



LASER CONTROLLER FOR OPTICAL AMPLIFIERS

Description

This laser controller is designed for driving the pump laser in optical amplifiers, such as Raman amplifier and EDFA, with high stability and reliability. It drives the laser in four modes: constant current, constant laser power, constant output power, and constant gain. It also provides these protection functions: over current, over laser power, over output power, and over gain.

Interface and Control

Pin #	Pin Name	Type	Description	Note
1	GND	Analog power	Connect ADC and DAC ground to here.	
2	ILIM	Analog input	Laser current limit set, 0 to 2.5V.	Set by DAC or POT
3	OPLIM	Analog input	Optical output power limit set, 0 to 2.5V.	Set by DAC or POT
4	LPLIM	Analog input	Laser power limit set, 0 to 2.5V.	Set by DAC or POT
5	GNLIM	Analog input	Constant gain limit set, 0 to 2.5V.	Set by DAC or POT
6	LIS	Analog input	Laser current set, 0 to 2.5V.	Set by DAC or POT
7	OPS	Analog input	Optical output power set, 0 to 2.5V.	Set by DAC or POT
8	LPS	Analog input	Laser output power set, 0 to 2.5V.	Set by DAC or POT
9	GNS	Analog input	Constant gain set, 0 to 2.5V.	Set by DAC or POT
10	OPFB	Analog output	Output photo diode feedback, 0 to 2.5V.	Connect a resistor between these two pins to set the trans-impedance
11	OPA	Analog input	Output photo diode anode, 0 to 2.5V.	
12	LPFB	Analog output	Laser photo diode feedback, 0 to 2.5V.	Connect a resistor between these two pins to set the trans-impedance
13	LPA	Analog input	Laser photo diode anode, 0 to 2.5V.	
14	IPFB	Analog output	Input photo diode feedback, 0 to 2.5V.	Connect a resistor between these two pins to set the trans-impedance
15	IPA	Analog input	Input photo diode anode, 0 to 2.5V.	
16	2.5V	Analog output	Voltage reference, 2.5V.	
17	LPGD	Digital output	Loop good, optical amplifier is working at the set mode.	
18	IPO	Analog output	Input power output voltage, 0 to 2.5V.	To ADC
19	LPO	Analog output	Laser power output voltage, 0 to 2.5V.	To ADC
20	OPO	Analog output	Output power output voltage, 0 to 2.5V.	To ADC
21	OIO	Analog output	Laser current output voltage, 0 to 2.5V.	To ADC
22	NC	NC	No connect.	
23	M1	Digital input	Mode set 1.	
24	M2	Digital input	Mode set 2. M1M2: 00 = constant current mode, 01 = constant laser power mode, 10 = constant output power mode, 11 = constant gain mode.	



25	SDNG	Digital input	Shut down, negative logic: 0 = off.	
26	LDA	Analog output	Laser diode anode.	
27	GND	Analog power	Analog ground, connect laser diode cathode to here.	The same as Pin 1.
28	PGND	Power	Power ground.	
29	PGND	Power	Power ground.	
30	VPS	Power	Power supply, 3.3V to 5V.	

Specifications

Part number: CWOA-A1-L1-D
 Operating temperature range: -25°C to +85°C
 Control loop rise and fall time: <5uS
 Output settling time: <10uS
 Drive current stability (in current mode): <0.05%
 Output power stability (in power mode): <0.05%
 Output ripple current: <0.02%
 Output current limit setting: 0 to 0.5A
 Power supply voltage VPS: 3.3V to 5.5V
 Maximum output current: 0.5A
 Maximum output voltage: VPS – 0.4V
 Size: 25.5mm × 22mm × 4.2mm

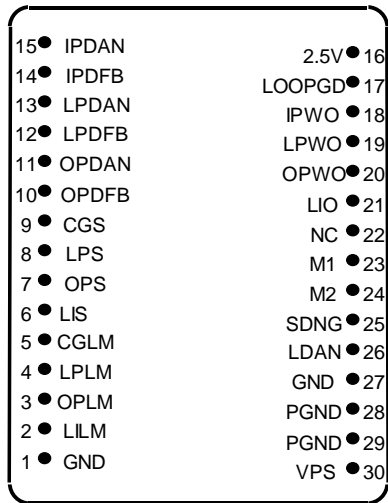


Figure 1 Bottom View of CWOA-A1-L1-D

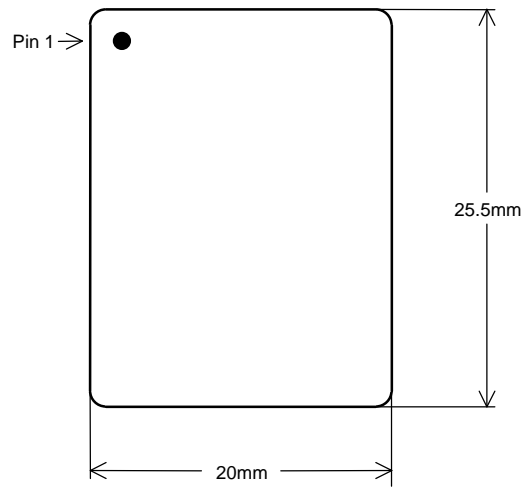


Figure 2 Top View of CWOA-A1-L1-D

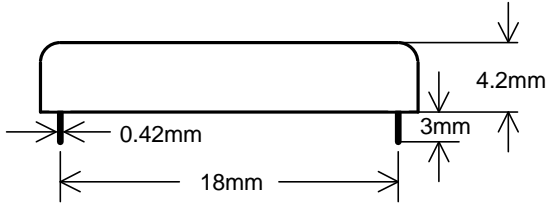


Figure 3 End View of CWOA-A1-L1-D

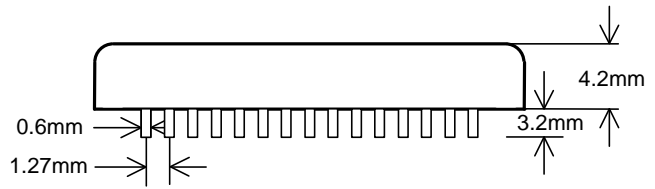
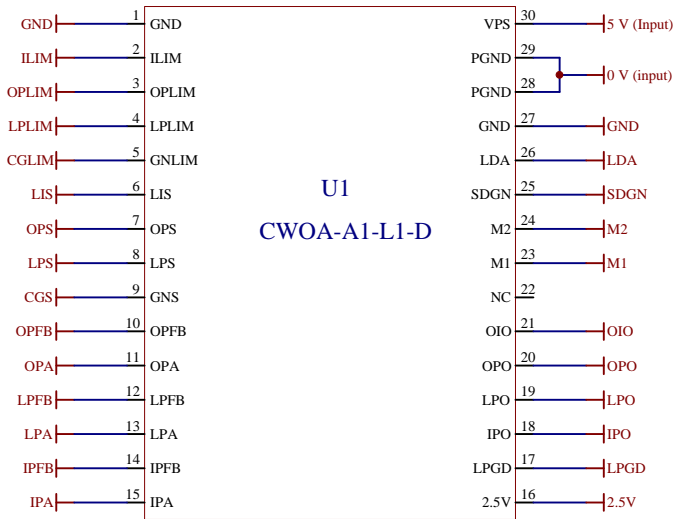


Figure 4 Side View of CWOA-A1-L1-D



EDFA Components

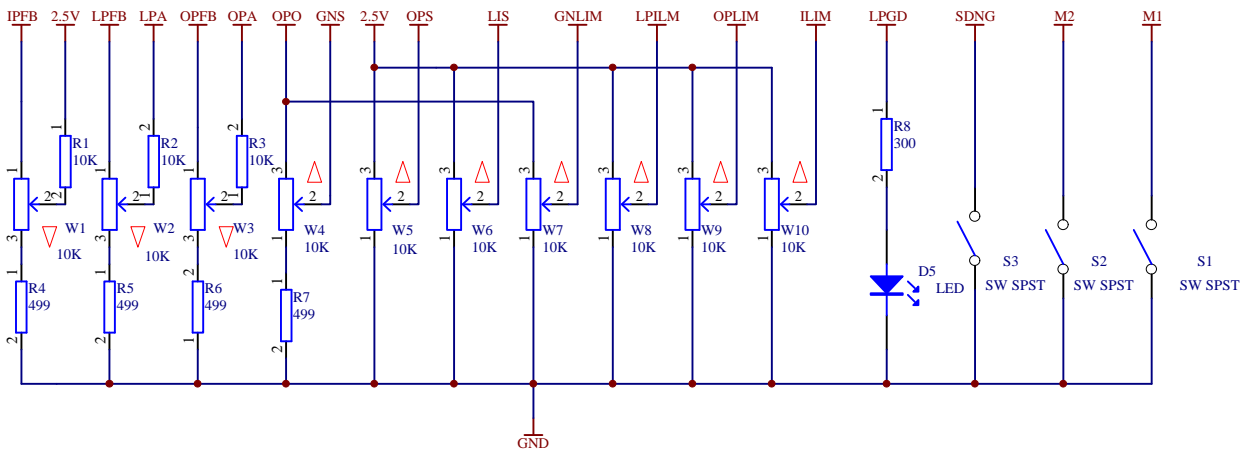
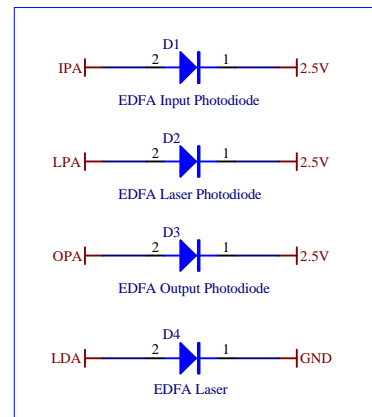


Figure 5 Connecting to EDFA