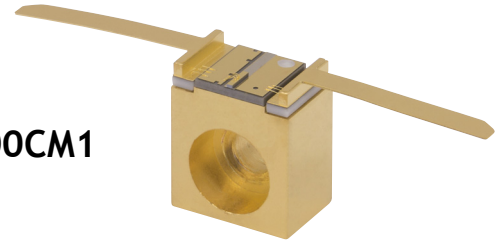
Quantum Cascade Laser, 100 mW, CWL Between 8 and 9 µm



QD8500CM1

Description

The QD8500CM1 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 QD8500CM1 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

QD8500CM1	
LD Reverse Voltage (Max)	1 V
PD Reverse Voltage (Max)	N/A
Absolute Max Current	Varies Between Devices[a]
Absolute Max Power	400 mW
Operating Temperature[b]	15 to 50 °C
Storage Temperature[b]	-40 to 85 °C

[a]The absolute maximum current is determined on a device-by-device basis and is listed on the device's data sheet.

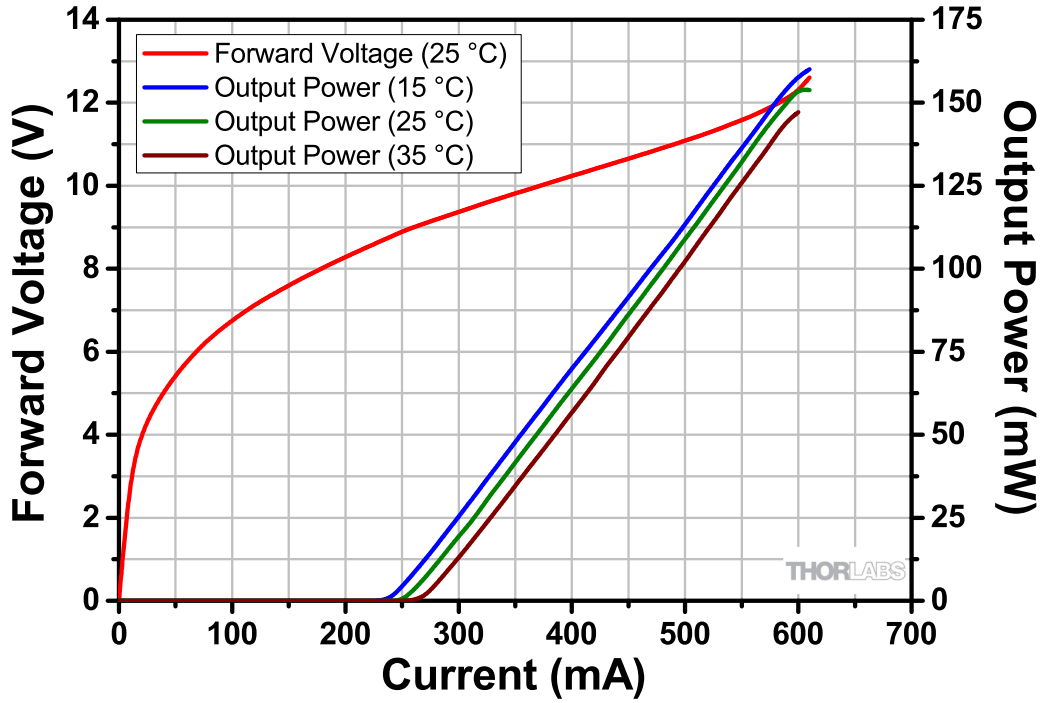
[b]Non-condensing environment. Single mode performance is tested and guaranteed at 25 °C.

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

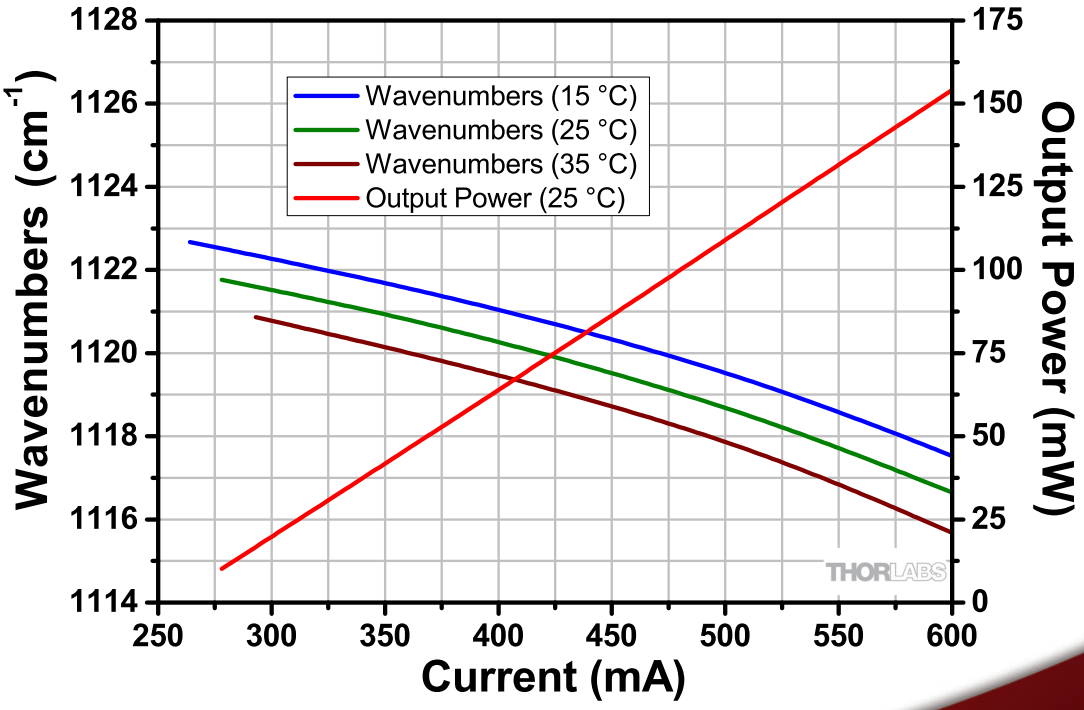
QD8500CM1				
	Symbol	**Min**	**Typical**	**Max**
Wavelength at Minimum Operating Current	λ_c	8.00 µm	-	9.00 µm
Tuning Range	TR	1.5 cm^{-1}	2.5 cm^{-1}	-
Temperature Tuning	$\Delta\bar{\nu}/\Delta T$	-	-0.08 cm^{-1}/ °C	-
Side Mode Suppression	SMSR	20 dB	-	-
Optical Output Power	P_{out}	10 mW	100 mW	-
Operating Current	I_{pp}	-	-	900 mA
Threshold Current	I_{TH}	-	300 mA	-
Forward Voltage	V_F	-	9.5 V	14 V
Perpendicular Beam Divergence Angle (FWHM)	$\theta_\perp$	-	55°	-
Parallel Beam Divergence Angle (FWHM)	$\theta_\parallel$	-	40°	-
Slope Efficiency	$\Delta P/\Delta I$	-	0.5 W/A	-

Sample Performance Plots

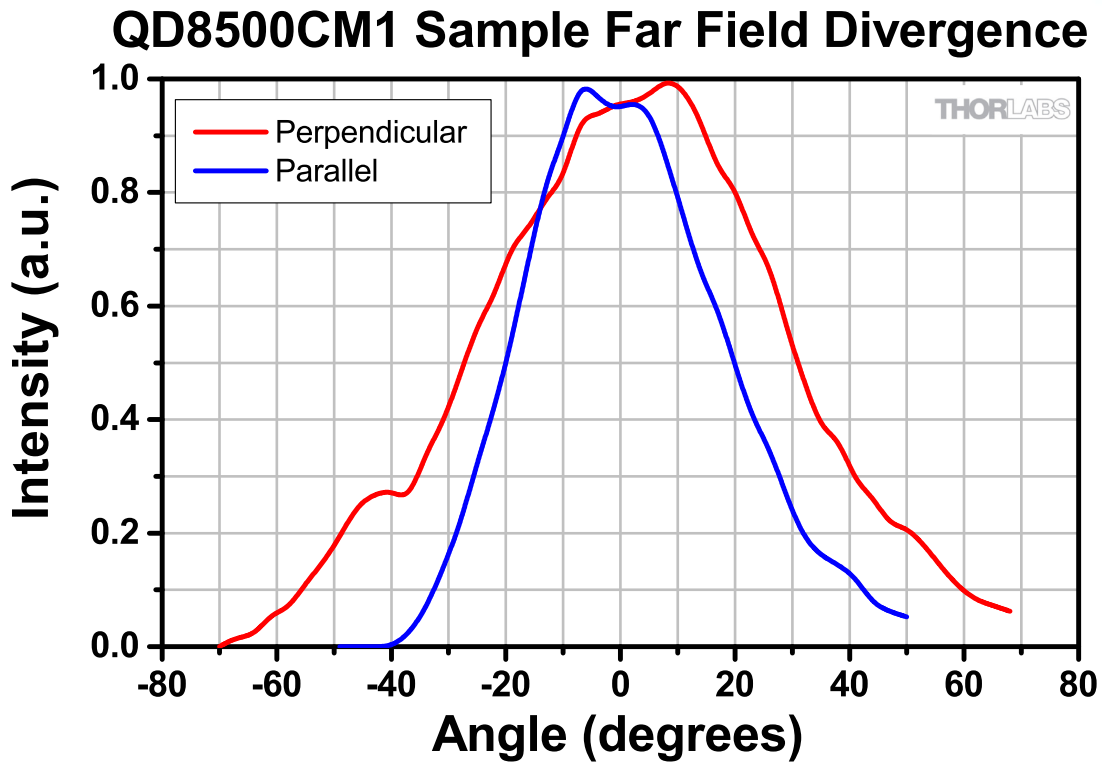
QD8500CM1 Sample L-I-V Characteristics



QD8500CM1 Sample Output Wavelength and Power



Sample Performance Plots (Cont.)



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 QD8500CM1