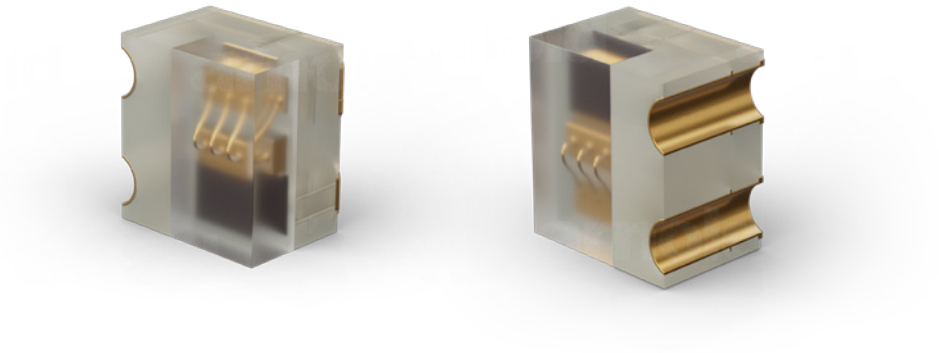
905SMD-SERIES

Surface Mount High-Power Multi-Junction Pulsed Laser Diodes



FEATURES

/ Multi-junction device up to 120 W
/ Low inductance package (1 nH) suitable for short pulses
/ 75 µm, 150 µm, and 225 µm source size
/ Proven InGaAs / GaAs high reliability structure
/ High power multi-junction structure for narrow far field
/ Excellent temperature stability
/ Reflow surface mount device MSL3 rating
/ Top or side-looking

APPLICATIONS

/ LiDAR
/ Range finding
/ Surveying equipment
/ Obstacle detection
/ Medical

10/24 / V8 / ED-MaL / lc-pld/905smd-series-hp-multi-junction-pld

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SPECIFICATIONS

Generic Optical Characteristics at t_{RT} = 21 °C and I_{FM}

	Min	Typ	Max
Wavelength of peak radiant intensity λ [nm]	895	905	915
Spectral bandwidth Δλ at 50 % intensity points [nm]		5	
Wavelength temperature coefficient [nm/°C]		0.28	
Beam spread at 50 % peak intensity [°] Parallel to junction plane ∥ Perpendicular to junction plane ⊥ Parallel to junction |/e² Perpendicular to junction |/e²		 10 23 15 48	
Polarization ratio TE/(TE+TM) [%]		>98	

Typical Product Characteristics at t_{RT} = 21 °C, t_W = 100 ns, P_{rr} = 1 kHz

Parameter	905D1S3JT03SMD	905D1S3JT06SMD	905D1S3JT09SMD
Output P_O at I_{FM} [W]	35	70	105
Emitting area [µm]	85 x 10	160 x 10	235 x 10
Threshold current, I_{TH} [mA]	300	600	800
Max. peak current I_{FM} [A]	13.5	27	40
Forward voltage at I_{FM} [V]	9.5	11.8	13.2

Given the very low inductance of SMD packaging and with proper design of the driving circuitry, very short current pulses (~5 ns) can be applied and therefore higher output powers can be reached, as shown in Figure 6. Special care must always be taken to avoid exceeding maximal rate duty factor. LASER COMPONENTS experts are available to help support your design efforts.

Absolute Maximum Ratings

Maximum Ratings	Limiting Values
Peak reverse voltage [V]	36
Pulse duration [ns]	150
Duty factor [%]	0.1
Temperature [°C] Storage Operating	 -55 to +100 -45 to +85
Max. soldering temperature [°C]	235 (during soldering reflow (see Figure 5)) 250 (for less than 30 seconds, if hand soldering)

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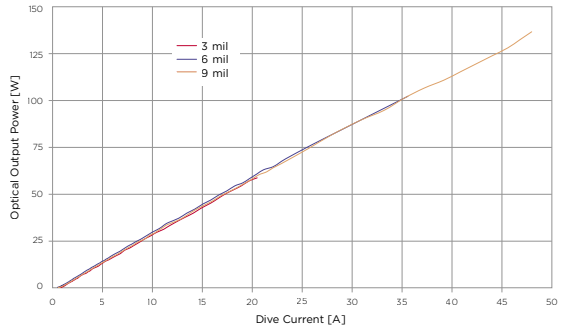

Figure 1: Output power vs. forward current

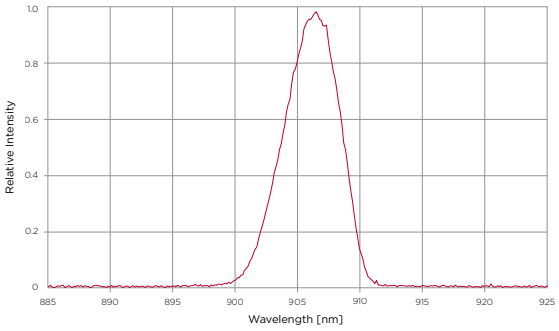

Figure 2: Spectral intensity distribution

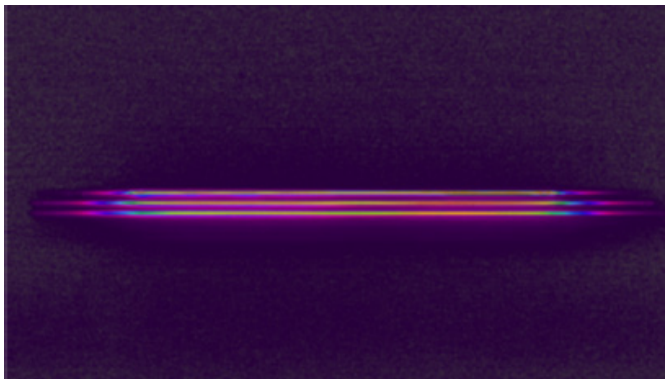

Figure 3: Near field beam profile

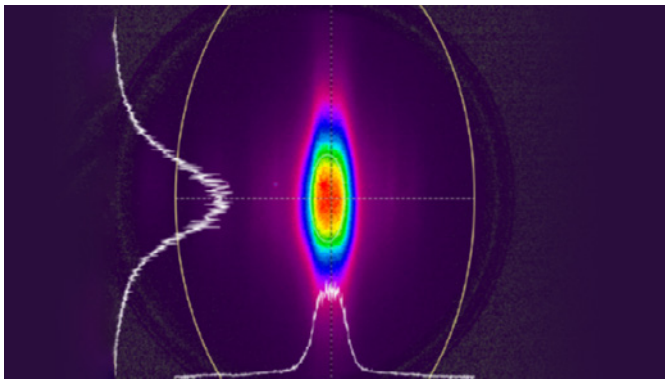

Figure 4: Far field beam profile

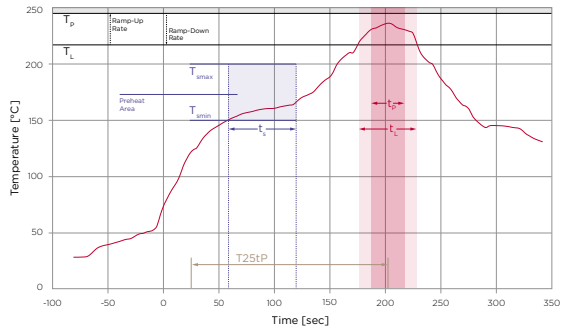

Figure 5: Typical recommended soldering reflow profile. Note: Reflow oven profile must follow J-STD-020 JEDEC Standard with two cycles maximum

Profile Feature Pb-Free Assembly	Symbol	Value
Temperature Min [°C]	T_{smin}	150
Temperature Max [°C]	T_{smax}	200
Time from T_{smin} to T_{smax} [sec]	t_s	60 – 120 max.
Ramp-up rate (T_L to T_p) [°C/sec]		3 max.
Liquidous temperature [°C]	T_L	217
Time maintained above T_L [sec]	t_L	60 – 150
Peak temperature [°C]	T_p	245 – 255 max.
Time maintained for peak [sec]	t_p	30
Ramp-down rate (T_p to T_L) [°C/sec]		6 max.
Time 25 °C to peak temperature [min]	T25tP	4 – 8 max.

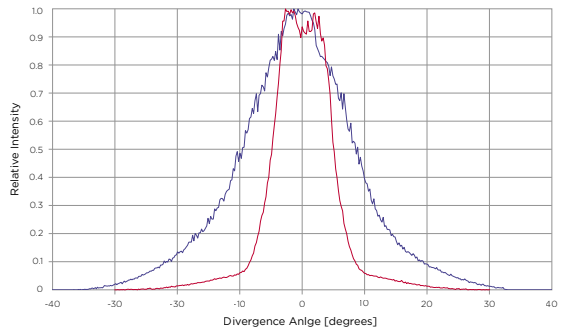

Figure 6: Far field emission parallel and perpendicular to junction plane

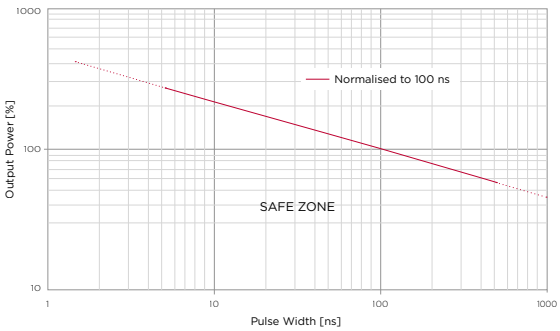

Figure 7: Safe operating limits at maximum duty factor

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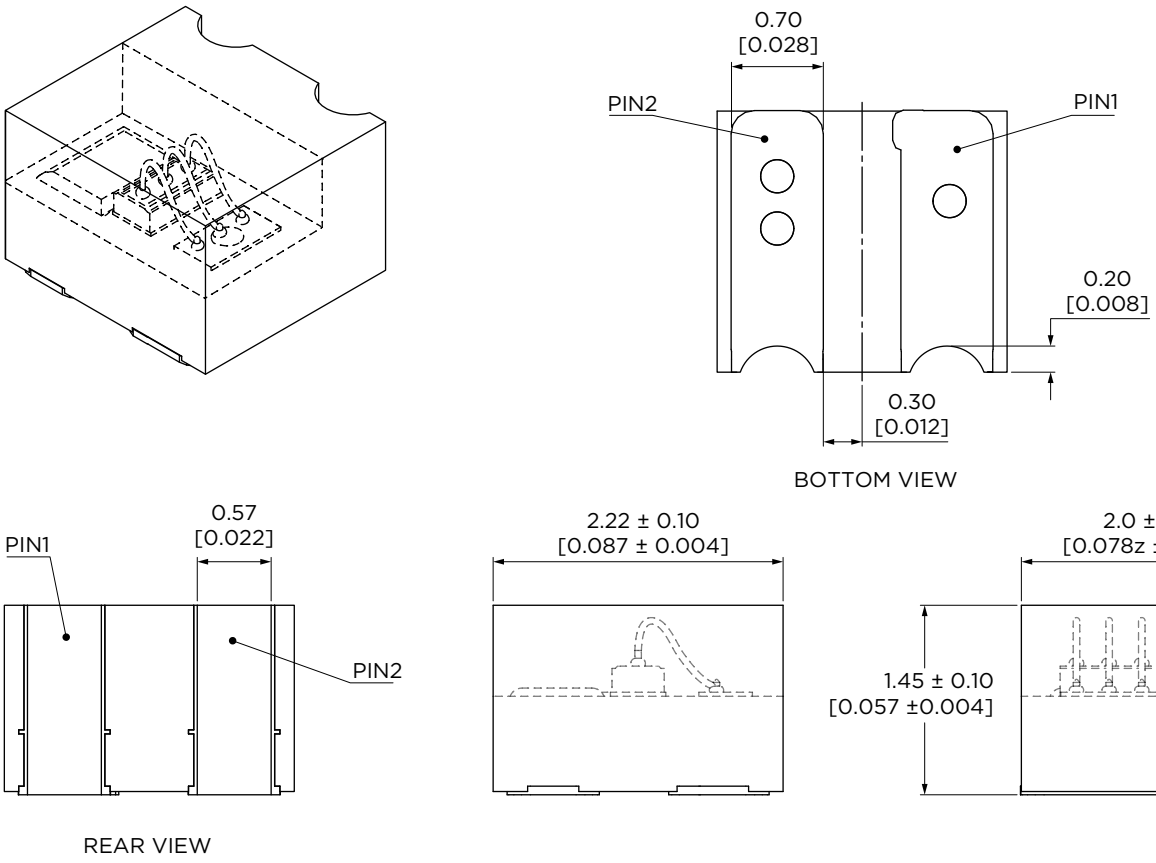
TECHNICAL DRAWING

Package drawing



Package SMD
Pin out:

1. LD Anode (+)
2. LD Cathode (-)

Units: mm [inch]
Dimensions are in millimeters - [inches] and are for reference only.

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PRODUCT NUMBER DESIGNATIONS

Emitting Source Size [µm]

905	D	1S	3JT	XX	-	SMD

03 (85 µm)
06 (160 µm)
09 (235 µm)

Footprint is available upon request.

PRODUCT CHANGES

LASER COMPONENTS reserves the right to make changes to the product(s) or information contained herein without notice. No liability is assumed as a result of their use or application.

ORDERING INFORMATION

Products can be ordered directly from LASER COMPONENTS or its representatives.
For a complete listing of representatives, visit our website at www.lasercomponents.com

Custom designed products are available on request.

LASER SAFETY

Personal Hazard

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«.

RoHS compliant

Handling Precautions

Products are subject to the risks normally associated with sensitive electronic devices including static discharge, transients, and overload.

Class IIIb LASER PRODUCT
Max. Peak Power: 400 Watts
Wavelength: 905 nm

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