

# Green Laser Diode in TO38 ICut Package

PL 520 **PRELIMINARY**



## Features

- Optical output power (continuous wave): 50mW ( $T_{Case} = 25^{\circ}C$ )
- Typ. emission wavelength: 520nm
- 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
- Holography
- 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**

Type	Optical Output Power $P_{op}$ (mW) ( $T_{Case} = 25^{\circ}\text{C}$ )	Ordering Code
PL 520	50	Q65111A2445

### Maximum Ratings

Operation outside these conditions may damage the device

Parameter	Symbol Symbol	Wert Values		Einheit Unit
		min.	max.	
Operating Current <sup>1)</sup>	$I_F$	–	200	mA
Operating Temperature <sup>1)</sup>	$T_{Case}$	+ 0	+ 60	°C
Storage Temperature	$T_{stg}$	- 40	+ 85	°C
Reverse Voltage	$V_R$	–	2	V
Soldering Temperature max. 10 sec.	$T_{solder}$	–	260	°C
Junction temperature <sup>1)</sup>	$T_j$	–	150	°C

<sup>1)</sup> Operation at maximum ratings may influence the life time.

**Laser Characteristics**

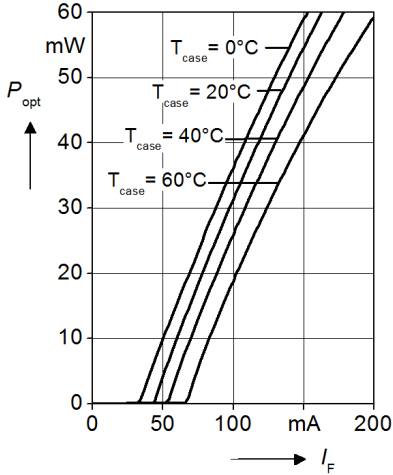
( $T_{\text{case}} = 25 \text{ }^\circ\text{C}$ )

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Emissionswellenlänge <sup>1)</sup> Emission Wavelength <sup>1)</sup>	$\lambda_{\text{peak}}$	515	520	530	nm
Spektrale Breite (Halbwertsbreite) <sup>1)</sup> Spectral Width (FWHM) <sup>1)</sup>	$\Delta\lambda$	–	2	–	nm
Schwellstrom Threshold Current	$I_{\text{th}}$	–	45	75	mA
Betriebsstrom <sup>1)</sup> Operating Current <sup>1)</sup>	$I_{\text{F}}$	–	150	160	mA
Betriebsspannung <sup>1)</sup> Operating Voltage <sup>1)</sup>	$V_{\text{F}}$	–	7.0	8.0	V
Strahldivergenz (FWHM) <sup>1)</sup> Beam Divergence (FWHM) <sup>1)</sup>	$\theta_{\parallel} \times \theta_{\perp}$	4x16	7x22	11x25	deg
Polarisation <sup>1)</sup> Polarization <sup>1)</sup>	$P_{\text{gr}}$	20:1	–	–	
Modulationsfrequenz Modulation Frequency	$f$	–	>100	–	MHz
Thermischer Widerstand (pn-Übergang zu Gehäuse) Thermal resistance (junction to case)	$R_{\text{th}}$	–	38	–	K/W

<sup>1)</sup> Standard operating conditions refer for to a continuous wave output power of  $P_{\text{op}} = 50\text{mW}$ .

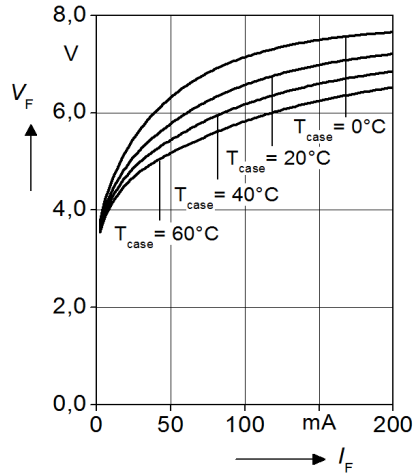
**Optical Output Power**

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



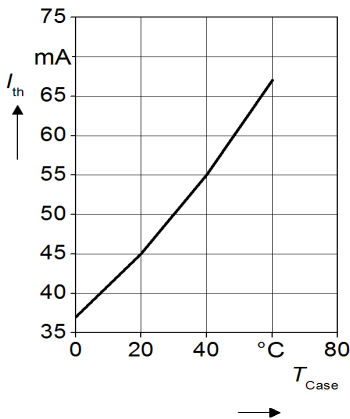
**Operating Voltage**

$$V_F = f(I_F)$$



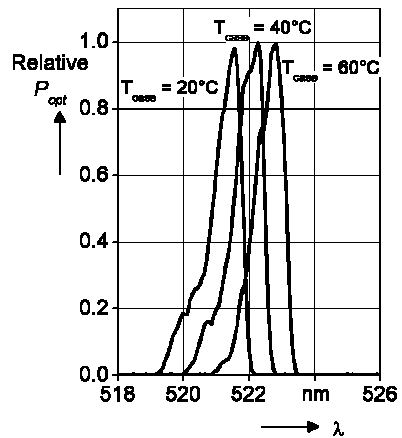
**Threshold Current**

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



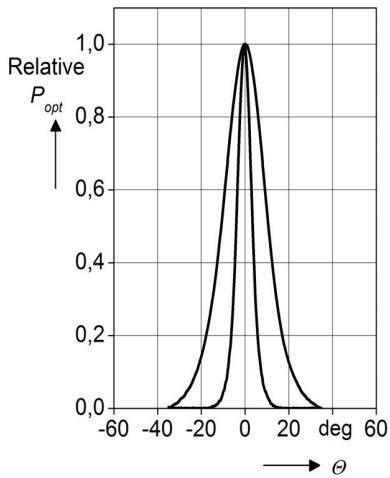
**Spectra**

$$\lambda = f(T_{Case})$$



**Strahldivergenz**  
**Beam Divergence**

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



**Important notes of operation for laser diode:**

**a) Electrical operation:**

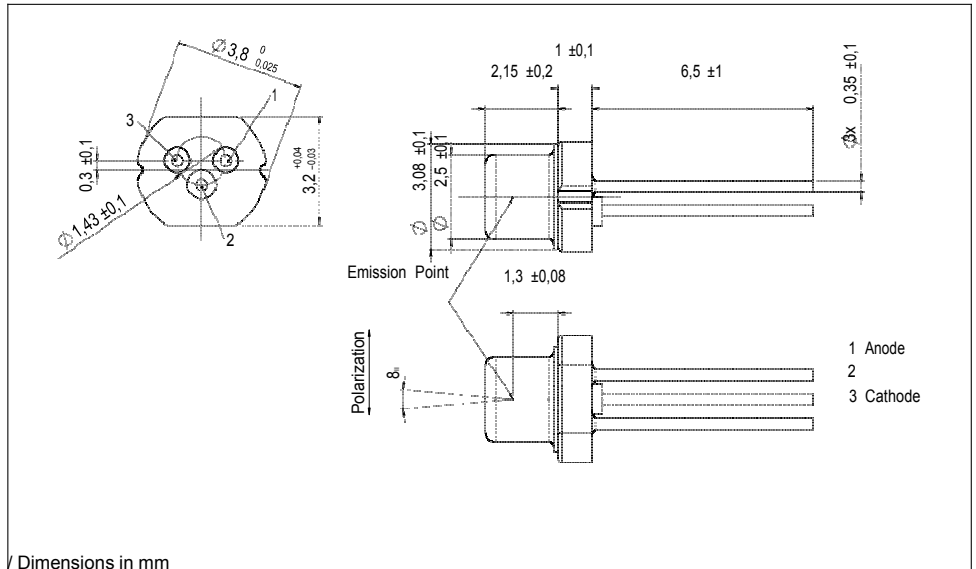
OSRAMs laser diodes are designed for maximum performance and reliability. Operating the laser diode above the maximum rating even for very short periods of time can damage the laser diode or reduce its lifetime. The laser diode must be operated with a suitable power supply with minimized electrical noise.

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

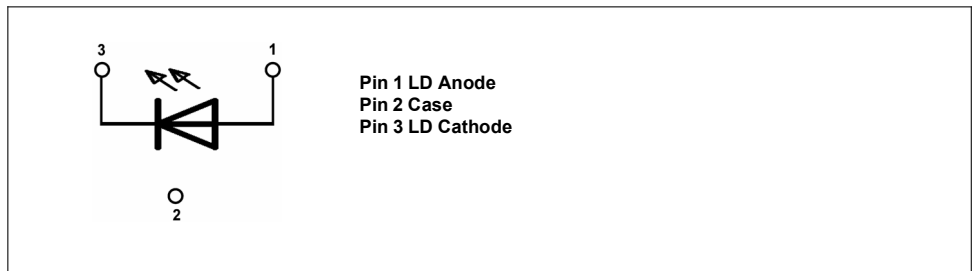
**b) Mounting instructions:**

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.

Package Outlines



Pin Connection



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