PICOSECOND PULSED SEED LASER DIODE DRIVER

- **Adjustable Pulse Width <150 ps TO >850 ps**
- **Output Current up to 2.5 A**
- **Compliance Voltage up to 10.0 V**
- **Repetition Rate up to 1 MHz**
- **On-Board TEC Controller**
- **5.0 VDC Input Power**
- **Compact Size only 2.90” x 3.54” x 0.53”**

DESCRIPTION:

AMI’s Model 766A picosecond pulsed seed laser diode driver is ideal for driving 14-pin butterfly packaged laser diode modules for applications which require pulse widths less than 1 ns. Applications include materials processing, time-resolved spectroscopy, LiDAR and others. The driver circuitry operates from a single 5 V power source. All other needed voltages are generated on the board by high efficiency switching power supplies. The pulse width and amplitude can be adjusted by the on-board potentiometers or external voltage signals. The driver includes a low-noise, bidirectional proportional-integral-derivative (PID) thermoelectric cooler controller (TEC) with current capability of 2.2 A and voltage capability of 4.0 V.

SPECIFICATION:

PARAMETER	Min.	Typical	Max.	Units
INPUT				
Power	4.75	5.0	5.25	VDC
Current	-	0.160	3.2	A
Trigger (50Ω Impedance)	3.68	-	5.0	V
External High Voltage Adjust	0	-	0.7	V
External Pulse Width Adjust	0	-	6.0	V
OUTPUT				
Current*	-	-	2.5	A
Compliance Voltage	1.2	-	10.0	V
Pulse Width**	≤ 150	-	≥ 850	ps
Repetition Rate	Single Shot	-	1.0	MHz
Risetime (Optical) **	-	110	-	ps
TEC Controller Output Current	-	±2.2	-	A
TEC Controller Output Voltage	-	±4.0	-	V
TEMPERATURE				
Operating	0	-	+50	°C
Storage	-20	-	+70	°C
Humidity		< 95% Non-Condensing		

** Output current dependent upon operating pulse width. See optical output waveforms for example.*
*** Dependent upon laser diode parasitics*
Specifications are subject to change without notice.

APPLICATIONS:

Seed Laser Diode Driver for Fiber Lasers, Time-Resolved Spectroscopy, LiDAR

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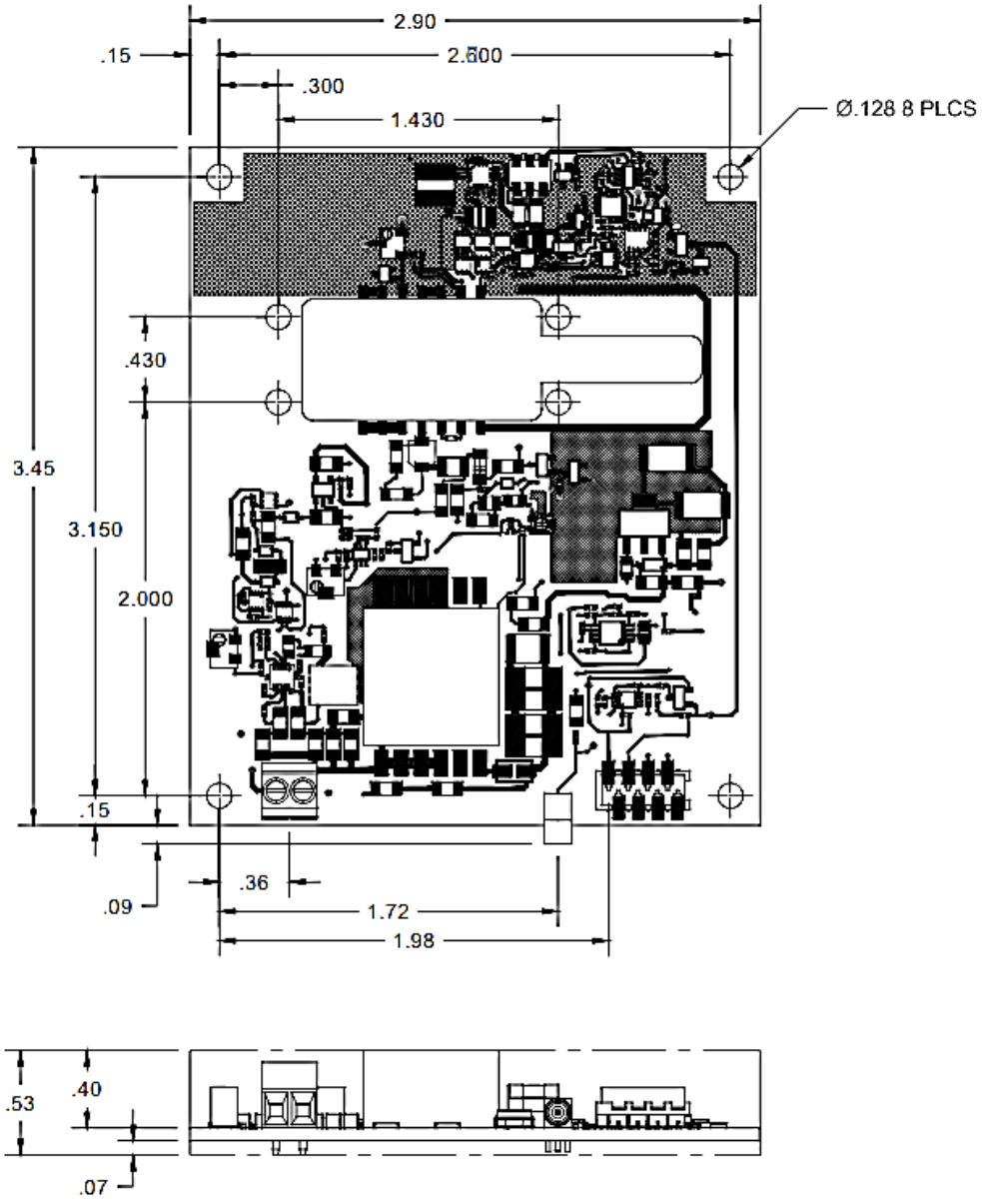
PROTECTION:	Driver disabled when laser diode die temperature is outside of TEC set point by ±0.5˚C.
	Driver disabled when power exceeds maximum dissipation.
CONNECTIONS:	
Power:	2 pin Terminal Block (*Molex 39257-0002)*
Interface:	8 Pin TE Connectivity MicroMatch Connectors (*188275-8*)
Trigger Input:	MMCX Micro Coax Connector
SIZE:	2.9” x 3.54” x 0.53”
THERMAL:	On-board TEC Controller will provide heating and cooling as necessary to maintain the thermistor temperature to within 0.0015°C from the set temperature. TEC controller is compatible with a 10k Ohm NTC thermistor. The thermistor and the TE-cooler are inside the laser diode package (not included). Customer may need to provide thermal mass and/or forced air for heatsinking under high dissipation conditions.

MECHANICAL DIMENSIONS:



ALL DIMENSIONS ARE IN INCHES. TOLERANCES: .XX= ± .02, .XXX= ±.005 DWG# 22-007

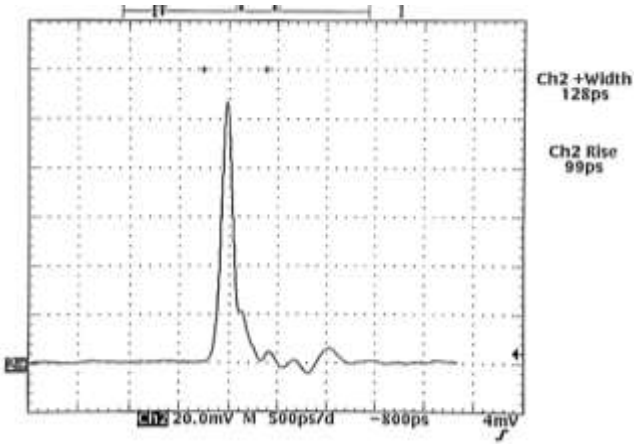
PIN CONNECTIONS:

I/O CONNECTOR Pinout	
JP1	
Pin	Function
1	$\overline{\text{Enable}}$
2	GND
3	$\overline{\text{Temp Fault}}$
4	GND
5	High Voltage Adjust
6	GND
7	Pulse Width Adjust
8	GND

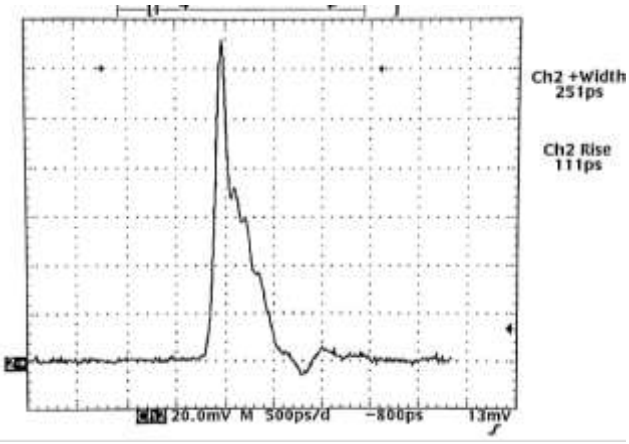
Compatible Laser Pinout	
Pin	Function
1	TEC +
2	Thermistor
3	BFM Anode
4	BFM Cathode
5	Thermistor
6	N/C
7	N/C
8	N/C
9	N/C
10	LD Anode
11	LD Cathode
12	N/C
13	Case Ground
14	TEC -

OPTICAL OUTPUT WAVEFORMS:

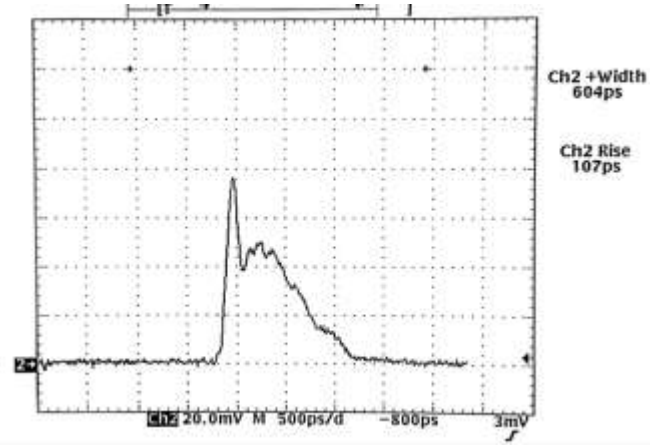
Test Laser: II-VI CM97A1064 10-pin Butterfly



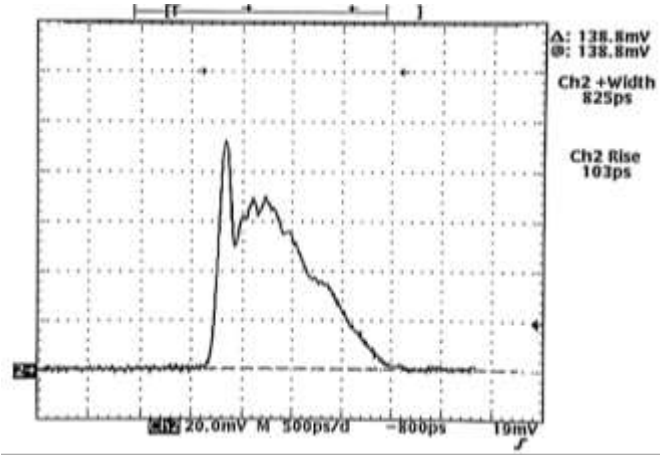
128 ps Pulse Width, 2 A Equivalent Current



251 ps Pulse Width, 2.5 A Equivalent Current



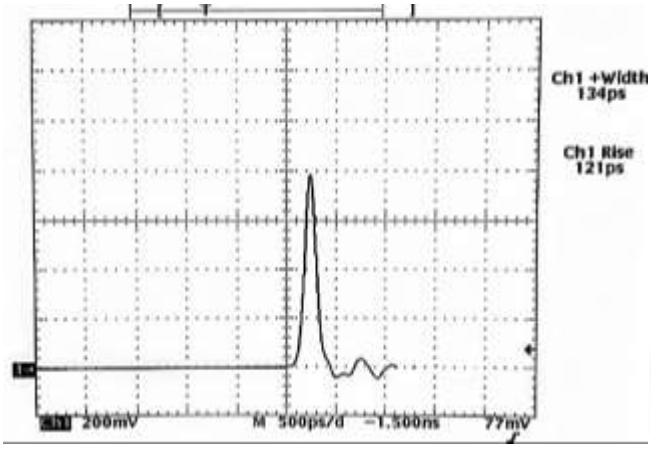
604 ps Pulse Width, 1.5 A Equivalent Current

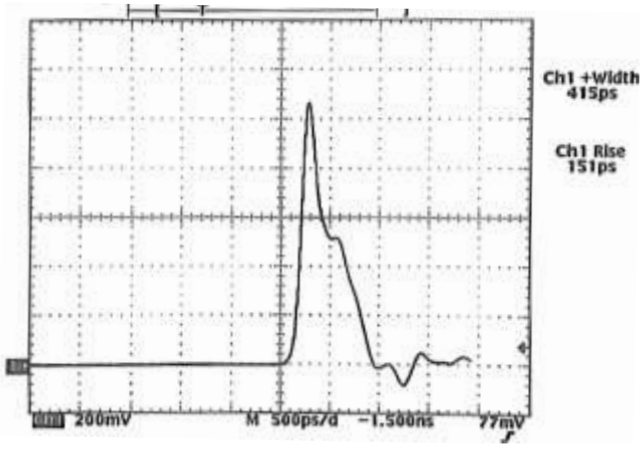


825 ps Pulse Width, 1.8 A Equivalent Current

ADDITIONAL SAMPLE OPTICAL WAVEFORMS:

Test Laser: Lumics LU1064M450 14-pin Butterfly





Test Laser: Oclaro LC96A1060 14-pin Butterfly