

EYP-TPA-0780-03000-4006-CMT04-0000

Revision 1.00

2015-09-08

TAPERED AMPLIFIER

GaAs Semiconductor Laser Diode



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General Product Information

Product	Application
780 nm Tapered Amplifier	Spectroscopy
C-Mount Package	



Absolute Maximum Ratings

	Symbol	Unit	min	typ	max
Storage Temperature	T_S	°C	-40		85
Operational Temperature at Case	T_C	°C	0		50
Forward Current	I_F	A			5
Reverse Voltage	V_R	V			2
Output Power	P_{opt}	W			3.2

non condensing
 non condensing
 Stress in excess of one of the Absolute Maximum Ratings can cause permanent damage to the device.

Recommended Operational Conditions

	Symbol	Unit	min	typ	max
Operational Temperature at Case	T_C	°C	5		40
Forward Current	I_F	A			4.5
Input Power	P_{input}	mW	10		50
Output Power	P_{opt}	W			3.0

Measurement Conditions / Comments
 non condensing
 with proper injection from a seed laser

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

Parameter	Symbol	Unit	min	typ	max
Center Wavelength	λ_c	nm		780	
Gain Width (FWHM)	$\Delta\lambda$	nm		20	
Temperature Coefficient of Wavelength	$d\lambda / dT$	nm / K		0.25	
Amplification	P_{opt}	dB	16	22	
Operational Current @ $P_{opt} = 3.0\text{ W}$	$I_{op\ Gain}$	A			4.5
Output Power @ $I_F = 4.5\text{ A}$	P_{opt}	W	3.0		
Cavity Length	L	μm		4000	

Measurement Conditions / Comments
 with 20-30 mW seed power
 with proper injection from a seed laser

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

cont'd

Parameter	Symbol	Unit	min	typ	max
Input Aperture (at rear side)	d_{input}	μm		3	
Output Aperture (at front side)	d_{output}	μm		210	
Astigmatism	A	μm		1400	
Divergence parallel ($1/e^2$)	$\Theta_{ }$	$^\circ$		18	
Divergence perpendicular ($1/e^2$)	Θ_{\perp}	$^\circ$		40	
Polarization				TM	

Measurement Conditions / Comments

depending on operating conditions

full beam divergence

full beam divergence

E field perpendicular to junction plane

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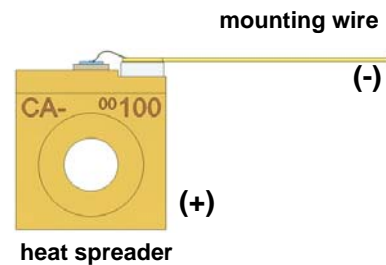
Package Dimensions

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

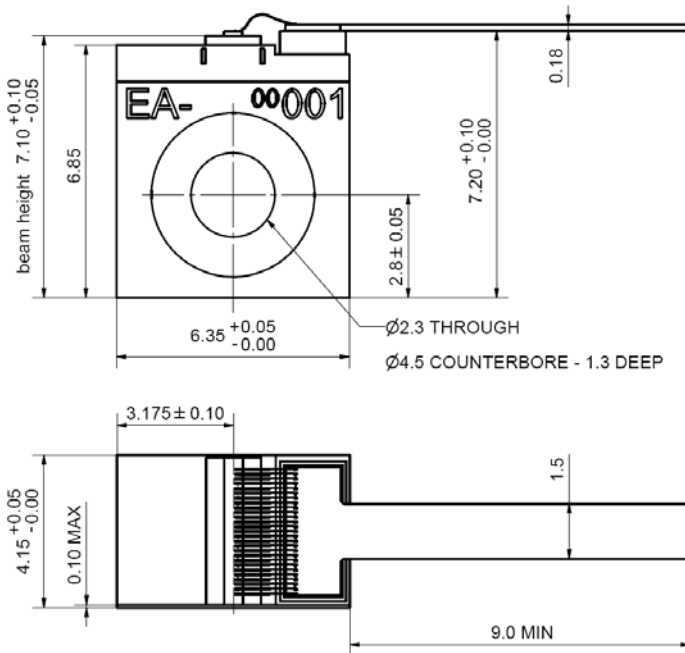
Measurement Conditions / Comments

Package Pinout

Cathode (-)	Mounting Wire
Anode (+)	Housing



Package Drawings



Z11-SPEC-CMT04-0000

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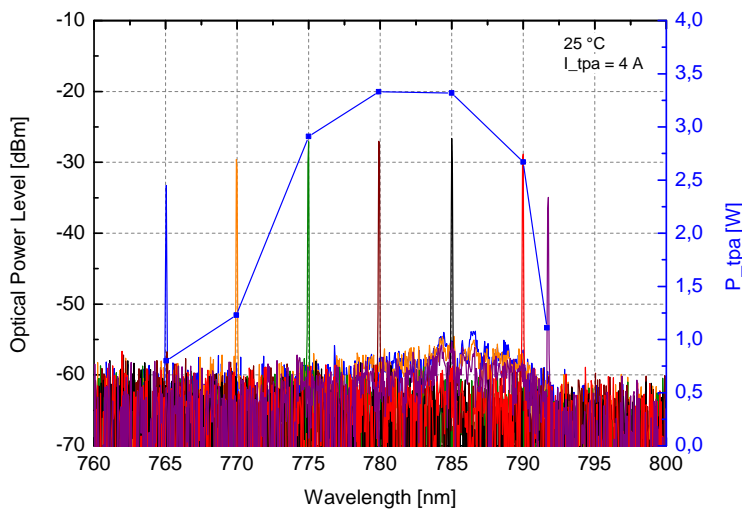
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Typical Measurement Results

Output power at various 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.

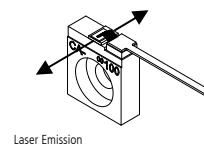
Unpacking, Installation and Laser Safety

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.

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. 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

