785 nm Grating Stabilized TO Can Laser Diode, 300 mW

LD785-SEV300

Description

The LD785-SEV300 785 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 200 to 300 mW. Contained in a Ø9 mm package, the LD785-SEV300 laser is ideal for Raman spectroscopy, instrumentation, and pumping applications.

Specifications

LD785-SEV300	
LD Reverse Voltage (Max)	2 V
Absolute Max Current	500 mA
Absolute Max Power	310 mW
Operating Temperature	See Note[a]
Storage Temperature	-10 to 65 °C
Pin Code	E

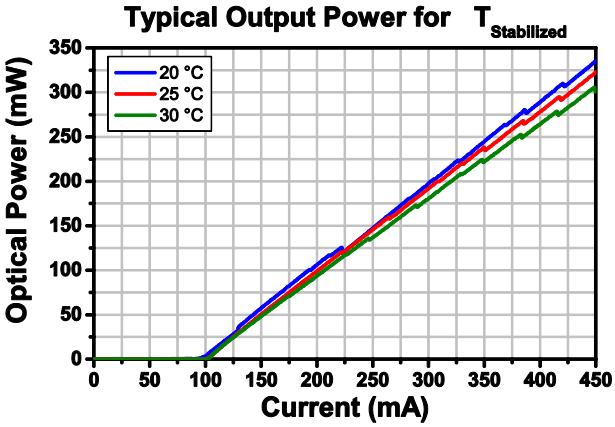
a. Note: The operating temperature corresponds to the range of temperatures over which the laser diode produces wavelength-stabilized output. The exact temperature range typically spans a minimum of 5 °C centered on a temperature between 15 °C and 30 °C. This specification is given for each device on the unit-specific data sheet.

LD785-SEV300				
	Symbol	Min	Typical	Max
Center Wavelength	λ_C	784 nm	785 nm	786 nm
Single Frequency Output Power[a] (CW @ I_{CW} and T_{CS})	$P_{CW\text{-}SF}$	250 mW	300 mW	-
Single Frequency Power Range	ΔP_{SF}	100 mW[b]	-	-
Operating Current (CW)	I_{CW}	-	-	500 mA
Center Temperature for $\Delta T_{stabilized}$	T_{CS}	15 °C	-	30 °C
Wavelength Stabilized Temperature Range	$\Delta T_{stabilized}$	5 °C	-	-
Threshold Current	I_{TH}	-	100 mA	150 mA
Side Mode Suppression Ratio (SMSR)	SMSR	25 dB	40 dB	-
Forward Voltage	V_F	-	2.2 V	2.8 V
Slope Efficiency at 25 °C	$\Delta P/\Delta I$	-	0.8 W/A	-
Laser Linewidth	Δv	-	10 MHz	-
Transverse Beam Divergence Angle (FWHM)	θ_T	-	16°	20°
Lateral Beam Divergence Angle (FWHM)	θ_L	-	8°	10°

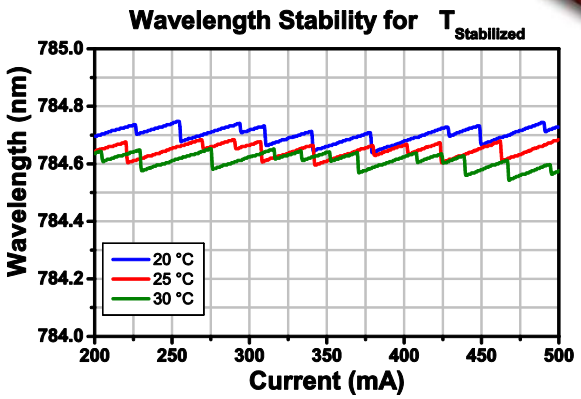
a. This value is the upper limit of the range where the diode can produce single frequency output and varies from laser to laser. The performance of each individual laser can be found on the unit-specific data sheet.

b. This value is specified for temperatures in the range given by $T_{CS} \pm \frac{1}{2}\Delta T_{stabilized}$. The 100 mW minimum single frequency power range corresponds to output powers between the typical $P_{CW\text{-}SF}-\Delta P_{SF}$ and $P_{CW\text{-}SF}$, i.e. between 200 mW and 300 mW.

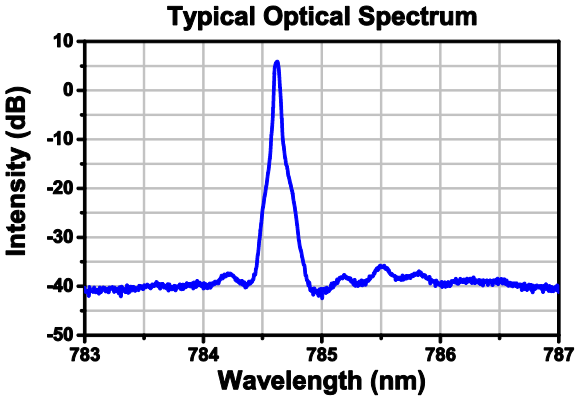
Typical Performance Plots



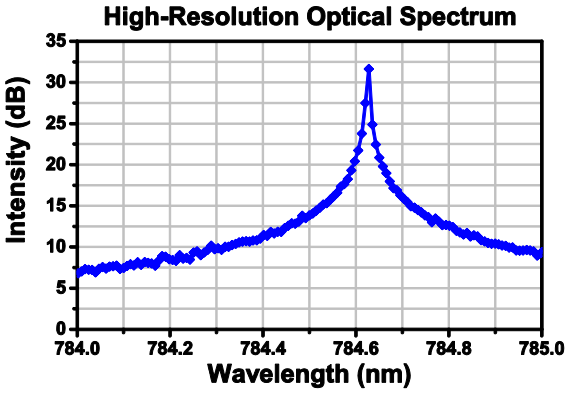
The typical output power vs. current is shown for four temperatures within the wavelength stabilized temperature range ($\Delta T_{Stabilized}$)* of a LD785-SEV300 laser diode.



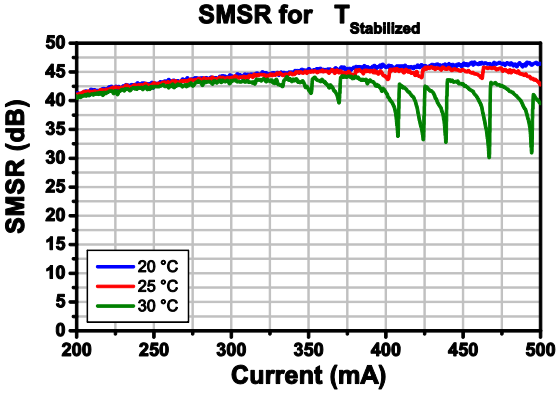
When used within the wavelength stabilized temperature range ($\Delta T_{Stabilized}$)*, the LD785-SEV300 shows excellent wavelength stability over a range of drive currents.



The typical optical spectrum is shown above. The data was obtained with a 500 mA drive current and the device held at 25 °C.



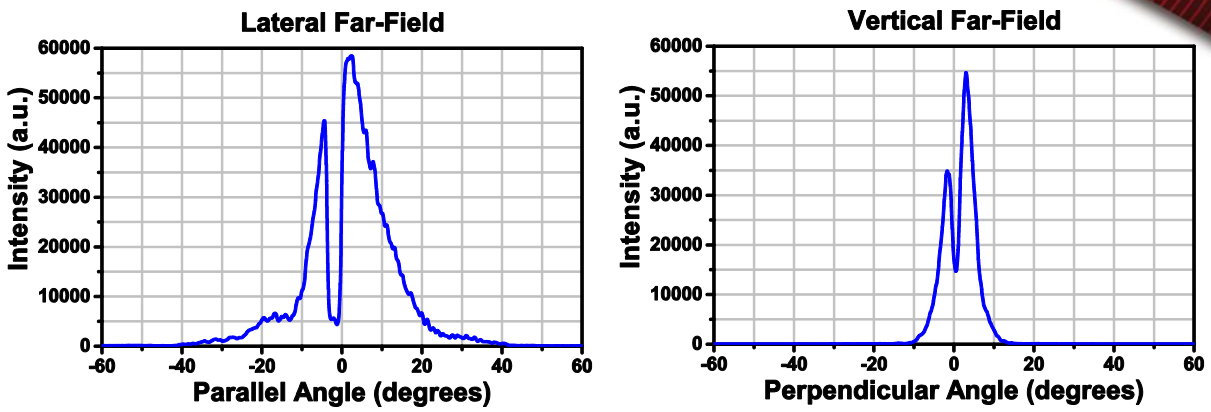
This high-resolution optical spectrum was obtained using one of Thorlabs' Optical Spectrum Analyzers (OSA201), which provides 8 pm resolution at 785 nm.



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

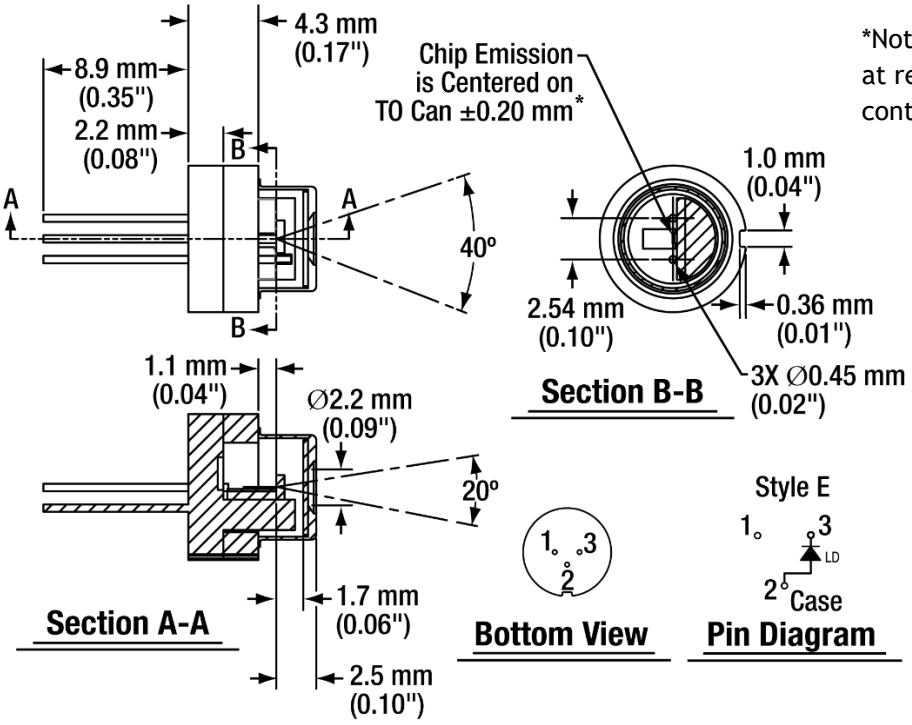
*The wavelength stabilized temperature range varies from laser diode to laser diode. The temperature range that supports wavelength-stabilized performance for each LD785-SEV300 laser is provided on the item-specific data sheet.

Typical Performance Plots Cont.



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 500 mA.

Drawing



*Note: Tighter tolerances are available at request with adjusted prices. Please contact techsupport@thorlabs.com.