

EYP-TPA-0670-00500-2004-CMT02-0000

Revision 0.90

2023-01-05

TAPERED AMPLIFIER Semiconductor Optical Amplifier



General Product Information

Product	Application
670 nm Tapered Amplifier	Spectroscopy
C-Mount Package	



Absolute Maximum Ratings

Parameter	Symbol	Unit	min	typ	max
Storage Temperature	T_S	°C	-40		85
Operational Temperature at Case	T_C	°C	0		30
Forward Current	I_F	A			1.3
Reverse Voltage	V_R	V			2
Output Power	P_{opt}	W			0.6

Measurement Conditions / Comments

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.

Recommended Operational Conditions

Parameter	Symbol	Unit	min	typ	max
Operational Temperature at Case	T_{case}	°C		20	
Forward Current	I_F	A			1.2
Input Power	P_{opt}	mW	10		50
Output Power	P_{opt}	W			0.5

Measurement Conditions / Comments

non condensing
seeding required above 0.6 A
with proper injection from a seed laser

Characteristics $T_{case}' = 20^\circ \text{C}$ at BOL

Parameter	Symbol	Unit	min	typ	max
Wavelength	λ	nm		670	
Gain Width (FWHM)	$\Delta\lambda$	nm		10	
Operational Current	$I_{Op Gain}$	A			1.2
Output Power	P_{opt}	W	0.5		
Polarization				TE	
Amplification	G	dB		13	
Temp. Coefficient of Wavelength	$d\lambda / dT$	nm/K		0.3	
Cavity Length	L	μm		2000	
Reflectivity at Front Facet	R_{ff}			$3 \cdot 10^{-4}$	$1 \cdot 10^{-3}$
Reflectivity at Rear Facet	R_{rf}			$3 \cdot 10^{-4}$	$1 \cdot 10^{-3}$

Measurement Conditions / Comments

with proper injection from a seed laser
E field parallel to junction plane
with proper injection from a seed laser

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Characteristics Tcase'= 20° C at BOL cont'd

Parameter	Symbol	Unit	min	typ	max
Input Divergence parallel	$\Theta_{out }$	°		10	
Input Divergence perpendicular	$\Theta_{out\perp}$	°		50	
Output Divergence parallel	$\Theta_{out }$	°		10	
Output Divergence perpendicular	$\Theta_{out\perp}$	°		45	

Measurement Conditions / Comments
1/e ² (full angle)
1/e ² (full angle)
1/e ² (full angle)
1/e ² (full angle)

Package Dimensions

Parameter	Symbol	Unit	min	typ	max
Height of Emission Plane	d _{EP}		7.05	7.1	7.2

Measurement Conditions / Comments

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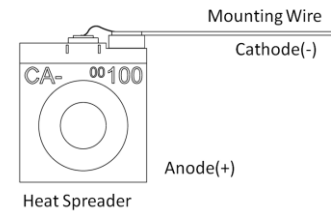
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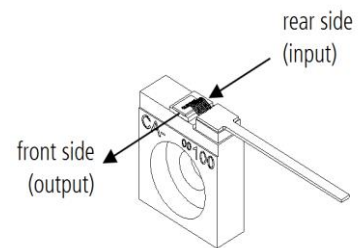
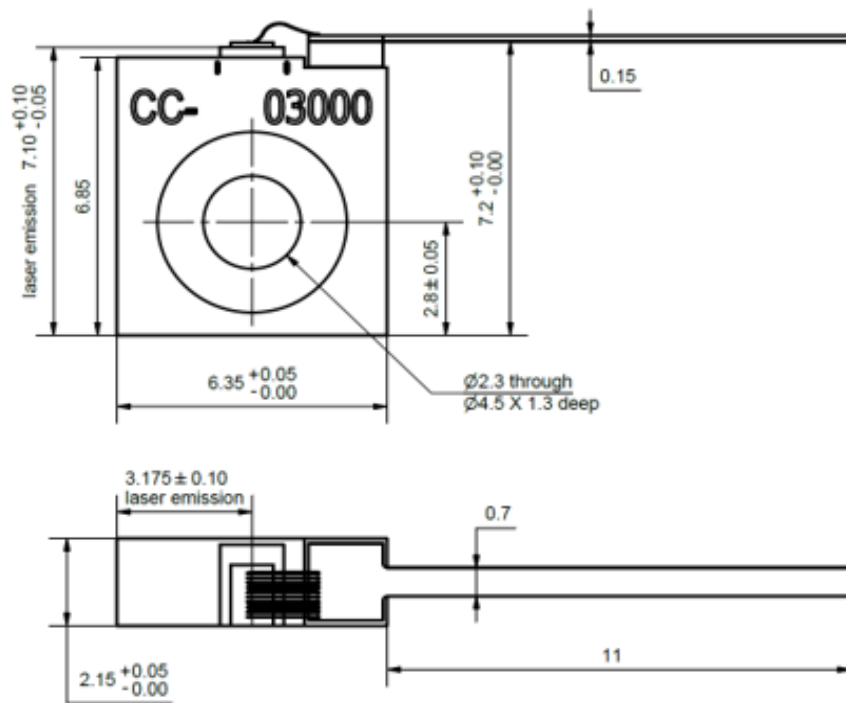


Pin Assignment

Laser Diode Cathode (-)	Mounting Wire
Laser Diode Anode (+)	Housing



Package Drawings

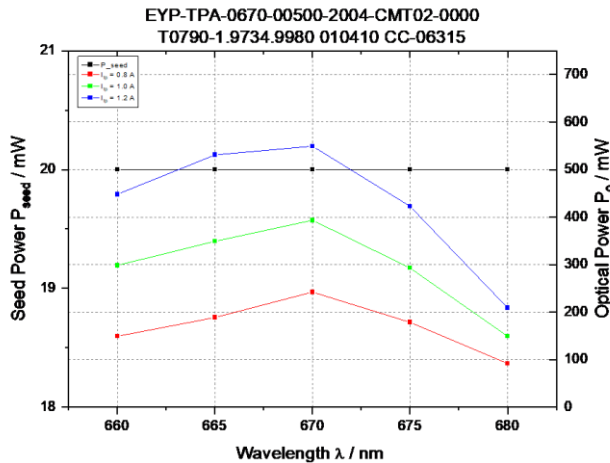


AIZ-18-0413-1250

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Typical Measurement Results



Measurement results and other illustrative material provided in this specification are typical and must be specifically confirmed in writing by eagleyard Photonics before they become applicable to any particular order or contract.

Unpacking, Installation and Laser Safety

Unpacking the tapered 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.

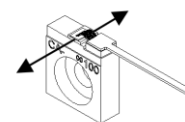
The TPA diode type is known to be sensitive against thermal stress. It should not be operated without appropriate injection from a seed laser. Operating at moderate temperatures on proper heat sinks will contribute to a long lifetime of the diode.

This amplifier is designed for the setup of MOPA systems. An optical isolator should be used between seed laser and amplifier in order to suppress backreflections that may disturb the emission spectrum of the seed laser and may cause mode-hops in case of wavelength tuning.

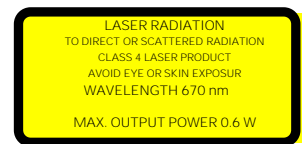
Each tapered amplifier will come with an individual test protocol verifying the parameters given in this document.

Avoid direct and/or indirect exposure to the free running beam. Collimating the free running beam with optics as common in optical instruments will increase threat to the human eye.

In accordance with the eagleyard Photonics policy of continuous improvement specifications may change without notice.



Laser Emission



IEC-60825-1



Complies with 21 CFR 1040.10 and 1040.40