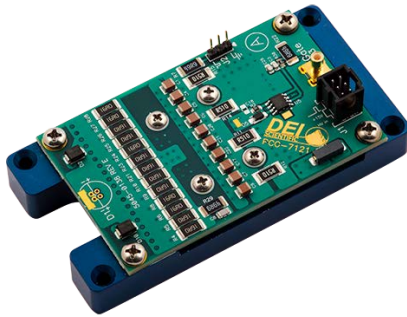




## Precision Pulse Control

The PCO-7121 is a compact and economical OEM pulsed-current laser diode driver module. It is designed to provide extremely fast high-current pulses for driving laser diodes in range finder, LIDAR, atmospheric communications and other applications requiring high-current nanosecond pulses. This module offers variable output current from 5 A to 50 A with pulse widths from 22 ns to 1  $\mu$ s at frequencies up to 1 MHz.

## Laser Diode Connection

Mounting pads are provided to mount the laser diode directly to the driver. The four-hole mounting pattern accepts TO-18, TO-5, TO-52, 5.6 mm, and 9 mm packages.

To facilitate various packages and mounting preferences, two solder pads at the end of the board accept various laser diode packages mounted on-axis to the driver. Alternately, low-inductance strip line cable can be used to connect the board to a remotely-located diode.

## System Operation

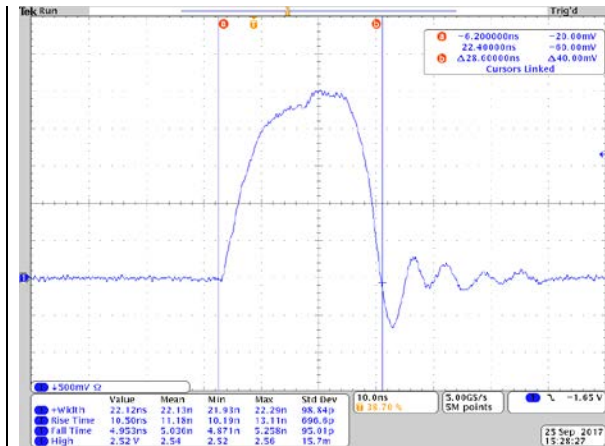
The DC high voltage and +15 VDC power supplies are connected via J1, a six-pin male header connector, using the supplied control cable. Pulse current depends on HV supply voltage over the range of 0 V to +95 V (maximum). Externally-generated pulses are fed to the gate input via either J1 or SMB connector. The width and repetition rate of the gate pulses directly set the timing of the output pulses.

A current monitor output is provided to observe the diode current in real time with an oscilloscope.

The driver is supplied mounted on a 1/2" thick aluminum heat spreader to provide the cooling needed and to simplify mounting or installation of the driver.

## Ordering Information

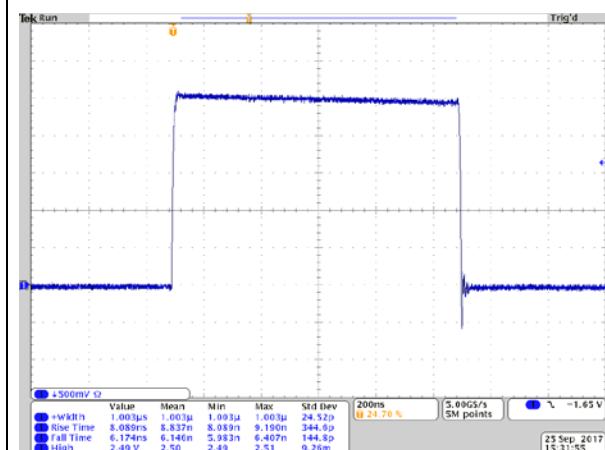
|                                |           |
|--------------------------------|-----------|
| PCO-7121                       | Module    |
| Included Control Cable         | 6100-0137 |
| Optional Current Monitor Cable | PCA-9145  |



PCO-7121 (50 A, 22 ns, shorted load, inverted waveform)



PCO-7121 (50 A, 100 ns, shorted load, inverted waveform)



PCO-7121 (50 A, 1000 ns, shorted load, inverted waveform)

### Pulse Amplitude

|                             |                                      |
|-----------------------------|--------------------------------------|
| Output current range        | 5 A to 50 A                          |
| Pulse width                 | 22 ns to 1000 ns                     |
| Rise time                   | $\leq 12$ ns * <sup>2</sup>          |
| Fall time                   | $\leq 10$ ns                         |
| Frequency                   | Single shot to 1 MHz                 |
| Throughput delay            | 28 ns typical                        |
| Housekeeping power required | 15 V $\pm$ 250 mV, 80 mA             |
| High voltage input voltage  | 0 V to 95 VDC                        |
| High voltage input power    | $\leq 12$ W (typical) * <sup>1</sup> |

### Gate

|                       |                  |
|-----------------------|------------------|
| Gate input            | +5 V             |
| Gate pulse width      | 10 ns to 1000 ns |
| Termination impedance | 50 $\Omega$      |
| Gate Connector        | SMB or J1 Pin 2  |

### Input connector

|                    |                 |
|--------------------|-----------------|
| Gate input         | J1 Pin 2        |
| +15 VDC input      | J1 Pin 4        |
| High voltage input | J1 Pin 6        |
| Return             | J1 Pins 1, 3, 5 |

### Current monitor

|                             |                |
|-----------------------------|----------------|
| Current monitor scaling     | 20 A/V typical |
| Current monitor termination | 50 $\Omega$    |
| Current monitor +           | J2 Pin 1       |
| Current monitor –           | J2 Pin 3       |

### Output connector D3

Four-hole mounting pattern accepts TO-18, TO-5, TO-52, 5.6 mm, and 9 mm packages

### General

|                       |                            |
|-----------------------|----------------------------|
| Size (LxWxH)          | 101.6 mm x 50.8 mm x 27 mm |
| Weight (approximate)  | 100 g                      |
| Mounting hole spacing | 92.1 mm x 43.2 mm          |
| Hole diameter         | 3.8 mm                     |

|                       |               |
|-----------------------|---------------|
| Operating Temperature | 0 °C to 35 °C |
| Cooling               | Air cooled    |

### Notes

\*<sup>1</sup> Driving a shorted load at maximum SOA level.

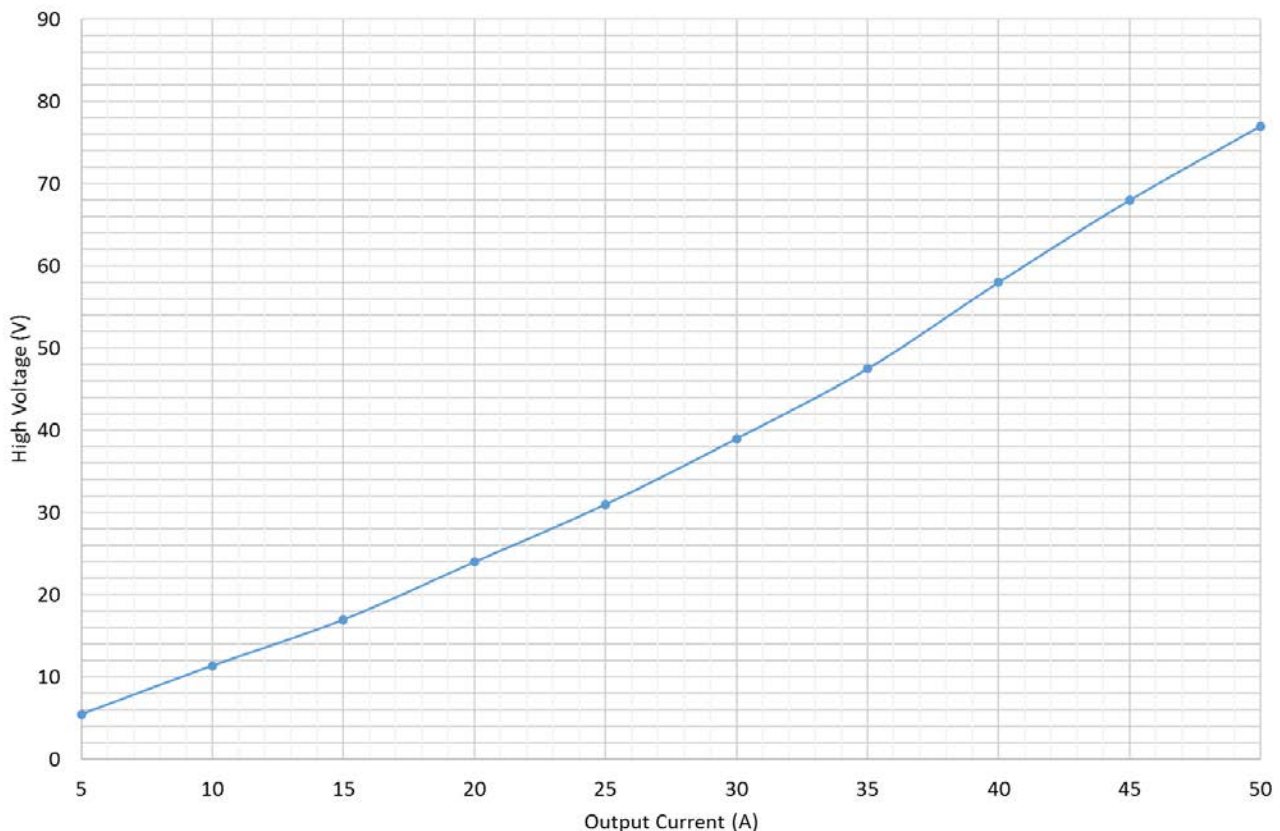
\*<sup>2</sup> For output currents above 20 A.

All specifications are measured after the module is thermally stabilized (30 minutes), driving a shorted load and using the current monitor connection.

Specifications are subject to change without notice.

Warranty: One year parts and labor on defects in materials and workmanship.

Typical High Voltage Setting vs Current



**CAUTION:**  
Permanent damage will occur if the instrument is operated above the appropriate SOA line in the graph below.

