

# Nanostack Pulsed Laser Diode in Plastic Package 75 W Peak Power Version 1.5

## SPL PL90\_3



### Features:

- Optical peak power up to 75 W
- Laser wavelength 905 nm
- Suited for short laser pulses from 1 to 100 ns
- Nanostack laser technology including 3 epitaxially stacked emitters
- Laser aperture 200  $\mu\text{m}$  x 10  $\mu\text{m}$
- Cost effective plastic package for high volume applications

### Applications

- Hand-held Laser Range Finders (LRF) for golfers, hunters, civil engineers
- Traffic surveillance (Laser speed gun, traffic recording, vehicle classification, distance measurement, fog detection)
- Professional laser sensors for distance measuring, positioning, protection

### Notes

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".

### Ordering Information

Type:	Number of emitters	Peak wavelength $\lambda_{\text{peak}}$ [nm]	Peak output power $P_{\text{opt}}$ [W]	Ordering Code
SPL PL90_3	3	905	75	Q62702P5353

**Maximum Ratings** (short time operation / kurzzeitiger Betrieb,  $T_A = 25\text{ °C}$ )

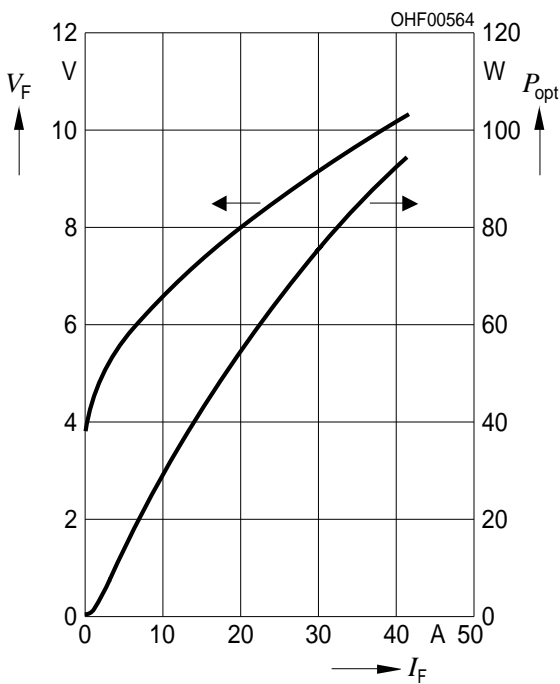
Parameter	Symbol	Values	Unit
Peak output power	$P_{\text{peak}}$	90	W
Forward current	$I_F$	40	A
Pulse width (FWHM)	$t_P$	100	ns
Duty cycle	dc	0.1	%
Reverse voltage	$V_R$	3	V
Operating temperature	$T_{\text{op}}$	-40 ... 85	°C
Storage temperature range	$T_{\text{stg}}$	-40 ... 100	°C
Soldering temperature <sup>1) page 5</sup>	$T_s$	260	°C

**Characteristics** ( $T_A = 25\text{ °C}$ )

Parameter	Symbol	Values			Unit
		min	typ	max	
Emission wavelength <sup>2) page 5</sup>	$\lambda_{\text{peak}}$	895	905	915	nm
Spectral width (FWHM) <sup>2) page 5</sup>	$\Delta\lambda$		7		nm
Peak output power <sup>2) page 5</sup>	$P_{\text{opt}}$	65	75	85	W
Threshold current	$I_{\text{th}}$	0.5	0.75	1	A
Operating voltage <sup>2) page 5</sup>	$V_{\text{op}}$	8	9	11	V
Fall Time	$t_f$		1		ns
Rise time	$t_r$		1		ns
Aperture size	w x h		200 x 10		$\mu\text{m}$ x $\mu\text{m}$
Beam divergence (FWHM) parallel to pn-junction	$\Theta_{\parallel}$		9		°
Beam divergence (FWHM) perpendicular to pn-junction	$\Theta_{\perp}$		25		°
Temperature coefficient of wavelength	$\Delta\lambda / \Delta T$		0.28		nm / K
Temperature coefficient of optical power	$\frac{\partial P_{\text{op}}}{P_{\text{op}} \partial T}$		-0.4		% / K
Thermal resistance	$R_{\text{th JA}}$		160		K / W

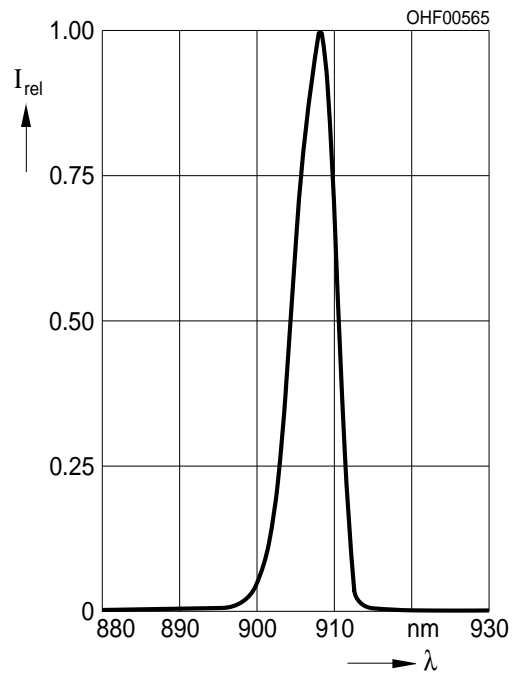
**Opt. Peak Power and Forward Voltage vs. Forward Current** <sup>3) page 5</sup>

$P_{opt}, V_F = f(I_F), T_A = 25\text{ }^\circ\text{C}$



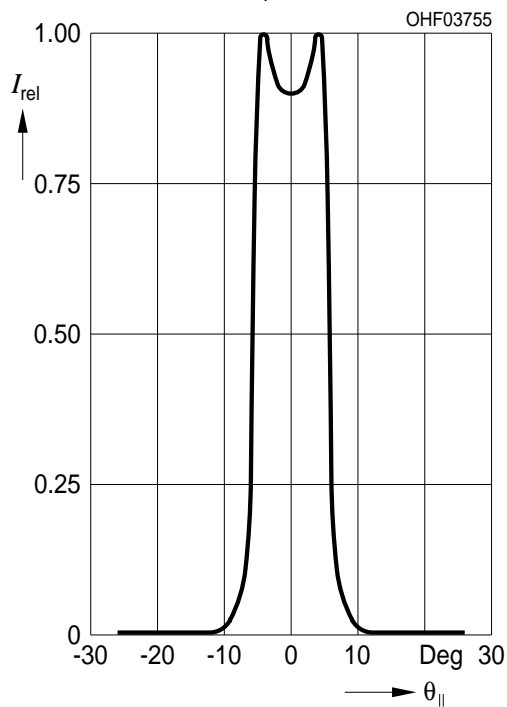
**Relative Spectral Emission** <sup>3) page 5</sup>

(typ)  $I_{rel} = f(\lambda), T_A = 25\text{ }^\circ\text{C}, P_{opt} = 75\text{ W}$



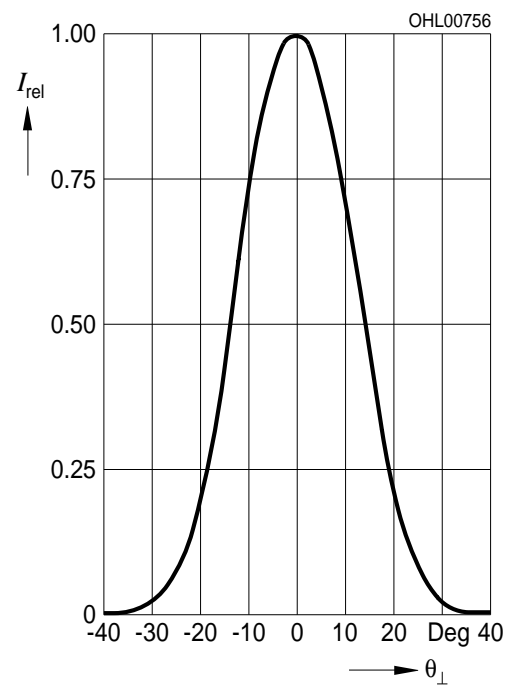
**Far-Field Distribution Parallel to pn-Junction** <sup>3) page 5</sup>

$I_{rel} = f(\Theta_{||}), T_A = 25\text{ }^\circ\text{C}, P_{opt} = 75\text{ W}$

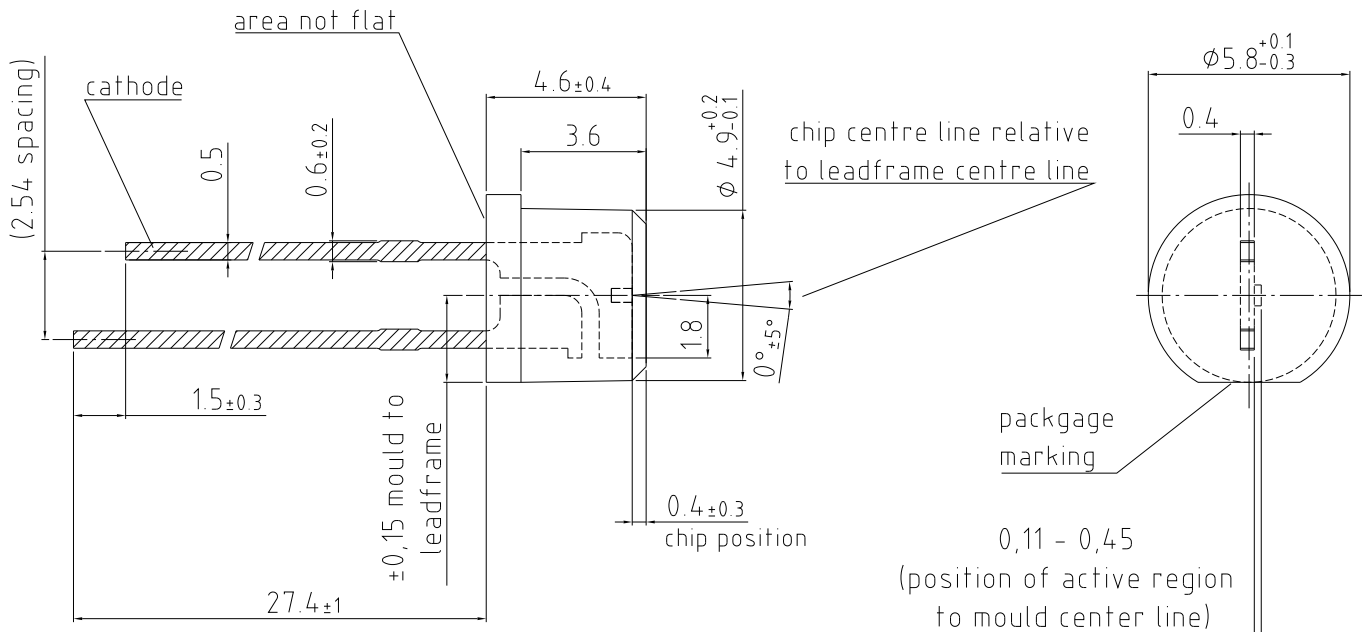


**Far-Field Distribution Perpendicular to pn-Junction** <sup>3) page 5</sup>

$I_{rel} = f(\Theta_{\perp}), T_A = 25\text{ }^\circ\text{C}, P_{opt} = 75\text{ W}$



### Package Outline



general tolerance  $\pm 0.1$

lead finish Sn 

Dimensions in mm.

C63062-A3440-A4-02

### Disclaimer

Language english will prevail in case of any discrepancies or deviations between the two language wordings.

### 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.

If printed or downloaded, please find the latest version in the Internet.

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\*\*) 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 and the life of the user may be endangered.

**Glossary**

- 1) **Soldering temperature:** 2 mm from bottom edge of case
- 2) **Standard operating conditions:** Standard operating conditions refer to pulses of 100 ns width at 1 kHz rate with 30 A operating current at  $T_A = 25\text{ °C}$ .
- 3) **Typical Values:** Due to the special conditions of the manufacturing processes of LED, 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.

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