

High Power Multi-Junction Pulsed Laser Diode Chips 905D1S3J0X-D7X00

Features

- Multi-junction devices up to 95 W
- 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

Applications

- LIDAR
- Rangefinding
- Automotive
- Industrial sensing
- Medical

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

	Min	Typ	Max	Units
Wavelength of peak radiant intensity λ	895	905	915	nm
Spectral bandwidth $\Delta\lambda$ at 50% intensity points		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.)	30 W	60 W	95 W
Emitting area	85 x 10 μm	160 x 10 μm	235 x 10 μm
I_{TH} typ	300 mA	500 mA	650 mA
I_{MAX} at 150 ns	11 A	22 A	35 A
Forward voltage at I_{MAX}	8.3 V	10 V	11.5 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

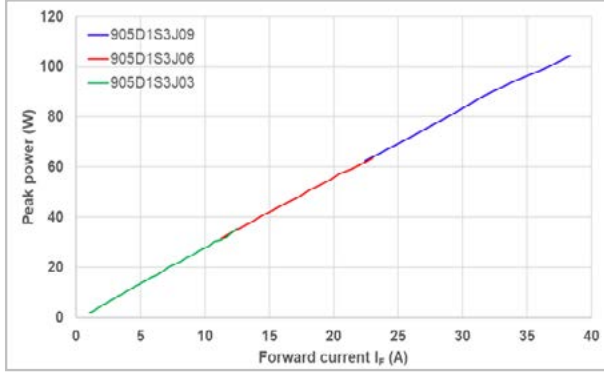


Figure 2:
Spectral intensity distribution

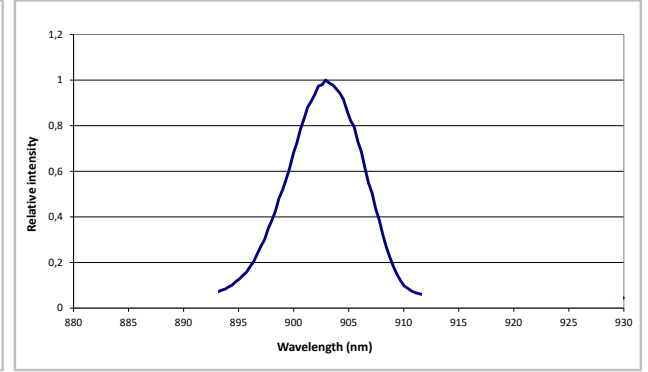


Figure 3:
Output power vs. temperature

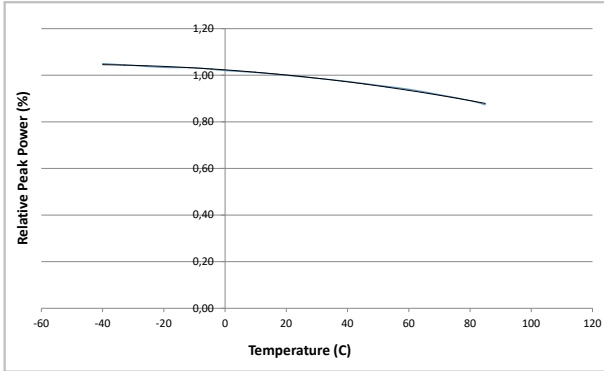


Figure 4:
Wavelength vs. temperature

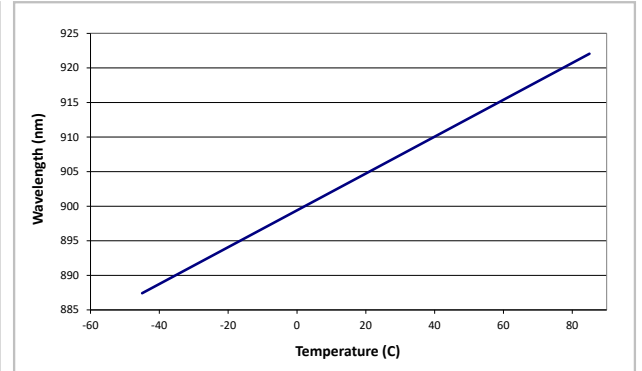


Figure 5:
905D1S3J series static Vf on TO CAN

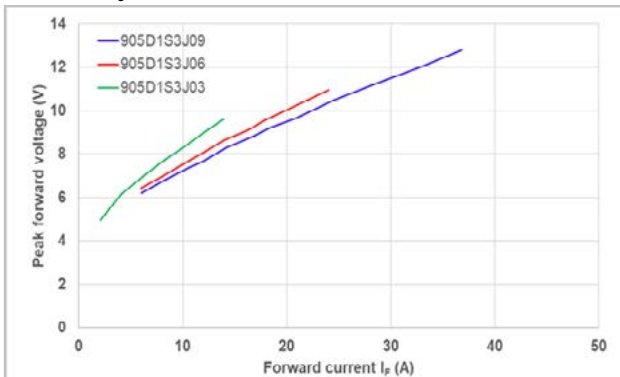
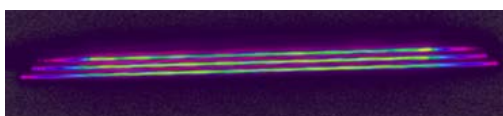


Figure 6:
Typical near field scan of triple junction lasers



Product Number Designations



Emitting Stripe Width

03 = 75 μm

06 = 150 μm

09 = 225 μm

Drawings and Dimensions - Chips

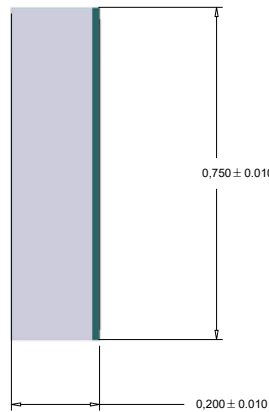
905D1S3J03-D7600

Back Facet (HR Side)



Front Facet (AR Side)

0,250 \pm 0,005



P Contact



N Contact

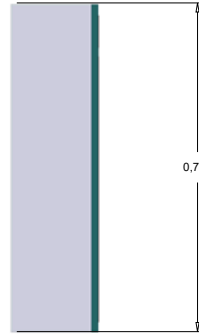
905D1S3J06-D7500

Back Facet (HR Side)



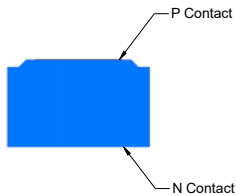
Front Facet (AR Side)

$0,325 \pm 0,005$



$0,750 \pm 0,010$

$0,200 \pm 0,010$



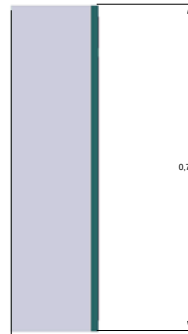
905D1S3J09-D7200

Back Facet (HR Side)



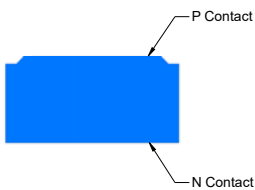
Front Facet (AR Side)

$0,400 \pm 0,005$



$0,750 \pm 0,010$

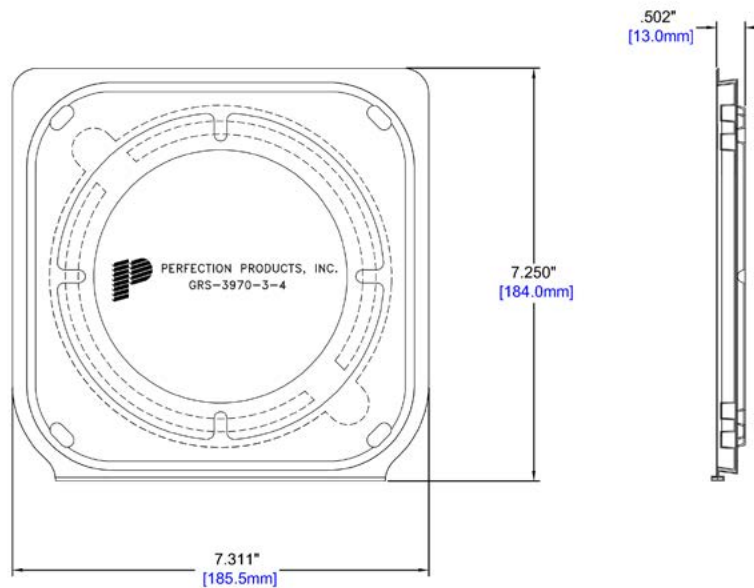
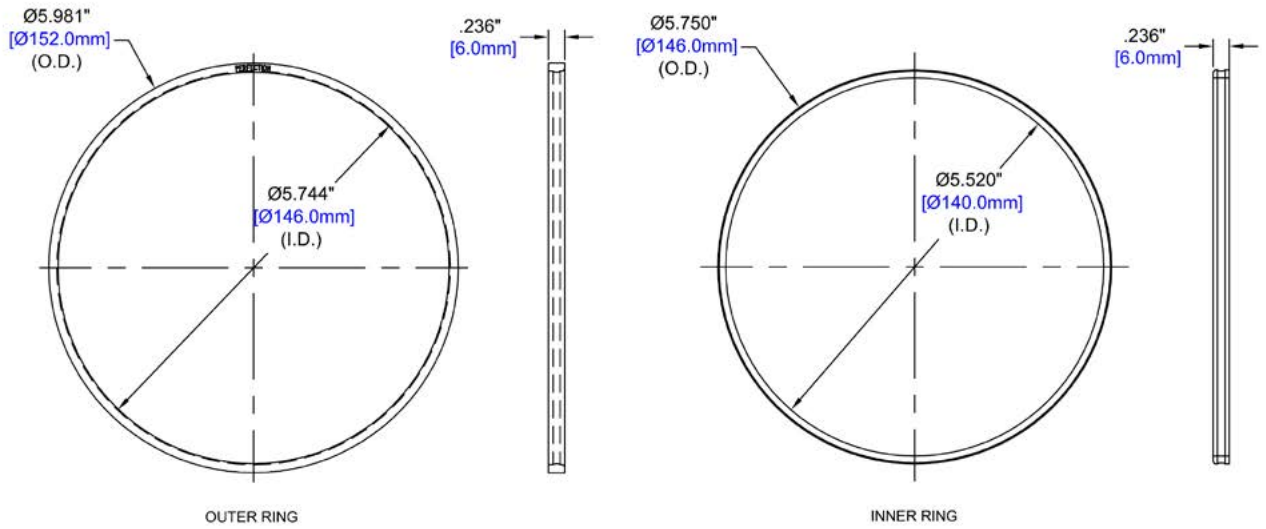
$0,200 \pm 0,010$



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 occurs from the antireflective coated surface opposite the end of the chip with fiducials located on the P-side.
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.