

## High Power/Low Cost Multi-Junction Pulsed Laser Diodes 905D1S3JT0XUA

### Features

- Multi-junction devices up to 115 W
- 75  $\mu\text{m}$ , 150  $\mu\text{m}$  and 225  $\mu\text{m}$  source size
- 3.2 W/A efficiency
- Proven InGaAs / GaAs high reliability structure
- High power multi-junction structure for narrow far field
- Excellent temperature stability
- Hermetic and custom designed package

### Applications

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



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

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

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

Parameter	905D1S3JT03UA	905D1S3JT06UA	905D1S3JT09UA
$P_O$ at $I_{FM}$	40 W	80 W	115 W
Emitting area	85 x 10 $\mu\text{m}$	160 x 10 $\mu\text{m}$	235 x 10 $\mu\text{m}$
$I_{TH}$	300 mA	600 mA	800 mA
$I_{FM}$	13.5 A	27 A	40 A
Forward voltage at $I_{FM}$	9.5 V	11.8 V	13.2 V

## Absolute Maximum Ratings

Maximum ratings	Limiting values
Peak reverse voltage	6 V
Pulse duration	150 ns
Duty factor	0.1%
Temperature	
- Storage	-55 $^{\circ}\text{C}$ to + 125 $^{\circ}\text{C}$
- Operating	-40 $^{\circ}\text{C}$ to + 105 $^{\circ}\text{C}$
Lead soldering	
- 5 seconds max at	200 $^{\circ}\text{C}$

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

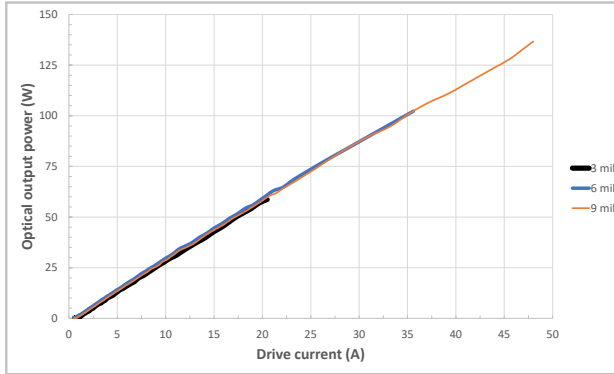


Figure 2:  
Optical output power vs. temperature

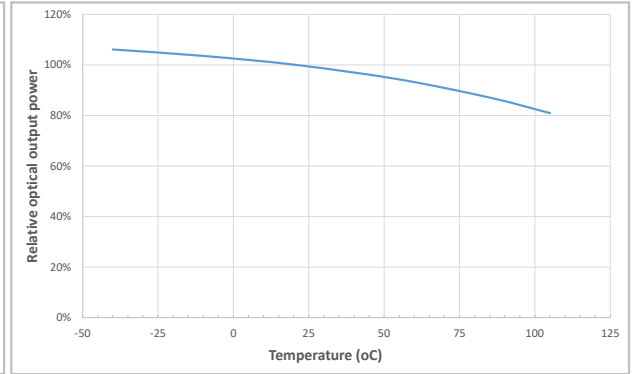


Figure 3:  
Wavelength vs. temperature

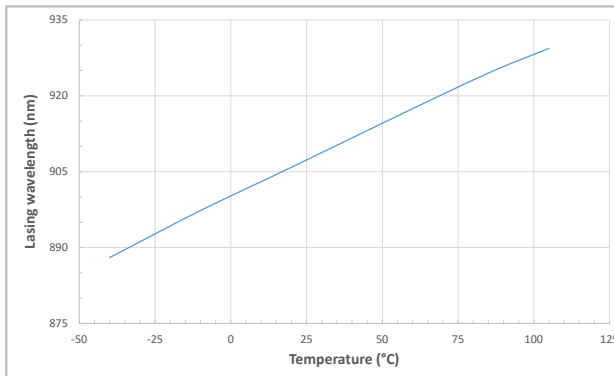


Figure 4:  
Output power vs. cone half angle

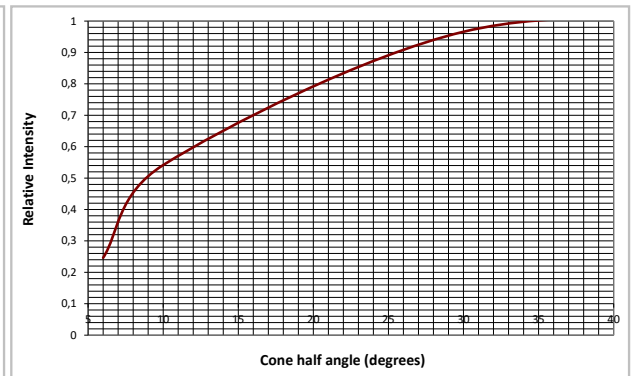


Figure 5:  
Spectral intensity distribution

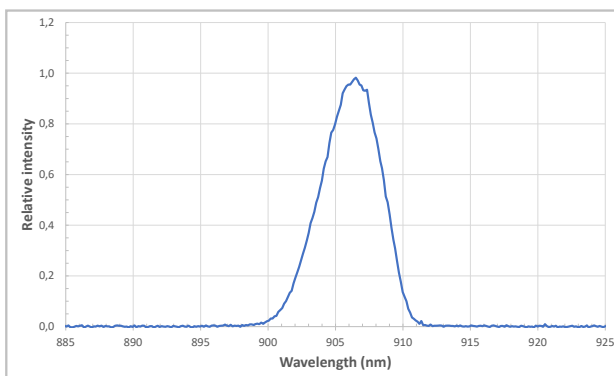


Figure 6:  
Far field emission parallel and perpendicular to junction plane

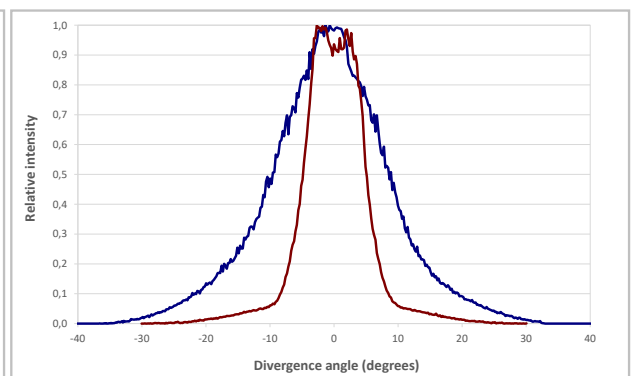


Figure 7:  
905D1S3J series static Vf

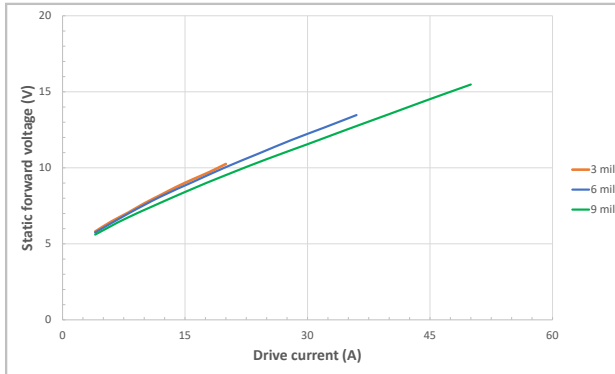


Figure 8:  
Typical near field scan of triple junction lasers

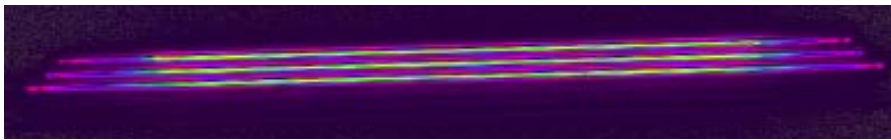


Figure 9:  
Typical far field beam scan

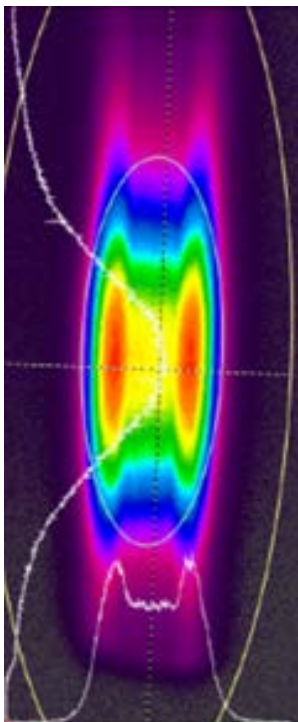
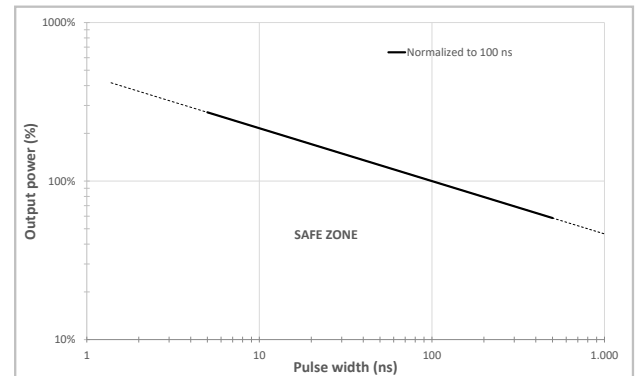


Figure 10:  
Safe operating limits at maximum duty factor



Product Number Designations

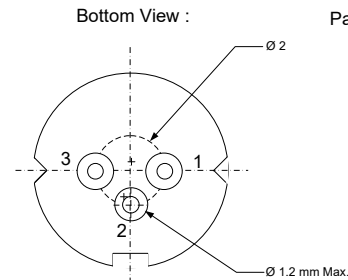
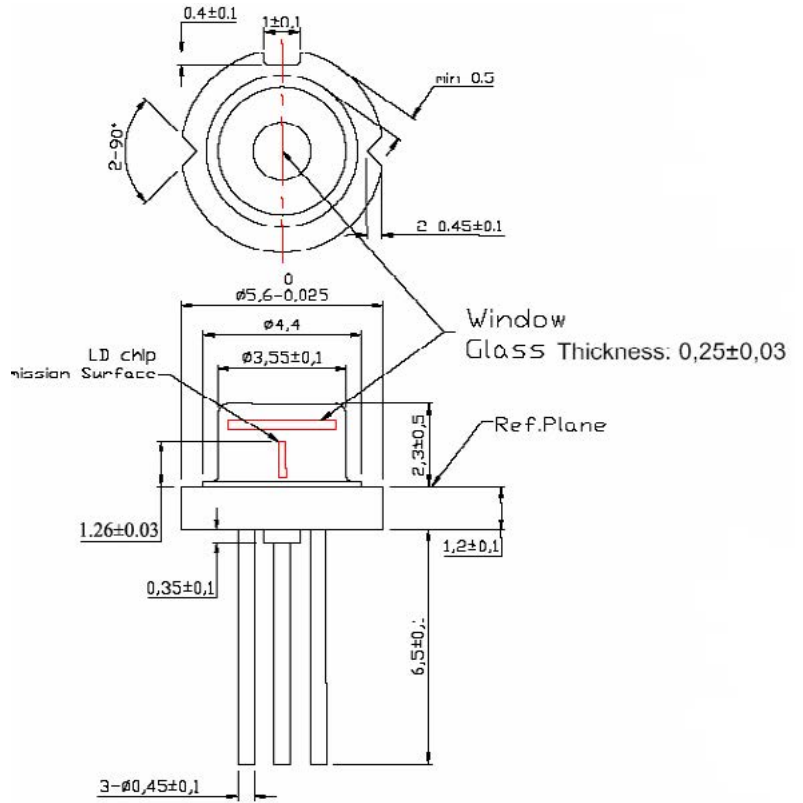


Emitting Stripe Width

03 = 75 $\mu$ m
06 = 150 $\mu$ m
09 = 225 $\mu$ m

Package Drawings

Package UA 5.6 mm CD



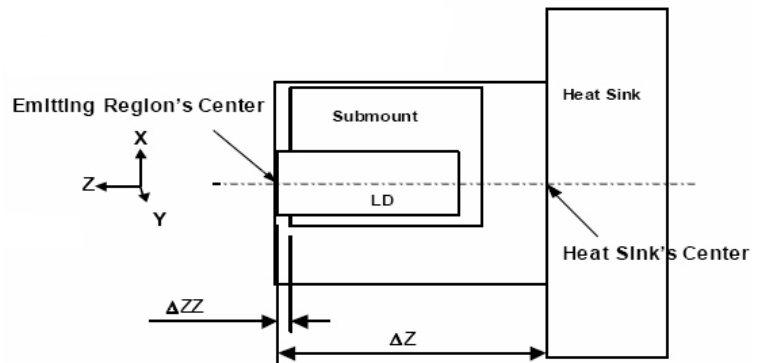
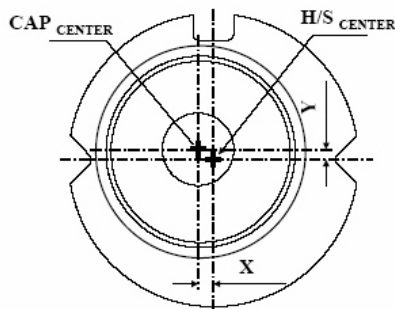
Package U Pin Out : 1. LD Anode(+)  
2. LD Cathode(-) Case  
3. NC  
Inductance 5.0 nH

Die Placement Accuracy

Measuring Point		Tolerance
LD	$\Delta X$	$0 \pm 50 \mu\text{m}$
	$\Delta Y$	$0 \pm 50 \mu\text{m}$
	$\Delta Z$	$1260 \pm 30 \mu\text{m}$
	$\Delta\theta$	$0 \pm 2^\circ$

Die Placement Accuracy

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



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](http://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.