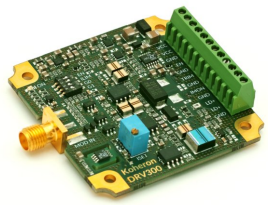


Koheron DRV300 is a low noise current driver for cathode-grounded laser diodes. It drives up to 200 mA laser current and features a DC to 10 MHz modulation input with adjustable modulation gain. A precision trimming input enables fine external tuning of the laser current. The 10 mA max. output current model with its ultra-low noise is well suited to drive Vertical-Cavity Surface-Emitting Lasers (VCSEL).

Specifications

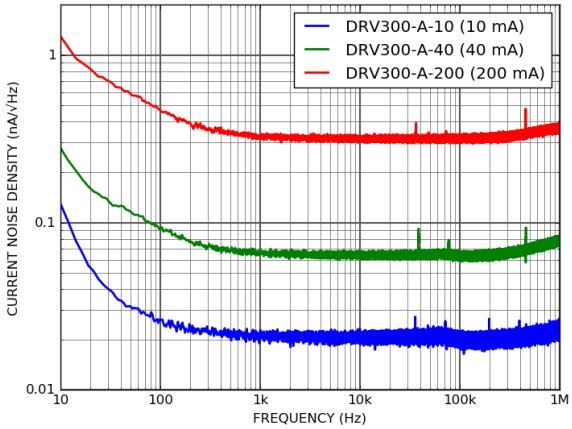
	DRV300-A-10	DRV300-A-40	DRV300-A-200
Current driver			
Laser current	0 mA to 10 mA	0 mA to 40 mA	0 mA to 200 mA
Compliance voltage	4.0 V	4.0 V	4.0 V
Slow start 90 % setpoint	800 ms	800 ms	800 ms
Current limit L setting	11 mA	25 mA	160 mA
Current limit H setting	11 mA	44 mA	220 mA
RMS noise 10 Hz to 1 MHz	25 nA_{rms}	75 nA_{rms}	350 nA_{rms}
Current noise density 1 kHz	23 pA/√Hz	70 pA/√Hz	340 pA/√Hz
Temperature coefficient	50 ppm/°C	50 ppm/°C	50 ppm/°C
Modulation input			
3 dB bandwidth	10 MHz	10 MHz	10 MHz
Modulation gain Low setting	40 µA/V	160 µA/V	800 µA/V
Modulation gain Medium setting	200 µA/V	800 µA/V	4 mA/V
Modulation gain High setting	1 mA/V	4 mA/V	20 mA/V
Input range	-1.2 V to 2 V	-1.2 V to 2 V	-1.2 V to 2 V
Input impedance	50 Ω	50 Ω	50 Ω
Trimming input			
Gain	0.5 mA/V	2 mA/V	10 mA/V

3 dB bandwidth	10 Hz	10 Hz	10 Hz
Input range	±2 V	±2 V	±2 V
Input impedance	2 kΩ	2 kΩ	2 kΩ
Current monitor output			
Current monitor gain	100 V/A	25 V/A	5 V/A
3 dB bandwidth	250 Hz	250 Hz	250 Hz
Output impedance	1 kΩ	1 kΩ	1 kΩ
Power supply			
Supply voltage	8.5 V to 12 V, nom. 9 V	8.5 V to 12 V, nom. 9 V	8.5 V to 12 V, nom. 9 V
Quiescent current laser disabled	10 mA	10 mA	10 mA
Quiescent current laser enabled	60 mA	60 mA	60 mA
Other			
Outside dimensions	58 mm x 50 mm x 14 mm	58 mm x 50 mm x 14 mm	58 mm x 50 mm x 14 mm
Weight	19 g	19 g	19 g
Operating temperature	-20 °C to 70 °C	-20 °C to 70 °C	-20 °C to 70 °C
Compatible lasers	Floating and cathode-grounded diodes	Floating and cathode-grounded diodes	Floating and cathode-grounded diodes

Characterization

Current noise

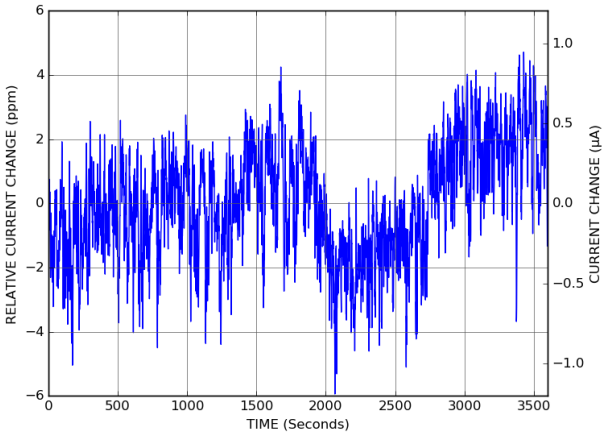
The figure below shows the current noise density of DRV300 laser drivers operated at their rated current.



DRV300 current noise density

Current stability

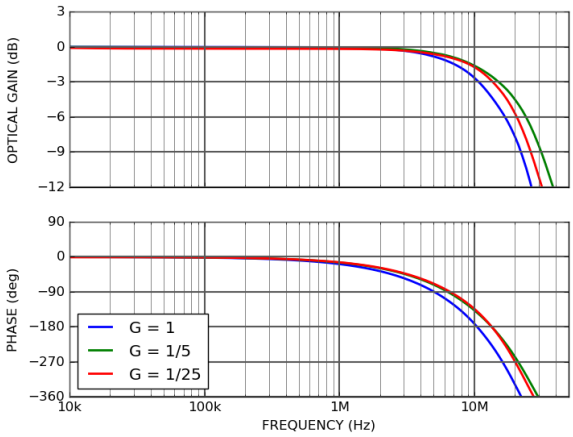
The figure below shows the current stability of the DRV300-A-200 laser driver driving 200 mA.



DRV300-A-200 one hour current stability

Modulation frequency response

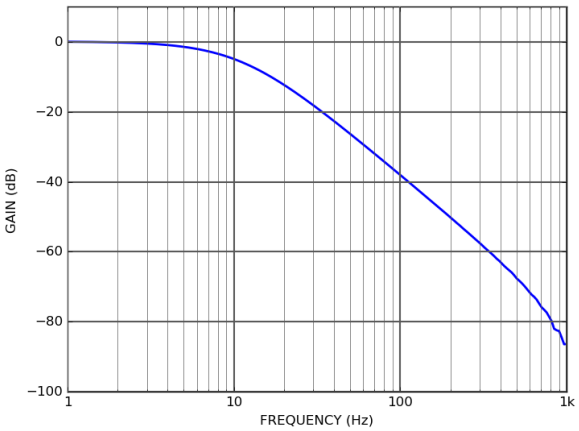
The figure below shows the modulation frequency response of the DRV300-A-200 laser driver driving 200 mA.



DRV300-A-200 modulation frequency response

Trimming input frequency response

The 10 Hz low-pass filter (> 80 dB rejection at 1 kHz) rejects wideband noise that could be injected by the trimming signal.

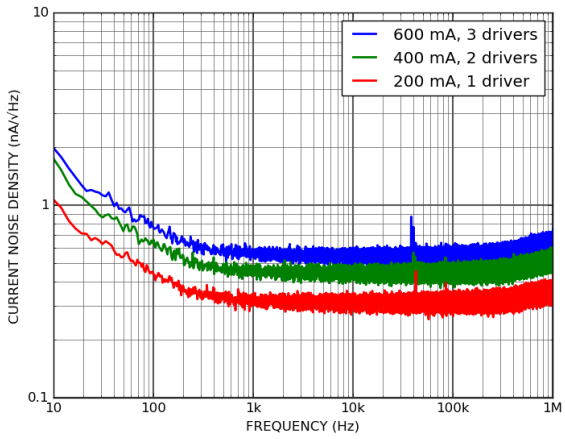


DRV300 trimming input frequency response

Combining multiple DRV300 laser drivers

Thanks to the cathode-grounded architecture of the driver, multiple DRV300 laser drivers can be mounted in parallel to increase output current. The DRV300 can also be mounted in parallel with any other cathode-grounded current driver such as the DRV110 Ultra low noise high-voltage laser driver.

The figure below shows the current noise density for 1, 2 and 3 DRV300-A-200 driver(s) mounted in parallel, with each driver operating at 200 mA:



DRV300 Current noise density of drivers mounted in parallel

Current noise density increases with the square root of the number of drivers (323, 455 and 560 pA/√Hz for 1, 2 and 3 drivers, respectively).

Ordering codes

PRODUCT NUMBER	ATTRIBUTE
DRV300-A-10	Laser current 10 mA
DRV300-A-40	Laser current 40 mA
DRV300-A-200	Laser current 200 mA