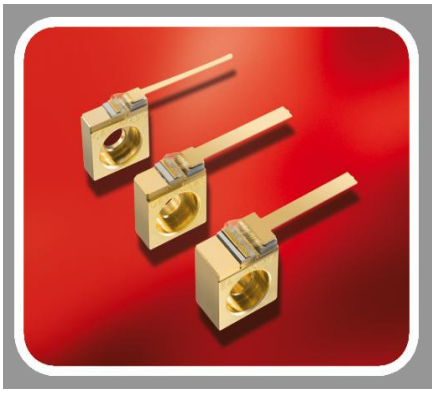
EYP-TPA-0808-02000-4006-CMT04-0000

TAPERED AMPLIFIER

GaAs Semiconductor Laser Diode

General Product Information

Product	Application
808 nm Tapered Amplifier	Spectroscopy
C-Mount Package	



Absolute Maximum Ratings

	Symbol	Unit	min	typ	max	
Storage Temperature	T_S	°C	-40		85	non condensing
Operational Temperature at Case	T_C	°C	0		50	non condensing
Forward Current	I_F	A			4.2	Stress in excess of one of the Absolute Maximum Ratings can cause permanent damage to the device.
Reverse Voltage	V_R	V			2	
Output Power	P_{opt}	W			2.2	

Recommended Operational Conditions

	Symbol	Unit	min	typ	max	Measurement Conditions / Comments
Operational Temperature at Case	T_C	°C	5		40	non condensing
Forward Current	I_F	A			4.0	
Input Power	P_{input}	mW	10		50	
Output Power	P_{opt}	W			2.0	with proper injection from a seed laser

Characteristics at T_{LD} = 25 °C at Begin Of Life

Parameter	Symbol	Unit	min	typ	max	Measurement Conditions / Comments
Center Wavelength	λ_C	nm		808		see graph on page 4
Gain Width (FWHM)	$\Delta\lambda$	nm		10		
Temperature Coefficient of Wavelength	$d\lambda / dT$	nm / K		0.25		
Amplification	P_{opt}	dB		16		at 808 nm
Operational Current @ P_{opt} = 2.0 W	$I_{op\ Gain}$	A			4.0	with proper injection from a seed laser
Output Power @ I_F = 4.0 A	P_{opt}	W	2.0			
Cavity Length	L	µm		4000		

TAPERED AMPLIFIER

GaAs Semiconductor Laser Diode

Characteristics at T_{amb} 25 °C at Begin Of Life cont'd

Parameter	Symbol	Unit	min	typ	max	Measurement Conditions / Comments
Input Aperture (at rear side)	d_{input}	µm		3		
Output Aperture (at front side)	d_{output}	µm		210		
Astigmatism	A	µm		700		depending on operating conditions
Divergence parallel ($1/e^2$)	$\Theta_{\parallel}$	°		14		full beam divergence
Divergence perpendicular ($1/e^2$)	$\Theta_{\perp}$	°		28		full beam divergence
Polarization				TM		E field perpendicular to junction plane

EYP-TPA-0808-02000-4006-CMT04-0000

TAPERED AMPLIFIER

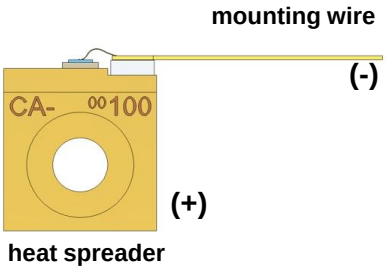
GaAs Semiconductor Laser Diode

Package Dimensions

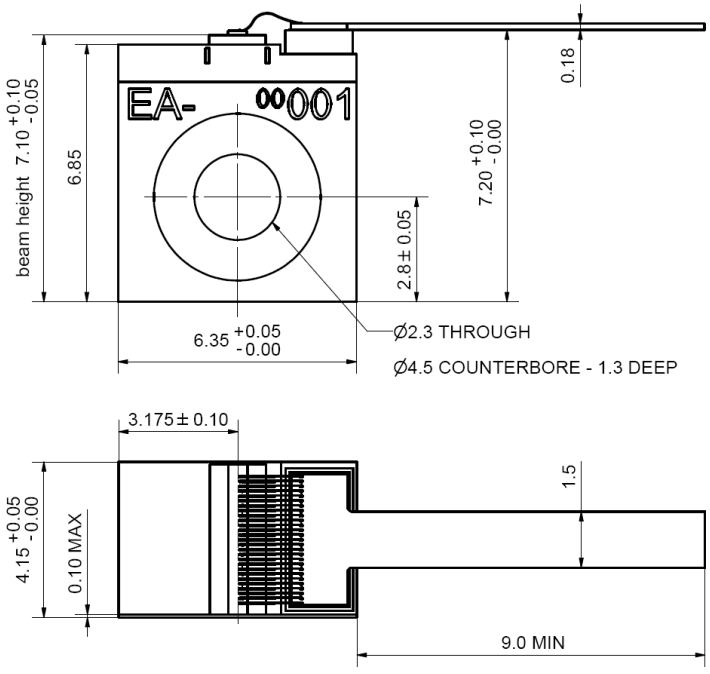
Parameter	Symbol	Unit	min	typ	max	Measurement Conditions / Comments
Height of Emission Plane	h	mm	7.05	7.20	7.35	
C-Mount Thickness	t	mm		4.15		

Package Pinout

Cathode (-)	Mounting Wire
Anode (+)	Housing



Package Drawings



Z11-SPEC-CMT04-0000

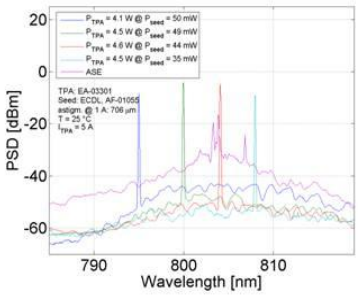
EYP-TPA-0808-02000-4006-CMT04-0000

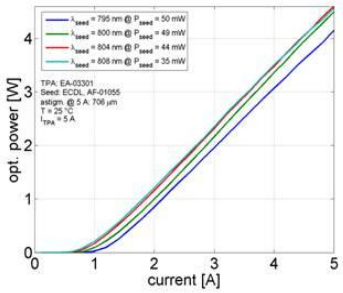
TAPERED AMPLIFIER

GaAs Semiconductor Laser Diode

Typical Measurement Results

Output power with seeding at different wavelengths

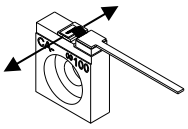




Performance figures, data and any illustrative material provided in this specification are typical and must be specifically confirmed in writing by eagleyard Photonics before they become applicable to any particular order or contract. In accordance with the eagleyard Photonics policy of continuous improvement specifications may change without notice.

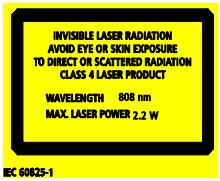
Unpacking, Installation and Laser Safety

Unpacking the laser diodes 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.



Laser Emission

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. The chip should be protected against moisture. A water vapor content below 5000 ppm is recommended for applications with high reliability requirements.



The laser emission from this diode is close to the invisible infrared region of the electromagnetic spectrum. 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.

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

DATA SHEET

EYP-TPA-0830-01000-4006-CMT04-0000

Revision 0.91

TAPERED AMPLIFIERS
Semiconductor Optical Amplifier

General Product Information

Product	Application
830 nm Tapered Amplifier	Spectroscopy
C-Mount Package	Metrology

Absolute Maximum Ratings

Parameter	Symbol	Unit	min	typ	max	Measurement Conditions / Comments
Storage Temperature (non condensing)	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 (non cond.)	T_C	°C	0		50	
Forward Current	I_F	A			3	
Reverse Voltage	V_R	V			0	
Output Power	P_{opt}	W			1.1	

Recommended Operational Conditions

Parameter	Symbol	Unit	min	typ	max	Measurement Conditions / Comments
Operational Temperature at Case	T_C	°C	5		40	non condensing
Forward Current	I_F	A			2.5	
Input Power	P_{input}	mW	10		50	
Output Power	P_{opt}	W			1.0	with proper injection from a seed laser

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

Parameter	Symbol	Unit	min	typ	max	Measurement Conditions / Comments
Design Wavelength	λ_C	nm		830		
Gain Width (FWHM)	$\Delta\lambda$	nm		30		
Temperature Coefficient of Wavelength	$d\lambda / dT$	nm / K		0.3		
Operational Current @ P_{opt} = 1.0 W	$I_{op\ Gain}$	A			2.5	with proper injection from a seed laser
Output Power	P_{opt}	W	1.0			
Amplification	G	dB		13		
Cavity length	L_C	µm		4000		

EYP-TPA-0830-01000-4006-CMT04-0000

Revision 0.91

2017-11-22

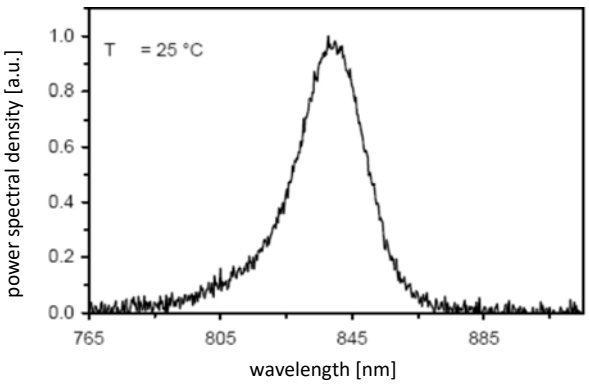
TAPERED AMPLIFIERS
Semiconductor Optical Amplifier

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

Parameter	Symbol	Unit	min	typ	max	Measurement Conditions / Comments
Reflectivity at Front Facet	R_{ff}			3·10-4	1·10-3	
Reflectivity at Rear Facet	R_{rf}			3·10-4	1·10-3	
Input Aperture (at rear side)	d_{in}	µm		3		
Output Aperture (at front side)	d_{out}	µm		280		
Astigmatism	A	µm		640		depending on operating conditions
Input Divergence parallel ($1/e^2$)	$\Theta_{in\,\|\|}$	°				
Input Divergence perpendicular ($1/e^2$)	$\Theta_{in\perp}$	°				
Output Divergence parallel ($1/e^2$)	$\Theta_{out\,\|\|}$	°				
Output Divergence perpendicular ($1/e^2$)	$\Theta_{out\perp}$	°				
Polarization				TE		E field parallel to junction plane

Typical Measurement Results

spectrum measured w/o injection



Performance figures, data and any 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. In accordance with the eagleyard Photonics policy of continuous improvement specifications may change without notice.

EYP-TPA-0830-01000-4006-CMT04-0000

Revision 0.91

2017-11-22

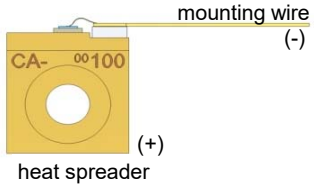
TAPERED AMPLIFIERS
Semiconductor Optical Amplifier

Package Dimensions

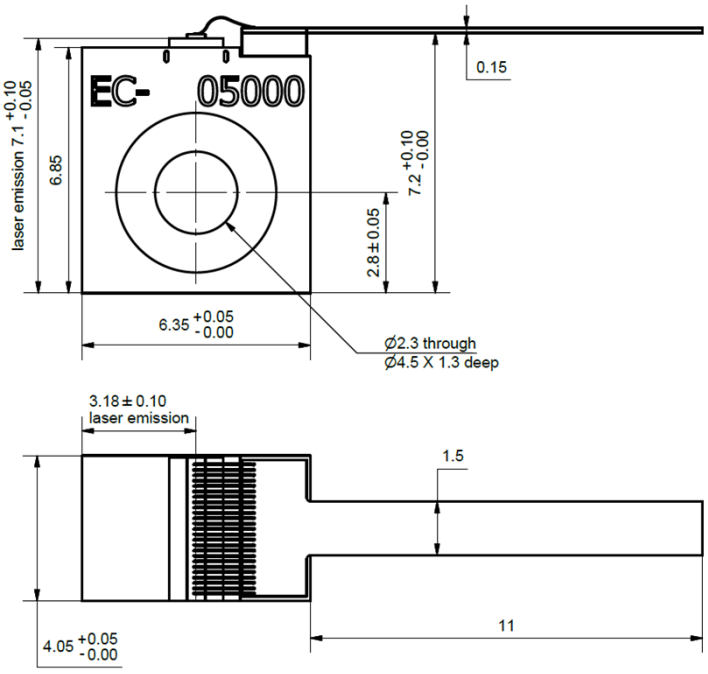
Parameter	Symbol	Unit	min	typ	max	Measurement Conditions / Comments
Height of Emission Plane	h	mm	7.05	7.10	7.20	
C-Mount Thickness	t	mm		4.05		

Package Pinout

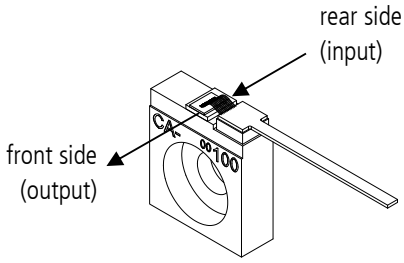
Mounting Wire	Cathode (-)
Housing	Anode (+)



Package Drawings



AIZ-18-0413-1535



EYP-TPA-0830-01000-4006-CMT04-0000

Revision 0.91

2017-11-22

TAPERED AMPLIFIERS
Semiconductor Optical Amplifier

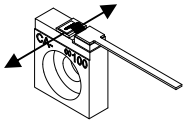
Unpacking, Installation and Laser Safety

Unpacking the laser diodes 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.

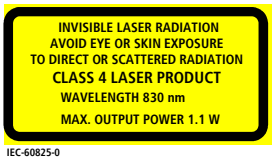
The TPA diode type is known to be sensitive against thermal stress. It should not be operated without appropriate injection from a seed laser. Operating at moderate temperatures on proper heat sinks willl contribute to a long lifetime of the diode. The chip should be protected against moisture. A water vapor content below 5000 ppm is recommended for applications with high reliability requirements.

The laser emission from this diode is close to the invisible infrared region of the electromagnetic spectrum. 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.

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



Laser Emission



IEC-60825-0

Complies with 21 CFR 1040.10 and 1040.40

DATA SHEET

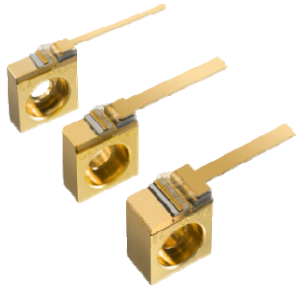
EYP-TPA-0845-02000-4006-CMT04-0000

Revision 1.00

TAPERED AMPLIFIERS
Semiconductor Optical Amplifier

General Product Information

Product	Application
845 nm Tapered Amplifier	Spectroscopy
C-Mount Package	



Absolute Maximum Ratings

Parameter	Symbol	Unit	min	typ	max	Measurement Conditions / Comments
Storage Temperature (non condensing)	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 (non cond.)	T_C	°C	0		50	
Forward Current	I_F	A			4.2	
Reverse Voltage	V_R	V			2	
Output Power	P_{opt}	W			3.0	

Recommended Operational Conditions

Parameter	Symbol	Unit	min	typ	max	Measurement Conditions / Comments
Operational Temperature at Case	T_C	°C	5		40	non condensing
Forward Current	I_F	A			3.5	with proper injection from a seed laser
Input Power	P_{input}	mW	10		50	
Output Power	P_{opt}	W			3.0	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_C	nm		845		
Gain Width (FWHM)	$\Delta\lambda$	nm		20		
Temp. Coefficient of Wavelength	$d\lambda / dT$	nm / K		0.3		
Output Power	P_{opt}	W	1.5	2.0		with proper injection from a seed laser
Amplification	G	dB		21		
Cavity length	L_C	µm		4000		

EYP-TPA-0845-02000-4006-CMT04-0000

Revision 1.00

2021-07-26

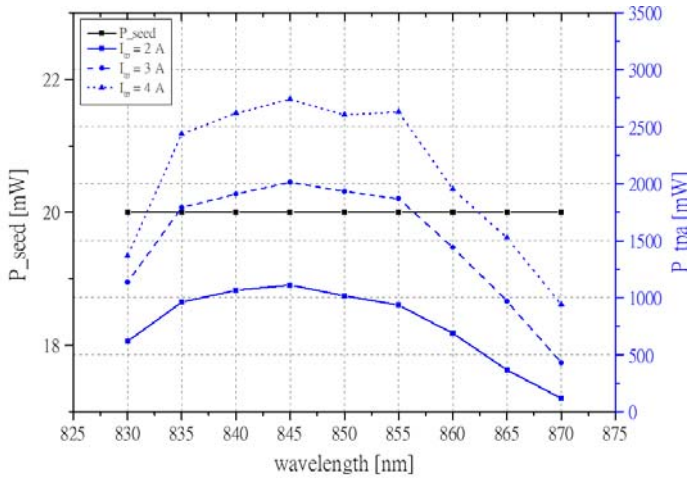
TAPERED AMPLIFIERS
Semiconductor Optical Amplifier

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

Parameter	Symbol	Unit	min	typ	max	Measurement Conditions / Comments
Reflectivity at Front Facet	R_{ff}			3·10-4	1·10-3	
Reflectivity at Rear Facet	R_{rf}			3·10-4	1·10-3	
Input Aperture (at rear side)	d_{in}	µm		2.2		
Output Aperture (at front side)	d_{out}	µm		210		
Astigmatism	A	µm		720		depending on operating conditions
Input Divergence parallel	$\Theta_{in\,\|\|}$	°		tbd		
Input Divergence perpendicular	$\Theta_{in\perp}$	°		tbd		
Output Divergence parallel	$\Theta_{out\,\|\|}$	°		20		1/e2
Output Divergence perpendicular	$\Theta_{out\perp}$	°		40		1/e2
Polarization				TE		E field parallel to junction plane

Typical Measurement Results

output power with seeding at different wavelengths



Graphs, data and any illustrative material provided in this specification describe the typical performance of the tapered amplifier. The achievable amplification depends strongly on a proper injection of the seed laser. In accordance with the eagleyard Photonics policy of continuous improvement specifications may change without notice.

EYP-TPA-0845-02000-4006-CMT04-0000

Revision 1.00

2021-07-26

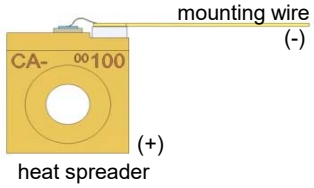
TAPERED AMPLIFIERS
Semiconductor Optical Amplifier

Package Dimensions

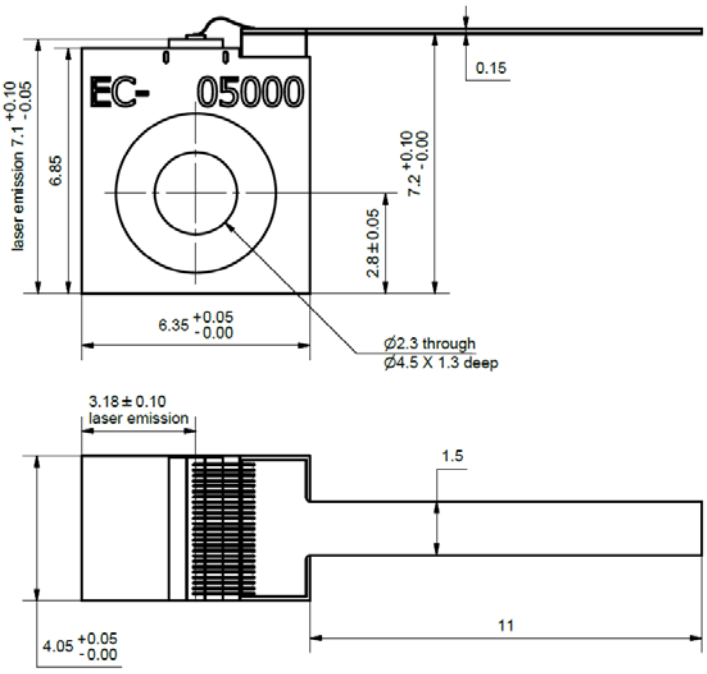
Parameter	Symbol	Unit	min	typ	max	Measurement Conditions / Comments
Height of Emission Plane	h	mm		7.05	7.10	7.20
C-Mount Thickness	t	mm			4.05	

Package Pinout

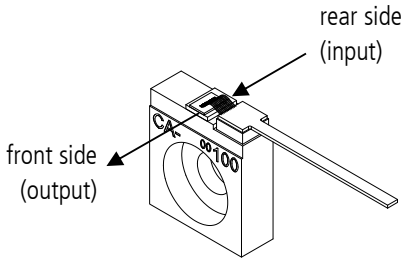
Mounting Wire	Cathode (-)
Housing	Anode (+)



Package Drawings



AIZ-18-0413-1535



EYP-TPA-0845-02000-4006-CMT04-0000

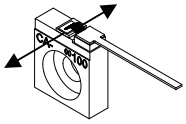
Revision 1.00

2021-07-26

TAPERED AMPLIFIERS
Semiconductor Optical Amplifier

Unpacking, Installation and Laser Safety

Unpacking the laser diodes 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.



Laser Emission

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. The chip should be protected against moisture. A water vapor content below 5000 ppm is recommended for applications with high reliability requirements.

IEC-60825-0

The laser emission from this diode is close to the invisible infrared region of the electromagnetic spectrum. 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.

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