

# OSRAM PLT3 450GB

## Datasheet

Preliminary datasheet version

**Published by ams-OSRAM AG**

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[ams-osram.com](http://ams-osram.com)

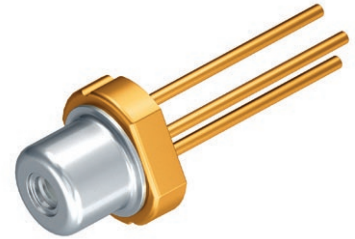
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## Metal Can TO38

# PLT3 450GB

Blue Laser Diode in TO38 ICut Package



## Applications

- Appliances & Tools
- Entertainment
- Functional Illumination
- Medical Imaging
- Outdoor & Industrial Lighting
- Projection
- Visualization

## Features

- Typical emission wavelength: 450 nm
- Efficient radiation source for cw and pulsed operation
- Single mode semiconductor laser
- High modulation bandwidth
- Miniaturized TO38 ICut package
- Laser diode isolated against package

Ordering Information

| Type       | Peak output power<br>typ.<br>$P_{opt}$ | Ordering Code |
|------------|----------------------------------------|---------------|
| PLT3 450GB | 100 mW                                 | Q65113A4975   |

Maximum Ratings

| Parameter                                                  | Symbol    |      | Values |
|------------------------------------------------------------|-----------|------|--------|
| Operating temperature                                      | $T_{op}$  | min. | -20 °C |
|                                                            |           | max. | 70 °C  |
| Storage temperature                                        | $T_{stg}$ | min. | -40 °C |
|                                                            |           | max. | 85 °C  |
| Peak output power<br>$T_{case} = 25\text{ °C}$             | $P_{opt}$ | max. | 110 mW |
| Reverse voltage <sup>1)</sup><br>$T_{case} = 25\text{ °C}$ | $V_R$     | max. | 2 V    |
| Soldering temperature<br>$t_{max} = 10\text{ sec}$         | $T_S$     | max. | 260 °C |

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

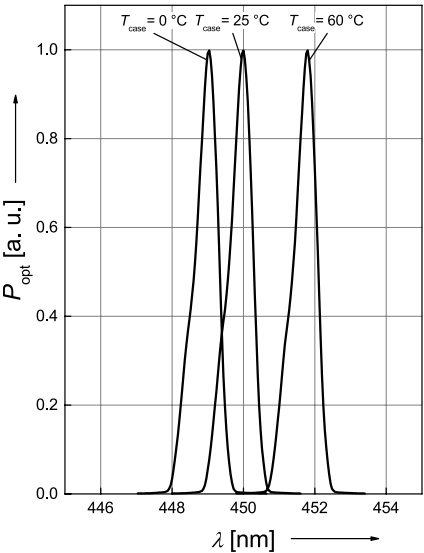
Characteristics

$P_{opt} = 100\text{ mW}$ ;  $T_c = 25\text{ °C}$

| Parameter                                           | Symbol           | Values               |                            |
|-----------------------------------------------------|------------------|----------------------|----------------------------|
| Operating current                                   | $I_{op}$         | typ.<br>max.         | 87 mA<br>120 mA            |
| Peak wavelength <sup>2)3)</sup>                     | $\lambda_{peak}$ | min.<br>typ.<br>max. | 440 nm<br>450 nm<br>460 nm |
| Spectral bandwidth (FWHM)                           | $\Delta\lambda$  | typ.                 | 1 nm                       |
| Beam divergence (FWHM) parallel to pn-junction      | $\Theta_{  }$    | min.<br>typ.<br>max. | 5 °<br>8.4 °<br>10 °       |
| Beam divergence (FWHM) perpendicular to pn-junction | $\Theta_{\perp}$ | min.<br>typ.<br>max. | 18 °<br>21.5 °<br>25 °     |
| Threshold current                                   | $I_{th}$         | typ.<br>max.         | 12 mA<br>30 mA             |
| Forward voltage <sup>4)</sup>                       | $V_F$            | typ.<br>max.         | 5.2 V<br>6.5 V             |
| TE polarization                                     | $P_{TE}$         | typ.                 | 100:1                      |
| Modulation frequency                                | f                | min.                 | 100 MHz                    |

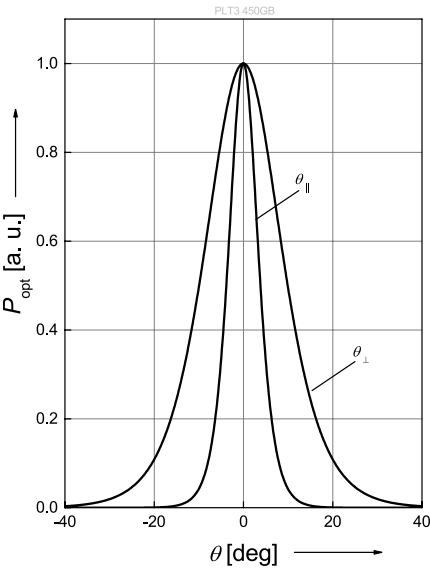
Relative Spectral Emission 5), 6)

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



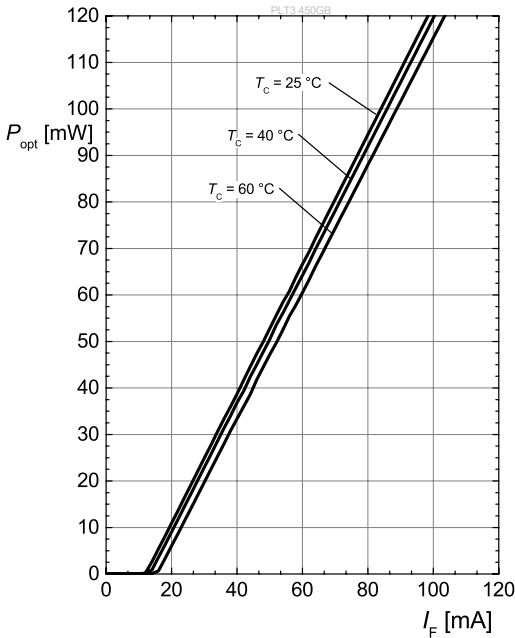
Beam Divergence 6)

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



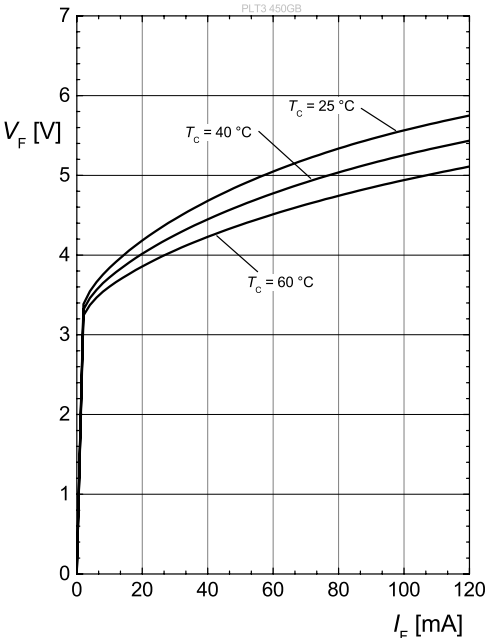
Optical Output Power 5), 6)

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



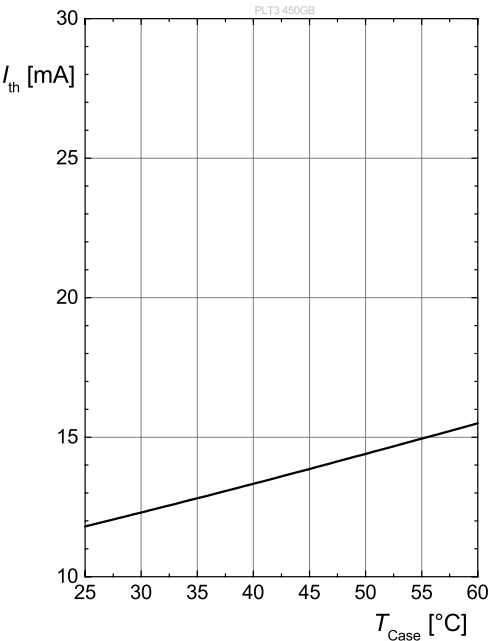
Operating Voltage 5), 6)

$V_F = f(I_F)$

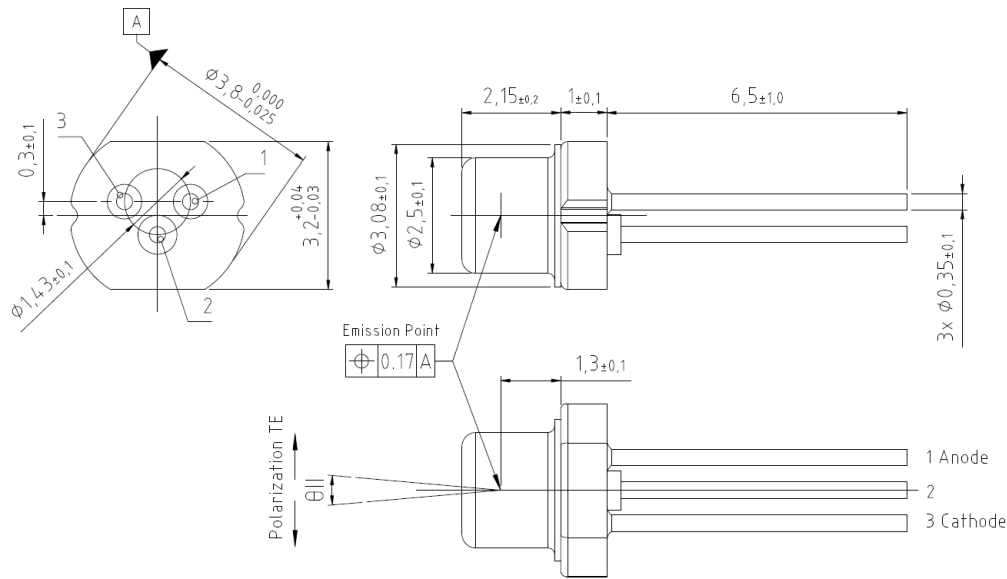


Threshold Current 5)

$I_{\text{th}} = f(T_c)$



Dimensional Drawing 7)



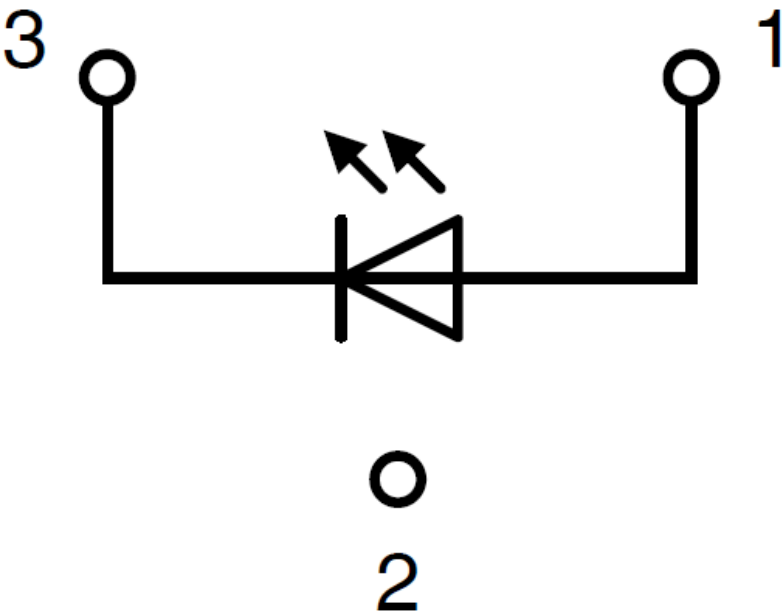
C63062-A4180-A1 -03

Further Information:

Approximate Weight: 141.0 mg

ESD advice: ATTENTION – Observe Precautions For Handling – Electrostatic Sensitive Device.

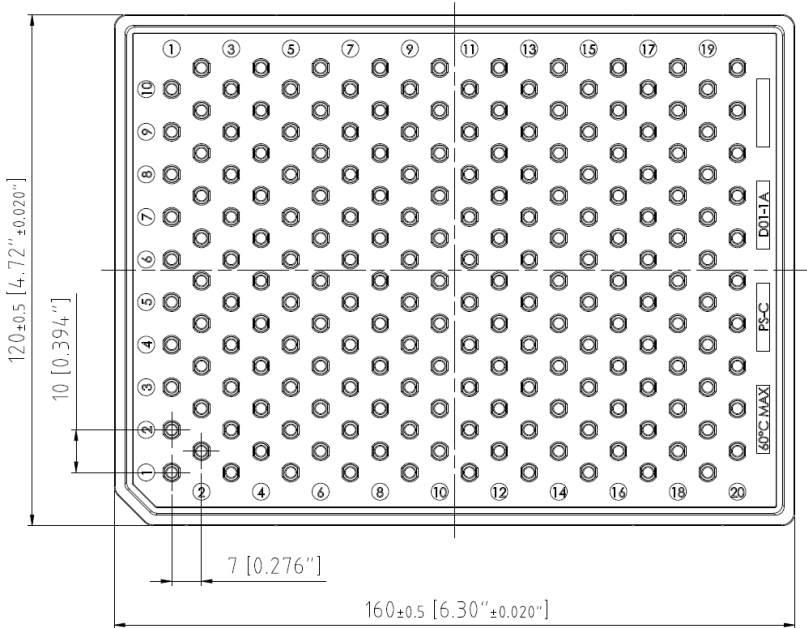
Electrical Internal Circuit



| Pin   | Description |
|-------|-------------|
| PIN 1 | LD Anode    |
| PIN 2 | Case        |
| PIN 3 | LD Cathode  |

Tray <sup>7)</sup>

200 pieces per tray



Barcode-Product-Label (BPL)

**OSRAM**

LX XXXX      BIN1: XX-XX-X-XXX-X

RoHS Compliant

(6P) BATCH NO: 1234567890

(1T) LOT NO: 1234567890      (9D) D/C: 1234

(X) PROD NO: 123456789(Q)QTY: 9999      (G) GROUP: XX-XX-X-X

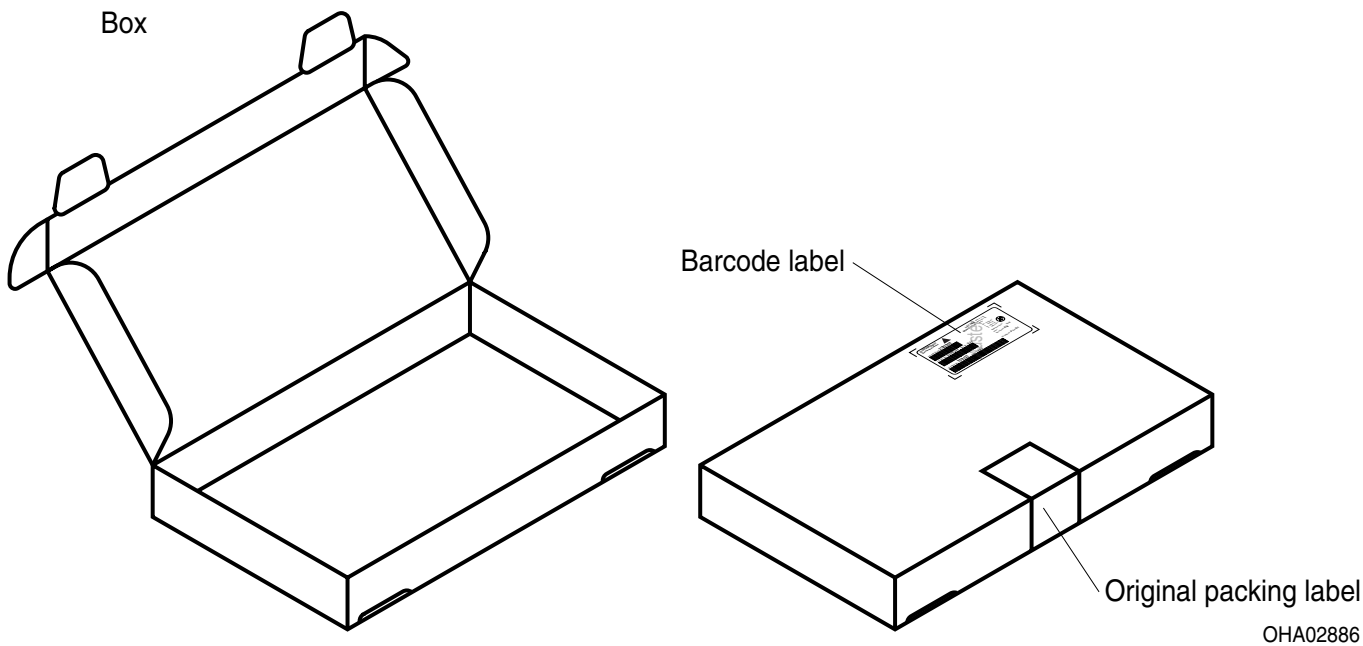
ML Temp    ST  
X    XXX °C X

Pack: RXX  
DEMY    XXX  
X\_X123\_1234.1234 X

OHA04563

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Schematic Transportation Box <sup>7)</sup>



Dimensions of Transportation Box

| Width      | Length     | Height    |
|------------|------------|-----------|
| 215 ± 5 mm | 265 ± 5 mm | 95 ± 5 mm |

Notes

Depending on the mode of operation, these devices emit highly concentrated visible and non visible 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.

Subcomponents of this device contain, in addition to other substances, metal filled materials including silver. Metal filled materials can be affected by environments that contain traces of aggressive substances. Therefore, we recommend that customers minimize device exposure to aggressive substances during storage, production, and use. Devices that showed visible discoloration when tested using the described tests above did show no performance deviations within failure limits during the stated test duration. Respective failure limits are described in the IEC60810.

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## Notes

### 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.

For further application related information please visit <https://ams-osram.com/support/application-notes>

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## Disclaimer

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For information on the types in question please contact our Sales Organization.

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Please use the recycling operators known to you. We can also help you – get in touch with your nearest sales office. By agreement we will take packing material back, if it is sorted. You must bear the costs of transport. For packing material that is returned to us unsorted or which we are not obliged to accept, we shall have to invoice you for any costs incurred.

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Our components are not developed, constructed or tested for the application as safety relevant component or for the application in medical devices.

Our products are not qualified at module and system level for such application.

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## Glossary

- 1) **Reverse Operation:** This product is intended to be operated applying a forward current within the specified range. Applying any reverse bias shall be avoided.
- 2) **Wavelength:** The wavelengths are measured with a tolerance of  $\pm 0.5$  nm.
- 3) **Wavelength:**  $\lambda_{\text{peak}}$  is measured with an internal reproducibility of  $\pm 0.3$  nm (acc. to GUM with a coverage factor of  $k = 3$ ).
- 4) **Forward Voltage:** The forward voltages are measured with a tolerance of  $\pm 0.1$  V.
- 5) **Typical Values:** Due to the special conditions of the manufacturing processes of semiconductor devices, the typical data or calculated correlations of technical parameters can only reflect statistical figures. These do not necessarily correspond to the actual parameters of each single product, which could differ from the typical data and calculated correlations or the typical characteristic line. If requested, e.g. because of technical improvements, these typ. data will be changed without any further notice.
- 6) **Testing temperature:**  $T_A = 25^\circ\text{C}$  (unless otherwise specified)
- 7) **Tolerance of Measure:** Unless otherwise noted in drawing, tolerances are specified with  $\pm 0.1$  and dimensions are specified in mm.

Revision History

| Version | Date       | Change                                                                  |
|---------|------------|-------------------------------------------------------------------------|
| 0.0     | 2022-12-22 | Initial Version                                                         |
| 0.1     | 2023-06-21 | Electro - Optical Characteristics (Diagrams)<br>Type Designation System |
| 0.2     | 2024-08-30 | Glossary                                                                |

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EU RoHS and China RoHS compliant product

此产品符合欧盟 RoHS 指令的要求；  
按照中国的相关法规和标准，  
不含有毒有害物质或元素。

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