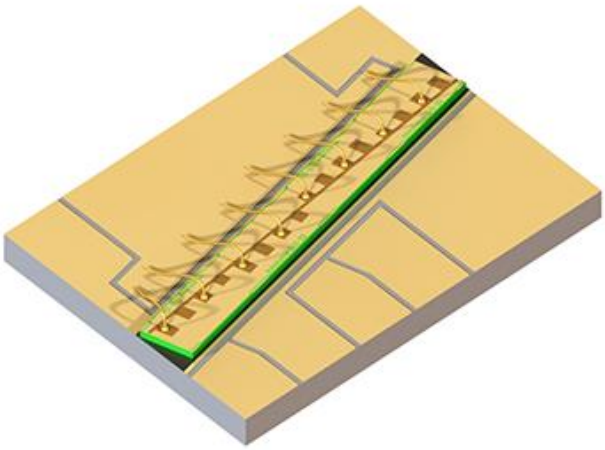
1290nm Booster Optical Amplifier on Submount



Product Description

A high-power boost optical amplifier (BOA) with a center wavelength of 1290nm and packaged in a chip on carrier (CoC) form. This product adopts InAs/GaAs quantum dot gain material and proprietary anti reflection coating technology, and can achieve an output power of up to 550mW in a submount package form, which is currently the highest power package version among BOA products in this band.

Product features

High-gain and low-noise amplification; compact submount integration; wide operating wavelength range; intelligent power control; extreme environmental adaptability

Part Number

MP-BOA-1290-150-65-CoC

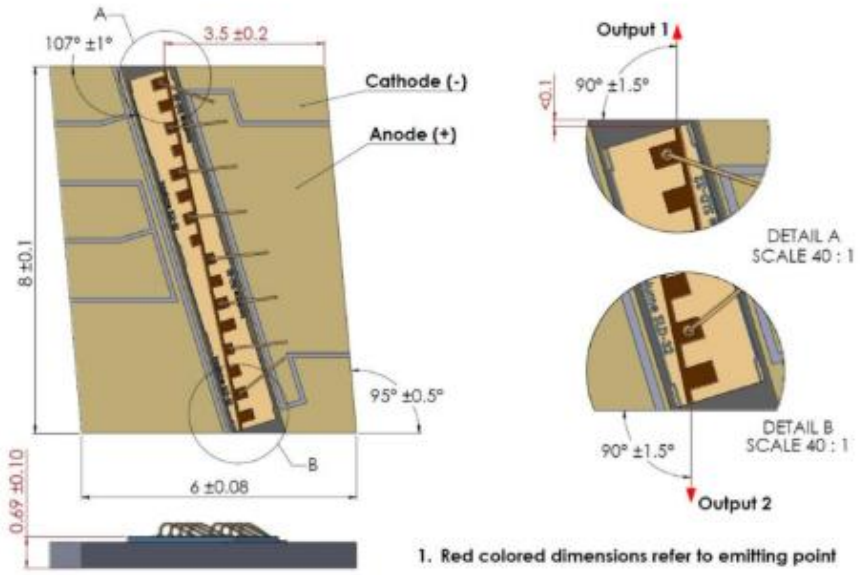
Application area

Submarine cable relay; space laser communication; military optoelectronic systems; fiber sensing networks; free-space optical communication

Core parameters

Center Wavelength	Saturated Output Power	Bandwidth
1290nm	22dBm	65nm

Dimension Drawing



General Parameters

Detailed Specifications

Recommended Operating Conditions

@ CW, device mounted on a copper heat sink

Parameter	Min.	Typ.	Max.	Unit
Heat Sink Temperature	20	25	30	°C
Forward Current	—	2000	3000	mA
Output Power (Amplification Mode)	—	—	550	mW
Input Optical Power*	-20	10	15	dBm

*** Fiber-to-chip coupling efficiency taken into account.**

Gain Characteristics

@ CW, 25°C, 2000 mA, Input Signal: 10 dBm, 1300 nm

Parameter	Min.	Typ.	Max.	Unit
Forward Current @ 450 mW	—	—	3000	mA
Saturated Output Power @ -3 dB	18	22	—	dBm
Gain	13	18	—	dB
Small-Signal Gain @ -20 dBm	36	43	—	dB
Peak Wavelength	1280	1290	1300	nm
Bandwidth @ -3 dB	—	65	—	nm
Noise Figure @ Pin = -20 dBm (Excluding input coupling)	—	—	5	dB

ASE Characteristics

@ CW, 25°C, 2000 mA, No Input Signal

Parameter	Min.	Typ.	Max.	Unit
Output Power (Per Port)	—	175	—	mW
Forward Voltage	—	1.6	2.2	V
Average Wavelength	—	1225	—	nm
Bandwidth (FWHM)	—	15	—	nm
Ripple (RMS)**	—	0.04	1	dB
Slow-Axis Beam Divergence (FWHM)	4	8	11	deg
Fast-Axis Beam Divergence (FWHM)	24	28	33	deg
Polarization Extinction Ratio (PER)	14	18	—	dB
Polarization	—	TE	—	—

** Measured within 1 nm range near the spectral maximum at 20 pm resolution.

Absolute Maximum Ratings

Parameter	Min.	Max.	Unit
Output Optical Power	—	1300	mW
Input Optical Power	—	20	dBm
Forward Current	—	4000	mA
Reverse Voltage	—	2	V
Soldering Temperature (Max. 5 s)	—	250	°C
Chip Operating Temperature (Above Dew Point)	5	50	°C
Storage Temperature	5	50	°C

Chip Parameters

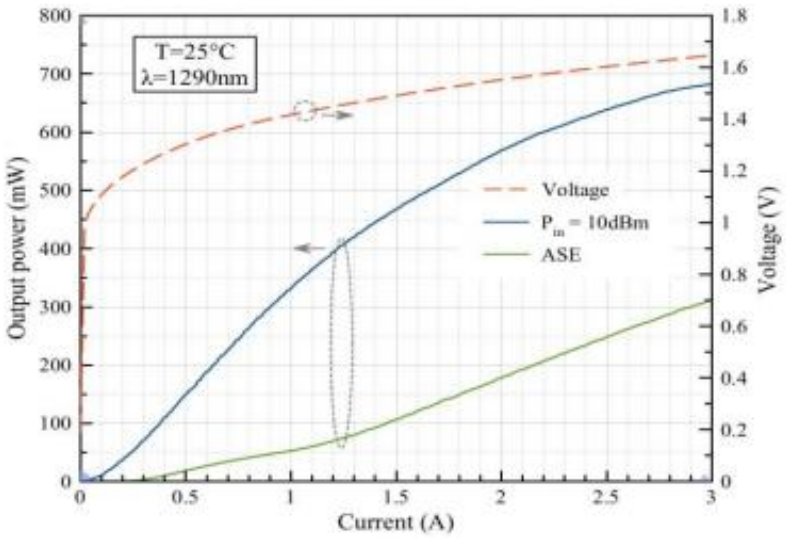
Parameter	Min.	Typ.	Max.	Unit
Chip Length	—	8	—	mm
Front Facet Back Reflection	—	—	0.001	%
Rear Facet Back Reflection	—	—	0.001	%

Model Description

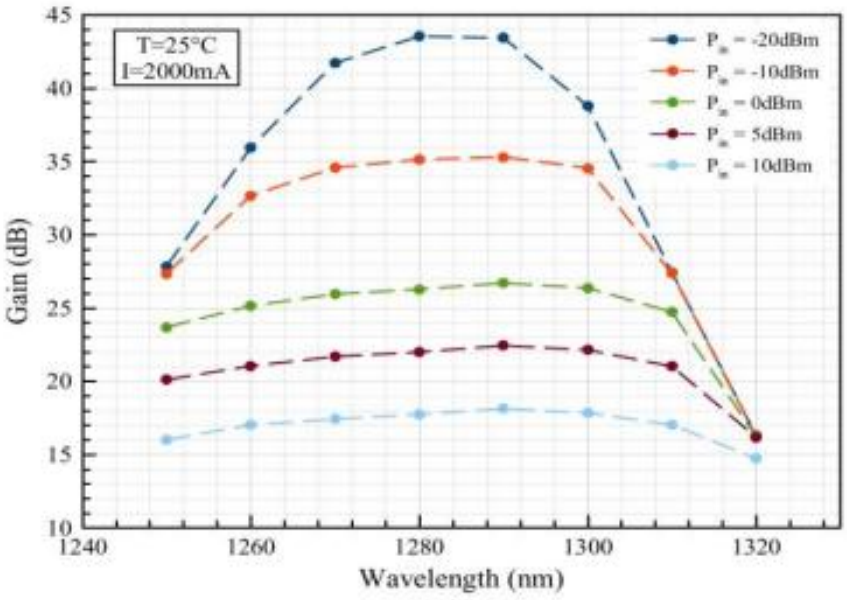
Characteristic Curves

Typical Performance (For Reference Only)

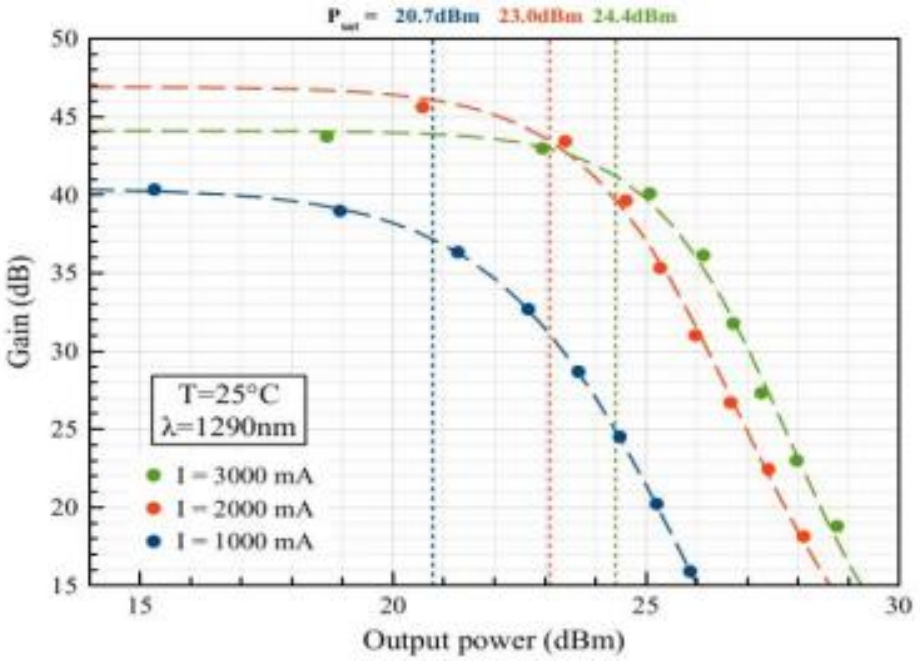
Output Power and Operating Current



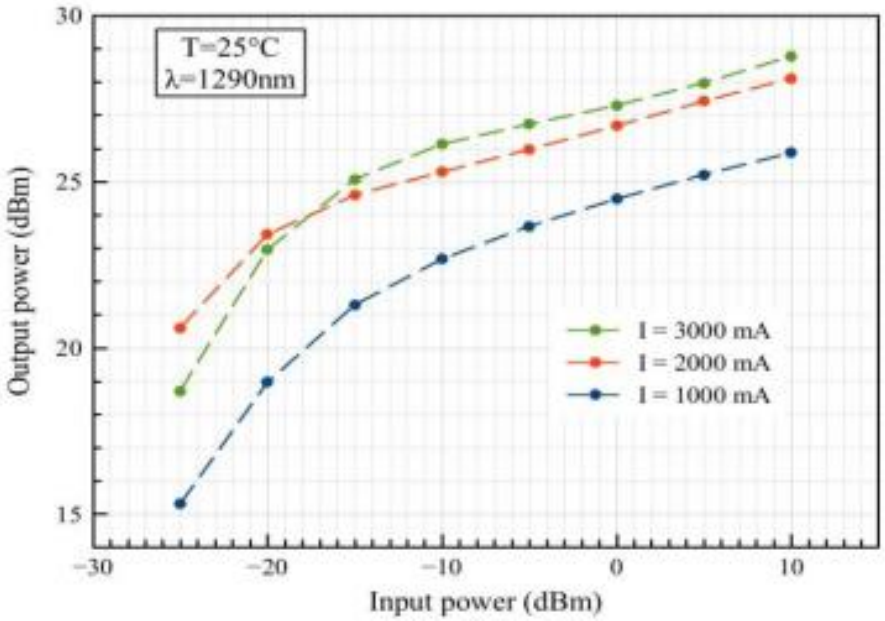
Gain Spectrum



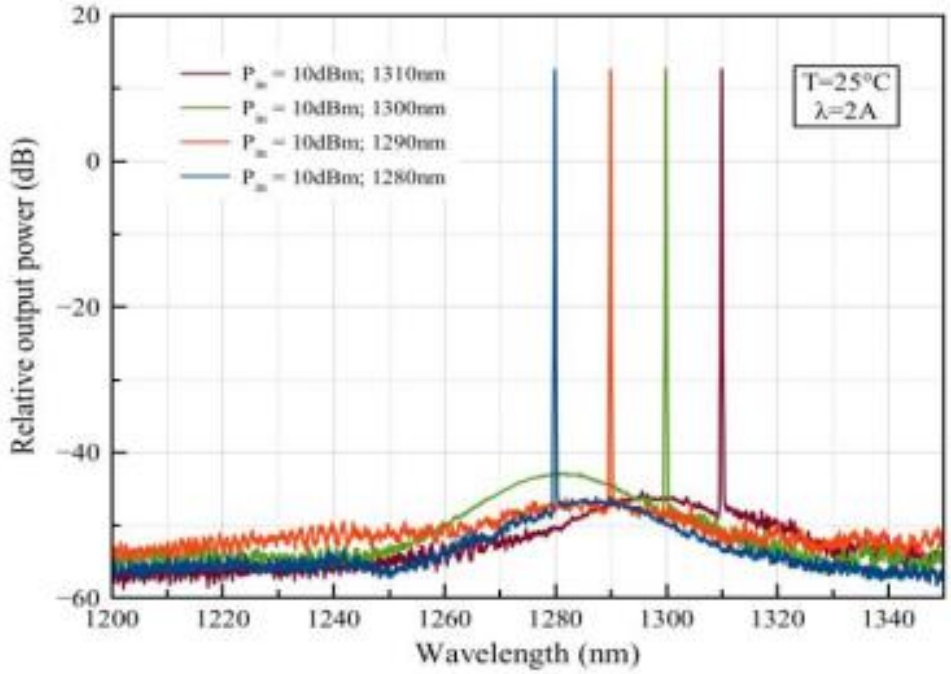
Gain and Output Power



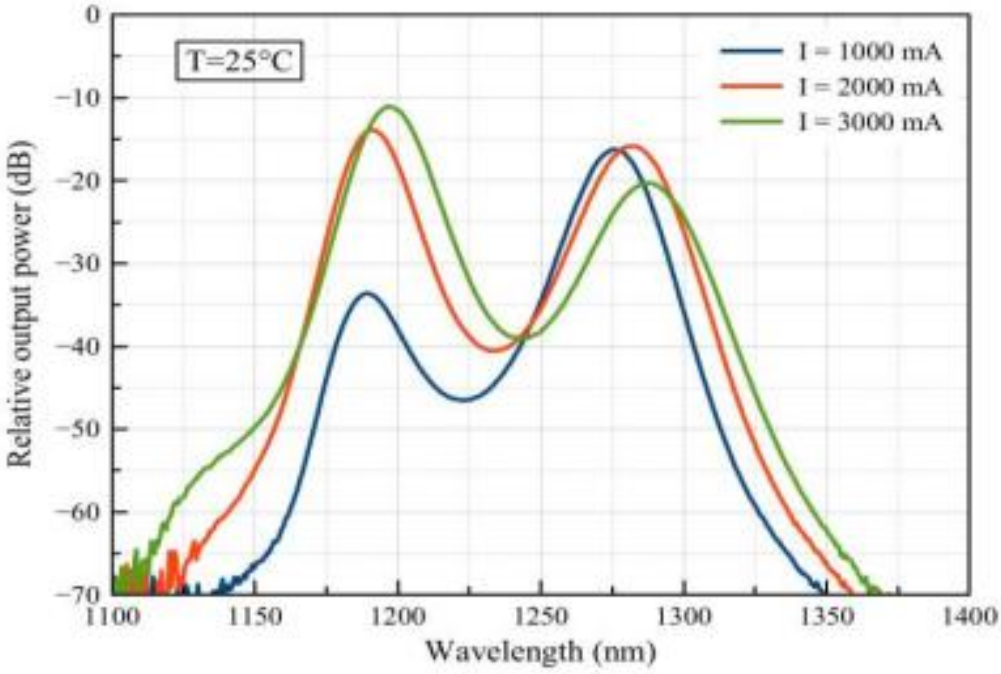
Output Power vs. Input Power



Amplified Spectrum



ASE Spectrum



Operating Instructions

Safety and Operating Instructions

The light emitted by this device is invisible and hazardous to human eyes. Avoid direct viewing of the fiber connector while the device is in operation. When operating with the connector uncovered, appropriate laser safety goggles must be worn.

Absolute maximum ratings shall only be applied to the device for a short duration. Long-term exposure to maximum ratings or simultaneous exposure to multiple maximum ratings may cause device damage or reliability degradation. Operation beyond the device's maximum ratings may result in equipment failure and potential safety hazards. A dedicated matched power supply must be adopted to ensure the maximum forward current is not exceeded.

Devices mounted on heat spreaders require a qualified heat sink. The device shall be fixed to the heat sink with 4 screws (fastened in a cross pattern with an initial torque of 0.075 N・m and a final torque of 0.15 N・m) or clamps. The flatness deviation of the heat sink surface shall be less than 0.05 mm. Indium foil or flexible thermal interface materials are recommended between the device base and the heat sink. Thermal grease is not recommended for this application.

Prevent optical back-reflection, which may degrade the device's spectral performance and output power stability, and even cause catastrophic facet

damage. An optical isolator is strongly recommended to suppress back-reflection.

Do not pull the optical fiber. Avoid bending the fiber with a bending radius less than 3 cm. The fiber end-face shall be fully protected against contamination and mechanical damage during installation. After removing the dust cap, clean the fiber end-face unidirectionally with lens cleaning wipes or cotton swabs moistened with isopropyl alcohol or ethanol. Operate the device only with clean optical fiber connectors.

ESD Protection

Electrostatic discharge is a primary cause of unexpected product failure. Strict ESD precautions must be implemented at all times. Maintain continuous ESD protection during installation, including the use of anti-static wristbands, grounded work surfaces, and standardized anti-static operating procedures.