Hybride Impuls-Laserdiode mit integrierter Treiberstufe 70 W Spitzenleistung
Hybrid Pulsed Laser Diode with Integrated Driver Stage 70 W Peak Power

Lead (Pb) Free Product - RoHS Compliant

SPL LL90_3

Besondere Merkmale

- Kleines kostengünstiges Plastik-Gehäuse
- Integriert sind ein FET und Kondensatoren zur Impulsansteuerung
- InAlGaAs/GaAs kompressiv verspannte Quantenfilmstruktur
- Hochleistungslaser mit „Large-Optical-Cavity“ (LOC) Struktur
- Nanostack Lasertechnologie beinhaltet mehrere epitaktisch integrierte Emitter
- Laserapertur 200 µm x 10 µm
- Schneller Betrieb (< 30 ns Impulsbreite)
- Niedrige Versorgungsspannung (< 20 V)

Anwendungen

- Entfernungsmessung
- Sicherheit, Überwachung
- Beleuchtung, Zündung
- Test- und Messsysteme

Sicherheitshinweise

Je nach Betriebsart emittieren diese Bauteile hochkonzentrierte, nicht sichtbare Infrarot-Strahlung, die gefährlich für das menschliche Auge sein kann. Produkte, die diese Bauteile enthalten, müssen gemäß den Sicherheits-richtlinien der IEC-Norm 60825-1 behandelt werden.

Features

- Low cost, small size plastic package
- Integrated FET and capacitors for pulse control
- Strained InAlGaAs/GaAs QW-structures
- High power large-optical-cavity laser structure
- Nanostack laser technology including multiple epitaxially stacked emitters
- Laser aperture 200 µm x 10 µm
- High-speed operation (< 30 ns pulse width)
- Low supply voltage (< 20 V)

Applications

- Range finding
- Security, surveillance
- Illumination, ignition
- Testing and measurement

Safety advices

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 “Safety of laser products”.

Typ Type	Emitteranzahl Number of Emitters	Opt. Spitzenaus-gangsleistung Opt. Peak Power	Wellenlänge Wavelength	Bestellnummer Ordering Code
SPL LL90_3	3	70 W	905 nm	Q65110A1009

Grenzwerte (kurzzeitiger Betrieb) (T_A = 25 °C)
Maximum Ratings (short time operation)

Parameter **Parameter**	**Symbol** **Symbol**	**Werte** **Values**		**Einheit** **Unit**
		min.	**max.**	
Spitzenausgangsleistung Peak output power	P_{opt}	–	80	W
Ladespannung (V_G = 15 V) Charge voltage (V_G = 15 V)	V_C		20	V
Gate-Spannung Gate voltage	V_G	– 20	+ 20	V
Tastverhältnis Duty cycle	$d.c.$	–	0.1	%
Betriebstemperatur Operating temperature	T_{op}	- 40	+ 85	°C
Temperatur des pn-Übergangs[1)] Junction temperature[1)]	T_j	–	+ 105	°C
Lagertemperatur Storage temperature	T_{stg}	- 40	+ 100	°C
Löttemperatur (t_{max} = 10 s) Soldering temperature (t_{max} = 10 s)	T_s	–	+ 260	°C

[1)] limited due to plastic package, not due to laser chip

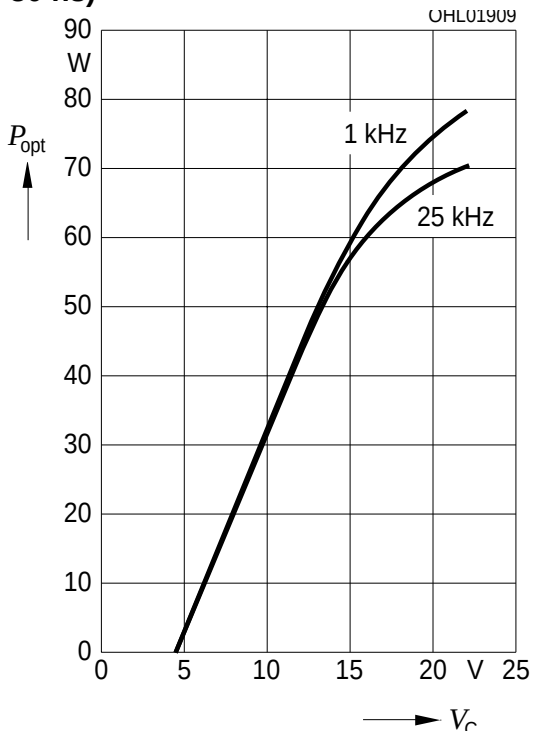
Optische Kennwerte (T_A = 25 °C)
Optical Characteristics

Parameter **Parameter**	**Symbol** **Symbol**	**Werte** **Values**			**Einheit** **Unit**
		min.	**typ.**	**max.**	
Zentrale Emissionswellenlänge[1)] Emission wavelength[1)]	λ	895	905	915	nm
Spektralbreite (Halbwertsbreite)[1)] Spectral width (FWHM)[1)]	$\Delta\lambda$	–	7	–	nm
Spitzenausgangsleistung[1)] Peak output power[1)]	P_{opt}	60	70	80	W
Ladespannung an der Laserschwelle Charge Voltage at laser threshold	$U_{C,\,th}$	4.0	4.5	5.0	V
Pulsbreite (Halbwertsbreite)[1), 2)] Pulse width (FWHM)[1), 2)]	t_p	37	40	43	ns
Anstiegs- und Abfallzeit (10% … 90%)[1), 2)] Rise and fall time (10% … 90%)[1), 2)]	t_r, t_f	7 40	10 45	13 50	ns ns
Jitter (bzgl. Triggersignal und optischem Puls) Jitter (regarding trigger signal and optical pulse)	t_j		170	500	ps
Austrittsöffnung Aperture size	$w \times h$	–	200 × 10	–	µm²
Strahldivergenz (Halbwertsbreite) parallel zum pn-Übergang[1)] Beam divergence (FWHM) parallel to pn junction[1)]	$\theta_{\parallel}$	12	15	18	Grad deg.
Strahldivergenz (Halbwertsbreite) senkrecht zum pn-Übergang[1)] Beam divergence (FWHM) perpendicular to pn-junction[1)]	$\theta_{\perp}$	27	30	33	Grad deg.
Temperaturkoeffizient der Wellenlänge Temperature coefficient of wavelength	$\partial\lambda / \partial T$	–	0.30	0.33	nm/K
Thermischer Widerstand Thermal resistance	R_{th}	–	200	–	K/W
Einschaltpunkt der Gate-Spannung Switch on gate voltage	$V_{G\,on}$	–	5.0	–	V

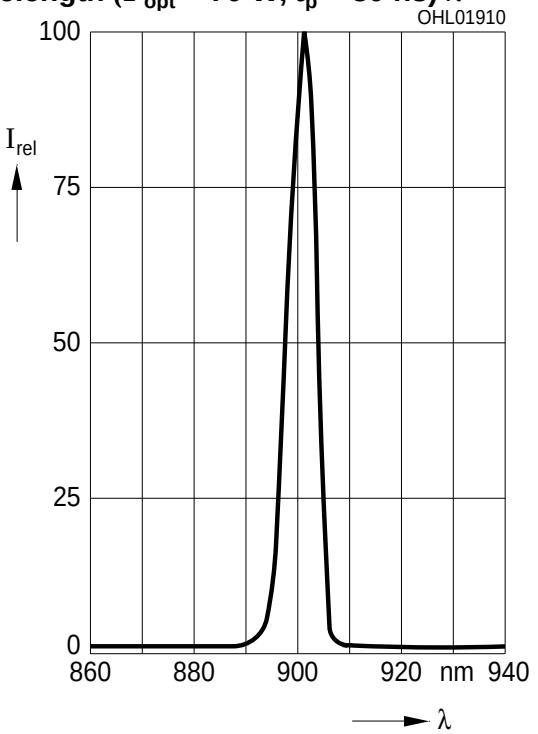
1) Werte beziehen sich auf folgende Standardbetriebsbedingung: >50 ns Pulsbreite, 1 kHz Pulswiederholrate, 18.5 V Ladespannung, 15 V Gate-Spannung und 25°C Umgebungstemperatur. Der Laser wird angesteuert mit dem MOSFET-Treiber Elantec EL7104C.
Values refer to the following standard operating conditions: >50 ns pulse width, 1 kHz pulse repetition rate, 18.5 V charge voltage, 15 V gate voltage and 25 °C ambient temperature. The laser is driven by the MOSFET driver Elantec EL7104C.

2) Die Schaltgeschwindigkeit ist abhängig von Strom und Geschwindigkeit, mit der die Gate-Kapazität (typ. 300 pF) des internen Transistors geladen wird. Kürzere Pulsbreiten, Anstiegs- und Abfallzeiten erhält man bei Trigger-Pulsbreiten <50 ns. Dies bewirkt jedoch auch eine reduzierte optische Spitzenleistung.
Switching speed at gate depends on current and speed, charging the gate capacitance (typ. 300 pF) of the internal transistor. Reduced pulse widths, rise and fall times occur at trigger pulse widths <50 ns. This also reduces the optical peak power.

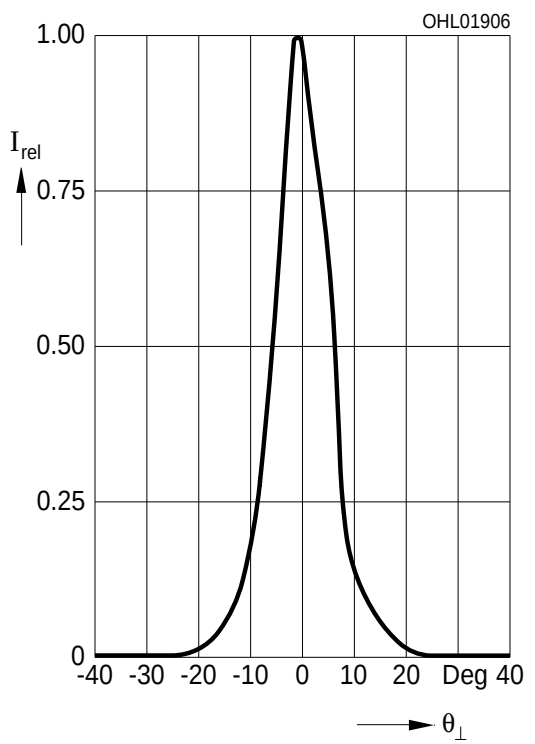
Optical output power P_{opt} vs charge voltage V_c (t_p = 30 ns)



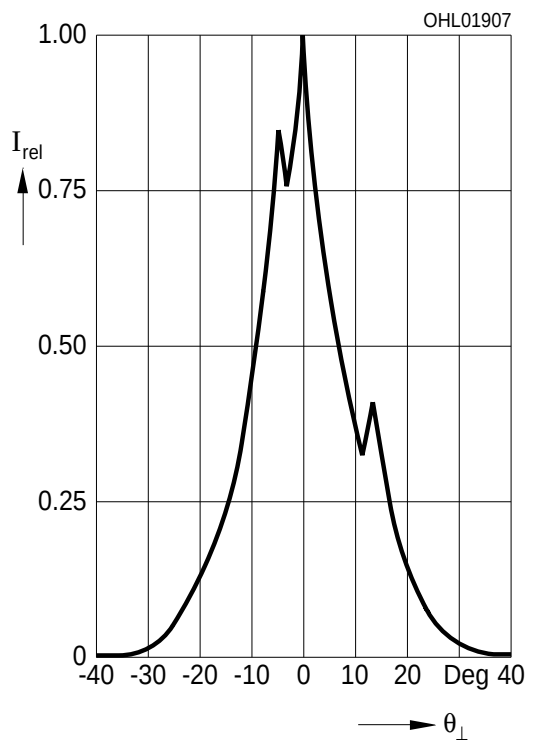
Optical spectrum, relative intensity I_{rel} vs. wavelength (P_{opt} = 70 W, t_p = 30 ns) λ



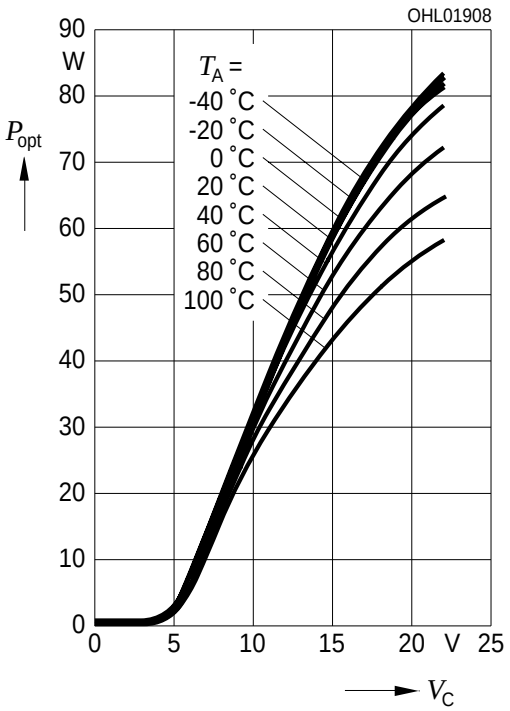
Far-field distribution parallel to junction I_{rel} vs. angle $\theta_{||}$ (P_{opt} = 70 W, t_p = 30 ns)



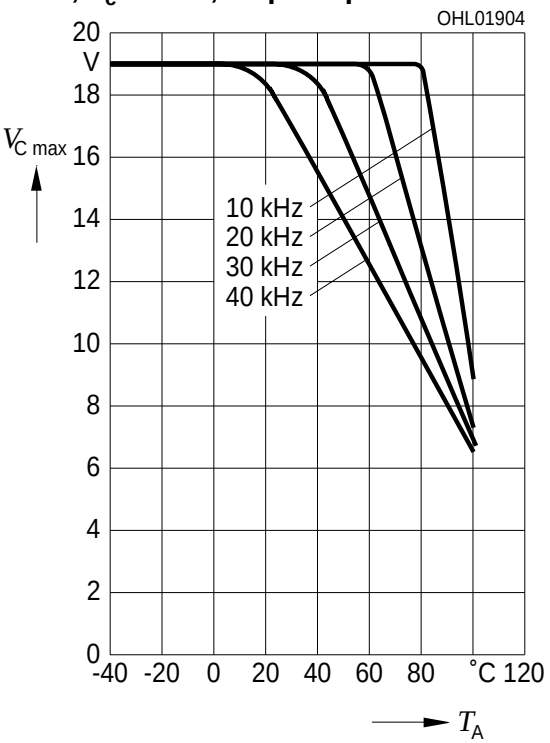
Far-field distribution perpendicular to junction I_{rel} vs. angle $\theta_\perp$ (P_{opt} = 70 W, t_p = 30 ns)



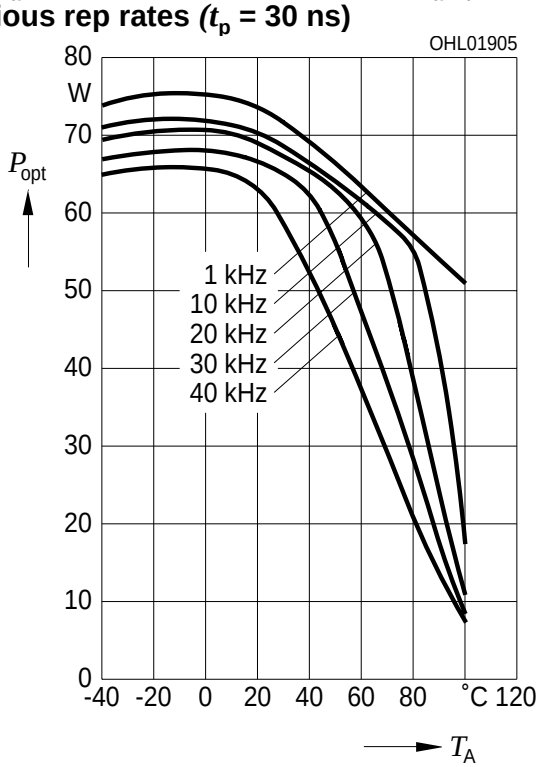
Optical output power P_{opt} vs charge voltage V_c (t_p = 30 ns, PRF = 1 kHz) at different ambient temperature T_{amb}



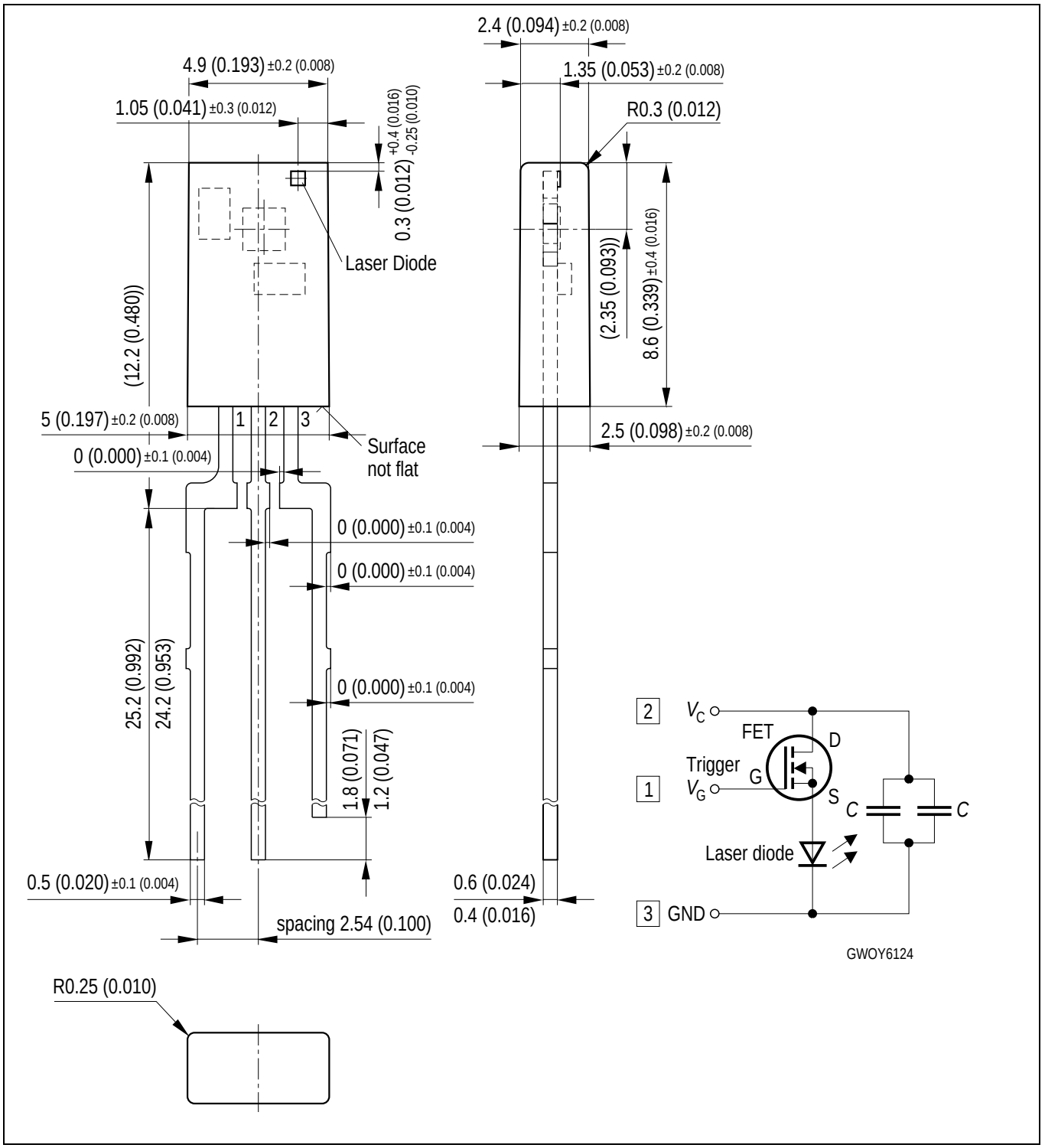
Maximum allowed charge voltage $V_{c,max}$ vs. ambient temperature T_{amb} at various rep rates (t_p=30 ns, V_c<=19 V, chip temperature<=105 °C)



Peak output power at maximum charge voltage $V_{c,max}$ vs. ambient temperature T_{amb} at various rep rates (t_p = 30 ns)



Maßzeichnung
Package Outlines



Maße in mm (inch) / Dimensions in mm (inch).

Published by
OSRAM Opto Semiconductors GmbH
Wernerwerkstrasse 2, D-93049 Regensburg
www.osram-os.com

EU RoHS and China RoHS compliant product

此产品符合欧盟 RoHS 指令的要求；

按照中国的相关法规和标准，不含有毒有害物质或元素。

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.

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.

Components used in life-support devices or systems must be expressly authorized for such purpose! Critical components [1] , may only be used in life-support devices or systems [2] with the express written approval of OSRAM OS.

[1] A critical component is a component usedin a life-support device or system whose failure can reasonably be expected to cause the failure of that life-support device or system, or to affect its safety or effectiveness of that device or system.

[2] Life support devices or systems are intended (a) to be implanted in the human body, or (b) to support and/or maintain and sustain human life. If they fail, it is reasonable to assume that the health of the user may be endangered.