

Quantum cascade laser driver



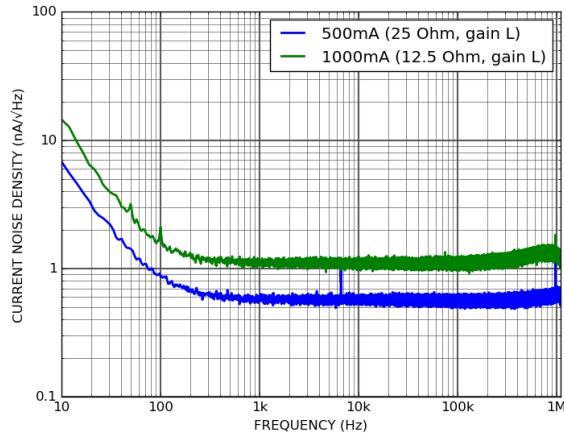
Koheron QCL100 is a high-performance current driver designed to drive high-voltage loads such as Quantum Cascade Lasers. It operates as a current sink, allowing the laser anode to be connected to the ground. The QCL100 driver provides a compliance voltage adjustable up to 15 V and an adjustable precision current limit. The board features a 5 MHz modulation input and a 10 Hz trimming input. It is supplied from a single 24 V input and comes with an aluminum base plate.

Specifications

	QCL100-A-500	QCL100-A-1000
Laser current	0 - 650 mA	0 - 1300 mA
Supply voltage V_S	19 V - 26 V	19 V - 26 V
Compliance voltage	15 V at 500 mA (13.5 V at 650 mA)	15 V at 1000 mA (13 V at 1300 mA)
3 dB modulation bandwidth	5 MHz	5 MHz
Current monitor gain	2 V/A	1 V/A
RMS noise (10 Hz - 1 MHz)	680 nA _{rms}	1350 nA _{rms}
Current noise density (1 kHz)	650 pA/ $\sqrt{\text{Hz}}$	1300 pA/ $\sqrt{\text{Hz}}$
Modulation gains	10 mA/V, 50 mA/V	20 mA/V, 100 mA/V
Operating temperature	0 °C - 50 °C	0 °C - 50 °C
Outside Dimensions	100 mm x 68 mm x 16 mm	100 mm x 68 mm x 16 mm
Compatible lasers	Anode-grounded / Floating diodes	Anode-grounded / Floating diodes

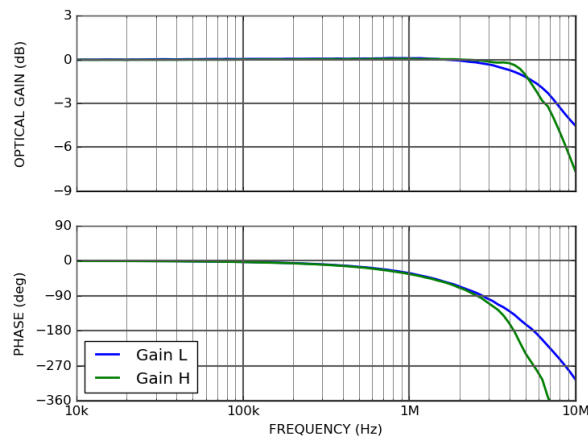
Characterization

Current noise

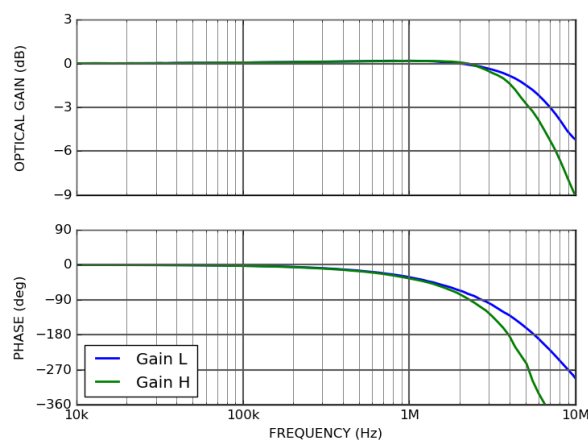


Modulation

Modulation transfer function measured across a 25 Ω load at 400 mA (QCL100-A-500) and 12.5 Ω load at 1000 mA (QCL100-A-1000). Modulation input voltage amplitude is 2 V_{pp}.

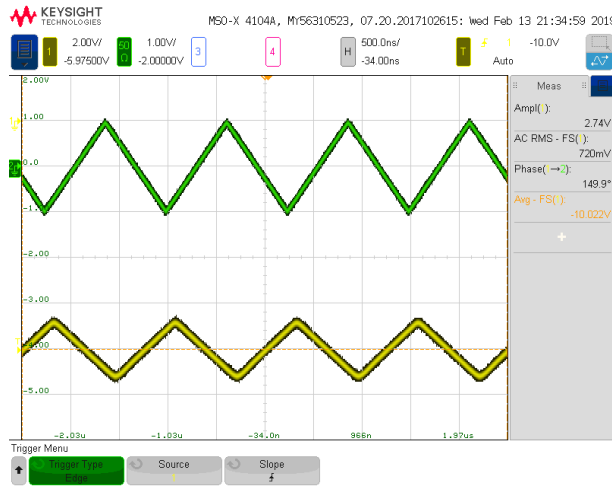


QCL100-A-500 modulation response



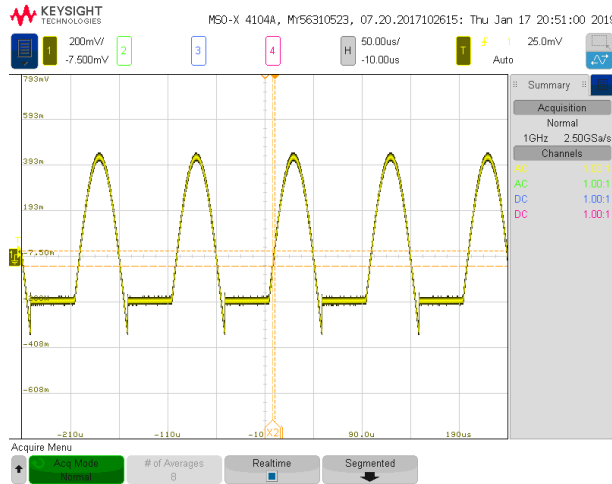
QCL100-A-1000 modulation response

The figure below shows the response (yellow) of the QCL100-A-500 driver to a 2 V_{pp} triangle modulation (green):



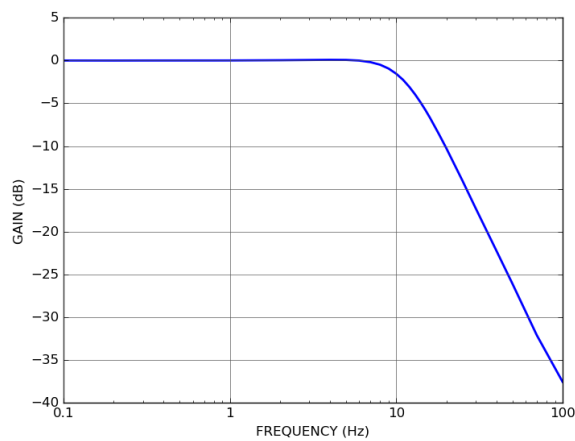
Current limit

The QCL100 driver integrates a fast and precise current limit. Here the current limit clamps a 10 kHz sine wave at 400 mA:



External setpoint trimming input

The external trimming input can be used to perform a low frequency modulation with a 10 Hz bandwidth.



Ordering codes

- QCL100-A-500: Max. output current 650 mA
- QCL100-A-1000: Max. output current 1300 mA