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

Specification

SOA1310025YY12DBXXXX

Low noise WDM Semiconductor Optical Amplifier

Features:

- High output power (150mW) at 1310nm
- High saturation output power (20dBm)
- Low ripples
- Low noise figure
- Low BER value
- RoHS compliance
- Proprietary anti-reflection coating technology enabling high reliability
- Polarization maintaining PM1310 fiber or HI1060 fiber
- 900um loose tube on fiber (optional)

Applications:

- Datacom
- 4WDM
- Optical preamplifiers
- Optical coherence tomography (OCT)

Recommended Operating Conditions

@ CW, the case is mounted on room temperature heatsink

Parameter	Min.	Typ.	Max.	Unit
Chip Temperature	20	25	35	°C
Forward Current		1000	1250	mA
Input Optical Power	-25		10	dBm
Output Power in Amplification Mode			150	mW

Gain Characteristics

@ CW, 25°C, 1000mA, with input signal -20dBm @ 1310nm

Parameter	Min.	Typ.	Max.	Unit
Small Signal Gain	10	12		dB
Saturation Output Power (-3dB)	18	20		dBm
Wavelength of Gain Maximum		1310		nm
Gain Bandwidth (FWHM)	25	35		nm
Noise Figure*		5.5		dB
Bit Error Rate**		1.00E-06		

* - NF = 10log10(2p_ase/Ghv) [D.Baney et al., Optical Fiber Techn. 6, 122 (2000)]
** - 4lambda Pin range -5dBm...5dBm

Amplified Spontaneous Emission (ASE) Characteristics

@ CW, 25°C, 1000mA, no input signal

Parameter	Min.	Typ.	Max.	Unit
Output Power (each port)		1		mW
Forward Voltage		1.6	2	V
Mean Wavelength		1210		nm
Bandwidth (FWHM)		25		nm
Ripples*** (RMS)		0.02	1	dB
Polarisation Extinction Ratio (PER)	13	18		dB
Polarization		TE		

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

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Absolute Maximum Ratings

Parameter	Min	Max	Unit
Output Optical Power		200	mW
Input Optical Power		15	dBm
Forward Current		1500	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

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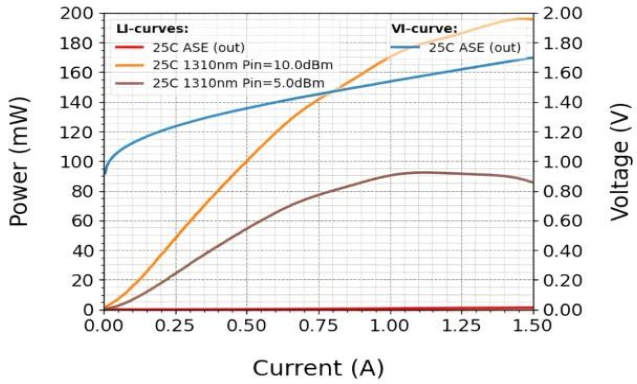
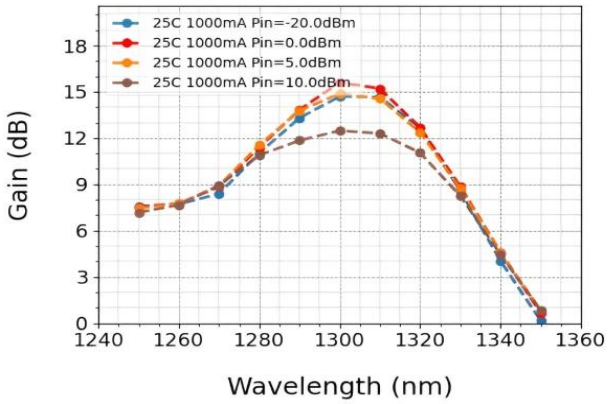
Typical Performance (for reference only)

@ CW, the case is mounted on room temperature heatsink

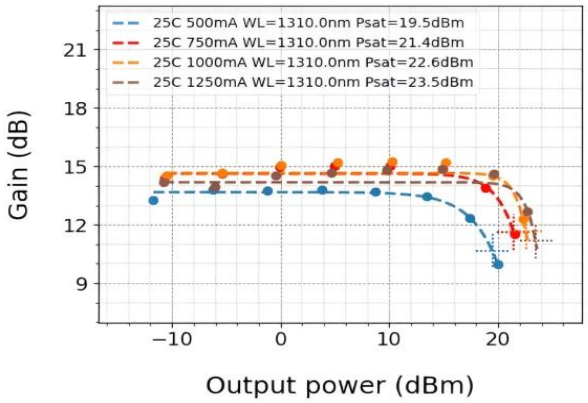
Output Power vs Operating Current



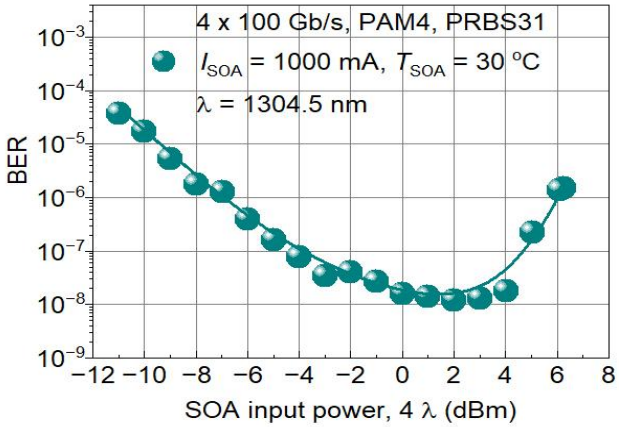
Gain Spectra



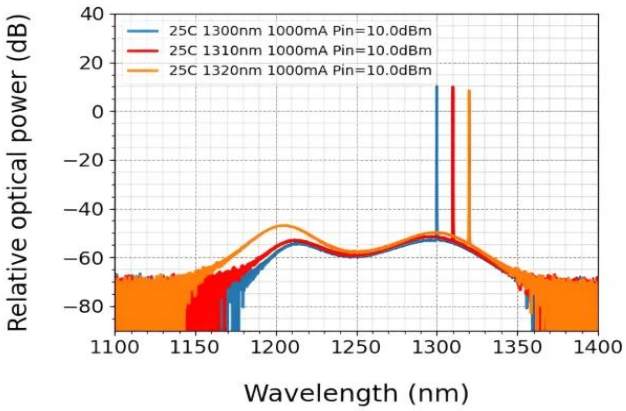
Gain vs Output Power



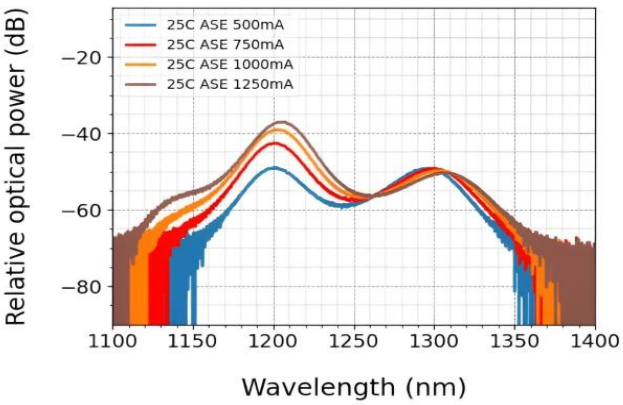
Bit Error Rate



Optical Spectra of Amplified Optical Signals



Optical Spectra (ASE)



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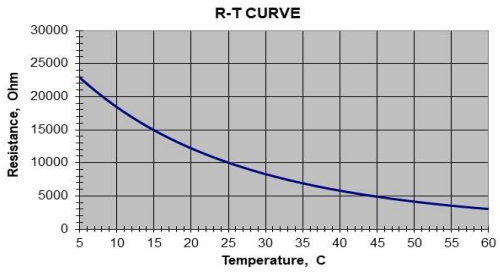
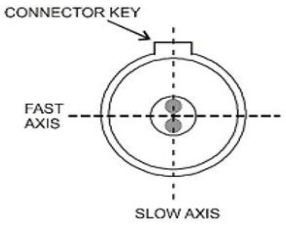
Thermistor specification

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



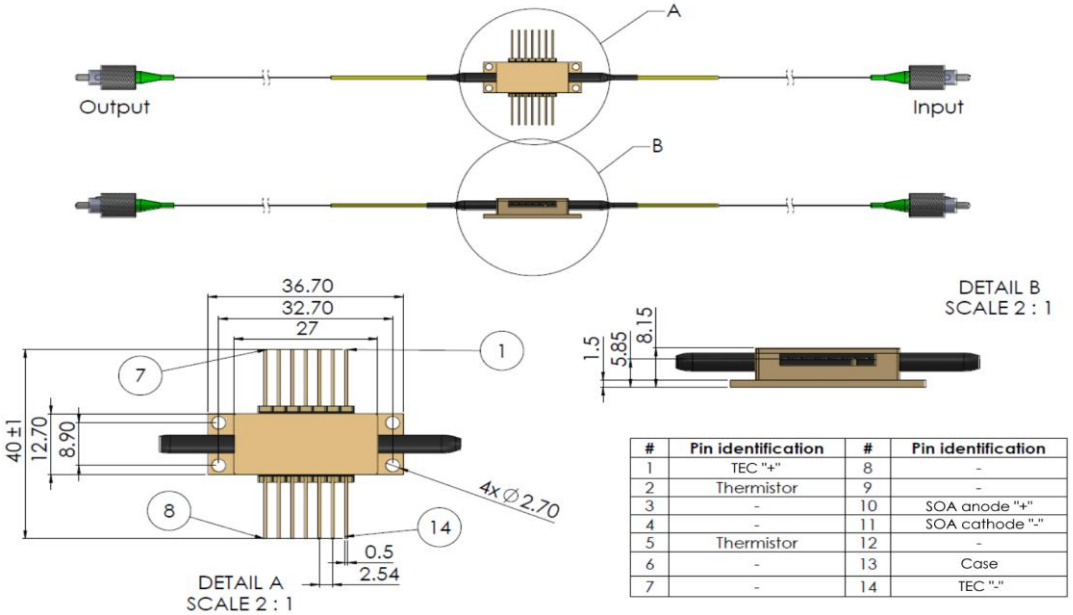
Fiber specification

Parameters	Value	Value	Unit
Fiber Type	HI1060	PM1310	
Numerical Aperture (Typical)	0.14	0.12	
Cut-off Wavelength	920±50	1200±70	nm
Mode-Field (core) Diameter	6.2±0.3 @1060nm	9.3±0.5 @1300nm	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.

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 "-"

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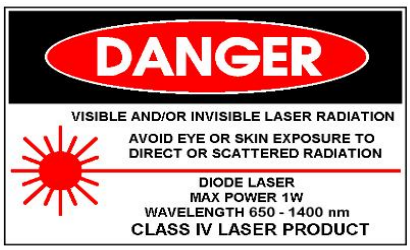
Safety and Operating Instructions

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) or 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.
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.



Part-number Identification

SOA131035HI12DBXXXX -> 1310nm gain mean wavelength, 35nm gain bandwidth, 12dB gain at wavelength of gain maximum, HI-1060 fiber
SOA131035PM12DBLXXX -> 1310nm gain mean wavelength, 35nm gain bandwidth, 12dB gain at wavelength of gain maximum, PM-1310 fiber, with loose tube

NOTE: Innolume product specifications are subject to change without notice