Allwave Lasers
Photonic Devices Inc.

1650nm Single-Polarization Semiconductor Optical Amplifier Devices

Datasheet

1. Product Information

Part Number: SOAD-6521322122

Product Description: The Semiconductor Optical Amplifier Devices at 1650nm are designed by using a high quality angled multi-quantum-well SOA chip in a 14-pin butterfly package with TEC/thermistor for closed-loop temperature control which can assure a stable amplified output for a large dynamic input signal. The devices are available in a standard 14-PIN butterfly package. The SOA devices have high optical gain, high saturation output power, high polarization extinction ratio, low noise figure and broad wavelength range. We have options of optical isolators for output side of the SOA as well as output fiber of SM fibers, PM fibers and other special fibers per customer specifications. The products are Telcordia GR-468-CORE qualified and in compliance with RoHS requirement.

Applications:

- Loss compensation for fiber-optic connection and switch
- WDM fiber-optic networks
- 100G fiber-optic data center

Features:

- Wide optical bandwidth
- High saturation output power
- Single-Polarization
- Low gain ripple

Reliability: Telcordia GR-468-CORE, RoHS

2. Performance Specifications

Absolute Maximum Ratings

Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. These are absolute stress ratings only. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operational sections of the data sheet. Exposure to absolute maximum ratings for extended periods can adversely affect device reliability.

Parameter	Symbol	Condition	Min.	Typical	Max.	Unit
Storage Temperature	Ts	-	-40	-	+85	℃
Operating Case Temperature	T_C	-	-20	-	+70	℃
Forward Current	I_F	-	-	-	700	mA
SOA Reverse Voltage	V_R	-	-	-	2.5	V
TEC Current	I_{TEC}	-	-	1.0	1.5	A
TEC Voltage	V_{TEC}	-	-	2.8	3.5	V

Optical Characteristics (at 25 ℃ laser temperature)

Parameter	Symbol	Condition	Min.	Typical	Max.	Unit
Center Wavelength	λc	T_L=15~35℃, CW	1630	1650	1670	nm

3dB Optical Bandwidth	$\Delta\lambda_{3dB}$	-	40	-	-	nm
3dB Saturation Output Power	Psat	CW	13	-	-	dBm
Small Signal Gain@λc (@ P_{in} = -25 dBm)	G_{max}	-	20	-	-	dB
Gain Ripple with Respect to λ	ΔG	-	-	1.0	1.5	dB
Polarization Extinction Ratio	PER	-	18	-	-	dB
Noise Figure	NF	-	-	8	9	dB
Optical Isolation	ISO	-	30	-	-	dB

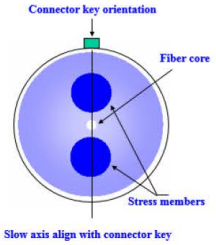
Electrical Characteristics (at 25 °C laser temperature)

Parameter	Symbol	Condition	Min.	Typical	Max.	Unit
Operating Current	I_{op}	-	-	500	600	mA
TEC Set Temperature	Ts	-	15	-	35	°C
Thermistor Current	I_{TC}	-	10	-	100	μA
Thermistor Resistance	R_{TH}	T_L = 25 °C	9.5	10	10.5	KΩ
Thermistor Temperature	-	-	-	-	100	°C

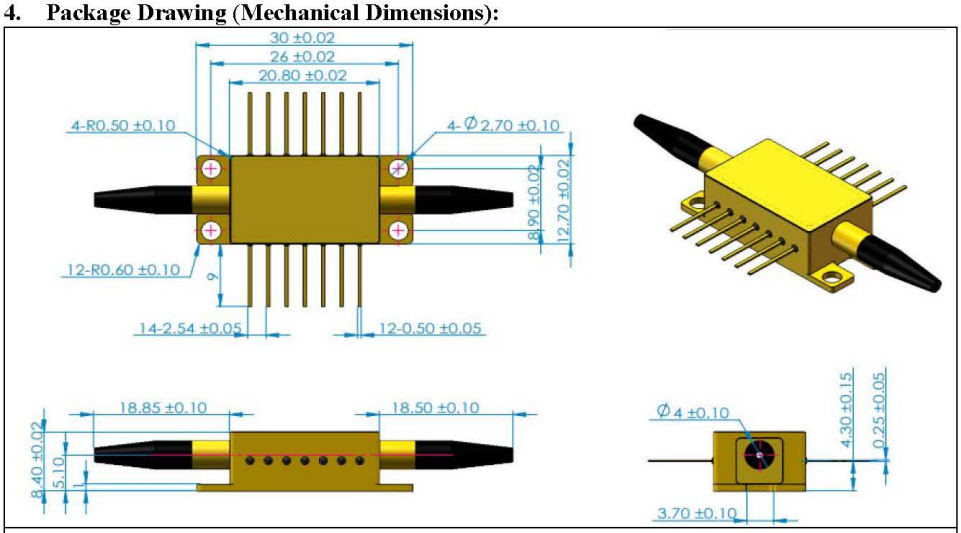
Fiber Pigtail Specifications

Parameters	Specifications
Fiber Type	PMF-1550
Jacket Type	900μm loose tube
Pigtail Length	1.0±0.1m
Connector Type	FC/APC

Note: The PM fiber and the connector key are aligned to the slow axis

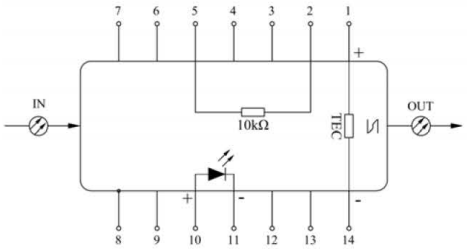


4. Package Drawing (Mechanical Dimensions):



Dimensions are in millimeters.

4. Pinout Assignments:



1	Thermoelectric Cooler (+)
2	Thermistor
3	NC
4	NC
5	Thermistor
6	NC
7	NC
8	Case Ground
9	NC
10	SOA Anode (+)
11	SOA Cathode (–)
12	NC
13	NC
14	Thermoelectric Cooler (–)

5. Test Report: The test report should be provided when the products are delivered. Following characteristic test data should be included: Saturation Output Power, Center wavelength, Small Signal Gain, PER, Pinout Assignments..

6. Packaging: Vacuum sealed anti-static plastic package. Following items should be indicated on the outer packaging surface: Product Name, Product Number, Serial Number.

7. Ordering Info: SOAD-6521322122: SOAD= semiconductor optical amplifier device, 65=1650nm band, 2=single polarization, 1=14-PIN butterfly, 3=13dBm, 2=PMF-1550 input Panda PM fiber, 2= PMF-1550 output Panda PM fiber, 1=900μm loose tube, 2=100cm long input and output pigtail length, 2= FC/APC

Ordering Information									
SOAD-	☐☐	☐	☐	☐	☐	☐	☐	☐	☐
	Wavelength	Polarization Type	Package	Ouput Power	Input Fiber Type	Output Fiber Type	Pigtail Type	Pigtail length	Connector
	06: 1060nm	1:Polarization insensitive	1: 14-PIN	0: 6dBm	0: SMF-28e	0: SMF-28e	0:250μm bare fiber	1:50cm	0:None
	31: 1310nm	2:Single polarization	2: 8-PIN	1: 8dBm	1: PMF-1310	1: PMF-1310	1:900μm loose tube	2:100cm	1:FC/UPC
	45: 1450nm			2: 10dBm	2: PMF-1550	2: PMF-1550	2:900μm tight tube	3:150cm	2:FC/APC
SOAD-	55: 1550nm			3: 13dBm	8: PM980	8: PM980	C: Customized	4:200cm	3:SC/UPC
	60: 1600nm			C: Customized	9: Flexco1060	9: Flexco1060		C:Customized	4:SC/APC
	65: 1650nm				C: Customized	C: Customized			5:LC/UPC
									6:LC/APC
									C:Customized
Example of Ordering Form:SOAD-5521122122-01									
SOAD-	55	2	1	1	2	2	1	2	2
	1550nm	Single polarization	14-PIN	8dBm	PMF-1550	PMF-1550	900μm loose tube	100cm	FC/APC

End

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