4.05 µm Quantum Cascade Laser, 300 mW

QF4050T1

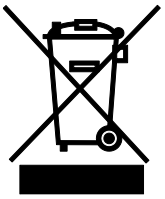
Description

The QF4050T1 laser is a single-spatial-mode, Fabry-Perot quantum cascade laser (QCL) contained in a TO-9 package, designed and manufactured by Thorlabs. This laser operates in continuous wave (CW) mode at room temperature. The laser package is an environmentally sealed module with three pins for electrical connection. The TO can does not contain a monitor photodiode. The emitting surface is protected by an AR-coated sapphire window, and the output beam is divergent. This semiconductor laser is a compact light source suited to many applications.

Specifications

Absolute Maximum Ratings	
LD Reverse Voltage (Max)	1 V
Absolute Max Current	1 A[a]
Absolute Max Power	800 mW
Operating Temperature	15 to 50 °C[b]
Storage Temperature	-40 to 85 °C[b]

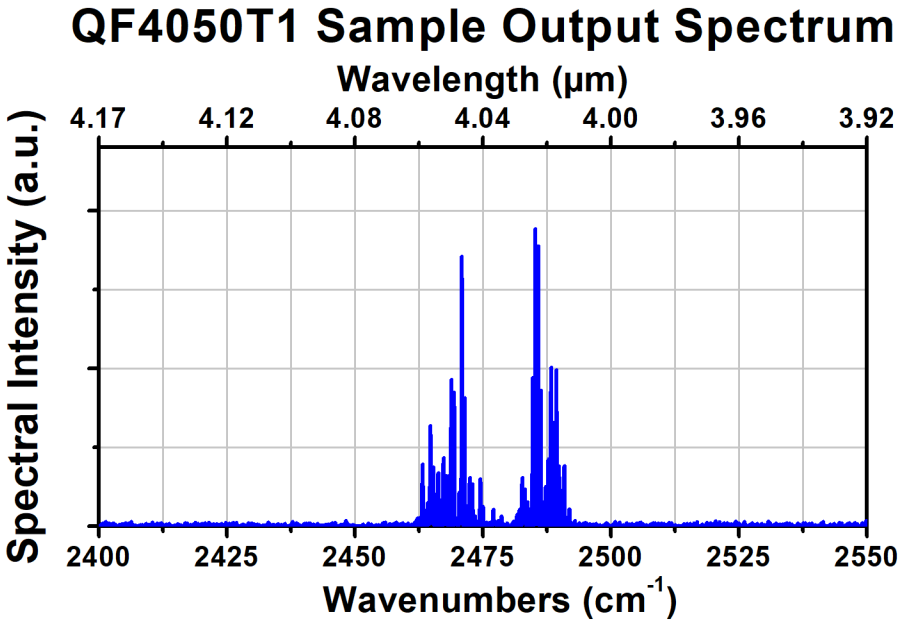
a. Specified on a Device-by-Device Basis in Individual Datasheets
b. Non-Condensing Environment

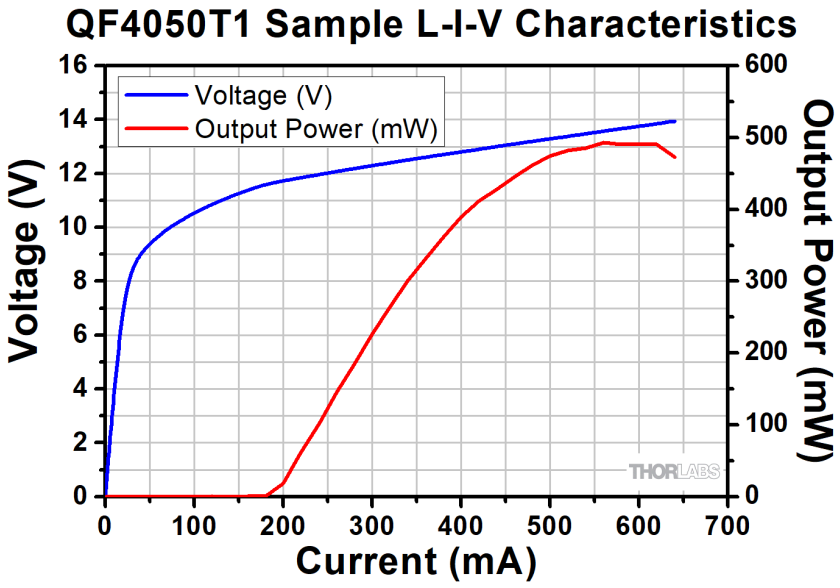


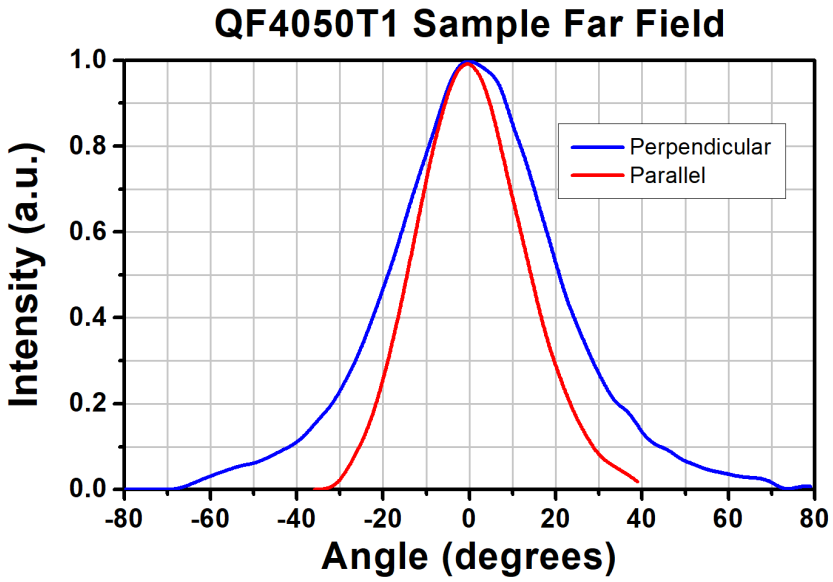
QF4050T1 Specifications[a]				
	Symbol	**Min**	**Typical**	**Max**
Center Wavelength	λ_C	3.90 µm	4.05 µm	4.20 µm
Output Power	P_{out}	300 mW	-	-
Operating Current	I_{pp}	-	-	600 mA
Threshold Current	I_{TH}	-	200 mA	-
Forward Voltage	V_F	-	12.0 V	14.0 V
Parallel Beam Divergence Angle (FWHM)	$\theta_{\parallel}$	-	30°	-
Perpendicular Beam Divergence Angle (FWHM)	$\theta_{\perp}$	-	40°	-

a. All values are specified at T_{case} = 25 °C, CW current operation.

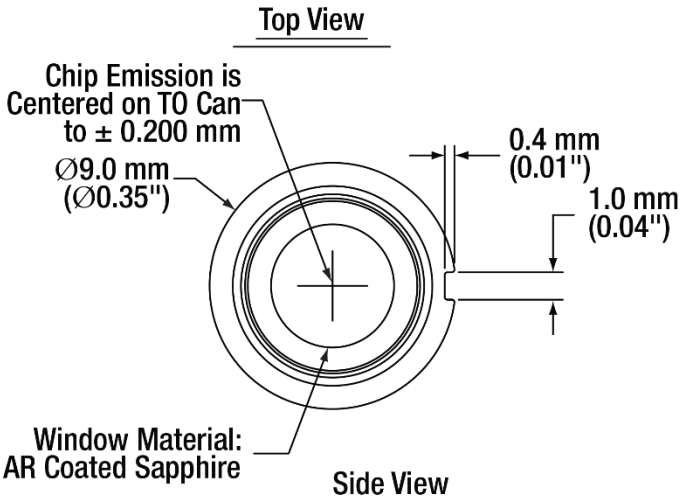
Sample Performance Plots

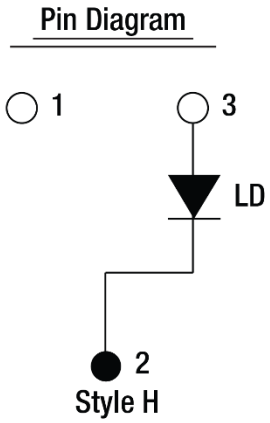


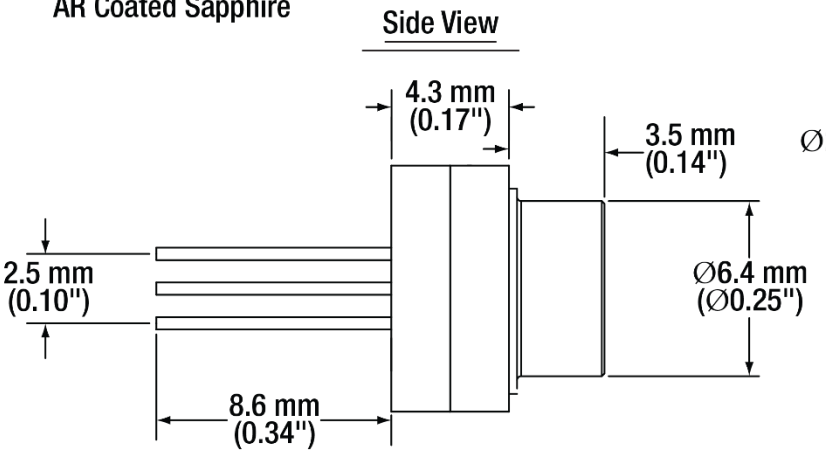


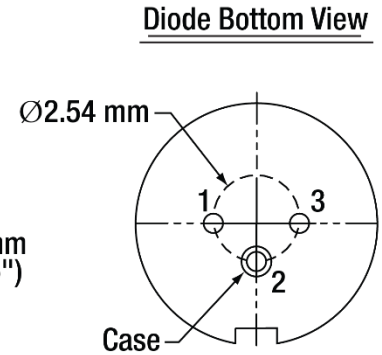

QF4050T1 Sample Far Field
Intensity (a.u.)
Angle (degrees)
Perpendicular
Parallel
1.0
0.8
0.6
0.4
0.2
0.0
-80
-60
-40
-20
0
20
40
60
80

Drawings


Top View
Chip Emission is Centered on TO Can to ± 0.200 mm
Ø9.0 mm (Ø0.35")
0.4 mm (0.01")
1.0 mm (0.04")
Window Material: AR Coated Sapphire


Pin Diagram
1
3
LD
2
Style H


Side View
4.3 mm (0.17")
3.5 mm (0.14")
2.5 mm (0.10")
Ø6.4 mm (Ø0.25")
8.6 mm (0.34")


Diode Bottom View
Ø2.54 mm
1
3
2
Case