

OSRAM SPL PL90AT03

Datasheet

Preliminary datasheet version

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Radial T1 3/4

SPL PL90AT03

Pulsed Laser Diode in Plastic Package 75 W Peak Power



Applications

- 3D Sensing
- Robotics

Features

- Laser wavelength 905 nm
- Suited for short laser pulses from 1 to 100 ns
- Contact width 70 μm
- Cost effective plastic package for high volume applications

Ordering Information

Type	Peak output power typ. $I_F = 25\text{ A}; t_p = 30\text{ ns}; f = 1\text{ kHz}; T_A = 25\text{ °C}$ P_{opt}	Ordering Code
SPLPL90AT03	75 W	Q65113A5477

Maximum Ratings

$T_A = 25\text{ °C}$

Parameter	Symbol	Values	
Operating temperature	T_{op}	min. max.	-40 °C 85 °C
Storage temperature	T_{stg}	min. max.	-40 °C 100 °C
Peak output power ¹⁾	P_{opt}	max.	75 W
Forward current	I_F	max.	25 A
Pulse width (FWHM)	t_p	max.	30 ns
Duty cycle	D	max.	0.1 %
Soldering temperature $t_{max} = 10\text{ }\mu\text{s}$	T_s	max.	260 °C

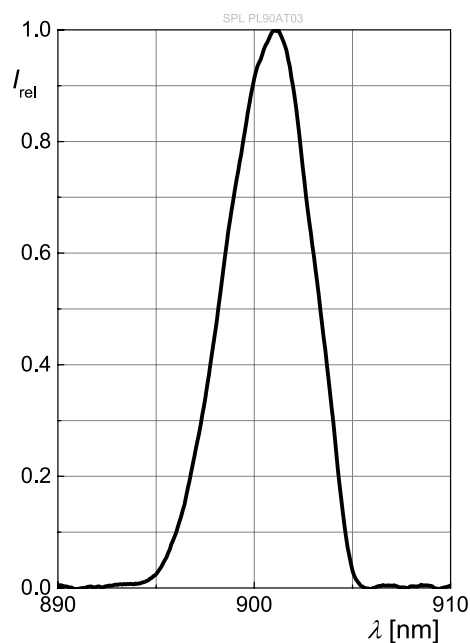
Characteristics

 $I_F = 8 \text{ A}$; $t_p = 100 \text{ ns}$; $T_A = 25 \text{ °C}$

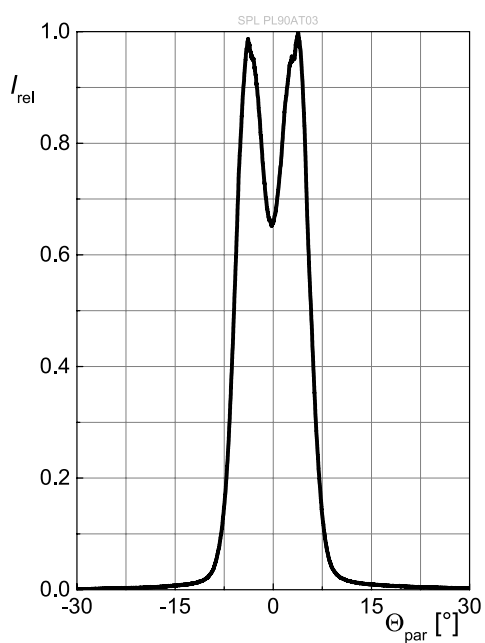
Parameter	Symbol		Values
Operating voltage	V_{op}	typ.	6 V
Peak wavelength ²⁾	λ_{peak}	min. typ. max.	898 nm 905 nm 912 nm
Spectral bandwidth (FWHM)	$\Delta\lambda$	typ.	5 nm
Peak output power ¹⁾	P_{opt}	min. typ. max.	20 W 25 W 30 W
Beam divergence (FWHM) parallel to pn-junction	$\Theta_{ }$	typ.	12 °
Beam divergence (FWHM) perpendicular to pn-junction	$\Theta_{\perp}$	typ.	25 °
Threshold current	I_{th}	typ.	0.3 A
Temperature coefficient of wavelength	TC_{λ}	typ.	0.28 nm / K
Temperature coefficient of optical power	TC_P	typ.	-0.4 % / K
Thermal resistance junction ambient real	R_{thJA}	typ.	200 K / W

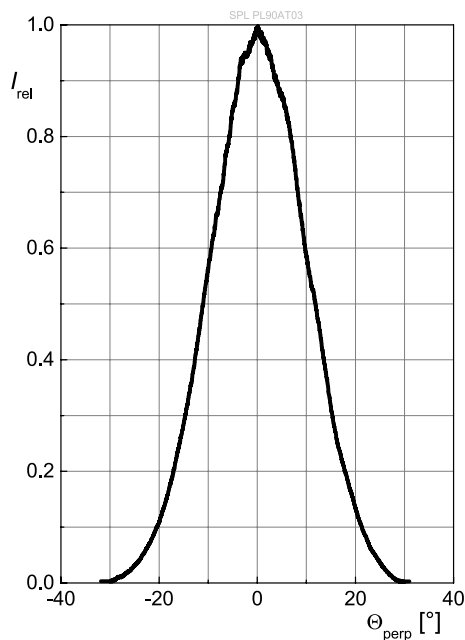
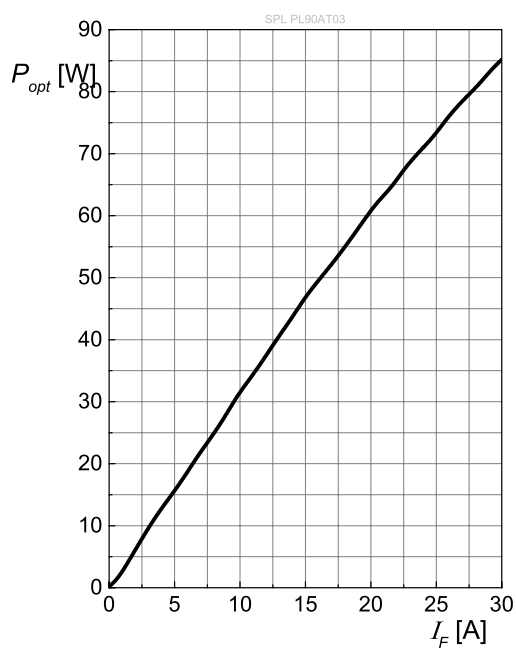
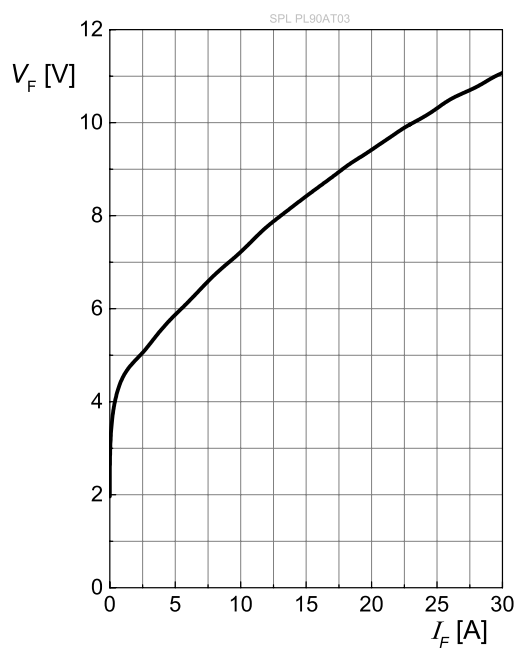
Relative Spectral Emission 3), 4)

$$I_{\text{e,rel}} = f(\lambda); I_{\text{F}} = 25 \text{ A}; P_{\text{opt}} = 75 \text{ W}; t_{\text{p}} = 30 \text{ ns}$$

**Far-Field Distribution Parallel to pn-Junction** 3), 4)

$$I_{\text{rel}} = f(\Theta_{\text{II}}); P_{\text{opt}} = 75 \text{ W}; t_{\text{p}} = 30 \text{ ns}; f = 1 \text{ kHz}$$



Far-Field Distribution Perpendicular to pn-Junction ^{3), 4)} $I_{\text{rel}} = f(\Theta_{\perp}); P_{\text{opt}} = 75\text{W}; t_p = 30\text{ns}; f = 1\text{kHz}$ **Optical Output Power** ^{3), 4)} $P_{\text{opt}} = f(I_F); t_p = 30\text{ ns}; f = 1\text{ kHz}$ **Forward Voltage** ^{3), 4)} $V_F = f(I_F); t_p = 30\text{ ns}; f = 1\text{ kHz}$ 

Technical drawing of a leadframe assembly, showing side and top views with dimensions and labels.

Side View Dimensions:

- Overall length: 27.4 ± 1
- Distance from left end to start of cathode: 1.5 ± 0.3
- Cathode length: 0.5
- Distance between cathodes: 0.6 ± 0.2
- Distance from end of cathodes to start of chip: 4.6 ± 0.4
- Chip length: 3.6
- Chip width: $\phi 4.9_{-0.1}^{+0.2}$
- Chip position offset: 0.4 ± 0.3
- Chip angle: $0^\circ \pm 5^\circ$
- Chip height: 1.8
- Distance from chip to end of leadframe: ± 0.15 mould to leadframe
- Area not flat: Indicated by a hatched pattern on the top surface.

Top View Dimensions:

- Overall width: $\phi 5.8_{-0.3}^{+0.1}$
- Distance from center to chip center line: 0.4
- Package marking: Indicated by a dashed circle.
- Position of active region to mould center line: $0.11 - 0.45$

General Tolerances:

- General tolerance: ± 0.1
- Lead finish: Sn

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Glossary

- 1) **Brightness:** The brightness values are measured with a tolerance of $\pm 11\%$.
- 2) **Wavelength:** The wavelengths are measured with a tolerance of ± 1 nm.
- 3) **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.
- 4) **Testing temperature:** TA = 25°C (unless otherwise specified)
- 5) **Tolerance of Measure:** Unless otherwise noted in drawing, tolerances are specified with ± 0.1 and dimensions are specified in mm.

Revision History

Version	Date	Change
0.0	2023-01-18	Initial Version

Preliminary datasheet version



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