

# High Power Multi-Junction Pulsed Laser Diodes 905D1S3J0XX-Chip

## Features

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

## Applications

- Range finding
- Surveying equipment
- Weapons simulation
- Laser radar
- Obstacle detection
- Medical
- Automotive

## 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		9		nm
Wavelength temperature coefficient		0.28		nm/ $^\circ\text{C}$
Beam spread (50% peak intensity)				
Parallel to junction plane $\parallel$		10		Degrees
Perpendicular to junction plane $\perp$		20		Degrees

Optical Characteristics at  $t_{RT} = 21^{\circ}\text{C}$ ,  $t_w = 150\text{ ns}$ ,  $P_{rr} = 3.33\text{ kHz}$ 

Parameter	905D1S3J03	905D1S3J06	905D1S3J09
$P_O$ at $I_{FM}$ (typ.)	25 W	50 W	75 W
Emitting area	85 x 10 $\mu\text{m}$	160 x 10 $\mu\text{m}$	235 x 10 $\mu\text{m}$
$I_{TH}$ typ	300 mA	500 mA	800 mA
$I_{MAX}$ at 100 ns	11 A	22 A	30 A
Forward voltage at $I_{MAX}$	12 V	11 V	11 V

## Absolute Maximum Ratings

Maximum ratings	Limiting values
Peak reverse voltage	6 V
Pulse duration	150 ns
Duty factor	0.1%
Temperature	
- Storage	-55°C to + 100°C
- Operating	-45°C to + 85°C

Figure 1:  
905D1S3J03 / 905D1S3J06 / 905D1S3J09  
Power vs. Forward current

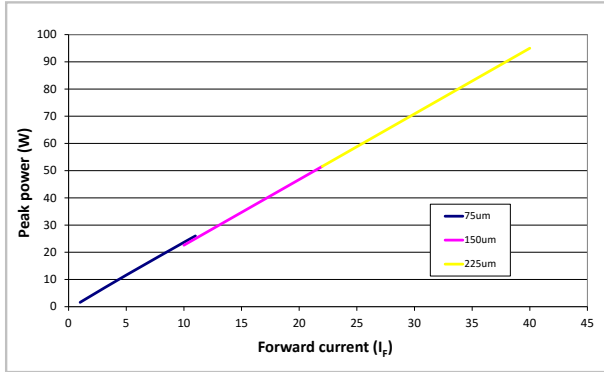


Figure 2:  
Spectral intensity distribution

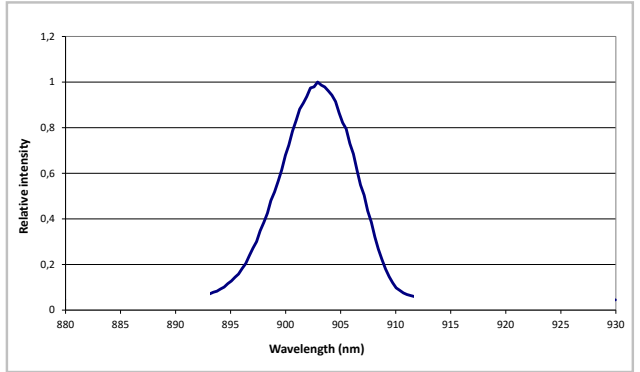


Figure 3:  
Output power vs. temperature

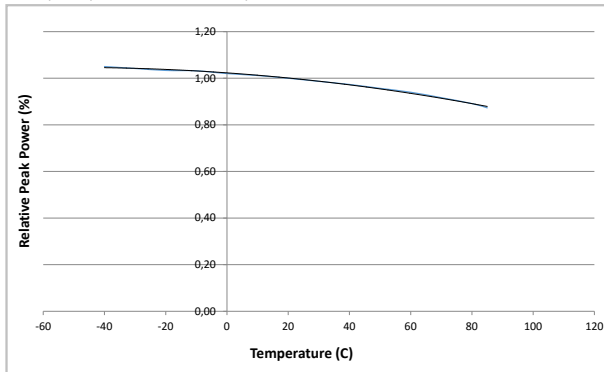


Figure 4:  
Wavelength vs. temperature

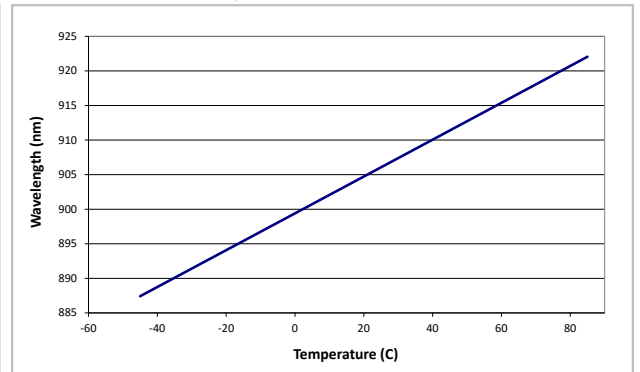


Figure 5:  
905D1S3J series static Vf on TO CAN

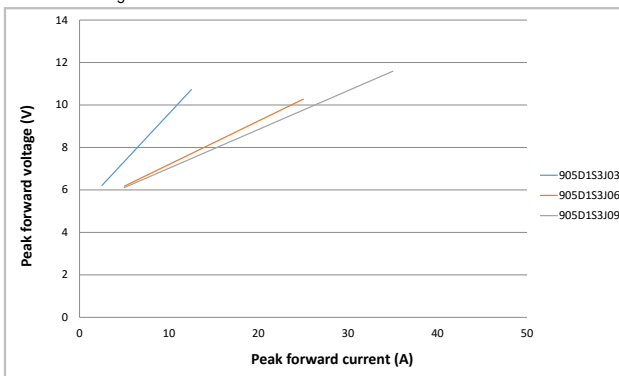
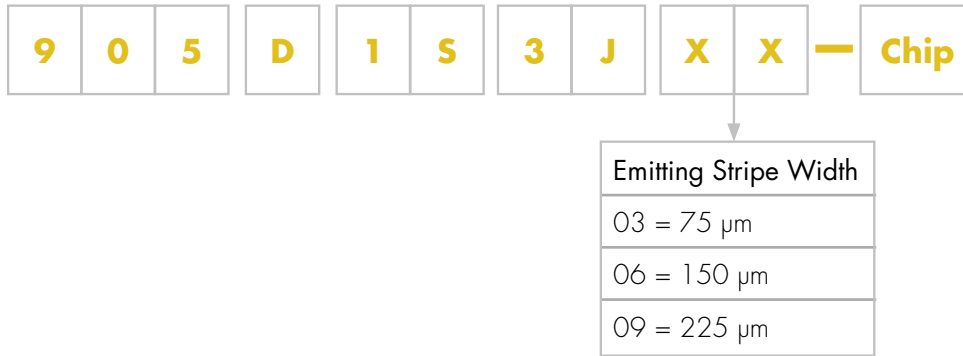


Figure 6:  
Typical near field scan of triple junction lasers

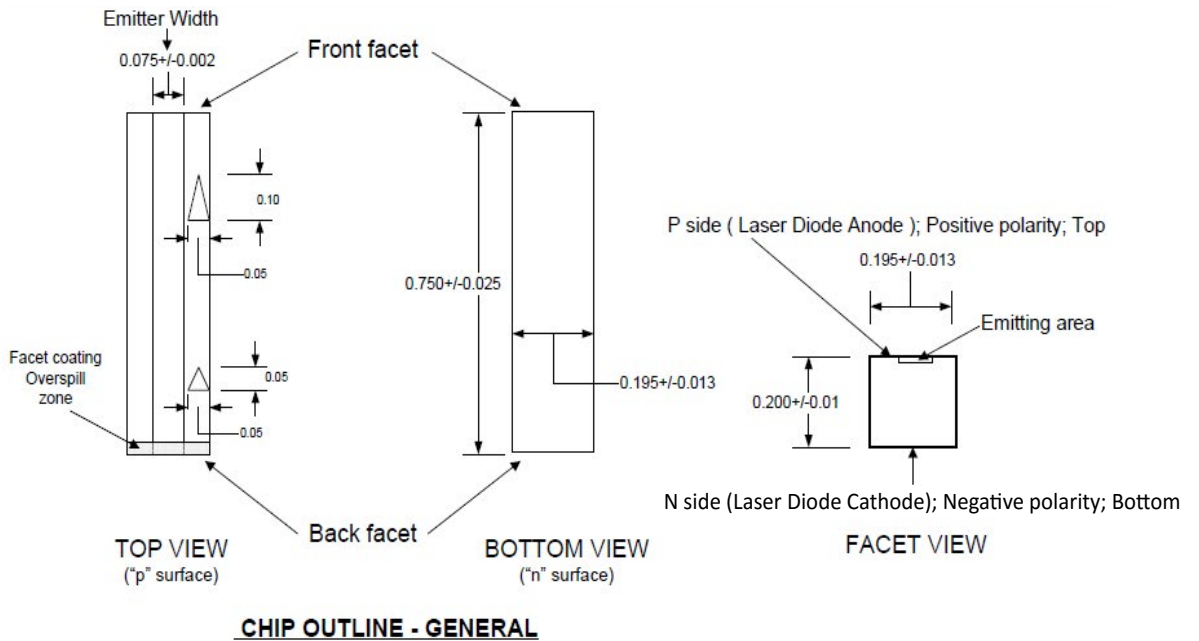


Product Number Designations



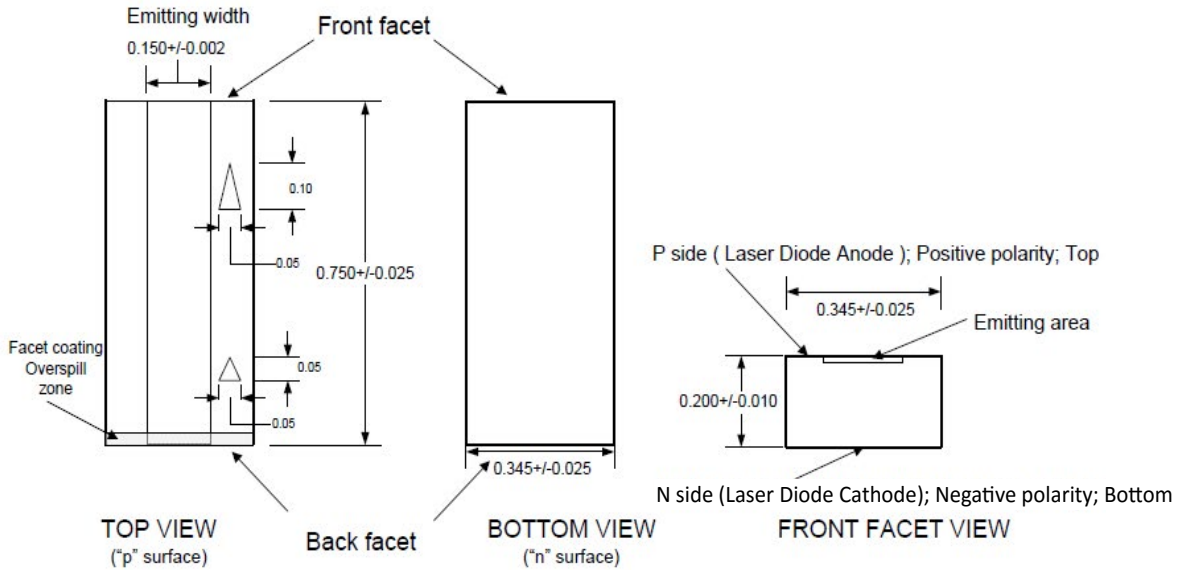
Drawings and Dimensions - Chips

905D1S3J03-CHIP



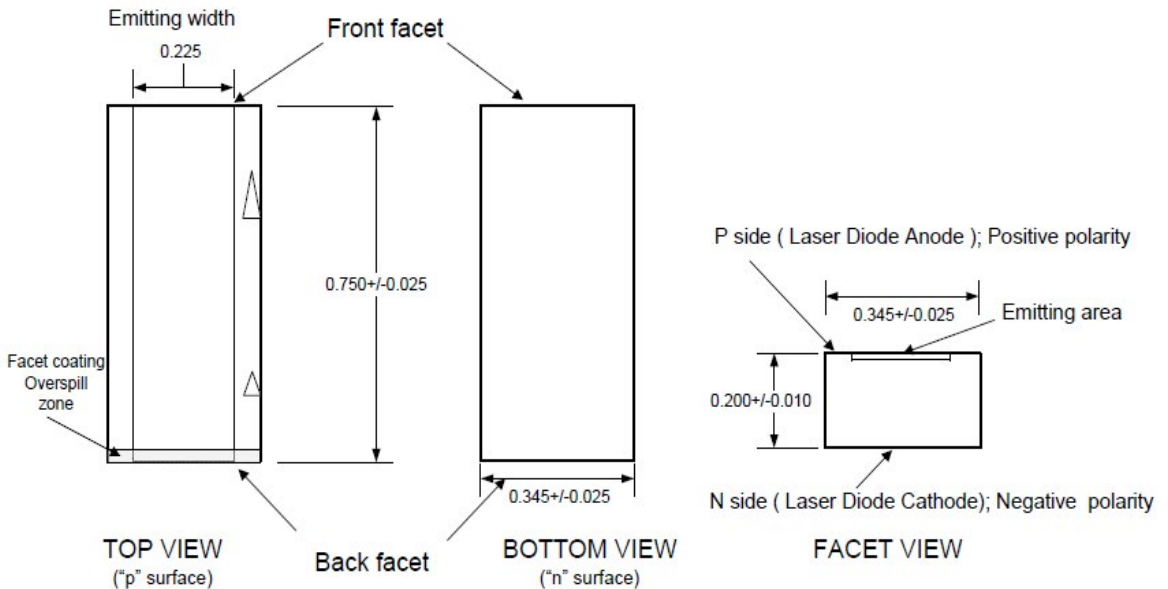
05/17 / V01 / IF / Datenblätter nicht veröffentlicht/lcc/905d1s3jxxchip

905D1S3J06-CHIP



**CHIP OUTLINE - GENERAL**

905D1S3J09-CHIP

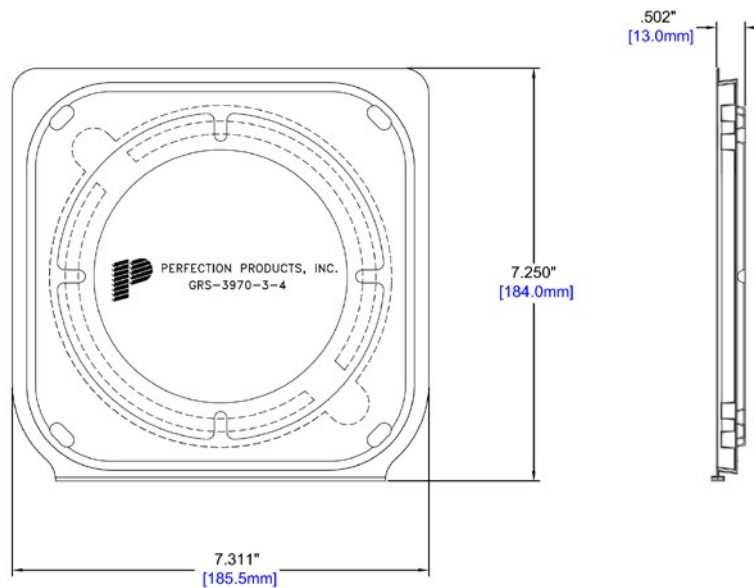
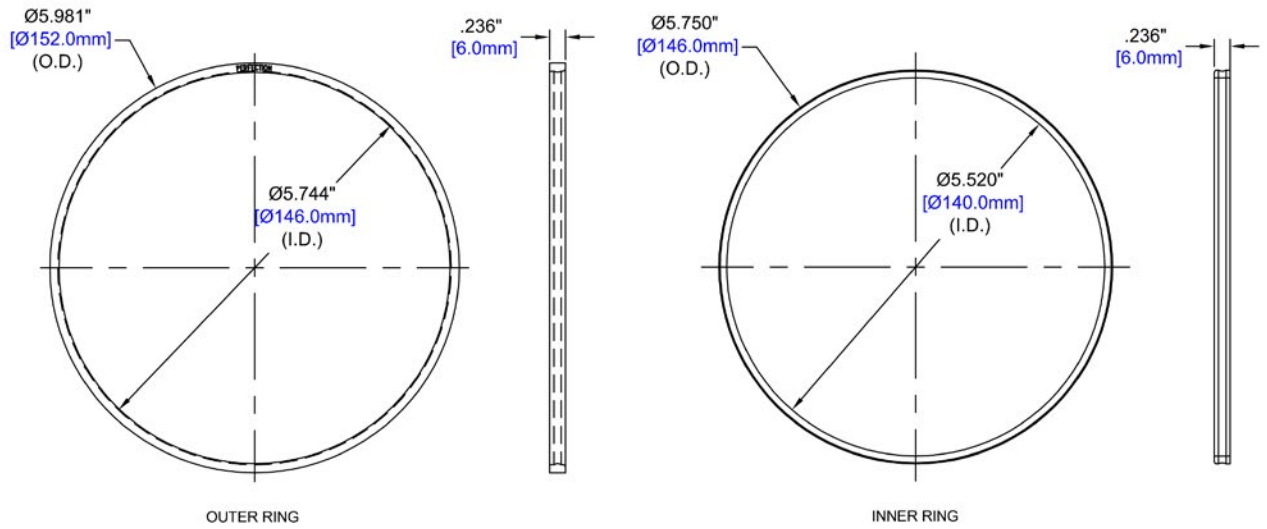


**CHIP OUTLINE - GENERAL**

**Note:**

Composition and thicknesses of the top layer of the metallization for both "p" and "n" surfaces.  
 Final Au thicknesses are : P-side : 6000 Å ( wirebondable ) and N-side: 4000 Å.

Drawings and Dimensions - Packaging



## Handling Instructions and Guidelines

### Pulsed Laser Diode: Chip handling

1. The chips should always be mounted with the junction side up. The pattern on the chip surface indicates the junction side. (P-side)
2. One facet of the chips is coated with a reflective coating; the other with antireflective coating. Laser emission will occur from the antireflective coating as indicated by the direction of the arrows on the chip surface.
3. Both sides of the chip are gold plated and the surfaces are designed for either soldering or wire bonding.
4. Our recommendation is to solder the chip on the bottom to a suitable heat sink, such as plated alumina, aluminium nitride, copper etc. It is also acceptable to use conductive epoxy. Ensure that epoxy does not contaminate the front facet or short the junction close to the top surface. Note the semiconductor junctions are very close to the top surface. It is also acceptable to use a non-corrosive flux. Flux residue must be removed entirely from the facets with solvents, particularly in the area of the laser junctions.
5. The top surface should be compression wire bonded using at least 2 x 1 mil wires or at least 1 x 2 mil wire. Minimal pressures and low level ultrasonic scrubbing should be used to avoid creating internal damage. Bond wires should be kept as short as possible to avoid inductive losses. It is important however to maintain a slight loop in the wire to avoid stressing the bond during temperature excursions.
6. Never handle the chips by the facets. It's OK to gently grip the sides or to use a vacuum chuck on the top surface to pick and place the chips.

#### NOTE:

Due to processes beyond our control Laser Components do not provide a warranty on chips after they have been removed from the shipping film.