Datasheet

TOPTICA EAGLEYARD

EYP-TPA-0850-02000-4006-BTU02-0000

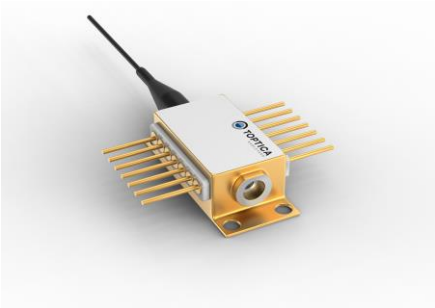
Revision 0.70

2023-01-17

TAPERED AMPLIFIER
Semiconductor Optical Amplifier

General Product Information

Product	Application
850 nm Tapered Amplifier	Spectroscopy
with hermetic 14-Pin Butterfly Housing (RoHS compliant)	
including Thermoelectric Cooler and Thermistor	
with PM fiber (input) and integrated beam collimation (output)	



Absolute Maximum Ratings

Parameter	Symbol	Unit	min	typ	max	Measurement Conditions / Comments
Storage Temperature	T_S	° C	-40		85	Stress in excess of one of the Absolute Maximum Ratings may damage the laser. Please note that a damaging optical power level may occur although the maximum current is not reached. These are stress ratings only, and functional operation at these or any other conditions beyond those indicated under Recommended Operational Conditions is not implied.
Operational Temperature at Case	T_C	°C	-20		75	
Forward Current	I_F	A			3.5	
Reverse Voltage	V_R	V			2	
Output Power	P_{opt}	W			2.2	
TEC Current	I_{TEC}	A			5	
TEC Voltage	V_{TEC}	V			7	

Recommended Operational Conditions

Parameter	Symbol	Unit	min	typ	max	Measurement Conditions / Comments
Operational Temperature at Case	T_{case}	°C	0		50	
Operational Temperature at Chip	T_{LD}	°C	10	25	35	
Forward Current	I_F	A			3.2	seeding required above 1.6 A
Input Power	P_{opt}	mW	10		50	
Output Power	P_{opt}	W			2	with proper injection from a seed laser

Characteristics at T_{LD} = 25 °C at BOL

Parameter	Symbol	Unit	min	typ	max	Measurement Conditions / Comments
Wavelength	λ	nm		850		
Gain Width (FWHM)	Δλ	nm		20		
Output Power	P_{opt}		2			
Polarization				TE		E field parallel to base plate
Amplification	G	dB		16		
Temp. Coefficient of Wavelength	dλ / dT	nm/K		0.3		

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Characteristics at T_{LD} = 25 °C at BOL cont'd

Parameter	Symbol	Unit	min	typ	max	Measurement Conditions / Comments
Beam Diameter	d	mm		1		1/e²
Output Divergence parallel	$\Theta_{out\,\|\|}$	mrad		3		1/e² (full angle)
Output Divergence perpendicular	$\Theta_{out\perp}$	mrad		3		1/e² (full angle)

Thermoelectric Cooler

Parameter	Symbol	Unit	min	typ	max	Measurement Conditions / Comments
Current	I_{TEC}	A		1.2		Popt '= 2 W; DT '= 20 K
Voltage	U_{TEC}	V		2		Popt '= 2 W; DT '= 20 K
Power Dissipation (total loss at case)	P_{loss}	W		8		Popt '= 2 W; DT '= 20 K
Temperature Difference	ΔT	K			40	Popt '= 2 W

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Thermistor (Standard NTC Type)

Parameter	Symbol	Unit	min	typ	max	Measurement Conditions / Comments
Resistance	R			10		25° C
Beta Coefficient	b			3892		0° ... 50° C
Steinhart & Hart Coefficient A	A			1.1293×10^{-3}		
Steinhart & Hart Coefficient B	B			2.3410×10^{-4}		
Steinhart & Hart Coefficient C	C			8.7755×10^{-8}		

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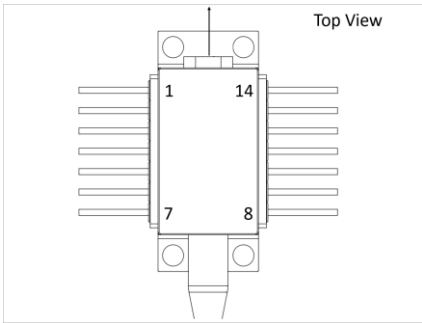
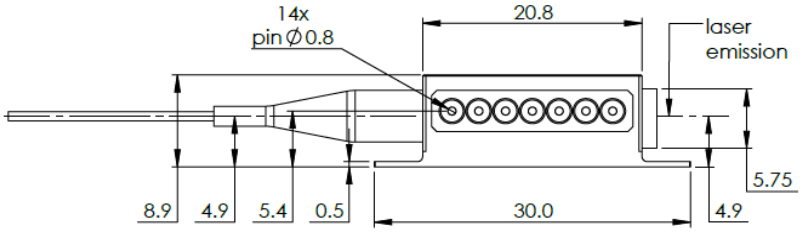
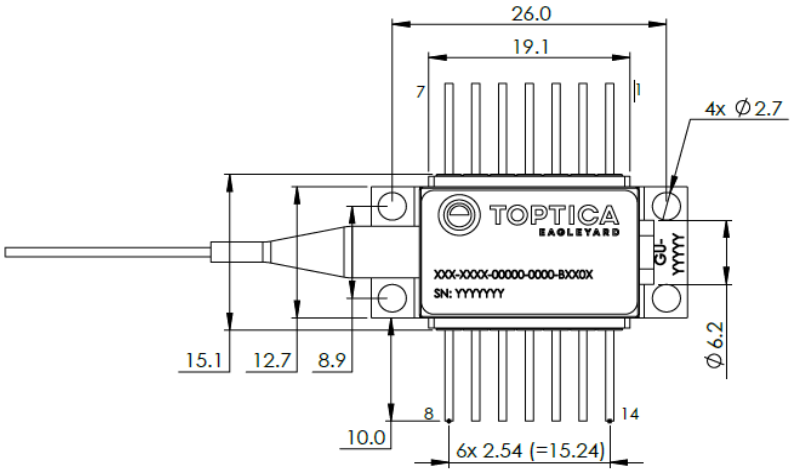
Pin Assignment

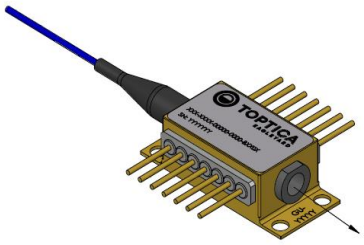
1	Thermoelectric Cooler (+)	14	Thermoelectric Cooler (-)
2	Thermistor	13	not connected
3	not connected	12	not connected
4	not connected	11	Amplifier (Cathode)
5	Thermistor	10	Amplifier (Anode)
6	not connected	9	not connected
7	not connected	8	not connected



Package Drawings







Caution. Excessive mechanical stress on the package can lead to a damage of the laser.

See instruction manual on www.toptica-eagleyard.com

SWZ-23-0117-1237

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Fiber and Connector Type (Input)

Parameter		Measurement Conditions / Comments
PM Fiber	900 / 125 / 5.5 µm, UV/Polyester-elastomer Coating	
	length: 1 +/-0.1 m	
Connector	FC/APC	
	narrow key / 2 mm	
	narrow key / 2 mm	

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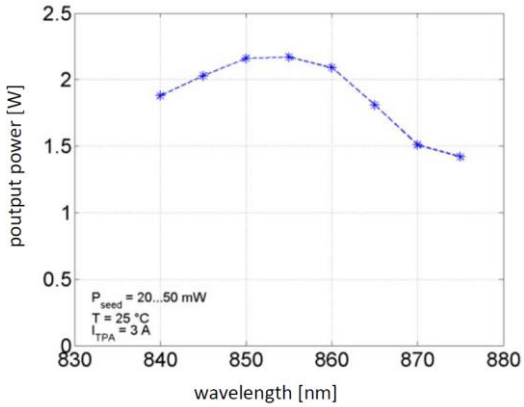
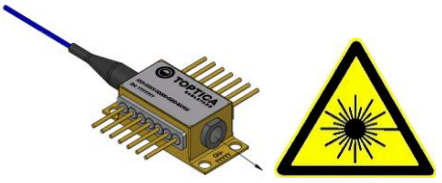
Typical Measurement Results

output power with seeding at different wavelengths



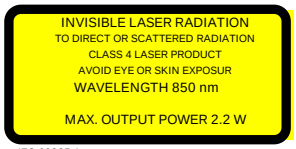
Unpacking, Installation and Laser Safety

Unpacking the taperd amplifier should only be done at electrostatic safe workstations (EPA). Though protection against electro static discharge (ESD) is implemented in the laser package, charges may occur at surfaces. Please store this product in its original package at a dry, clean place until final use. During device installation, ESD protection has to be maintained.



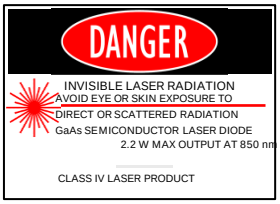
The TPA diode type is known to be sensitive against thermal stress. It should not be operated without appropriate injection from a seed laser. Operating at moderate temperatures on proper heat sinks willl contribute to a long lifetime of the diode.

This amplifier is designed for the setup of MOPA systems. Appropriate seed lasers are DFB lasers of the type EYP-DFB-xxxx-xxxxx-1500-xxxxx-000x with matching wavelengths. An external fiber isolator should be used between seed laser and amplifier in order to suppress backreflections that may disturb the



IEC-60825-1

Each tapered amplifier will come with an individual test protocol verifying the parameters given in this document.



Complies with 21 CFR 1040.10 and 1040.40

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