

HIGH HEAT LOAD (HHL) PACKAGE

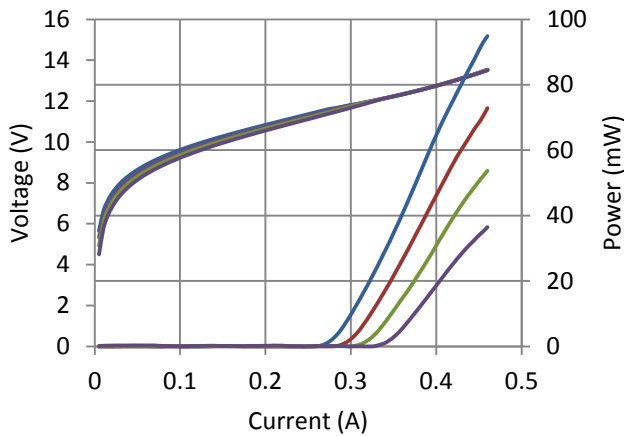
OVERVIEW

- Thermo-electrically cooled. External heat sink still required.
- Sealed in a nitrogen-purged atmosphere.
- Package dimensions (approx): **45 x 32 x 18 mm (excluding pins)**.

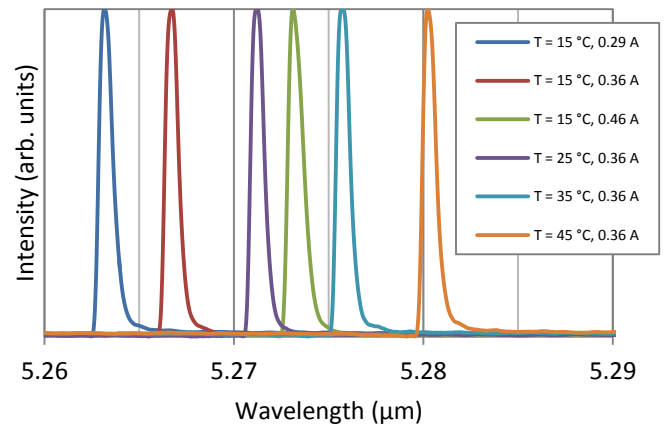
ELECTRO-OPTICAL CHARACTERIZATION ⁽¹⁾

		Specs				Units
		CW				
Driving Conditions	Operation Mode					--
	Temperature	15	25	35	45	$^{\circ}\text{C}$
Electrical	Thresh. Current	0.19	0.29	0.31	0.34	A
	Max. Current	0.46	0.46	0.46	0.46	A
	Thresh. Voltage	11.6	11.7	11.8	11.9	V
	Max. Voltage	13.5	13.5	13.5	13.5	V
	Laser Efficiency ⁽²⁾	1.5	1.2	0.9	0.6	%
Optical	Max. Power Output	94.9	72.8	53.6	45.1	mW
	Center Wavelength ⁽³⁾	5.267	5.271	5.276	5.280	μm

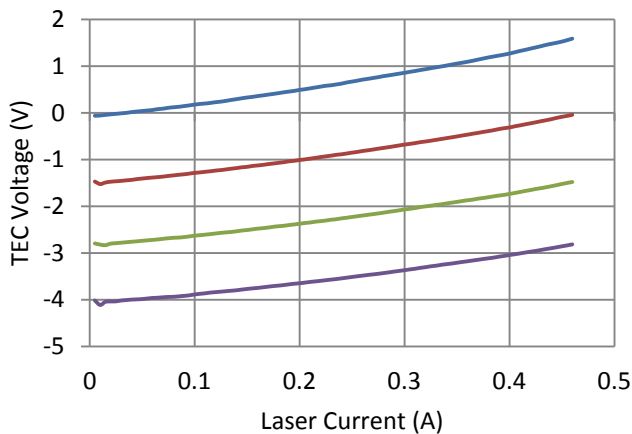
L – I – V curve under CW



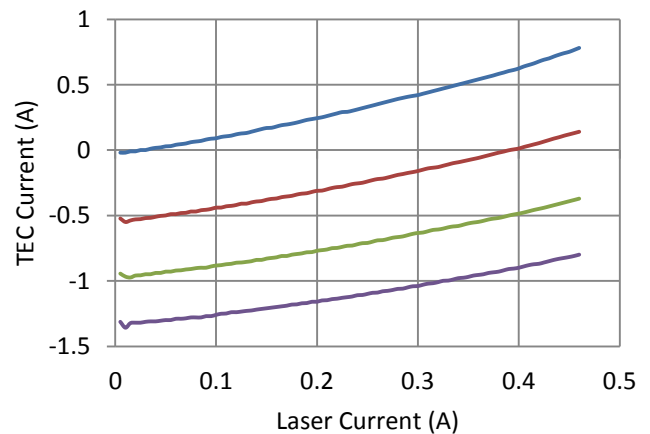
Spectral Characterization



TEC V – QCL I curve under CW ⁽¹⁾



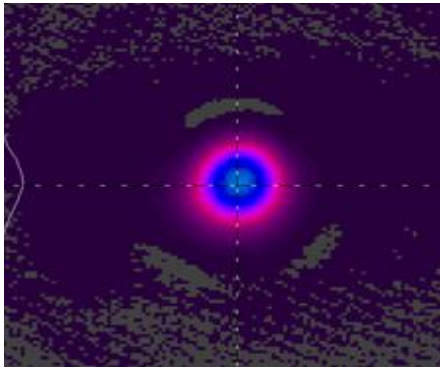
TEC I – QCL I curve under CW ⁽¹⁾



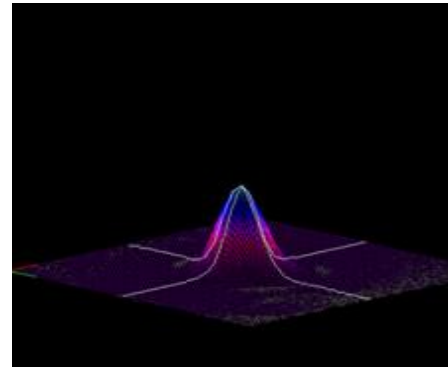
SPECTRAL CHARACTERIZATION AND BEAM QUALITY ⁽¹⁾

		Specs		Units
Driving Conditions	Operation Mode	CW		---
Wavelength Tuning ⁽⁴⁾	Temperature	0.45		nm/K
	Current	57.6		nm/A
SMSR		30		dB
Beam Profile ⁽⁵⁾	Optical Planes	Lateral	Vertical	---
	Full Beam Waist	2.63	3.24	mm
	Beam Waist Location	808.7	1434.3	mm
	Divergence Angle	1.27	1.03	mrad
	M ²	1.09	1.31	---

2-D Beam Profile at 1524.0 mm (60.0 in)



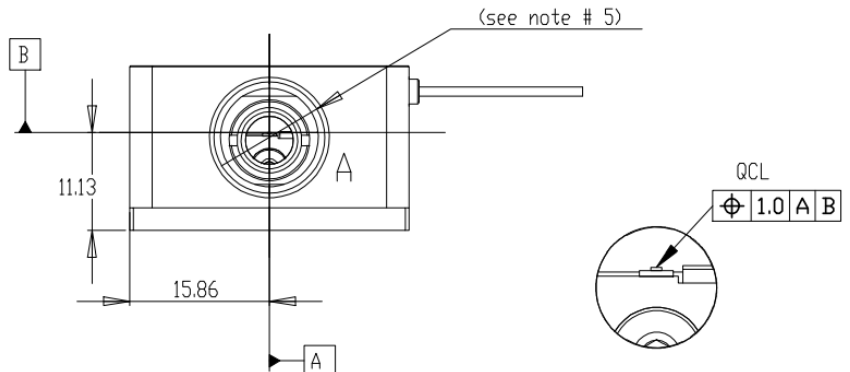
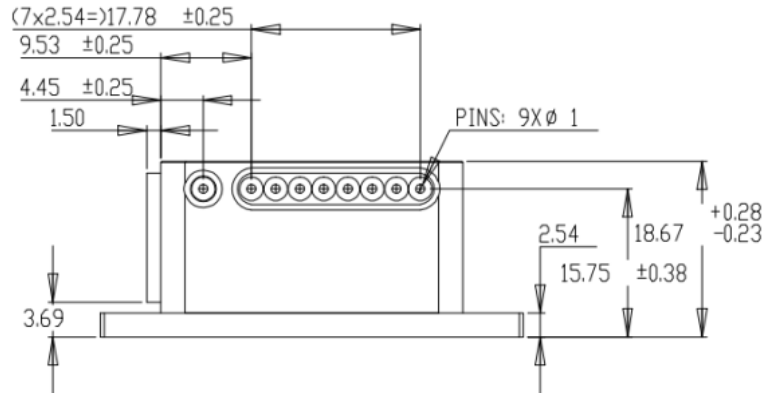
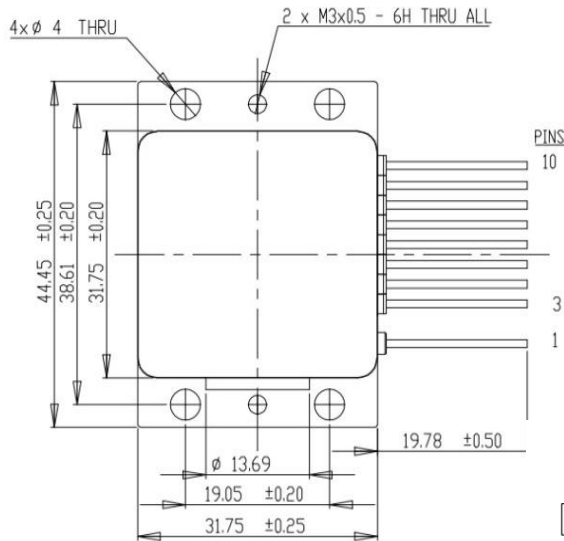
3-D Beam Profile at 1524.0 mm (60.0 in)


HHL SPECIFICATIONS

Model No		HHL – xx – xx	HHL –xx – xxHP	Units
TEC Parameters (25 °C)	Max. Heat Capacity	65.0	100.0	W
	Max. Current	7.9	4.9	A
	Max. Voltage	14.4	34.0	V
	Typ. Resistance	3.0	6.0	Ω
Temperature Sensor	Type	10.0 kΩ Thermistor	RTD 100	---
	Constant	A = 1.12924 e ⁻³ B = 2.34108 e ⁻⁴ C = 0.87755 e ⁻⁷	A = 3.9848 e ⁻³ B = -0.5870 e ⁻⁶ C = 4.0000 e ⁻¹²	---
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
- Device is not grounded



PIN LAYOUT

- | | |
|-----------------------|-----------------------|
| Pin 1: TEC (-) | Pin 6: Thermal Sensor |
| Pin 2: Not Installed | Pin 7: Laser (-) |
| Pin 3: TEC | Pin 8: |
| Pin 4: Laser (+) | Pin 9: |
| Pin 5: Thermal Sensor | Pin 10: TEC (+) |

NOTES

1. All Dimensions in Millimeters
2. Tolerance: 0.13 mm (unless otherwise noted)
3. TEC: Details Specs. Upon Request
4. Thermal Sensor: RTD 100 or 10k Thermistor
5. ZnSe Window:
AR Coated: 3-7 μm or 7-14 μm (upon request)
6. Collimating Lens Inside (upon request)

- (1) Device was secured to a water-cooled external heat sink set to $T = 15^\circ\text{C}$
- (2) Not including TEC
- (3) Driving Current $I = 0.36\text{ A}$
- (4) Temperature tuning measurement taken from $T = 15^\circ\text{C} - 45^\circ\text{C}$.
Current tuning measurement taken from $I = 0.29\text{ A} - 0.46\text{ A}$.
- (5) $I = 0.35\text{ A}$, $V = 12.2\text{ V}$, $T = 15^\circ\text{C}$, Measured at $1/e^2$

