780nm Tapered Amplifier

2W, ±5nm bandwidth

DATASHEET

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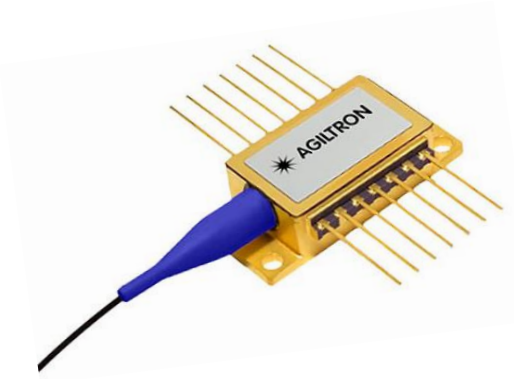

780 nm Tapered Amplifier consists of an optical amplifier integrated into an industry-standard, 14-pin butterfly package. This modular tapered amplifier is easy to integrate into larger systems. The output of the amplifier is free space. Agiltron recommends using an optical isolator to prevent back reflections from damaging the amplifier. A matching driver is available.

Features

- Up to 600 mW
- High Thermal Efficiency
- Integrated Thermoelectric Cooler, Thermistor, and Monitor Diode
- Robust High-Power Operation (0 to 70°C)

Applications

- Instrument
- Sensor

Specifications

Parameter	Min	Typical	Max	Unit
Center Wavelength		780		nm
Small Signal Gain [1]		20		dB
Amplification Bandwidth		±5		nm
Operating Current [2]		2.5		A
Output Power [3]		1		W
Output Polarization State [4]		TM		
Case Operating Temperature [5]	10		40	°C
Fiber [6]		PM780-HP		
Fiber Length		1 m		
Connector		FC/APC, 2.0 mm Key		
TEC Operating Current (T_{case} = 25 °C)		2		A
TEC Operating Voltage (T_{case} = 25 °C)		3		V
Internal Package Thermistor		10		kΩ
Steinhart-Hart Coefficients		A: 1.1292E-3 B: 2.3411E-4 C: 8.7755E-8		
Laser Class		4		

Notes:

[1]. At 2 mW seed power, falling to 14 dB at 20 mW seed due to amplifier saturation.
[2]. At lower currents, chip astigmatism will cause increasing beam quality degradation.
[3]. Typical only, up to 3 A drive may be required.
[4]. The polarization is perpendicular to package's base.
[5]. Requires an adequate heat sink and non-condensing atmosphere.
[6]. Fiber protected by 900 μm diameter loose tube.

* TCHIP = 25 °C, Drive current = 2.5 A, Seed Input Level ≥ 5 mW

Rev 09/11/25

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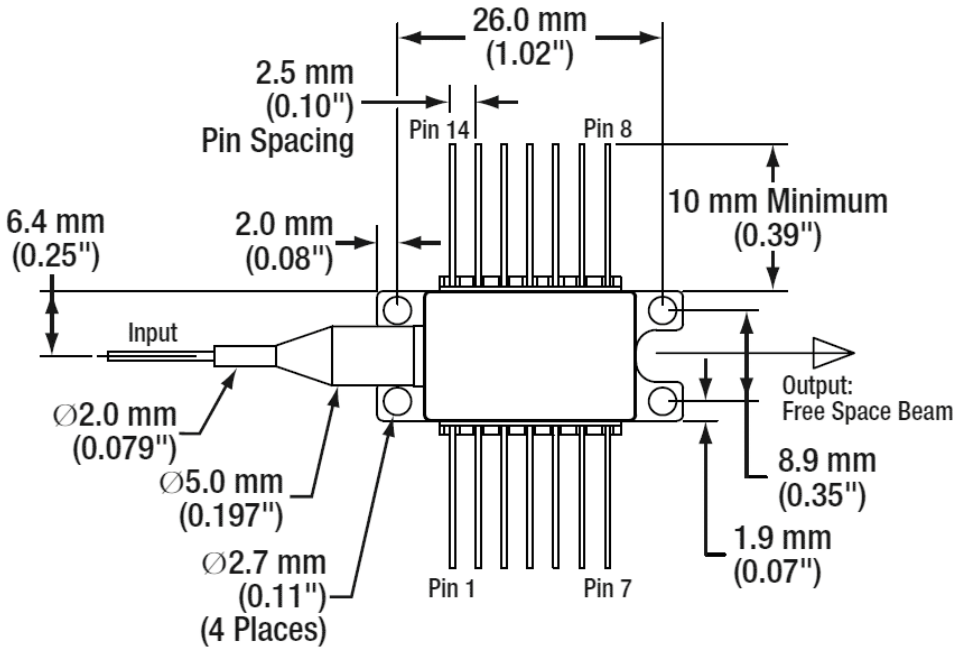
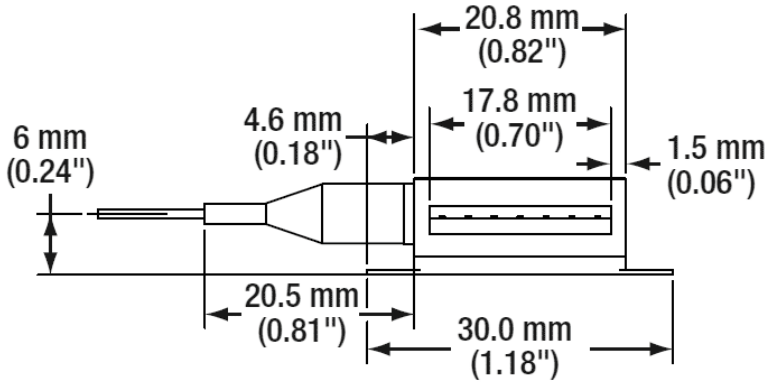
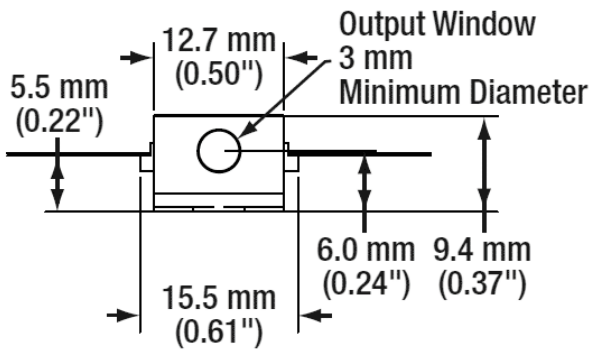
Mechanical Dimension



PIN	Function
1	Thermoelectric Cooler (+)
2	Thermistor (Chip)
3	NC
4	NC
5	Thermistor (Chip)
6	Thermistor (Case)
7	Thermistor (Case)
8	NC
9	NC
10	Laser Anode (+)
11	Laser Cathode (-)
12	NC
13	Case Ground
14	Thermoelectric Cooler (-)





*Product dimensions may change without notice. This is sometimes required for non-standard specifications.

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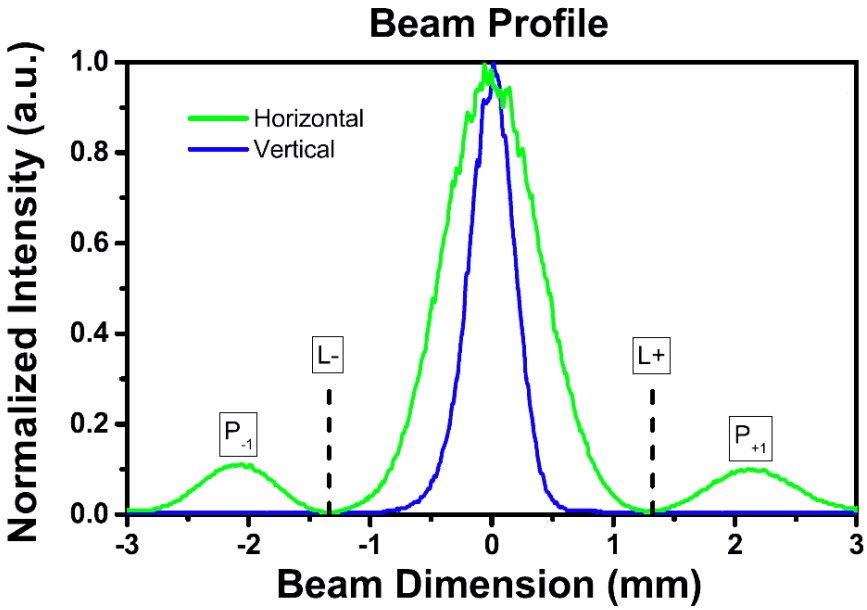
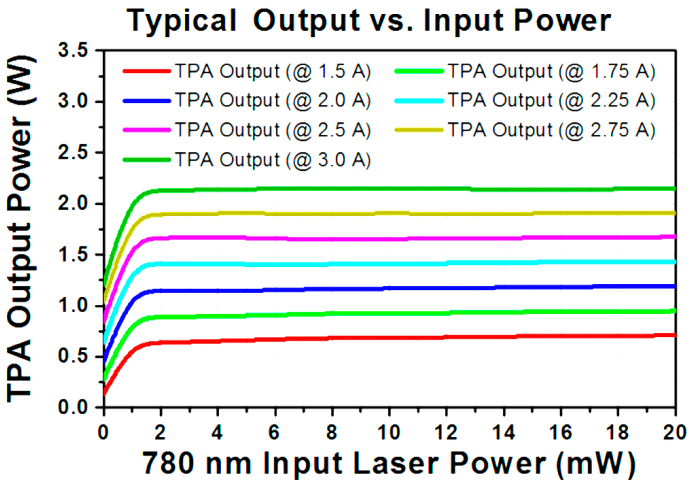
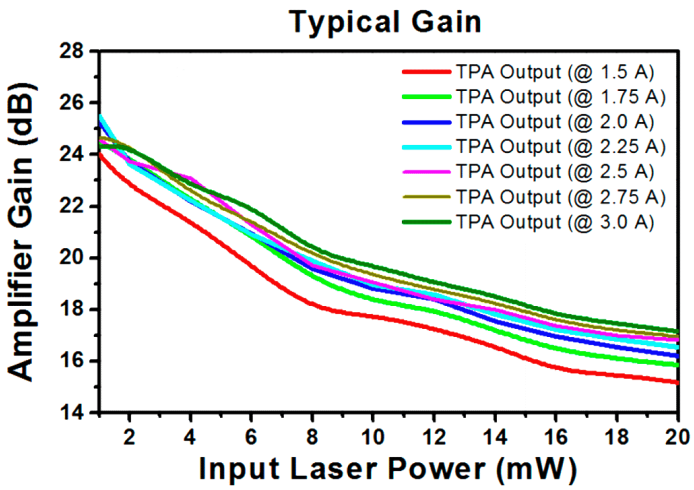
Beam Profile

The beam profile was measured at 2.5 A drive current and 600 mm from package output window. Over 60% of the total measured beam power[a] is contained within L- and L+ (lines at first minima).The beam ellipticity has a typical value of 2, when driven at 2.5 A. Note that the beam properties are optimized at a drive current of 2.5 A; at currents above 2.5 A, the side lobes' height can increase. At currents below 2.5 A, astigmatism in the chip will cause degradation in the beam quality so that multiple intensity lobes will become visible.



Typical Spectrum





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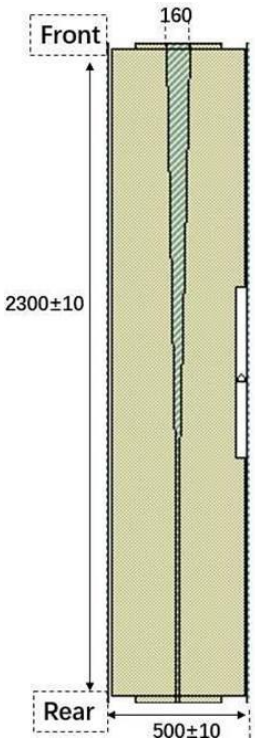
Ordering Information

	78	☐	☐	☐	☐	☐	☐	☐
Prefix	**Wavelength**	**Output Power**	**Driver**	**Housing**	**Input Fiber**	**Fiber Buffer**	**Fiber Length**	**Connector**
TAPA-	1780nm = 78 Special = 0	0.6W = 6 1W = 1	Non = N Yes = 1	None= N Module = 2 Benchtop = 3	PM780 = 1 Special = 0	0.9mm Tube = 3 Special = 0	1.0 m = 1 Special = 0	FC/APC = 3 Special = 0

Chip Dimension



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Benchtop Matching Laser Diode Driver

Agiltron cost-effective LDCB series benchtop control kit is designed for easy laser diode mounting and precise control. It incorporates a high-precision, low-noise auto-feedback drive electronics to ensure constant output power or a constant driving current and an integrated temperature control unit maintains optimal operating conditions. The system provides up to 1A driving current and up to 2A TEC cooling current. Each system features a front fiber output connector. The user interface includes an intuitive LCD display for independent control of output power and temperature via two front rotating knobs. The LDCB also includes a universal power supply compatible with 100 to 240 VAC. The LDCB has a built-in isolator option to prevent reflection-induced laser emissions instability. The LDCB is designed as a laser diode and TEC controller kit for customer to install laser diode. It has three types of pluggable laser mounts of butterfly, DIL, and TOCAN. The TOCAN mount contains an external TEC that maintains a constant temperature for wavelength stability.

For details please click: https://agiltron.com/product/laser-diode-tec-controllers-benchtop-kit/

Turn-Key Module Matching The Laser Diode

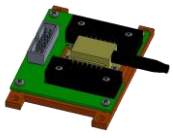
The Agiltron LDCM series laser source module is designed for OEM applications and features all-in-one high reliability and highly stable laser output. The LDCM contains high-precision, low-noise, auto-feedback laser diode drive electronics to ensure constant output power or driving current and an integrated temperature controller that maintains optimal operating conditions. An optional fiber optical isolator can be integrated to prevent reflection-induced laser emission instability, which is essential for achieving highly stable lasers. Agiltron produces isolators from 370nm to 2600nm. The system provides up to 1A driving current and up to 2A TEC cooling current. Each unit features a single FC/APC connector output and two front rotating knobs for independent setting of laser output power and temperature. A toggle switch allows selection between constant current control mode and feedback constant output power mode.

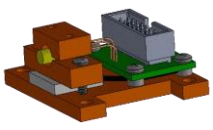
For details please click: https://agiltron.com/product/laser-diode-tec-controllers-module/

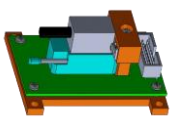
Laser Driver Kit

Agiltron cost-effective LDCD series module control kit is designed for easy laser diode mounting and precise control. It incorporates a high-precision, low-noise auto-feedback drive electronics to ensure constant output power or a constant driving current and an integrated temperature control unit maintains optimal operating conditions. The system provides up to 1A driving current and up to 2A TEC cooling current. It has three types of pluggable laser mounts of butterfly, DIL, and TOCAN. The TOCAN mount contains an external TEC that maintains a constant temperature for wavelength stability. It comes with cables to connect between the mounting module to the driving module, making integration convenient.

For details please click: https://agiltron.com/product/laser-diode-tec-controllers-compact/







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Caution Electrostatic Sensitivity

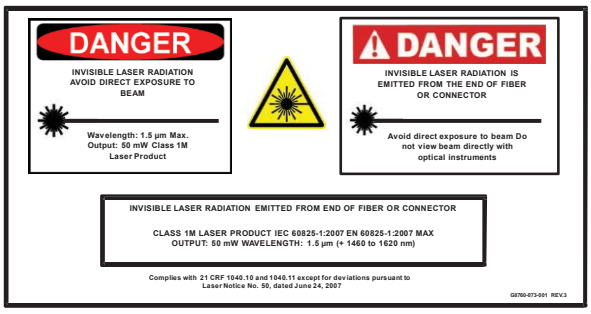
- Never touch laser diode and the module using hands
- Always use protections when handle a laser diode
- Recommend mounting the laser diode using an ionic gun and ESD finger cots

Laser Safety

This product meets the appropriate standard in Title 21 of the Code of Federal Regulations (CFR). FDA/CDRH Class 1M laser product. This device has been classified with the FDA/CDRH under accession number 0220191. All versions of this laser are Class 1M laser products, tested according to IEC 60825-1:2007 / EN 60825-1:2007. An additional warning for Class 1M laser products. For diverging beams, this warning shall state that viewing the laser output with certain optical instruments (for example eye loupes, magnifiers, and microscopes) within a distance of 100 mm may pose an eye hazard. For collimated beams, this warning shall state that viewing the laser output with certain instruments designed for use at a distance (for example telescopes and binoculars) may pose an eye hazard.

Wavelength = 1.3/1.5 µm.

Maximum power = 30 mW.



*Caution - Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.
*IEC is a registered trademark of the International Electrotechnical Commission.

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