

LightForge™ - Rapid Flat Top

Overview:

LightForge™ is a low-cost rapid fabrication service giving optical designers the ability to create innovative new freeform surfaces, test new ideas and verify designs for production without incurring expensive upfront engineering charges and lengthy lead times.

PowerPhotonic's LightForge - Rapid Flat Top service is designed to generate flat top beams for single mode lasers with low lead times and no engineering charges.

This beam shaper is a single optic designed to be inserted into the collimated beam path producing a flat top profile at the focus of a far field lens, as shown in the diagram below.

We offer circular, square and rectangular outputs. Our sales team will perform a quick check to assess whether your request fits inside the Rapid Flat Top specification range and once accepted we can deliver your optic in as little as 3 weeks.

The PowerPhotonic Effect:

1.5-6.5mm

Input Beam

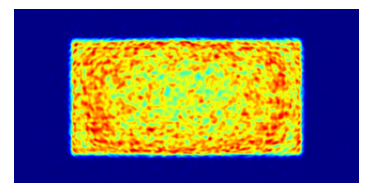
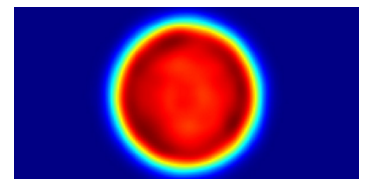
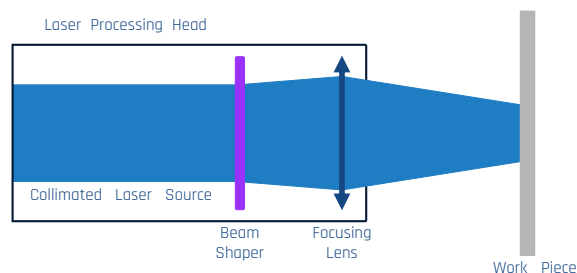
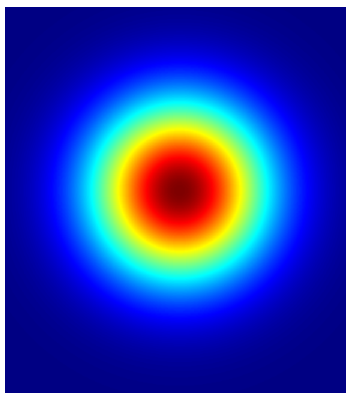
Flexible

Output spot size and shape

3 Weeks

Lead time

Typical System Application:



Key Features:

- Short lead time
- Fixed design rules
- Cost Effective
- AR coatings available

Target Applications:

- Beam Shaping
- Imaging Systems
- Laser Material Processing
- Beam Homogenizing

LightForge™ - Rapid Flat Top

Material Properties	Nominal Specification	
Material	UV Fused Silica Corning 7980	
Transmission	≈ 92% uncoated, >99% coated	
Mechanical Characteristics	Dimensions and Tolerance	Units
Diameter	25.4+0/-0.1	mm
Thickness	1.0+/-0.05	mm
Clear Aperture	2.5x input beam diameter	
Surface Quality	5/2 x 0.1; L 1 x 0.01; E0.5	ISO10110-7
Input Beam Characteristics	Range	Units
Beam Diameter (1/e²)	1.5 - 6.5	mm
Beam Quality	<1.2	mm²
Wavelength	500 - 1100	nm
Output Spot Characteristics	Range	Units
Nominal Spot Shape	Square, rectangle, circle or line	
Power in the bucket	95% - within 1.05 x 1/e² output spot size	
Output Spot Size Tolerance	±5	%
Flatness Factor	>0.6	ISO13694:2018 3.2.9
Plateau Uniformity	<0.25	ISO13694:2018 3.2.9
Custom Options Available	Notes	
AR Coating	Reflectance <0.3% per surface @ 515-535 nm and 1030-1070 nm	

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PowerPhotonic
Enhancing Beam Performance