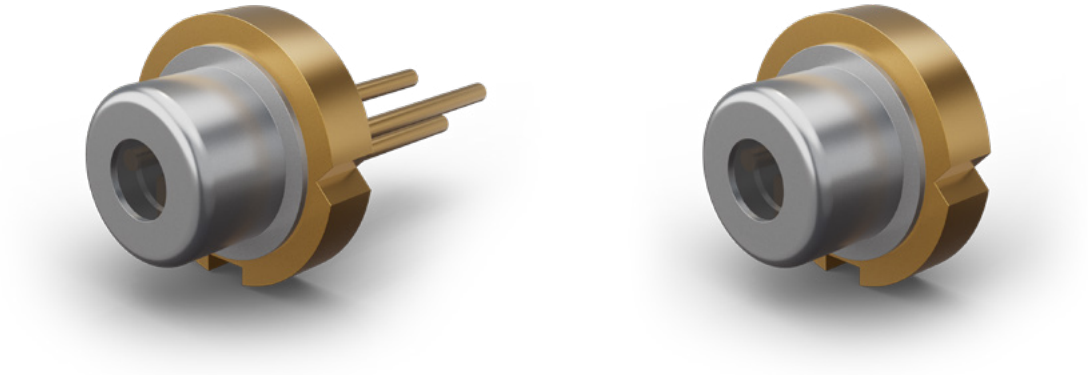
HIGH-VOLUME SINGLE- AND MULTI-JUNCTION PULSED LASER DIODES 905D1S0XUA- AND 905D1S3JT0XUA-SERIES

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

09/24 / V3 / ED-MaL / lc-pld/905d1sxua-pulsed-laser-diodes

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beyond borders

LASER COMPONENTS®

SPECIFICATIONS

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

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

Typical Product Characteristics at t_{RT} = 21 °C, t_W = 100 ns, P_{rr} = 1 kHz

Parameter	905D1S03UA	905D1S09UA	905D1S3JT03UA	905D1S3JT06UA	905D1S3JT09UA
Output P_O at I_{FM} [W]	6.5	19	40	80	115
Emitting area [µm]	85 x 1	235 x 1	85 x 10	160 x 10	235 x 10
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 Operating	 -55 to +125 -40 to +105	
Lead soldering [°C] 5 seconds max at	260	

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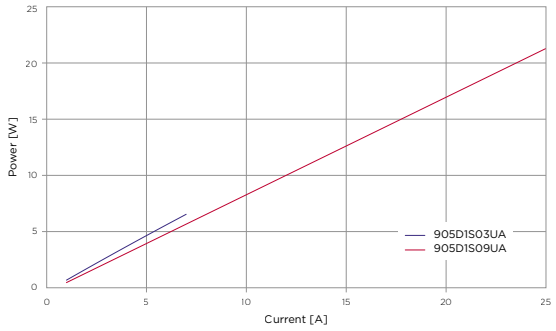

Figure 1: Single-Junction Units Output Power vs. Forward Current

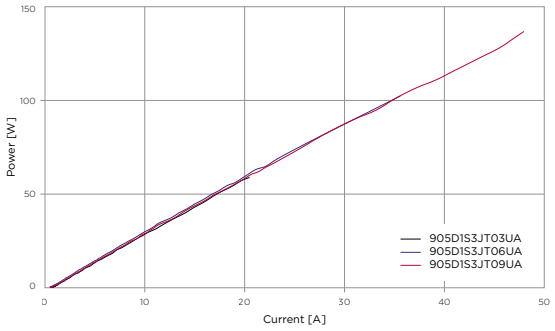

Figure 2: Triple-Junction Units Output Power vs. Forward Current

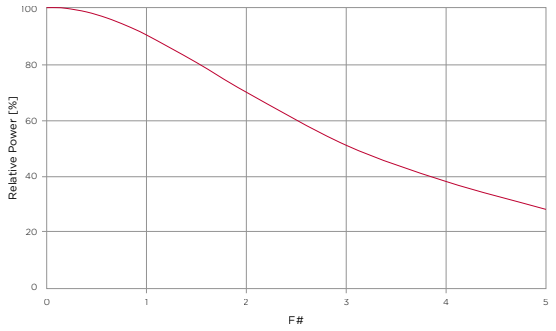

Figure 3: Optical Output Power vs. F#

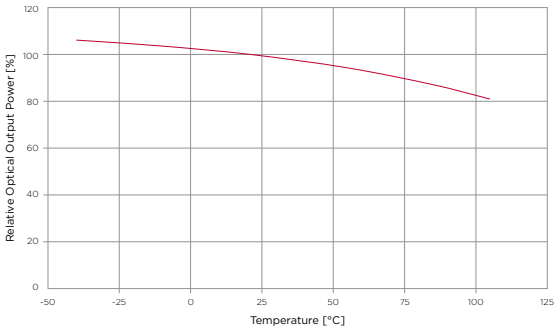

Figure 4: Optical Output Power vs. Temperature

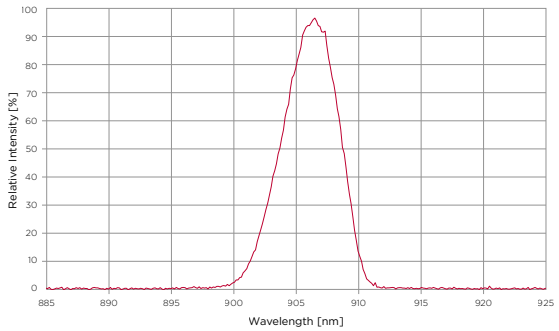

Figure 5: Spectral Intensity Distribution

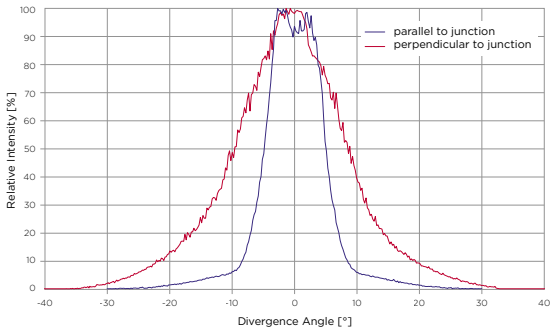

Figure 6: Far Field Emission Parallel and Perpendicular to Junction Plane

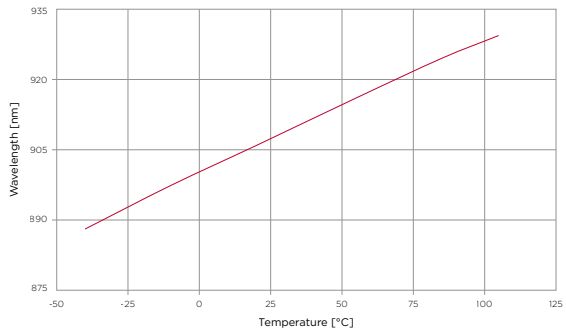

Figure 7: Wavelength vs. Temperature

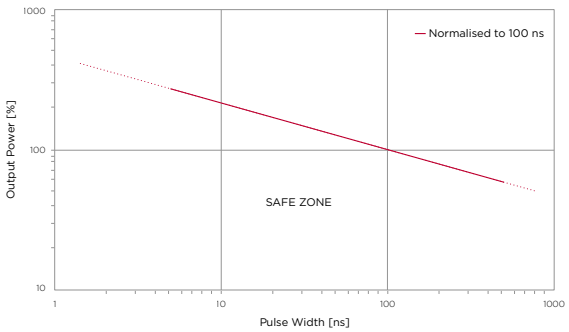

Figure 8: Safe Operating Limits at Maximum Duty Factor

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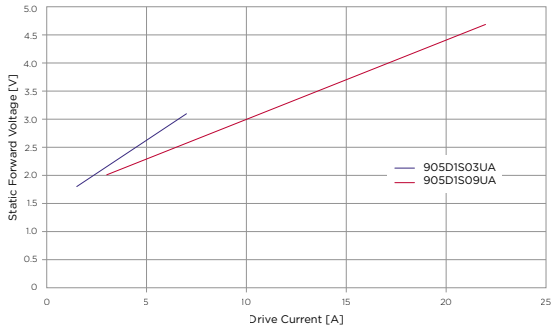


Figure 9: Single-Junction Units Static Forward Voltage vs. Current

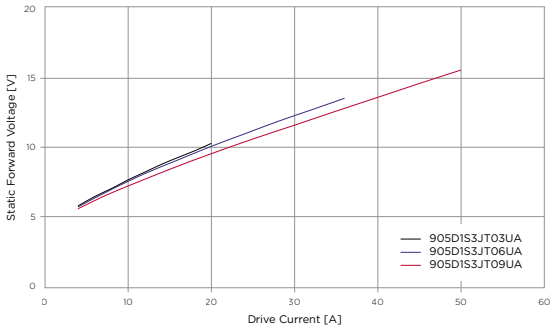


Figure 10: Triple-Junction Units Static Forward Voltage vs. Current

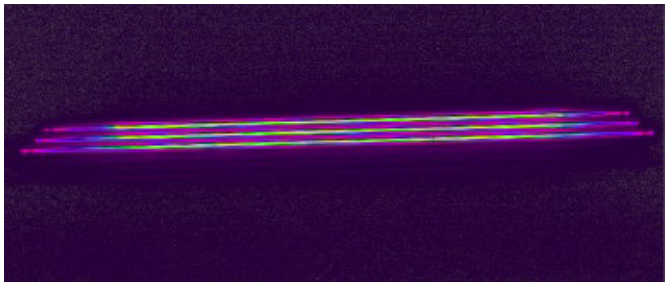


Figure 11: Typical Near Field Scan of Triple Junction Lasers

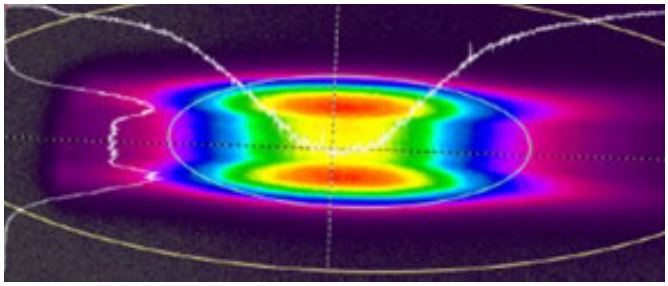
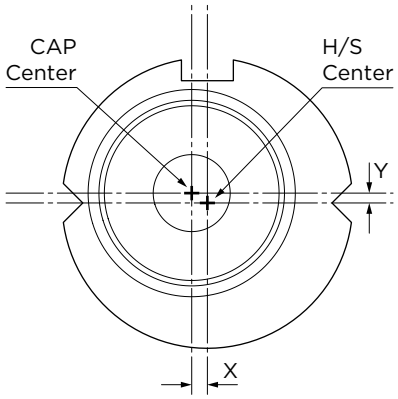
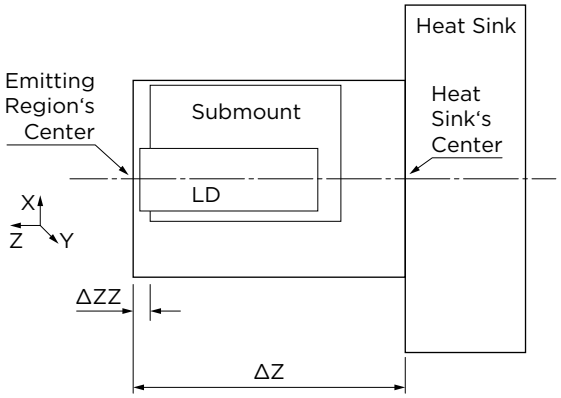


Figure 12: Typical Far Field Beam Scan for Triple-Junction Units

Die Placement Accuracy

Measuring Point	Tolerance
LD ΔX [µm]	0 ± 50
LD ΔY [µm]	0 ± 50
LD ΔZ [µm]	1260 ± 30
LD Δθ [°]	0 ± 2
Cap X [µm]	0 ± 100
Cap Y [µm]	0 ± 100





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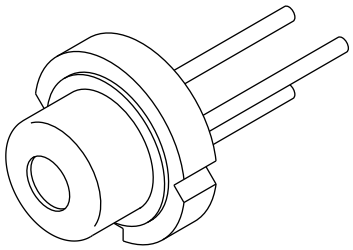
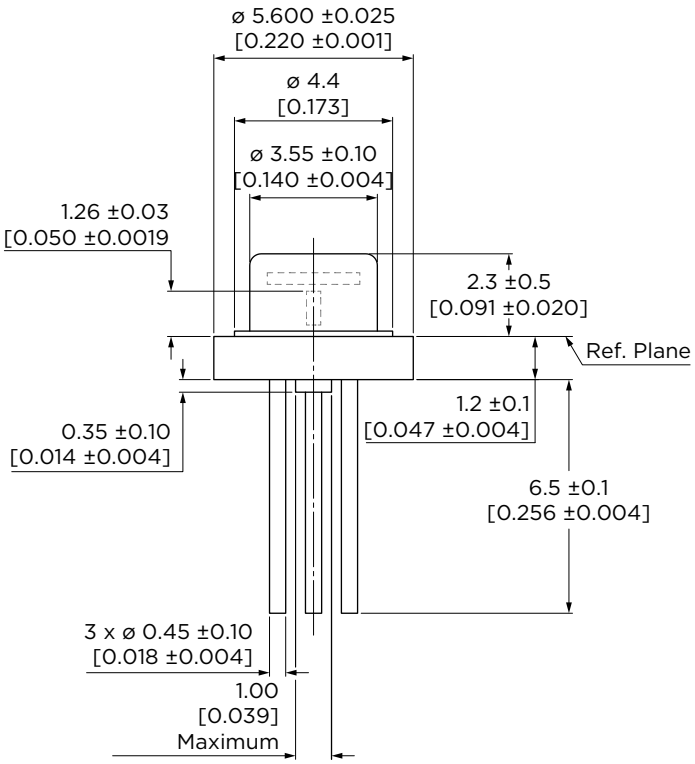
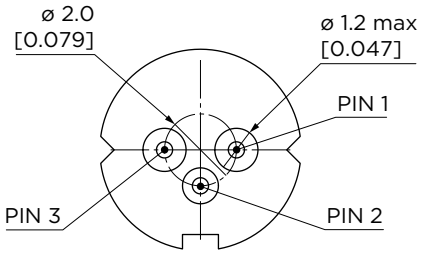
TECHNICAL DRAWING

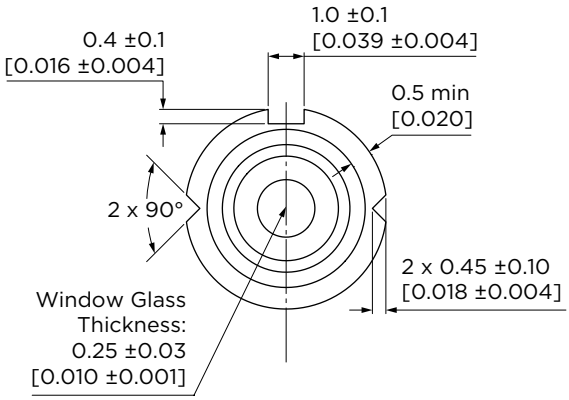
Package UA and UAP 5.6 mm CD







REAR VIEW



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

Units: mm [inch]
Dimensions are in millimeters - [inches] and are for reference only.

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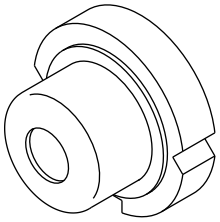
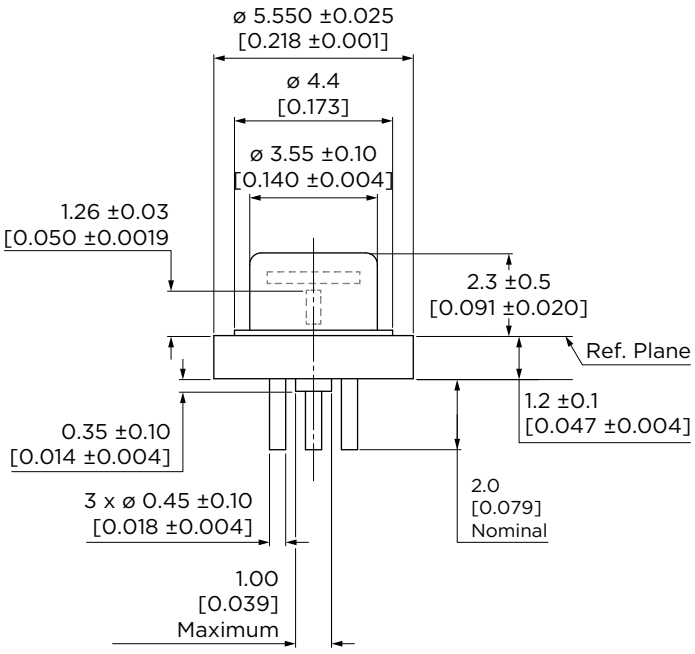
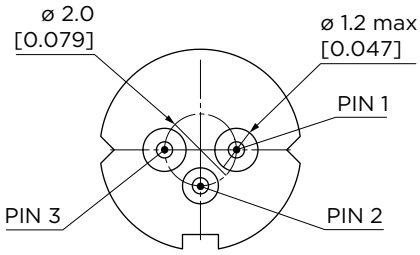
TECHNICAL DRAWING

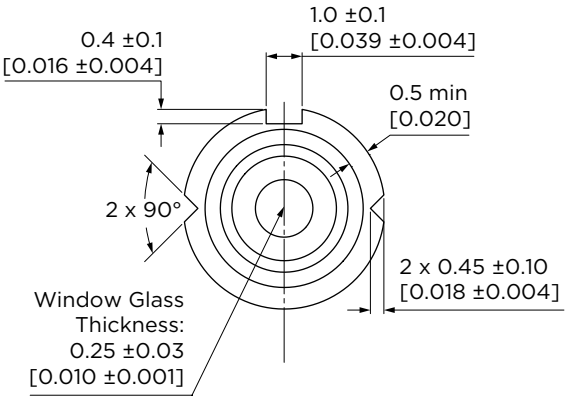
Package UAS 5.6 mm CD with 3.4 ± 0.1 mm leads







REAR VIEW



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

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ORDERING INFORMATION

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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«.

RoHS compliant

Handling Precautions

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

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