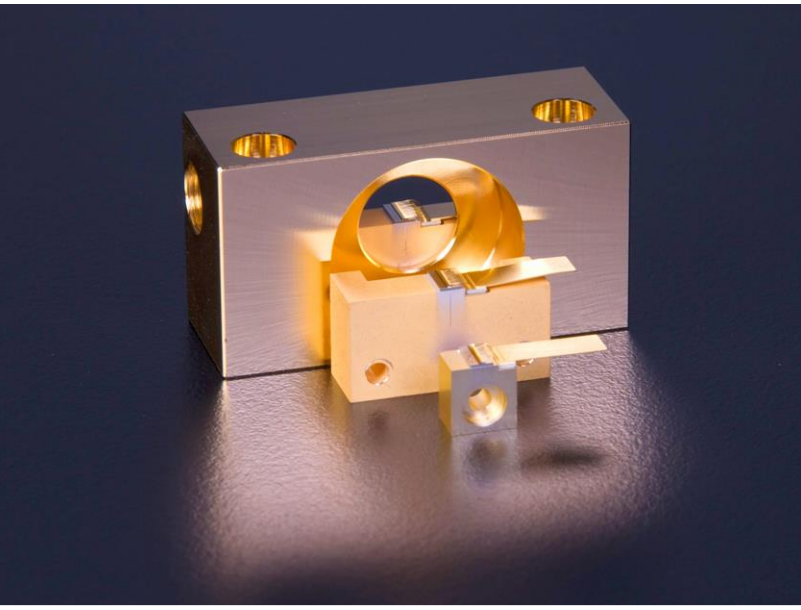
TA-0860-3000

Tapered Amplifier for MOPA Setups



Operation Range: 850 nm to 868 nm
Output Power: 3000 mW
M^2 ($1/e^2$): < 1.7
Side Mode Suppression: > 40 dB
Anti-Reflection Coating: < 0.01%
Packaging: C-Mount / DHP-I / DHP-F

General Description

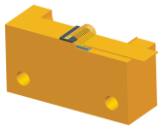
GaAs based tapered amplifiers are used for the amplification of an existing seed laser. The seed power between 10 mW and 30 mW can be amplified up to nearly diffraction limited power values in the Watt-range. Such a setup is called MOPA (Master Oszillator Power Amplifier). The rear facet and the front facet are both provided with an anti-reflection coating of less than 0.01% to avoid laser action of the amplifier chip itself. Application examples for MOPA setups with tapered amplifiers are optical cooling, optical trapping, Raman spectroscopy and high resolution absorption spectroscopy.

Advantages

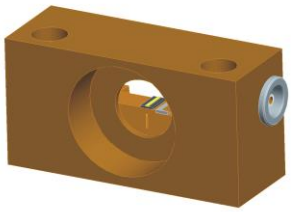
- Tuning range between 850 nm and 868 nm
- Suitable for MOPA setups up to 3000 mW
- Nearly diffraction limited with M^2 ($1/e^2$) < 1.7
- Side mode suppression of more than 40 dB
- Highly anti-reflection facet coatings < 0.01%
- Passive cooling
- Different packages available

C-Mount

DHP-I



DHP-F



Options

- The TA-0860-3000 can be mounted on a c-mount or optionally on a DHP inset or a DHP frame for better handling.
- The TA-0860-3000 can be ordered with selected beam quality parameters M^2.
- The TA-0860-3000 is also available for external cavity configurations, see product datasheet TAL-0860-3000.

TA-0860-3000
Specification Data

Product		TA-0860-3000
Spectral Data		
Wavelength Operation Range [1]	nm	850 to 868
Possible Wavelength Operation Without ASE [1/2]	nm	845 to 872
ASE Suppression	dB	> 40
Typical Seed Power [3]	mW	15
Maximum Seed Power [3]	mW	30
Minimum Seed Power [3]	mW	10
Beam Parameter Output Facet		
Output Aperture at Front Side	µm	256 x 1.2
Divergence Parallel (95%)	°	10 to 12
Divergence Perpendicular (95%)	°	50
M^2 ($1/e^2$) [4]		< 1.7
Astigmatism	µm	Depends On Operating Conditions
Electrical Data		
Typical Operation Current (2000 mW)	A	3.5
Typical Operation Current (3000 mW)	A	4.5
Maximum Operation Current With Injection	A	5
Maximum Operation Current Without Injection	A	2.0
Operation Voltage	V	< 1.7
Polarization		TE
Thermal Data		
Operating Temperature	°C	15 to 30
Recommended Heat Sink Temperature	°C	20
Storage Temperature [4]	°C	-20 to 60
Operating Conditions		Non-Condensing Atmosphere
Package		
Heat Sink Type [5]		C-Mount
Cavity Length	µm	5000
Cathode (-)		Wire Flag
Anode (+)		Base Plate
Other Specifications		
RoHS 2002/95EC Compliant		Yes
Optional		
Packaging		
Heat Sink Type		DHP-inset (DHP-I), DHP-frame (DHP-F)
Connector		Customized Connector Cables
Related Products		
For External Cavity Setups		TAL-0860-3000

[1] Tolerance of +/-2nm, not exceeding maximum operation current [2] Lower output power possible at periphery areas with max. operation current
[3] Measured in front of rear facett [4] Measured in accordance to ISO 11146 [5] In a non condensing atmosphere [6] Other heat sinks on reque

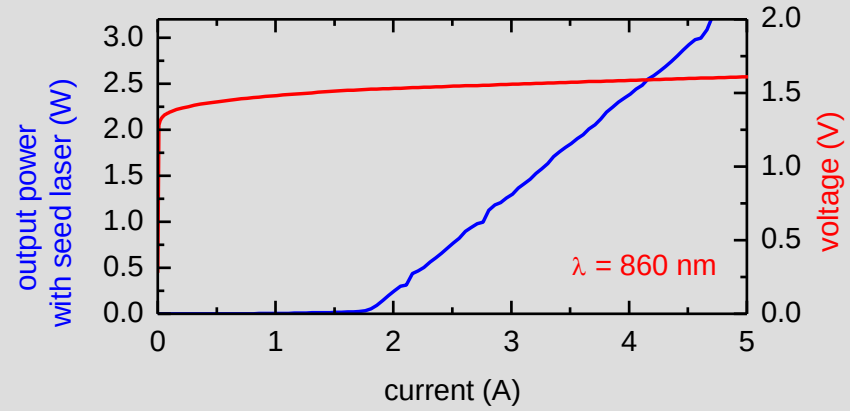
Safety
This is a laser class IV product according to IEC - Standard International Commission (Publication 825, 1993). The laser light emitted from this laser diode is invisible and/or visible and is harmful to the human eye. The safety regulations for eye and personell protection included in the IEC Standard must be observed to avoid any harm to operating personell. Avoid direct exposure and looking into the laser diode, into the collimated beam or into the fiber when it is linked to the module.

Storage and shipping
Store and ship the diode laser with shortened electrical contacts, in a clean and dry atmosphere and in a tempertaure range of 0°C to 60°C.

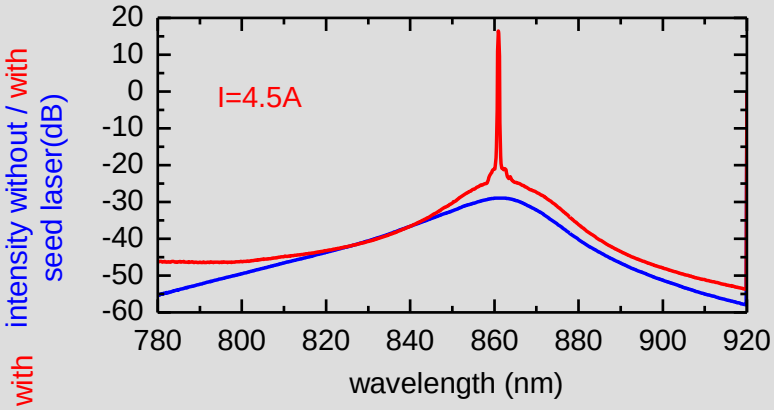
Operation and handling
Diode lasers are extremely sensitive to over-voltage. Take extreme precaution to avoid electrostatic charges. Precautions against spiking during switching on and off the power supply must be assured. Correct polarity of power supply must be assured. During handling personell has to wear wrist straps. Grounded work surfaces and additional antistatic techniques are mandatory during handling.
Device failure and safety hazard are caused by operation in excess of maximum ratings. Exceeding output power and temperature specification will result in accelerated device ageing.
Do not mount via any paste-like media!

TA-0860-3000
Example Measurement Data

The charts presented only describe typical examples. All modules are characterised individually, the results being contained in the documentation included. The display options are subject to alteration.

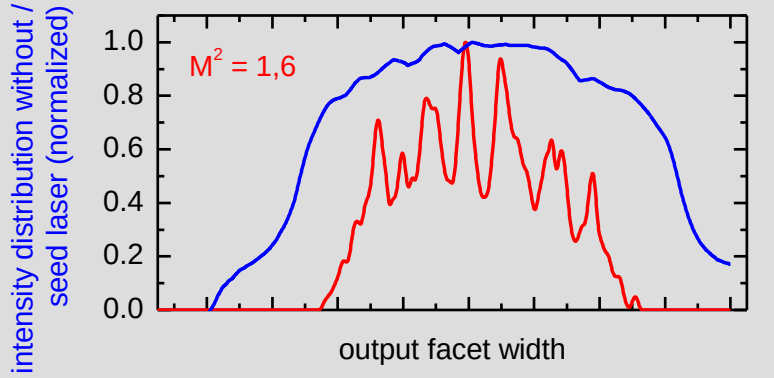


P(I) and U(I) characteristics. All measurements have been done for 20 mW seed power and at 20 °C in cw operation



Amplifier output spectrum with and without seed power.

Operation beyond the central tuning range and power specified may induce increased thermic stress to the modules and thereby reduce its service life.

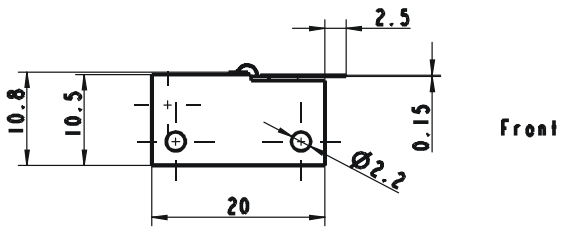


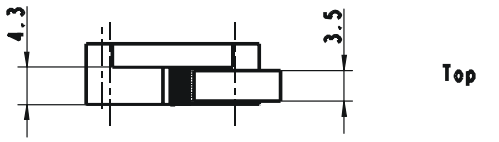
Intensity distribution at the amplifier output facet in the slow axis with seed power.

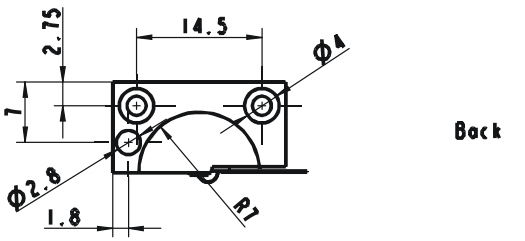
M^2 has been measured using a commercial BeamScope in accordance to ISO 11146.

TA-0860-3000
Package Drawings

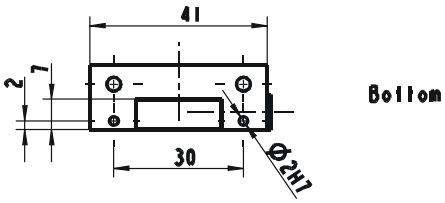
DHP-Inset

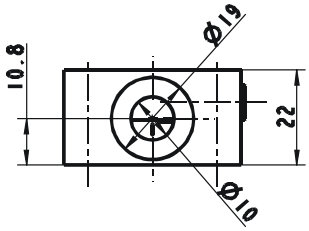


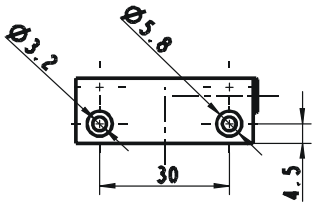


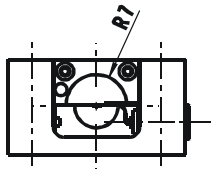


DHP-Frame

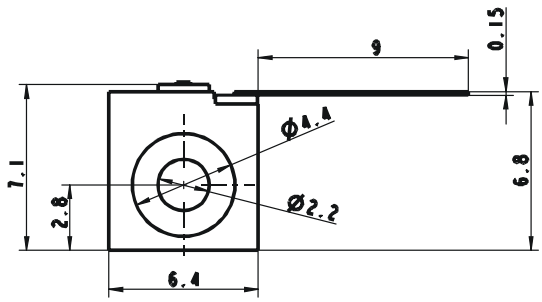


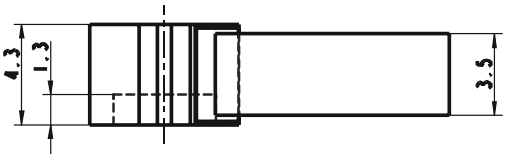


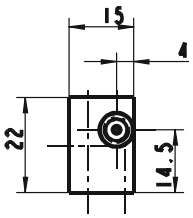




C-Mount







06-2017

DILAS Diodenlaser GmbH
Galileo-Galilei-Strasse 10
55129 Mainz, Germany

Phone: +49 (0) 6131 9226 0
Fax: +49 (0) 6131 9226 257

Email: sales@DILAS.de
Website: www.DILAS.com