

High Power/Low Cost Single- and Multi-Junction Pulsed Laser Diodes 905D1S0xUA- and 905D1S3JT0xUA-Series

Features

- Single- and Multi-junction devices up to 115 W
- 75 µm, 150 µm and 225 µm source size
- 3.2 W/A efficiency
- Proven InGaAs / GaAs high reliability structure
- High power structure for narrow far field
- Excellent temperature stability
- Hermetic 5.6 mm CD and custom designed package
- Ultra-precise mechanical tolerances
- Fully RoHS compliant



Applications

- Range finding
- Surveying equipment
- Weapons simulation
- Obstacle detection
- Medical
- Automotive LiDAR

General Optical Characteristics at $t_{RT} = 21\text{ °C}$, I_{FM}

	Min	Typ	Max	Units
Wavelength of peak radiant intensity λ	895	905	915	nm
Spectral bandwidth $\Delta\lambda$ at 50% intensity points		5		nm
Wavelength temperature coefficient		0.28		nm/°C
Beam spread				
Parallel to junction plane \parallel FWHM		10		Degrees
Perpendicular to junction plane \perp FWHM		23		Degrees
Parallel to junction $1/e^2$		15		Degrees
Perpendicular to junction $1/e^2$		48		Degrees
Polarization ratio TE/(TE+TM)		>98%		

Typical Product Characteristics at $t_{RT} = 21\text{ °C}$, $t_w = 100\text{ ns}$, $P_{rr} = 1\text{ kHz}$

Parameter	905D1S03UA	905D1S09UA	905D1S3JT03UA	905D1S3JT06UA	905D1S3JT09UA
Output P_O at I_{FM}	6.5 W	19 W	40 W	80 W	115 W
Emitting area	85 x 1 μm	235 x 1 μm	85 x 10 μm	160 x 10 μm	235 x 10 μm
Threshold current, I_{TH}	250 mA	750 mA	300 mA	600 mA	800 mA
Max. peak current I_{FM}	7 A	22 A	13.5 A	27 A	40 A
Forward voltage at I_{FM}	3 V	4.7 V	9.5 V	11.8 V	13.2 V

Absolute Maximum Ratings

Maximum ratings	Limiting values	
	905D1S0xUA	905D1S3JT0xUA
Peak reverse voltage	6 V	36 V
Pulse duration	150 ns	
Duty factor	0.1%	
Temperature		
- Storage	-55 °C to + 125 °C	
- Operating	-40 °C to + 105 °C	
Lead soldering		
- 5 seconds max at	260 °C	

Figure 1a: Optical Output Power vs. Forward Current
905D1S0XUA (single junction units)

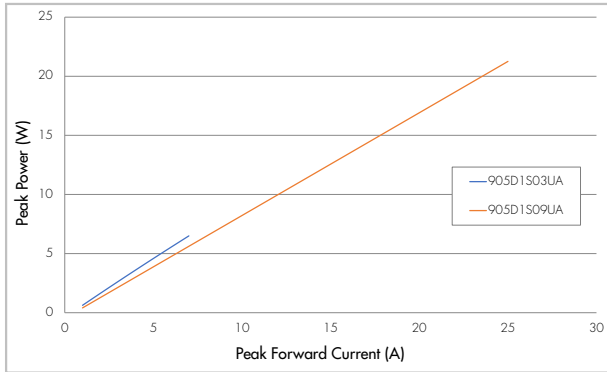


Figure 1b:
Output power vs. forward current (905D1S3JT0XUA)

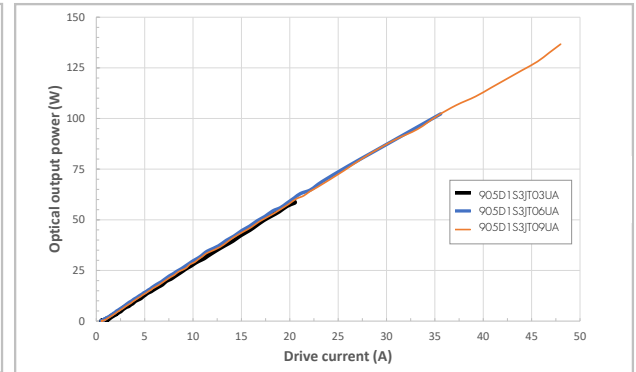


Figure 2:
Optical output power vs. temperature

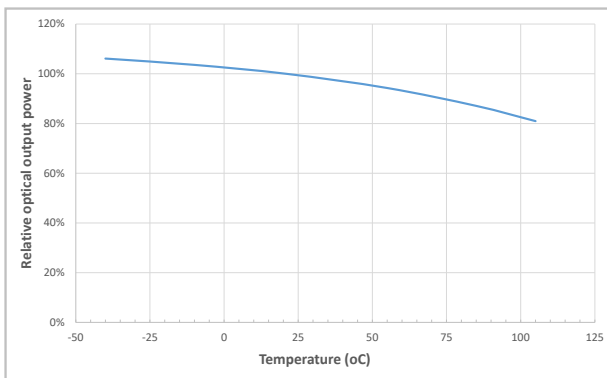


Figure 3:
Wavelength vs. temperature

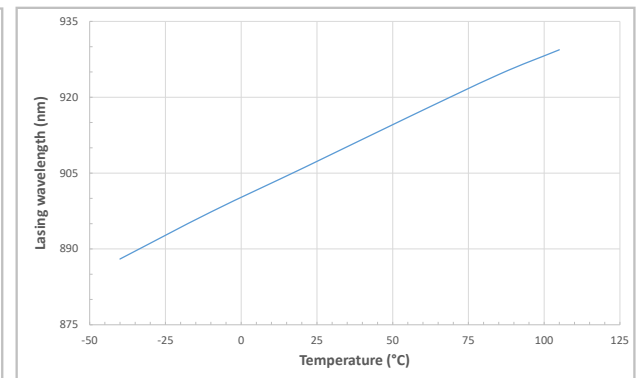


Figure 4: Optical Output Power vs. F#

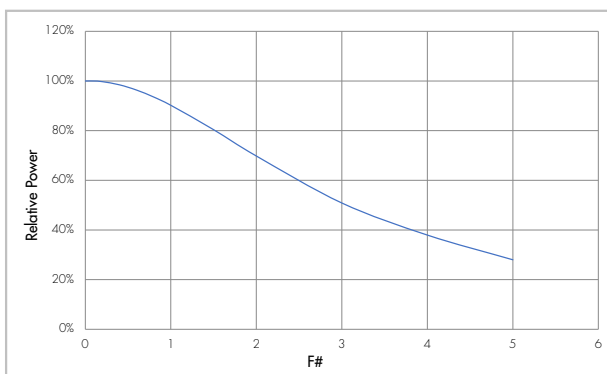


Figure 5:
Spectral intensity distribution

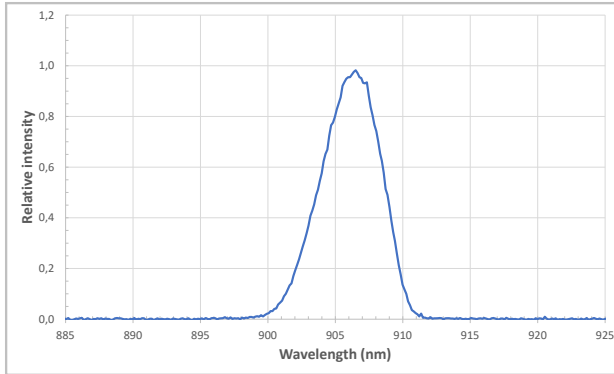


Figure 6:
Far field emission parallel and perpendicular to junction plane

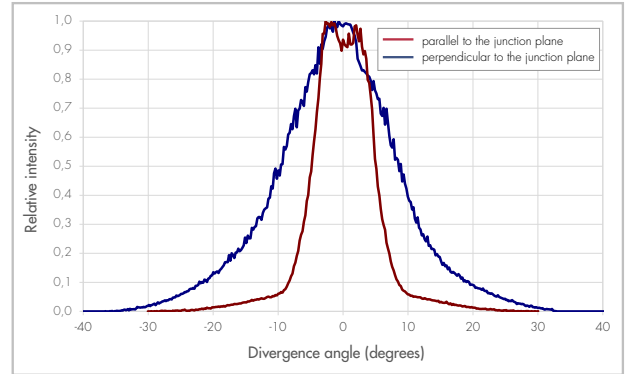


Figure 7a:
905D1S0XUA Single-junction units Static Forward Voltage vs. Current

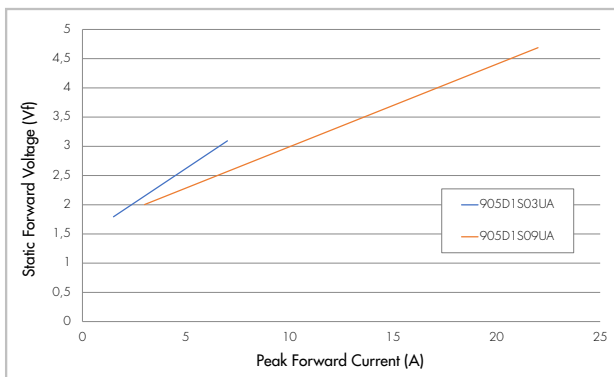


Figure 7b:
905D1S3JT0XUA Triple-junction units Static Forward Voltage vs. Current

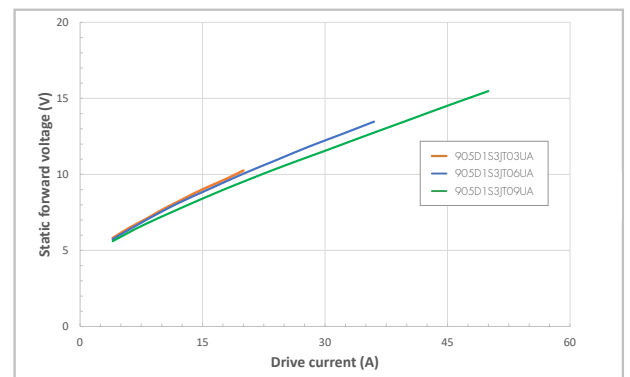
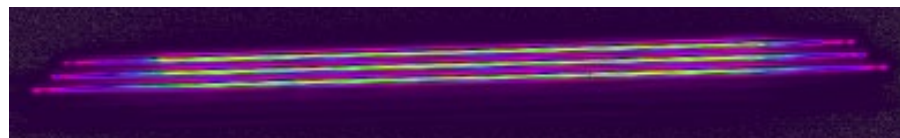
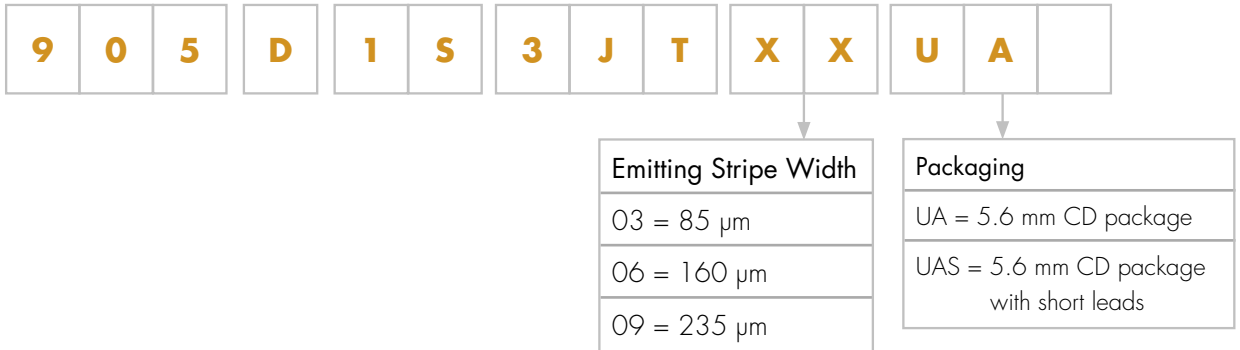


Figure 8:
Typical near field scan of triple junction lasers



Triple-junction Product Number Designations

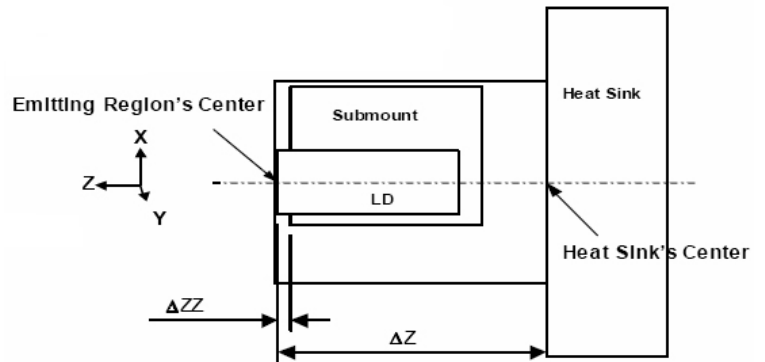
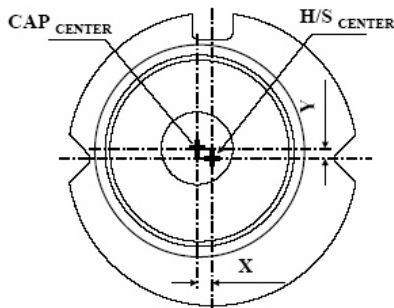


Die Placement Accuracy

Measuring Point		Tolerance
LD	ΔX	$0 \pm 50 \mu\text{m}$
	ΔY	$0 \pm 50 \mu\text{m}$
	ΔZ	$1260 \pm 30 \mu\text{m}$
	$\Delta\theta$	$0 \pm 2^\circ$

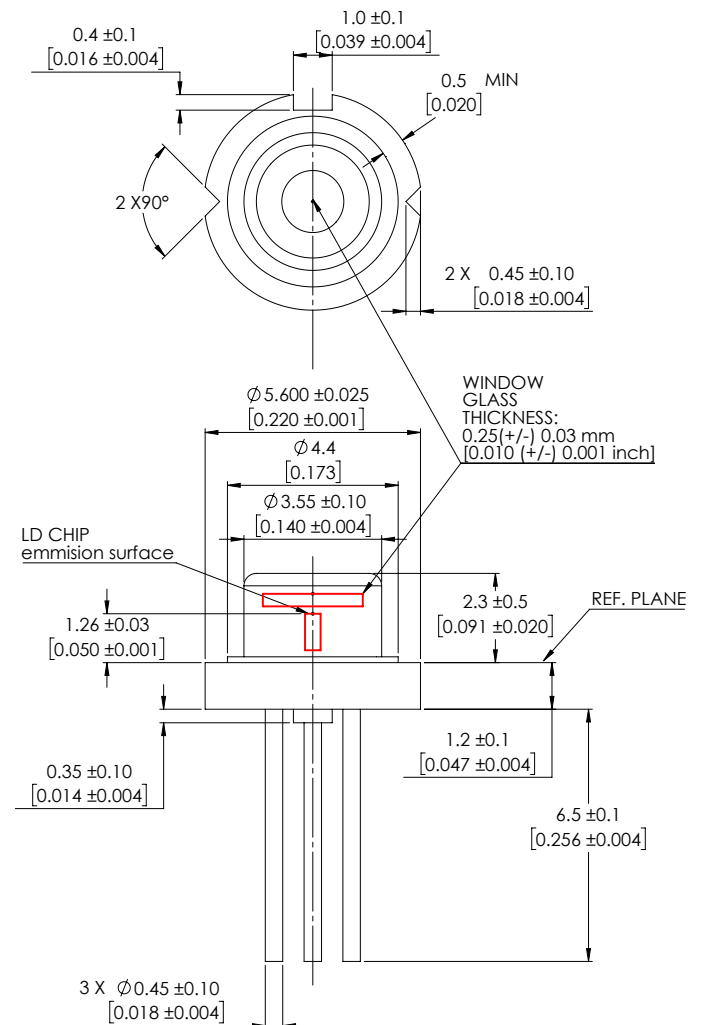
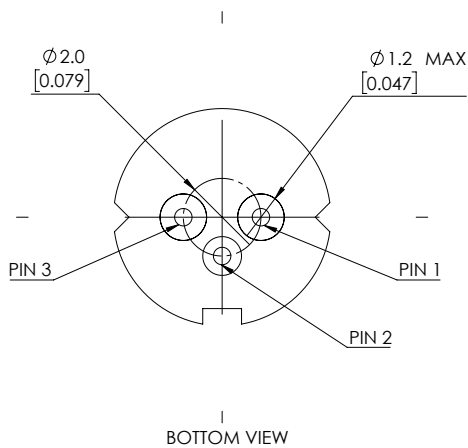
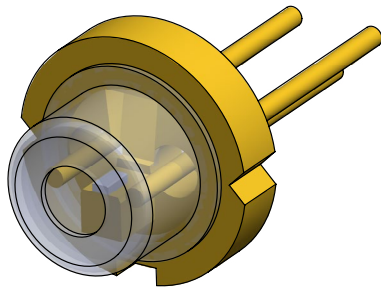
Die Placement Accuracy

Measuring Point		Tolerance
Cap	X	$0 \pm 100 \mu\text{m}$
	Y	$0 \pm 100 \mu\text{m}$



Package Drawings

Package UA 5.6 mm CD



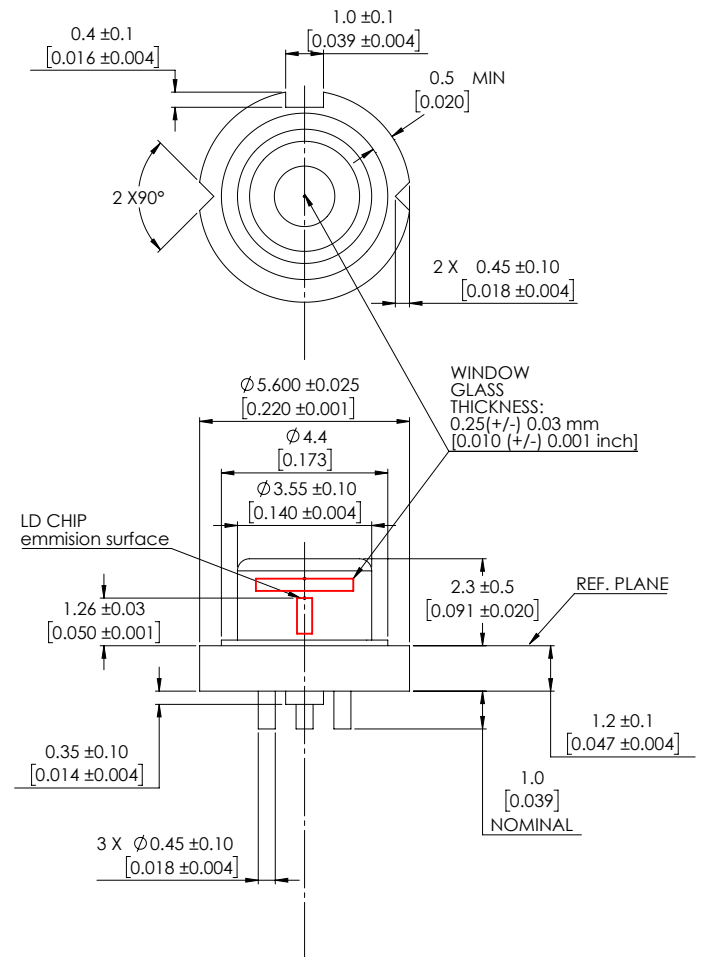
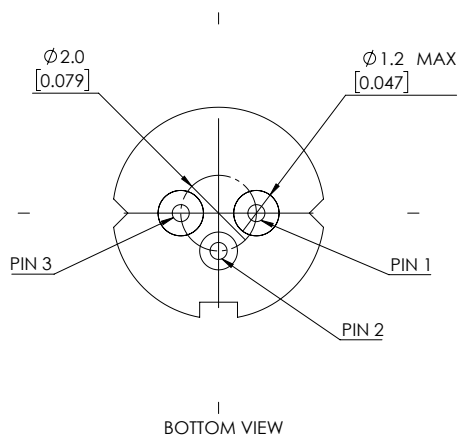
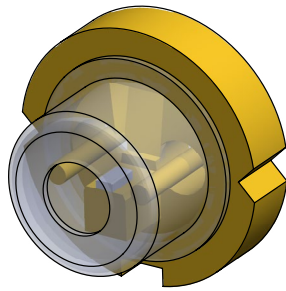
Units: mm [inch]

Package UA: Pin out:

1. LD Anode (+)
2. LD Cathode (-), Case
3. NC

Inductance 5.0 nH

Package UAS 5.6 mm CD with shortened leads



Units: mm [inch]

Package UAS: Pin out:

1. LD Anode (+)
2. LD Cathode (-), Case
3. NC

Inductance 5.0 nH

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".



Handling Precautions:

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

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