



Single Mode Laser Beamshapers



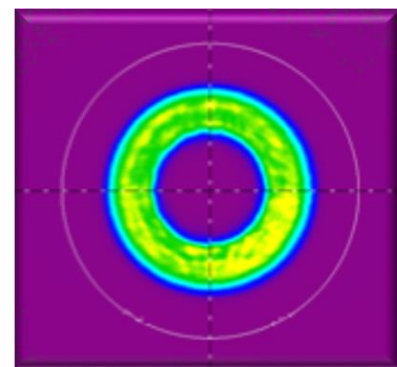
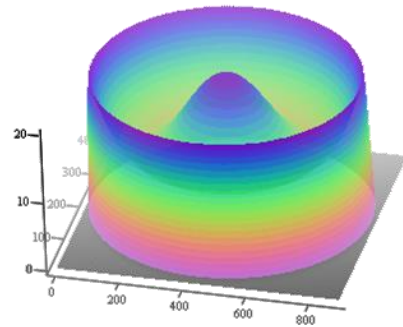
PowerPhotonic
Enhancing Beam Performance

Overview

PowerPhotonic's single mode field mappers use a unique freeform direct-write process to fabricate customized single mode beamshaping surfaces in to a fused silica substrate.

These single mode beamshapers are carefully designed to transform a single mode beam into a variety of image shapes at the focus of a lens, providing the highest performance in shape and efficiency without adding additional speckle or diffraction artifacts.

PowerPhotonic's fabrication technology can generate field mappers to produce a wide selection of shapes and intensity distributions including square, round, annular and more. These field mappers are offered in a 1 optic or 2 optic solution, allowing for optimal tradeoffs between cost and performance.



Key Features

- All fused silica optics
- Customizable image shapes
- Customizable image sizes
- No additional speckle or diffraction artifacts
- Long depth of focus version available
- Suitable for single-mode TEM00 lasers ($M^2 < 2$)
- Suitable for use with galvo-f θ system

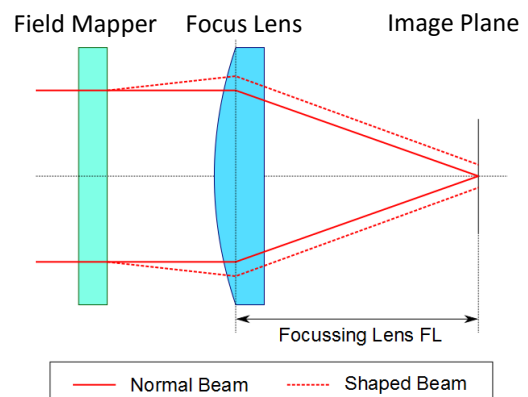
Target Applications

- **Materials processing: low power and pulsed**
 - Laser polishing
 - Laser marking and drilling
 - Laser lift-off
 - Glass annealing and crystallisation
- **Solar cell and Li-ion battery manufacturing**

Benefits

- Highest system efficiency possible >98%
- Dramatic increase in beam uniformity
- High power handling, >20kW CW
- High laser damage threshold, >100J/cm²
- No focal plane shift
- Good through-focus performance
- Long depth of focus
- Nearly diffraction limited spot size

How they are Used



Standard Product Selection – Single Mode Field Mappers

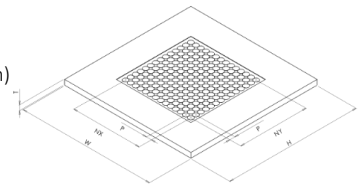
Part Number	Spot Shape*	1/e2 Input Beam Diameter (mm)	Spot Radius (mm)	Height H (mm)	Thickness T (mm)	Long DOF version**
PP-FM-T1-SQ-D5-R05	Square	5.00	0.50	25.4	1.00	No
PP-FM-T1-SQ-D5-R1	Square	5.00	1.00	25.4	1.00	No
PP-FM-T3-SQ-D5-R01	Square	5.00	0.10	25.4	1.00	Yes
PP-FM-T3-SQ-D5-R05	Square	5.00	0.50	25.40	1.00	Yes
PP-FM-TX-XX-DX-RXX	Custom	Custom	Custom	Custom	Custom	Custom

*Image shape can be specified as Circular = CI, Square = SQ, Annular – AN
For custom image shapes please contact PowerPhotonic

**T3 indicates 2 optic system within extended depth of focus and smaller available spot radii

Optical coating on request at extra cost
All custom parameters can be customer specified

W: Width (+/-0.10mm)
H: Height (+/- 0.10mm)
T: Thickness (+/- 0.02mm)



Customization Program

Due to the unique nature of the PowerPhotonic manufacturing process, our standard products can be easily modified to meet specific requirements. Please contact PowerPhotonic for additional information.

Options

- ☉ Clear Aperture Width and Height
- ☉ Substrate Width, Height and Thickness
- ☉ Divergence Angle

About Us

PowerPhotonic is a global leader in precision micro-optics products. Our business was founded with the objective of providing unsurpassed excellence in all aspects of design and manufacture of micro-optics for optical and laser applications. Our world-class design skills are supported by an innovative and flexible manufacturing process that allows the company to design both a broad range of state-of-the-art standard micro-optics products and uniquely, to offer a low cost and rapid fabrication service for creating completely freeform optical surfaces

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