# SLD3132VF Blue-Violet Laser Diode for Blu-ray Disc Players

**Along with the increasing popularity of flat-panel high-definition TV sets, the number of titles available in the Blu-ray Disc format has increased and the age of this next generation optical disc has truly arrived. Sony has now developed the SLD3132VF laser diode for Blu-ray disc players. This new device concentrates all of Sony's blue-violet laser diode technology and is now being released as the next generation standard model playback laser diode.**

- Blue-violet laser diode for Blu-ray disc players
- Excellent high-temperature operating characteristics and low noise
- Optimized chip size for reduced cost

## Blue-Violet Laser Diode for Blu-ray Disc Players

Sony has already released the SLD3131 series of products as Blu-ray disc playback laser diodes. In the SLD3132VF of this release, which is targeted as the next generation standard model playback laser, Sony has introduced a new laser structure and new laser facet technologies that improve quality even further over existing products, and has optimized the chip size even further.

In this device, Sony has taken full advantage of the mass production technologies established up to now through the manufacture of laser diodes for Blu-ray disc players in application such as the Sony Computer Entertainment Inc. PlayStation 3 (PS3)*1 and will continue to contribute to the advance of the Blu-ray disc by providing stable and continuing supply of blue-violet laser diodes.

*1: PlayStation 3 and PS3 are registered trademarks of Sony Computer Entertainment Inc.

## Excellent High-Temperature Operating Characteristics and Low Noise

Since laser diodes are subject to heat from the other components in the system in addition to the heat they generate themselves, their operating environment can reach high temperatures. The blue-violet laser diode is a critical key device in Blu-ray equipment and a long operating lifetime and stable operation in such environments are important. Furthermore, low noise is also required for practical reasons when used as an optical disc laser.

In the product of this release, Sony achieved stable operation and long life in high-temperature environments up to 75°C by optimizing the structure of the active layer. Furthermore, Sony achieved excellent low-noise characteristics by holding the threshold current to a low level.

## Optimized Chip Size for Reduced Cost

By making the SLD3132VF chip size smaller than that previously used for playback laser diodes, Sony succeeded in reducing costs. There is a tendency for operating lifetimes to become shorter as the chip size is reduced due to, for example, increases in the device operating temperature. Sony, however, developed the SLD3132VF as a product that achieves both high-quality and low-cost by combining the optimized structure of the active layer mentioned above with other Sony technologies such as the new laser facet technology. The SLD3132VF uses the 5.6 mm diameter package that is the standard for current laser diodes. Sony plans on adding the SLD3132VFI, provided in a 3.8 mm diameter package, to the lineup in the near future for use in slim optical disc drives for IT and other applications.

## V O I C E

Many end customers are already enjoying high-definition video created by Sony blue-violet laser diodes. In this project as well, the team members worked together as a unit and created a device that can respond to everyone's desires for both quality and lower costs.

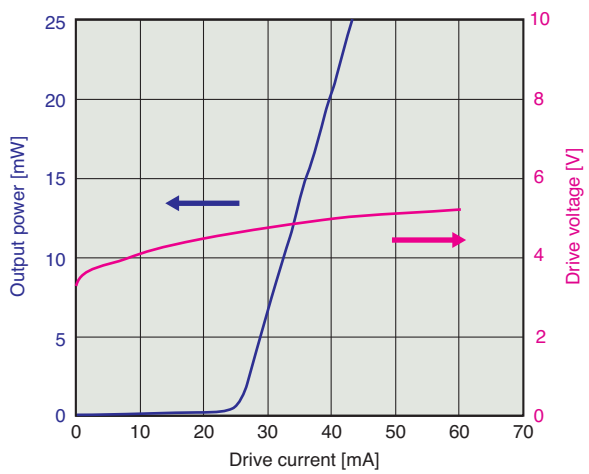
We are all committed to continuing to provide both the superb video images created by Blu-ray discs and the blue-violet laser diodes that support those images.

**Table 1** Main Specifications

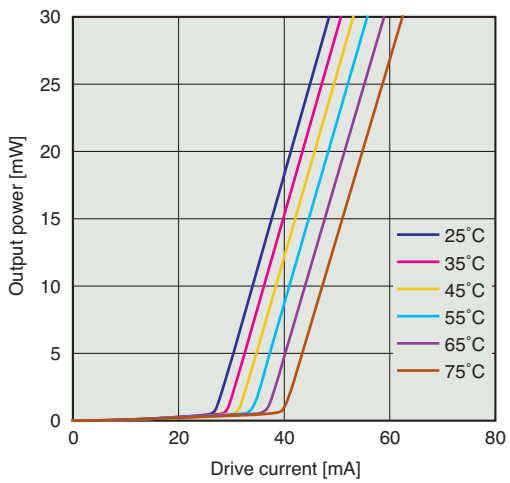
| Item | | Symbol | Conditions | Typ. | Unit |
|---|---|---|---|---|---|
| Threshold current | | Ith | CW | 25 | mA |
| Operating current | | Iop | CW, Po = 15mW | 37 | mA |
| Operating voltage | | Vop | CW, Po = 15mW | 4.6 | V |
| Wavelength | | λp | CW, Po = 15mW | 405 | nm |
| Radiation angle | Parallel | θ// | CW, Po = 15mW | 9 | deg. |
| | Perpendicular | θ⊥ | CW, Po = 15mW | 23 | |
| Differential efficiency | | ηD | CW, Po = 15mW | 1.4 | mW/mA |

**Figure 1** Representative Characteristics

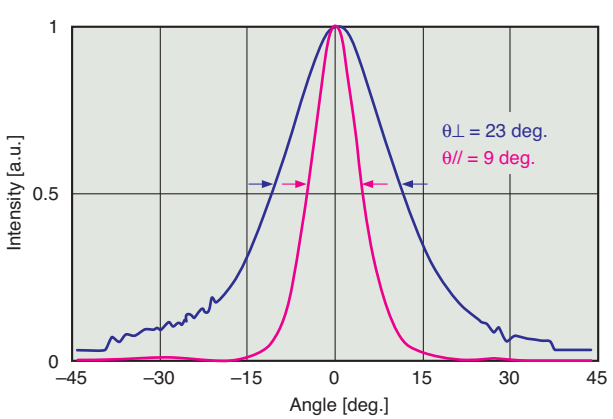
(1) L-I and V-I Characteristics




(2) L-I Temperature Characteristics




(3) Far-Field Pattern




(4) Aging Characteristics

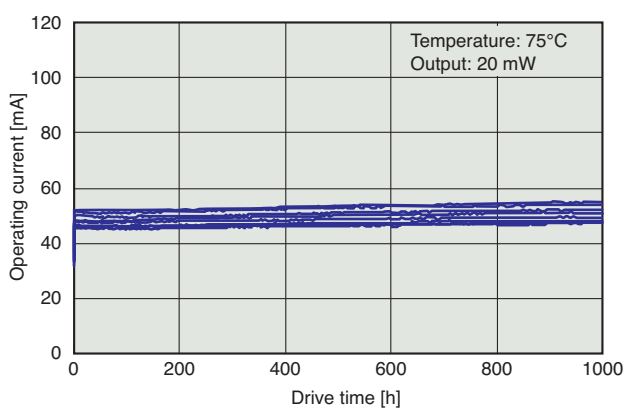



**Figure 2** Noise Characteristics