

# Impuls-Laserdiode im Plastikgehäuse, 4 W Spitzenleistung Pulsed Laser Diode in Plastic Package, 4 W Peak Power

**Lead (Pb) Free Product - RoHS Compliant**

**SPL PL90\_0**  
**SPL PL90\_0-B**



## Besondere Merkmale

- Optische Spitzenleistung bis zu 4 W
- Laserwellenlänge 905 nm
- Geeignet für kurze Laserpulse von 1 bis 100 ns
- Austrittsöffnung 60  $\mu\text{m}$   $\times$  2  $\mu\text{m}$
- Kostengünstiges Plastikgehäuse für hochvolumige Anwendungen

## Anwendungen

- Tragbare Laserentfernungsmessgeräte für Golfer, Jäger, Bauingenieure
- Automobilanwendungen (Intelligenter Tempomat, Aufprall-Vorerkennung, Kollisionsvermeidung, adaptive Rückleuchten)
- Verkehrsüberwachung (Laserradarpistole, Verkehrszählung, Fahrzeug-Klassifizierung, Abstandsmessung, Nebelerkennung)
- Professionelle Lasersensoren für Abstandsmessung, Positionierung, Sicherheit

## 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 Sicherheitsrichtlinien der IEC-Norm 60825-1 behandelt werden.

## Features

- Optical peak power up to 4 W
- Laser wavelength 905 nm
- Suited for short laser pulses from 1 to 100 ns
- Laser aperture 60  $\mu\text{m}$   $\times$  2  $\mu\text{m}$
- Cost effective plastic package for high volume applications

## Applications

- Hand-held Laser Range Finders (LRF) for golfers, hunters, civil engineers
- Automotive applications (Adaptive Cruise Control (ACC), pre-crash detection, collision avoidance, adaptive rear lighting)
- Traffic surveillance (Laser speed gun, traffic recording, vehicle classification, distance measurement, fog detection)
- Professional laser sensors for distance measuring, positioning, protection

## 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	Opt. Spitzenausgangsleistung Opt. Peak Power	Wellenlänge Wavelength	Bestellnummer Ordering Code
SPL PL90_0	4 W	905 nm	Q62702P5270
SPL PL90_0-B	4 W	905 nm	Q65110A8790

**Grenzwerte (kurzzeitiger Betrieb)** (Umgebungstemperatur  $T_A = 25\text{ °C}$ )

**Maximum Ratings (short time operation)** (Ambient temperature  $T_A = 25\text{ °C}$ )

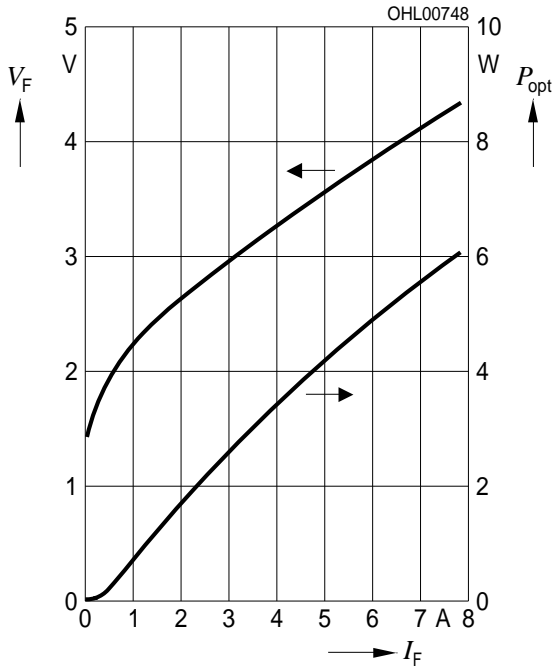
Parameter Parameter	Symbol Symbol	Werte Values		Einheit Unit
		min.	max.	
Spitzenausgangsleistung Peak output power	$P_{\text{peak}}$	–	5	W
Spitzendurchlaßstrom Peak forward current	$I_F$	–	6	A
Pulsbreite (Halbwertsbreite) Pulse width (FWHM)	$t_p$	–	100	ns
Tastverhältnis Duty cycle	<i>d.c.</i>	–	0.1	%
Sperrspannung Reverse voltage	$V_R$	–	3	V
Betriebstemperatur Operating temperature	$T_{\text{op}}$	- 40	+ 85	°C
Lagertemperatur Storage temperature	$T_{\text{stg}}$	- 40	+ 100	°C
Löttemperatur ( $t_{\text{max}} = 10\text{ s}$ , 2 mm von Gehäuseunterseite) Soldering temperature ( $t_{\text{max}} = 10\text{ s}$ , 2 mm from bottom edge of case)	$T_s$	–	+ 260	°C

**Optische Kennwerte** (Umgebungstemperatur  $T_A = 25\text{ °C}$ )  
**Optical Characteristics** (Ambient temperature  $T_A = 25\text{ °C}$ )

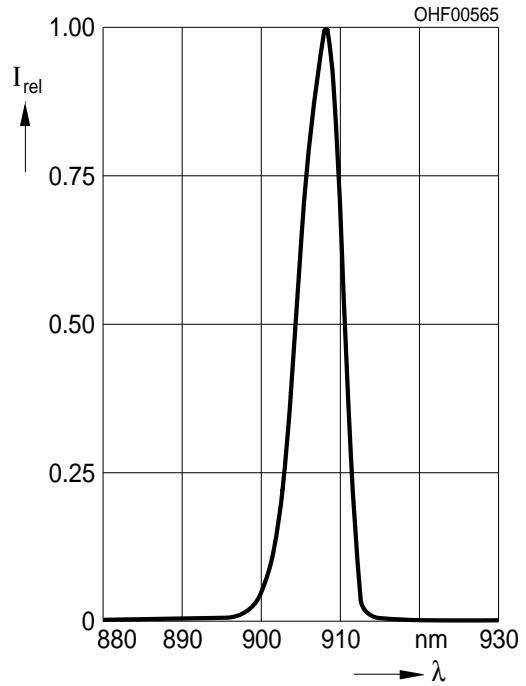
Parameter Parameter	Symbol Symbol	Werte Values			Einheit Unit
		min.	typ.	max.	
Zentrale Emissionswellenlänge <sup>1)</sup> Emission wavelength <sup>1)</sup>	$\lambda_{\text{peak}}$	895	905	915	nm
Spektralbreite (Halbwertsbreite) <sup>1)</sup> Spectral width (FWHM) <sup>1)</sup>	$\Delta\lambda$	–	3	–	nm
Spitzenausgangsleistung <sup>1)</sup> Peak output power <sup>1)</sup>	$P_{\text{op}}$	3	4	5	W
Schwellstrom Threshold current	$I_{\text{th}}$	0.15	0.3	0.5	A
Betriebsspannung <sup>1)</sup> Operating voltage <sup>1)</sup>	$V_{\text{op}}$	2.7	3.4	4.0	V
Minimale Anstiegs- und Abfallzeit (10% ...90%) Minimum rise and fall time (10% ... 90%)	$t_r, t_f$	–	1	–	ns
Austrittsöffnung Aperture size	$w \times h$	–	$60 \times 2$	–	$\mu\text{m}$
Strahldivergenz (Halbwertsbreite) Beam divergence (FWHM)	$\theta_{\parallel} \times \theta_{\perp}$	–	$9 \times 25$	–	Grad deg.
Temperaturkoeffizient der Wellenlänge Temperature coefficient of wavelength	$\partial\lambda / \partial T$	–	0.28	–	nm/K
Temperaturkoeffizient der opt. Ausgangsleistung Temperature coefficient of optical power	$\partial P_{\text{op}} / P_{\text{op}} \partial T$	–	-0.4	–	%/K
Thermischer Widerstand Thermal resistance	$R_{\text{th JA}}$	–	160	–	K/W

<sup>1)</sup> Standardbetriebsbedingungen beziehen sich auf eine Pulsbreite von 100 ns bei einer Frequenz von 1 kHz und einem Betriebsstrom von 5 A bei  $T_A = 25\text{ °C}$ .  
Standard operating conditions refer to pulses of 100 ns pulse width at 1 kHz rate with 5 A operating current at  $T_A=25\text{ °C}$ .

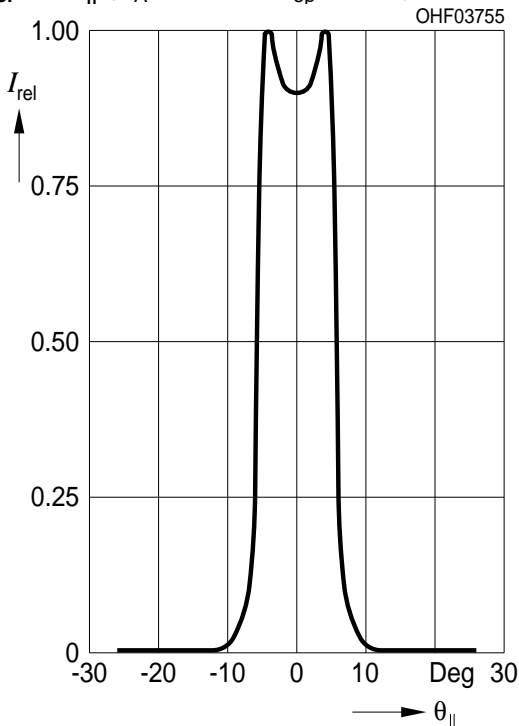
Optical output power  $P_{opt}$  and forward voltage  $V_F$  vs. forward current  $I_F$  ( $T_A = 25\text{ }^\circ\text{C}$ )



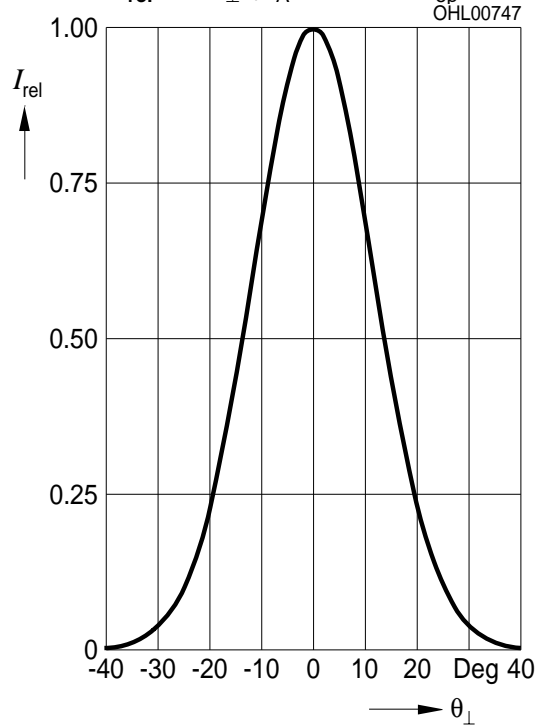
Optical spectrum, relative intensity  $I_{rel}$  vs. wavelength  $\lambda$  ( $T_A = 25\text{ }^\circ\text{C}$ ,  $P_{op} = 4\text{ W}$ )



Far-field distribution parallel to junction  $I_{rel}$  vs.  $\theta_{||}$  ( $T_A = 25\text{ }^\circ\text{C}$ ,  $P_{op} = 4\text{ W}$ )

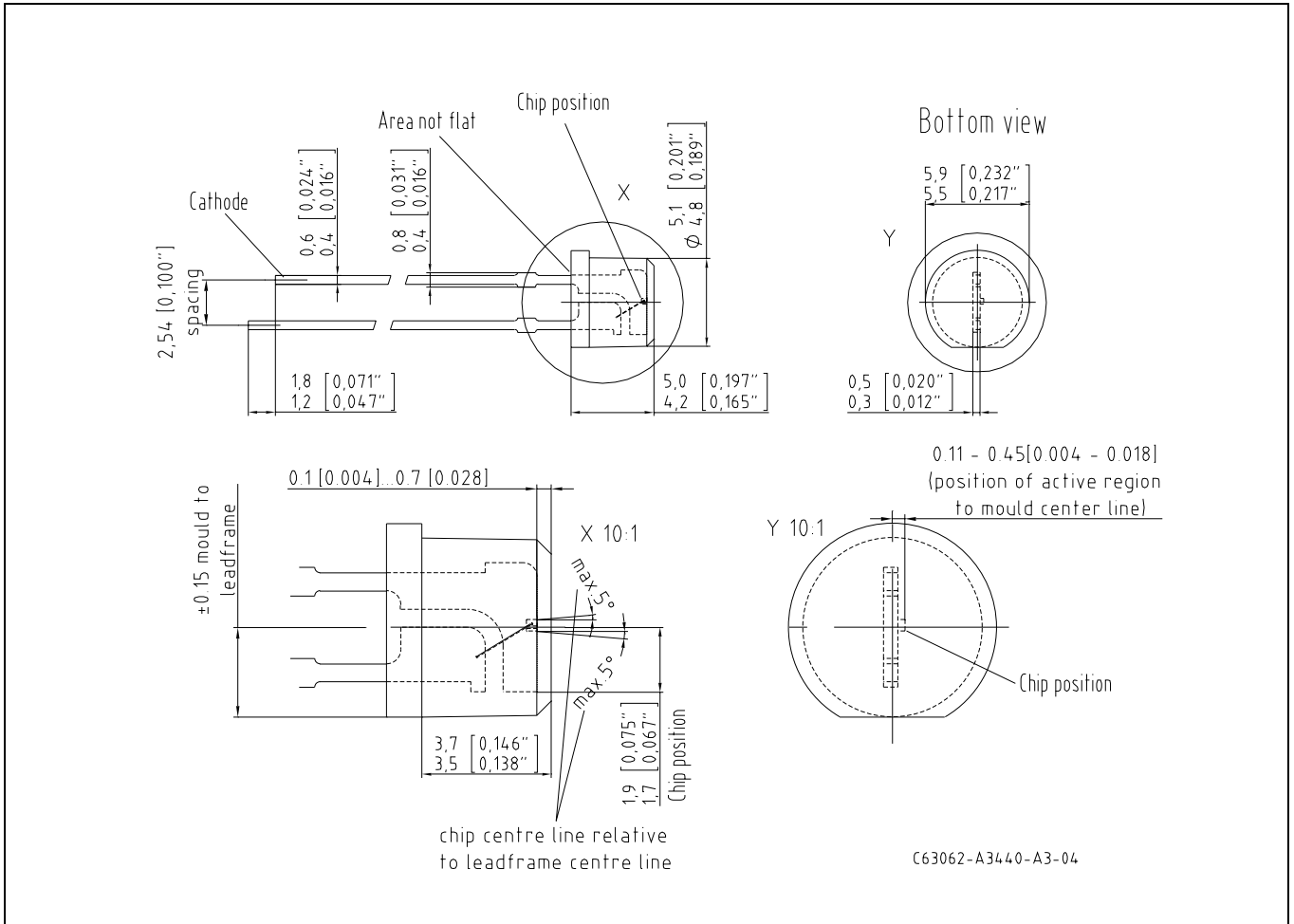


Far-field distribution perpendicular to junction  $I_{rel}$  vs.  $\theta_{\perp}$  ( $T_A = 25\text{ }^\circ\text{C}$ ,  $P_{op} = 4\text{ W}$ )



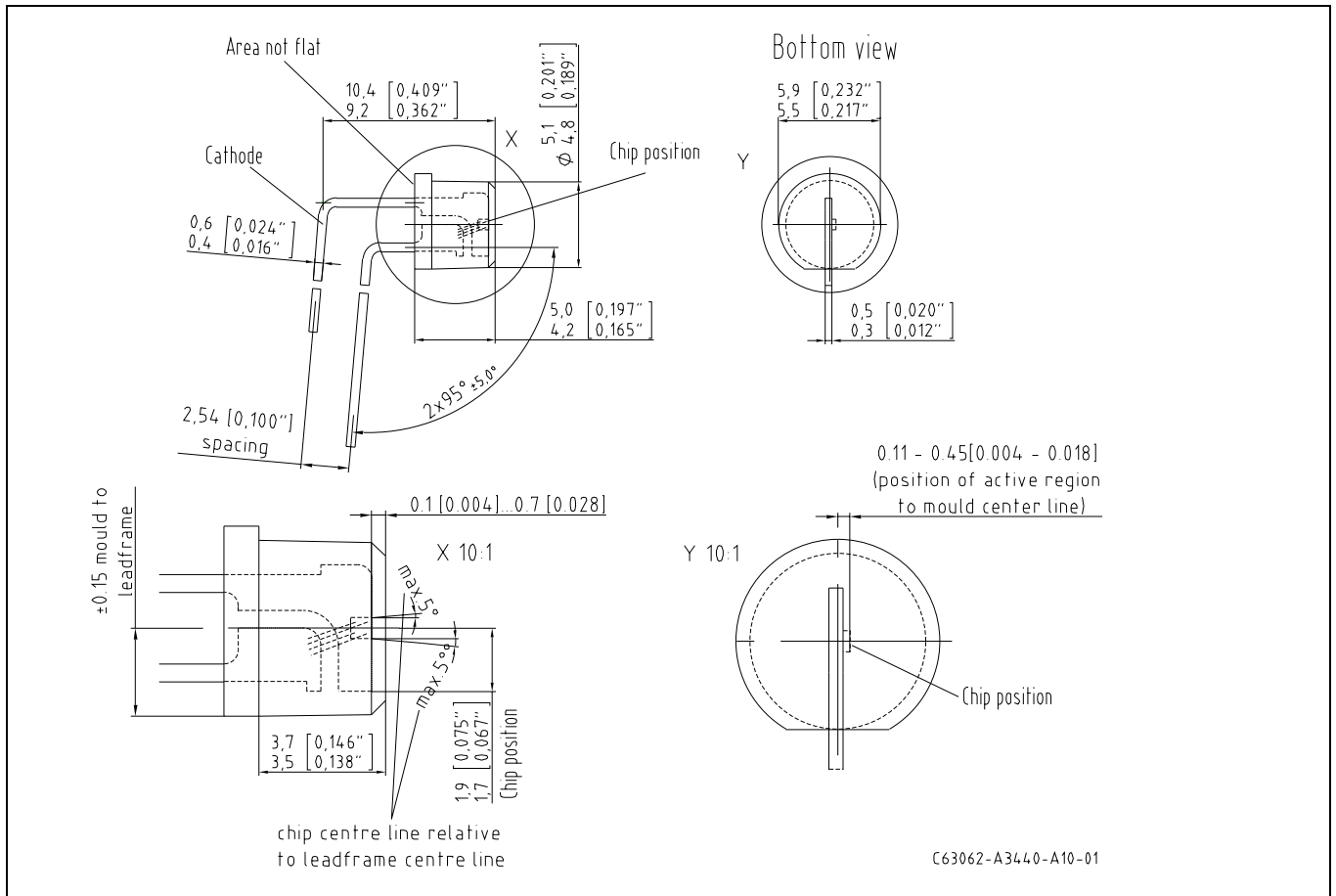
Maßzeichnung  
Package Outlines

SPL PL90\_0



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

SPL PL90\_0-B



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

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