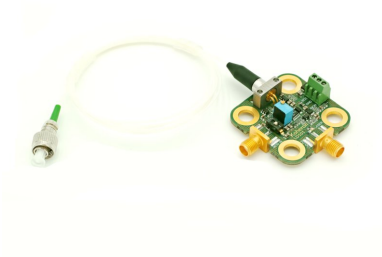
1550 nm low-noise DFB laser

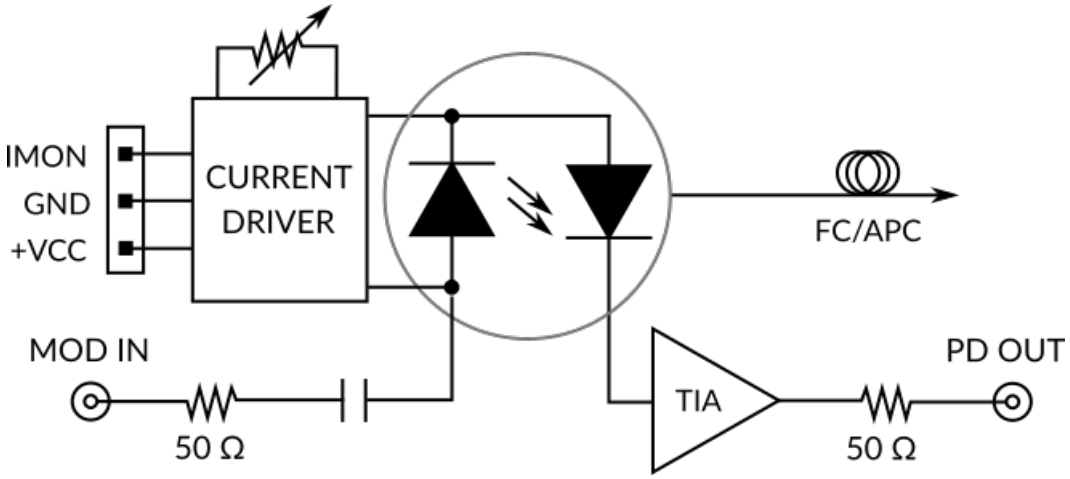


Koheron LD101 is a 1550 nm, low-noise, DFB laser with integrated current driver, photodetector and RF modulation. It works on a single 3.3V power supply and is designed to be mounted on a standard M6 metric breadboard. Laser current is adjusted with a precision trimmer ranging from 0 to 55 mA. The LD101 features an AC-coupled modulation input for current modulation. The internal photodetector includes a transimpedance amplifier with a gain of 2 V/mA and 40 MHz bandwidth. The LD101 has a typical spectral linewidth of 5 MHz.

Specifications

	LD101
Laser diode	
Wavelength	1550 nm
Optical power (30 mA current)	3 mW
Spectral linewidth	5 MHz (typ.) / 8 MHz (max.)
Integrated optical isolation	30 dB
Fiber output	1 m SM fiber with FC/APC connector
Current	
Current monitoring gain	40 mV/mA
Limit	55 mA
Modulation	
AC modulation cut-off frequency	1.6 kHz
Gain	20 mA/V above 100 kHz
Internal photodetector	
Bandwidth	40 MHz
Gain	2000 V/A
Output impedance	50 Ω
Other	
Power supply	3.3 V - 5 V
I/O	SMA for modulation and internal photodetector
Outside dimensions (excl. fiber)	64 mm x 45 mm x 14 mm
Weight	21 g
Operating temperature	0 - 50 °C

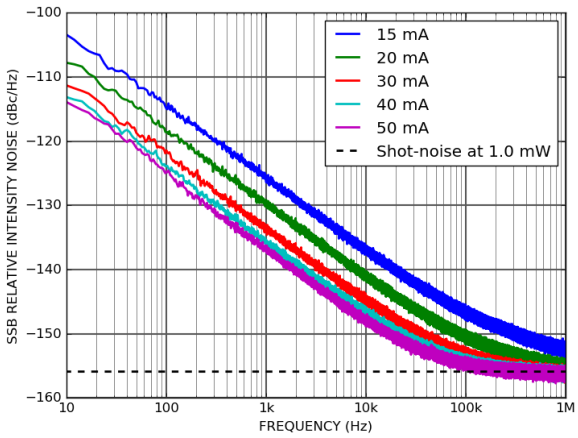
Functional diagram



Characterization

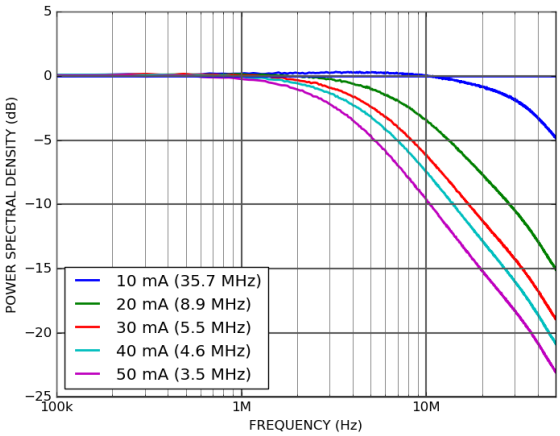
Relative intensity noise

We characterized the laser relative intensity noise (RIN) for different operating currents. In all measurements, the same optical power (1 mW) was sent to the photodetector to maintain the same shot-noise floor.



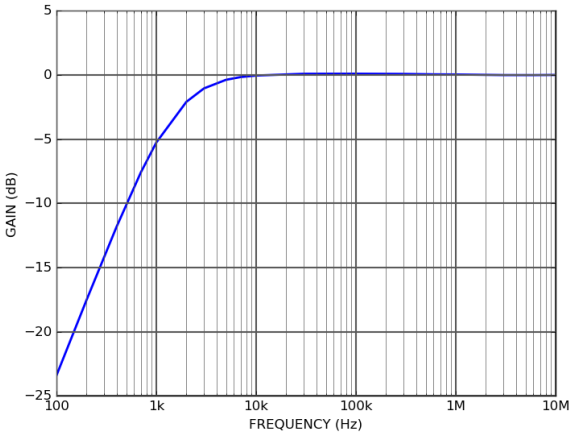
Spectral linewidth

We measured the LD101 spectral linewidth using the self-homodyne method with a 10 km fiber delay. The figure below shows the power spectral density of the interference signal:



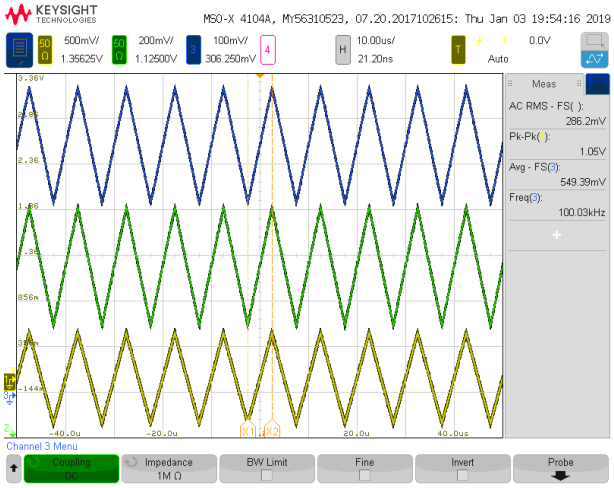
Modulation input

The graph below shows the frequency response of the AC-coupled modulation input at 40 mA current and 1 V_{pp} modulation.



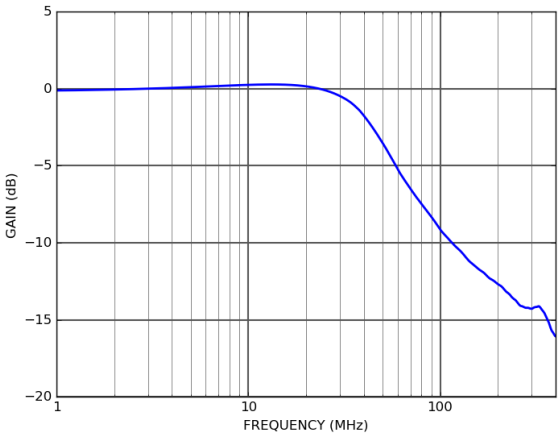
Example: 100 kHz triangle

We modulated the laser current with a 100 kHz triangle wave. The graph below shows in yellow the modulation signal, in blue the monitoring output and in green the laser output observed with a PD100-DC photodetector.



Internal photodetector output

The graph below shows the frequency response of the internal photodetector output. Bandwidth at 3 dB is about 40 MHz.



Ordering codes

- **LD101**