

Description

Thorlabs' BOA1310S Booster Optical Amplifier (BOA) is designed to amplify polarized optical signals around 1310 nm. The semiconductor device is housed in a standard 14-pin butterfly package with FC/APC connectors. Single mode fiber is used on both input and output sides. An integrated TEC and thermistor provide temperature control to stabilize the gain and optical spectrum.

Specifications

CW; $T_{CHIP} = 25\text{ }^{\circ}\text{C}$; $T_{CASE} = 0 - 70\text{ }^{\circ}\text{C}$

BOA1310S Specifications				
	Symbol	Min	Typical	Max
Center Wavelength ^a	λ_C	1275 nm	1290 nm	1305 nm
Operating Current	I_{OP}	-	900 mA	1000 mA
Optical 3 dB Bandwidth	BW	75 nm	82 nm	-
Small Signal Gain @ $P_{IN} = -20\text{ dBm}^{b,c}$	G	28.5 dB	32 dB	-
Saturated Output Power (@ -3 dB) ^{b,c}	P_{SAT}	20 dBm	20.5 dBm	-
Gain Ripple (RMS) ^b	δG	-	0.12 dB	0.35 dB
Noise Figure ^{b,c}	NF	-	7.0 dB	9.5 dB
Forward Voltage ^b	V_F	-	1.5 V	2.0 V
TEC Operation (Typical/Max @ $T_{CASE} = 25\text{ }^{\circ}\text{C} / 70\text{ }^{\circ}\text{C}$)				
TEC Current	I_{TEC}	-	0.5 A	1.5 A
TEC Voltage	V_{TEC}	-	0.7 V	4.0 V
Thermistor Resistance	R_{TH}	-	10 k Ω	-

a. This is the center wavelength of the amplified spontaneous emission (ASE) and is not necessarily the operating wavelength. An operating wavelength of 1312 nm was selected for testing to yield the specified saturated output power (P_{SAT}).

b. At I_{OP} .

c. At 1312 nm

BOA1310S Absolute Maximum Ratings ^a			
	Symbol	Min	Max
Operating Current	I_{OP}	-	1000 mA
Optical Output Power, CW	P_{OUT}	-	250 mW
Chip Temperature (TEC)	T_{CHIP}	10 $^{\circ}\text{C}$	30 $^{\circ}\text{C}$
Case Temperature	T_{CASE}	0 $^{\circ}\text{C}$	70 $^{\circ}\text{C}$

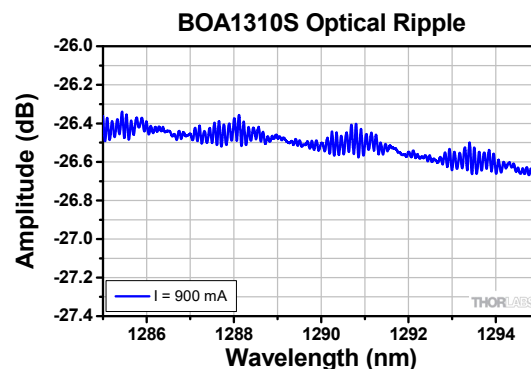
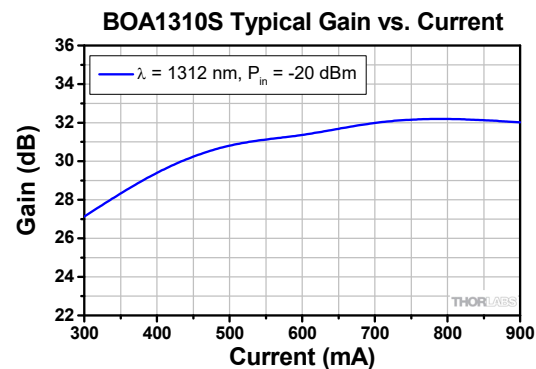
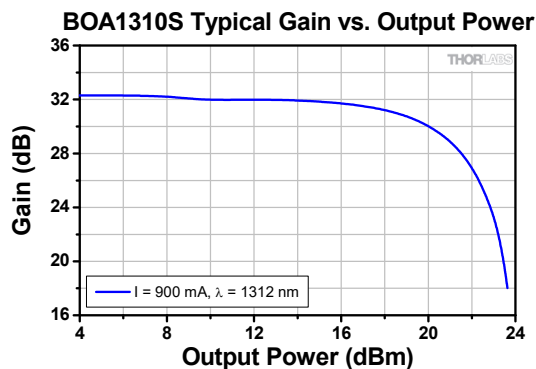
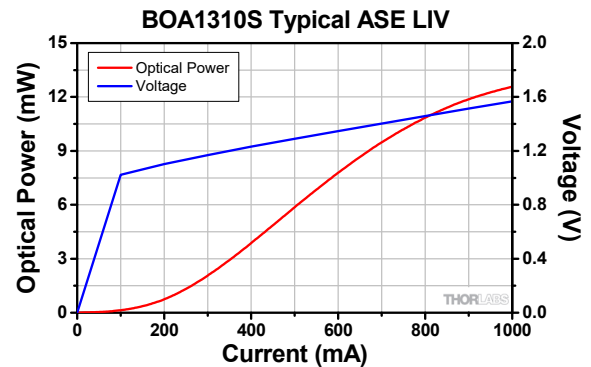
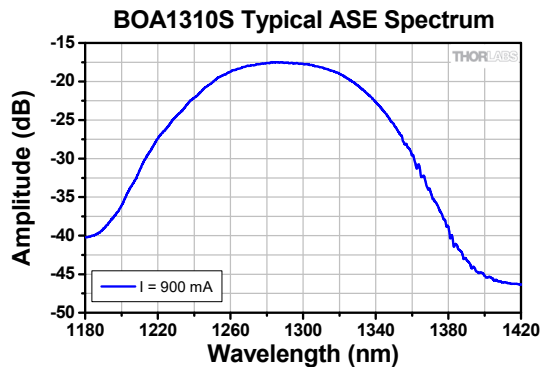
a. Absolute maximum rating specifications should never be exceeded. Operating at or beyond these conditions can permanently damage the amplifier.



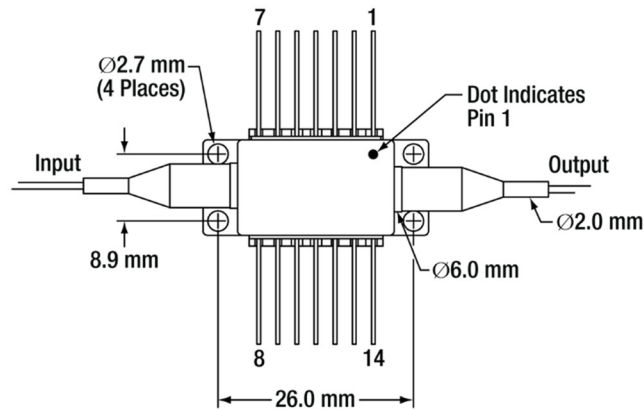
Fiber Specifications	
	Value
Fiber Type	SMF28e
Fiber Jacket Diameter	Ø900 µm
Fiber Coating Diameter	Ø245 µm
Fiber Cladding Diameter	Ø125 µm
Mode Field Diameter ^a	9.2 ± 0.4 µm at 1310 nm 10.4 ± 0.5 µm at 1550 nm
Numeric Aperture	0.14
Fiber Pigtail Length	1.5 m
Connector	FC/APC, 2.0 mm Narrow Key

a. Mode Field Diameter is specified as a nominal value.

Performance Plots



Drawings



Pin Identification

- | | |
|---------------|-----------------|
| 1. TEC + | 14. TEC - |
| 2. Thermistor | 13. Ground |
| 3. Not Used | 12. Not Used |
| 4. Not Used | 11. Dev Cathode |
| 5. Thermistor | 10. Dev Anode |
| 6. Not Used | 9. Not Used |
| 7. Not Used | 8. Not Used |

Recommended mounting torque
is 10 - 20 oz-in (0.07 - 0.14 N-m)

