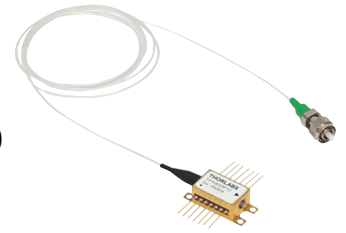


TPA850P10



Description

Thorlabs' TPA850P10 850 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. Thorlabs recommends using an optical isolator (Item # IO-3-850-HP) to prevent back reflections from damaging the amplifier.

Specifications

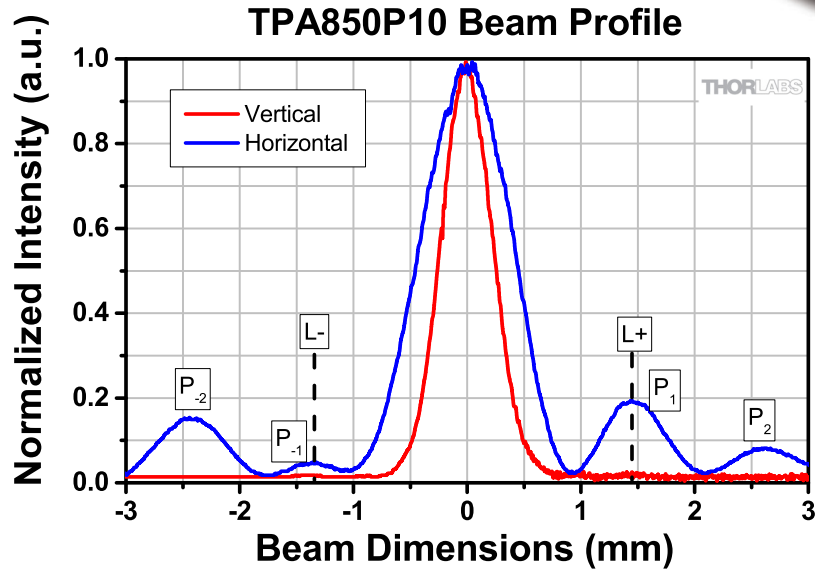
TPA780P20		
	Symbol	Typical
Center Wavelength	λ_c	850 nm
Small Signal Gain ^a	G_{SS}	24 dB
Amplification Bandwidth	BW	CWL \pm 5 nm
Operating Current ^b	I_{op}	2.5 A
Output Power ^c	P_{out}	1 W
Output Polarization State ^d	Pol	TE
Case Operating Temperature ^e	T_{case}	10 to 40 °C
Fiber ^f	-	PM780-HP
Fiber Length	-	1 m
Connector	-	FC/APC, 2.0 mm Key
TEC Operating Current ($T_{case} = 25\text{ °C}$)	I_{TEC}	2 A
TEC Operating Voltage ($T_{case} = 25\text{ °C}$)	V_{TEC}	3 V
Internal Package Thermistor	-	10 kOhm
Steinhart-Hart Coefficients	-	A: 1.1292E-3 B: 2.3411E-4 C: 8.7755E-8
Laser Class	-	4
Compatible Controller	-	LDC2500B



$T_{CHIP} = 25\text{ °C}$, Drive current = 2.5 A, Seed Input Level $\geq 5\text{ mW}$

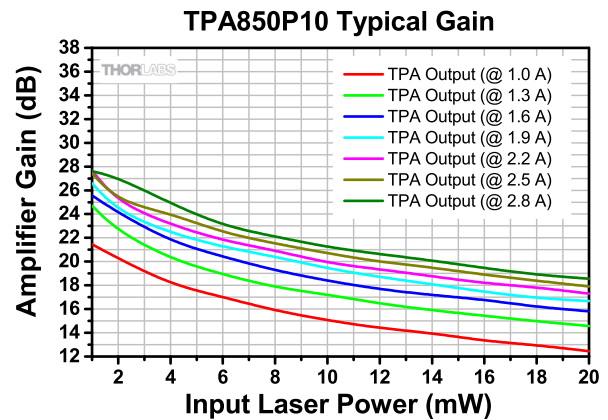
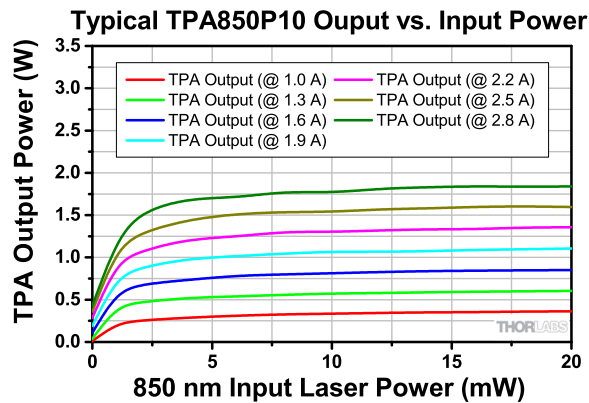
- At 2 mW seed power, falling to 16 dB at 20 mW seed due to amplifier saturation.
- At lower currents, chip astigmatism will cause increasing beam quality degradation.
- Typical only, up to 3 A drive may be required.
- The polarization is parallel to package's base.
- Requires an adequate heat sink and non-condensing atmosphere.
- Fiber protected by 900 μm diameter loose tube.

Beam Profile



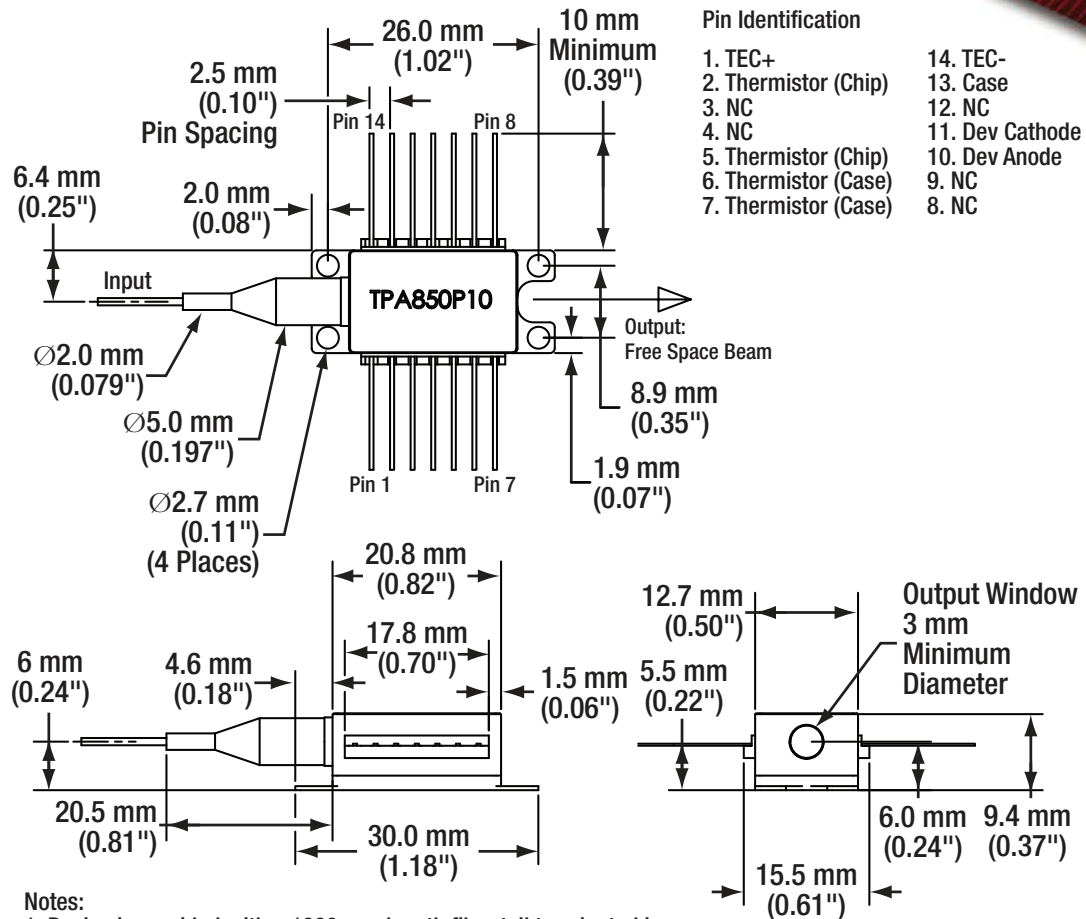
The beam profile was measured at 2.5 A drive current and 600 mm from package output window. Over 60% of the total measured beam power^a is contained within L- and L+ (lines at first minima). The beam ellipticity has a typical value of 2, when driven at 2.5 A. Note that the beam properties are optimized 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.

Performance Plots



^a Total power collected in a 6 mm diameter power sensor placed at 600 mm from the package output window.

Drawings



Notes:

1. Device is provided with a 1000 mm length fiber tail terminated in an FC/APC connector; the fiber is Thorlabs PM780-HP fiber protected by 900 μ m diameter loose tube.