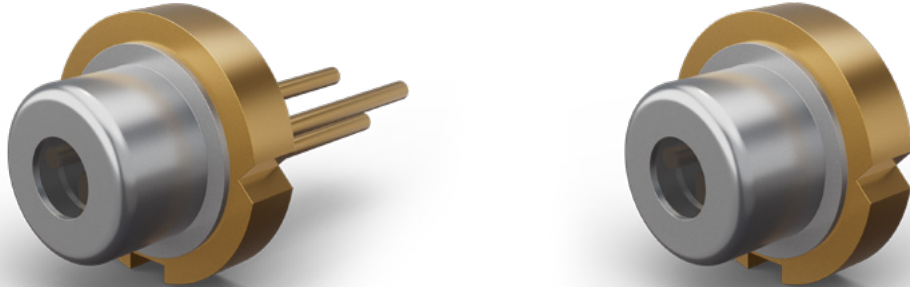


HIGH-VOLUME SINGLE- AND MULTI-JUNCTION PULSED LASER DIODES 905D1S0XUA- AND 905D1S3JTOXUA-SERIES LASER DIODES



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
- / Available with built-in monitoring photodiode (UAP-suffix) and short pins (UAS-suffix)
- / Fully RoHS compliant

APPLICATIONS

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

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LASER DIODES

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905D1S0xUA- and 905D1S3JT0xUA-Series



SPECIFICATIONS

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

	Min	Typ	Max
Wavelength of peak radiant intensity λ [nm]	895	905	915
Spectral bandwidth $\Delta\lambda$ at 50% intensity points [nm]		5	
Wavelength temperature coefficient [nm/°C]		0.28	
Beam spread [°]			
Parallel to junction plane \parallel FWHM		10	
Perpendicular to junction plane \perp FWHM		23	
Parallel to junction $1/e^2$		15	
Perpendicular to junction $1/e^2$		48	
Polarization ratio TE/(TE+TM) [%]		>98	
UAP-suffix only	Breakdown voltage (V_{BR}) of photodiode [V]	30	
	Dark current ($V_R = 10\text{ V}$) [nA]		5
	Rise and Fall Time ($R_{LOAD} = 50\text{ Ohms}$, $V_R = 10\text{ V}$) [ns]		4
	Responsivity of photodiode as a function of output power [$\mu\text{A/W}$]		2.5

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} [W]	6.5	19	40	80	115
Emitting area [μm]	85x1	235x1	85x10	160x10	235x10
Threshold current, I_{TH} [mA]	250	750	300	600	800
Max. peak current I_{FM} [A]	7	22	13.5	27	40
Forward voltage at I_{FM} [V]	3	4.7	9.5	11.8	13.2

Absolute Maximum Ratings

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

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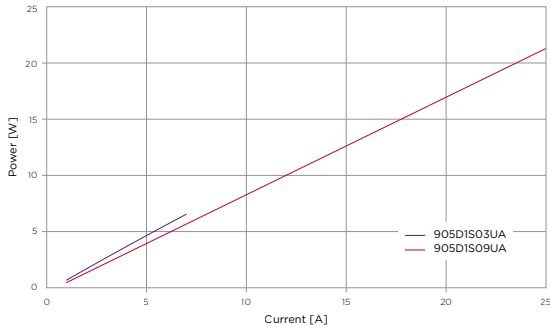


Figure 1: Single-Junction Units Output Power vs. Forward Current

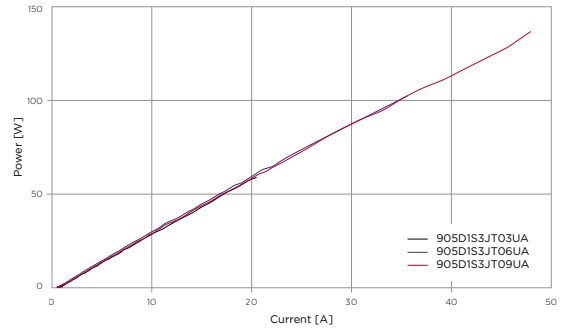


Figure 2: Triple-Junction Units Output Power vs. Forward Current

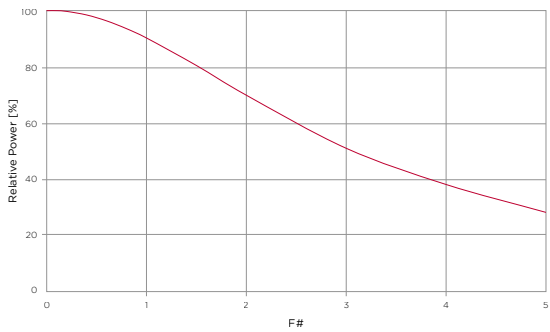


Figure 3: Optical Output Power vs. F#

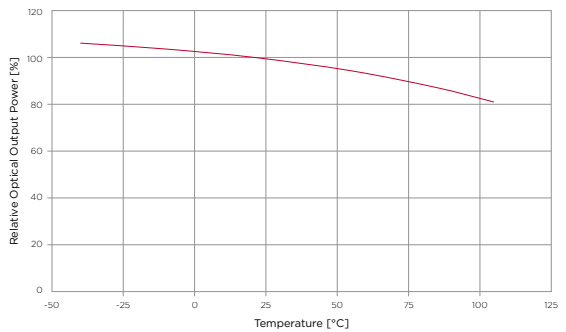


Figure 4: Optical Output Power vs. Temperature

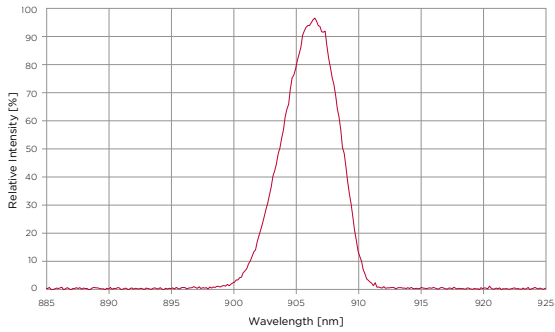


Figure 5: Spectral Intensity Distribution

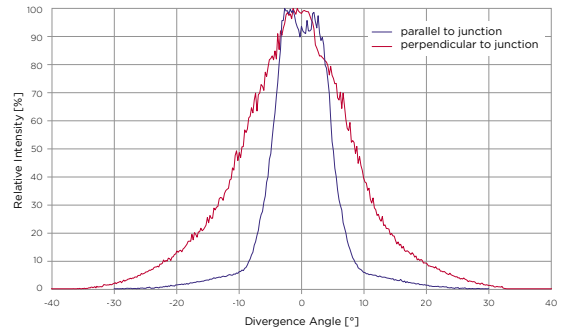


Figure 6: Far Field Emission Parallel and Perpendicular to Junction Plane

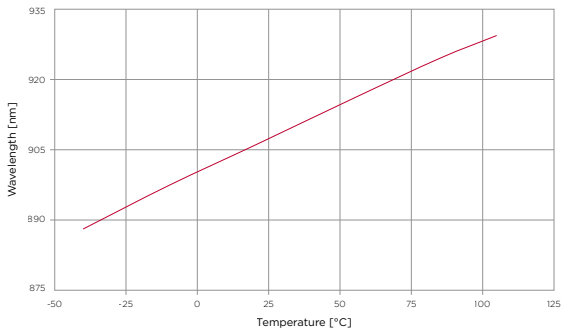


Figure 7: Wavelength vs. Temperature

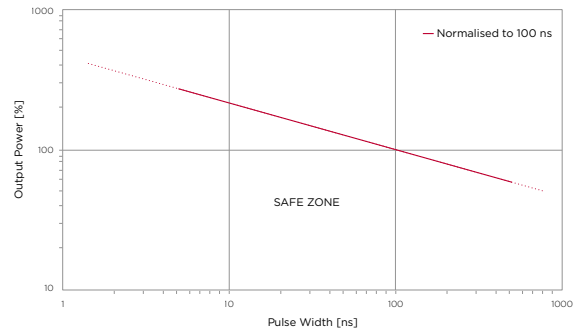


Figure 8: Safe Operating Limits at Maximum Duty Factor

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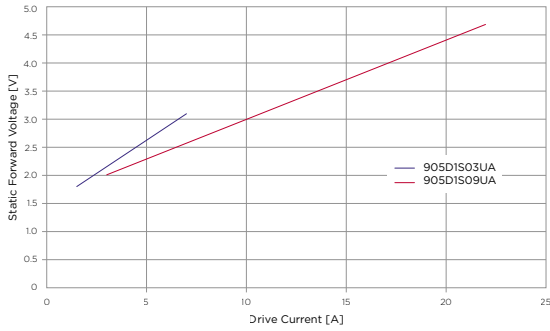


Figure 9: Single-Junction Units Static Forward Voltage vs. Current

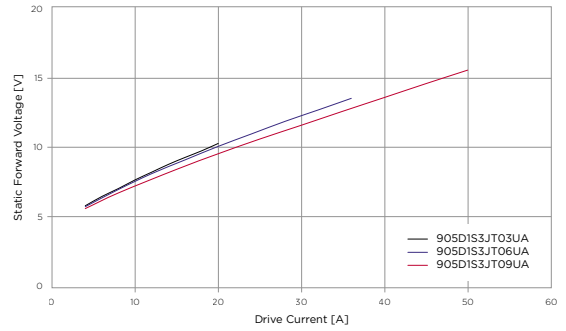


Figure 10: Triple-Junction Units Static Forward Voltage vs. Current

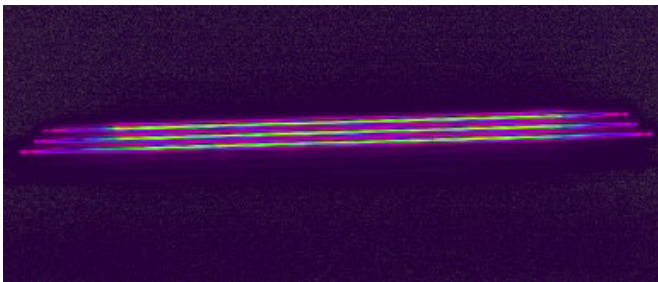


Figure 11: Typical Near Field Scan of Triple Junction Lasers

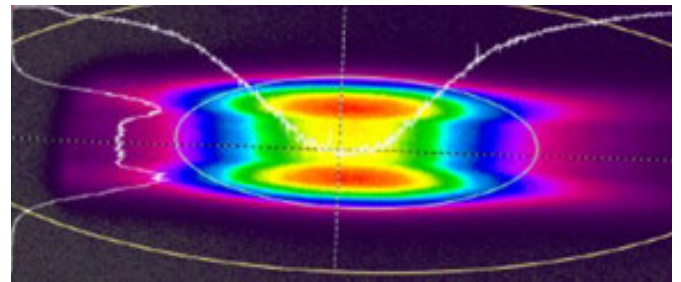
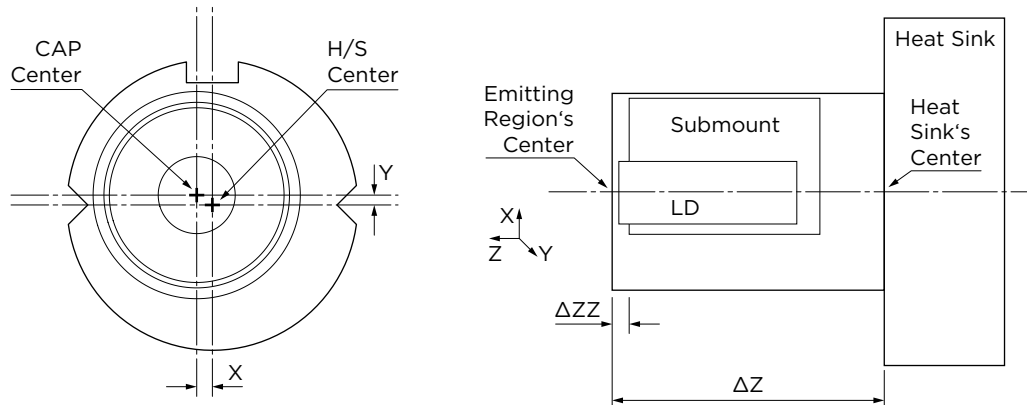


Figure 12: Typical Far Field Beam Scan for Triple-Junction Units

Die Placement Accuracy

Measuring Point	Tolerance
LD ΔX [μm]	0 ± 50
LD ΔY [μm]	0 ± 50
LD ΔZ [μm]	1260 ± 30
LD $\Delta\theta$ [$^\circ$]	0 ± 2
Cap X [μm]	0 ± 100
Cap Y [μm]	0 ± 100



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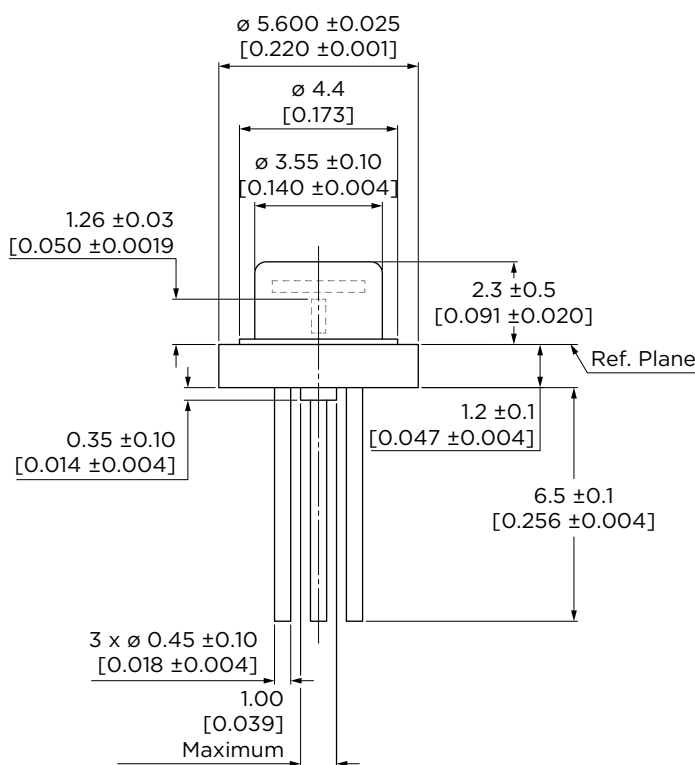
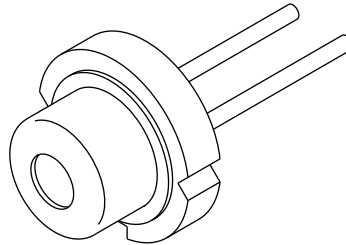
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TECHNICAL DRAWING

Package UA and UAP 5.6 mm CD



Package UA 5.6 mm CD

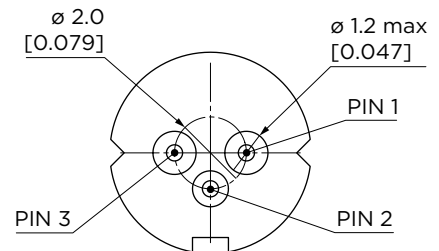
Pin out:

1. LD Anode (+)
 2. LD Cathode (-) Case
 3. NC
- Case Inductance 5.0 nH

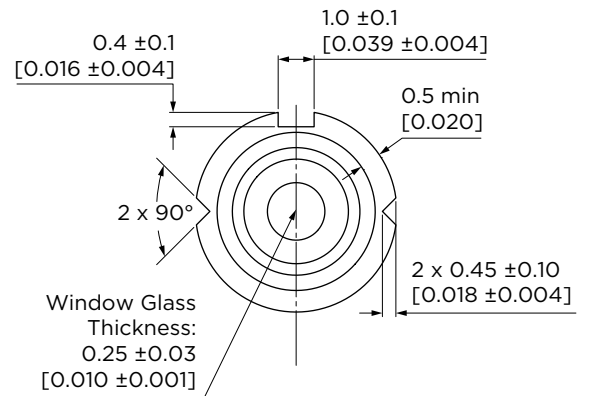
Package UAP 5.6 mm CD

Pin out:

1. LD Anode (+)
 2. PD Anode (+), Case, LD Cathode (-)
 3. PD Cathode (-)
- Inductance 5.0 nH



REAR VIEW



Units: mm [inch]

Dimensions are in millimeters - [inches] and are for reference only.

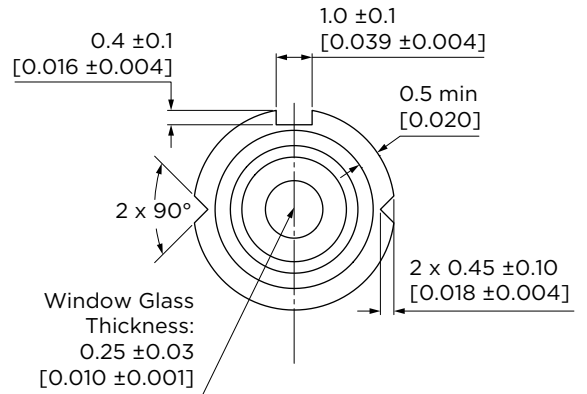
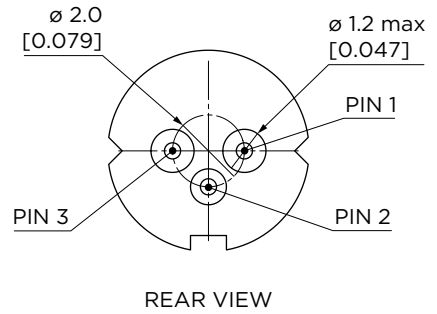
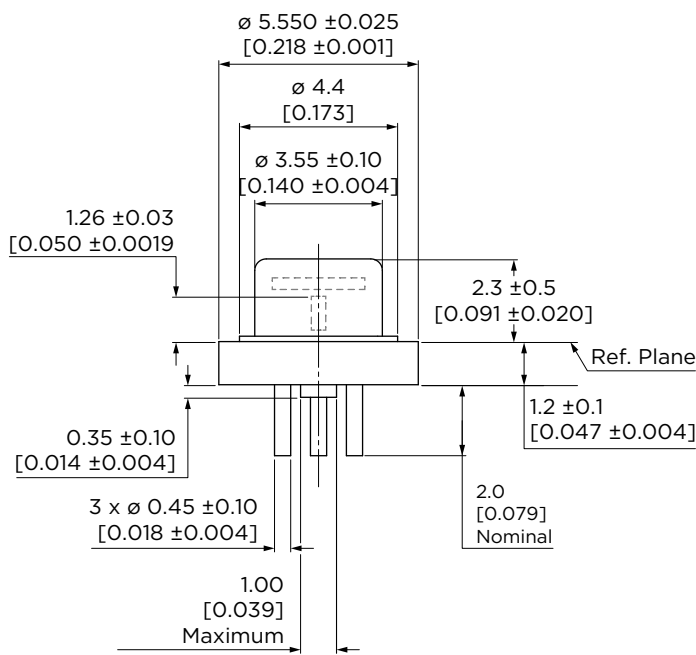
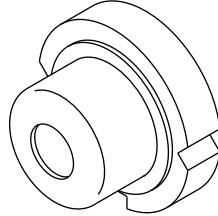
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TECHNICAL DRAWING

Package UAS 5.6 mm CD with 3.4 ± 0.1 mm leads



Package UAS 5.6 mm CD

Pin out:

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

Case Inductance 5.0 nH

Units: mm [inch]

Dimensions are in millimeters - [inches] and are for reference only.

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ORDERING CODE

		Emitting Stripe Width [μm]	Package Style
905D1S	X	X	X
	Skip for Single-Junction 3JT = Triple-Junction	03 = 85 μm 06 = 160 μm (3JT only) 09 = 235 μm	UA = 5.6 mm CD package UAS = 5.6 mm CD package with short leads UAP = 5.6 mm CD package with built-in monitoring photodiode

PRODUCT CHANGES

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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.

