

# Blue Laser Diode in TO90 Package

## Version α.2

---

PLPT9 450D\_E A01



### Features

- Typ. emission wavelength 447 nm
- Efficient radiation source for cw and pulsed operation
- TO90 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 $P_{\text{opt}} (T_{\text{case}} = 25\text{ °C})$	Ordering Code
PLPT9 450D_E A01	3.5 W	–

## Maximum Ratings

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

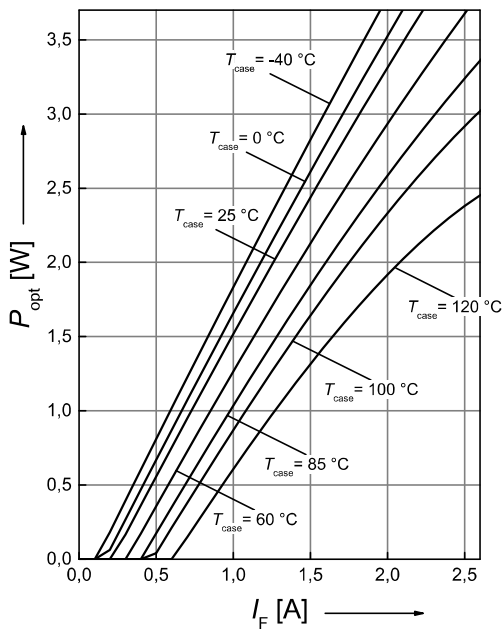
Parameter	Symbol	Values		Unit
		min.	max.	
Optical Output Power	$P_{\text{opt max}}$		3.7	W
Operating Current <sup>1) page 6</sup>	$I_{\text{F}}$		2.6	A
Operating Temperature <sup>1) page 6</sup>	$T_{\text{case}}$	-40	+120	°C
Storage Temperature	$T_{\text{stg}}$	-40	+135	°C
Reverse Current	$I_{\text{R}}$		20	mA
Soldering Temperature max. 10 sec.	$T_{\text{solder}}$		260	°C
Junction Temperature	$T_{\text{j}}$		160	°C

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

Parameter	Symbol	Values <sup>2) page 6</sup>			Unit	
		min.	typ.	max.		
Emission Wavelength ( $P_{\text{opt}} = 3.5\text{ W}$ ) <sup>3) page 6</sup>	B1	$\lambda_{\text{peak}}$	440	–	442	nm
	B2		442	–	444	nm
	B3		444	–	446	nm
	B4		446	–	448	nm
	B5		448	–	450	nm
	B6		450	–	452	nm
	B7		452	–	455	nm
Threshold Current	$I_{\text{th}}$	–	0.25	0.40	A	
Optical Output Power ( $I_{\text{F}} = 2.1\text{ A}$ ) <sup>3) page 6</sup>	$P_{\text{opt}}$	–	3.5	–	W	
Operating Current ( $P_{\text{opt}} = 3.5\text{ W}$ ) <sup>3) page 6</sup>	$I_{\text{F}}$	–	2.1	2.5	A	
Forward Voltage ( $P_{\text{opt}} = 3.5\text{ W}$ ) <sup>3) page 6</sup>	$V_{\text{F}}$	–	–	5.5	V	
Beam Divergence ( $P_{\text{opt}} = 3.5\text{ W}$ ) Full angle at $1/e^2$ from peak intensity	$\theta_{\parallel} \times \theta_{\perp}$	–	7 x 49	–	deg	
Polarization ( $P_{\text{opt}} = 3.5\text{ W}$ )	$PR$	–	100:1	–	TE:TM	
Thermal Resistance (junction to case)	$R_{\text{th}}$	–	10	–	K/W	
Total Power Dissipation	$P_{\text{tot}}$	–	6.75	–	W	

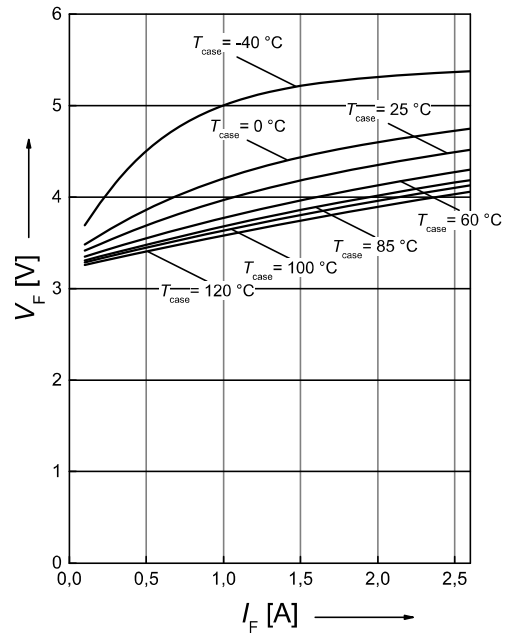
**Optical Output Power** 2) page 6

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



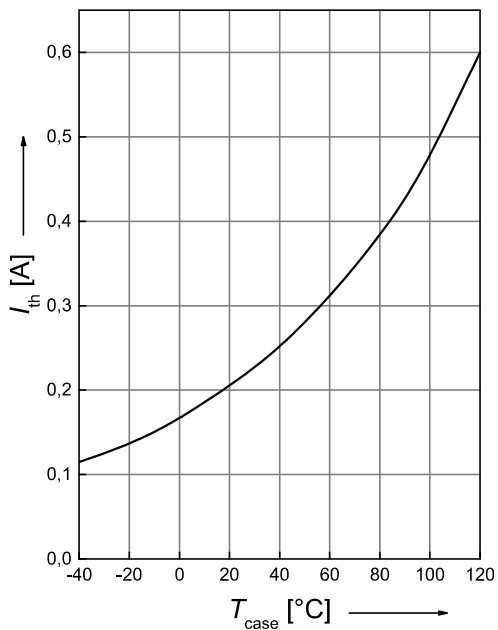
**Forward Voltage** 2) page 6

$$V_F = f(I_F)$$



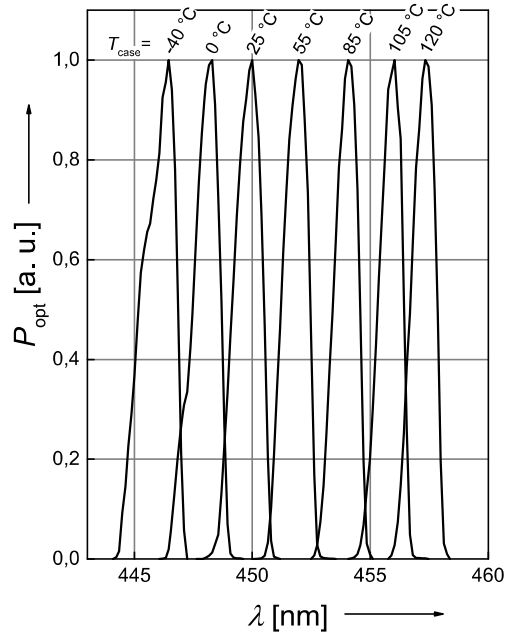
**Threshold Current** 2) page 6

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



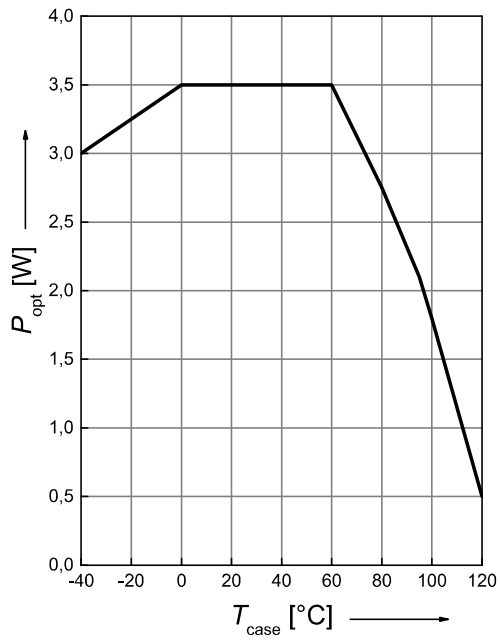
**Relative Spectral Emission** 2) page 6

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

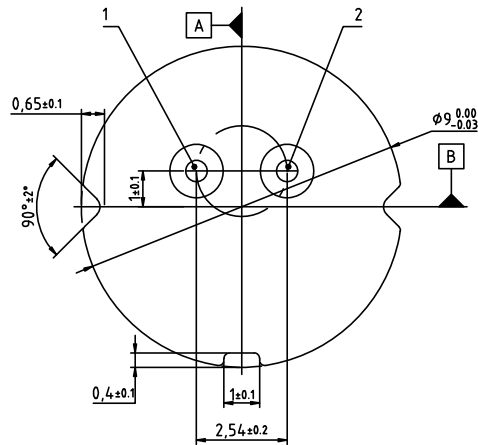


**Max. Permissible Opt. Output Power** <sup>1) 2)</sup> page 6

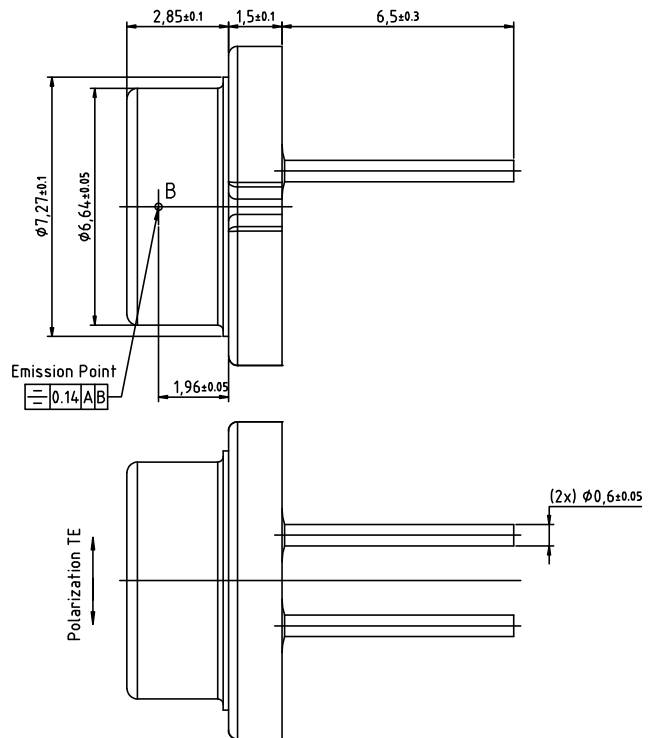
$$P_{opt} = f(T_{case})$$



Package Outline



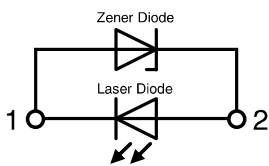
1: Cathode  
2: Anode



E062.5902.06-01

Dimensions in mm

Pin Connection



Pin 1: LD Cathode  
Pin 2: LD Anode