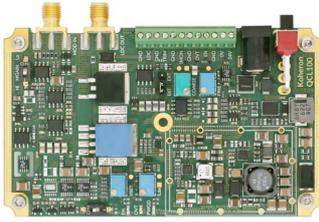


QCL100 - Quantum cascade laser driver



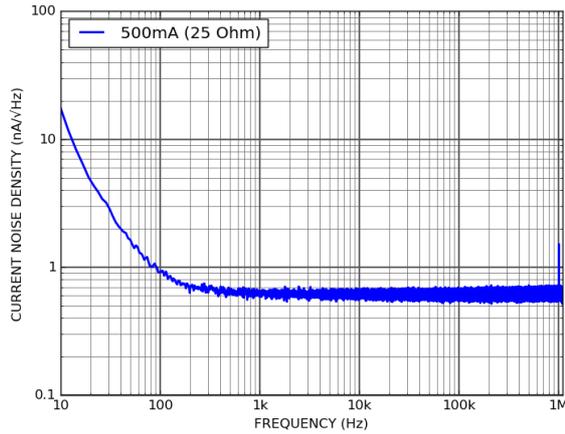
Koheron QCL100 is a high-performance current source designed to drive Quantum Cascade Lasers. With a low current noise of 650 pA/√Hz, the QCL100 driver provides an adjustable compliance voltage up to 15 V at 500 mA and an adjustable precision current limit. The QCL100 driver features a 5 MHz modulation input and a 10 Hz trimming input and is supplied from a single 24 V input.

Specifications

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

Characterization

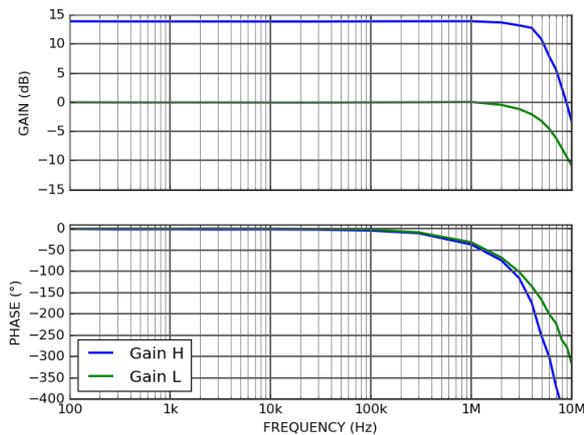
Current noise



[Current noise is measured](#) across a 25 Ω resistor (VSET set to -13.9 V). Integrated noise in the 10 Hz - 1 MHz bandwidth is 653 nA_{rms}.

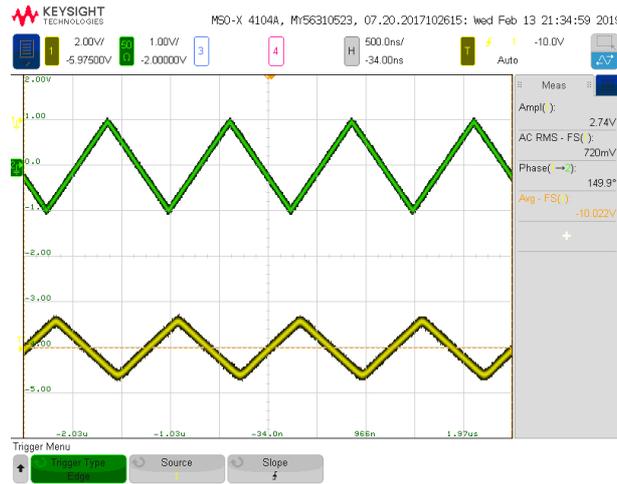
Modulation

The modulation transfer function of the QCL100 driver was measured across a 25 Ω load at 400 mA (VSET set to -14.5 V) with a modulation input amplitude is 2 V_{pp}:



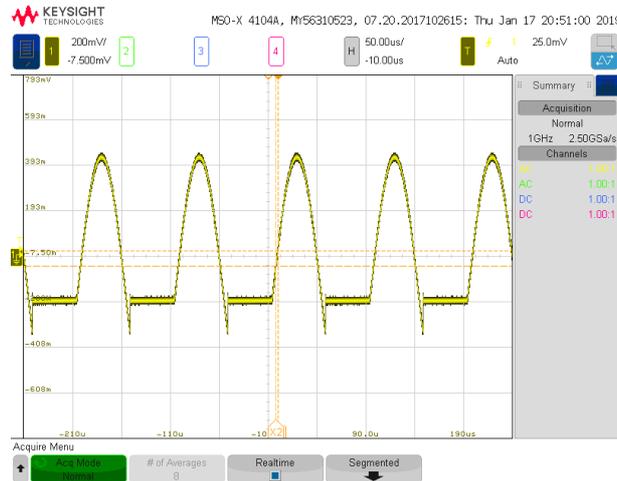
The gain at half the optical bandwidth is 6.9 MHz (in low gain) and 5.9 MHz (in high gain). A phase-shift of 90° is reached at 2.6 MHz (in low gain) and 2.3 MHz (in high gain).

The figure below shows the response (yellow) of the QCL100 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.

