



Semiconductor optical amplifiers (SOAs) — gain modules and traveling wave amplifiers (TWAs)

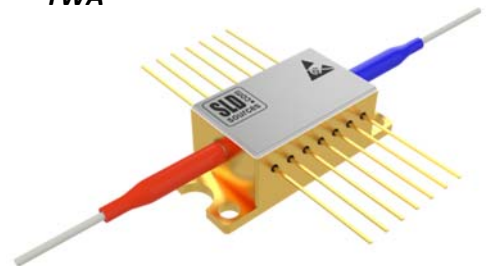
Semiconductor optical amplifiers (SOAs) are key components of external cavity lasers, including tunable and swept wavelength tunable lasers. In these lasers, the SOAs are employed as the gain elements—power boosters and pre-amplifiers.

We have two types of amplifiers in our product line — **gain modules** and **traveling wave amplifiers (TWAs)**.

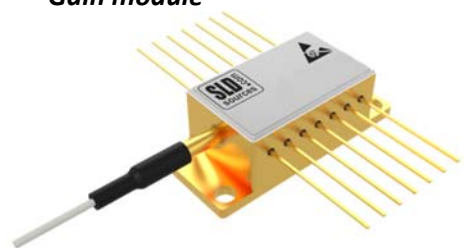
The amplifiers are hermetically sealed fiber pigtailed modules that can be assembled with SM or PANDA PM fibers. The modules are Telcordia GR-468-CORE qualified and RoHS and REACH compliant.

The amplifiers have a wide gain spectrum and a high output optical power. We offer a wide range of standard products in 760 – 1100 nm spectral range with various optical gain bandwidths and output optical power levels.

TWA



Gain module



Standard TWAs

Parameter	Units	TWA785G50	TWA795G16	TWA830G55	TWA840G25	TWA850G40	TWA870G58	TWA870G20	TWA930G65	TWA970G40	TWA1010G95	TWA1060G35	TWA1060G75
		Center wavelength	nm	785	795	830	840	850	870	870	930	970	1010
3dB optical gain bandwidth	nm	50	16	55	25	40	58	20	65	40	95	35	75
Output optical power	dBm	13	13	15	17	13	13	10	13	15	13	15	13
Small signal gain (max)	dB	25	30	25	30	22	25	25	25	27	24	30	25
Gain ripple (max)	%	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Polarization dependent gain	dB	7	7	7	7	7	7	10	7	7	7	10	7
Forward current	mA	300	200	200	300	200	220	200	200	220	300	300	220
Forward voltage	V	2.5	2.5	2.5	2.3	2.5	2.5	2.2	2.5	2.3	2.5	2.3	2.5

Standard gain modules

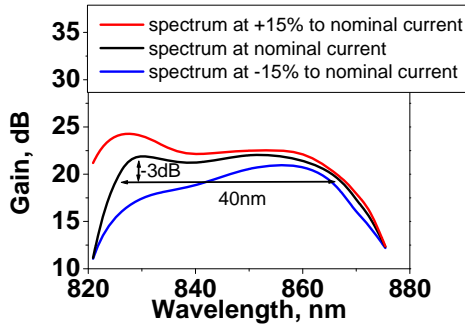
Parameter	Units	SOA840G50			SOA970G50			SOA1020G110		
		min	typ	max	min	typ	max	min	typ	max
ASE mode	Typical output power ex-fiber (SM) at the maximum spectral width	1			1			3		
	Typical peak wavelength	840			970			1020		
	Spectral width (FWHM)	45	50	–	45	50	–	100	110	–
	Residual spectral modulation	–	3	6	–	3	6	–	5	10
Forward current	mA	–	65	90	–	200	260	–	200	240
Laser mode (normal cleave)	Threshold current	–	40	50	–	100	150	–	40	60
	External slope efficiency	0.25 0.40			– 0.05 0.10			– 0.2 0.3		
	Maximum output power ex-fiber (SM or PM)	10			10			10		
	Forward voltage	V	2.0			2.0			2.2	



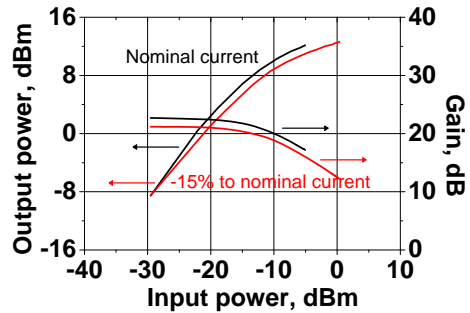
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Typical performance examples

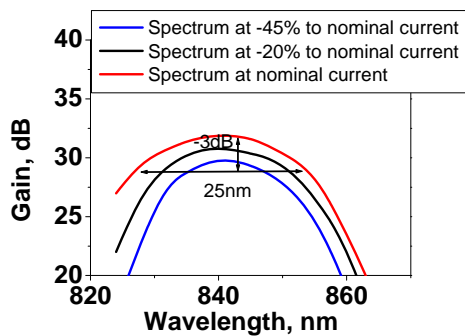
TWA850G40: small signal gain spectrum



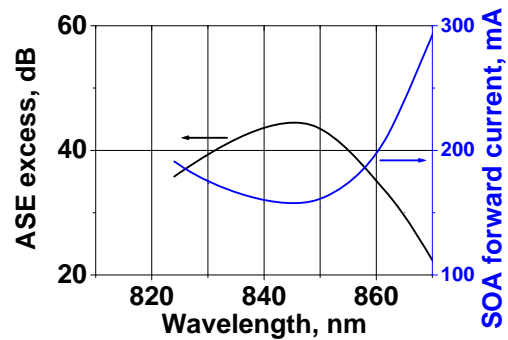
TWA850G40: transmission characteristics at 845 nm



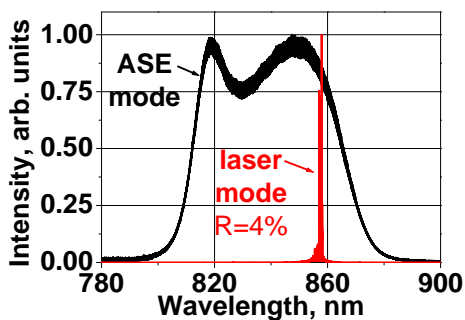
TWA840G2: small signal gain spectrum



TWA840G2: ASE excess and SOA forward current vs wavelength at 2 mW input power (0.03 nm FWHM linewidth) and 50 mW SOA output power



SOA840G50: spectra for ASE and laser modes



SOA840G50: SOA forward current vs wavelength at 1 mW SOA output power (4% reflectivity mirror is used)

