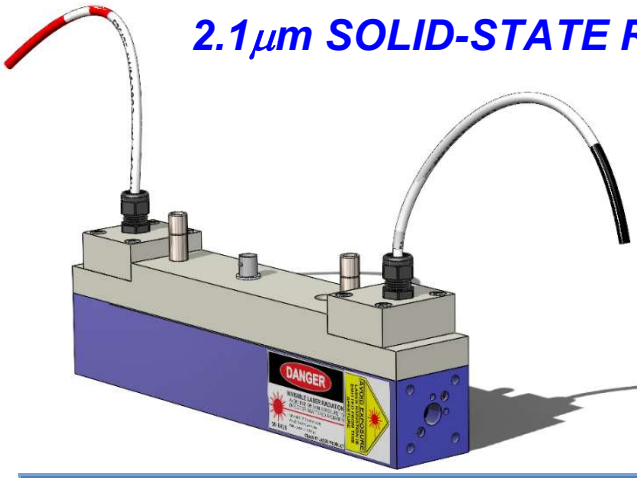
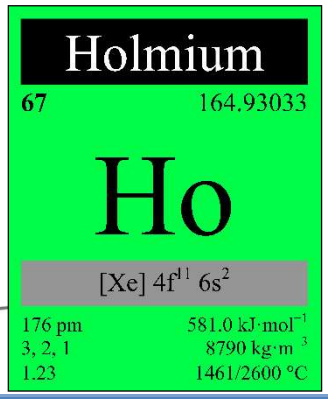
2.1μm SOLID-STATE Resonators





Parameter	Value	Notes
Wavelength	2.1 µm	
Resonator Output	40+ W	@10-20 Hz & 500 µs typical
Lamp Voltage	700 V	@40W & 500 µs typical
Pulse Width	100-2000 µs	
Coolant Temp	20°C	Typical (deionized H2O)
Coolant Flow Rate	8-10 Liters/min	Configuration dependent
Repetition Rate	5-30 Hz	
Dimensions	26.5 x 4.8 x 10.1 cm	Configuration dependent

- For more information, contact sales@megawattlasers.com

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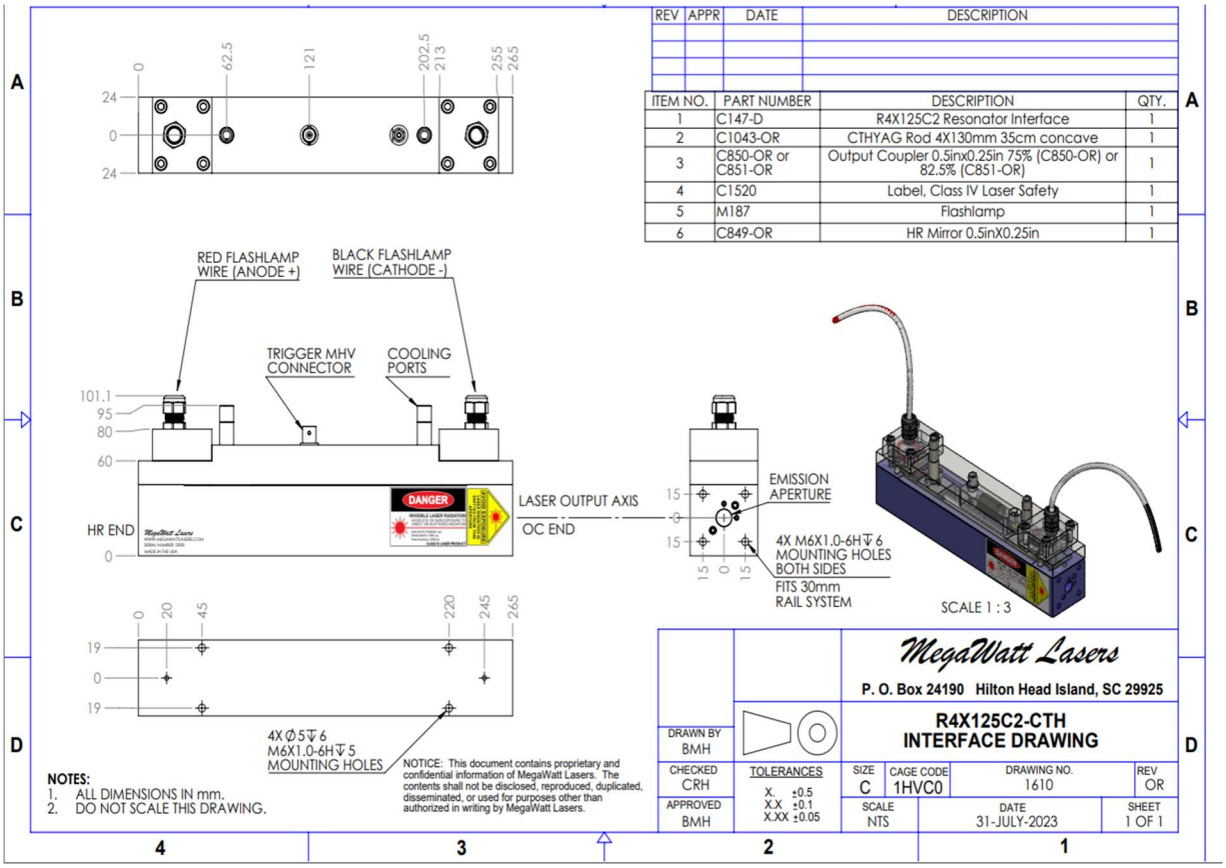
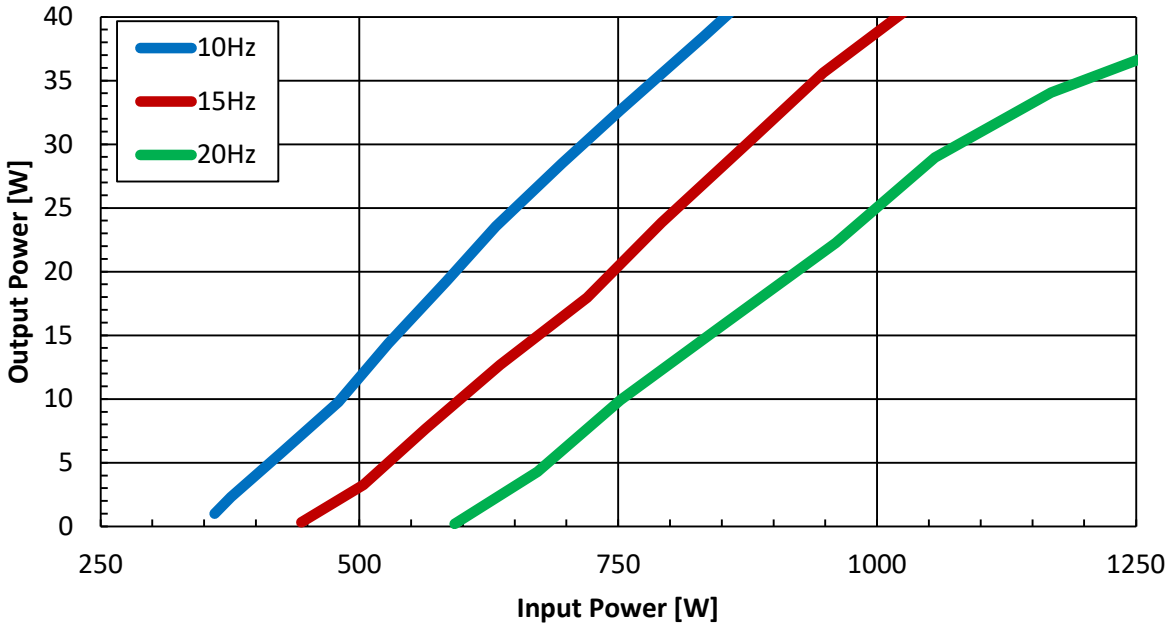
2.1μm SOLID-STATE Resonators

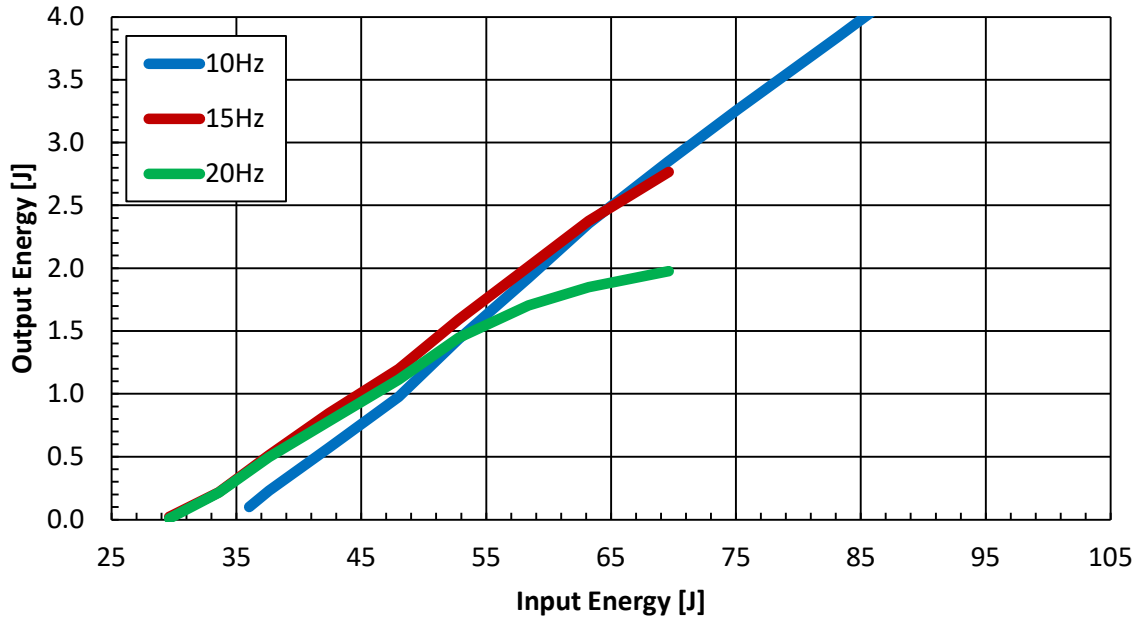
MegaWatt Lasers is pleased to offer off-the-shelf laser resonator assemblies. These resonators are intended for OEM or R&D applications. Laser assemblies include: pump chamber, flashlamp, laser rod, trigger electronics, and resonator optics tailored for the specific application. This resonator assembly is perfectly suited as a laboratory laser which can easily transform into an OEM design. Also available are resonator assemblies using other solid-state laser media, such as Er:YAG, Er:Glass, Nd:YAG, Nd: Glass, Ruby, and Alexandrite. MegaWatt Lasers also offers custom resonators with average powers up to 150 W (2.13 µm) as well as turnkey systems. Our Engineering department has considerable experience assisting OEM customers with custom and/or complete system designs.

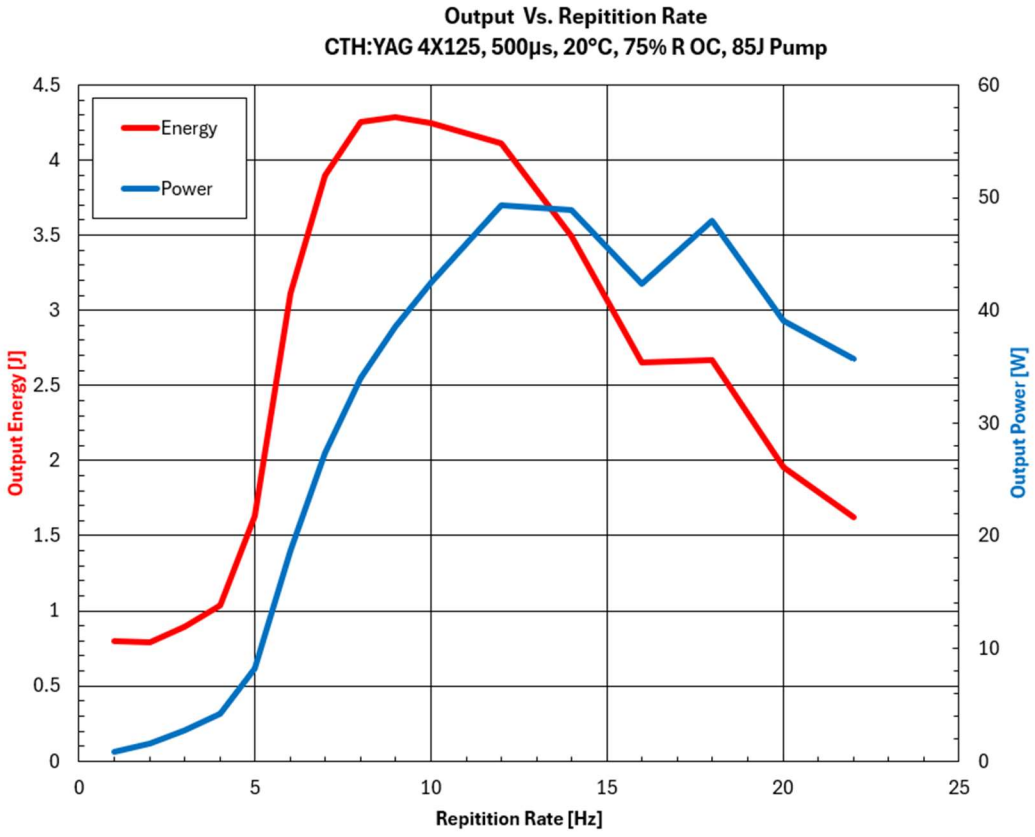


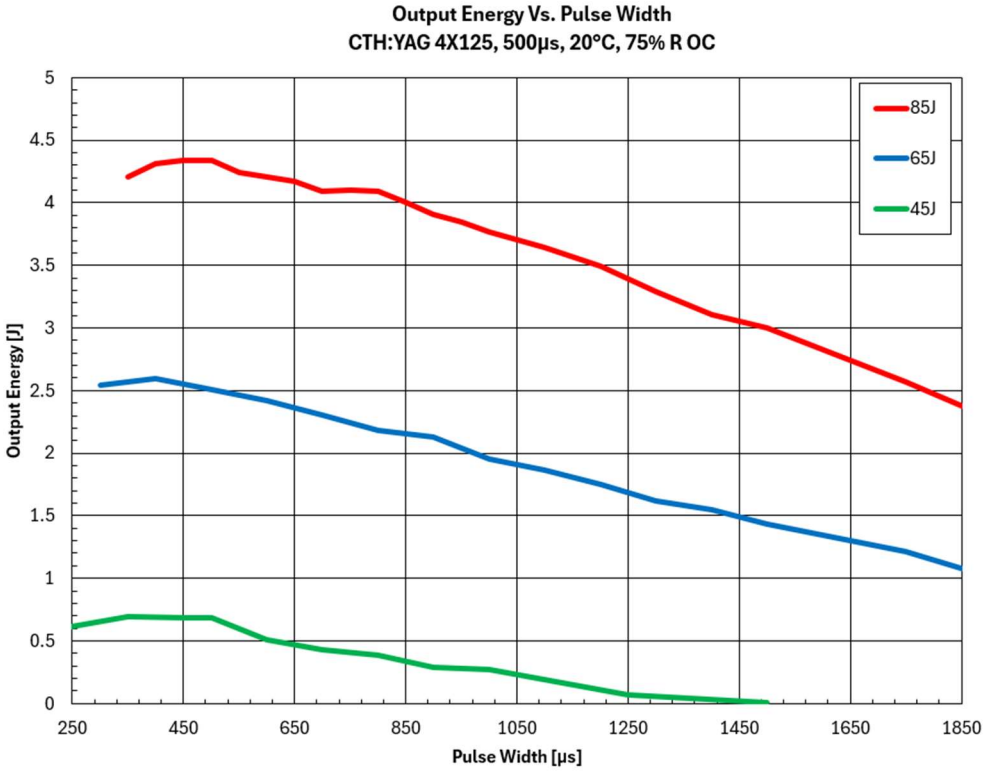
Input Power Vs. Ouput Power
CTH:YAG 4X125, 500 µs, 20°C, 75% R OC

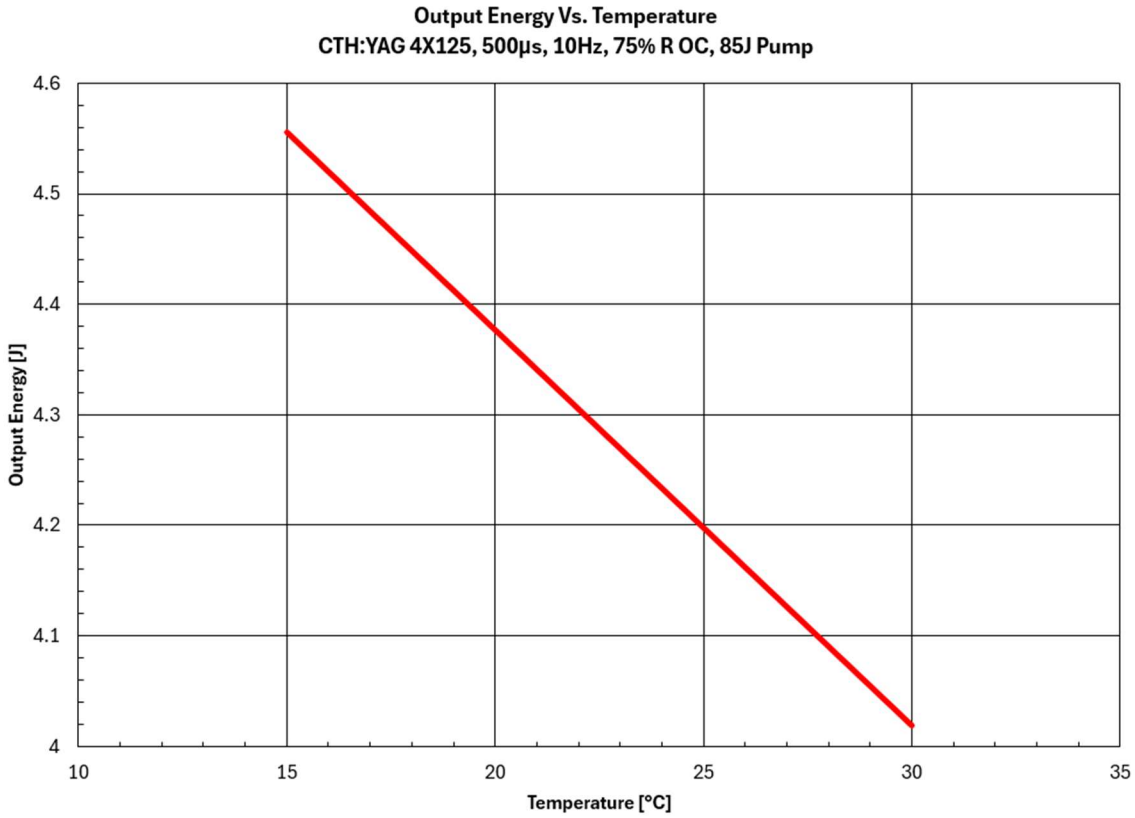


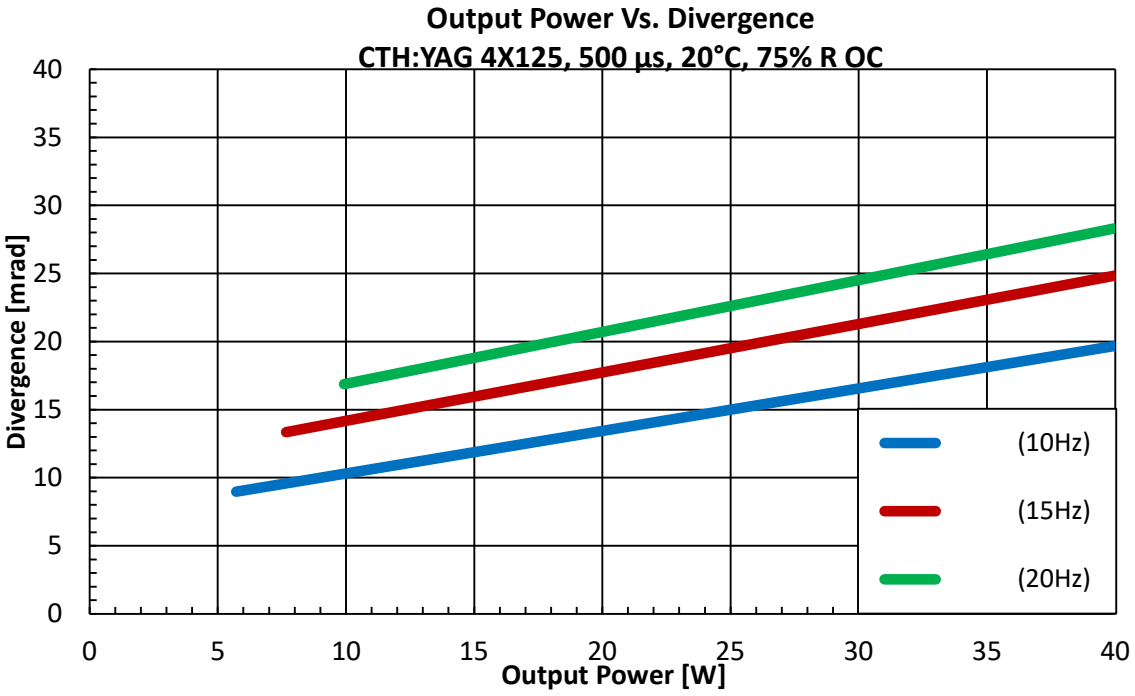
Input Energy Vs. Ouput Energy
CTH:YAG 4X125, 500 µs, 20°C, 75% R OC



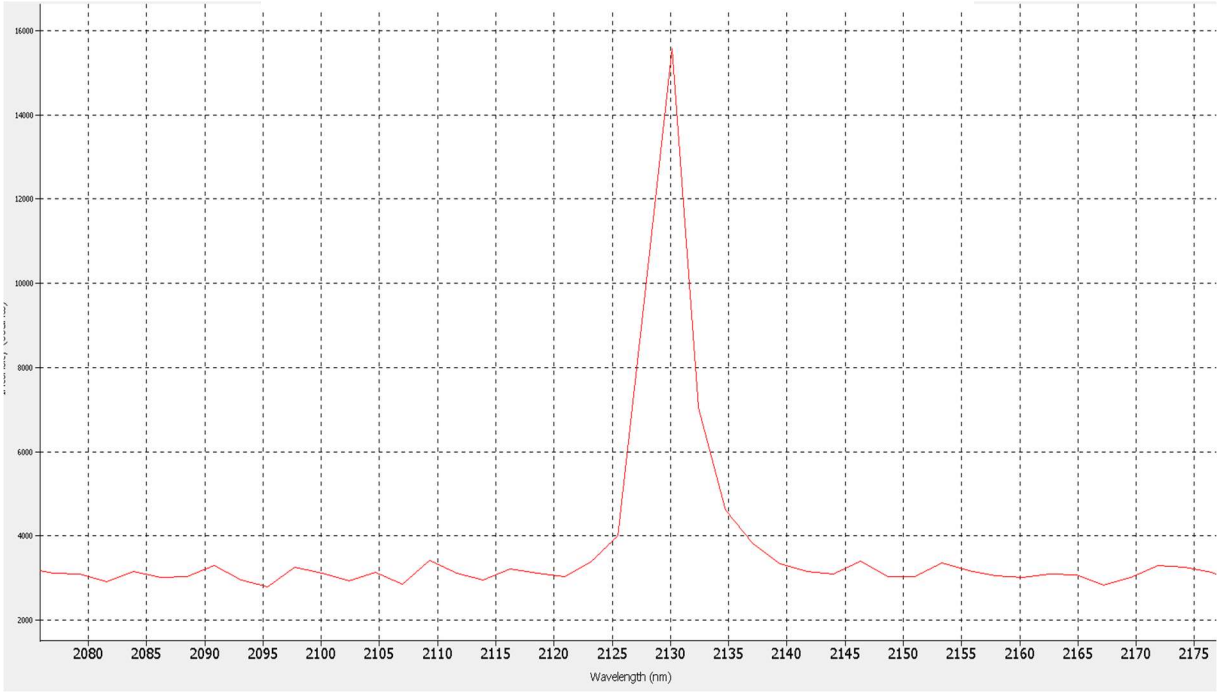

Output Vs. Repitition Rate
CTH:YAG 4X125, 500µs, 20°C, 75% R OC, 85J Pump
Energy
Power
Output Energy [J]
Output Power [W]
Repitition Rate [Hz]
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
0
10
20
30
40
50
60
0
5
10
15
20
25


Output Energy Vs. Pulse Width
CTH:YAG 4X125, 500µs, 20°C, 75% R OC
85J
65J
45J
Output Energy [J]
Pulse Width [µs]
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5
250
450
650
850
1050
1250
1450
1650
1850


Output Energy Vs. Temperature
CTH:YAG 4X125, 500µs, 10Hz, 75% R OC, 85J Pump
Output Energy [J]
4.6
4.5
4.4
4.3
4.2
4.1
4
10
15
20
25
30
35
Temperature [°C]


Output Power Vs. Divergence
CTH:YAG 4X125, 500 µs, 20°C, 75% R OC
Divergence [mrad]
40
35
30
25
20
15
10
5
0
0
5
10
15
20
25
30
35
40
Output Power [W]
(10Hz)
(15Hz)
(20Hz)

Spectral measurement of CTH:YAG, 4mm diameter rod



Pump Chamber	Output Coupler	Coolant Temperature	Repetition Rate	Pulse Width	Output Power
[Type]	[%]	[°C]	[Hz]	[µs]	[W]
4X125	82.5	18	10	500	33.7

Flashlamp Driver Recommendations:

For lithotripsy applications, typical operational parameters are up to 40 Watts of average power at 10 Hz with an electrical pulse duration of 500 microseconds. Using an M187 flashlamp, the capacitor bank voltage is approximately 700 volts. Usually a relatively large capacitor bank (~ 3000uF) is used and the flashlamp current is switched with an IGBT. The resulting current pulse is roughly “square” in shape. A good laboratory driver would be MegaWatt’s KALD-20-10.

Resonator Table of replacement components:

Table of Standard Replacement Components for R4X125C2-CTH		
Part #	**Value**	**Notes**
4X125C2	Pump Chamber	
C1043	CTH:YAG laser rod, 4X130 with 35cm CC ROC	
M187	Flashlamp	
C849	HR mirror, ∅ ½ x ¼ in thick	
C850	PR mirror, R=75%, ∅ ½ x ¼ in thick	Also available 82%