

PLT3 520D

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 ($T_{case}=25^{\circ}C$)
- Optical output power (pulse wave): 140 mW ($T_{case}=25^{\circ}C$)
- Efficient radiation source for cw and pulsed operation
- Single tranverse mode semiconductor laser
- High modulation bandwidth
- Miniaturized TO38 ICut package
- Laser diode isolated against package
- Typical emission wavelength: 520 nm

Ordering Information

Type	Peak output power ¹⁾ typ. P_{opt}	Ordering Code
PLT3 520D	140 mW	Q65112A6822

Pulse conditions: $\leq 10 \mu s$, $\leq 50 \% DC$, $\leq 300 mA$, $50^{\circ}C$

DRAFT – For reference only. Subject to change without notice.

Maximum Ratings

Parameter	Symbol		Values
Operating temperature	T_{op}	min. max.	-20 °C 60 °C
Storage temperature	T_{stg}	min. max.	-40 °C 85 °C
Junction temperature	T_j	max.	120 °C
Forward current ²⁾	I_F	max.	330 mA
Reverse voltage ³⁾	V_R	max.	2 V
Soldering temperature $t_{max} = 10 \mu s$	T_S	max.	260 °C

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

Characteristics

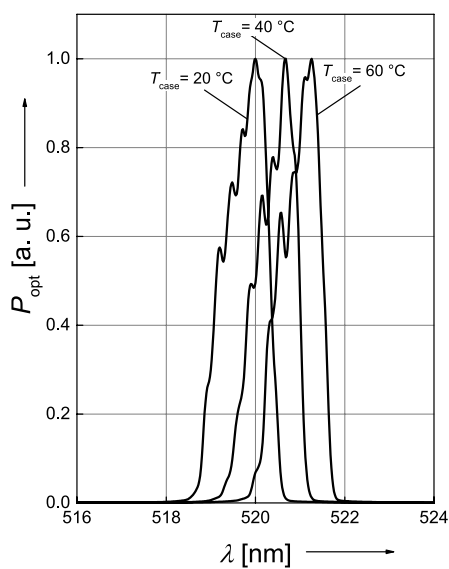
P_{opt} = CW mode: 80 mW; Pulse mode: 140 mW; $T_{\text{case}} = 25\text{ °C}$

Parameter	Symbol		Values
Operating voltage ⁴⁾	V_{op}	typ.	6 V
CW $P_{\text{opt}} = 110\text{ mW}$		max.	8 V
Peak wavelength ⁵⁾	λ_{peak}	min.	515 nm
CW $P_{\text{opt}} = 110\text{ mW}$		typ.	520 nm
		max.	530 nm
Spectral bandwidth at 50% $I_{\text{e,rel,max}}$	$\Delta\lambda$	typ.	1 nm
Peak output power ¹⁾	P_{opt}	min.	110 mW
Pulse mode with 300 mA		typ.	140 mW
Peak output power ¹⁾	P_{opt}	min.	80 mW
CW with 240 mA		typ.	100 mW
Peak output power ¹⁾	P_{opt}	typ.	80 mW
CW with 200 mA			
Beam divergence (FWHM) parallel to pn-junction	$\Theta_{\parallel}$	min.	5 °
CW $P_{\text{opt}} = 110\text{ mW}$		typ.	6.2 °
		max.	8 °
Beam divergence (FWHM) perpendicular to pn-junction	$\Theta_{\perp}$	min.	18 °
CW $P_{\text{opt}} = 110\text{ mW}$		typ.	22.5 °
		max.	25 °
Threshold current	I_{th}	typ.	50 mA
		max.	90 mA
TE polarization	P_{TE}	typ.	100:1
CW $P_{\text{opt}} = 110\text{ mW}$			
Modulation frequency	f	min.	100 MHz
CW $P_{\text{opt}} = 110\text{ mW}$			
Thermal resistance junction case real	R_{thJC}	typ.	38 K / W

Pulse conditions: $\leq 10\text{ }\mu\text{s}$, $\leq 50\text{ \% DC}$, $\leq 300\text{ mA}$, 50 °C

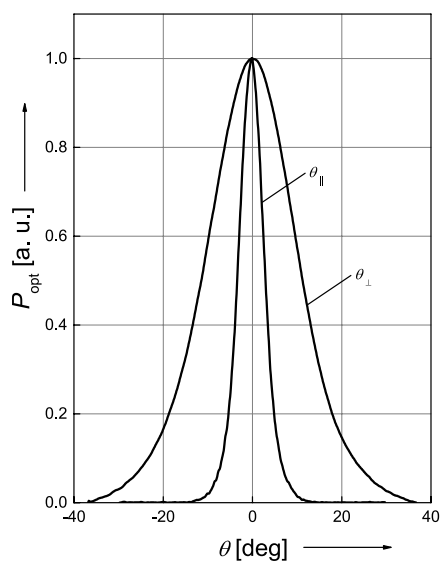
Relative Spectral Emission ⁶⁾

$$I_{e,rel} = f(\lambda); I_F = 200 \text{ mA}; P_{opt} = 80 \text{ W}$$



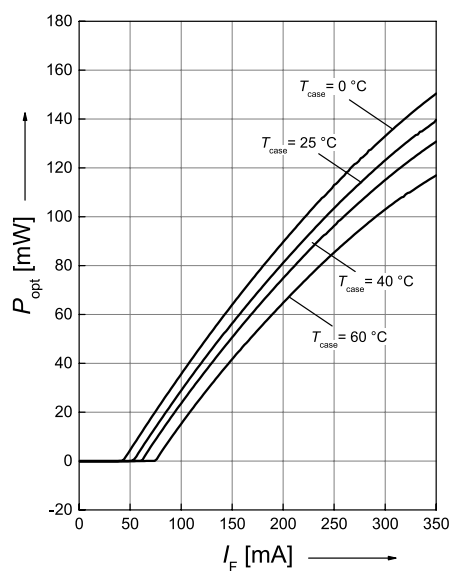
Beam Divergence ⁶⁾

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



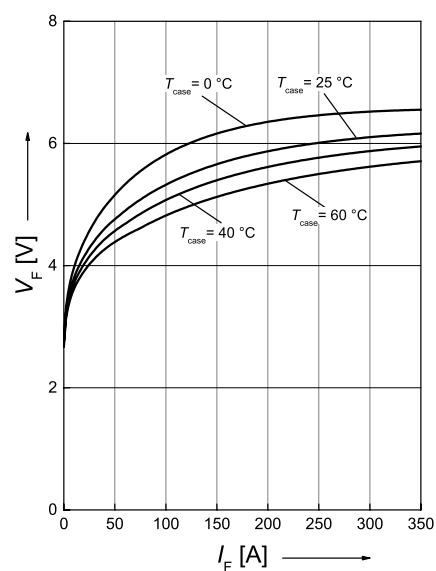
Optical Output Power ^{6), 7)}

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



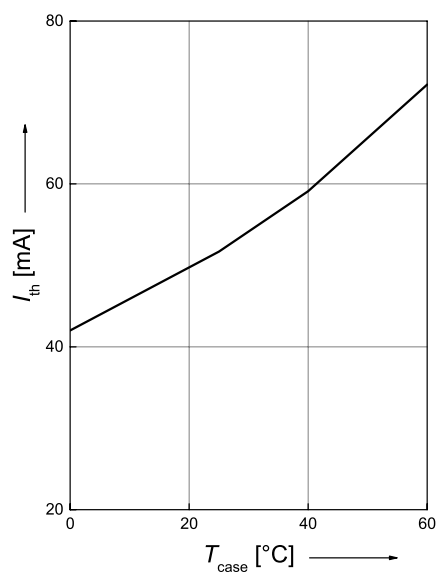
Opt. Power / Forward Voltage ^{6), 7)}

$$V_F = f(I_F)$$

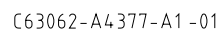


Threshold Current

$$I_F = f(T)$$



Dimensional Drawing ⁸⁾



Approximate Weight: 141.0 mg

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

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

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/apnotes

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Attention please!

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

If printed or downloaded, please find the latest version in the OSRAM OS Website.

Packing

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

By agreement we will take packing material back, if it is sorted. You must bear the costs of transport. For packing material that is returned to us unsorted or which we are not obliged to accept, we shall have to invoice you for any costs incurred.

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Glossary

- 1) **Testcondition:** Tests are carried out at 25 °C.
- 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) **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) **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) **Testing temperature:** TA = 25°C
- 8) **Tolerance of Measure:** Unless otherwise noted in drawing, tolerances are specified with ± 0.1 and dimensions are specified in mm.

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