

4.53 μm DISTRIBUTED FEEDBACK (DFB) QCL

PART NO: VHL-13-47



VERTICAL EMITTING HIGH HEAT LOAD (VHL) PACKAGE

OVERVIEW

- Thermo-electrically cooled. External heat sink still required.
- Sealed in a nitrogen-purged atmosphere.
- Package dimensions (approx): **1.75 x 1.25 x 0.72 in (excluding pins)**.

VHL SPECIFICATIONS

Model No	VHL – xx – xx		Units
TEC Parameters (25 °C)	Max. Heat Capacity	65.0	W
	Max. Current	7.9	A
	Max. Voltage	14.4	V
	Typ. Resistance	3.0	Ω
Temperature Sensor	Type	10.0 k Ω 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	%
Weight (approx.)		110.0	g

LASER SPECIFICATIONS

		Specs	Units
Process		DFB	---
Cavity Dimensions	Emitter Width	6	μm
	Cavity Length	2	mm
Typ. Thermal Resistance		10.0	K/W
Oper. Temperature		15 – 45	°C
Facet Coating	Front	AR	---
	Back	HR	---



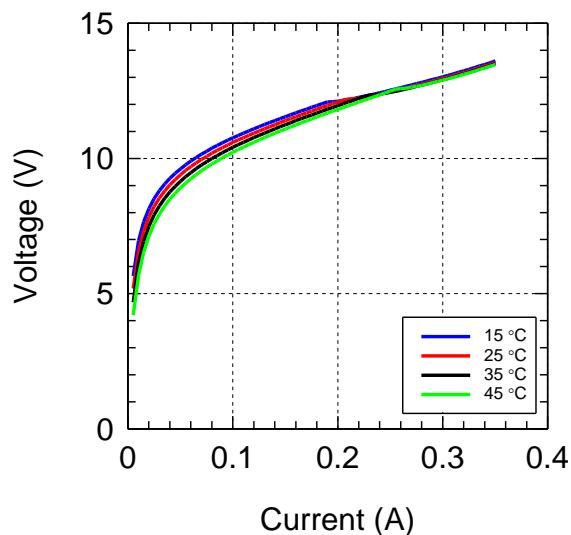
4.53 μm DISTRIBUTED FEEDBACK (DFB) QCL

PART NO: VHL-13-47

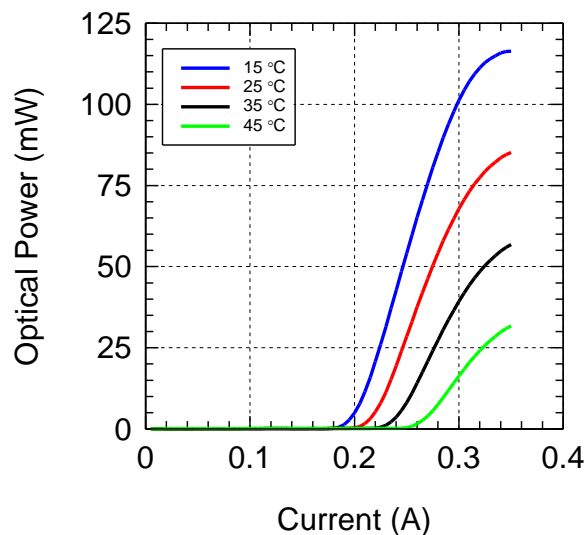
ELECTRO-OPTICAL CHARACTERIZATION ⁽¹⁾

		Specs				Units
Driving Conditions	Operation Mode	CW				--
	Temperature	15	25	35	45	°C
Electrical	Thresh. Current	0.20	0.22	0.24	0.26	A
	Max. Current	0.34	0.34	0.34	0.34	A
	Thresh. Voltage	12.1	12.2	12.4	12.6	V
	Max. Voltage	13.1	13.2	13.4	13.5	V
	Laser Efficiency ⁽²⁾	2.7	1.9	1.2	0.7	%
Optical	Max. Power Output ⁽³⁾	110.3	81.5	55.1	31.7	mW
	Center Wavelength ⁽⁴⁾	4.53	4.54	4.54	4.55	μm
Tuning ⁽⁵⁾	Temperature	0.45				nm/°C
	Current	42.9				nm/A

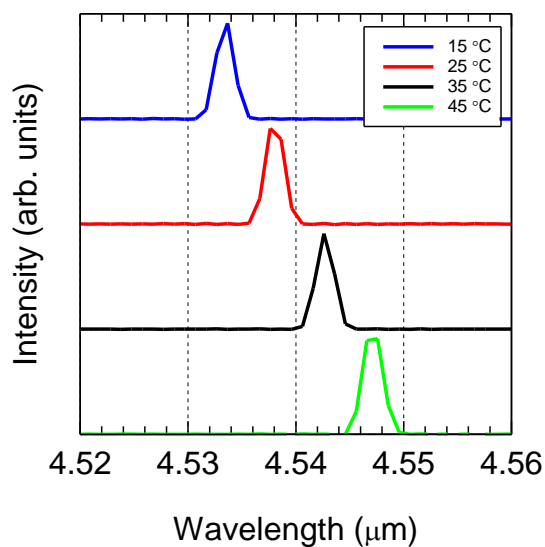
V - I curve under CW



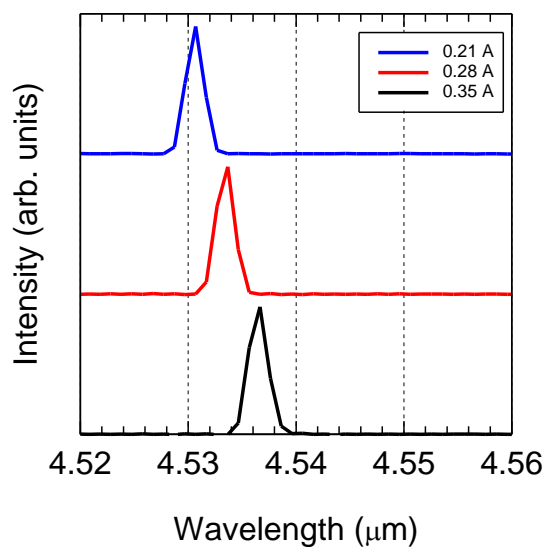
L - I curve under CW



Spectral Characterization: I = 0.28 A

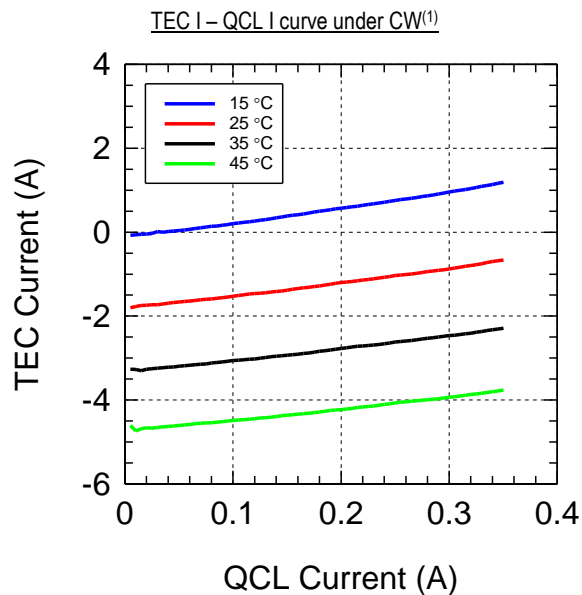
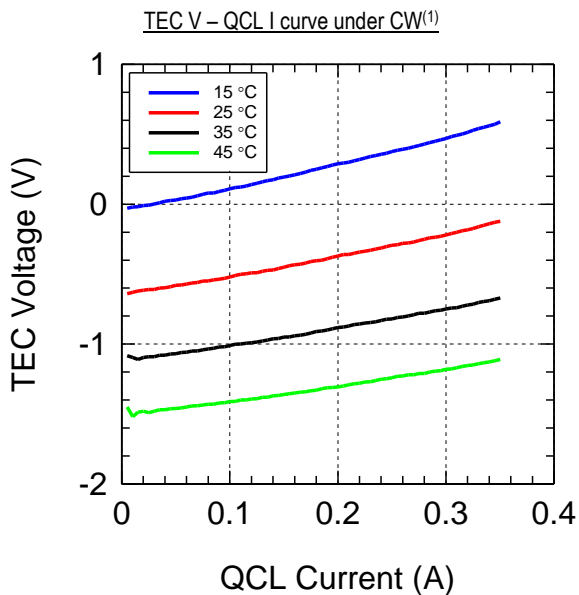


Spectral Characterization: T = 15 °C



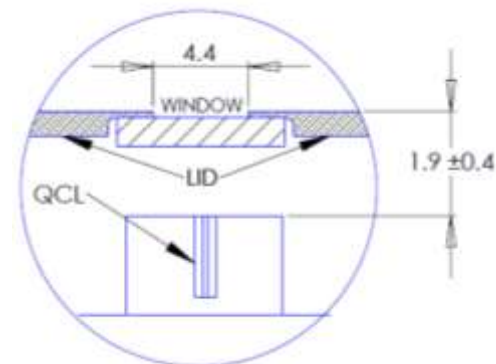
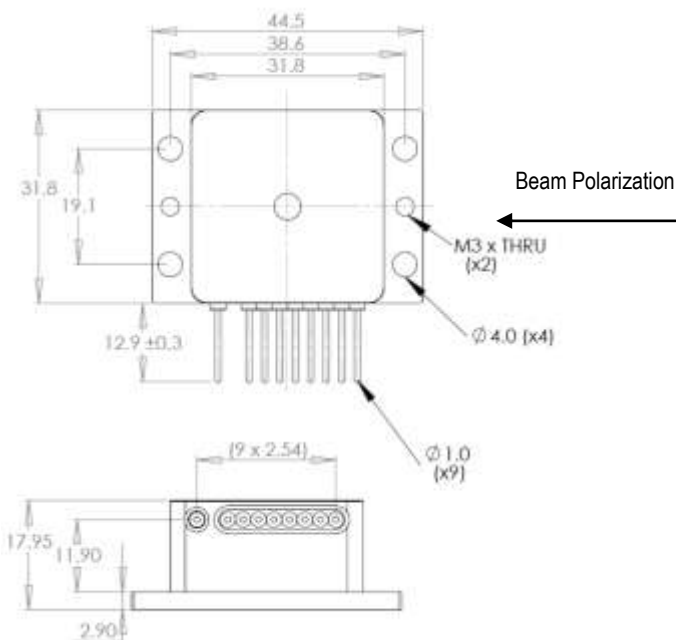
4.53 μm DISTRIBUTED FEEDBACK (DFB) QCL

PART NO: VHL-13-47



VHL DIMENSIONS

- Dimension: **millimeters**
- Beam Polarization Perpendicular to the Leads



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

(1) Device was secured to a water-cooled external heat sink set to $T = 15\text{ }^\circ\text{C}$
 (2) Not including TEC
 (3) No Collimating Lens
 (4) Measurement taken at $I = 0.28\text{ A}$
 (5) Temperature tuning measurement taken from $T = 15\text{ }^\circ\text{C} - 45\text{ }^\circ\text{C}$.
 Current tuning measurement taken from $I = 0.21\text{ A} - 0.35\text{ A}$.

