**m2k-TA-0780-1000**  
Tapered Amplifier for MOPA Setups

**General Description**  
GaAs based tapered amplifiers are used for the amplification of an existing seed laser. The seed power between 10mW and 30mW can be amplified up to nearly diffraction limited power values of 1000mW. Such a setup is called MOPA (Master Oscillator Power Amplifier). The rear facet and the front facet are both provided with an anti-reflection coating of less than 0.01% to avoid laser action of the amplifier chip itself. Application examples for MOPA setups with tapered amplifiers are optical cooling, optical traps or high resolution absorption or Raman spectroscopy.

**Advantages**  
- tuning range between 765nm and 790nm  
- suitable for MOPA setups up to 1000mW  
- nearly diffraction limited with $M^2 (1/e^2) < 1.5$  
- side mode suppression of more than 40dB  
- highly anti-reflection facet coatings < 0.01%  
- passive cooling  
- different packages available

**Options**  
- The m2k-TA-0780-1000 can be mounted on a c-mount or optionally on a DHP inset or a DHP frame for better handling.  
- The m2k-TA-0780-1000 can be ordered with selected beam quality parameters $M^2$.  
- The m2k-TA-0780-1000 is also available for external cavity configurations, see product data sheet m2k-TAL-0780-1000.

**Operation range:** 765–790nm  
**Output power:** 1000mW  
**$M^2$:** < 1.5  
**Side mode suppression:** > 40dB  
**AR coating:** < 0.01%  
**Packaging:** C-mount / DHP-I / DHP-F

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**DANGER**  
INVISIBLE LASER RADIATION  
AVOID EYE OR SKIN EXPOSURE  
DIODE LASER  
> 1 W MAX OUTPUT at 765-1080 nm  
CLASS IV LASER PRODUCT

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### m2k-TA-0780-1000 Specification Data

#### Product

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#### Beam parameter output facet

| Output aperture at front side (µm) | 150 x 1.2 |
| Divergence parallel (95%) (°) | < 1.5 |
| Divergence perpendicular (95%) (°) | < 1.5 |
| Astigmatism (µm) | depends on operating conditions |

#### Electrical data

| Typical operation current (500mW) (A) | 1.7 |
| Maximum operation current with injection (A) | 2.2 |
| Maximum operation current without injection (A) | 2 |
| Operation voltage (V) | < 1.8 |

#### Thermal data

| Operating temperature (°C) | 15 ... 30 |
| Recommended heat sink temperature (°C) | 20 |
| Storage temperature (°C) | -20 ... 60 |
| Operating conditions | non-condensing atmosphere |

#### Package

| Heat sink type | c-mount |
| Cavity length (µm) | 2500 |
| Cathode (-) | wire flag |
| Anode (+) | base plate |

#### Other specifications

| RoHS 2002/95EC compliant | yes |

#### Optional

| Packaging |
| Heat sink type | DHP-inset (DHP-I), DHP-frame (DHP-F) |
| Connector | customized connector cables |

#### Related Products

| For External Cavity Setups | m2k-TAL-0780-1000 |

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**Safety**

This is a laser class IV product according to IEC - Standard International Commission (Publication 825, 1993). The laser light emitted from this laser diode is invisible and/or visible and is harmful to the human eye. The safety regulations for eye and personnel protection included in the IEC Standard must be observed to avoid any harm to operating personnel. Avoid direct exposure and looking into the laser diode, into the collimated beam or into the fiber when it is linked to the module.

**Storage and shipping**

Store and ship the diode laser with shortened electrical contacts, in a clean and dry atmosphere and in a temperature range of 0°C to 60°C.

**Operation and handling**

Diode lasers are extremely sensitive to over-voltage. Take extreme precaution to avoid electrostatic charges. Precautions against spiking during switching on and off the power supply must be assured. Correct polarity of power supply must be assured. During handling personnel has to wear wrist straps. Grounded work surfaces and additional antistatic techniques are mandatory during handling.

Device failure and safety hazard are caused by operation in excess of maximum ratings. Exceeding output power and temperature specification will result in accelerated device ageing.

Do not mount via any paste-like media!
The charts presented only describe typical examples. All modules are characterised individually, the results being contained in the documentation included. The display options are subject to alteration by m2k-laser.

P(I) and U(I) characteristics. All measurements have been done for 20 mW seed power and at 20 °C in cw operation.

Amplifier output spectrum without seed power.

Operation beyond the central tuning range and power specified may induce increased thermic stress to the modules and thereby reduce its service life.

Intensity distribution at the amplifier output facet in the slow axis with seed power.

M² has been measured using a commercial BeamScope in accordance to ISO 11146.
m2k-TA-0780-1000
Package Drawings

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Moderate Brightness Diode-Lasers