

OSRAM PLT5 520DB_P

Datasheet

Preliminary datasheet version

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am  **OSRAM**

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Metal Can TO56

PLT5 520DB_P

Green Laser Diode in TO56 Package



Applications

- Appliances & Tools
- Entertainment
- Functional Illumination
- Medical Imaging
- Outdoor & Industrial Lighting
- Projection
- Visualization

Features

- Optical output power (continuous wave): 10 mW ($T_c = 25^\circ\text{C}$)
- Typical emission wavelength: 515 nm
- Efficient radiation source for cw and pulsed operation
- Single mode semiconductor laser
- High modulation bandwidth
- TO56 package with photo diode

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Ordering Information

| Type | Peak output power typ. P_{opt} | Ordering Code |
|--------------|----------------------------------------|---------------|
| PLT5 520DB_P | 10 mW | Q65113A4956 |

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Maximum Ratings

| Parameter | Symbol | | Values |
|--------------------------------------------------------------|-----------|------|--------|
| Operating temperature | T_{op} | min. | -20 °C |
| | | max. | 60 °C |
| Storage temperature | T_{stg} | min. | -40 °C |
| | | max. | 85 °C |
| Peak output power ¹⁾ $T_{case} = 25\text{ °C}$ | P_{opt} | max. | 15 mW |
| Reverse voltage ²⁾ $T_{case} = 25\text{ °C}$ | V_R | max. | 2 V |
| Soldering temperature $t_{max} = 10\text{ sec}$ | T_s | max. | 260 °C |

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

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Characteristics

$P_{opt} = 10 \text{ mW}$; $T_c = 25 \text{ °C}$

| Parameter | Symbol | | Values |
|--------------------------------------------------------|-------------------------------------------|----------------------|----------------------------|
| Operating current ³⁾ | I_{op} | typ. max. | 43 mA 60 mA |
| Operating voltage ⁴⁾ | V_{op} | typ. max. | 5.0 V 5.8 V |
| Peak wavelength ⁵⁾ | λ_{peak} | min. typ. max. | 510 nm 515 nm 530 nm |
| Spectral bandwidth (FWHM) | $\Delta\lambda$ | typ. | 1 nm |
| Beam divergence (FWHM) parallel to pn-junction | $\Theta_{ }$ | min. typ. max. | 6 ° 8 ° 10 ° |
| Beam divergence (FWHM) perpendicular to pn-junction | Θ_{\perp} | min. typ. max. | 19 ° 22 ° 25 ° |
| Beam pointing accuracy ⁶⁾ | $\Delta\theta_{ }, \Delta\theta_{\perp}$ | min. max. | -3 ° 3 ° |
| Threshold current | I_{th} | typ. max. | 25 mA 40 mA |
| TE polarization | P_{TE} | typ. | 100:1 |
| Modulation frequency | f | min. | 100 MHz |
| Monitor current ^{7,8)} $V_R = 5 \text{ V}$ | I_m | typ. | 120 μA |

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Wavelength Groups

$P_{opt} = 10 \text{ mW}; T_c = 25 \text{ °C}$

| Group | Peak wavelength ⁹⁾ | Peak wavelength ⁹⁾ |
|-------|-------------------------------|-------------------------------|
| | min. λ_{peak} | max. λ_{peak} |
| B1 | 510 nm | 515 nm |
| B2 | 515 nm | 520 nm |
| B3 | 520 nm | 530 nm |

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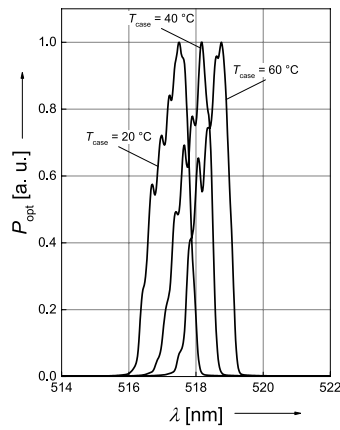
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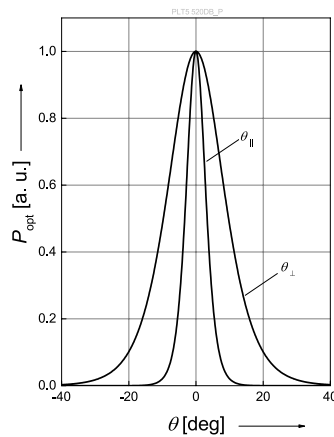
Relative Spectral Emission ^{10), 11)}

$$P_{\text{opt}} = f(\lambda); \text{ Group (B2)}$$



Beam Divergence ¹¹⁾

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



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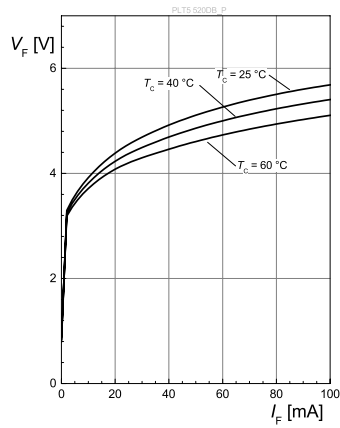
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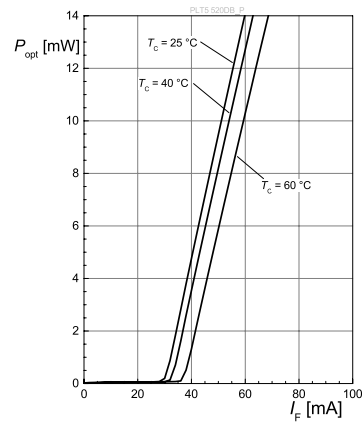
Forward Voltage ^{10), 11)}

$$V_F = f(I_F)$$



Optical Output Power ^{10), 11)}

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



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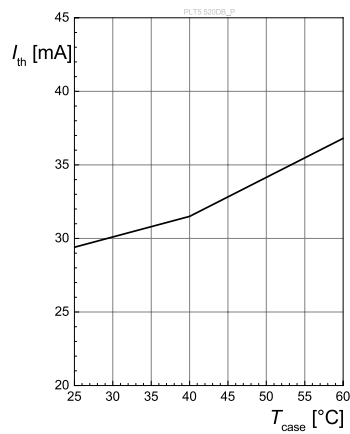
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Threshold Current

$$I_{th} = f(T_c)$$



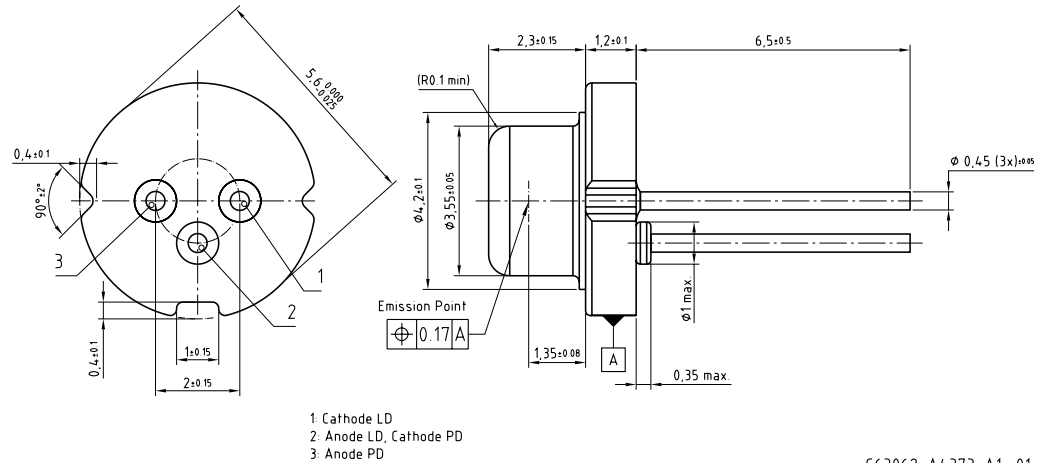
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Dimensional Drawing ¹²⁾



C63062-A4373-A1-01

Further Information:

Approximate Weight: 313.0 mg

ESD advice: ATTENTION – Observe Precautions For Handling – Electrostatic Sensitive Device

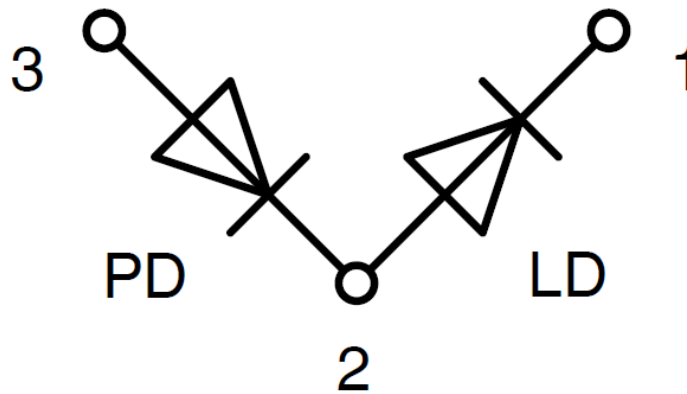
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Electrical Internal Circuit



| Pin | Description |
|-------|-----------------------------|
| PIN 1 | LD Cathode |
| PIN 2 | LD Anode, PD Cathode (case) |
| PIN 3 | PD Anode |

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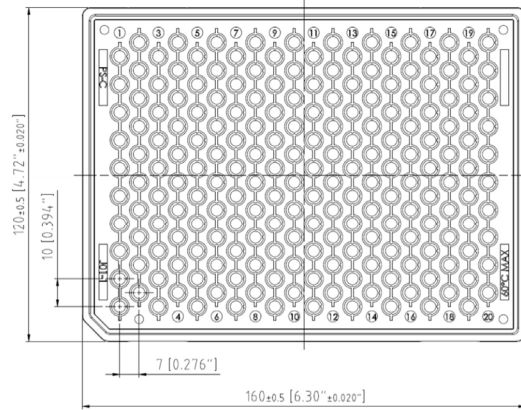
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Tray ¹¹⁾

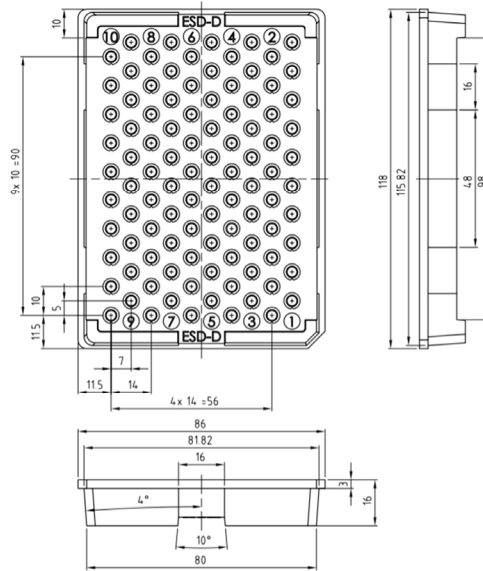
200 pieces per Tray



C63062-A4337-B1

Tray ¹¹⁾

100 pieces per Tray



C63062-A4404-X1-01

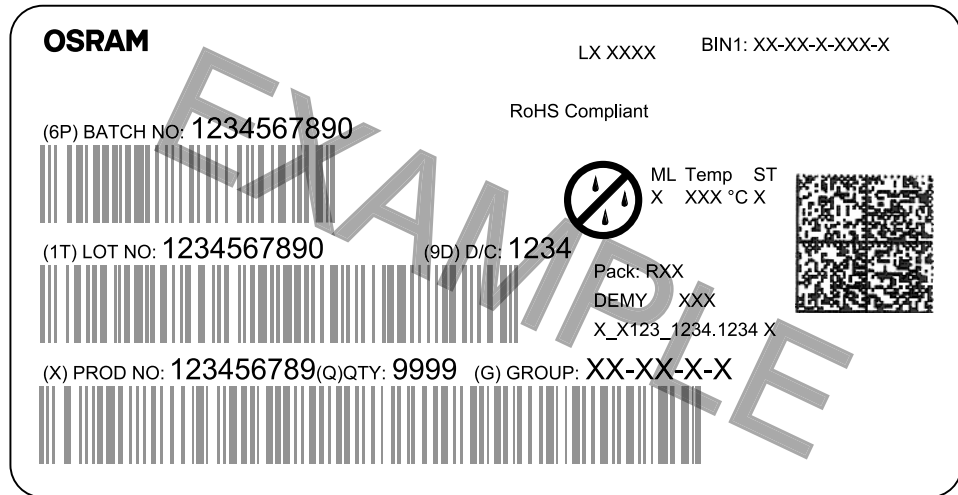
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Barcode-Product-Label (BPL)



OSRAM LX XXXX BIN1: XX-XX-X-XXX-X

RoHS Compliant

(6P) BATCH NO: 1234567890

(1T) LOT NO: 1234567890 (9D) D/C: 1234

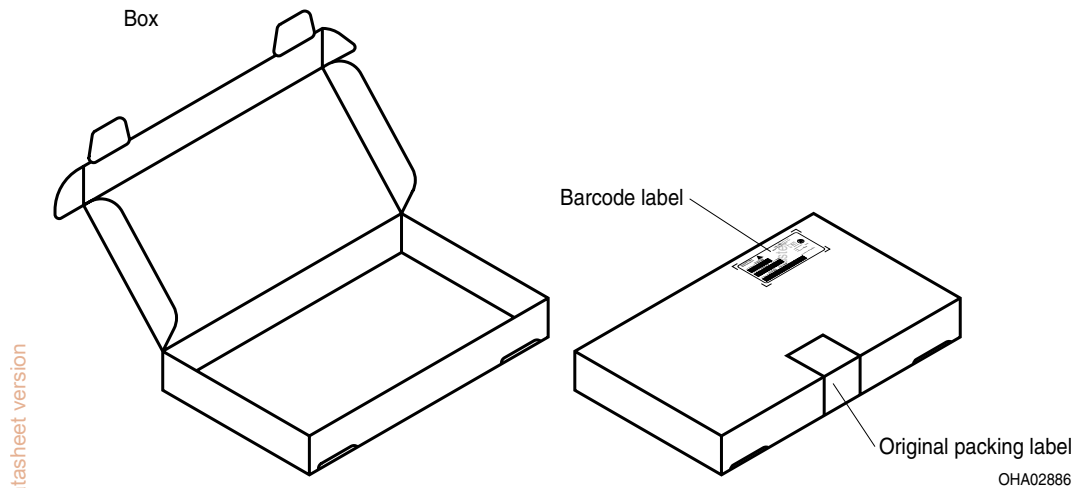
(X) PROD NO: 123456789(Q)QTY: 9999 (G) GROUP: XX-XX-X-X

ML Temp ST
X XXX °C X

Pack: RXX
DEMY XXX
X_X123_1234.1234 X

OHA04563

Schematic Transportation Box ¹²⁾



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Dimensions of Transportation Box

| At pieces per Tray | Width | Length | Height |
|--------------------|------------|------------|-----------|
| 200 | 170 ± 5 mm | 270 ± 5 mm | 45 ± 5 mm |
| 100 | 103 ± 5 mm | 128 ± 5 mm | 25 ± 5 mm |

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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 <https://ams-osram.com/support/application-notes>

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Glossary

- 1) **Brightness:** The brightness values are measured with a tolerance of $\pm 11\%$.
- 2) **Reverse Operation:** This product is intended to be operated applying a forward current within the specified range. Applying any continuous reverse bias or forward bias below the voltage range of light emission shall be avoided because it may cause migration which can change the electro-optical characteristics or damage the LED.
- 3) **Operating/Forward current:** IF is measured with an internal reproducibility of $\pm 7\%$ (acc. to GUM with a coverage factor of $k = 3$).
- 4) **Operating/Forward voltage:** VF is measured with an internal reproducibility of $\pm 0.05\text{ V}$ (acc. to GUM with a coverage factor of $k = 3$).
- 5) **Wavelength:** λ_{peak} is measured with an internal reproducibility of $\pm 0.3\text{ nm}$ (acc. to GUM with a coverage factor of $k = 3$).
- 6) **Beam pointing accuracy:** The values may contain measurement deviations.
- 7) **Monitor current:** Monitor current refers to a reverse voltage of $V_{\text{RPD}} = 5\text{ V}$. Monitor current is for short time power reference purpose only. Not guaranteed for accuracy.
- 8) **Monitor current:** For reference only.
- 9) **Wavelength:** The wavelengths are measured with a tolerance of $\pm 1\text{ nm}$.
- 10) **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.
- 11) **Testing temperature:** $T_A = 25^\circ\text{C}$ (unless otherwise specified)
- 12) **Tolerance of Measure:** Unless otherwise noted in drawing, tolerances are specified with ± 0.1 and dimensions are specified in mm.

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Revision History

| Version | Date | Change |
|---------|------------|-------------------------|
| 0.0 | 2023-02-17 | Initial Version |
| 0.1 | 2023-06-21 | Type Designation System |

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EU RoHS and China RoHS compliant product
此产品符合欧盟 RoHS 指令的要求；
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