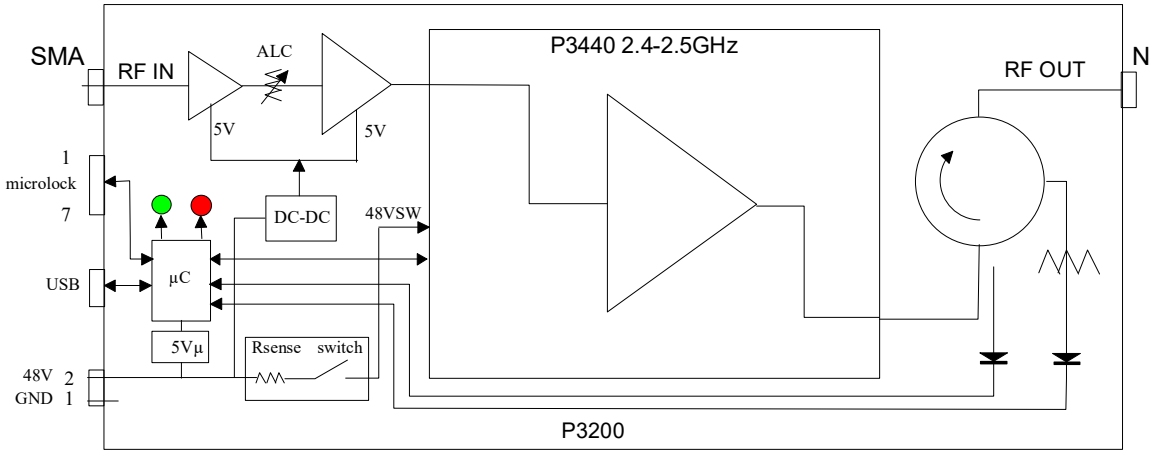
PACKAGE



APPLICATIONS

- ♦ Medical
- ♦ Jammers

BLOCK DIAGRAM



Electrical characteristics: 50 ohms; +48V; -25°C to +80°C (1, 2)

Ref	Parameter	Conditions	Note	Min	Typ	Max	Units
1	Bandwidth			2400		2500	MHz
2	Gain small signal	2450 MHz; 50°C			55		dB
3	Gain variation vs frequency	2400-2500 MHz				1.5	dBpp
4	Power gain	250W output	3		54		dB
5	P saturation	2450MHz	3		300		W
6	Power gain vs frequency	250W output	3			1.5	dBpp
7	Input return loss	50 ohms				-15	dB
8	Output return loss	50 ohms				-15	dB
9	Fast On/Off rise time	FOO : 3V to 0V				1	µs
10	Fast On/Off fall time	FOO : 0V to 3V				1	µs
11	ALC rise time					300	µs
12	ALC hold time					3	ms
13	ALC dynamic	max power		10			dB
14	Second harmonic	f1=2450MHz; 250W output			-50		dBc
15	spurious					-30	dBm
16	Shut down level	CW	4		250		W
17	Current consumption	48V ; idle			0.45		A
18	Current consumption	48V ; 100W			6.6		A
19	Current consumption	48V ; 250W			11.0	12.0	A

1. Unless otherwise specified
2. Hot spot temperature given by temp sensor close to final transistor
3. 1ms pulse every 10ms
4. Regulates the current to 11A during 10ms (cumulated) when shut down level is exceeded before effective shut down

Maximum ratings

Ref	Parameter	Conditions	Note	Min	Nom	Max	Units
1	Operating temperature	Hot spot temperature	5	-25°C		+80	°C
2	Supply voltage			46	48	50	V
3	Voltage on Alarm pin					10	V
4	Input CW power	In band	7			+3	dBm
5	Maximum reverse power	>2s	6			250	W
6	Maximum reverse power	continuous				40	W

5. Shuts down at 80°C resume operation at 70°C
6. Will automatically shut down after 2s
7. Will shut down at I>11A (250W CW)

Protections

Ref	Parameter	Description	Remarks
1	Overvoltage	Shut down if supply > 50 V	
2	Under voltage	Shut down if supply < 40 V	
3	Overcurrent	Shut down if current > 11 A	Output power > +54dBm CW
4	Temperature	Shut down if temp > 80°C	Auto recovery (at 70°C)
5	Max reverse power	Shut down if Prev > 40W	Shuts down after 2s for Pout>40W

Specifications and information are subject to change without notice

Analog monitoring & controls

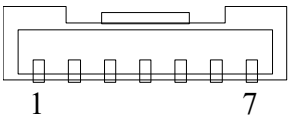
Ref	Characteristic	Description	Remarks
1	Temperature	Analog output	-40°C to +100°C (TMP20)
2	Alarm	Open drain (0V on alarm)	Multiplexed with analog temp
3	PA On/Off (PAOO)	Amplifier Off when PAOO > 2V Amplifier On when PAOO < 0.5V	48V switches off Command 0-3V
4	Fast On/Off (FOO)	RF Off when FOO > 2V RF On when FOO < 0.5V	48V On but bias Off Command 0-3V

USB Monitoring & controls (7)

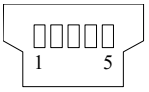
Ref	Characteristic	Description	Remarks
1	Temperature	Hot spot temperature	Digital sensor
2	Supply voltage	Voltage applied by user	
3	Current	Through sense resistor	
4	ON/OFF	Shut down amplifier	
5	Alarm	Provide state of amplifier	

8. Use Interface program PRSI25001V0.2.

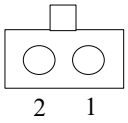
Communication DC Connector Molex Microlock Plus 505567 0771

Pin description			PINOUT
Pin 1 : NC			7 circuits Pitch 1.25mm
Pin 2 : PA ONOff		Mate with 505565 0701 505431 crimp terminals AWG 26 wire	
Pin 3 : ALA			
Pin 4 : Temperature			
Pin 5 : Current sense			
Pin 6 : forward power			
Pin 7 : Gnd			

Communication USB 54819-0589

Pin description			PINOUT
Pin 1 : Vbus			Mini USB b
Pin 2 : Data-			
Pin 3 : Data+			
Pin 4 : NC			
Pin 5 : Gnd			

Power Supply DC Connector Molex Minifit Jr 172648-0102

Pin description			PINOUT
Pin 2 : Supply +48V		Mate with 39-01-4020 with 45750-3211 inserts and AWG16 wires	2ckts 4.2mm pitch
Pin 1 : Gnd			

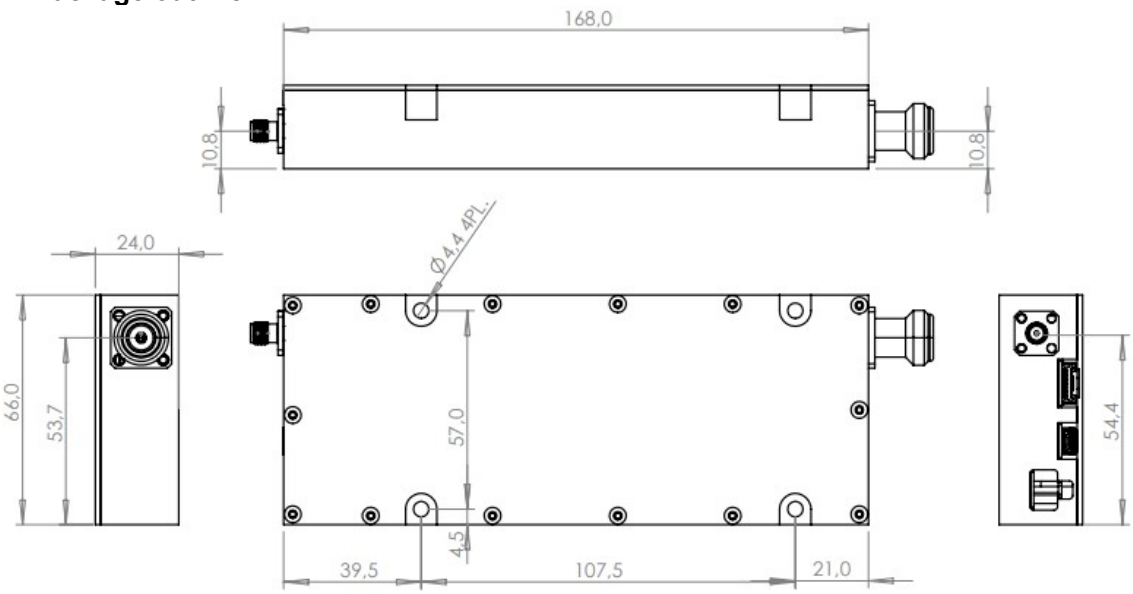
LED significations

LED 1 (green)	LED 2 (red/orange)	Signification
OFF	OFF	Power supply not applied
ON	OFF	Amplifier ON
Blinking	OFF	Amplifier Muted by operator
ON	Orange	Temperature warning, amplifier ON
OFF	Red	Amplifier OFF (Under voltage, over voltage, over temp.…)

Mechanical characteristics

Ref	characteristic	description	remarks
1	Housing dimensions	168mm x 66mm x 24mm	
2	Housing cover finish	Electroless nickel	
3	Mounting	4 M4 screws	It is recommended to use a thermal interface material under housing
4	Input RF connectors	SMA	female
5	Output RF connector	N	female
5	DC supply connector	Molex 172648-0102	Male type
6	DC controls connector	Molex 505567-0771	Male type
7	USB connectors	Mini USB B	
8	Weight	460 grams	

Package outline:



Specifications and information are subject to change without notice

Thermal information

Ref	Parameter	temperature	Condition	Note
1	Temp sensor reading		Hot spot close to final transistor	
2	Housing temperature at 250W CW output	65°C (Shut down condition)	Temp sensor = 80°C (Shut down condition)	8

9. Housing attached to heatsink with thermal interface material

Part numbering:

LPA-AH11-250AB-2400M-2500M-48-00

Housing

Peak power (W)

Class of operation	
AA	Class A
AB	Class AB
DO	Doherty

Frequency band lower edge

Frequency band upper edge

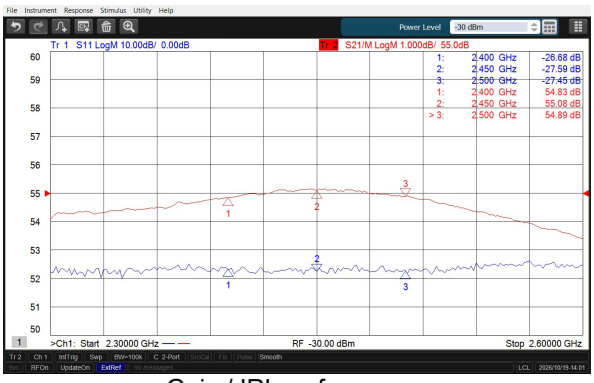
Supply Voltage	
28	28V Supply
48	48V Supply

Other options

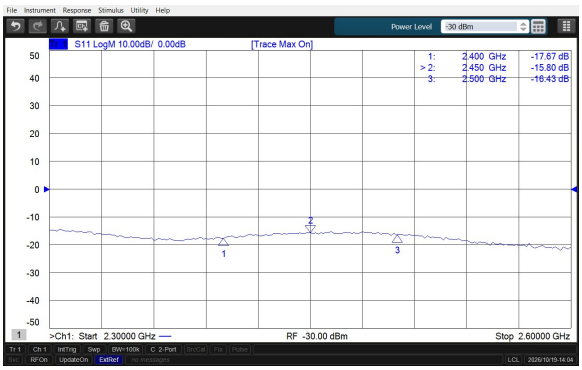
Accessories:

Ref	LPA Code	Document number	Title	Date
1	P330	SPSD26024-0	Heatsink for AH11	
2	P350	SPSD26023-0	AH11 cable and interface board	
3	USB Cable		USB to mini USB B	

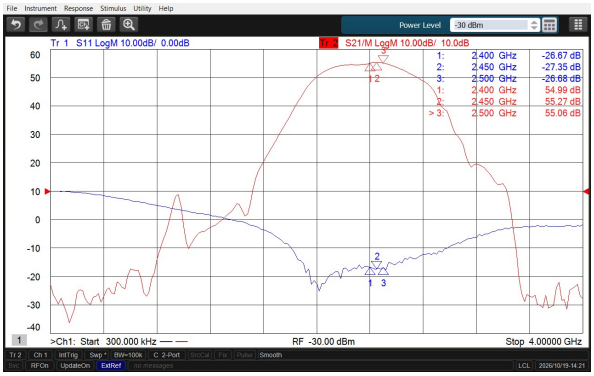
TYPICAL PERFORMANCE



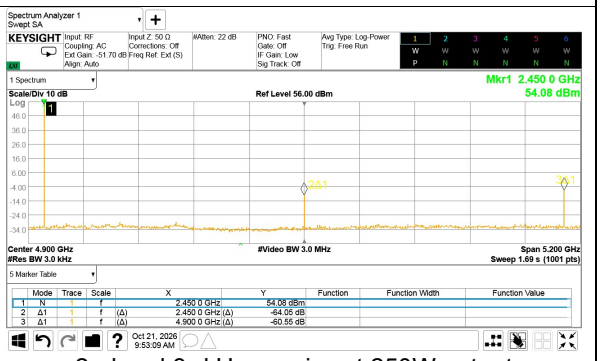
Gain / IRL vs frequency



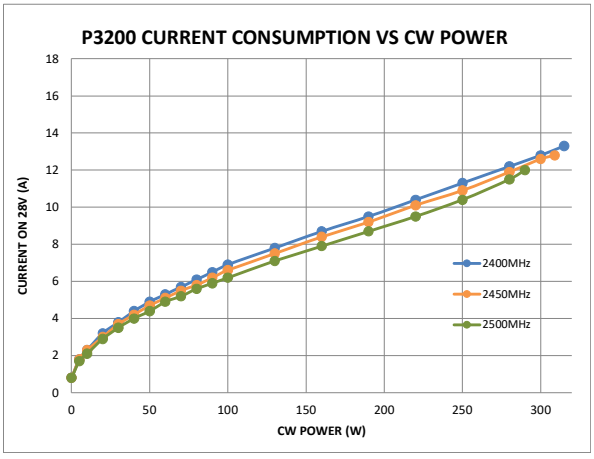
Output return loss vs frequency



Wideband response (0-4GHz)



2nd and 3rd Harmonics at 250W output

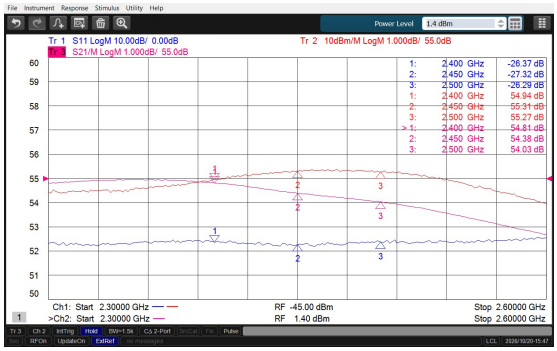


Current consumption on 48V vs CW power

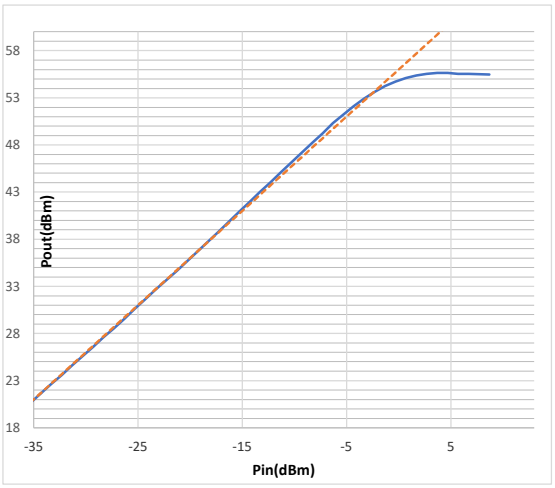
Shutdown current and CW power vs frequency

Specifications and information are subject to change without notice

TYPICAL PERFORMANCE (continued)

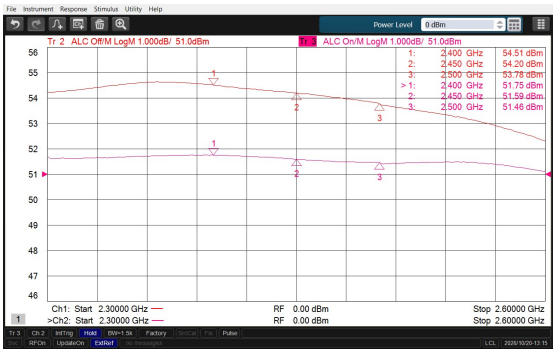


Gain compression @319Woutput
pulse width : 1ms, pulse period : 10ms

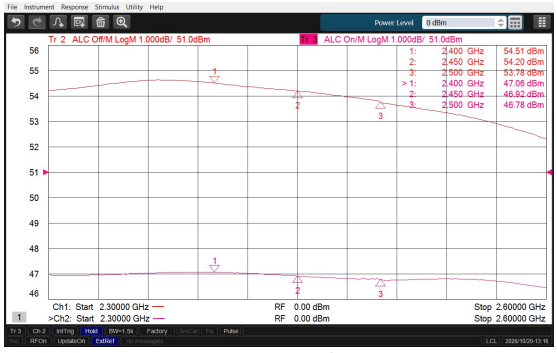


P1dB (pulse width : 1ms, pulse period : 10ms)

Gain vs temperature



Output power vs frequency
ALC level set at 52dBm, Pout=51.6dBm
(54dBm with ALC Off)

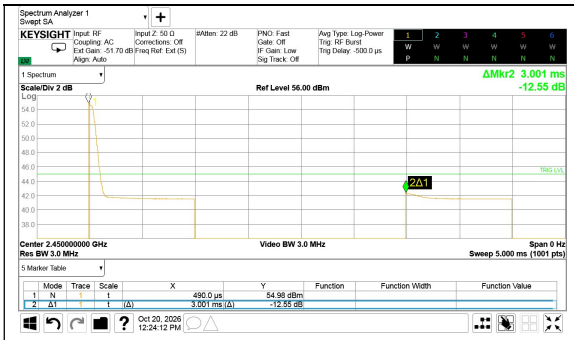


Output power vs frequency
ALC level set at 47dBm, Pout=46.9dBm
(54dBm with ALC Off)

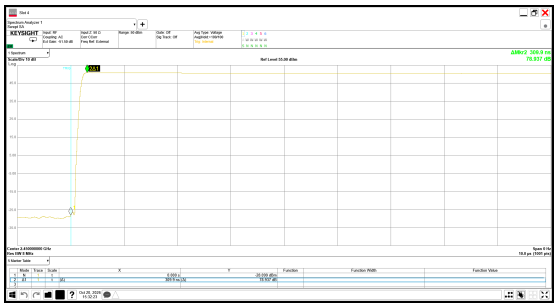


ALC rise time on the first pulse
ALC level set at 42dBm (Pout with ALC Off : 55dBm)
Pulse width : 1ms, pulse period : 3ms

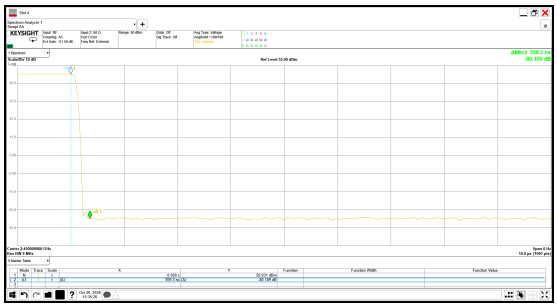
TYPICAL PERFORMANCE (continued)



ALC hold time
ALC level set at 42dBm (Pout with ALC Off : 55dBm)
Pulse width : 1ms, pulse period : 3ms



FOO rise time : 310ns



FOO fall time : 360ns