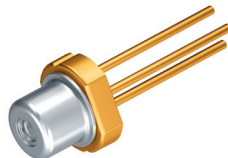


# Blue Laser Diode in TO38 ICut Package

## Version 0.2

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### PL 450B



#### Features

- Optical output power (continuous wave): 80 mW ( $T_{\text{case}} = 25\text{ }^{\circ}\text{C}$ )
- Typical emission wavelength: 450 nm
- Efficient radiation source for cw and pulsed operation
- Single transverse mode semiconductor laser
- High modulation bandwidth
- Miniaturized TO38 ICut package
- Laser diode isolated against package

#### Applications

- Laser projection
- Laser shows
- 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 $P_{\text{opt}} (T_{\text{case}} = 25\text{ °C})$	Ordering Code
PL 450B	80 mW	Q65111A0518

**Maximum Ratings**

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

Parameter	Symbol	Values		Unit
		min.	max.	
Optical Output Power	$P_{\text{opt max}}$		120	mW
Operating Current	$I_{\text{F}}$		165	mA
Operating Temperature	$T_{\text{case}}$	-40	+70	°C
Storage Temperature	$T_{\text{stg}}$	-40	+85	°C
Reverse Voltage	$V_{\text{R}}$		2	V
Soldering Temperature max. 10 sec.	$T_{\text{solder}}$		260	°C
Junction temperature	$T_{\text{j}}$		120	°C

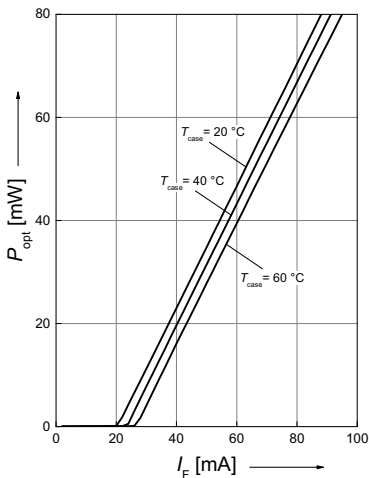
**Laser Characteristics** ( $T_{\text{case}} = 25\text{ °C}$ )

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Emission Wavelength <sup>1)</sup>	$\lambda_{\text{peak}}$	440	450	460	nm
Spectral Width (FWHM) <sup>1)</sup>	$\Delta\lambda$	–	2	–	nm
Threshold Current	$I_{\text{th}}$	–	30	60	mA
Operating Current <sup>1)</sup>	$I_{\text{F}}$	–	100	145	mA
Operating Voltage <sup>1)</sup>	$V_{\text{F}}$	–	5.8	7.0	V
Beam Divergence (FWHM) <sup>1)</sup>	$\theta_{\text{  }}$ x $\theta_{\text{⊥}}$	4 x 18	–	11 x 25	deg
Polarization <sup>1)</sup>	$P_{\text{gr}}$	20:1	–	–	
Modulation Frequency	$f$	–	>100	–	MHz
Thermal resistance (junction to case)	$R_{\text{th}}$	–	38	–	K/W

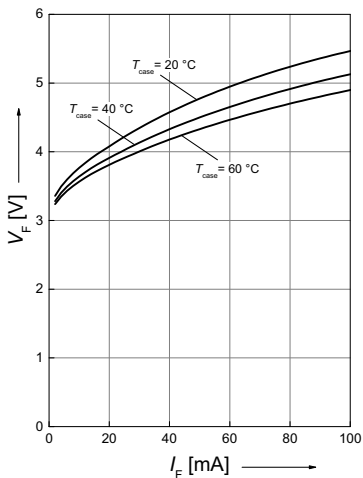
<sup>1)</sup> Standard operating conditions refer to a continuous wave output power of  $P_{\text{opt}} = 80\text{ mW}$ .

**Optical Output Power**

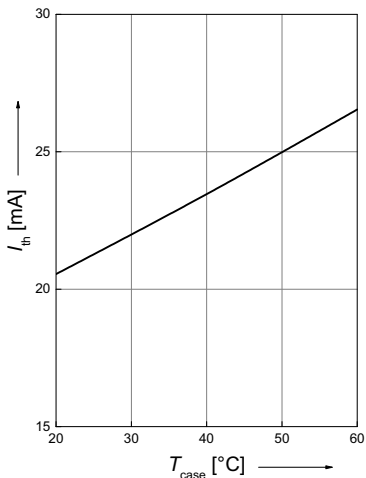
$$P_{\text{opt}} = f(I_F)$$

**Operating Voltage**

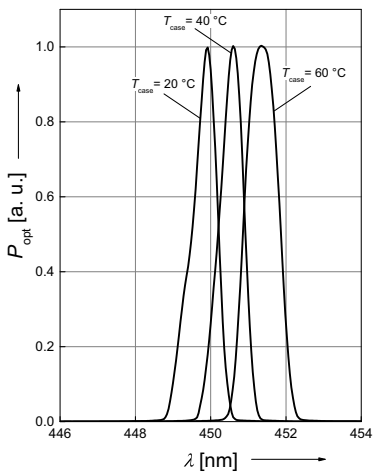
$$V_F = f(I_F)$$

**Threshold Current**

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

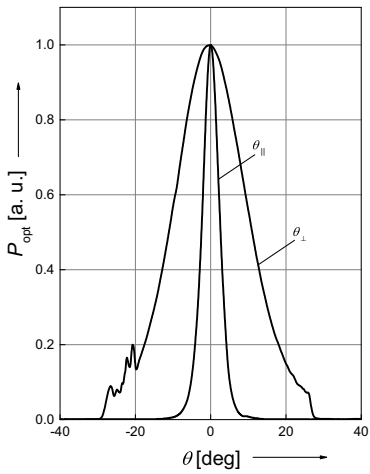
**Relative Spectral Emission**

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

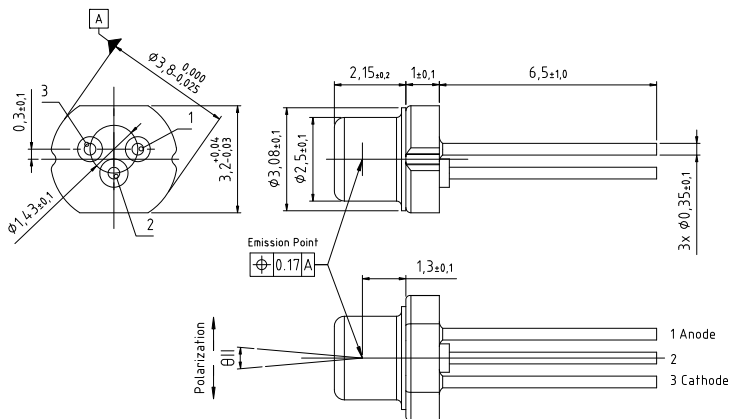


**Beam Divergence**

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



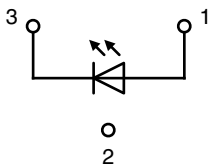
## Package Outline



C63062-A4180-A1-02

Dimensions in mm

## Pin Connection



Pin 1: LD Anode  
 Pin 2: Case  
 Pin 3: LD Cathode

## Disclaimer

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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.

\*\*) Life support devices or systems are intended (a) to be implanted in the human body, or (b) to support and/or maintain and sustain human life. If they fail, it is reasonable to assume that the health and the life of the user may be endangered.

## 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.

Published by OSRAM Opto Semiconductors GmbH  
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