

# High Intensity Pulsed Laser Diodes 1550 HI-Series

## Features

- High intensity output
- Low divergence
- 0.5 W/A efficiency
- Excellent temperature stability
- Hermetic and custom designed package
- High Reliability

## Applications

- Eye safe range finding
- Surveying equipment
- "Friend or Foe" identification
- Laser radar
- Security barrier



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

	Min	Typ	Max	Units
Wavelength of peak radiant intensity $\lambda$	1540	1555	1580	nm
Spectral bandwidth $\Delta\lambda$ at 50% intensity points at $i_{FM}$		25		nm
Wavelength temperature coefficient		0.6		nm/ $^{\circ}\text{C}$
Beam spread (50% peak intensity)				
Parallel to junction plane $\parallel$		12		Degrees
Perpendicular to junction plane $\perp$		25		Degrees

## Single Chips

Single chip characteristics at  $t_{RT} = 21^\circ\text{C}$ ,  $t_w = 150\text{ ns}$ ,  $P_{rr} = 3.33\text{ kHz}$

Parameter	HI155G1S02X	HI155G1S04X	HI155G1S07X	HI155G1S14X**
$P_O$ at $I_{FM}$ (typ.)	8 W	16 W	20 W	30 W
Emitting area	50 $\mu\text{m}$	100 $\mu\text{m}$	180 $\mu\text{m}$	350 $\mu\text{m}$
Max peak forward current $I_{FM}^*$	45 A	60 A	65 A	80 A
$I_{TH}$ typ	0.3 A	0.6 A	0.9 A	2 A
Forward voltage at $I_{FM}$	10 V	9 V	8 V	7.5 V

\*  $I_{FM}$  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.

\*\* Only available on request.

## Absolute Maximum Ratings

Maximum ratings	Limiting values
Peak reverse voltage	6 V
Pulse duration	150 ns
Duty factor	0.1%
Temperature	
- Storage	-55°C to + 100°C
- Operating	-45°C to + 85°C
Lead soldering	
- 5 seconds max at	200°C

### Note:

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

Figure 1:  
Peak Power vs. Current for 50  $\mu\text{m}$ , 100  $\mu\text{m}$   
(150 ns, 3 kHz, 21°C, F/0)

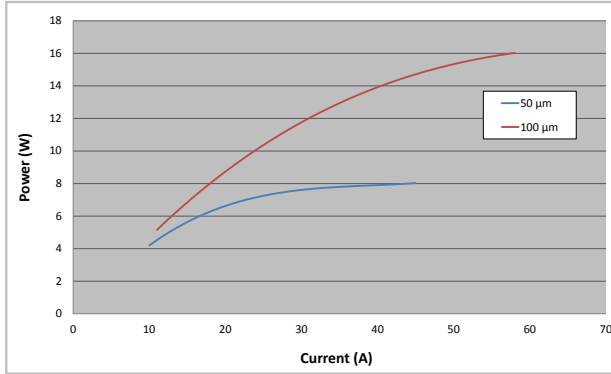


Figure 2:  
Peak Power vs. Current for 180  $\mu\text{m}$ , 350  $\mu\text{m}$   
(150 ns, 3 kHz, 21°C, F/0)

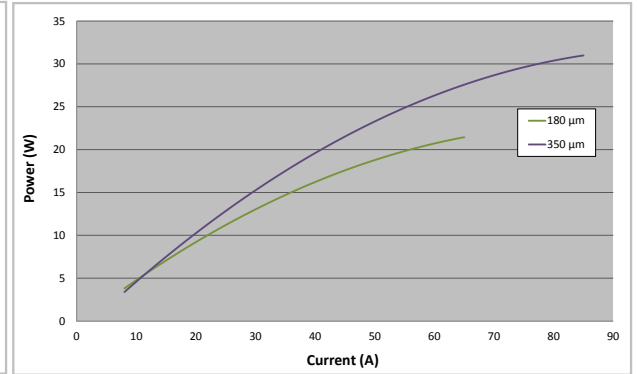


Figure 3:  
Collection into Reducing Aperture Size

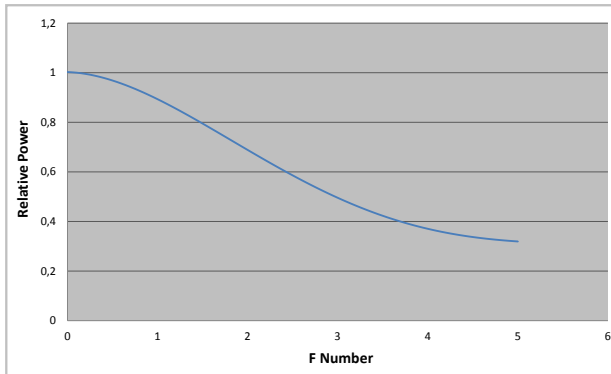


Figure 4:  
Power Output vs. Temperature

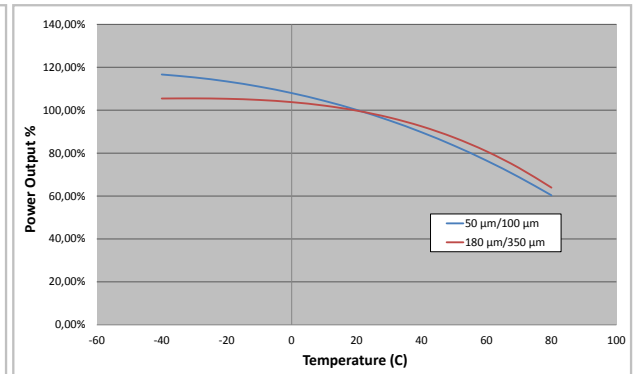


Figure 5:  
Forward Voltage vs. Current

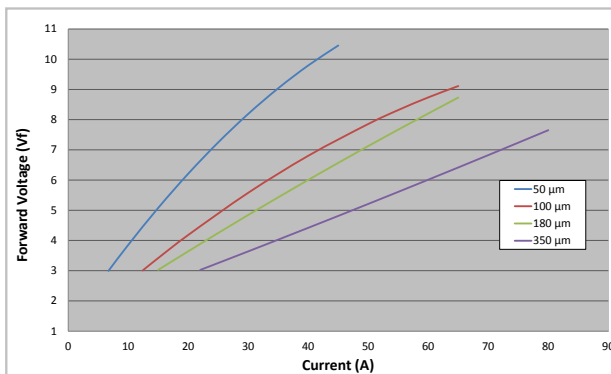


Figure 6:  
Wavelength vs. Temperature

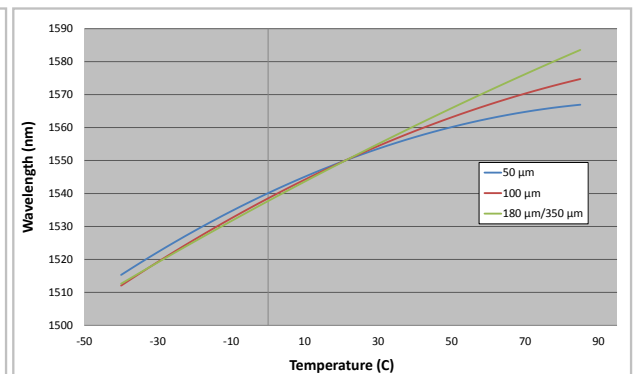


Figure 7:  
Far field emission parallel and perpendicular to junction plane

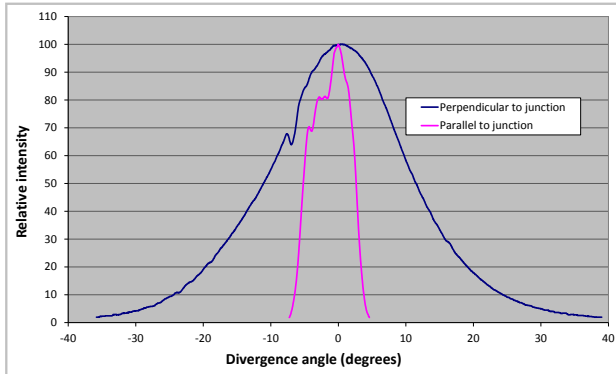
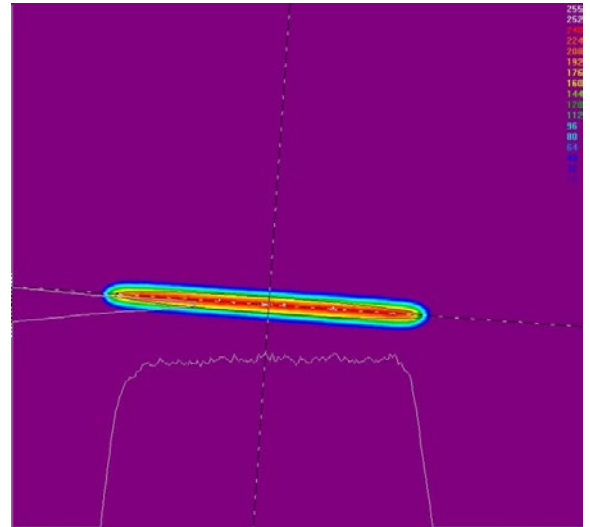
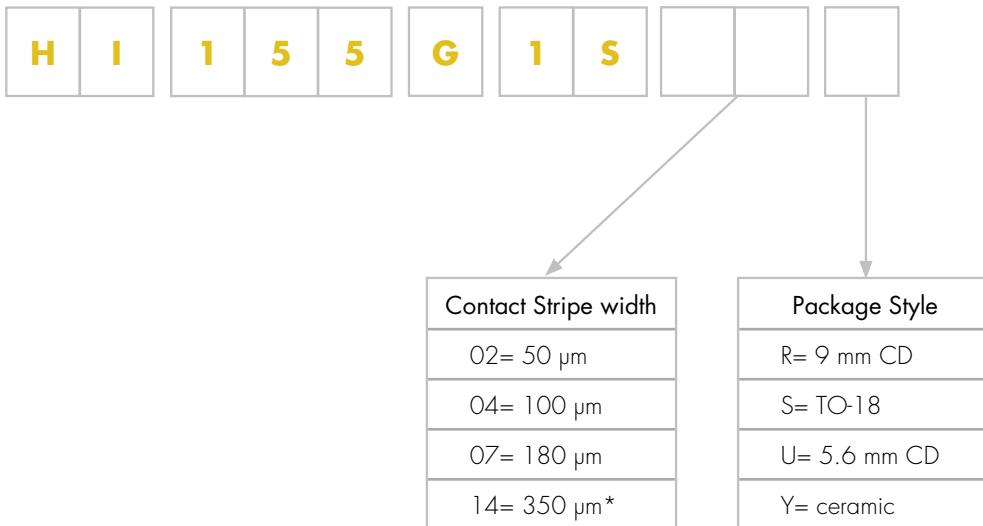


Figure 8:  
Near field emission



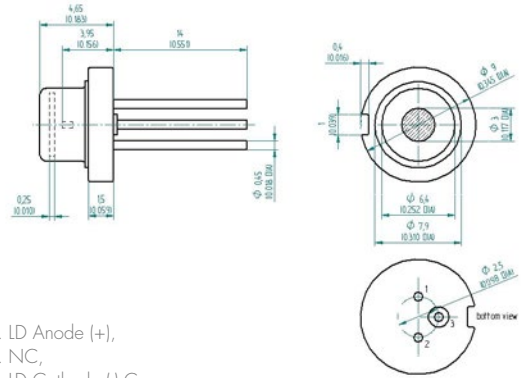
### Product Number Designations



\* Only available on request.

Package Drawings

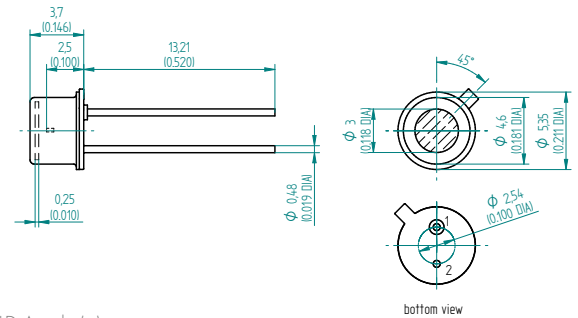
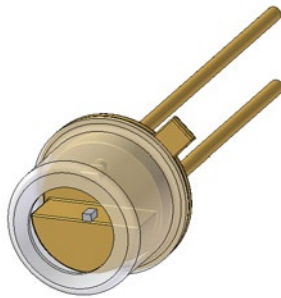
Package R 9 mm CD



Package R: Pin Out:

1. LD Anode (+),
  2. NC,
  3. LD Cathode (-) Case,
- Inductance 6.8 nH

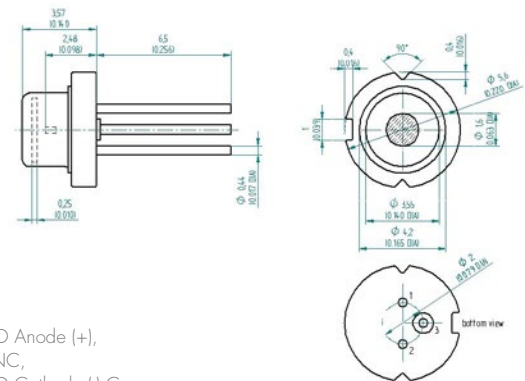
Package S TO-18



Package S: Pin Out:

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

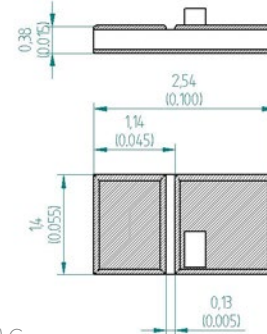
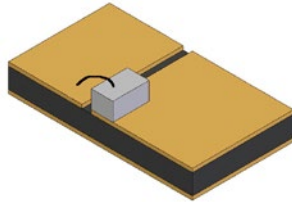
Package U 5.6 mm CD



Package U: Pin Out:

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

Package Y ceramic carrier



Package U: Pin Out: 1. LD Anode (+),  
2. LD Cathode (-) Case,  
Inductance 1.6 nH

## Product Changes

LASER COMPONENTS reserves the right to make changes to the product(s) or information contained herein without notice. No liability is assumed as a result of their use or application.

## 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.

## Laser Safety

### 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.

