

YUCCA 100-343

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 (*) 3 ns pulse duration (**) 10 ns pulse duration	100 W at 200 kHz ** 100 W at 800 kHz * 90 W at 1 MHz *
Pulse Duration (**) (**) Factory set	2 ns, 3 ns, 5 ns, 10 ns or burst mode
Beam quality	$M^2 < 1.2$



Advantages

- ✓ Unprecedented beam quality
- ✓ High power 100 W up to 1 MHz
- ✓ High energy > 500 µJ/pulse
- ✓ Excellent beam quality $M^2 < 1.2$ up to 4 MHz
- ✓ High peak power up to 50 kW
- ✓ Competitive price/COO
- ✓ Long UV crystal lifetime
- ✓ HALT designed / HASS Certified
- ✓ Pulse-On-Demand capability

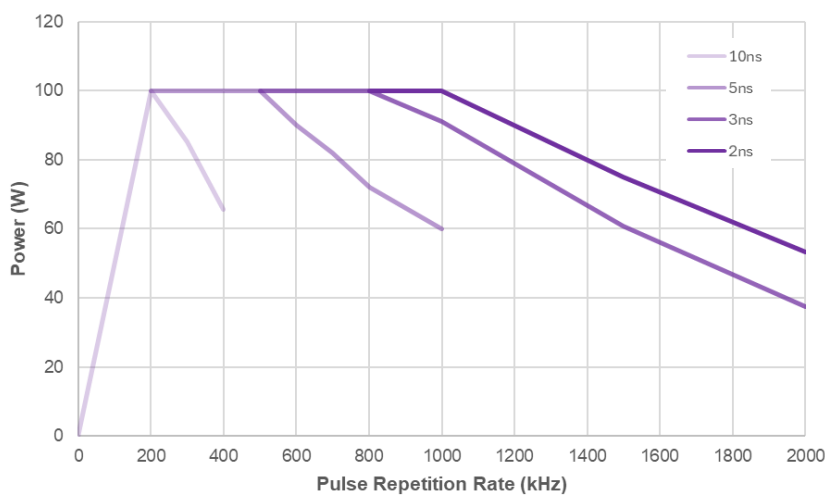
Applications

- ✓ PCB/Flex PCB via drilling, cutting and dpaneling
- ✓ Advanced packaging drilling and ablation
- ✓ Wafer scribing and debonding
- ✓ Photovoltaics scribing, cutting, deletion
- ✓ CFRP cutting, drilling and texturing
- ✓ OLED drilling and Lift-Off
- ✓ Ceramic scribing, cutting and drilling
- ✓ Glass processing (TGV)
- ✓ LED processing

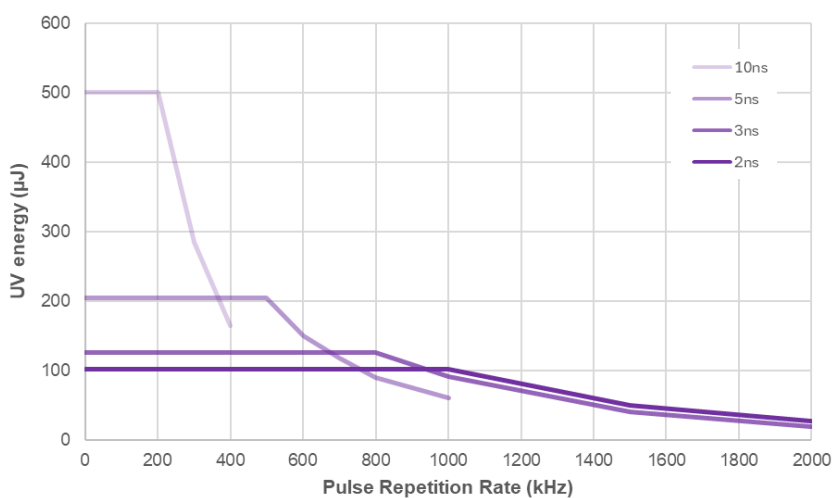
YUCCA 100-343

Typical performances

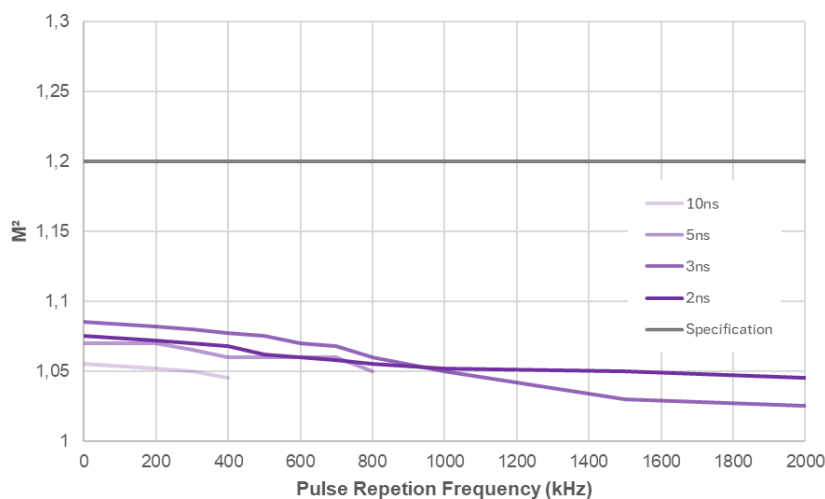
Power at 2 ns, 3 ns, 5 ns, 10 ns



Energy at 2 ns, 3 ns, 5 ns, 10 ns



Typical M^2 at 2 ns, 3 ns, 5 ns, 10 ns



YUCCA 100-343

Specifications

Output Characteristics

Central Wavelength	343.3 nm \pm 0.5 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	3 ns	5 ns	10 ns	Burst
	100 W @ 1 MHz 70 W @ 1.5 MHz 50 W @ 2 MHz	100 W @ 800 kHz 90 W @ 1 MHz 30 W @ 2 MHz	100 W @ 500 kHz 55 W @ 1 MHz	100 W @ 200 kHz 60 W @ 400 kHz	(**)
Pulse Width	2 ns, 3 ns, 5 ns, 10 ns or burst				
Pulse Repetition Rates	Single-shot to 4 MHz				
Power Stability	< 2%, 2 σ over 8 hours				
Pulse to Pulse Energy Stability	< 3% RMS				

Beam Characteristics

Spatial Mode	TEM ₀₀				
M ²	\leq 1.2				
Polarization Ratio	\geq 100:1 linear				
Polarization Direction	Vertical, \pm 2°				
Beam Divergence (full-angle)	< 0.3 mrad or < 0.2 mrad				
4 σ Beam Diameter @ exit (nominal)	3.5 mm \pm 0.35 mm or 5 mm \pm 0.5 mm				
Astigmatism	\leq 30%				
Beam Circularity	\geq 90%				
Long Term Beam Pointing Stability, over 8 hours	\leq 25 μ rad, full-angle				

Operating Conditions

External Communications	Ethernet / RS-232 / USB				
Warm-up Time					
Cold Start	\leq 30 minutes				
Warm Start	\leq 2 minutes				
Electrical Requirements	100 – 240V AC				
Line Frequency	50 to 60 Hz				
Power Consumption	< 1500 W				
Temperature Range	15°C to 35°C (59°F to 95°F)				
Humidity	10% to 95% RH, non-condensing				
Storage conditions					
Temperature	0°C to 50°C (32°F to 122°F)				
Humidity	5% to 95% RH				
Altitude (non-operational)	Sea level to 11 000 meter				

Chiller Requirements

Cooling Water Temperature	25 °C \pm 0.1 °C
Minimum Cooling Power	1200 W
Cooling Water Flow	5 liter/min, 3.5 liter/min minimum

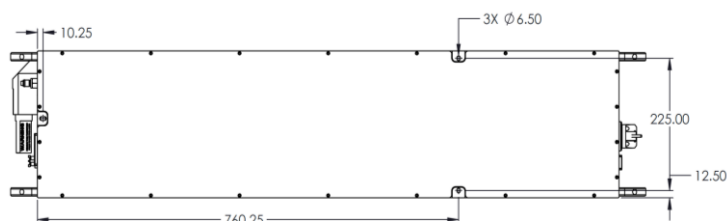
Physical Characteristics

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)

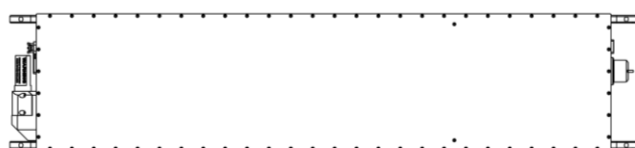
Features

Extended Internal Power Monitoring	Power monitored at each stage of the laser
Ultra Wide Operation Range	Constant pulse width and beam parameters over the whole pulse repetition rate range
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 (class 1000)

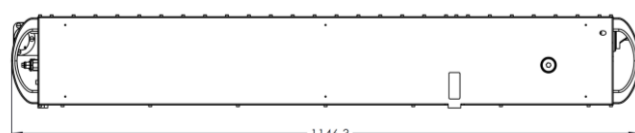
Laser Head (in mm)



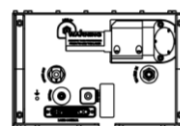
Bottom View



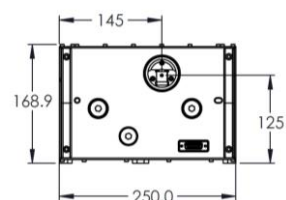
Top View



Side View

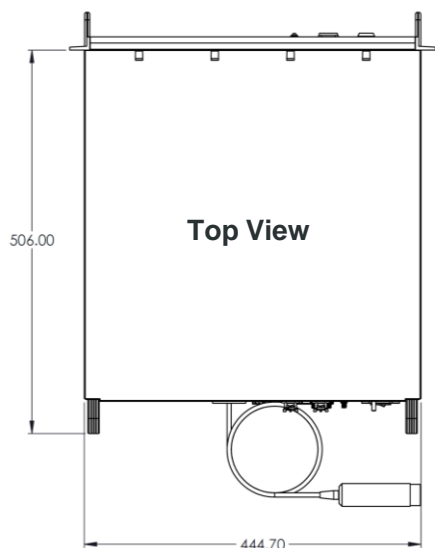


Rear View

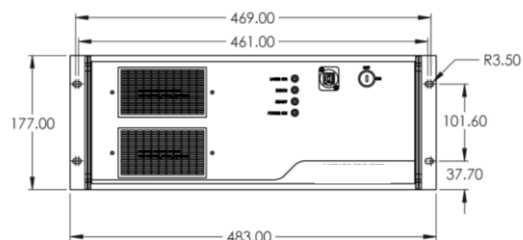


Front View

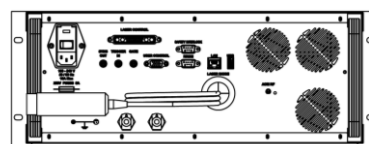
Power Supply (in mm)



Top View



Front View



Rear View

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