

Micro-Optic Solutions Diffuser Fact Sheet



DigitalOptics Corporation™ (DOC) is a world-wide leader in the design and manufacture of diffractive optical elements (DOEs). Using wafer-based lithography, DOC produces its OptiML™ DOEs with exceptional thermal, mechanical and optical performance characteristics. In addition, wafer-level processing provides excellent manufacturing repeatability and economies of scale. Available materials include crystal-quartz, fused-silica, glass, silicon and advanced synthetic substrates.



Diffusers are types of diffractive optical elements that redistribute laser beam energy to create specific output patterns. These patterns are fully customizable; with patterns such as circles, squares, rectangles and complex shapes.

OptiML DOEs are designed to maximize transmission efficiency while minimizing zero-order transmission. They are also easy to integrate into complex optical systems, as they can be insensitive to input beam alignment.

Diffractive diffusers can be used for a wide variety of applications.

- Controlled angle illumination for precision lithographic systems
- Numerical aperture expansion for heads-up displays
- Beam homogenization for surgical and biomedical lasers
- General laser beam reshaping

DOC offers both custom and stock designs.

Technical Overview - DOEs

Feature Control	Features as small as 100nm, with 15nm overlay control and ~100nm corner rounding
Wavelength	193nm to 14µm
Materials	Quartz, fused-silica, silicon, germanium, or advanced synthetic substrates
Dimensions	0.5mm to 125.0mm
Projection Angles	Wide: up to 120° (full angle)
Coatings	Anti-reflective coating and metallization capabilities
Zero Order	Typically < 1.5%
Efficiency	Varies by design

Technical Specifications - MDOC01257_A

DOC P/N	MDOC01257_A
Output Pattern	Square Diffuser
Die Size (mm)	15x15x1
Substrate	Optical Grade Fused- Silica
Phase Levels	8
Wavelength (nm)	650
Pattern Angle (Max X°)	6.62°
Pattern Angle (Max Y°)	6.62°
Transmission Efficiency	>80%
Non Uniformity	10%

Contact a DOC sales representative for more information.

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