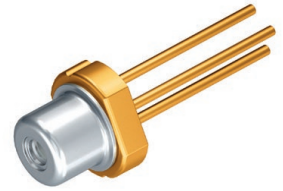


# PL 520B

## Metal Can® TO38

Green Laser Diode in TO38 ICut Package



## Applications

- Measurement Levelling
- Projection Home LED & Laser
- Projection Professional LED & Laser
- Stage Lighting (LED & Laser)

## Features:

- Optical output power (continuous wave): 80 mW ( $T_C = 25^\circ\text{C}$ )
- Typical emission wavelength: 520 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

## Ordering Information

| Type   | Peak output power<br>typ.<br>$P_{\text{opt}}$ | Ordering Code |
|--------|-----------------------------------------------|---------------|
| PL520B | 80 mW                                         | Q65111A7290   |

**Maximum Ratings <sup>1)</sup>**

| Parameter                                     | Symbol    |      | Values |
|-----------------------------------------------|-----------|------|--------|
| Operating temperature                         | $T_{op}$  | min. | -20 °C |
|                                               |           | max. | 60 °C  |
| Storage temperature                           | $T_{stg}$ | min. | -40 °C |
|                                               |           | max. | 85 °C  |
| Junction temperature                          | $T_j$     | max. | 120 °C |
| Forward current <sup>2)</sup>                 | $I_F$     | max. | 300 mA |
| Reverse voltage <sup>3)</sup>                 | $V_R$     | max. | 2 V    |
| Soldering temperature<br>$t_{max} = 10 \mu s$ | $T_S$     | max. | 260 °C |

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

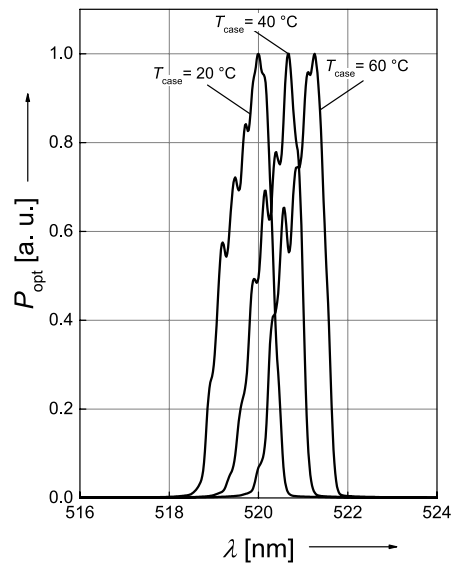
## Characteristics

$P_{\text{opt}} = 80 \text{ mW}$ ;  $T_{\text{case}} = 25 \text{ °C}$

| Parameter                                             | Symbol                  |                      | Values                     |
|-------------------------------------------------------|-------------------------|----------------------|----------------------------|
| Operating current <sup>2)</sup>                       | $I_{\text{op}}$         | typ.<br>max.         | 200 mA<br>240 mA           |
| Peak wavelength <sup>4)</sup>                         | $\lambda_{\text{peak}}$ | min.<br>typ.<br>max. | 515 nm<br>520 nm<br>530 nm |
| Spectral bandwidth at 50% $I_{\text{rel,max}}$ (FWHM) | $\Delta\lambda$         | typ.                 | 1 nm                       |
| Beam divergence (FWHM) parallel to pn-junction        | $\Theta_{\parallel}$    | min.<br>typ.<br>max. | 5 °<br>6.3 °<br>7.5 °      |
| Beam divergence (FWHM) perpendicular to pn-junction   | $\Theta_{\perp}$        | min.<br>typ.<br>max. | 18 °<br>22.5 °<br>25 °     |
| Threshold current                                     | $I_{\text{th}}$         | typ.<br>max.         | 40 mA<br>70 mA             |
| Forward voltage <sup>5)</sup>                         | $V_{\text{F}}$          | typ.<br>max.         | 6 V<br>8 V                 |
| TE polarization                                       | $P_{\text{TE}}$         | typ.                 | 100:1                      |
| Modulation frequency                                  | $f$                     | min.                 | 100 MHz                    |
| Thermal resistance junction case real                 | $R_{\text{thJC}}$       | typ.                 | 38 K / W                   |

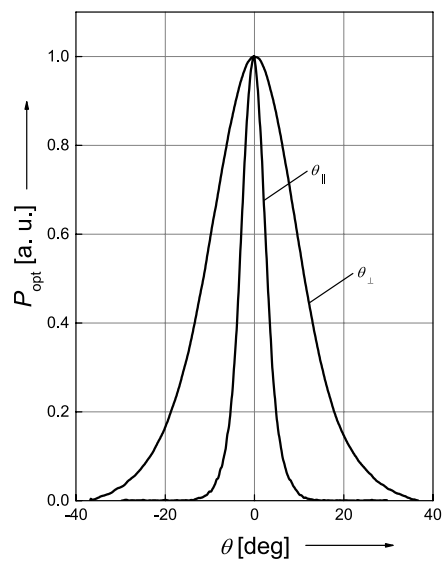
## Relative Spectral Emission <sup>6)</sup>

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



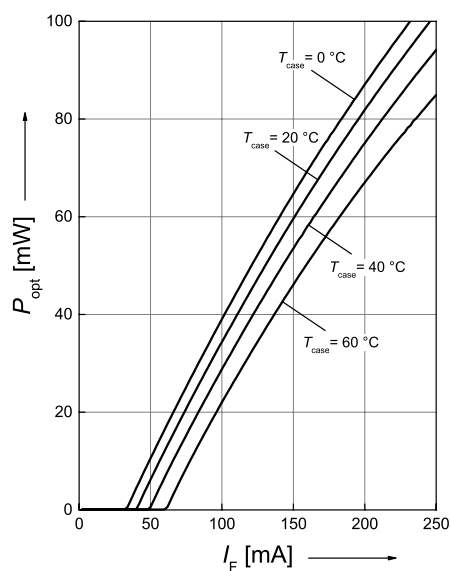
## Beam Divergence <sup>6)</sup>

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



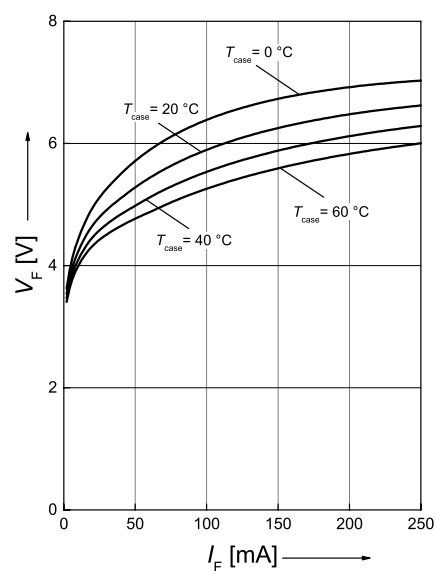
## Optical Output Power <sup>6)</sup>

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



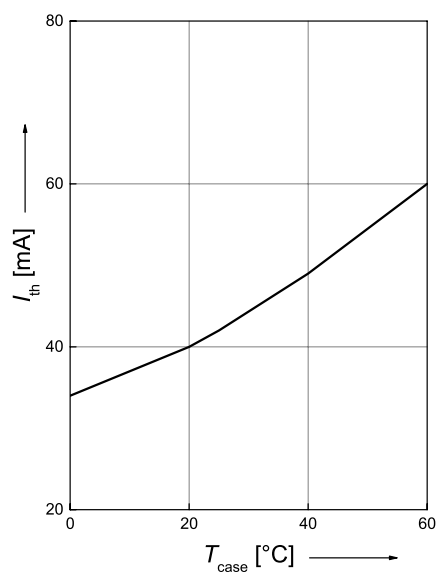
## Opt. Power / Forward Voltage <sup>6)</sup>

$$V_F = f(I_F)$$



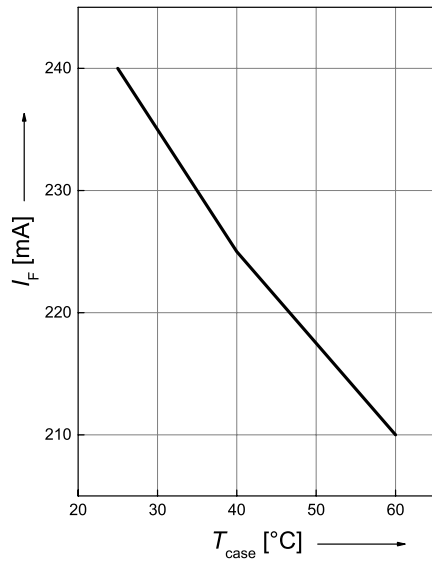
## Threshold Current <sup>6)</sup>

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

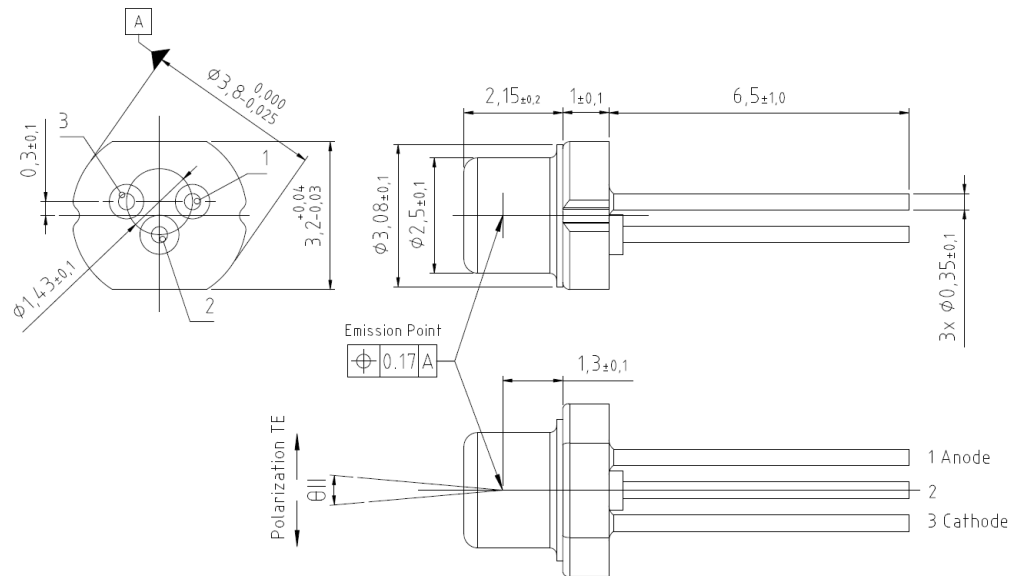


## Max. Permissible Forward Current <sup>6)</sup>

$$I_F = f(T_{\text{case}})$$



## Dimensional Drawing <sup>7)</sup>



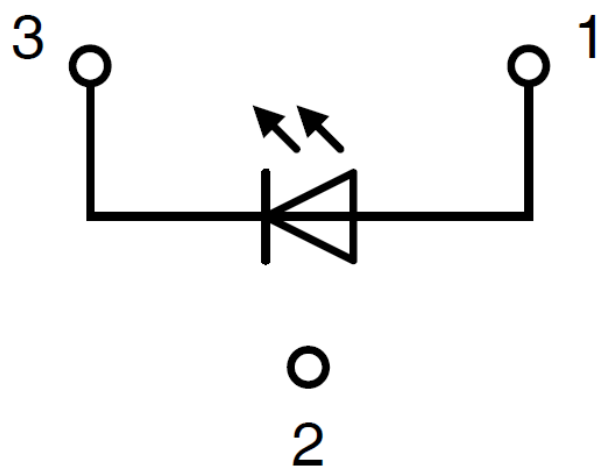
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## Further Information

**Approximate Weight:** 310.0 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  |

Discontinued



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## 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.

### 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 [www.osram-os.com/appnotes](http://www.osram-os.com/appnotes)

## Disclaimer

### Attention please!

The information describes the type of component and shall not be considered as assured characteristics. Terms of delivery and rights to change design reserved. Due to technical requirements components may contain dangerous substances.

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

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## Glossary

- 1) **Output power:** The operation at the maximum ratings influences the life time.
- 2) **Operating/Forward current:** IF is measured with an internal reproducibility of  $\pm 7\%$  (acc. to GUM with a coverage factor of  $k = 3$ ).
- 3) **Reverse Operation:** Reverse Operation of 10 hours is permissible in total. Continuous reverse operation is not allowed.
- 4) **Wavelength:**  $\lambda_{\text{peak}}$  is measured with an internal reproducibility of  $\pm 0.3\text{ nm}$  (acc. to GUM with a coverage factor of  $k = 3$ ).
- 5) **Operating/Forward voltage:** VF is measured with an internal reproducibility of  $\pm 0.05\text{ V}$  (acc. to GUM with a coverage factor of  $k = 3$ ).
- 6) **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.
- 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                                       |
|---------|------------|----------------------------------------------|
| 1.0     | 2019-03-18 | Initial Version                              |
| 1.1     | 2019-04-12 | Electro - Optical Characteristics (Diagrams) |
| 1.2     | 2019-07-22 | Discontinued                                 |

Discontinued

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