BLOOM
LASERS FOR INDUSTRY

SCAN ME

YUCCA 45-343

High power short nanosecond UV laser for high-speed precision micromachining

YUCCA, the UV fiber laser, provides high power at high pulse repetition rates with short nanosecond pulses. It is fully designed to improve laser process quality with shorter pulse widths and increase productivity with higher pulse repetition rates.

Its innovative patented fiber design enables a unique combination of short nanosecond pulses, performance for high-speed process and reduced overall processing cost. With a constant short nanosecond pulse duration and beam quality over the whole pulse repetition rate range, YUCCA is the right laser source for the next generation of UV laser micromachining equipment targeting higher throughput.

YUCCA is designed with high-end methodologies to exceed industrial quality standards and to guarantee reliability and serviceability. Manufactured with field proven technology and qualified components, good practices and high-quality, YUCCA is the right answer for 24/7 operations in extended production cycle environments.

Wavelength	**343 nm**
Power (*) (*) 7.5 ns pulse duration	45 W at 225 kHz 45 W at 400 kHz 25 W at 800 kHz
Pulse Duration (**) (**) Factory set	2 ns, 5 ns, 7.5 ns, 10 ns or burst mode
Beam quality	$M^2 < 1.2$

Advantages

- High power 45 W up to 600 kHz
- Short pulses 2 ns up to 1 MHz
- Excellent beam quality $M^2 < 1.2$ up to 1 MHz
- High peak power up to 40 kW
- Field proven technology
- Long UV crystal lifetime
- HALT designed / HASS Certified
- 2 ns, 5 ns, 7.5 ns, 10 ns or burst

Applications

- PCB via drilling, cutting and depaneling
- ITO patterning
- Wafer scribing and debonding
- Glass processing
- CFRP processing
- Battery processing
- Ceramic scribing, cutting and drilling
- Material texturing

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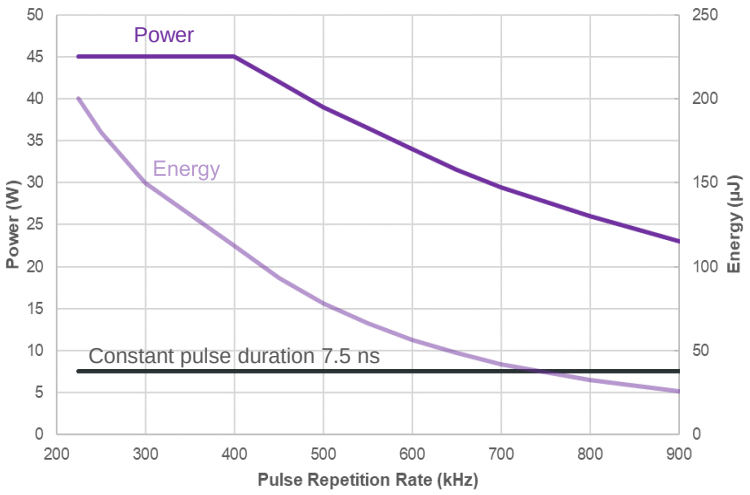
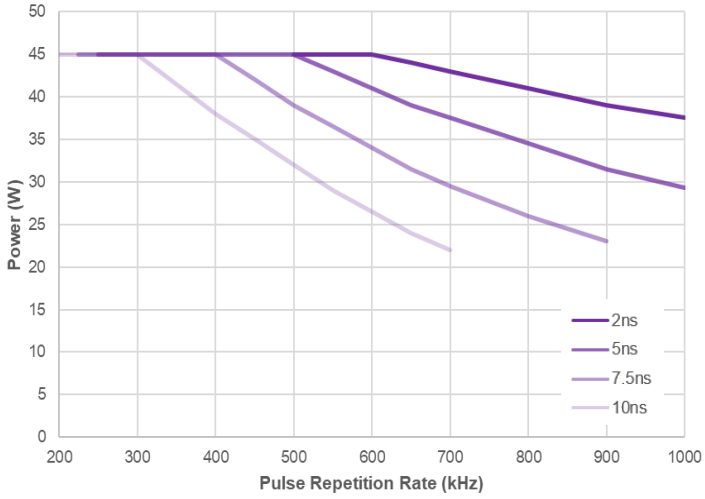
Typical performances

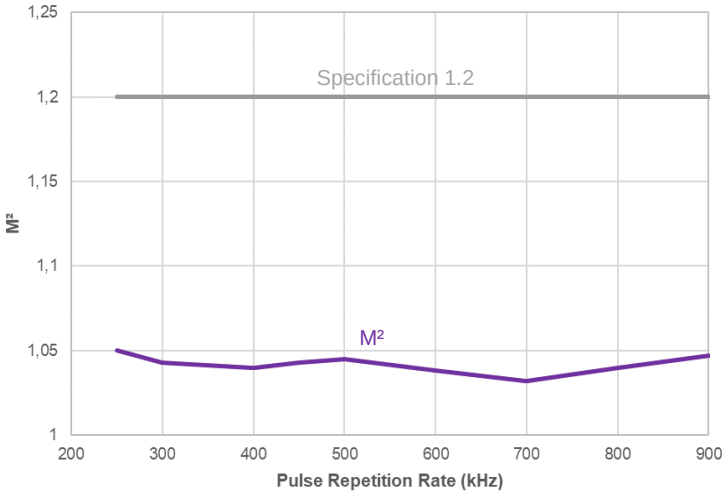
Power, Energy at 7.5 ns



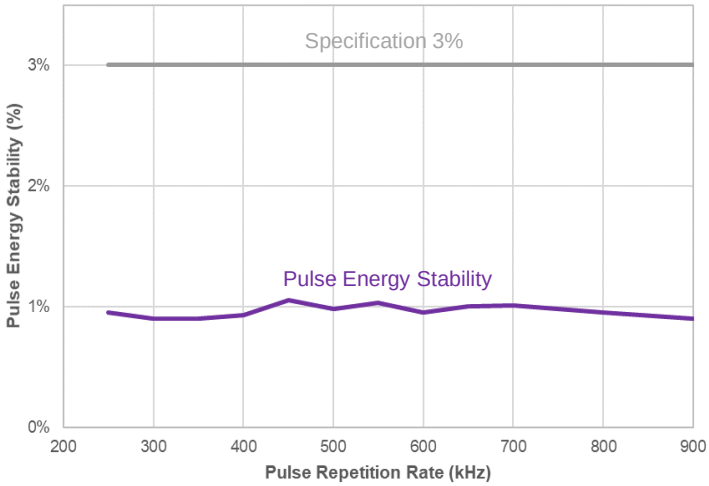
Power at 2 ns, 5 ns, 7.5 ns, 10 ns



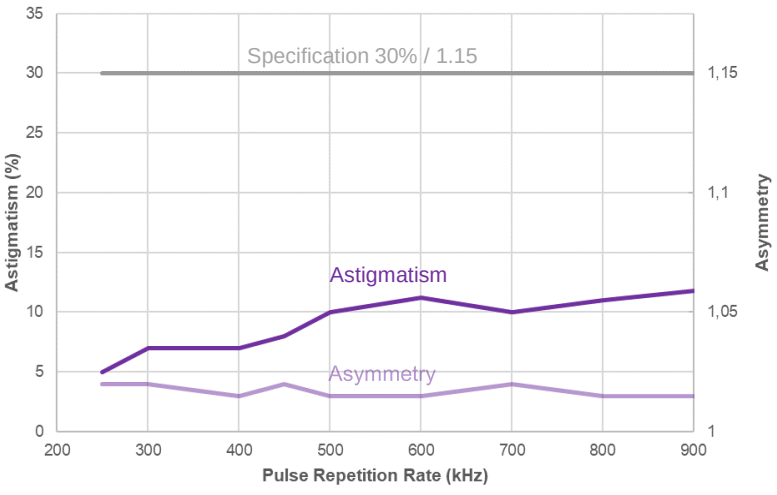
M² at 7.5 ns



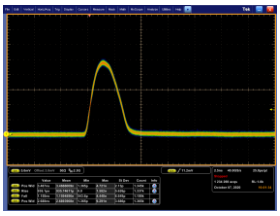
Pulse Energy Stability at 7.5 ns



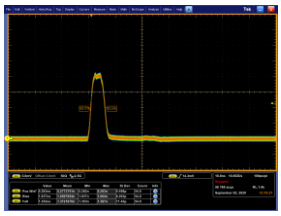
Astigmatism and Asymmetry at 7.5 ns



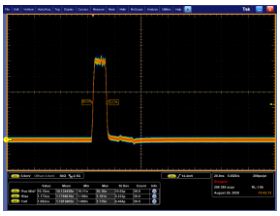
Factory Set Pulses



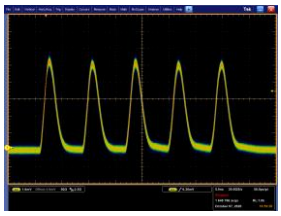
2 ns



5 ns



10 ns



5 x 2 ns ; Δ = 2 ns

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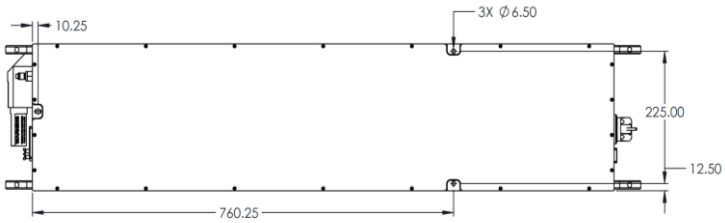
Specifications

Output Characteristics					
Central Wavelength	343 nm ± 0.1 nm				
Average Power (*) (**) (*) Pulse duration to be chosen by customer between 2 ns and 10 ns and factory set (**) Burst available on request	2 ns	5 ns	7.5 ns	10 ns	Burst
	45 W @ 500 kHz 45 W @ 600 kHz 35 W @ 1000 kHz	45 W @ 250 kHz 45 W @ 500 kHz 29 W @ 1000 kHz	45 W @ 225 kHz 45 W @ 400 kHz 25 W @ 800 kHz	45 W @ 200 kHz 45 W @ 300 kHz 20 W @ 700 kHz	(**)
Pulse Width	2 ns, 5 ns, 7.5 ns, 10 ns or burst				
Pulse Repetition Rates	Single-shot to 1 000 kHz				
Power Stability	< 2%, 2σ over 8 hours				
Pulse to Pulse Energy Stability	< 3% RMS				
Beam Characteristics					
Spatial Mode	TEM_{00}				
M^2	≤ 1.2				
Polarization Ratio	≥ 100:1 linear				
Polarization Direction	Vertical, ± 2°				
Beam Divergence (full-angle)	< 0.3 mrad				
4σ Beam Diameter @ exit (nominal)	3.5 mm ± 0.35 mm				
Waist Location (from exit face of output window)	0 m ± 6 m				
Astigmatism	≤ 30%				
Beam Circularity	≥ 90%				
Long Term Beam Pointing Stability, over 8 hours	≤ 25 µrad, full-angle				
Operating Conditions					
External Communications	Ethernet / RS-232 / USB				
Warm-up Time Cold Start Warm Start	 ≤ 30 minutes ≤ 10 minutes				
Electrical Requirements	100 – 240V AC				
Line Frequency	50 to 60 Hz				
Power Consumption	< 900 W				
Temperature Range	15°C to 35°C (59°F to 95°F)				
Humidity	10% to 95% RH, non-condensing				
Storage conditions Temperature Humidity	 0°C to 50°C (32°F to 122°F) 5% to 95% RH				
Altitude (non-operational)	Sea level to 11 000 meter				
Chiller Requirements					
Cooling Water Temperature	25 °C +/- 0.1 °C				
Minimum Cooling Power	700 W				
Cooling Water Flow	5 liter/min, 3 liter/min minimum				
Physical Characteristics					
Dimensions (L x W x H, mm)	Laser Head : 1146 x 250 x 169 mm (45.11 x 9.84 x 6.65 in) Control Unit : 506 x 483 x 177 mm (19.92 x 19.01 x 6.97 in)				
Weight	Laser Head : 50 kg (110 lbs) without water Control Unit : 25 kg (55 lbs)				
Features					
Extended Internal Power Monitoring	Power monitored at each stage of the laser				
Ultra Wide Operation Range	Constant pulse width and beam parameters between 250 kHz and 1 MHz				
Industry Ready Data Logging	Long-term and short-term laser operation log, diagnosis, maintenance				
Alignment Beam	Low power mode level for laser installation and alignment				
Sacrificial Window	Field Replaceable Unit				
Advanced support	Industry 4.0 ready, remote control, remote support, >30 sensors in laser head				
Best practices	Sealed laser head, multi-stage components cleaning and assembled in ISO 6 cleanroom				

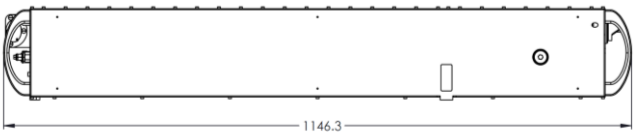
YUCCA 45-343 Specifications

Laser Head (in mm)

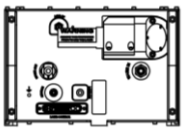


Bottom View

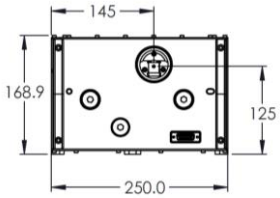
Top View



Side View

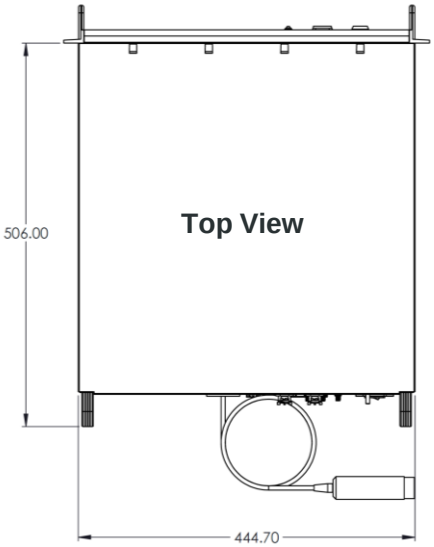


Rear View

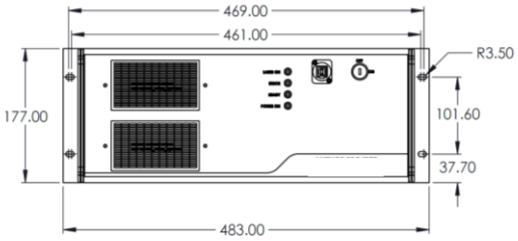


Front View

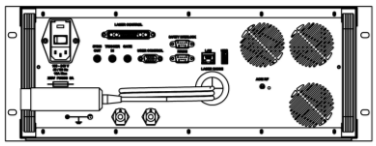
Power Supply (in mm)



Top View



Front View



Rear View

According to BLOOM continuous product improvements, specifications and drawings are subject to change without notice.

BLOOM Lasers
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