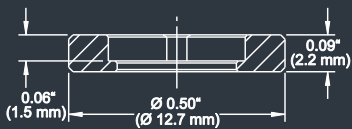


DE-R 198 Diffractive Optical Element

MOUNTED VERSION

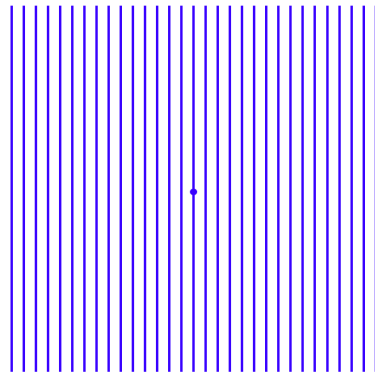
For testing or setups under laboratory conditions we offer a version mounted in 12.7 mm stainless steel frame for use with standard laboratory holders.



COLLIMATED / CONVERGING LASER

The laser can be collimated for long range use or converging for a fixed working distance.

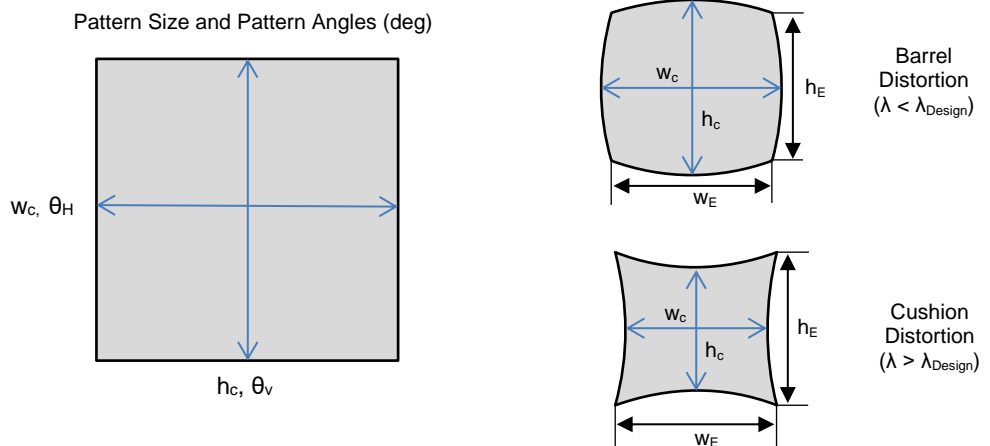
Please note that the size/thickness of each spot or line depends on the focusing of the laser.



- **Element Number: DE-R 198**
- **Current Product Revision: A**
- Description: 31 Lines (Square)
- Substrate Material: Polycarbonate (PC)
- Size (Ø x Thickness): 8 x 0.63 mm
- Design Wavelengths: 450 nm
- Recommended Wavelength Range: 425-490 nm
- Minimum Recommended Beam Diameter: 3-4 mm

This Large-angle pattern is subject to geometrical distortion due to its symmetry properties, if the DOE is used at laser wavelengths significantly different ($\Delta\lambda > 50\text{nm}$) from the design wavelength. Pattern size and pattern angles and the intensity in the undiffracted central spot ('zero order intensity', see reverse page) will vary most with the wavelength. Diffraction efficiencies given on this datasheet have been measured using elements of product revision A.

Geometry and Diffraction Angles

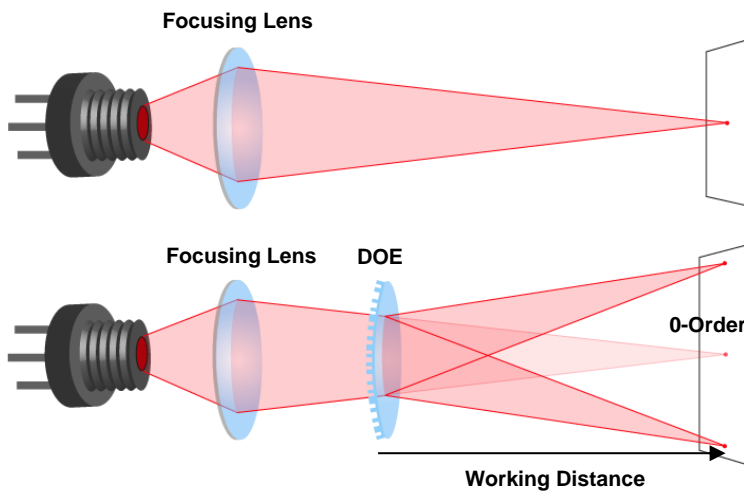


θ_H = horizontal angle, θ_V = vertical angle, h_c = center height, w_c = center width, h_E = edge height, w_E = edge width

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

Wavelength λ [nm]	Pattern Size @ 100 mm Distance				Ratio corner-to-center		Pattern Angles	
	w_c [mm]	h_c [mm]	w_E [mm]	h_E [mm]	Width	Height	θ_H [°]	θ_V [°]
405	46.1	46.1	45.8	45.8	99.4%	99.4%	25.9	25.9
450	51.5	51.5	51.5	51.5	100.0%	100.0%	28.9	28.9
520	60.2	60.2	60.9	60.9	101.2%	101.2%	33.5	33.5
532	61.7	61.7	62.6	62.6	101.4%	101.4%	34.3	34.3
594	69.7	69.7	71.6	71.6	102.7%	102.7%	38.4	38.4
640	75.9	75.9	78.8	78.8	103.8%	103.8%	41.5	41.5
660	78.6	78.6	82.1	82.1	104.4%	104.4%	42.9	42.9

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.

Zero Order Diffraction Intensity

Wavelength	0-Order Intensity
402	5.3%
447	0.3%
515	4.4%
640	21.5%

