

## 4.34 $\mu\text{m}$ DISTRIBUTED FEEDBACK (DFB) QCL

PART NO: TO3-CIA009



TO – 3 can

**OVERVIEW**

- Thermo-electrically cooled. External heat sink still required.
- Pulse & CW capable.
- Sealed in a nitrogen-purged atmosphere.
- Package dimensions (approx): 1.2 x 1.0 x 0.6 in (excluding pins)

		Specs				Units	Comments	
<b>Laser Specifications</b>	Process	DFB				----		
	Cavity Dimension	Emitter Width	7			$\mu\text{m}$		
		Cavity Length	2			mm		
	Typ. Thermal Resistance		10.0				K/W	
	Oper. Temperature		15 – 60				$^{\circ}\text{C}$	
	Facet Coating	Front	AR				----	
Back		HR				----		
<b>Electrical Parameters</b>	Operation Mode	<b>Pulse</b>				----		
	Temperature	15	25	35	45	$^{\circ}\text{C}$		
	Thresh. Current	0.28	0.31	0.36	0.42	A		
	Max. Current	1.00	1.00	1.00	1.02	A		
	Thresh. Voltage	10.6	10.7	10.7	10.8	V		
	Max. Voltage	13.2	13.1	13.0	13.2	V		
	Laser Efficiency	4.0	3.3	2.8	2.5	%	<i>Not including TEC</i>	
<b>Optical Parameters</b>	Max. Power Output	538.0	438.8	370.0	330.4	mW		
	Center Wavelength	4.341	4.345	4.348	4.350	$\mu\text{m}$	<i>Pulse I = 0.63 A</i>	
	Tuning Range	Temperature	0.26			nm/K	<i>Pulse T = 15 – 45 <math>^{\circ}\text{C}</math></i>	
		Current	3.0			nm/A	<i>Pulse I = 0.30 – 0.96 A</i>	
	Beam Divergence	Typ. Fast Axis	60 $^{\circ}$			deg	<i>Transverse (FWHM)</i>	
Typ. Slow Axis		40 $^{\circ}$			deg	<i>Longitudinal (FWHM)</i>		



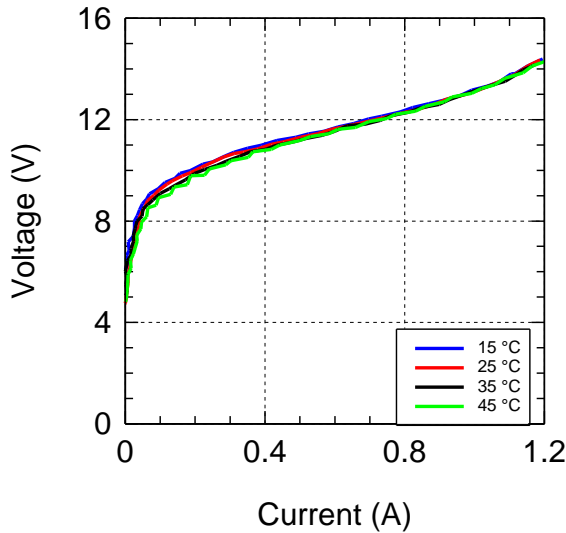
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**PULSE MODE**

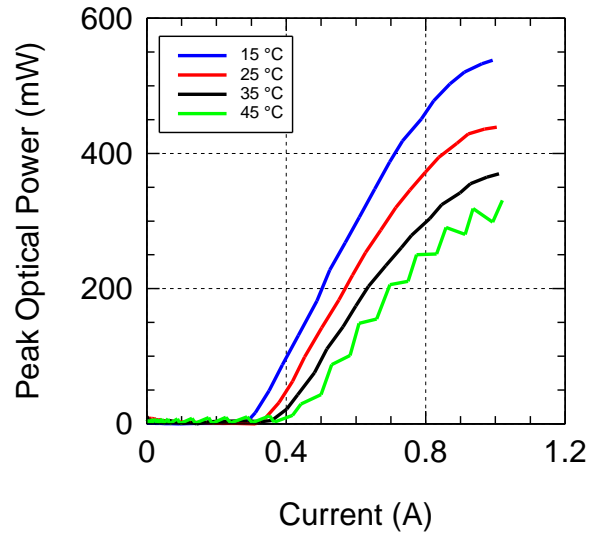
**ELECTRO – OPTICAL CHARACTERIZATION**

Heat sink Temperature: 15 °C

Pulse Width: 200.0 ns



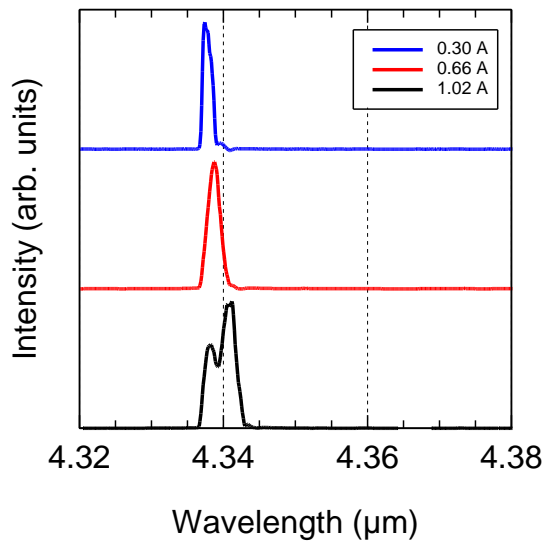
Pulse Rate: 100.0 kHz



**SPECTRAL CHARACTERIZATION**

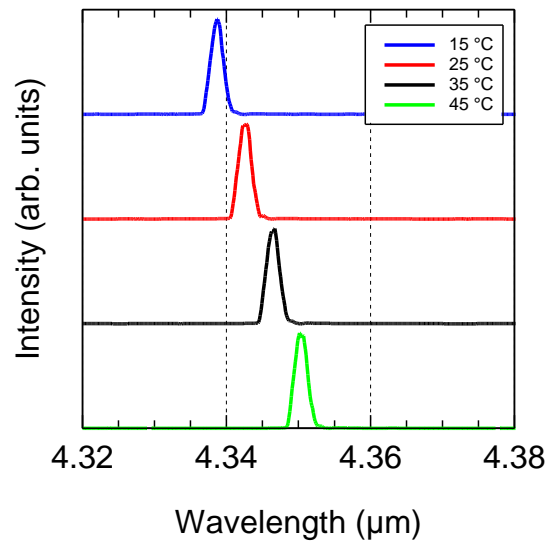
Temperature: 15 °C

Pulse Width: 200.0 ns



Pulse Rate: 100.0 kHz

Driving Current: 0.66 A



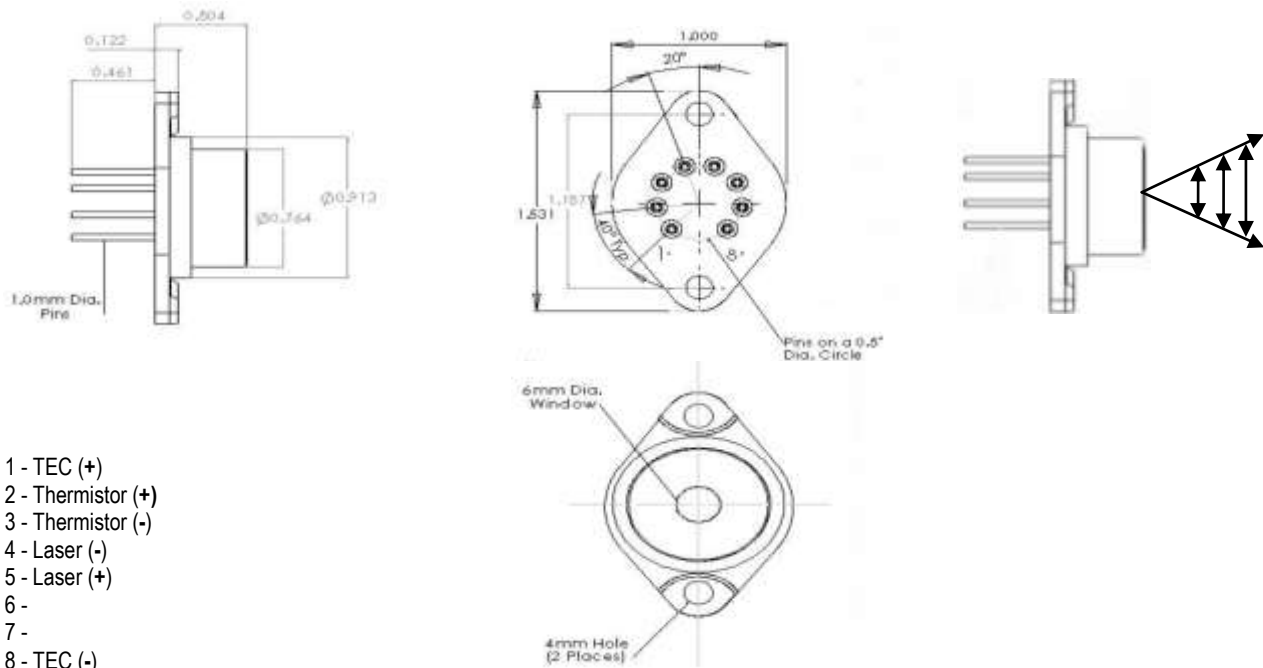
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**TO-3 SPECIFICATIONS**

Model No		TO3 -12-CI0xxx	Units
TEC Parameters (25 °C)	Max. Current	3.3	A
	Max. Voltage	6.0	V
	Max. Heat Capacity	10.6	W
Temperature Sensor	Type	10.0 k $\Omega$ 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	%

**DIMENSIONS**

- Dimension: **mm**
- Linear Vertical Beam Polarization
- Laser Chip Location:  $\approx$  1.8 mm (0.07 in) behind the window's external surface.



- Pin 1 - TEC (+)
- Pin 2 - Thermistor (+)
- Pin 3 - Thermistor (-)
- Pin 4 - Laser (-)
- Pin 5 - Laser (+)
- Pin 6 -
- Pin 7 -
- Pin 8 - TEC (-)