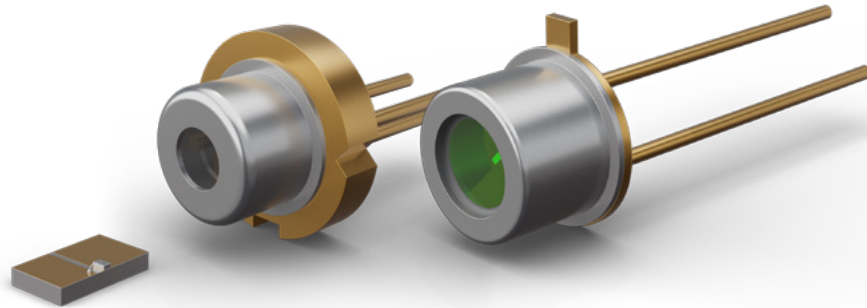


## HP155G SERIES

High-Performance Pulsed Laser Diodes 1550 Series



The HP1550G series is engineered to provide a high-performance and high-quality 1550 nm Pulsed Laser Diode (PLD). It features an advanced InP chip design, that provides exceptional efficiency and output powers.

The HP155G series is available in stacked diode configurations, with a choice of emitting source sizes and different package styles.

### FEATURES

- / High intensity output
- / Low divergence
- / Excellent temperature stability
- / Hermetic and custom designed package
- / 25 degree beam divergence

### APPLICATIONS

- / Eye safe range finding
- / Surveying equipment
- / »Friend or Foe« identification
- / Laser radar
- / Security barrier

# HP155G SERIES

High-Performance Pulsed Laser Diodes 1550 Series



## SPECIFICATIONS

### Generic Optical Characteristics at $t_{RT} = 21\text{ }^{\circ}\text{C}$

|                                                                                                                                                      | Min  | Typ      | Max  |
|------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------|------|
| Wavelength of peak radiant intensity $\lambda$ [nm]                                                                                                  | 1530 | 1550     | 1570 |
| Spectral bandwidth $\Delta\lambda$ at 50% intensity points [nm]                                                                                      |      | 22       |      |
| Wavelength temperature coefficient [nm/ $^{\circ}\text{C}$ ]                                                                                         |      | 0.45     |      |
| Beam spread (50 % peak intensity) [ $^{\circ}$ ]<br>Parallel to junction plane $\parallel$<br>Perpendicular to junction plane $\perp$ single element |      | 11<br>25 |      |

### Typical Single Chip Characteristics at $t_{RT} = 21\text{ }^{\circ}\text{C}$ , $t_W = 100\text{ ns}$ , $P_r = 1\text{ kHz}$

| Parameter                                       | HP155G1S02X | HP155G1S04X | HP155G1S07X | HP155G1S14X |
|-------------------------------------------------|-------------|-------------|-------------|-------------|
| Output $P_O$ at $I_{FM}$ (typ.) [W]             | 8           | 11.5        | 18          | 31          |
| Emitting area [ $\mu\text{m}$ ]                 | 50x1        | 100x1       | 180x1       | 355x1       |
| Peak forward current $I_{FM}$ [A]*              | 30          | 30          | 46          | 80          |
| Threshold current, $I_{TH}$ (typ.) [A]          | 0.45        | 0.55        | 0.7         | 1           |
| Forward voltage at $V_F$ at $I_{FM}$ (typ.) [V] | 7.5         | 6           | 7           | 10          |

\*  $I_{FM}$  is the maximum peak current under any drive condition and is applicable to devices operated for short and intermittent duration such as in hand held range finders.

For applications that demand continuous use at maximum duty factor, we recommended  $I_{FM}$  at 50 % to ensure longevity. High temperature operation will reduce peak power and MTTF so for optimal performance under high stress conditions it is important to provide an adequate heat sink.

## Absolute Maximum Ratings

| Maximum Ratings                                            | Limiting Values           |
|------------------------------------------------------------|---------------------------|
| Peak reverse voltage [V]                                   | 6                         |
| Pulse duration single element[ns]                          | 150                       |
| Duty factor [%]                                            | 0.05                      |
| Temperature [ $^{\circ}\text{C}$ ]<br>Storage<br>Operating | -55 to +100<br>-45 to +85 |
| Lead soldering [ $^{\circ}\text{C}$ ] 5 seconds max at     | 200                       |

**Note:** High Temperature operation will reduce peak power and MTTF so for optimal performance it is important to provide an adequate heat sink.

# HP155G SERIES

High-Performance Pulsed Laser Diodes 1550 Series

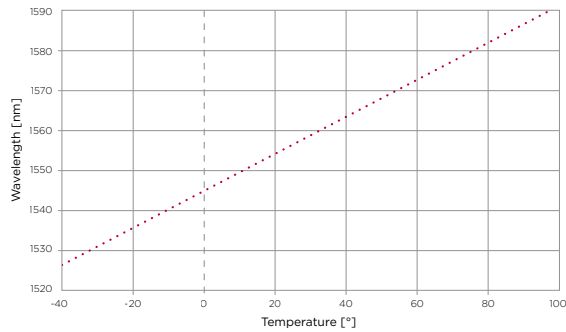


Figure 1: Typical Wavelength vs. Temperature

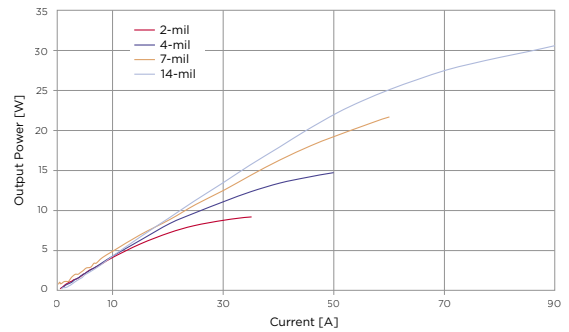


Figure 2: Typical Optical Output Power vs. Forward Current

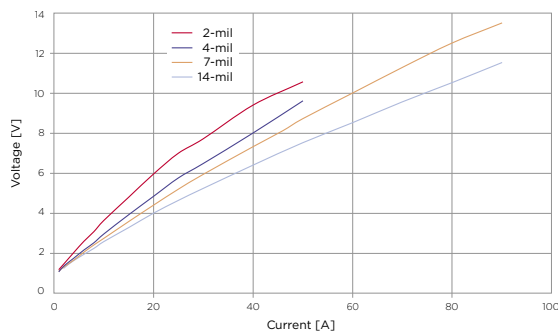


Figure 3: Typical Static Forward Voltage ( $V_F$ ) vs. Peak Current

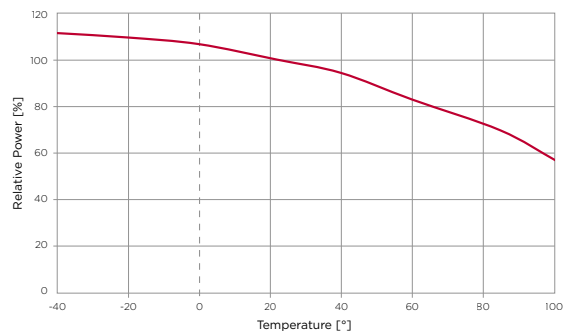


Figure 4: Typical Peak Optical Output Power vs. Temperature

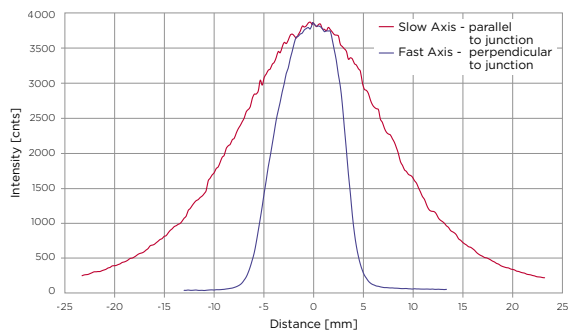


Figure 5: Typical Beam Divergence Parallel and Perpendicular to the Junction Plane

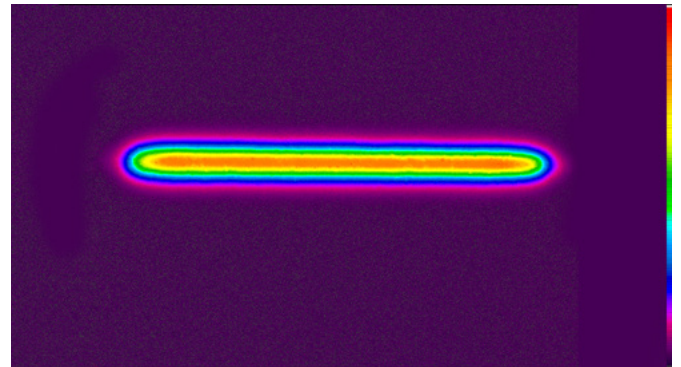


Figure 6: Near Field

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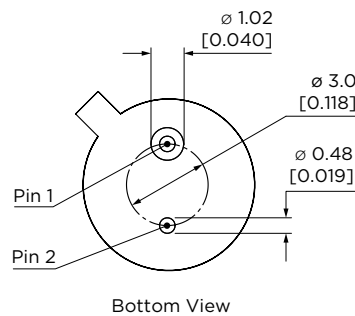
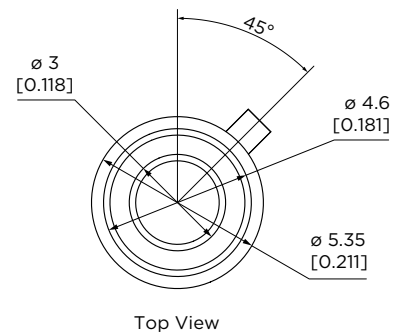
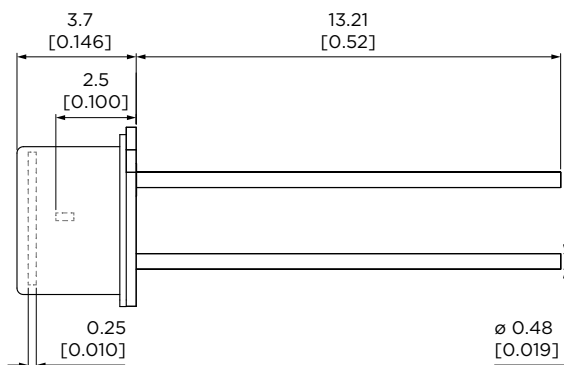
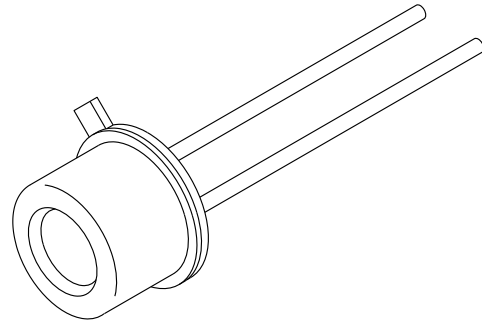
# HP155G SERIES

High-Performance Pulsed Laser Diodes 1550 Series



## TECHNICAL DRAWING

Package S TO-18



### Package S TO-18

Pin out:

1. LD Anode (+)
  2. LD Cathode (-)
- Case Inductance 5.2 nH

Units: mm [inch]

Dimensions are in millimeters - [inches] and are for reference only.

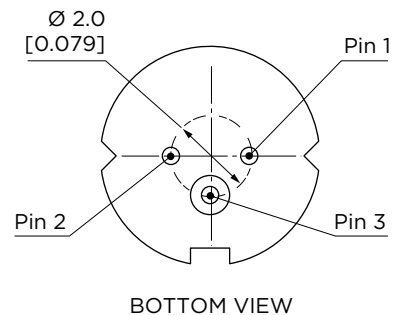
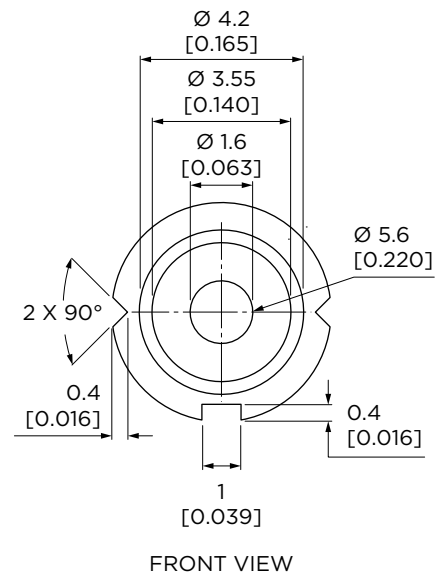
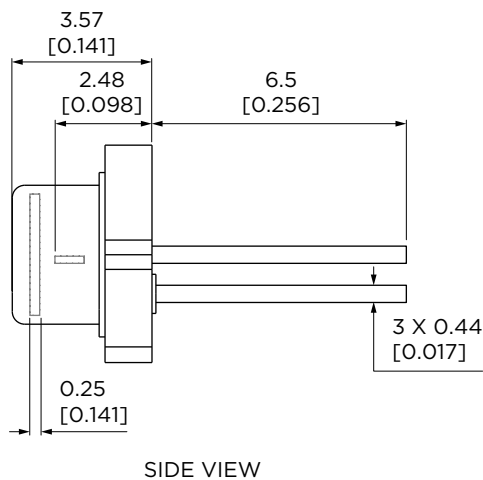
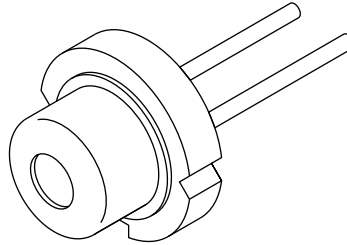
# HP155G SERIES

High-Performance Pulsed Laser Diodes 1550 Series



## TECHNICAL DRAWING

Package U 5.6 mm CD



### Package U

Pin out:

1. LD Anode (+)
  2. NC
  3. LD Cathode (-) Case
- Case Inductance 5.0 nH

Units: mm [inch]

Dimensions are in millimeters - [inches] and are for reference only.

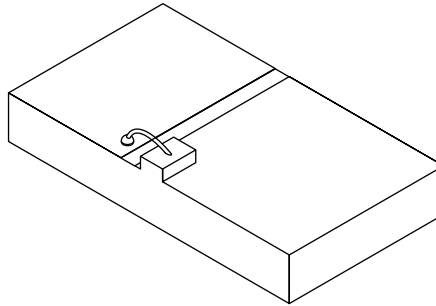
# HP155G SERIES

High-Performance Pulsed Laser Diodes 1550 Series

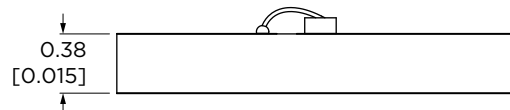
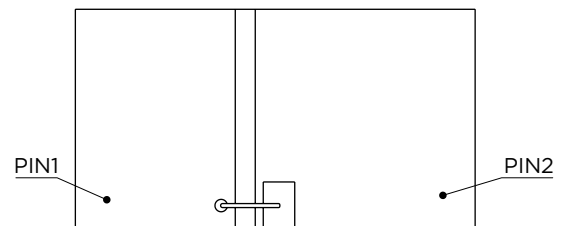
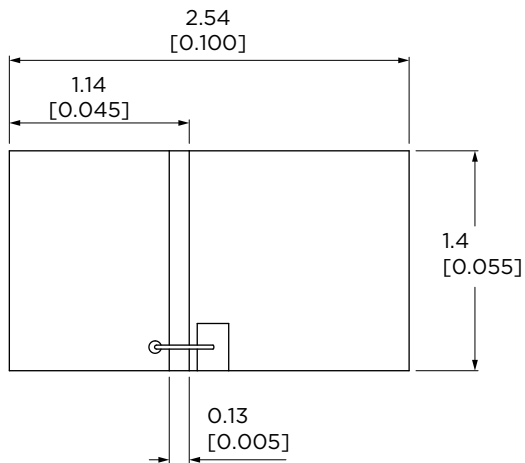


## TECHNICAL DRAWING

Package Y ceramic carrier



1. Anode left
2. Cathode right



### Package Y Ceramic Carrier

Pin out:

1. LD Anode (+)
  2. LD Cathode (-)
- Case Inductance 1.6 nH

Units: mm [inch]

Dimensions are in millimeters - [inches] and are for reference only.

# HP155G SERIES

High-Performance Pulsed Laser Diodes 1550 Series



## ORDERING CODE

|               | Diode Configuration                                                                                           | Emitting Source Size                                                                                                            | Package Style                                                  |
|---------------|---------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|
| <b>HP155G</b> | <b>XX</b>                                                                                                     | <b>XX</b>                                                                                                                       | <b>X</b>                                                       |
|               | <b>1S</b> = Single stack<br><b>2S</b> = Double stack*<br><b>3S</b> = Triple stack*<br><b>4S</b> = Quad stack* | <b>02</b> = 50 $\mu\text{m}$<br><b>04</b> = 100 $\mu\text{m}$<br><b>07</b> = 180 $\mu\text{m}$<br><b>14</b> = 355 $\mu\text{m}$ | <b>S</b> = TO-18<br><b>U</b> = 5.6 mm CD<br><b>Y</b> = Ceramic |

\* = Available upon demand

Example: HP155G1S04U

## PRODUCT CHANGES AND LIABILITY

LASER COMPONENTS reserves the right to make changes to the product specifications and/or discontinue products without prior notice. While every effort has been made to ensure the accuracy and reliability of the information provided in this datasheet, LASER COMPONENTS accepts no liability for any errors, omissions, or the consequences of product use. It is the responsibility of the customer to ensure that the product is suitable for their specific application and to comply with all applicable laws and regulations.

## ORDERING INFORMATION

Products can be ordered directly from LASER COMPONENTS or its representatives. For a complete listing of representatives, visit our website at [www.lasercomponents.com](http://www.lasercomponents.com)

Custom designed products are available on request.

## SAFETY AND HANDLING INFORMATION

### Personal Hazard

Depending on the mode of operation, these devices emit highly concentrated non visible infrared light which can be hazardous to the human eye. Products which incorporate these devices have to follow the safety precautions given in IEC 60825-1 »Safety of laser products«.

### Handling Precautions

Products are subject to the risks normally associated with sensitive electronic devices including static discharge, transients, and overload.



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