



## CONSTANT CURRENT CW LASER DRIVER

### Description

This laser driver is for driving diode lasers with high stability and high power efficiency. It provides these functions: laser constant current control, laser current monitoring, control loop stability indications, and shut down. It provides a high stability and low noise 2.5V reference voltage which can be used for setting the output current, or for ADCs & DACs.

**Main features: high efficiency, low noise, high reliability, zero EMI and small package.**

Part number:	CWD-01-V2
Laser current control signal level:	0 to 2.5V
Control accuracy:	±0.2%
Laser current indication signal level:	0 to 2.5V
Indication accuracy:	±0.2%
Maximum output current:	2A
Current output noise:	0.05%
Laser driver efficiency:	≥90%
Power input DC voltage:	3.0V to 5.5V
Output reference voltage:	2.5V
Operating temperature:	-20°C to +85°C

### Pin Descriptions

- Pin 1 SDNG**, shut down control, digital input. Negative logic, at the internal chip control input: >1.4V = enable, <0.95V = shut down, nominal threshold voltage = 1.2V. The input current is between 3µA and 8µA. There is a resistor, a Schottky diode, and a capacitor circuit in front of the internal input pin. See Figure 2. This circuit allows a slow start up and a quick shut down.
- Pin 2 LDGD**, laser diode good, digital output. When this pin is high, >1V, the control loop is working properly. When this pin is low, <1V, the laser diode is bad, or there is a short or open circuit at the laser diode. This pin comes from an open drain output and is pulled up by a 100KΩ resistor.
- Pin 3 GND**, signal ground. Connect ADC and DAC grounds to here.
- Pin 4 2.5V**, reference voltage, analog output. It can source 3mA max, with 5µVp-p noise @ 0.1 to 10 Hz and 25ppm/°C stability max.
- Pin 5 LCS**, laser current set-point voltage, analog input. There is an input resistor of 100K tied to GND. Setting it from 0V to 2.5V will set the laser current from 0A to 2A linearly.
- Pin 6 LCO**, laser current output indication, analog output. 0V to 2.5V indicates the laser current of from 0A to 2A linearly.
- Pin 7 GND**, the same as PIN 3.
- Pin 8 LCGD**, laser current good, control loop indication, analog output. When this pin is stabilized and the value is between 0.2V and 1.8V, the output voltage to the laser, Pin 9 LDA, will be 4.8V to 0V



linearly, the laser current is stabilized, and the control loop is stable. This pin has a similar function as Pin 2 LDGD, except that this pin is of an analog output and Pin 2 is of a digital output.

**Pin 9 LDA**, laser diode anode, analog output. Connect it to the anode of the laser diode.

**Pin 10 PGND**, power ground. Connect this pin directly to the cathode of the laser diode.

**Pin 11 PGND**, power ground. Connect this pin directly to power supply return pass.

**Pin 12 VPS**, power supply voltage, power input. The driver will work from  $VPS = 3.0V$  to  $5.5V$ .

Figure 1 illustrates two typical connection schematics.

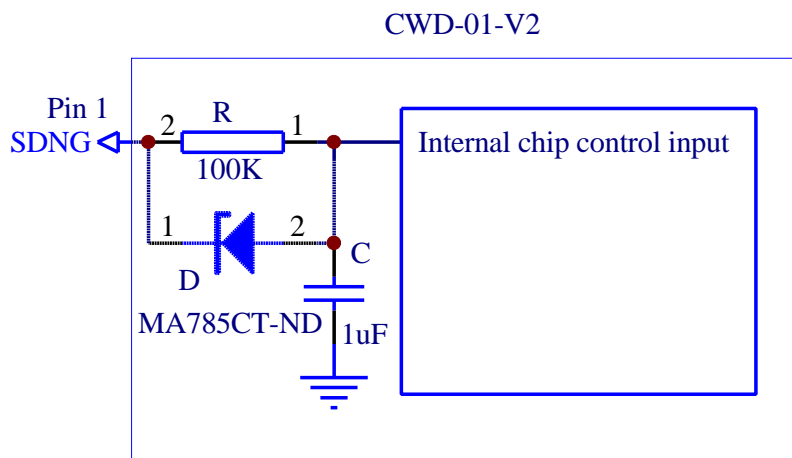


Figure 1

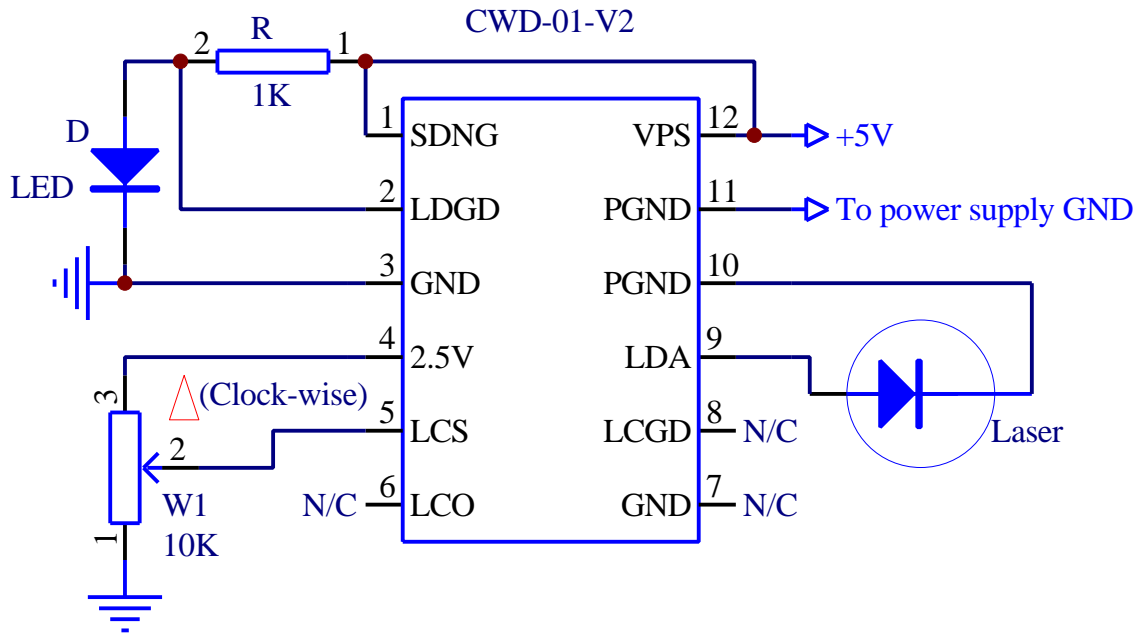


Figure 2A Self-contained

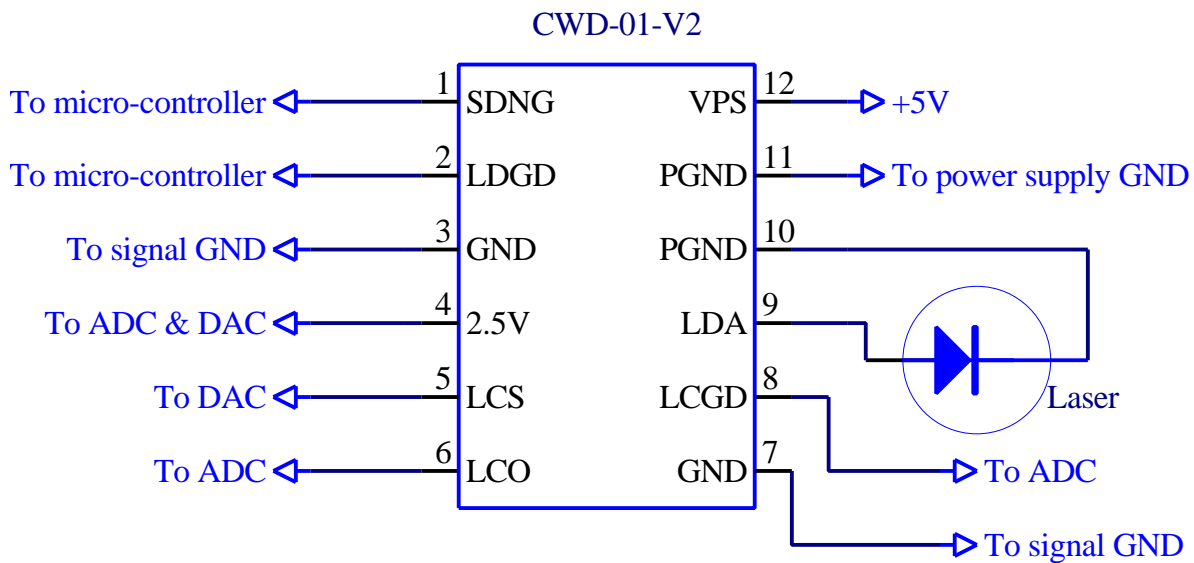


Figure 2B Micro-processor Based



### Pin Configurations and Mechanical Dimensions

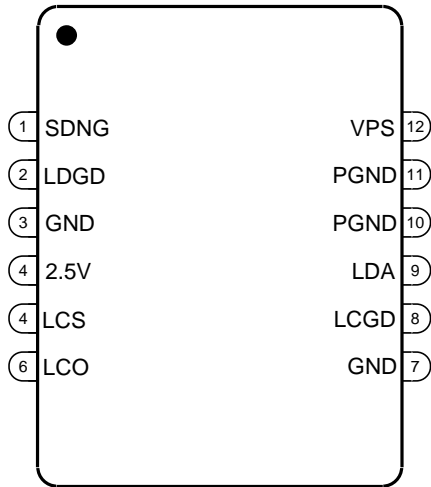


Figure 3 Top View of CWD-01-V2-S

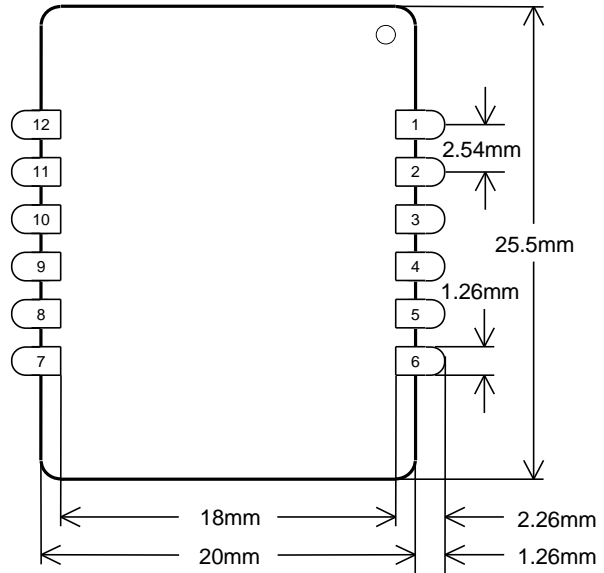


Figure 4 Bottom View of CWD-01-V2-S

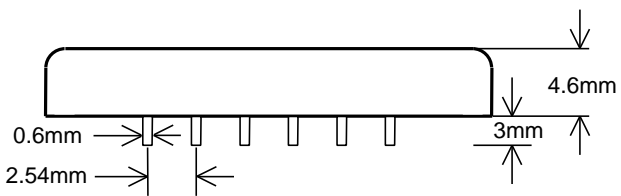


Figure 5 Side View of CWD-01-V2-D

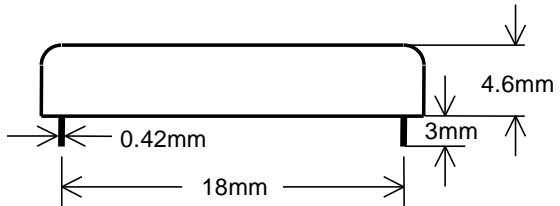


Figure 6 End View of CWD-01-V2-D

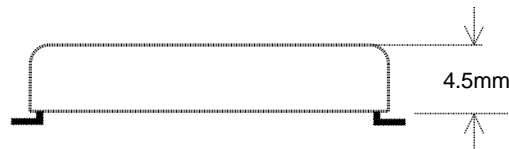


Figure 7 End View of CWD-01-V2-S

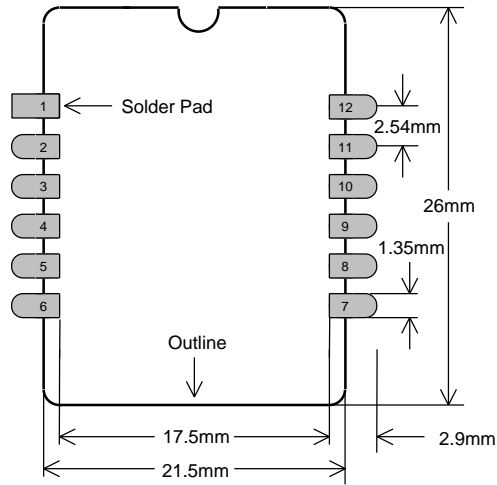


Figure 8 Recommended PCB footprint for surface mount package

**Note:** The Constant Current CW Laser Drivers come in two types of packages: surface mount and through hole. The surface mount package has to be soldered manually, not by reflow oven. The through hole package can be mounted in a socket, soldered manually, or by wave soldering machine. Package type is designated by suffixing D (through hole) or S (surface mount) to the part number.