

Light Shaping Optics for Industrial Applications

VIAVI light shaping optics are relied upon in a wide variety of industrial applications such as semiconductor wafer inspection, laser machining, machine vision and industrial LiDAR (Light Detection and Ranging) systems.

Our light shaping optics are ideal for demanding applications that require environmentally robust and durable optics for high power industrial applications. For example, our engineered diffusers generate best in class uniform illumination beams with efficient light management.

As we collaborate with our customers to develop innovative custom solutions, our offerings uniquely combine quality, performance and low cost.

Light Shaping Optics

VIAVI Light Shaping Optics are critical components in industrial applications sending light where it is needed. Our refractive Engineered Diffusers® reduce system level complexity and cost by providing nearly wavelength agnostic performance over a wide spectral range. Our wafer level manufacturing process for prototyping and production, ensures consistent product performance at reduced cost, and ready to scale for volume production.

Engineered Diffusers enable uniform illumination beams with sharp contrast and no zero-order hotspots enabling efficient light management and ensuring eye safety. We've an extensive library of standard catalog products including diffusers, MLA, vortex phase plates, and custom products can be designed for arbitrary illumination profiles including asymmetric diffusers. Custom beam combiners for high power industrial lasers are enabled by our micro-lens arrays with nearly 100% fill-factor or gratings with nearly vertical grating walls.

Highly robust Reactive-ion etched (RIE) products provide enhanced efficiency of light management in high power illumination and imaging instruments that utilize deep ultraviolet or infrared wavelengths. Reactive-ion etched products utilize fused silica, silicon, germanium and thin-film coated inorganic materials providing environmentally robust solutions with high laser damage threshold and no outgassing.

Replicated polymer on glass products offer low-cost solutions at high volumes. Polymer on glass products are available with reflow compatibility ensuring seamless packaging in electronics modules such as for industrial LiDAR.

Applications

- Semiconductor Wafer Inspection
- Laser Machining
- Fiber Beam Combiner
- Machine Vision
- Industrial LiDAR
- Laser homogenizing and shaping
- Laser material processing
- Hot spot reducer
- Metrology Instruments
- Laser Projectors

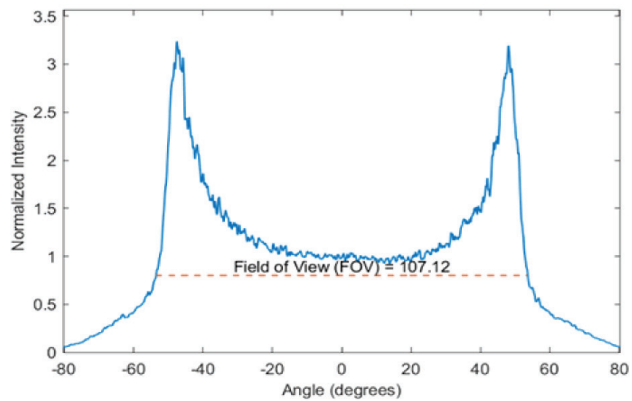
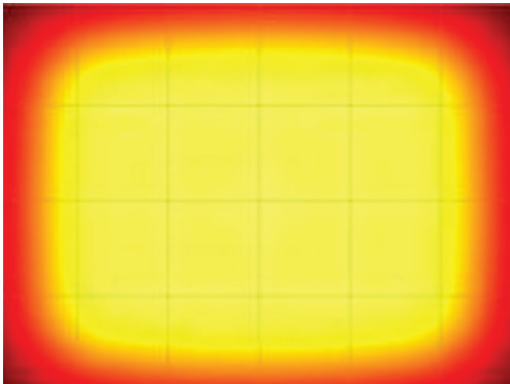
VIAVI Product Technology Offerings

- Engineered Diffusers
- Microlens Arrays
- Gratings
- Phase Plates
- Dot Projection Optics
- Polymer on Glass
- Reactive Ion Etched (RIE)

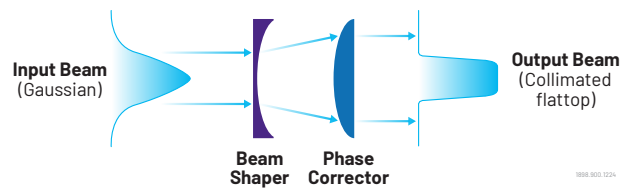
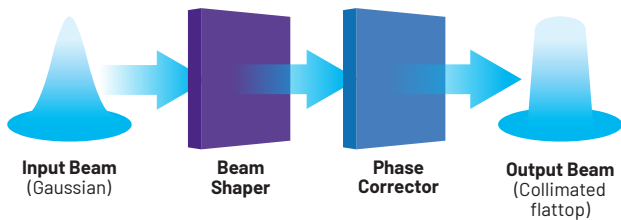
Beam shaping with Engineered Diffusers:

(Left) A uniform illumination irradiance pattern with no zero-order hot-spot for improved eye safety.

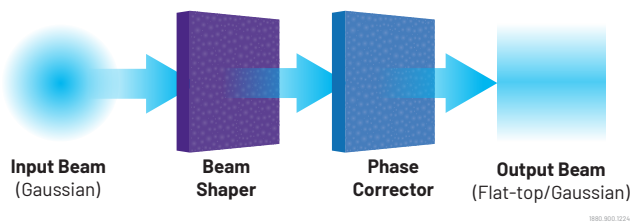
(Right) Batwing shaped intensity cross-section with sharp edges, ensures efficient light management.



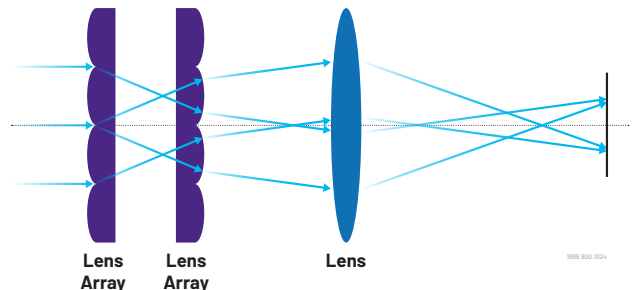
Gaussian-to-Flattop Beam Shaping: Typical configuration for speckle-free Gaussian-to-Flattop beam shaping with sharp illumination contrast.



Beam Shaping Example for Semiconductor Wafer Inspection: Enhanced wafer inspection throughput in semiconductor equipment manufacturing can be achieved by utilizing custom beam shaping.



Fly's Eye Integrators: Microlens arrays are excellent for homogenizing and shaping light with sharp contrast in digital projector systems, mask aligners, etc.



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