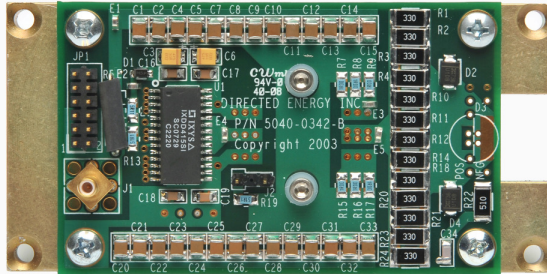


## PCO-7120 PULSED LASER DIODE



- Compact Economical OEM Module
- 500mA to 50A Output
- <9nS Rise Time
- Variable Pulse Width From 12nS to >1uS
- Repetition Frequency To 1MHz
- Diode May Be Mounted Directly On The PCO-7120
- Pulsed Current Monitor Output

The PCO-7120 is a compact, economical OEM laser diode driver module designed to provide extremely fast, high current pulses to drive laser diodes in range finder, LIDAR, atmospheric communications and other applications requiring high current, nanosecond pulses. It offers variable output current from 500mA to 50A, with continuously variable pulse widths from 12ns to >1µs and frequencies up to 1MHz.

Mounting pads are provided to mount the laser diode directly to the driver, eliminating the need for interconnect cables or striplines. The four-hole mounting pattern accepts TO-18, TO-5, TO-52, 5.6MM, and 9MM packages, as well as other packages of similar dimensions and lead spacing, mounted perpendicular to the driver circuit board. To facilitate different packages and mounting preferences, there are two solder pads on the end of the board to accept various laser diode packages mounted on axis to the driver. Furthermore, the diode can be connected remotely from the driver using a low-impedance stripline interconnection between the mounting pads and the leads of the laser diode.

A current monitor output may be viewed with an oscilloscope, providing a straight-forward means to observe the diode current waveform in real-time.

The PCO-7120 driver provides high-speed performance, variable pulse width, current and frequency, a robust design, flexible mounting configurations and the ability to drive a wide range of laser diodes in a small package. These features provide the user with an economical OEM module with the flexibility to be readily designed into a wide range of products.

### Technical Overview

The PCO-7120 uses an IXYS-RF DE-150 Series MOSFET driven with an IXYS-RF IXDD415SI high speed gate drive IC as the main switching element. Unlike avalanche transistor drivers, the power MOSFET of the PCO-7120 is not operated in breakdown, but instead is controlled via its gate with a highspeed gate drive circuit. This design provides a high degree of reliability, excellent switching performance, variable pulse width and superior amplitude.

The driver requires three user-supplied inputs: A TTL gate input, +15VDC support power, and a high voltage DC input (+100V maximum). The output pulse follows the input gate in width and frequency. The output current depends upon the available charge of the driver's energy storage network. This charge is directly proportional to the voltage by the high voltage DC power supply. Therefore the output current amplitude of the PCO-7120 is controlled by varying the input high voltage amplitude. The output current can be varied over a large range with little variation in pulse width.

To minimize cost, the driver is designed so that the laser diode is floating on the voltage of the drain of the output transistor. **The diode must be electrically isolated from earth (chassis) ground.** The cathode (-) connects to "NEG" terminal of D3, and the anode (+) connects to the "POS" terminal of D3. The diode can be connected remotely using a low-impedance stripline interconnection between the mounting pads and the leads of the laser diode.

High speed clamp diodes are incorporated into the output network to protect the laser diode against reverse voltage conditions.

The driver is supplied mounted on a 1/4" aluminum heat spreader to provide the cooling needed for the switching transistor, and to simplify mounting or installation of the driver.

## SPECIFICATIONS

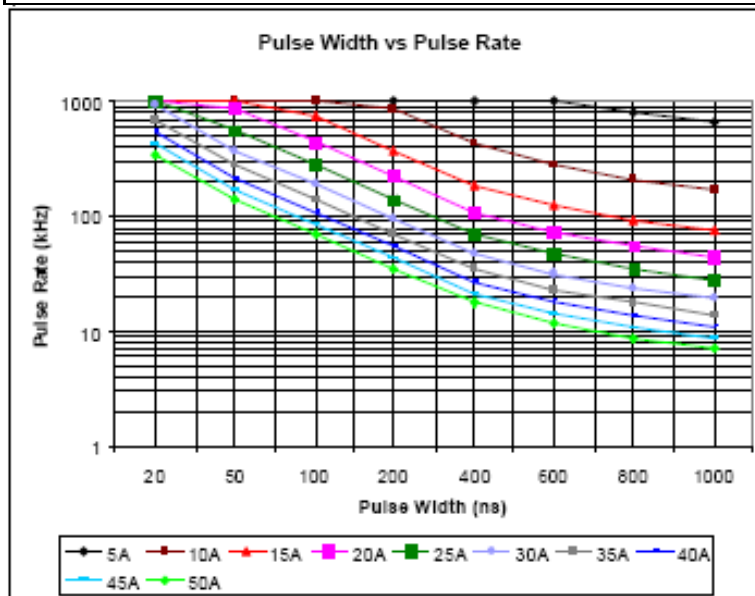
### PARAMETERS

|                                         |                                                                           |
|-----------------------------------------|---------------------------------------------------------------------------|
| Output Current                          | 500mA to 50A Controlled                                                   |
| Minimum Pulse Width (Typical)           | 12nS                                                                      |
| Maximum Pulse Width With 5% Pulse Droop | 1uS at 50A 10uS at 5A                                                     |
| Rise Time (10% to 90%)                  | 8nS                                                                       |
| Pulse Recurrence Frequency              | Single Shot To 1MHZ Limited By Maximum Average Current<br>See Graph Below |
| Gate (Trigger) Input                    | +5VInto 50Ω                                                               |
| Support Power                           | +12VDC to +15VDC at 60mA Typical                                          |
| High Voltage Input                      | +5VDC to 100VDC                                                           |
| Throughput Delay                        | <40nS, Typically 36nS                                                     |

### MECHANICAL

|                       |                                                |
|-----------------------|------------------------------------------------|
| Size W x L x H        | 2.00" x 4.06" x 0.76"<br>51mm x 103mm x 19.3mm |
| Weight                | 4.5oz (128g)                                   |
| Operating Temperature | -20°C to +55°C                                 |

ALL SPECIFICATIONS MEASURED INTO A SHORTED OUTPUT. SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE. LASER DIODE NOT INCLUDED



| Output Current (A) | Maximum Duty Cycle | Typical DC HV Input (VDC) |
|--------------------|--------------------|---------------------------|
| 5                  | 0.65               | 10                        |
| 10                 | 0.17               | 18                        |
| 15                 | 0.075              | 26                        |
| 20                 | 0.045              | 34                        |
| 25                 | 0.028              | 42                        |
| 30                 | 0.019              | 51                        |
| 40                 | 0.011              | 70                        |
| 50                 | 0.007              | 92                        |

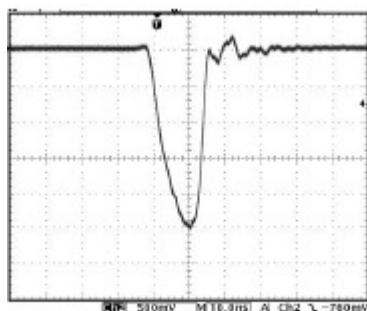
#### Ordering Information:

- The PCO-7120 is provided on an aluminum heat spreader. Mating input connector (2 x 12 housing) is supplied with the driver.

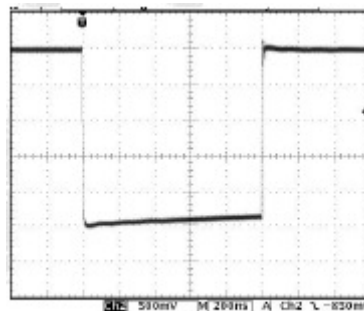
#### Optional Accessories:

- PCA-9145: 36" Current Monitor Connector to BNC Male Coaxial Cable to connect current monitor to an oscilloscope.
- PCA-9245 36" BNC Male to SMB Plug Coaxial Cable For Gate Input.

1820-0030 Low-Impedance Stripline to remotely connect PCO-7120 to the laser diode.



12ns Pulse Width, 50A Output



1us Pulse Width, 50A Output