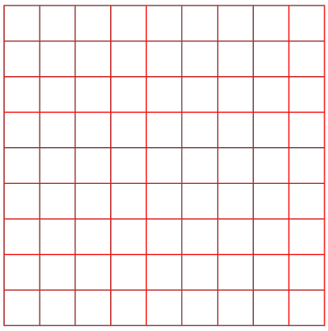
DE-R 354 Diffractive Optical Element

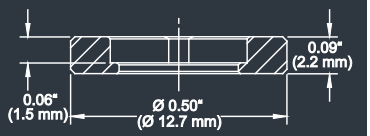


- **Element Number: DE-R 354**
- **Current Product Revision: A**
- Description: Square Grid 10 x 10 Lines
- Number of Lines: 100 Lines
- Substrate Material: Polycarbonate (PC)
- Size (Ø x Thickness): 8 x 1.2 mm
- Design Wavelengths: 658 nm
- Recommended Wavelength Range: 620-680 nm
- Minimum Recommended Beam Diameter: 2-3 mm

Within the recommended wavelength range, the zeroth order central spot is not visible on the line. When the DOE is used at a wavelength different from the design wavelength, the pattern will scale in size and geometrical distortions may occur (see section 'Geometry and Diffraction Angles▼'). When the DOE is used at a wavelength within the recommended wavelength range, the element shows the lowest intensity in the central spot (see section 'Zero Order Diffraction Intensity▼' on reverse page).Diffraction efficiencies given on this datasheet have been measured using elements of product revision A.

MOUNTED VERSION

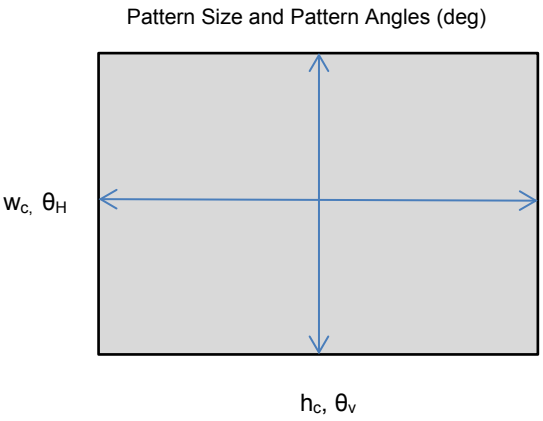
For testing or setups under laboratory conditions we offer a version mounted in 12.7 mm stainless steel frame for use with standard laboratory holders.

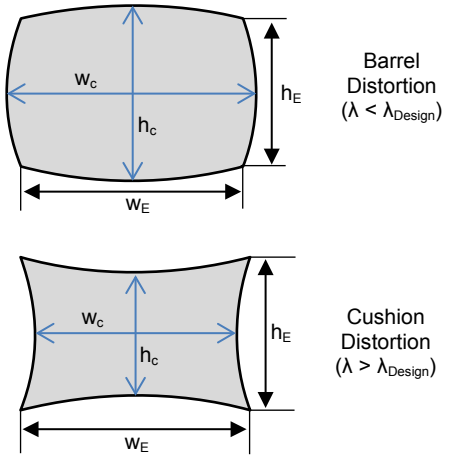


COLLIMATED / CONVERGING LASER

The laser can be collimated for long range use or converging for a fixed working distance. Please note that the size/thickness of each spot or line depends on the focusing of the laser.

Geometry and Diffraction Angles



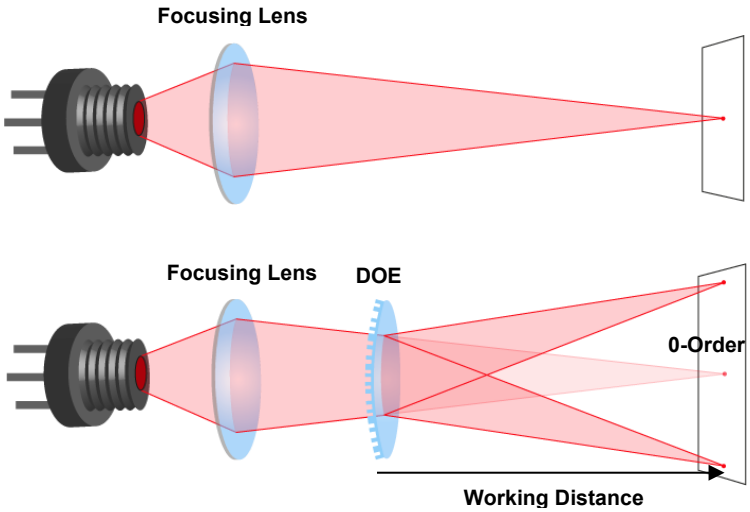


θ_H= horizontal angle, θ_V= vertical angle, h_C= center height, w_C= center width, h_E= edge height, w_E= edge width

If the DOE is used at laser wavelengths close to the design wavelength ($\Delta\lambda$ < 50nm) the geometrical distortion is usually tolerable (see table below).

Wavelength	Pattern Size @ 100 mm Distance				Ratio corner-to-center		Pattern Angles	
	w_c	h_c	w_E	h_E	Width	Height	θ_H	θ_v
532 nm	57.5 mm	57.5 mm	56.3 mm	56.3 mm	97.9%	97.9%	32.1°	32.1°
594 nm	64.9 mm	64.9 mm	64.2 mm	64.2 mm	98.8%	98.8%	36.0°	36.0°
638 nm	70.3 mm	70.3 mm	70.0 mm	70.0 mm	99.6%	99.6%	38.7°	38.7°
658 nm	**72.8 mm**	**72.8 mm**	**72.8 mm**	**72.8 mm**	**100.0%**	**100.0%**	**40.0°**	**40.0°**
687 nm	76.5 mm	76.5 mm	76.9 mm	76.9 mm	100.6%	100.6%	41.8°	41.8°
752 nm	84.9 mm	84.9 mm	86.8 mm	86.8 mm	102.2%	102.2%	46.0°	46.0°

Setup



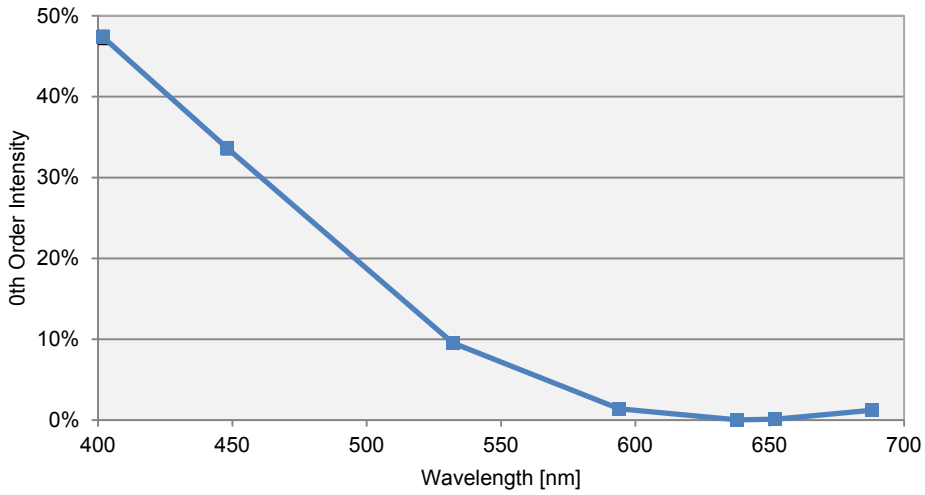
Laser diodes are the most common light source to be used with diffractive optical elements, but other laser light sources may also be used.

The DOEs are best used with collimated or convergent laser sources. The microstructure surface should be oriented towards the laser.

The 0-order spot is equivalent in size and shape to the original beam, but its power is attenuated.

Diffraction Zero Order Intensity

Wavelength	0-Order Intensity
402	47%
448	34%
532	9.5%
594	1.4%
638	0.03%
652	0.1%
688	1.2%



HOLOEYE Photonics AG
Volmerstr. 1
12489 Berlin, Germany
contact@holoeye.com
www.holoeye.com