JDS Uniphase

Product Bulletin

High-speed, High-temperature Data Link Laser Diodes

SDL-5800 Series

High-speed lasers manufactured with InGaAs active regions are able to perform at gigabit data rates at high temperatures. SDL-5800 series lasers are able to transmit data at 1.25 Gb/s and 125 °C. Based on JDS Uniphase's 980 nm pump laser and space heritage, the SDL-5800 series is extremely reliable.

The SDL-5800, a strained layer InGaAs single-mode structure, is fabricated using an MOCVD-grown quantum well active region. The product's high efficiency, together with JDS Uniphase's unique low thermal resistance assembly, minimizes junction temperature rise, thereby optimizing device-operating lifetime. JDS Uniphase's device and packaging technology combination ensures the highest reliability available in the industry.

The SDL-5800 is offered on the JDS Uniphase standard B-submount, ready for integration into photonic modules.

Key Features

- Modulation rates up to 1.25 Gb/s
- Temperature operating range -40 to 125 °C
- 990 nm wavelength
- Alumina submount

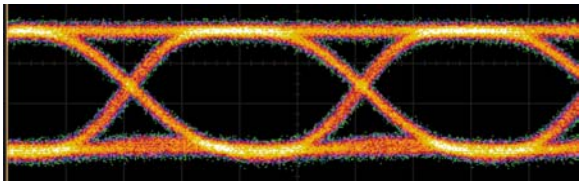
Applications

- Avionic LANs
- Satellite data links
- Harsh environment remote sensing

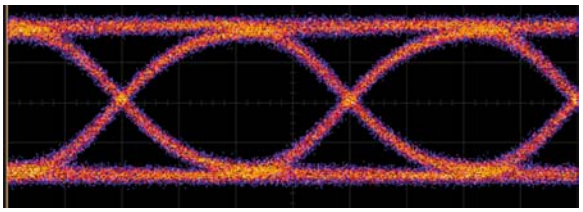
Electro-optical Performance

Laser Characteristics	Condition	SDL-5800-A Minimum	SDL-5800-A Maximum	Unit
Modulation rate	at 10 mW	–	1.25	Gb/s
CW output power		10	15	mW
Peak wavelength	at 10 mW	975	–	nm
Spectral width	at 10 mW	–	10	nm
Slope efficiency		0.55	–	mW/mA
FWHM beam divergence				
Parallel to junction	at 10 mW	–	15	degrees
Perpendicular to junction	at 10 mW	–	35	degrees
Threshold current		–	10	mA
Operating current	at 10 mW	–	28	mA
Signal current	$I_{op} - I_{th}$	–	18	mA
Forward voltage	at 10 mW	–	1.6	V
Series resistance		–	10	Ω

Laser Eye Diagrams

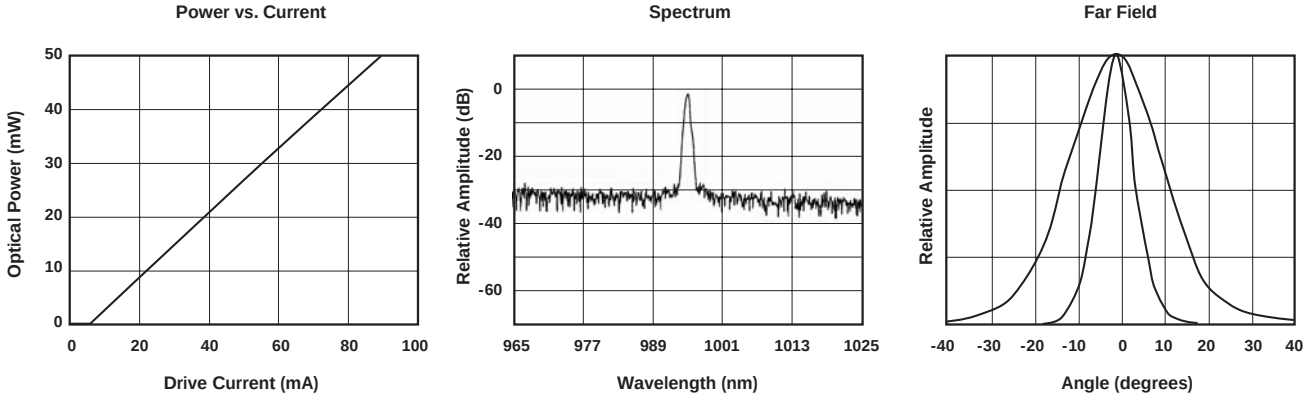


125 °C, 1.25 Gb/s



–40 °C, 1.25 Gb/s

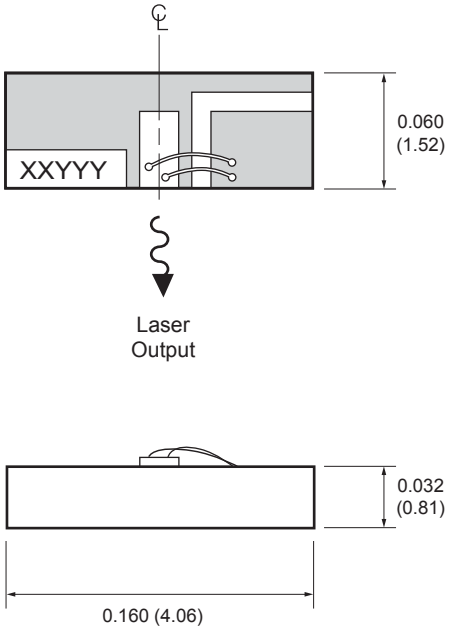
Optical Characteristics



Package Dimensions (inches [mm])

Standard Tolerances
inches: x.xx = ±0.02 mm: x.x = ±0.5
x.xxx = ±0.010 x.xx = ±0.25

B-Submount



User Safety

Safety and Operating Considerations

The laser light emitted from this laser diode is invisible and may be harmful to the human eye. Avoid looking directly into the laser diode or into the collimated beam along its optical axis when the device is in operation.

CAUTION: THE USE OF OPTICAL INSTRUMENTS WITH THIS PRODUCT WILL INCREASE EYE HAZARD.

Operating the laser diode outside of its maximum ratings may cause device failure or a safety hazard. Power supplies used with the component must be employed such that the maximum peak optical power cannot be exceeded. CW laser diodes may be damaged by excessive drive current or switching transients. When power supplies are used, the laser diode should be connected with the main power on and the output voltage at zero. The current should be increased slowly while the laser diode output power and the drive current are monitored.

Device degradation accelerates with increased temperature, and therefore careful attention to minimize the case temperature is advised. For example, life expectancy will decrease by a factor of four if the case is operated at 50 °C rather than 30 °C.

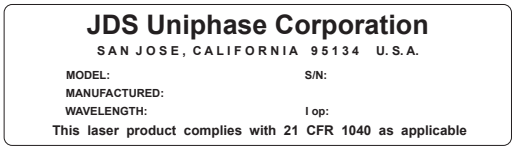
A proper heatsink for the laser diode on a thermal radiator will greatly enhance laser life. Firmly mount the laser on a radiator with a thermal impedance of less than 0.5 °C/W for increased reliability.

ESD PROTECTION – Electrostatic discharge is the primary cause of unexpected laser diode failure. Take extreme precaution to prevent ESD. Use wrist straps, grounded work surfaces and rigorous antistatic techniques when handling laser diodes.

21 CFR 1040.10 Compliance

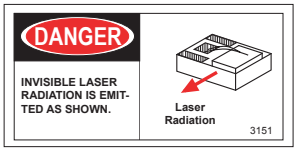
Because of the small size of these devices, each of the labels shown is attached to the individual shipping container. They are illustrated here to comply with 21 CFR 1040.10 as applicable under the Radiation Control for Health and Safety Act of 1968.

Serial Number Identification Label



Output Power Danger Label

Package Aperture Label



B-Submount Diodes

Ordering Information

For more information on this or other products and their availability, please contact your local JDS Uniphase account manager or JDS Uniphase directly at 1-800-254-3684 in North America and +800-5378-JDSU worldwide or via e-mail at sales@jdsu.com.

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