Innolume GmbH
Konrad-Adenauer-Allee 11
44263 Dortmund, Germany

Specification

BOA1130040YY950MXXXX

Fiber Coupled Booster Semiconductor Optical Amplifier



Features:

- High output power 950mW @ 1130nm
- High saturation output power (25dBm)
- Proprietary anti-reflection coating technology enabling high reliability
- Polarization maintaining PM980 fiber or HI1060 fiber
- 900um loose tube on fiber (optional)

Applications:

- Neutral-atom quantum computing and optical clocks
- Booster amplifier for tunable sources
- Trapped-ion systems
- Frequency doubling
- Swept sources, tunable lasers, OCT

Recommended Operating Conditions

@ CW, Tcase=25°C

Parameter	Min.	Typ.	Max.	Unit
Chip Temperature	20	25	40	°C
Forward Current			2500	mA
Output Power in Amplification Mode			950	mW
Input Optical Power	-25	10	20	dBm

Gain Characteristics

@ CW, 25°C, 3000mA, with input signal 10dBm, 1130nm

Parameter	Min.	Typ.	Max.	Unit
Forward Current @ 950mW @ Pin=20dBm			2500	mA
Saturation Output Power @ -3dB	21	25		dBm
Gain	15	18		dB
Small Signal Gain @ Pin=-20dBm	35	45		dB
Peak Wavelength	1120	1130	1140	nm
Bandwidth @ -3dB		40		nm
Noise Figure @ Pin=-20dBm		8		dB

Amplified Spontaneous Emission (ASE) Characteristics

@ CW, 25°C, 3000mA, no input signal

Parameter	Min.	Typ.	Max.	Unit
Output Power (each port)		300		mW
Forward Voltage		1.7	2.1	V
Mean Wavelength @ground state		1130		nm
Bandwidth (FWHM) @ground state		12		nm
Ripples* (RMS)		0.02	0.9	dB
Polarisation Extinction Ratio (PER)	13	16		dB
Polarization		TE		

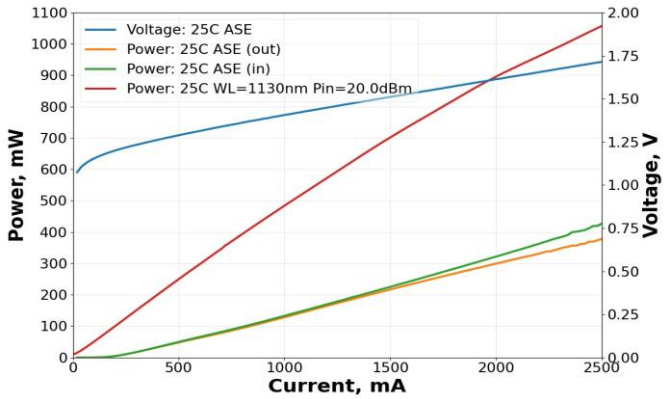
* - measured in 1nm span around spectrum maximum with 20pm resolution.

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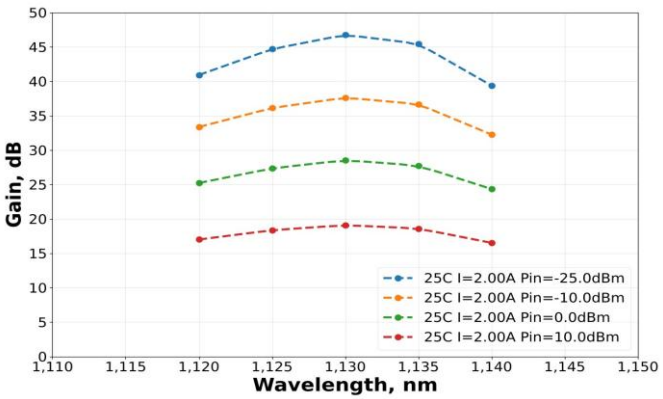
Typical Performance (for reference only)

@ CW, Tcase=25°C

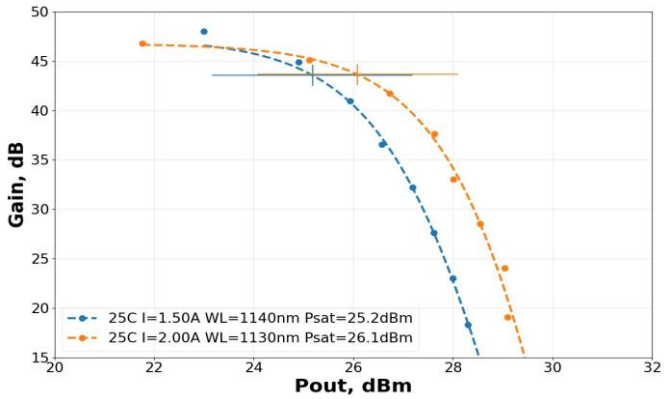
Output Power vs Operating Current



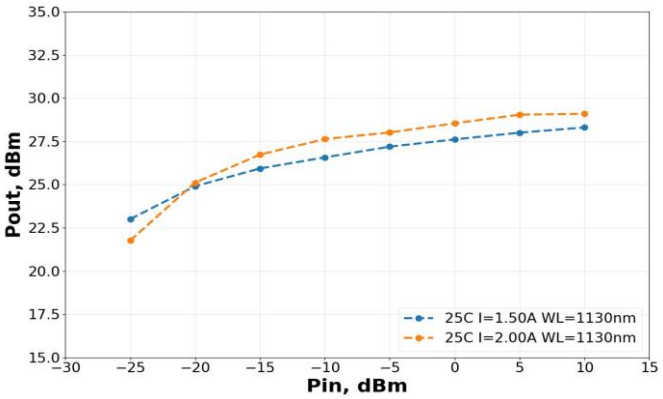
Gain Spectra



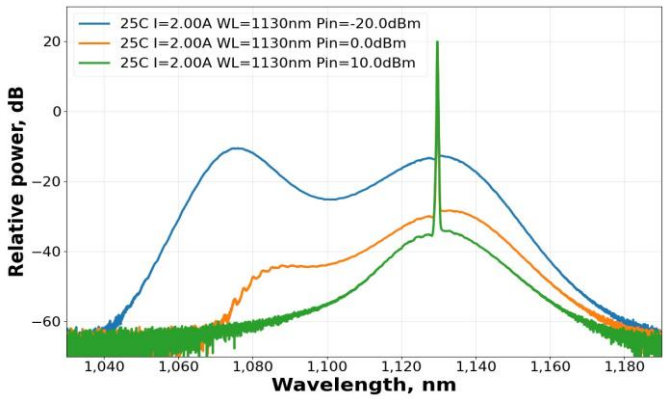
Gain vs Output Power



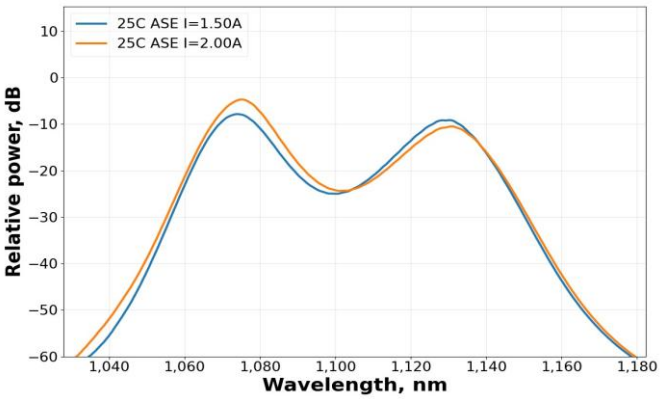
Output Power vs Input Power



Optical Spectra of Amplified Optical Signals



Optical Spectra (ASE)



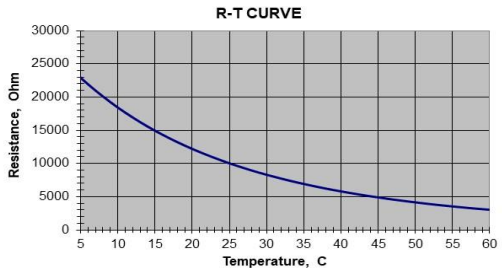
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Absolute Maximum Ratings

Parameter	Min	Max	Unit
Output Optical Power		1100	mW
Input Optical Power		22	dBm
Forward Current		3000	mA
Reverse Voltage		2	V
TEC Current		3	A
TEC Voltage		4	V
Chip Operating Temperature	5	50	°C
Case Operating Temperature	0	50	°C
Storage Temperature	0	50	°C
Pin Soldering Temperature (max 10 sec, max case temperature 120°C)		300	°C
Fiber Band Radius	3		cm

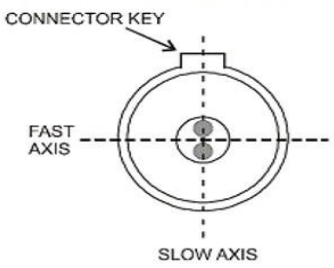
Thermistor specification

Parameters	Value	Unit
Type	NTC	
Resistance @ 25°C	10±0.1	kOhm
Beta 25-85°C	3435±1%	K



Fiber specification

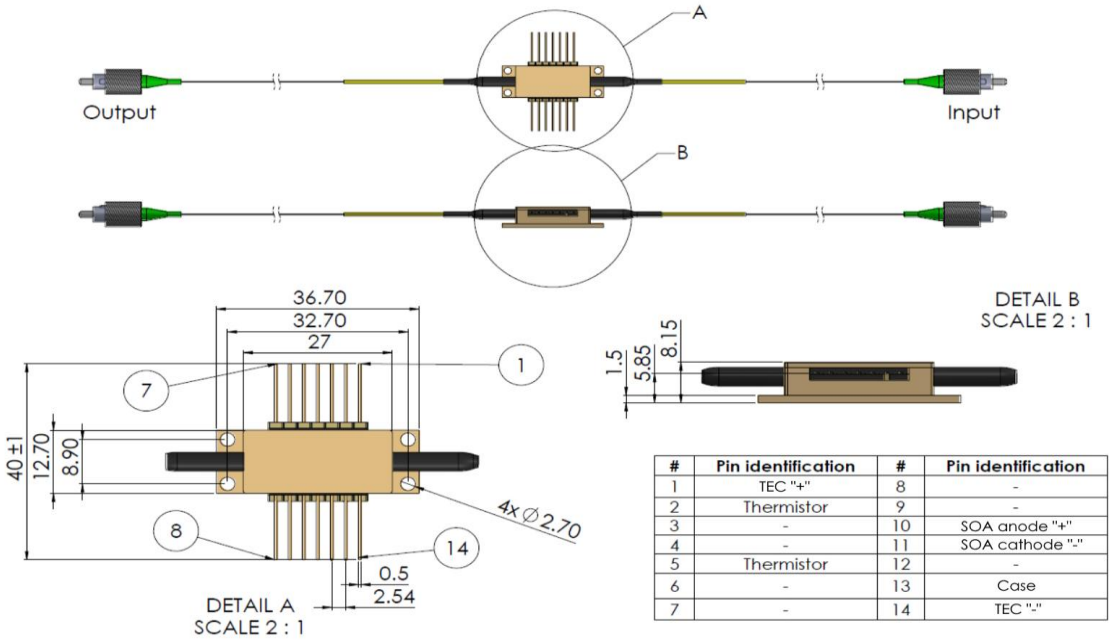
Parameters	Value	Value	Unit
Fiber Type	HI1060	PM980	
Numerical Aperture (Typical)	0.14	0.12	
Cut-off Wavelength	920±50	900±70	nm
Mode-Field (core) Diameter	6.2±0.3 @1060nm	6.6±0.3 @1060nm	μm
Cladding Diameter	125±1	125±1	μm
Coating (buffer) Diameter	245±15	245±15	μm
Loose Tube Diameter (optional)	900	900	μm
Connector	FC/APC	FC/APC	
Key	narrow	narrow	



The output light is polarized along the slow axis of PM fiber.

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Dimensions (in mm)



#	Pin identification	#	Pin identification
1	TEC "+"	8	-
2	Thermistor	9	-
3	-	10	SOA anode "+"
4	-	11	SOA cathode "-"
5	Thermistor	12	-
6	-	13	Case
7	-	14	TEC "-"

Safety and Operating Instructions

The light emitted from this device is invisible and can be harmful to the human eye. Avoid looking directly into the fiber connector when the device is in operation. Proper laser safety eyewear must be worn during operation with open connector.

Absolute Maximum Ratings may be applied to the device for short period of time only. Exposure to maximum ratings for extended period of time or exposure to more than one maximum rating may cause damage or affect the reliability of the device. Operating the device outside of its maximum ratings may cause device failure or a safety hazard. Power supplies used with the component must be employed such that the maximum forward current cannot be exceeded.

A proper heatsink for the device on thermal radiator is required. The device must be mounted on radiator with 4 screws (bolt down in X-style fashion with initial torque set to 0.075Nm and final X-style bolt down at 0.15Nm) and with clamps. The deviation from flatness of radiator surface must be less than 0.05mm. It's recommended using of Indium foil or thermal conductive and soft material between bottom of the case and heatsink for thermal interface. It's undesirable to use thermal grease for this.

It is highly recommended to use a mount with additional temperature stabilization for the module's case. Even short-term exceeding of the Case Operating Temperature during operation can cause damage to the device.

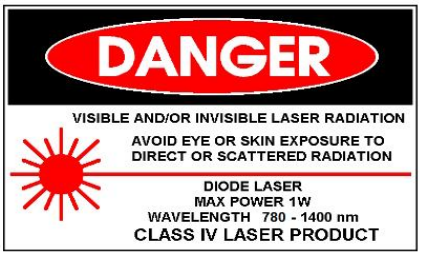
Avoid back reflection to the device. It may give impact on the device performance in aspects of spectrum and power stability. It also may cause fatal facet damage. Using of optical isolators is highly recommended to block back reflection.

Do not pull the fiber. Do not bend a fiber with a radius smaller than 3 cm. Fiber tip should always be protected from any contamination or damage during the process of installation. After removing the dust-preventing cap covered at fiber tip, carefully clean fiber tip by wiping through one direction using optical lens cleaning paper or cotton swab dabbed with Iso-Propanol or Ethyl alcohol. Operate the device with clean fiber connector only.

ESD PROTECTION - Electrostatic discharge is the primary cause of unexpected product failure. Take extreme precaution to prevent ESD. During device installation, ESD protection has to be maintained - use wrist straps, grounded work surfaces and rigorous antistatic techniques when handling the product.







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Part-number Identification

BOA1130040HI950MXXXX -> 950mW output power at 1130nm mean wavelength, 40nm bandwidth, HI-1060 fiber
BOA1130040PM950MLXXX -> 950mW output power at 1130nm mean wavelength, 40nm bandwidth, PM-980 fiber, with loose tube

NOTE: Innolume product specifications are subject to change without notice