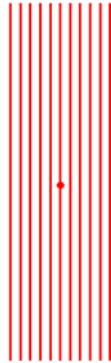


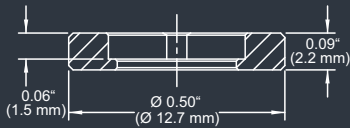
DE-R 381 Diffractive Optical Element



- **Element Number: DE-R 381**
- **Current Product Revision: A**
- Description: 11 Lines (Rectangular)
- Substrate Material: Polycarbonate (PC)
- Size (Ø x Thickness): 8 x 0.63 mm
- Design Wavelengths: 850 nm
- Recommended Wavelength Range: 830-880 nm
- Minimum Recommended Beam Diameter: 2-3 mm

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.



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.

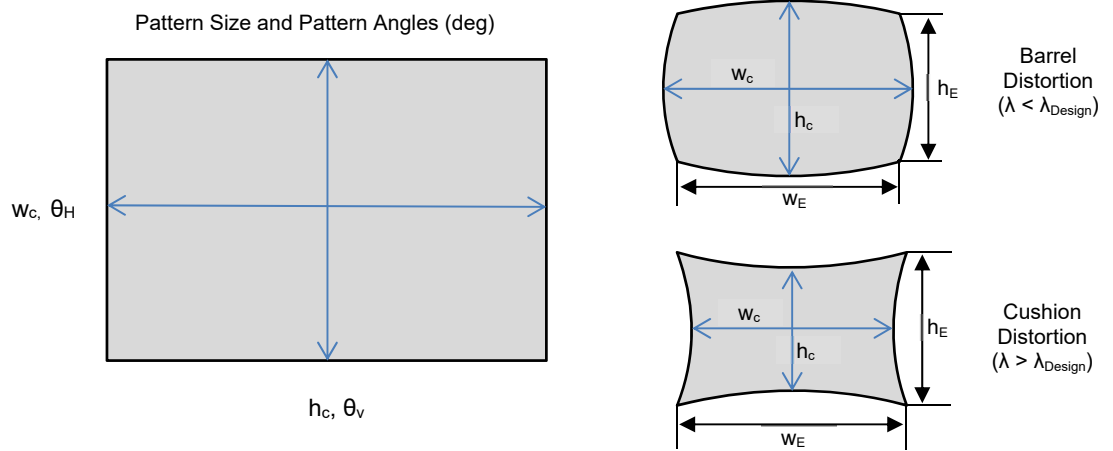
Geometry and Diffraction Angles



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.

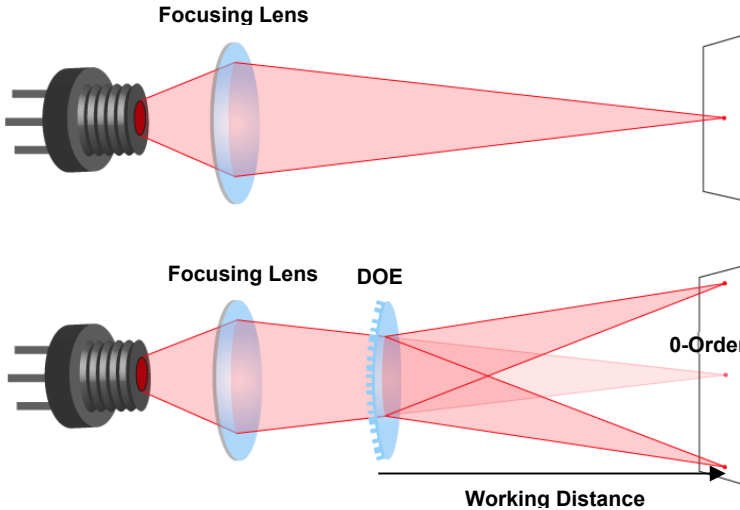


θ_H = horizontal angle, θ_V = vertical angle, h_c = center height, w_c = center width, h_E = edge height, w_E = edge width

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	Pattern Size @ 100 mm Distance				Ratio corner-to-center		Pattern Angles	
	λ [nm]	w_c [mm]	h_c [mm]	w_E [mm]	h_E [mm]	Width	Height	θ_H [°]
652	31.6	103.7	28.5	102.9	90.3%	99.3%	17.9	54.8
687	33.3	110.9	30.5	110.2	91.6%	99.4%	18.9	58.0
752	36.5	125.3	34.5	124.8	94.4%	99.6%	20.7	64.1
801	39.0	137.1	37.8	136.8	97.0%	99.8%	22.1	68.9
825	40.2	143.3	39.6	143.1	98.4%	99.9%	22.7	71.2
850	41.5	150.0	41.5	150.0	100.0%	100.0%	23.4	73.7
893	43.7	162.4	45.0	162.8	103.1%	100.2%	24.6	78.2
923	45.2	171.8	47.7	172.5	105.5%	100.4%	25.5	81.3
980	48.2	191.6	53.5	193.3	111.0%	100.9%	27.1	87.5

Setup



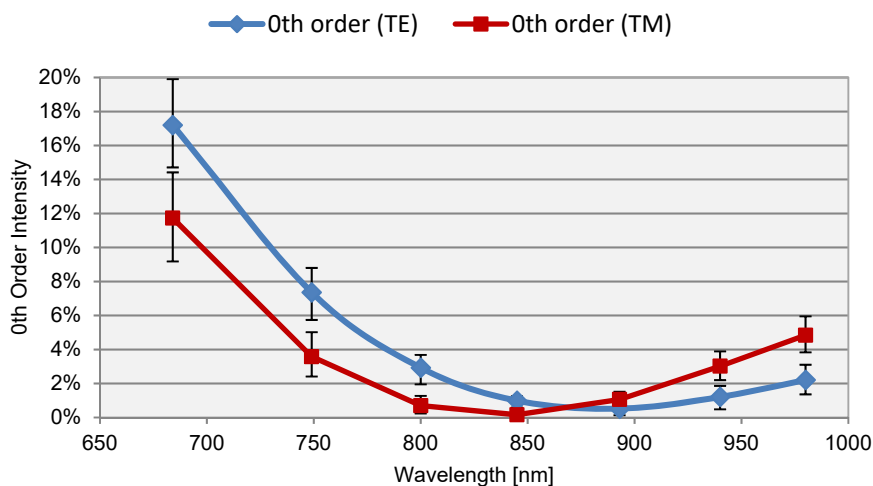
Laser diodes are the most common light source to be used with diffractive optical elements, but other laser light sources may also be used.

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 TM (min)	0-Order Intensity TM (typ.)	0-Order Intensity TM (max)	0-Order Intensity TE (min)	0-Order Intensity TE (typ.)	0-Order Intensity TE (max)
684 nm	9.2%	11.7%	14.4%	14.7%	17.2%	19.9%
749 nm	2.4%	3.6%	5.0%	5.7%	7.4%	8.8%
800 nm	0.2%	0.7%	1.3%	2.0%	2.9%	3.7%
845 nm	0.1%	0.2%	0.2%	0.6%	1.0%	1.3%
893 nm	0.5%	1.1%	1.5%	0.1%	0.5%	0.8%
940 nm	2.2%	3.0%	3.9%	0.5%	1.2%	1.9%
980 nm	3.8%	4.8%	6.0%	1.4%	2.2%	3.1%



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