

Blue Laser Diode in TO56 Package

Version 0.3

PL TB450B



Features

- Optical output power (continuous wave): 1.6 W ($T_{\text{case}} = 25\text{ °C}$)
- Typical emission wavelength: 450 nm
- Efficient radiation source for cw and pulsed operation
- TO56 package
- ESD protection diode
- Laser diode isolated against package

Applications

- Laser projection
- Laser shows
- Illumination
- 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 $P_{\text{opt}} (T_{\text{case}} = 25^\circ\text{C})$	Ordering Code
PL TB450B	1.6 W	Q65111A3513

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	$P_{\text{opt max}}$		1.8	W
Operating Current ($T_{\text{case}} = 25^\circ\text{C}$)	I_{F}		1.5	A
Operating Temperature	T_{case}	-40	+85	$^\circ\text{C}$
Storage Temperature	T_{stg}	-40	+85	$^\circ\text{C}$
Reverse Current	I_{R}		20	mA
Soldering Temperature max. 10 sec.	T_{solder}		260	$^\circ\text{C}$
Junction Temperature	T_{j}		150	$^\circ\text{C}$

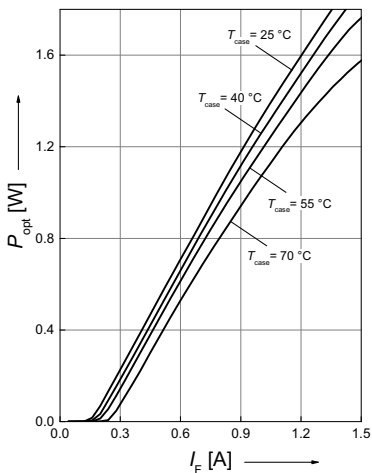
Laser Characteristics ($T_{\text{case}} = 25^\circ\text{C}$)

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Emission Wavelength ¹⁾	λ_{peak}	440	450	460	nm
Threshold Current	I_{th}	–	0.2	0.3	A
Optical Output Power ($I_{\text{F}} = 1.2\text{ A}$)	P_{opt}	1.3	1.6	–	W
Operating Current ¹⁾	I_{F}	–	1.2	1.5	A
Operating Voltage ¹⁾	V_{F}	–	4.8	6.0	V
Beam Divergence (FWHM) ¹⁾	$\theta_{\text{ }}$ x $\theta_{\text{\perp}}$	– 19	7 x 23	– 27	deg
Polarization ¹⁾	P_{gr}	–	100:1	–	
Thermal Resistance (junction to case)	R_{th}	–	15	–	K/W

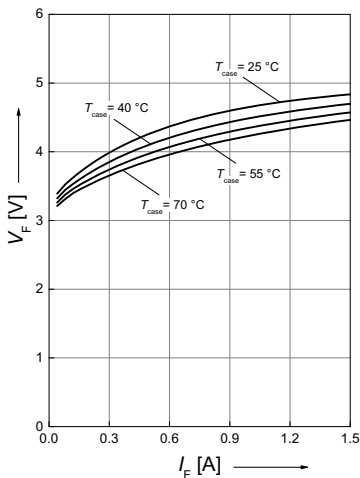
¹⁾ Standard operating conditions refer to an output power of $P_{\text{opt}} = 1.6\text{ W}$.

Optical Output Power

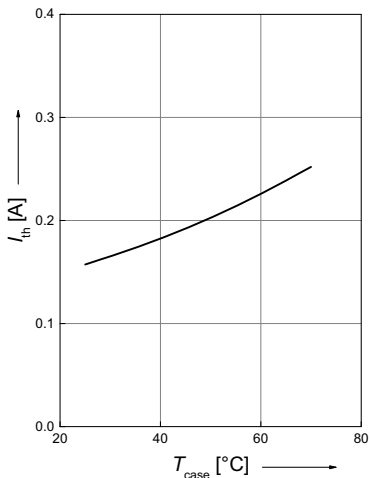
$$P_{\text{opt}} = f(I_F)$$

**Operating Voltage**

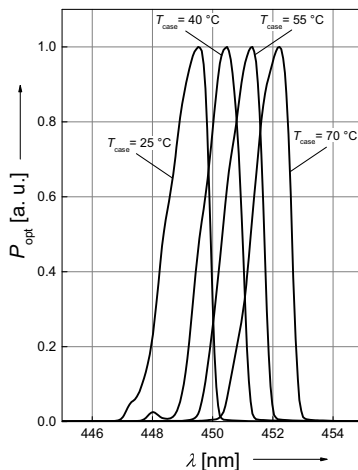
$$V_F = f(I_F)$$

**Threshold Current**

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

**Relative Spectral Emission**

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



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Components used in life-support devices or systems must be expressly authorized for such purpose!

Critical components* may only be used in life-support devices** or systems with the express written approval of OSRAM OS.

*) 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.

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