

# PLT3 450C

## Metal Can® TO38

Blue Laser Diode in TO38 ICut Package



### Applications

- Health Monitoring (Heart Rate Monitoring, Pulse Oximetry)
- Projection Home LED & Laser
- Projection Professional LED & Laser

### Features:

- Optical output power (continuous wave): 20 mW ( $T_{case} = 25^{\circ}C$ )
- Typical emission wavelength: 450 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 typ. $P_{opt}$	Ordering Code
PLT3 450C	20 mW	Q65112A2809

## Maximum Ratings

$T_C = 25\text{ °C}$

Parameter	Symbol		Values
Operating temperature	$T_{op}$	min.	-20 °C
		max.	70 °C
Storage temperature	$T_{stg}$	min.	-40 °C
		max.	85 °C
Junction temperature	$T_j$	max.	120 °C
Peak output power	$P_{opt}$	max.	40 mW
Forward current <sup>1)</sup>	$I_F$	max.	120 mA
Reverse voltage <sup>2)</sup>	$V_R$	max.	2 V
Soldering temperature	$T_S$	max.	260 °C
$t_{max} = 10\text{ }\mu\text{s}$			

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

## Characteristics

$P_{\text{opt}} = 20 \text{ mW}$ ;  $T_{\text{case}} = 25 \text{ °C}$

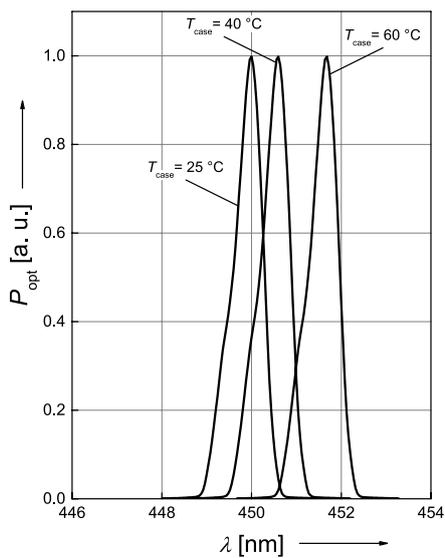
Parameter	Symbol		Values
Peak wavelength <sup>3)</sup>	$\lambda_{\text{peak}}$	min.	445 nm
		typ.	450 nm
		max.	455 nm
Operating current <sup>1)</sup>	$I_{\text{op}}$	typ.	45 mA
		max.	80 mA
Spectral bandwidth at 50% $I_{\text{e,rel,max}}$	$\Delta\lambda$	typ.	1 nm
Peak output power	$P_{\text{opt}}$	max.	0.04 W
Beam divergence (FWHM) parallel to pn-junction	$\Theta_{\parallel}$	min.	4 °
		typ.	6.5 °
		max.	7.5 °
Beam divergence (FWHM) perpendicular to pn-junction	$\Theta_{\perp}$	min.	18 °
		typ.	22.5 °
		max.	25 °
Threshold current	$I_{\text{th}}$	typ.	10 mA
		max.	24 mA
Forward voltage <sup>4)</sup>	$V_{\text{F}}$	typ.	5 V
		max.	7 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

## Wavelength Groups

Group	Peak wavelength <sup>3)</sup> min. $\lambda_{\text{peak}}$	Peak wavelength <sup>3)</sup> max. $\lambda_{\text{peak}}$
B1	445 nm	447 nm
B2	447 nm	449 nm
B3	449 nm	451 nm
B4	451 nm	453 nm
B5	453 nm	455 nm

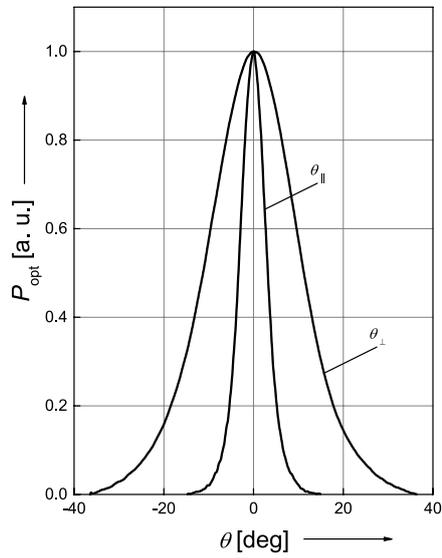
## Relative Spectral Emission <sup>5)</sup>

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



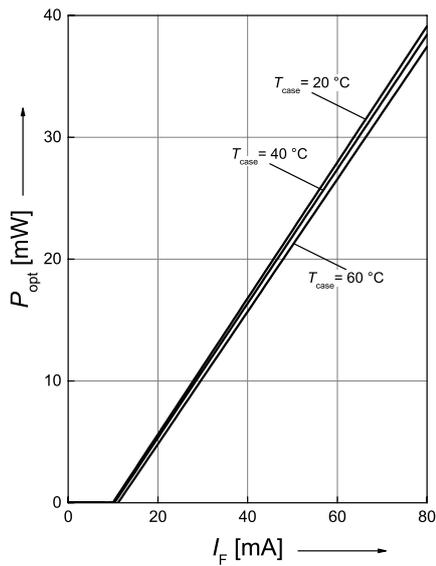
### Beam Divergence <sup>5)</sup>

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



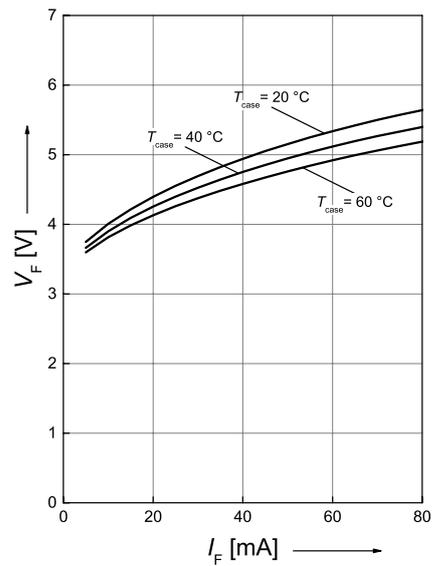
### Optical Output Power <sup>5)</sup>

$P_{opt} = f(I_F)$



### Forward Voltage <sup>5)</sup>

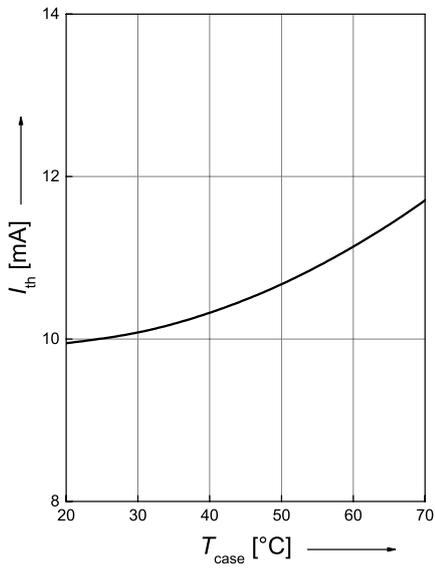
$V_F = f(I_F)$



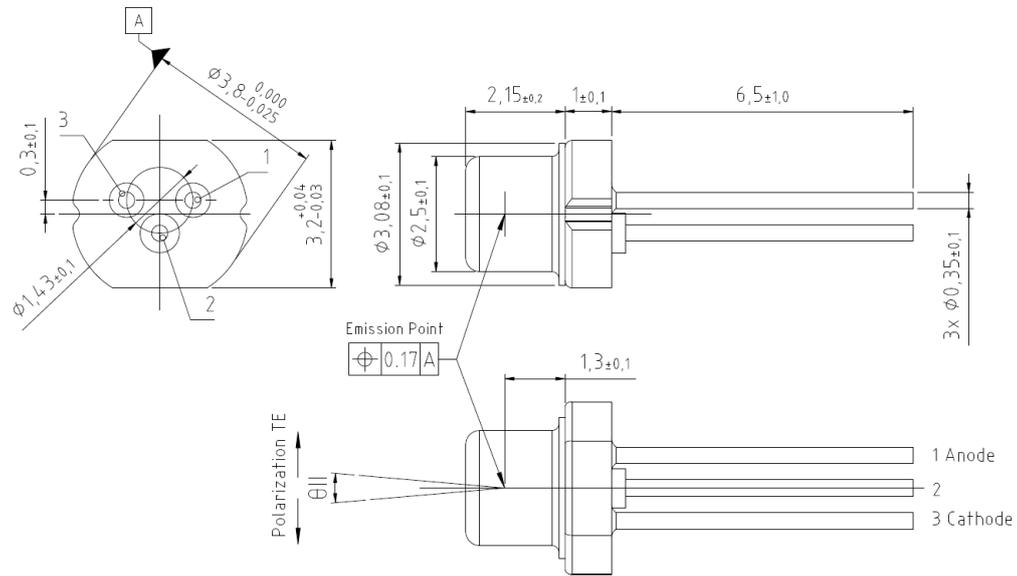
Preliminary datasheet version

## Threshold Current <sup>5)</sup>

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



## Dimensional Drawing <sup>6)</sup>



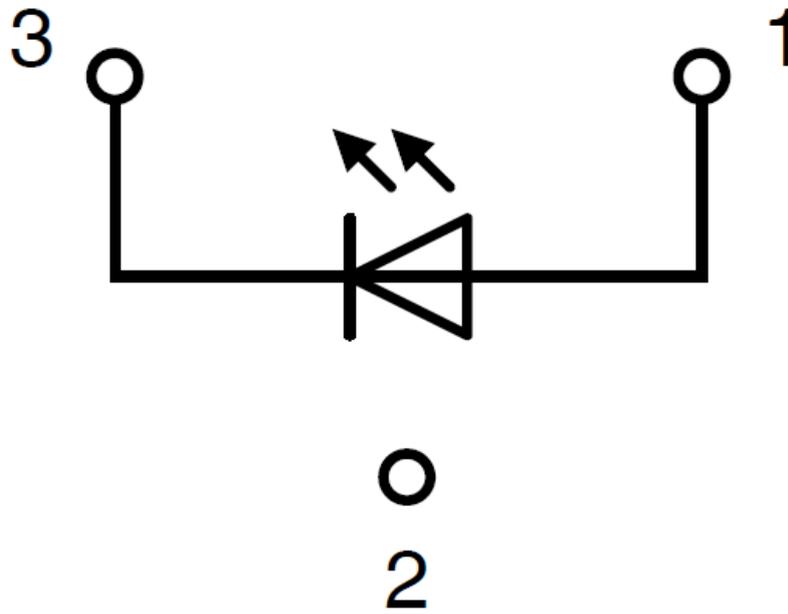
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## Further Information

**Approximate Weight:** 141.0 mg

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

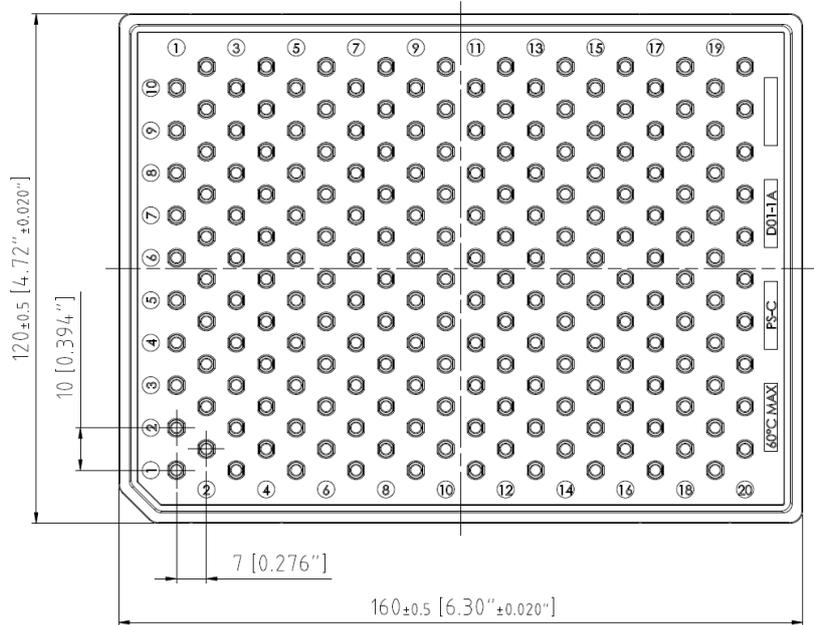
## Electrical Internal Circuit



Pin	Description
PIN 1	LD Anode
PIN 2	Case
PIN 3	LD Cathode

**Tray** <sup>6)</sup>

200 pieces per Tray



C63062-A4336-B1

**Barcode-Product-Label (BPL)**

**OSRAM Opto Semiconductors** LX XXXX    BIN1: XX-XX-X-XXX-X

RoHS Compliant

(6P) BATCH NO: 1234567890 ML Temp    ST  
X    XXX °C X

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

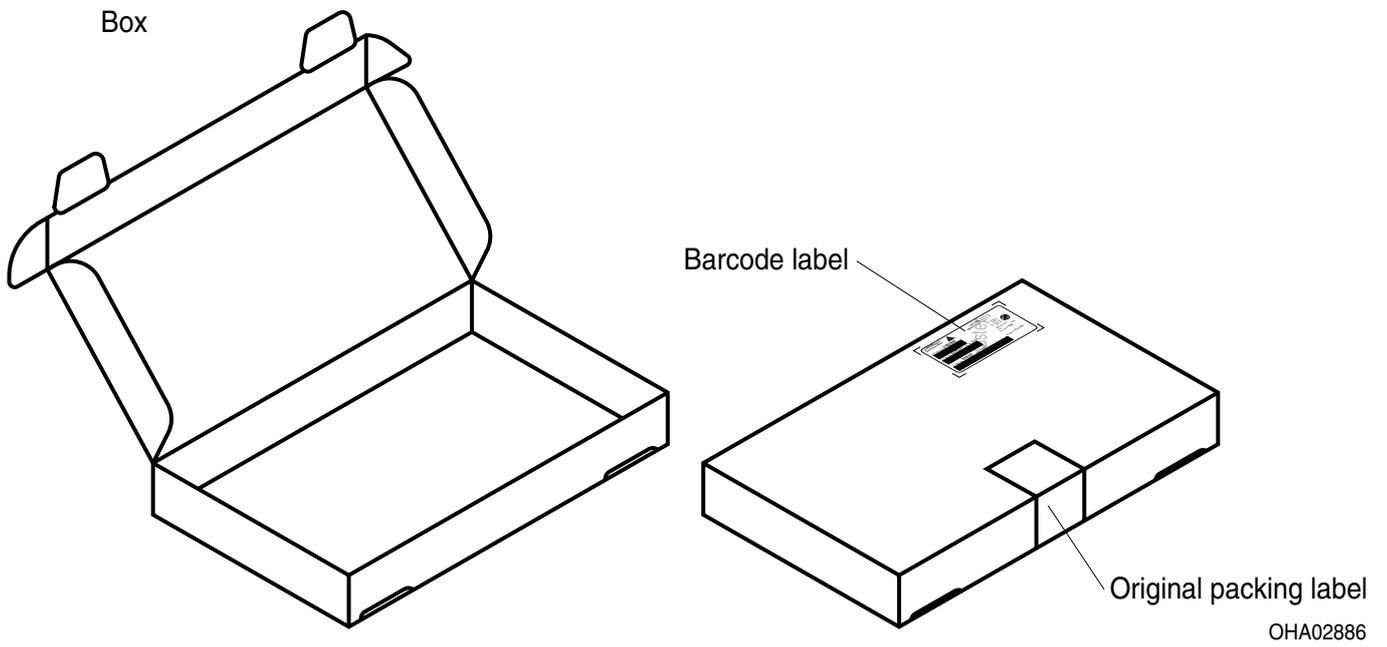
(X) PROD NO: 123456789 (Q) QTY: 9999 (G) GROUP: XX-XX-X-X

Pack: RXX  
 DEMY    XXX  
 X\_X123\_1234.1234 X

OHA04563

Preliminary datasheet version

## Schematic Transportation Box <sup>6)</sup>



## Dimensions of Transportation Box

Width	Length	Height
215 ± 5 mm	265 ± 5 mm	95 ± 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 informations please visit [www.osram-os.com/appnotes](http://www.osram-os.com/appnotes)

Depending on the mode of operation, these devices emit highly concentrated non visible infrared 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 and IEC 62471.

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### Packing

Please use the recycling operators known to you. We can also help you – get in touch with your nearest sales office.

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## Glossary

- 1) **Operating/Forward current:** IF is measured with an internal reproducibility of  $\pm 7\%$  (acc. to GUM with a coverage factor of  $k = 3$ ).
- 2) **Reverse Operation:** Reverse Operation of 10 hours is permissible in total. Continuous reverse operation is not allowed.
- 3) **Wavelength:**  $\lambda_{\text{peak}}$  is measured with an internal reproducibility of  $\pm 0.3\text{ nm}$  (acc. to GUM with a coverage factor of  $k = 3$ ).
- 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) **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.
- 6) **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
0.1	2019-01-28	Characteristics

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