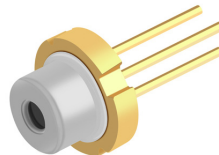


# Green Laser Diode in TO56 Package

## Version 1.1

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### PLT5 510



#### Features

- Optical output power (continuous wave): 10 mW ( $T_{\text{case}} = 25\text{ °C}$ )
- Typical emission wavelength: 515 nm
- Efficient radiation source for cw and pulsed operation
- Single transverse mode semiconductor laser
- High modulation bandwidth
- TO56 package with photo diode

#### Applications

- Laser projection
- Laser shows
- Presenter
- Biomedical Applications
- Metrology

#### Safety Advice

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



**ATTENTION – Observe Precautions For Handling – Electrostatic Sensitive Device**

**Ordering Information**

| Type:         | Optical Output Power<br>$P_{\text{opt}} (T_{\text{case}} = 25^{\circ}\text{C})$ | Ordering Code |
|---------------|---------------------------------------------------------------------------------|---------------|
| PLT5 510_B1-3 | 10 mW                                                                           | Q65111A6310   |

**Maximum Ratings**

Operation outside these conditions may damage the device. Operation at the maximum ratings influences lifetime.

| Parameter                          | Symbol              | Values |      | Unit               |
|------------------------------------|---------------------|--------|------|--------------------|
|                                    |                     | min.   | max. |                    |
| Operating Current                  | $I_F$               |        | 120  | mA                 |
| Operating Temperature              | $T_{\text{case}}$   | -20    | +60  | $^{\circ}\text{C}$ |
| Storage Temperature                | $T_{\text{stg}}$    | -40    | +85  | $^{\circ}\text{C}$ |
| Reverse Voltage                    | $V_R$               |        | 2    | V                  |
| Soldering Temperature max. 10 sec. | $T_{\text{solder}}$ |        | 260  | $^{\circ}\text{C}$ |
| Junction temperature               | $T_j$               |        | 120  | $^{\circ}\text{C}$ |

**Laser Characteristics** ( $T_{\text{case}} = 25^{\circ}\text{C}$ )

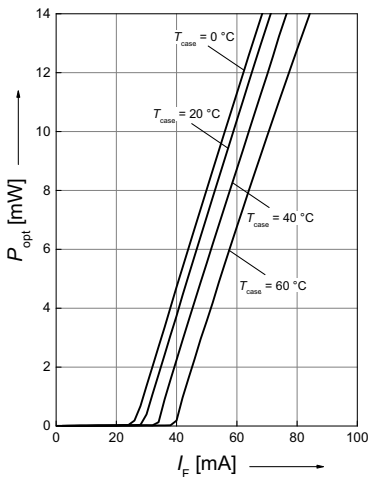
| Parameter                             | Symbol         | Values                                     |                   |               | Unit              |     |
|---------------------------------------|----------------|--------------------------------------------|-------------------|---------------|-------------------|-----|
|                                       |                | min.                                       | typ.              | max.          |                   |     |
| Emission Wavelength <sup>1)</sup>     | B1<br>B2<br>B3 | $\lambda_{\text{peak}}$                    | 510<br>515<br>520 | –<br>–<br>–   | 515<br>520<br>530 | nm  |
| Spectral Width (FWHM) <sup>1)</sup>   |                | $\Delta\lambda$                            | –                 | 2             | –                 | nm  |
| Threshold Current                     |                | $I_{\text{th}}$                            | –                 | 30            | 60                | mA  |
| Operating Current <sup>1)</sup>       |                | $I_{\text{F}}$                             | –                 | 60            | 100               | mA  |
| Operating Voltage <sup>1)</sup>       |                | $V_{\text{F}}$                             | –                 | 5.4           | 7.0               | V   |
| Beam Divergence (FWHM) <sup>1)</sup>  |                | $\theta_{\parallel}$ x<br>$\theta_{\perp}$ | 5 x<br>19         | 6.6 x<br>21.4 | 9 x<br>25         | deg |
| Polarization <sup>1)</sup>            |                | $P_{\text{gr}}$                            | –                 | 100:1         | –                 |     |
| Modulation Frequency                  |                | $f$                                        | –                 | >100          | –                 | MHz |
| Thermal resistance (junction to case) |                | $R_{\text{th}}$                            | –                 | 34            | –                 | K/W |
| Monitor current <sup>1) 2)</sup>      |                | $I_{\text{m}}$                             | –                 | 150           | –                 | μA  |

<sup>1)</sup> Standard operating conditions refer to a continuous wave output power of  $P_{\text{opt}} = 10 \text{ mW}$ .

<sup>2)</sup> Photo current refers to a reverse voltage of  $V_R = 5 \text{ V}$ .

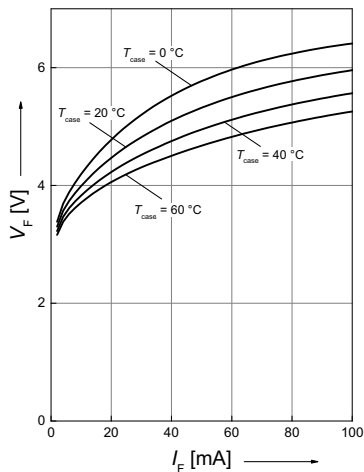
Optical Output Power

$P_{\text{opt}} = f(I_F)$



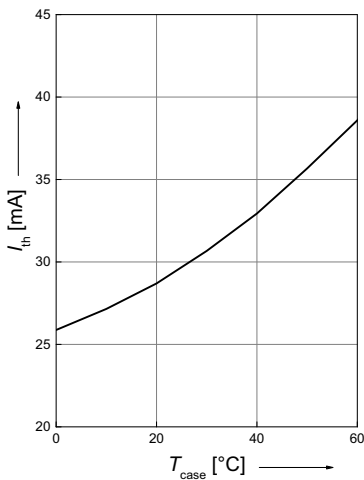
Operating Voltage

$V_F = f(I_F)$



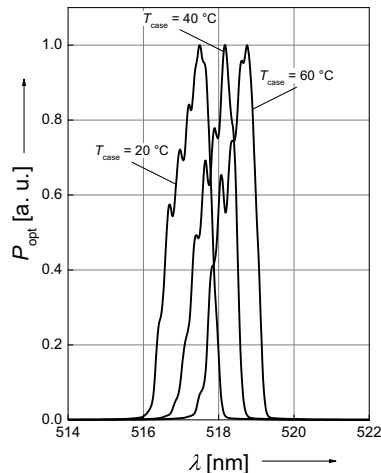
Threshold Current

$I_{\text{th}} = f(T_{\text{case}})$



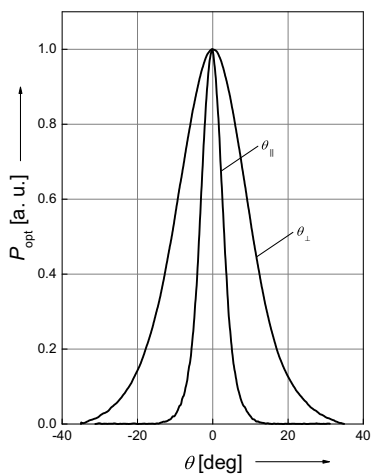
Spectra (B2)

$P_{\text{opt}} = f(\lambda)$

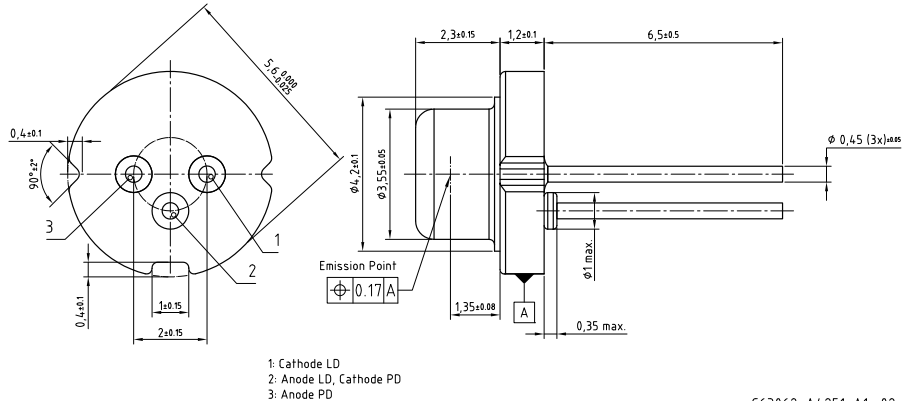


**Beam Divergence**

$$P_{\text{opt}} = f(\theta), T_{\text{case}} = 25\text{ }^{\circ}\text{C}$$



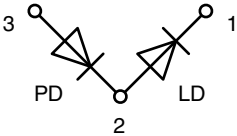
Package Outline



C63062-A4251-A1-02

Dimensions in mm

Pin Connection



Pin 1: LD Cathode  
Pin 2: LD Anode, PD Cathode (case)  
Pin 3: PD Anode

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\*) A critical component is a component used in a life-support device or system whose failure can reasonably be expected to cause the failure of that life-support device or system, or to affect its safety or the effectiveness of that device or system.

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## Important notes of operation for laser diode

### a) Electrical operation

OSRAMs laser diodes are designed for maximum performance and reliability. Operating the laser diode above the maximum rating even for very short periods of time can damage the laser diode or reduce its lifetime. The laser diode must be operated with a suitable power supply with minimized electrical noise.

The laser diode is very sensitive to electrostatic discharge (ESD). Proper precautions must be taken.

### b) Mounting instructions

In order to maintain the lifetime of the laser diode proper heat management is essential. Due to the design of the laser diode heat is dissipated only through the base plate of the diode's body. A proper heat conducting interconnection between the diodes base plate and the heat sink must be maintained.

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