

# Nanostack Pulsed Laser Diode in TO-56 Package 120 W Peak Power Draft Version $\alpha.0$

## SPL TL90AT08



### Features:

- Optical peak power up to 120 W
- Laser wavelength 905 nm
- Suited for short laser pulses from 1 to 100ns
- Nanostack laser technology including 3 epitaxially stacked emitters
- Contact width 200  $\mu\text{m}$
- Robust TO-can 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 TL90AT08	3	905	120	on request

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

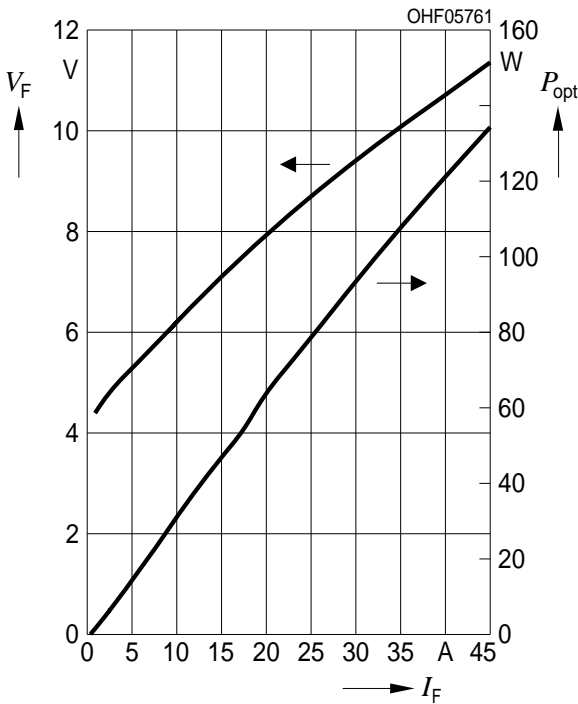
Parameter	Symbol	Values	Unit
Peak output power	$P_{\text{peak}}$	130	W
Forward current	$I_F$	45	A
Pulse width (FWHM)	$t_P$	100	ns
Duty cycle	dc	0.1	%
Reverse voltage	$V_R$	3	V
Operating temperature	$T_{\text{op}}$	-40 ... 85	°C
Storage temperature range	$T_{\text{stg}}$	-40 ... 100	°C
Soldering temperature <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>	$P_{\text{opt}}$		120		W
Threshold current	$I_{\text{th}}$		0.6		A
Operating voltage <sup>2) page 5</sup>	$V_{\text{op}}$		11		V
Beam divergence (FWHM) parallel to pn-junction	$\Theta_{\parallel}$		10		°
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	$R_{\text{th JA}}$		100		K / W

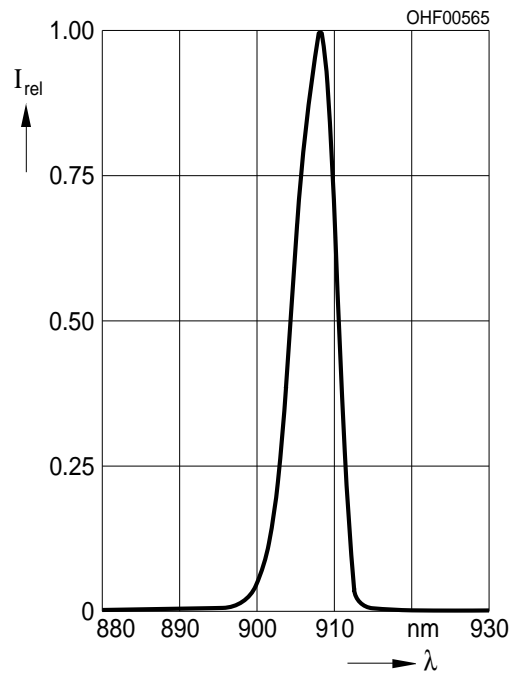
**Opt. Peak Power and Forward Voltage vs. Forward Current** <sup>3) page 5</sup>

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



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

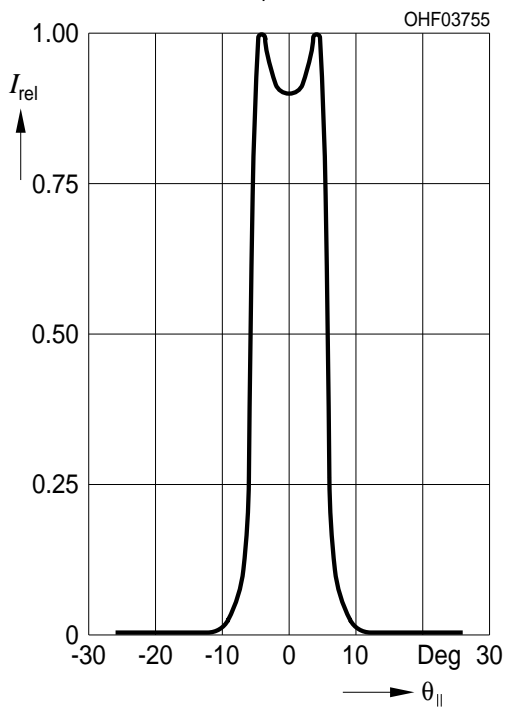
(typ)  $I_{rel} = f(\lambda), T_A = 25\text{ }^\circ\text{C}, P_{opt} = 120\text{ W}$



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

<sup>3) page 5</sup>

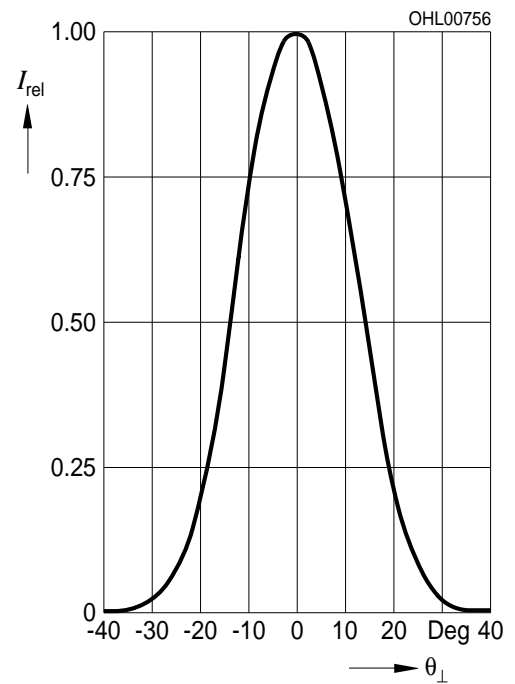
$I_{rel} = f(\Theta_{||}), T_A = 25\text{ }^\circ\text{C}, P_{opt} = 120\text{ W}$



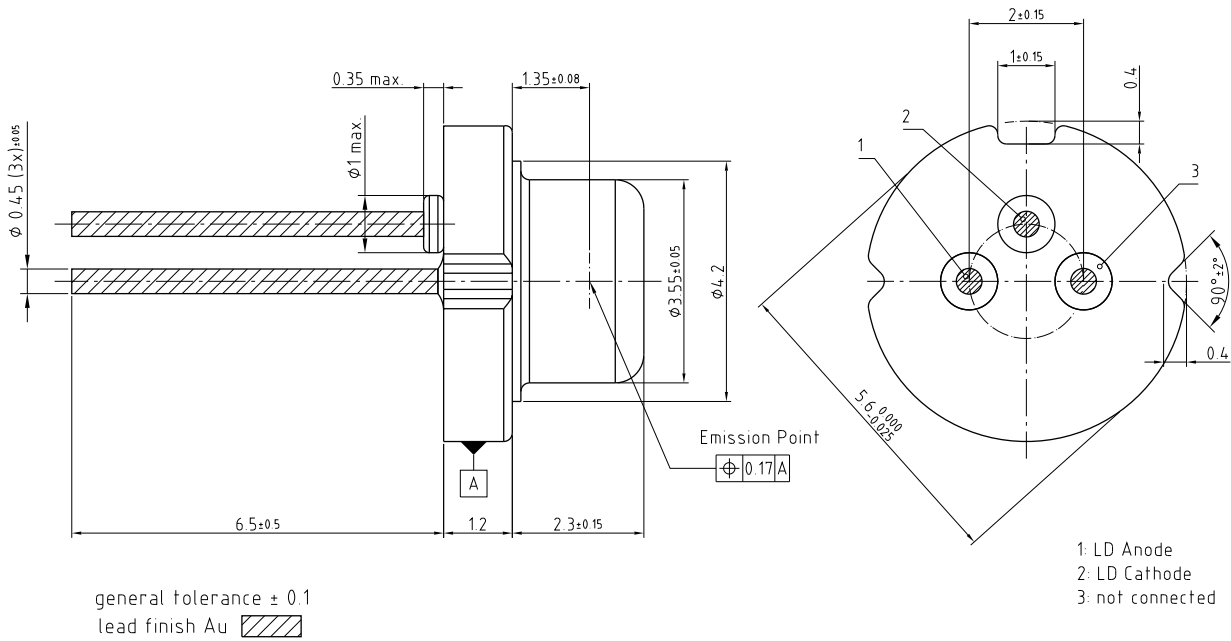
**Far-Field Distribution Perpendicular to pn-Junction** <sup>3) page 5</sup>

<sup>3) page 5</sup>

$I_{rel} = f(\Theta_{\perp}), T_A = 25\text{ }^\circ\text{C}, P_{opt} = 120\text{ W}$



Package Outline



C63062-A4334-A1-01

Dimensions in mm.

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**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 40 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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