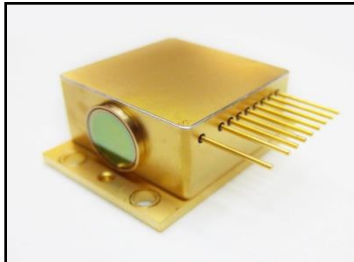


4.22 μm DISTRIBUTED FEEDBACK (DFB) QCL

PART NO: ATO4225-H (HHL-19-61)



HIGH HEAT LOAD (HHL) PACKAGE

FEATURES

- Pulse or CW operated lasers
- Thermo-electrically cooled. External heat sink still required.
- Sensitive to electrostatic discharge, must have standard ESD precautions during handling
- Package dimensions (approx): 44.5 x 31.8 x 18.4 mm (excluding pins)

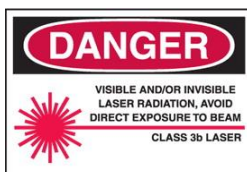
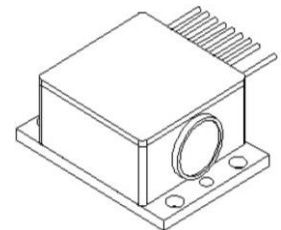
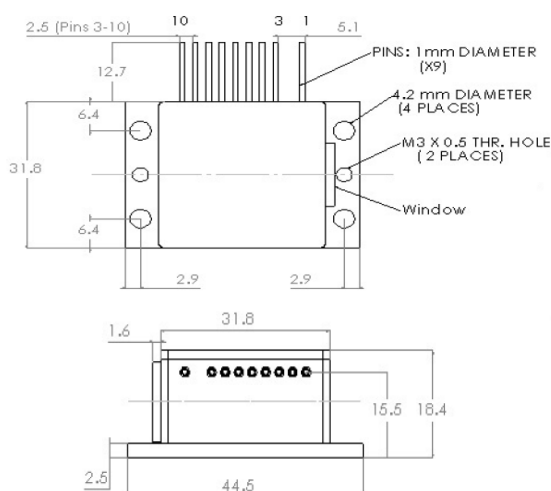
HHL SPECIFICATIONS

Model No		HHL – xx – xx	HHL –xx – xxLP	HHL –xx – xxHP	Units
TEC Parameters (25 °C)	I _{max}	7.9	----	----	A
	V _{max}	14.4	----	----	V
	Max. Heat Capacity	65.0	----	----	W
	Module Resistance	1.678	----	----	Ω
Temperature Sensor	Type	10.0 kΩ Thermistor			----
	Thermistor Constant	$A = 1.129 e^{-3}, B = 2.341 e^{-4}, C = 0.878 e^{-7}$			----
Window	Material	ZnSe			----
	Thickness	1			mm
	Diameter	12.7			mm
	Transmission	> 95			%
Lens	Type	Aspheric			----
	Spectral Range	MWIR			----
Weight (approx.)		110.0			g

HHL DIMENSIONS

- Dimension: **mm**
- Linear Vertical Beam Polarization

- Pin 1 - TEC (-)
- Pin 2 - Not Installed
- Pin 3 - Not Installed
- Pin 4 - Laser (+)
- Pin 5 - Thermistor (+)
- Pin 6 - Thermistor (-)
- Pin 7 - Laser (-)
- Pin 8 - Not Installed
- Pin 9 - Not Installed
- Pin 10 - TEC (+)





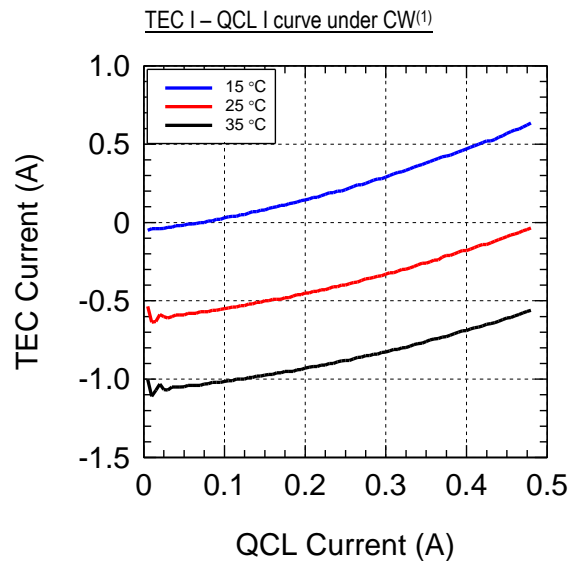
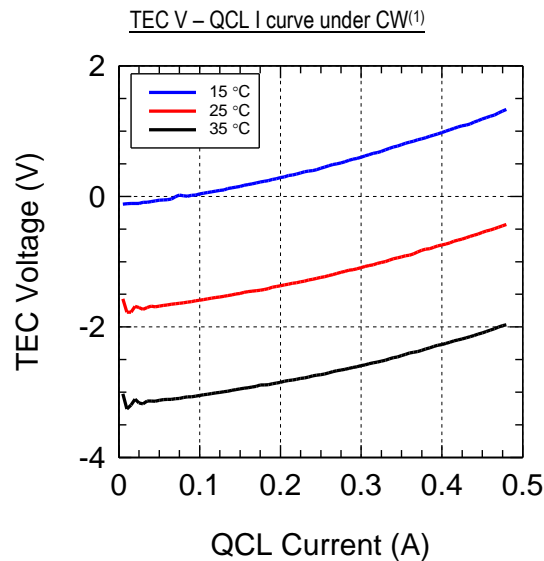
4.22 μm DISTRIBUTED FEEDBACK (DFB) QCL

PART NO: ATO4225-H (HHL-19-61)

LASER SPECIFICATIONS

		Measurement Conditions	Specs	Units	
Electrical	Operation Mode	----	CW	----	
	Device Type	----	DFB	----	
	Oper. Temperature Limits	----	15- 35	$^{\circ}\text{C}$	
	Max Oper. Currents	@ 15 $^{\circ}\text{C}$	690	mA	
		@ 35 $^{\circ}\text{C}$	690	mA	
Max Oper. Voltage	----	12.5	V		
Optical	Thresh. Current	@27 $^{\circ}\text{C}$	530	mA	
	Thresh. Voltage	@27 $^{\circ}\text{C}$	11.7	V	
	Max. Power Output	@27 $^{\circ}\text{C}$, 680mA	60	mW	
	Center Wavelength	@27 $^{\circ}\text{C}$, 680mA	4.225	μm	
	Laser Slope Efficiency	@25 $^{\circ}\text{C}$	1.13	%	
	Wavelength Tuning	Temperature	----	0.446	nm/ $^{\circ}\text{C}$
		Current	----	0.032	nm/mA

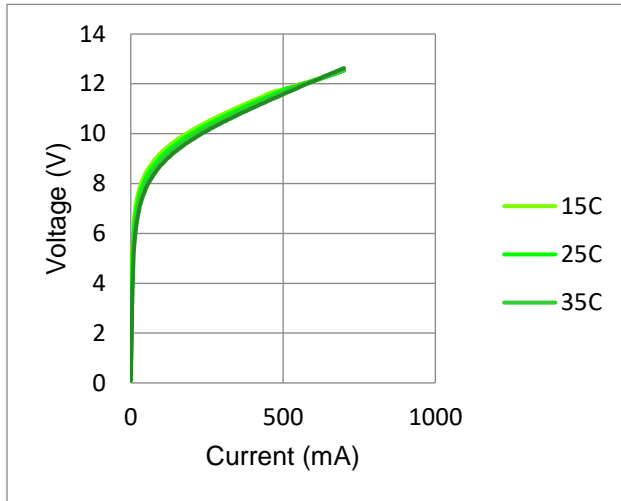
DEVICE OPERATIONAL CHARACTERIZATION



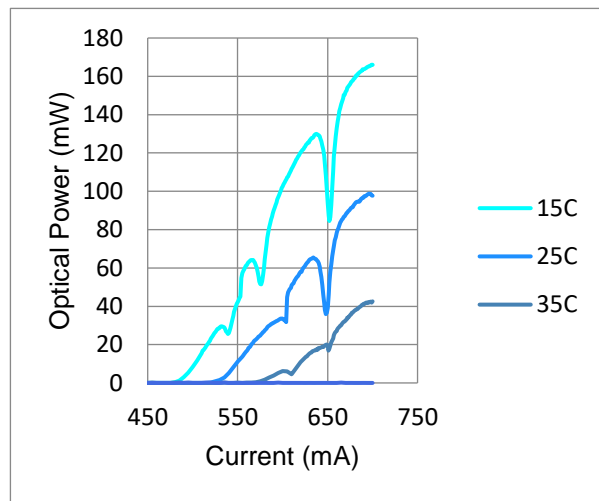
4.22 μm DISTRIBUTED FEEDBACK (DFB) QCL

PART NO: ATO4225-H (HHL-19-61)

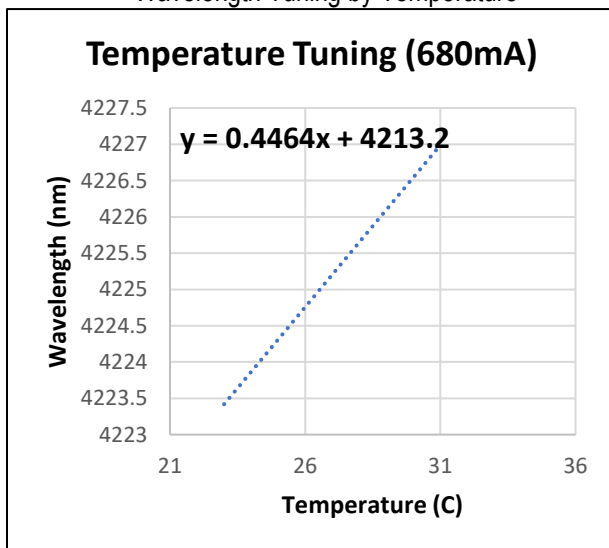
V-I curve under CW



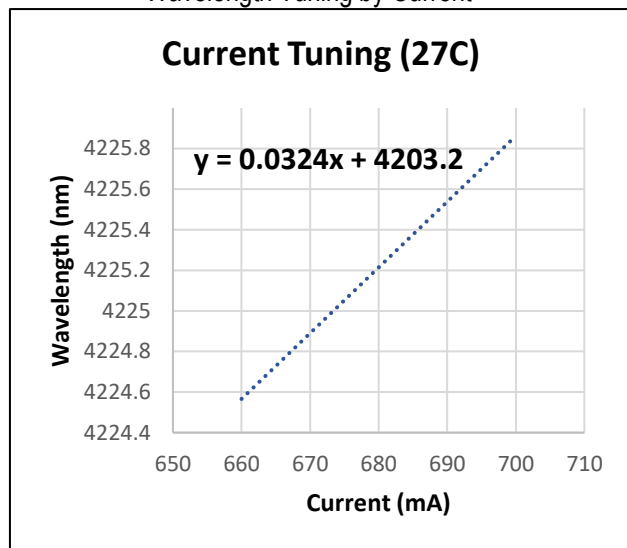
L-I curve under CW



Wavelength Tuning by Temperature



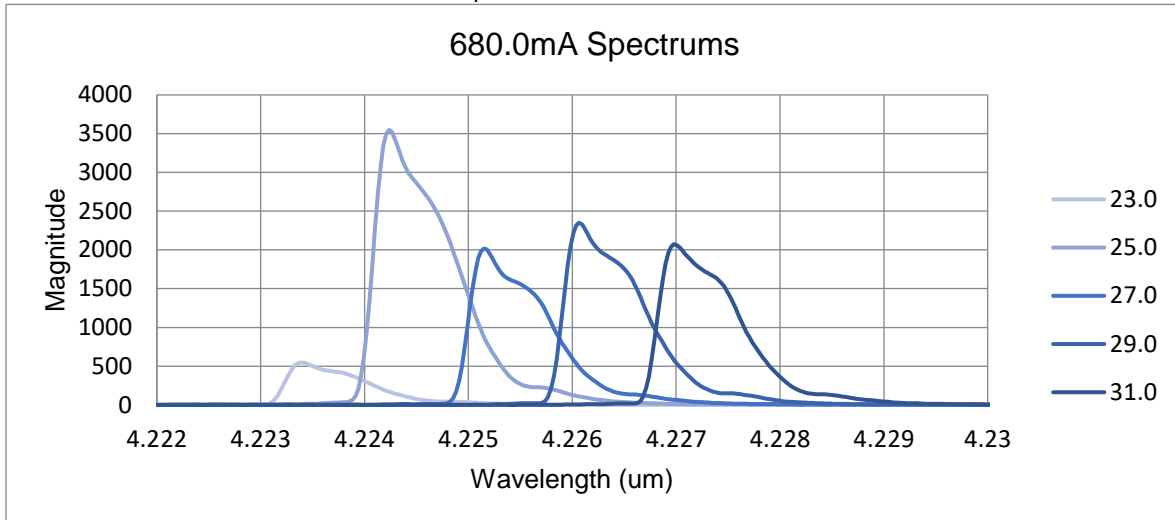
Wavelength Tuning by Current



4.22 μm DISTRIBUTED FEEDBACK (DFB) QCL

PART NO: ATO4225-H (HHL-19-61)

Spectral Characterization:

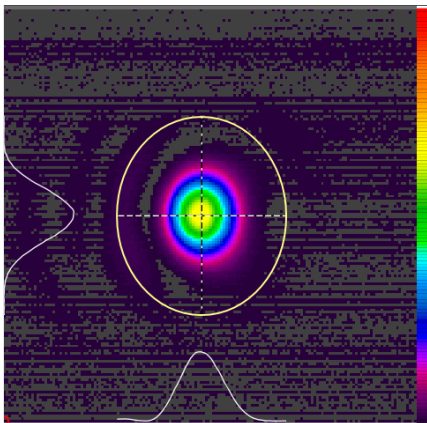


BEAM PROFILE CHARACTERIZATION⁽³⁾ UNDER CW OPERATION

	Slow – Axis (Horizontal)	Fast – Axis (Vertical)	Units
Full Beam Diameter	2.27	2.46	mm
Beam Waist Location	1039.6	1442.4	mm
Divergence Angle	1.18	1.09	mrad
M ²	1.06	1.23	---

(3) $I = 0.39 \text{ A}$, $V = 11.9 \text{ V}$, $T = 15 \text{ }^\circ\text{C}$, Measured at $1/e^2$

2D Beam Profile at 70cm



3D Beam Profile at 70cm

