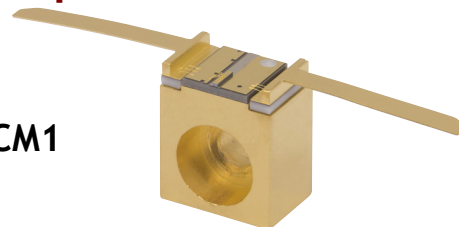


Quantum Cascade Laser, 40 mW, CWL Between 4 and 5 μm

QD4500CM1



Description

The QD4500CM1 is a single spatial mode, single longitudinal mode, Distributed Feedback Quantum Cascade Laser designed and manufactured by Thorlabs. This laser operates in Continuous Wave (CW) mode at room temperature. The QD4500CM1 is mounted on an open heatsink C-mount package with both the cathode and the anode isolated from the heatsink base. This discrete semiconductor laser is a compact light source suited to many applications. There is no monitor photodiode.

Specifications

QD4500CM1	
LD Reverse Voltage (Max)	1 V
PD Reverse Voltage (Max)	N/A
Absolute Max Current	Varies Between Devices ^a
Absolute Max Power	200 mW
Operating Temperature ^b	15 to 50 °C
Storage Temperature ^b	-40 to 85 °C

^aThe absolute maximum current is determined on a device-by-device basis and is listed on the device's data sheet.

^bNon-condensing environment. Single mode performance is tested and guaranteed at 25 °C.

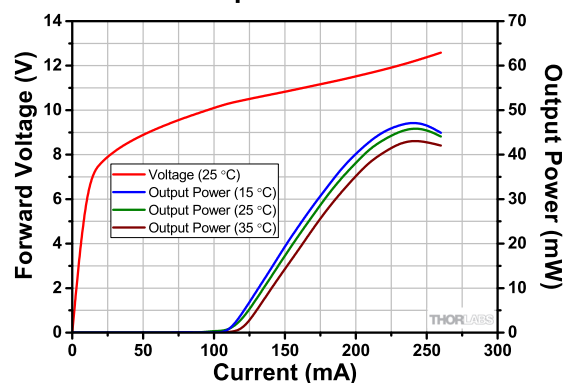
T_{Case} = 25 °C, CW Current Operation

QD4500CM1				
	Symbol	Min	Typical	Max
Wavelength at Minimum Operating Current	λ_c	4.00 μm	-	5.00 μm
Tuning Range	TR	1 cm^{-1}	2 cm^{-1}	-
Temperature Tuning	$\Delta\bar{\nu}/\Delta T$	-	-0.13 $\text{cm}^{-1}/^\circ\text{C}$	-
Side Mode Suppression	SMSR	20 dB	-	-
Optical Output Power	P _{out}	5 mW	40 mW	-
Operating Current	I _{pp}	-	-	500 mA
Threshold Current	I _{TH}	-	200 mA	-
Forward Voltage	V _F	-	10.5 V	14.0 V
Perpendicular Beam Divergence Angle (FWHM)	$\theta_{\perp}$	-	40°	-
Parallel Beam Divergence Angle (FWHM)	$\theta_{\parallel}$	-	30°	-
Slope Efficiency, Front Facet	$\Delta P/\Delta I$	-	0.4 W/A	-

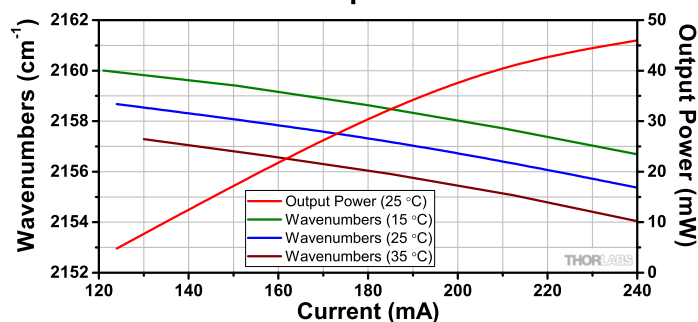


Sample Performance Plots

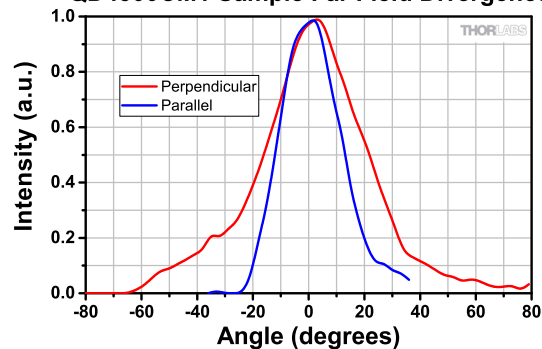
QD4500CM1 Sample L-I-V Characteristics



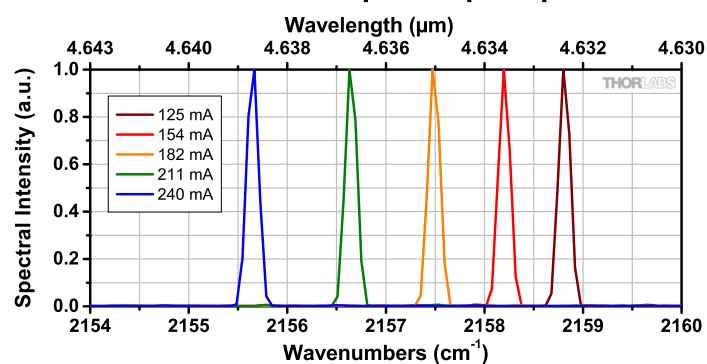
QD4500CM1 Sample Wavenumbers and Output Power



QD4500CM1 Sample Far Field Divergence



QD4500CM1 Sample Output Spectrum



Far field divergence values are measured at 25 °C and at a distance of 89.4 mm from the laser. The detector's aperture is Ø10 mm, and the sampling step size is 3°. The angle subtended by the detector is 6.4°.

Drawings for QD4500CM1

