852 nm Grating Stabilized TO Can Laser Diode, 270 mW

L852SEV1

Description

The L852SEV1 852 nm, Single-Frequency TO-Can Laser Diode is based on quantum well epitaxial layer growth and a highly reliable ridge waveguide structure with external volume holographic grating (VHG) feedback. This single-transverse mode laser diode features high optical output power and produces a wavelength stabilized spectrum with a single frequency narrow linewidth over the operating power range of approximately 250 to 300 mW. Contained in a Ø9 mm package, the L852SEV1 laser is ideal for Raman spectroscopy, instrumentation, and pumping applications.

Specifications

Absolute Maximum Ratings	
LD Reverse Voltage (Max)	2 V
Absolute Max Output Power	350 mW
Absolute Max Current	450 mA
Operating Temperature	See Note[a]
Storage Temperature	-10 to 65 °C
Pin Code	E

a. Note: The operating temperature corresponds to the range of temperatures over which the laser diode produces wavelength-stabilized output. The exact range typically spans a minimum of 5 °C centered on a temperature between 15 °C and 35 °C. This specification is given for each device on the serial-number-specific data sheet.

L852SEV1[a]				
	Symbol	**Min**	**Typical**	**Max**
Center Wavelength	λ_C	851 nm	852 nm	853 nm
Single Frequency Output Power (CW @ I_{OP} and T_{CS})[b]	P_{CW}	250 mW	270 mW	-
Single Frequency Power Range	ΔP_{SF}	100 mW[c]	-	-
Center Temperature for $\Delta T_{Stabilized}$	T_{CS}	15 °C	-	35 °C
Wavelength Stabilized Temperature Range	$\Delta T_{Stabilized}$	5 °C	-	-
Threshold Current	I_{th}	-	40 mA	-
Operating Current	I_{OP}	-	350 mA	400 mA
Side Mode Suppression Ratio	SMSR	35 dB	45 dB	-
Slope Efficiency	$\Delta P/\Delta I$	-	0.75 W/A	-
Forward Voltage	V_F	-	2.0 V	2.5 V
Vertical Beam Divergence Angle (FWHM @ 400 mA)	θ	-	12°	18°
Lateral Beam Divergence Angle (FWHM @ 400 mA)	θ	-	9°	12°

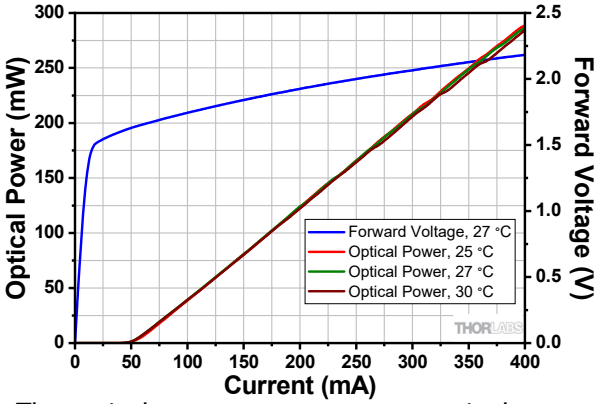
a. In order to achieve the specified performance, we recommend using the TCLDM9 Laser Diode Mount and, when collimated, an NIR optical Isolator; single frequency performance when collimated is only guaranteed with >30 dB isolation of back reflections.

b. This is the upper limit of the range where the diode can produce single frequency output and varies from laser to laser. The performance of each individual laser can be found on the serial-number-specific data sheet.

c. This value is specified for temperatures in the range given by $T_{CS} \pm \frac{1}{2}T_{Stabilized}$. The 100 mW minimum single frequency power range corresponds to output powers between the diode-specific output power $P_{CW}-\Delta P_{SF}$ and P_{CW}, e.g., between 170 mW and 270 mW.

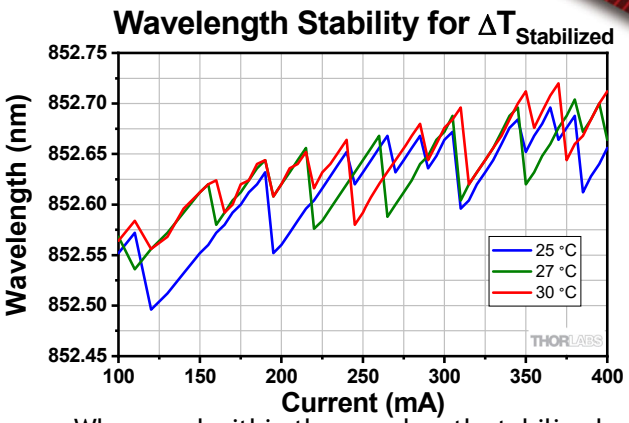
Typical Performance Plots

L852SEV1 Sample L-I-V Characteristics



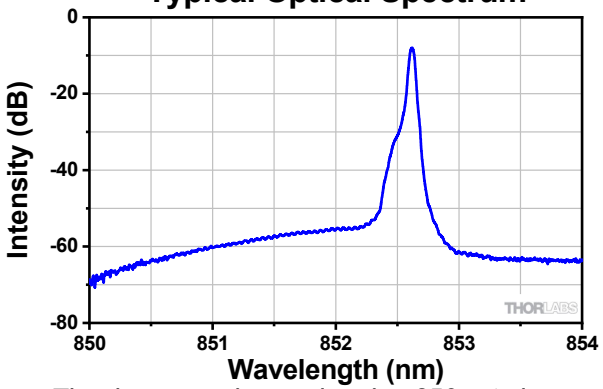
The typical output power vs. current is shown for three temperatures within the wavelength stabilized temperature range ($\Delta T_{Stabilized}$)* of an L852SEV1 laser diode.

Wavelength Stability for $\Delta T_{Stabilized}$



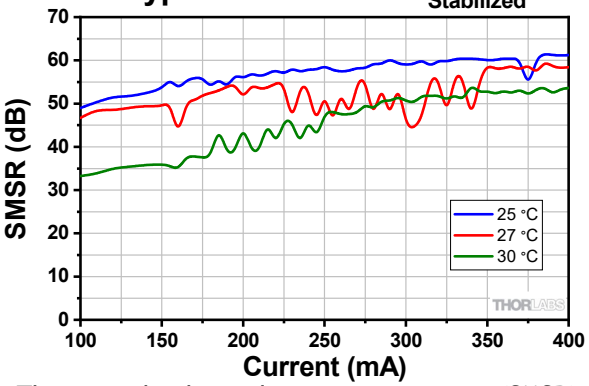
When used within the wavelength stabilized temperature range ($\Delta T_{Stabilized}$)*, the L852SEV1 shows excellent wavelength stability over a range of drive currents.

Typical Optical Spectrum



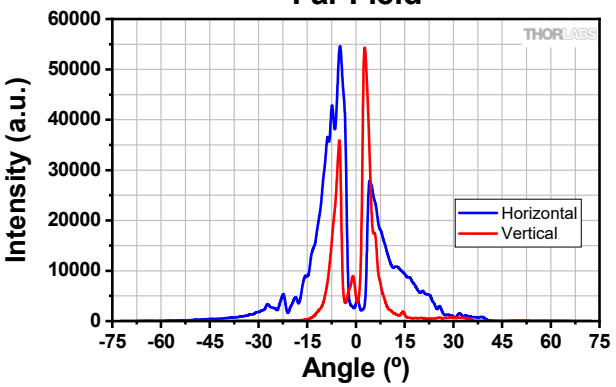
The data was obtained with a 350 mA drive current and the device held at 27° C.

Typical SMSR for $\Delta T_{Stabilized}$



The typical side mode suppression ratio (SMSR) is shown for three temperatures within the wavelength stabilized temperature range ($\Delta T_{Stabilized}$)*.

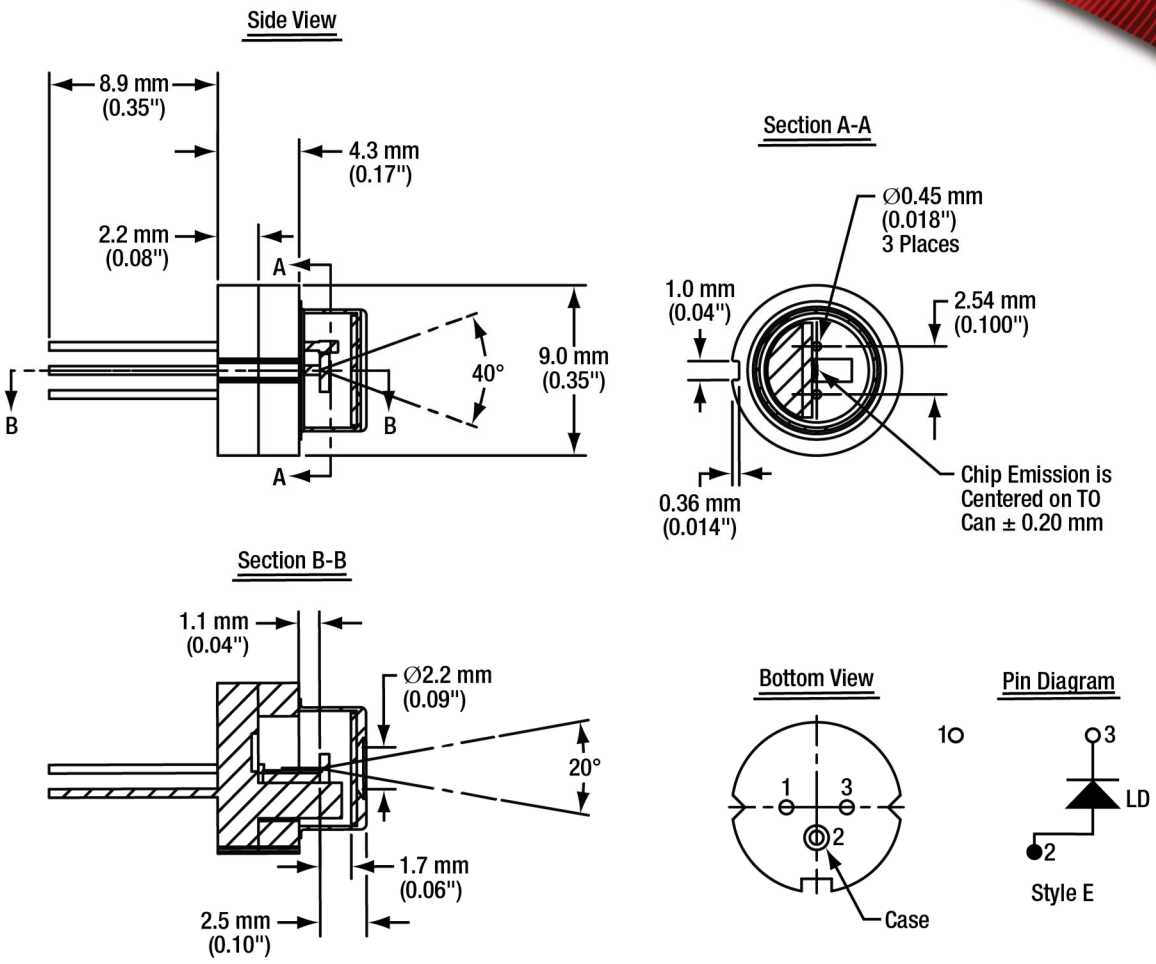
Far Field



The diverging beam from the laser chip freely propagates through the external volume holographic grating (VHG), while the light in the center of the beam is reflected back into the chip. This results in a stabilized wavelength emitting from the laser and also creates a dark spot in the far field, as shown in the graphs above. These were measured with a current of 400 mA.

*The wavelength stabilized temperature range varies from laser diode to laser diode. The temperature range that supports wavelength-stabilized performance for each L852SEV1 laser is provided on the serial-number-specific data sheet.

Drawing


Side View
8.9 mm
(0.35")
4.3 mm
(0.17")
2.2 mm
(0.08")
A
B
40°
9.0 mm
(0.35")
Section A-A
Ø0.45 mm
(0.018")
3 Places
1.0 mm
(0.04")
2.54 mm
(0.100")
0.36 mm
(0.014")
Chip Emission is
Centered on TO
Can ± 0.20 mm
Section B-B
1.1 mm
(0.04")
Ø2.2 mm
(0.09")
20°
1.7 mm
(0.06")
2.5 mm
(0.10")
Bottom View
1
3
2
Case
Pin Diagram
3
LD
2
Style E