Semiconductor Optical Amplifier

ASOA1550N15D25GBT



Figure 1. Top View

FEATURES

- Wavelength Range: Operates at 1550nm, a widely used wavelength for optical communication and sensing applications.
- High Gain: Small signal gain of 25dB with excellent power handling.
- Low Noise: The device offers a low noise figure (7-9 dB), ensuring minimal signal degradation.
- Polarization Insensitivity: Achieved with PDG (polarization dependent gain) <2.0dB, making it suitable for diverse signal environments.
- Compact Butterfly Package: The device comes in a sealed, standard butterfly package that ensures high reliability and ease of integration into existing systems.
- Temperature Range: Operates across a broad temperature range from −10°C to +70°C, suitable for both indoor and outdoor environments.
- Customizable Options: Available for custom configurations, including special wavelengths and integration options.

APPLICATIONS

The 1550nm Butterfly SOA is designed for a variety of optical applications:

- Fiber Optic Sensing Systems: Used as a modulator or chopper in distributed fiber optic sensor systems, replacing acousto-optic modulators (AOMs).
- Optical Communications: Amplifies optical signals in communication systems, replacing parts of EDFA systems for cost and space savings.
- Lidar Systems: Used in high-power SOA arrays for enhancing transmission power and generating pulses in TOF and FMCW Lidar applications.

©Copyrights 2000-2026, Analog Technologies, Inc. All Rights Reserved. Updated on 3/13/2026 1161 Ringwood Ct, #110, San Jose, CA 95131, U. S. A.

- Wind Radar Systems: Integrated into wind Lidar systems for improved sensitivity.
- Space-Based Optical Communication: Used in space light detection and communication systems due to its compact form and radiation-resistant properties.

SPECIFICATIONS

Table 1.

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit/Note
ASE Central Wavelength	λ_{ASE}	I_f = 250mA, T_A = 25°C		1515		nm
Working Wavelength	λ	I_f = 250mA, T_A = 25°C		1550		nm
Gain Spectrum (−3dB)	Δλ	P_{in} = 0dBm	100			nm
Max Output Power	P_{max}	I_f = 250mA, P_{in} =5dBm @1550nm		13		dBm
Small Signal Gain	SSG	I_f = 250mA, P_{in} =5dBm @1550nm		25		dB
Polarization Dependent Gain	PDG	I_f = 250mA, T_A = 25°C		1.0	2.0	dB
Noise Figure	NF	T_A = 25°C, I_f = 250mA @1550nm		7	9	dB
Operating Current	I_f			250	400	mA
Forward Voltage	V_f			1.3	1.5	V
Extinction Ratio 1	ER	I_f = 250mA/I_f = 0mA, P_{in} = 0dBm		50		dB
Extinction Ratio 2	ER	I_f = 250mA/I_f = −5mA, P_{in} = 0dBm		70		dB
TEC Current	I_{TEC}				1.8	A
TEC Voltage	V_{TEC}				3.4	V
Thermistor Resistance	R_{th}	T_A = 25°C	9.5	10	10.5	kΩ
Thermistor Current	I_{th}				5	mA
Leakage Rate		T_A = 25°C	1×10^{-12}	1×10^{-11}	1×10^{-8}	$Pa.m^3/s$
Operating Temperature	T_{opr}	I = I_{opr}	−10		70	°C
Storage Temperature	T_{stg}				85	°C
Total Power Consumption	P				4	W

©Copyrights 2000-2026, Analog Technologies, Inc. All Rights Reserved. Updated on 3/13/2026 1161 Ringwood Ct, #110, San Jose, CA 95131, U. S. A.

TYPICAL CHARACTERISTICS

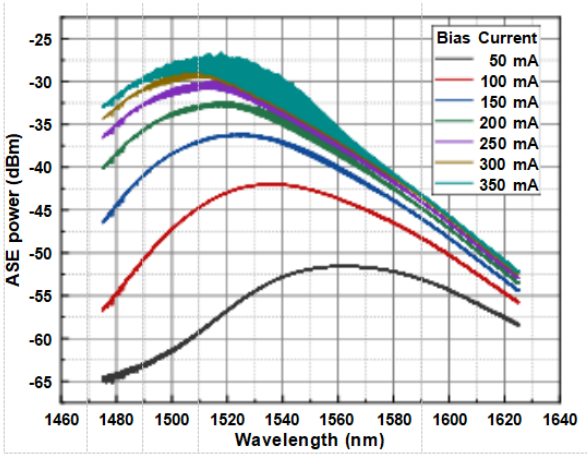


Figure 2. ASE Spectra

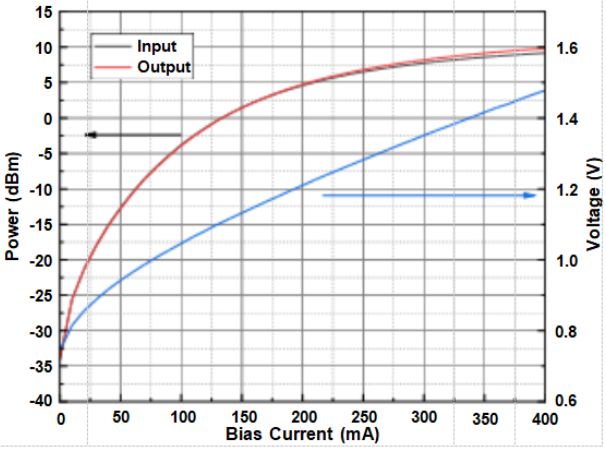


Figure 5. ASE LIV Characteristics

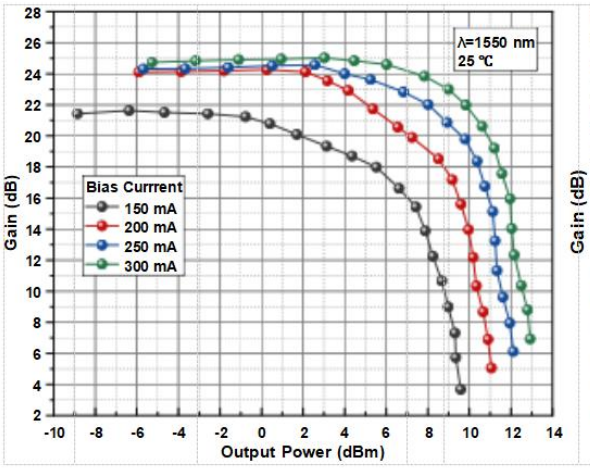


Figure 3. Gain vs. Output Power

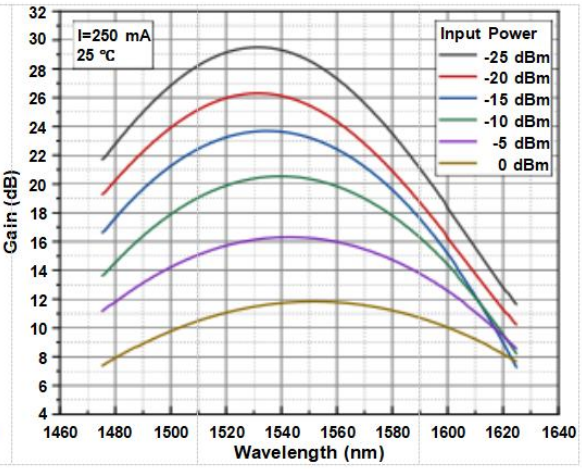


Figure 6. Gain Spectra

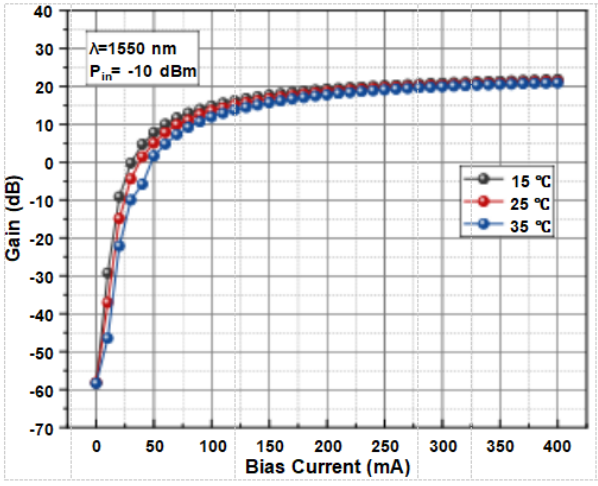


Figure 4. Gain vs. Current
(different temperature)

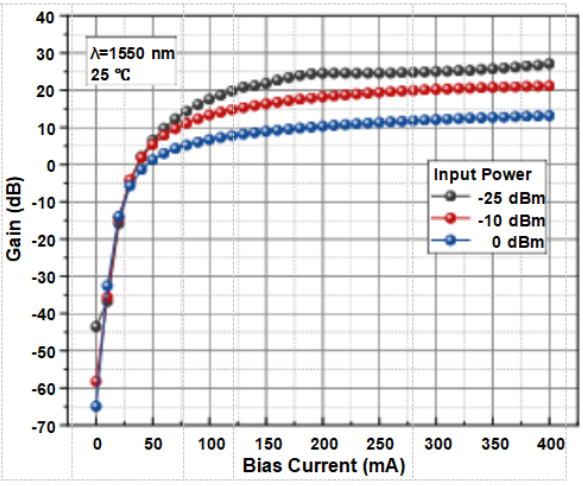


Figure 7. Gain vs. Current
(different input power)

©Copyrights 2000-2026, Analog Technologies, Inc. All Rights Reserved. Updated on 3/13/2026 1161 Ringwood Ct, #110, San Jose, CA 95131, U. S. A.

NAMING PRINCIPLE

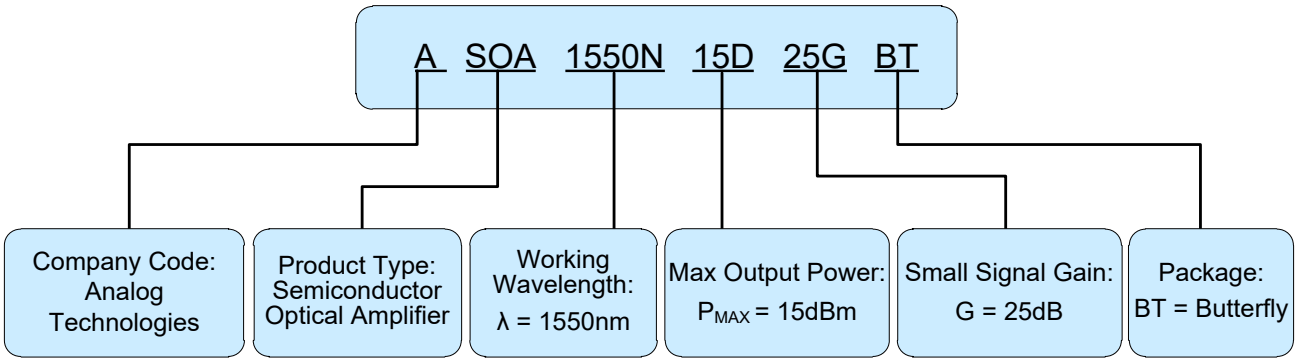
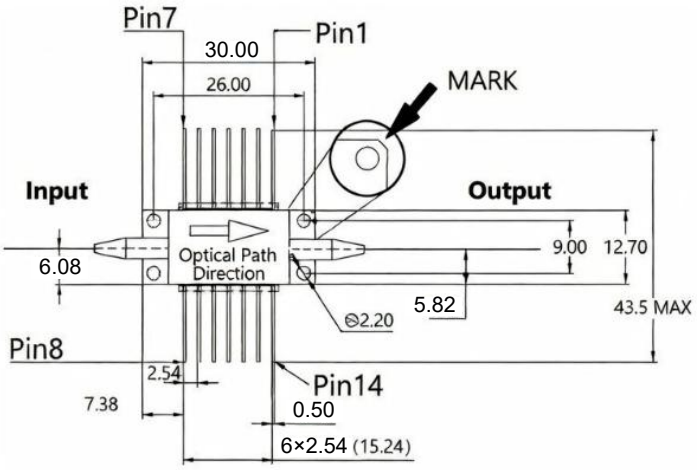
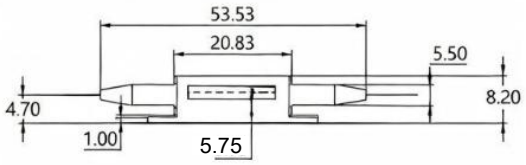


Figure 8. Naming Convention of ASOA1550N15D25GBT

OUTLINE DIMENSIONS





Pin Assignments			
1	TEC (+)	14	TEC (-)
2	Thermistor	13	GND
3	NC	12	NC
4	NC	11	Chip (-)
5	Thermistor	10	Chip (+)
6	NC	9	NC
7	NC	8	NC

*Note: Pin #1 is marked by a bevel (notch) at the base of the housing

Figure 9. Outline Dimensions

©Copyrights 2000-2026, Analog Technologies, Inc. All Rights Reserved. Updated on 3/13/2026 1161 Ringwood Ct, #110, San Jose, CA 95131, U. S. A.

ORDERING INFORMATION

Part Number	Buy Now
ASOA1550N15D25GBT	* *

*: both and are our online store icons. Our products can be ordered from either one of them with the same pricing and delivery time.

OTICE

1. It is important to carefully read and follow the warnings, cautions, and product-specific notes provided with electronic components. These instructions are designed to ensure the safe and proper use of the component and to prevent damage to the component or surrounding equipment. Failure to follow these instructions could result in malfunction or failure of the component, damage to surrounding equipment, or even injury or harm to individuals. Always take the necessary precautions and seek professional assistance if unsure about proper use or handling of electronic components.
2. Please note that the products and specifications described in this publication are subject to change without prior notice as we continuously improve our products. Therefore, we recommend checking the product descriptions and specifications before placing an order to ensure that they are still applicable. We also reserve the right to discontinue the production and delivery of certain products, which means that not all products named in this publication may always be available.
3. This means that while ATI may provide information about the typical requirements and applications of their products, they cannot guarantee that their products will be suitable for all customer applications. It is the responsibility of the customer to evaluate whether an ATI product with the specified properties is appropriate for their particular application.
4. ATI warrants its products to perform according to specifications for one year from the date of sale, except when damaged due to excessive abuse. If a product fails to meet specifications within one year of the sale, it can be exchanged free of charge.
5. ATI reserves the right to make changes or discontinue products or services without notice. Customers are advised to obtain the latest information before placing orders.
6. All products are sold subject to terms and conditions of sale, including those pertaining to warranty, patent infringement, and limitation of liability. Customers are responsible for their applications using ATI products, and ATI assumes no liability for applications assistance or customer product design.
7. ATI does not grant any license, either express or implied, under any patent right, copyright, mask work right, or other intellectual property right of ATI.
8. ATI's publication of information regarding third-party products or services does not constitute approval, warranty, or endorsement.

©Copyrights 2000-2026, Analog Technologies, Inc. All Rights Reserved. Updated on 3/13/2026 1161 Ringwood Ct, #110, San Jose, CA 95131, U. S. A.

9. ATI retains ownership of all rights for special technologies, techniques, and designs for its products and projects, as well as any modifications, improvements, and inventions made by ATI.
10. Despite operating the electronic modules as specified, malfunctions or failures may occur before the end of their usual service life due to the current state of technology. Therefore, it is crucial for customer applications that require a high level of operational safety, especially in accident prevention or life-saving systems where the malfunction or failure of electronic modules could pose a risk to human life or health, to ensure that suitable measures are taken. The customer should design their application or implement protective circuitry or redundancy to prevent injury or damage to third parties in the event of an electronic module malfunction or failure.

©Copyrights 2000-2026, Analog Technologies, Inc. All Rights Reserved. Updated on 3/13/2026 1161 Ringwood Ct, #110, San Jose, CA 95131, U. S. A.