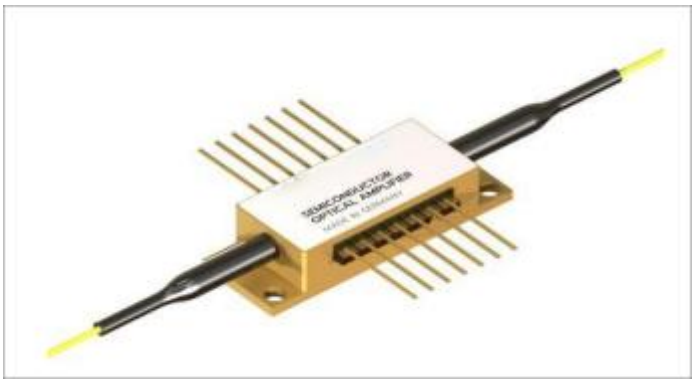
1250nm Broadband Semiconductor Optical Amplifier with 110nm Gain Bandwidth



Product Description

1250nm gain average wavelength, 110nm gain bandwidth, maximum gain at the wavelength of 27dB, HI-1060 fiber 1250nm gain average wavelength, 110nm gain bandwidth, maximum gain at the wavelength of 27dB, PM-980 fiber, with loose tube

Part Number

SOA1250110YY27DBXXXX

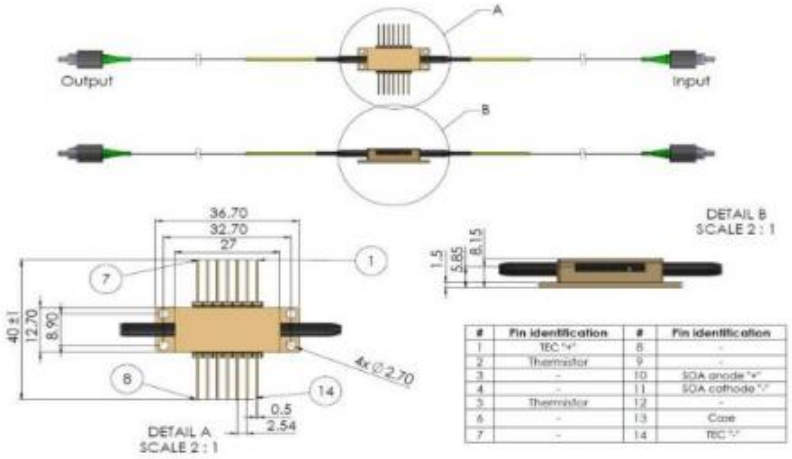
Product features

Broadband gain (110nm)、27dB gain, 15dBm saturated output power at Max. gain wavelength、 Low ripple、Strong linear polarization、RoHS compliance、Proprietary anti-reflection coating technology, high reliability、PM980 fiber or HI1060 fiber、900um fiber loose tube (optional)、Product Application

Application area

Swept Source, Tunable Laser、 Optical Preamplifier、 Optical Coherence Tomography (OCT)

Dimensional Drawing



#	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 "-"

Parameters

Recommended Operating Conditions

Parameters	Min.	Typ.	Max.	Unit
Chip Temperature	20	25	30	℃
Forward Current		900*	1000	mA
Input Optical Power	-40	-25	10	dBm

@ CW, with the housing mounted on a room-temperature heatsink
*- The current at the maximum gain bandwidth may vary by batch.

Gain Characteristics

@ CW, 25°C, 900mA, Input Signal -25dBm @ Maximum Gain Wavelength

Parameters	Min.	Typ.	Max.	Unit
Small Signal Gain at 1000mA	22	27		dB
Saturated Output Power at 1000mA (-3dB)	10	15		dBm
Peak Gain Wavelength	1240	1250	1260	nm
Gain Bandwidth (FWHM)	100	110		nm
Gain Spectrum Slope		6		dB
Noise Figure		8		dB

- NF = 10log10(2p_ase/Ghv) [D.Baney et al., Fiber Optic Technology. 6, 122 (2000)]

Amplified Spontaneous Emission (ASE) Characteristics

@CW, 25°C, 900mA, No Input Signal

Parameters	Min.	Typ.	Max.	Unit
Output Power (Per Port)		6		mW
Forward Voltage		1.6	1.9	V
Avg. Wavelength		1250		nm
Bandwidth (FWHM)		110		nm
Spectral Slope		6		dB
Ground State Peak Position		1280		nm
Excited State Peak Position		1210		nm
Ripple** (RMS)		0.01	0.1	dB
Polarization Extinction Ratio (PER)	15	18		dB
Polarization		TE		

** - Measured within a 1nm range around the spectral peak with a 20pm resolution.

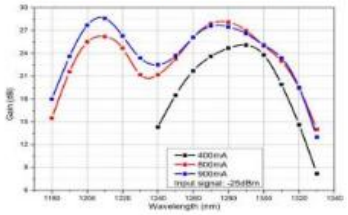
Absolute Maximum Ratings

Parameters	Min.	Max.	Unit
Optical Output Power		400	mW
Optical Input Power		20	dBm
Forward Current		1200	mA
Reverse Voltage		2	V
TEC Current		3	A
TEC Voltage		4	V
Chip Operating Temperature	10	40	°C
Case Operating Temperature	0	70	°C
Storage Temperature	-40	85	°C
Pin Soldering Temperature (Max 10 seconds, Max Case Temperature 120°C)		300	°C
Optical Fiber Bend Radius	3		cm

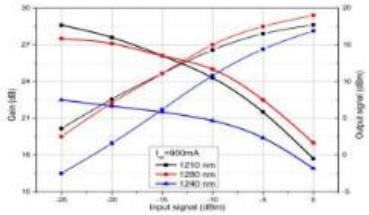
Typical Performance (For Reference Only)

@ CW, Case Mounted on a Room Temperature Heatsink

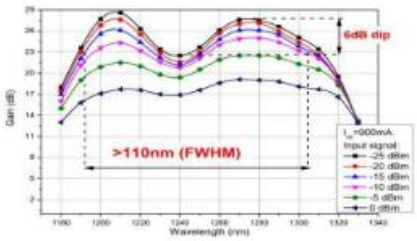
Gain Spectrum at Different Currents



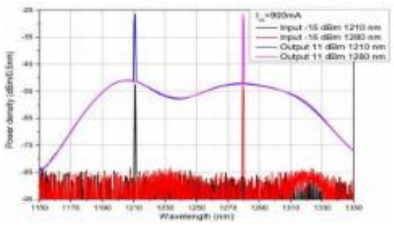
Gain and Output Power vs. Input Signal



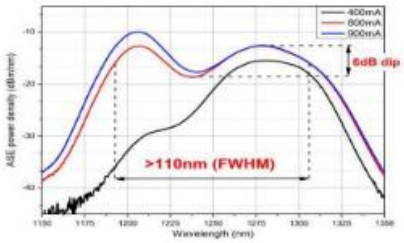
Gain Spectrum at Different Input Signals



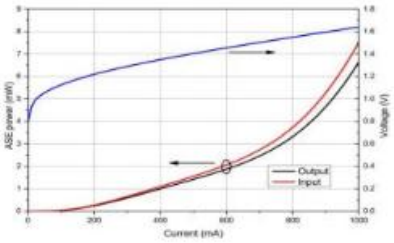
Amplified Optical Signal Spectrum

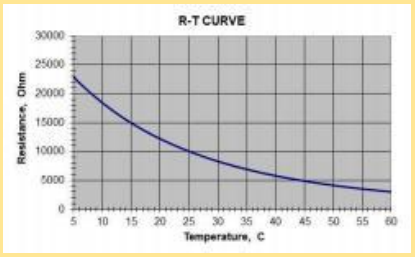


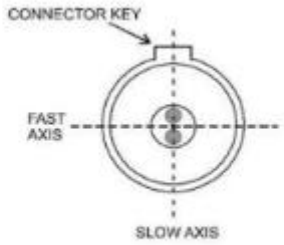
ASE Spectrum (No Input Signal)



Output Power at Different Input Signals



Thermistor Specifications			Optical Fiber Specifications			
Parameters	Value	Unit	Parameters	Value	Value	Unit
Type	NTC		Fiber Type	HI1060	PM980	
Resistance @ 25℃	10±0.1	kOhm	Numerical Aperture (Typical Value)	0.14	0.12	
Beta 25-85°C	3435±1%	K	Cutoff Wavelength	920±50	900±70	nm
			Mode Field Diameter	6.2±0.3 @1060nm	6.6±0.3 @1060nm	μm
			Cladding Diameter	125±1	125±1	μm
			Coating 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.

Safety and Operating Instructions

The light emitted by this device is invisible and harmful to the human eye. Avoid direct eye contact with the fiber optic connector when the device is operating. Appropriate laser safety glasses must be worn when operating with the connector exposed.

The absolute maximum rated values should only be applied for short durations. Prolonged exposure to maximum rated values or multiple maximum rated values may cause damage to the device or affect its reliability. Operating the device beyond its maximum rated values may lead to device failure or safety hazards. The power supply used must be the one specified for the component to ensure the maximum forward current is not exceeded.

Devices with thermal radiators require appropriate heat sinks. The device must be mounted to the heat sink using 4 screws (tightened with an X-type bolt, initial torque set to 0.075Nm, and final torque set to 0.15Nm) or fixtures. The flatness deviation of the heat sink surface must be less than 0.05mm. It is recommended to use indium foil or thermally conductive soft material as the thermal interface between the bottom of the housing and the heat sink. Do not use thermal grease for this purpose.

Avoid back-reflections on the device. It may affect the performance of the device in terms of spectral and power stability and could also cause fatal surface damage. It is strongly recommended to use an optical isolator to block back-reflections.

Do not pull the fiber. Do not bend the fiber at a radius smaller than 3 cm. During installation, always protect the fiber end from contamination or damage. After removing the dust cover from the fiber end, use optical lens cleaning paper or cotton swabs soaked in isopropyl alcohol or ethanol to clean the fiber end in one direction carefully. Only use clean fiber connectors to operate the device.

ESD Protection - Electrostatic discharge is a major cause of accidental product failure. Extreme precautions must be taken to prevent ESD. During device installation, ESD protection must be maintained—use wrist straps, grounded work surfaces, and strict anti-static procedures when handling the product.

Model Identification

SOA1250110HI27DBXXXX → 1250nm average gain wavelength, 110nm gain bandwidth, gain of 27dB at maximum gain wavelength, HI-1060 fiber

SOA1250110PM27DBLXXX → 1250nm average gain wavelength, 110nm gain bandwidth, gain of 27dB at maximum gain wavelength, PM-980 fiber, with loose tube