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# THORLABS

## SLD1123S, SLD1029S, and SLD1128S - September 8, 2015

Item #'s SLD1123S, SLD1029S, and SLD1128S were discontinued on September 8, 2015. For informational purposes, this is a copy of the website content at that time and is valid only for the stated product.

### SUPERLUMINESCENT DIODES (SLDs)

- ▶ Broadband Emission Centered at 1050, 1280, 1310, or 1550 nm
- ▶ Near-Gaussian Spectrum
- ▶ Low Ripple
- ▶ Butterfly or DIL Package



SLD1018S  
Butterfly Package

SLD1123S  
DIL Package

SLD1550S-A2  
Superluminescent Diode  
Mounted in a CLD1015 Compact  
Laser Diode Driver with TEC

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#### OVERVIEW

##### Features

- Center Wavelength at 1050, 1280, 1310, or 1550 nm
- Typical Bandwidths Ranging from 40 to 110 nm
- Butterfly or DIL Package
- Pigtailed with 1.5 m of SM or PM Fiber
- FC/APC Connector
- Integrated TEC and Thermistor

Superluminescent Diodes (SLDs) are excellent high-power, broadband light sources that are ideal for use in applications such as Optical Coherence Tomography (OCT) Imaging Systems and Fiber Optic Gyroscopes (FOG). The Dual In-Line- (DIL) and Butterfly-packaged SLDs offered here are Indium Phosphide (InP) devices manufactured by Thorlabs' Quantum Electronics (TQE).

Each device has an integrated thermoelectric cooler (TEC) and thermistor to ensure output stability. The output is coupled into an SM or PM fiber terminated with an FC/APC connector. The SLDs in DIL packages have integrated photodiodes for monitoring the device output. We also offer some of these SLDs in our XL line. These SLDs, denoted with the suffix XL, are hand-picked parts that demonstrate highly desirable specifications such as increased bandwidth and power. The specifications tables below and the tabs above further detail the differences.

A selection of the SLDs sold here are also available as benchtop sources. For more information, see the *Selection Guide* tab.

##### Recommended Controller/Mount Options

Item #	Mount	Diode Driver	TEC Controller
CLD1015	Butterfly	√	√
LM14S2	Butterfly		
ITC4000 Series	-	√	√
LDC200 Series	-	√	
TED200C	-		√

[Hide Specs](#)

The center wavelength with these devices is defined by an average weighted by the relative amplitude and may not correspond to peak power or the FWHM center wavelength due to the asymmetry of the spectrum.

### 1050 nm Superluminescent Diodes

Item #	SLD1050x		
Parameter	Min	Typ.	Max
Operating Current	-	-	300 mA
Center Wavelength	1030 nm	1050 nm	1070 nm
ASE Power <sup>A</sup>	6 mW	8 mW	-
Optical 3 dB Bandwidth <sup>a</sup>	40 nm	50 nm	-
RMS Gain Ripple <sup>a</sup>	-	0.1 dB	0.25 dB
Forward Voltage <sup>a</sup>	-	2.0 V	2.5 V
Photodiode Sensitivity	-	-	-
Fiber Type	HI1060 (SLD1050S) Corning PM 98-U25A (SLD1050P)		
<b>TEC Operation: typ / max @ T<sub>CASE</sub> = 25 °C / 65 °C</b>			
TEC Current	-	0.25 A	1.5 A
TEC Voltage	-	0.30 V	4.0 V
Thermistor Resistance	-	10 kΩ	-

a. @I<sub>OP</sub> = 300 mA

### 1280 nm Superluminescent Diodes

Item #	SLD1123S			SLD1023S			SLD1029S		
Parameter	Min	Typ.	Max	Min	Typ.	Max	Min	Typ.	Max
Operating Current	-	500 mA	600 mA	-	600 mA	800 mA	-	500 mA	650 mA
Center Wavelength	1260 nm	1280 nm	1310 nm	1270 nm	1280 nm	1290 nm	1260 nm	1280 nm	1300 nm
ASE Power	1 mW	1.5 mW	-	10 mW	15 mW	-	10 mW	15 mW	-
Optical Bandwidth	75 nm	95 nm	-	40 nm	45 nm	-	35 nm	40 nm	-
RMS Gain Ripple <sup>a</sup>	-	-	0.25 dB	-	-	0.35 dB	-	-	.35 dB
Forward Voltage <sup>b</sup>	-	1.6 V	2.0 V	-	1.4 V	2.0 V	-	1.3 V	2.0 V
Photodiode Sensitivity <sup>c</sup>	0.05 A/W	0.1 A/W	0.8 A/W	NA			0.05 A/W	0.1 A/W	0.8 A/W
Fiber Type	SMF-28e+			SMF-28e+			SMF-28e+		
<b>TEC Operation: typ / max @ T<sub>CASE</sub> = 25 °C / 65 °C</b>									
TEC Current	-	0.35 A	1.5 A	-	0.3 A	1.5 A	-	0.3 A	1.5 A
TEC Voltage	-	0.6 V	3.5 V	-	0.6 V	3.5 V	-	0.6 V	3.5 V
Thermistor Resistance	-	10 kΩ	-	-	10 kΩ	-	-	10 kΩ	-

a. @I<sub>OP</sub>, Res. BW = 0.1 nm

b. @ I<sub>OP</sub>

c. @VPD = -5 V

## 1310 nm Superluminescent Diodes

Item #	SLD1021S			SLD1018x			SLD1018xXL		
	Min	Typ.	Max	Min	Typ.	Max	Min	Typ.	Max
Operating Current	-	700 mA	900 mA	-	600 mA	800 mA	-	600 mA	800 mA
Center Wavelength	1290 nm	-	1330 nm	1290 nm	-	1330 nm	1290 nm	-	1330 nm
ASE Power	10 mW	12.5 mW	-	22 mW	30 mW	-	30 mW	-	-
Optical Bandwidth	80 nm	85 nm	-	40 nm	45 nm	-	45 nm	-	-
RMS Gain Ripple <sup>a</sup>	-	0.1 dB	0.35 dB	-	0.1 dB	0.35 dB	-	0.1 dB	0.35 dB
Forward Voltage <sup>b</sup>	-	1.55 V	2.0 V	-	1.5 V	1.8 V	-	1.5 V	1.8 V
Photodiode Sensitivity <sup>c</sup>	NA			NA			NA		
Fiber Type	SMF-28e+			SMF-28e+ (SLD1018S) Corning PM 13-U25A (SLD1018P)			SMF-28e+ (SLD1018SXL) Corning PM 13-U25A (SLD1018PXL)		
<b>TEC Operation: typ / max @ T<sub>CASE</sub> = 25 °C / 65 °C</b>									
TEC Current	-	0.4 A	1.5 A	-	0.3 A	1.5 A	-	0.3 A	1.5 A
TEC Voltage	-	0.5 V	4 V	-	0.5 V	4 V	-	0.5 V	4 V
Thermistor Resistance	-	10 kΩ	-	-	10 kΩ	-	-	10 kΩ	-

a. @I<sub>OP</sub>, Res. BW = 0.1 nmb. @ I<sub>OP</sub>c. @V<sub>PD</sub> = -5 V

## 1550 nm Superluminescent Diodes

Item #	SLD1550x-A2			SLD1550x-A1			SLD1550x-A40		
	Min	Typ.	Max	Min	Typ.	Max	Min	Typ.	Max
Operating Current	-	550 mA	600 mA	-	450 mA	500 mA	-	750 mA	900 mA
Center Wavelength	1520 nm	1550 nm	1580 nm	1520 nm	1550 nm	1580 nm	1530 nm	1550 nm	1570 nm
ASE Power	2.0 mW	2.5 mW	-	0.75 mW	1.0 mW	-	35 mW	40 mW	-
Optical Bandwidth	85 nm	90 nm	-	100 nm	110 nm	-	30 nm	33 nm	-
RMS Gain Ripple <sup>a</sup>	-	-	0.25 dB	-	-	0.1 dB	-	0.2 dB	0.35 dB
Forward Voltage <sup>b</sup>	-	1.6 V	2.0 V	-	1.6 V	2.0 V	-	1.4 V	1.8 V
Fiber Type	SMF-28e+ (SLD1550S-A2) Corning PM 15-U40A (SLD1550P-A2)			SMF-28e+ (SLD1550S-A1) Corning PM 15-U40A (SLD1550P-A1)			SMF-28e+ (SLD1550S-A40) Corning PM 15-U40A (SLD1550P-A40)		
<b>TEC Operation: typ / max @ T<sub>CASE</sub> = 25 °C / 65 °C</b>									
TEC Current	-	0.3 A	1.5 A	-	0.3 A	1.5 A	-	0.3 A	1.5 A
TEC Voltage	-	0.3 V	3.5 V	-	0.3 V	3.5 V	-	0.3 V	3.5 V
Thermistor Resistance	-	10 kΩ	-	-	10 kΩ	-	-	10 kΩ	-

Item #	SLD1128S			SLD1005S		
	Min	Typ.	Max	Min	Typ.	Max
Operating Current	-	400 mA	500 mA	-	600 mA	800 mA
Center Wavelength	1520 nm	1550 nm	1580 nm	1530 nm	1550 nm	1570 nm
ASE Power	0.75 mW	1.0 mW	-	20 mW	22 mW	-
Optical Bandwidth	100 nm	110 nm	-	45 nm	50 nm	-
RMS Gain Ripple <sup>a</sup>	-	-	0.1 dB	-	0.2 dB	0.35 dB
Forward Voltage <sup>b</sup>	-	1.6 V	2.0 V	-	1.4 V	1.6 V
Photodiode Sensitivity <sup>c</sup>	0.05 A/W	0.1 A/W	0.8 A/W	-	-	-
Fiber Type	SMF-28e+			SMF-28e+		
<b>TEC Operation: typ / max @ T<sub>CASE</sub> = 25 °C / 65 °C</b>						
TEC Current	-	0.35 A	1.5 A	-	0.3 A	1.5 A
TEC Voltage	-	0.5 V	3.5 V	-	0.3 V	3.5 V
Thermistor Resistance	-	10 kΩ	-	-	10 kΩ	-

a. @I<sub>OP</sub>, Res. BW = 0.1 nmb. @ I<sub>OP</sub>c. @V<sub>PD</sub> = -5 V

[Hide Selection Guide](#)

## SELECTION GUIDE

## Superluminescent Diode Performance:

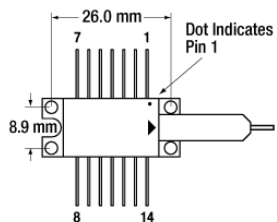
Item #	Center Wavelength	Output Power	FWHM	Optical Spectrum	LIV Curves <sup>a</sup>	Benchtop Source
SLD1050S	1050 nm	8 mW	50 nm			N/A
SLD1050P	1050 nm	8 mW	50 nm			N/A
SLD1123S	1280 nm	1.5 mW	95 nm			N/A
SLD1023S	1280 nm	15 mW	45 nm			N/A
SLD1029S	1280 nm	15 mW	40 nm			N/A
SLD1021S	1310 nm	12.5 mW	85 nm			S5FC1021S
SLD1018x	1310 nm	30 mW	45 nm			S5FC1018S S5FC1018P
SLD1018xXL	1310 nm	30 mW	45 nm (Min)			S5FC1018SXL S5FC1018PXL
SLD1550x-A1	1550 nm	1.0 mW	110 nm			N/A
SLD1128S	1550 nm	1.0 mW	110 nm			N/A
SLD1550x-A2	1550 nm	2.0 mW	90 nm			S5FC1550S-A2 S5FC1550P-A2
SLD1005S	1550 nm	22 mW	50 nm			S5FC1005S
SLD1550x-A40	1550 nm	40 mW	33 nm			N/A

a. Basic laser diode operating characteristics can be measured by increasing current (I) while measuring the device voltage (V) and light output (L). The resulting data is usually referred to as an LIV curve.

[Hide Package Diagrams](#)

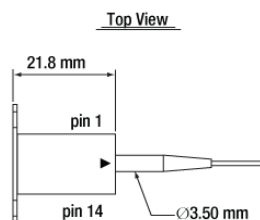
PACKAGE DIAGRAMS

**Butterfly Package**



Pin	Description	Pin	Description
1	+ TEC	14	- TEC
2	Thermistor	13	Case
3	NC	12	NC
4	NC	11	SLD Cathode
5	Thermistor	10	SLD Anode
6	NC	9	NC
7	NC	8	NC

**DIL Package**



Pin	Description	Pin	Description
1	+ TEC	14	- TEC
2	NC	13	Case
3	NC	12	Thermistor
4	NC	11	Thermistor
5	SLD Anode	10	NC
6	NC	9	SLD Cathode
7	PD Cathode	8	PD Anode

[Hide 1050 nm Superluminescent Diodes](#)

**1050 nm Superluminescent Diodes**



Item #	SLD1050S			SLD1050P		
	Min	Typ	Max	Min	Typ	Max
Parameter <sup>a</sup>						
Operating Current (mA)	-	-	300	-	-	300
Center Wavelength (nm) <sup>b</sup>	1030	1050	1070	1030	1050	1070
ASE Power (mW)	6	8	-	6	8	-
Optical Bandwidth (nm)	40	50	-	40	50	-
Output Spectrum (Click to Enlarge)						
LIV Plot (Click to Enlarge)						
Fiber Type	HI1060			Corning PM 98-U25A		

a. Full specifications are available by clicking on the *Specs* tab above.  
 b. The center wavelength with these devices is defined by an average weighted by the relative amplitude and may not correspond to peak power or the FWHM center wavelength due to the asymmetry of the spectrum.

Part Number	Description	Price	Availability
SLD1050S	8 mW SLD, CWL = 1050 nm, FWHM = 50 nm, Butterfly Pkg, SM Fiber, FC/APC	\$1,560.00	Today
SLD1050P	8 mW SLD, CWL = 1050 nm, FWHM = 50 nm, Butterfly Pkg, PM Fiber, FC/APC	\$1,710.00	Today

[Hide 1280 nm Superluminescent Diodes](#)**1280 nm Superluminescent Diodes**

Item #	SLD1123S			SLD1023S			SLD1029S		
	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max
Parameter <sup>a</sup>									
Operating Current (mA)	-	500	600	-	600	800	-	500	650
Center Wavelength (nm) <sup>b</sup>	1260	1280	1310	1270	1280	1290	1260	1280	1300
ASE Power (mW)	1	1.5	-	10	15	-	10	15	-
Optical Bandwidth (nm)	75	95	-	40	45	-	35	40	-
Output Spectrum (Click to Enlarge)									
LIV Plot (Click to Enlarge)									
Fiber Type	SMF-28e+			SMF-28e+			SMF-28e+		

a. Full specifications are available by clicking on the *Specs* tab above.

b. The center wavelength with these devices is defined by an average weighted by the relative amplitude and may not correspond to peak power or the FWHM center wavelength due to the asymmetry of the spectrum.

Part Number	Description	Price	Availability
SLD1023S	15 mW SLD, CWL 1280 nm, FWHM = 45 nm, Butterfly Pkg, SM Fiber, FC/APC	\$2,230.00	Today

[Hide 1310 nm Superluminescent Diodes](#)**1310 nm Superluminescent Diodes**

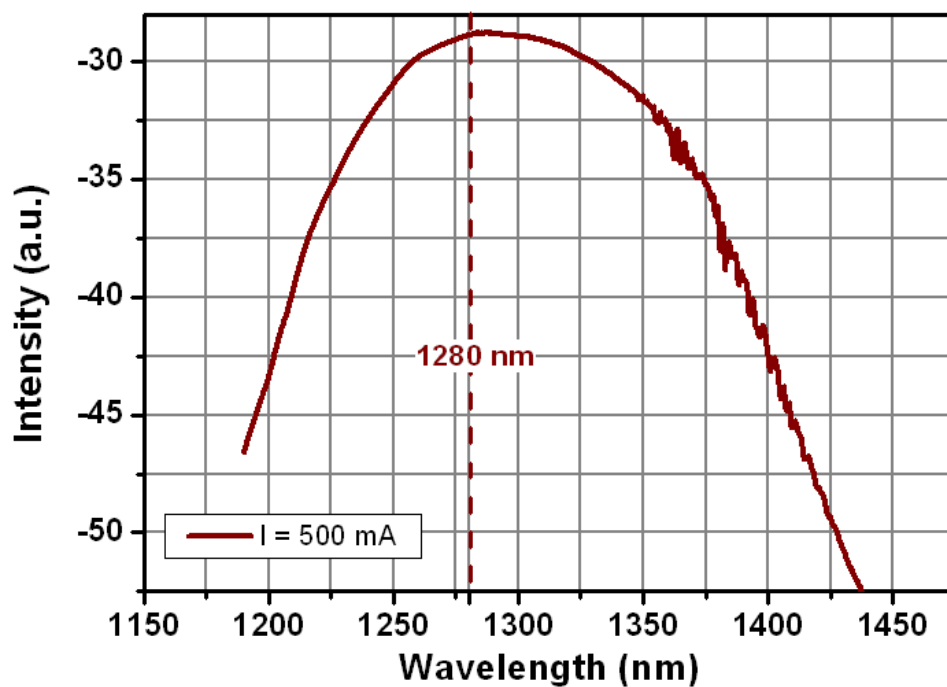
Item #	SLD1021S			SLD1018x			SLD1018xXL		
	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max
Parameter <sup>a</sup>									
Operating Current (mA)	-	700	900	-	600	800	-	600	800
Center Wavelength (nm) <sup>b</sup>	1290	-	1330	1290	-	1330	1290	-	1330
ASE Power (mW)	10	12.5	-	22	30	-	30	-	-
Optical Bandwidth (nm)	80	85	-	40	45	-	45	-	-
Output Spectrum (Click to Enlarge)									
LIV Plot (Click to Enlarge)									
Fiber Type	SMF-28e+			SMF-28e+ (SLD1018S and SLD1018SXL) Corning PM 13-U25A (SLD1018P and SLD1018PXL)					
Benchtop Version	S5FC1021S			S5FC1018S S5FC1018P			S5FC1018SXL S5FC1018PXL		

a. Full specifications are available by clicking on the *Specs* tab above.

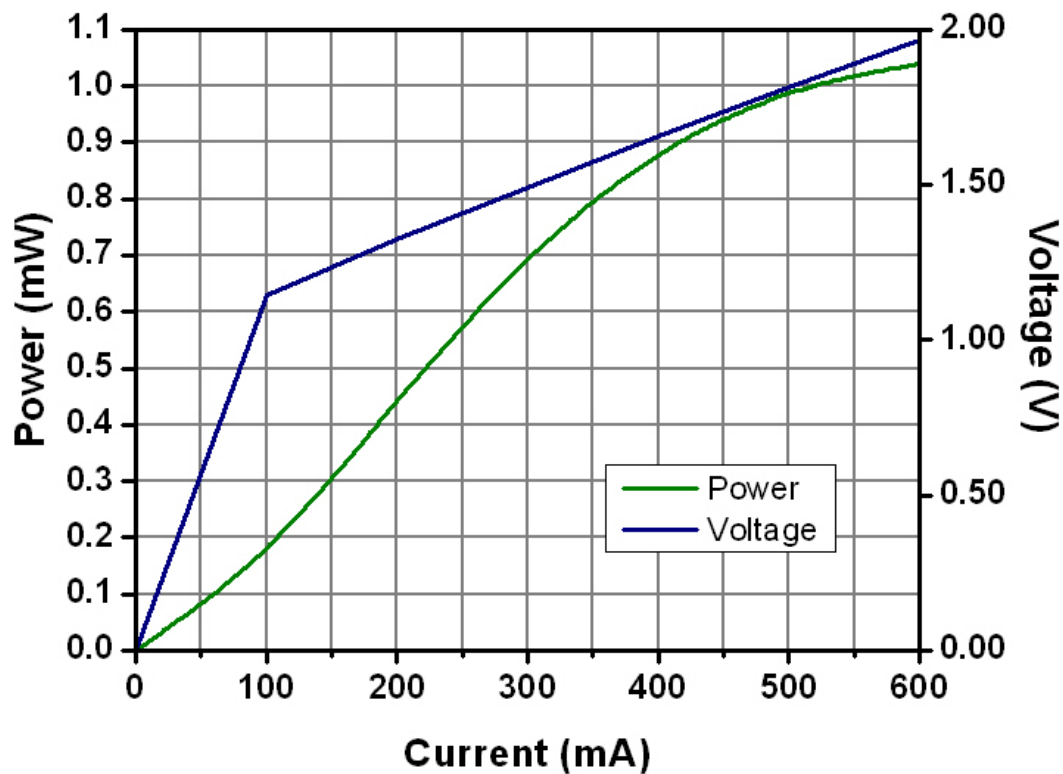
b. The center wavelength with these devices is defined by an average weighted by the relative amplitude and may not correspond to peak power or the FWHM center wavelength due to the asymmetry of the spectrum.

Part Number	Description	Price	Availability
SLD1021S	12.5 mW SLD, CWL 1310 nm, FWHM = 85 nm, Butterfly Pkg, SM Fiber, FC/APC	\$1,920.00	Today
SLD1018S	30 mW SLD, CWL 1310 nm, FWHM = 45 nm, Butterfly Pkg, SM Fiber, FC/APC	\$2,230.00	3-5 Days
SLD1018SXL	30 mW (min) SLD, CWL 1310 nm, FWHM = 45 nm (min), Butterfly Pkg, SM Fiber, FC/APC	\$4,440.00	Today
SLD1018P	30 mW SLD, CWL 1310 nm, FWHM = 45 nm, Butterfly Pkg, PM Fiber, FC/APC	\$2,380.00	Today
SLD1018PXL	30 mW (min) SLD, CWL 1310 nm, FWHM = 45 nm (min) Butterfly Pkg, PM Fiber, FC/APC	\$4,750.00	Today

**SLD1123S: Optical Spectrum**

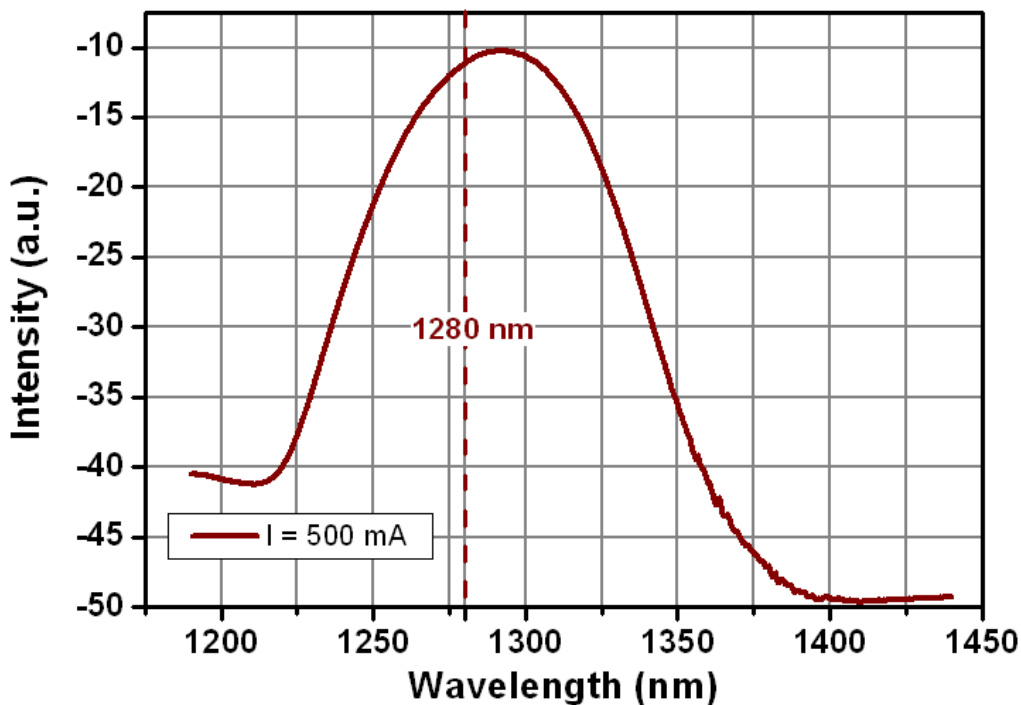


**SLD1123S: Optical Power and Forward Voltage**

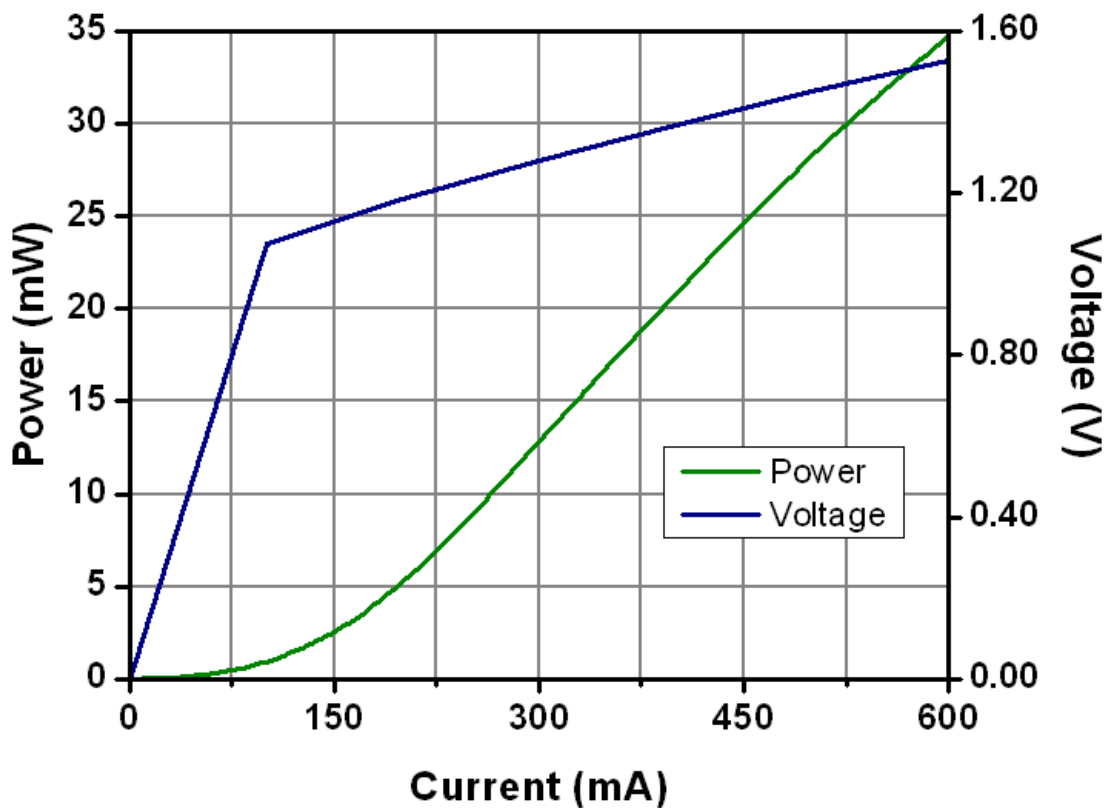


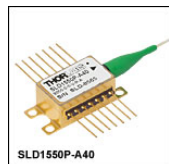


### SLD1029S: Optical Spectrum



### SLD1029S: Optical Power and Forward Voltage



[Hide 1550 nm Superluminescent Diode](#)**1550 nm Superluminescent Diode**

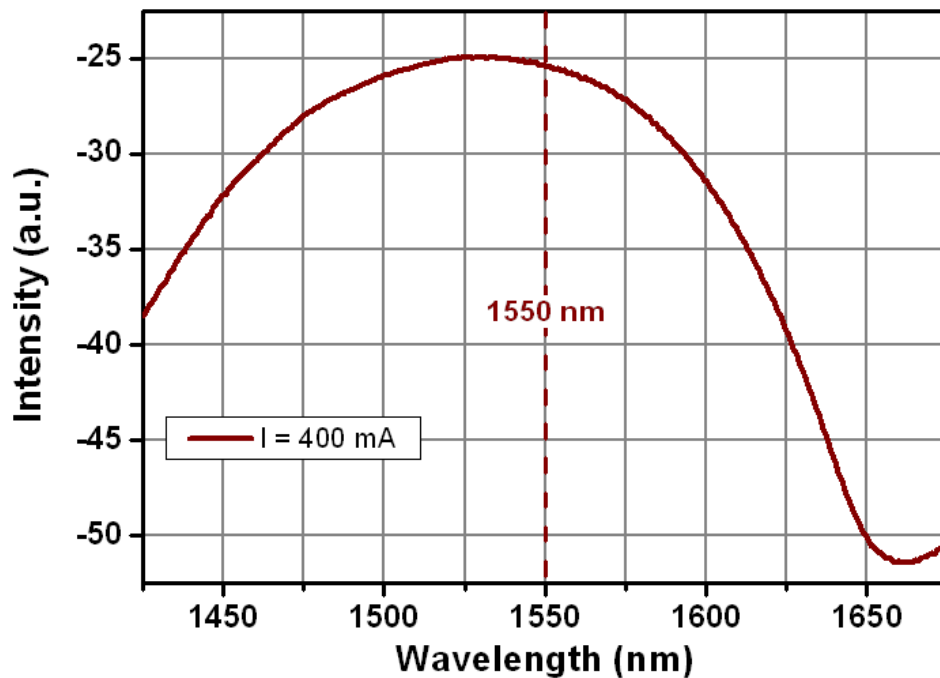
Item #	SLD1128S			SLD1550x-A1			SLD1550x-A2			SLD1005S			SLD1550x-A40		
Parameter <sup>a</sup>	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max
Operating Current (mA)	-	400	500	-	450	500	-	550	600	-	600	800	-	750	900
Center Wavelength (nm) <sup>b</sup>	1520	1550	1580	1520	1550	1580	1520	1550	1580	1530	1550	1570	1530	1550	1570
ASE Power (mW)	0.75	1.0	-	0.75	1.0	-	2.0	2.5	-	20	22	-	35	40	-
Optical Bandwidth (nm)	100	110	-	100	110	-	85	90	-	45	50	-	30	33	-
Output Spectrum (Click to Enlarge)															
LIV Plot (Click to Enlarge)															
Fiber Type	SMF-28e+			SMF-28e+ (SLD1550S-A1 and SLD1550S-A2) Corning PM 15-U40A (SLD1550P-A1 and SLD1550P-A2)						SMF-28e+			SMF-28e+ (SLD1550S-A40) Corning PM 15-U40A (SLD1550P-A40)		
Benchtop Version	N/A			N/A			S5FC1550S-A2 S5FC1550P-A2			S5FC1005S			N/A		

a. Full specifications are available by clicking on the *Specs* tab above.

b. The center wavelength with these devices is defined by an average weighted by the relative amplitude and may not correspond to peak power or the FWHM center wavelength due to the asymmetry of the spectrum.

Part Number	Description	Price	Availability
SLD1550S-A1	1.0 mW SLD, CWL=1550 nm, FWHM = 110 nm, Butterfly Package, SM Fiber, FC/APC	\$1,500.00	Today
SLD1550P-A1	1.0 mW SLD, CWL=1550 nm, FWHM = 110 nm, Butterfly Package, PM Fiber, FC/APC	\$1,630.00	Today
SLD1550S-A2	2.0 mW SLD, CWL=1550 nm, FWHM = 90 nm Butterfly Package, SM Fiber, FC/APC	\$1,500.00	Today
SLD1550P-A2	2.0 mW SLD, CWL=1550 nm, FWHM = 90 nm, Butterfly Package, PM Fiber, FC/APC	\$1,630.00	Lead Time
SLD1005S	22 mW SLD, CWL= 1550 nm, FWHM = 50 nm, Butterfly Pkg, SM Fiber, FC/APC	\$1,740.00	Today
SLD1550S-A40	Customer Inspired!40 mW SLD, CWL=1550 nm, FWHM = 33 nm, Butterfly Package, SM Fiber, FC/APC	\$1,970.00	Today
SLD1550P-A40	Customer Inspired!40 mW SLD, CWL=1550 nm, FWHM = 33 nm, Butterfly Package, PM Fiber, FC/APC	\$2,100.00	Today

### SLD1128S: Optical Spectrum



### SLD1128S: Optical Power and Forward Voltage

