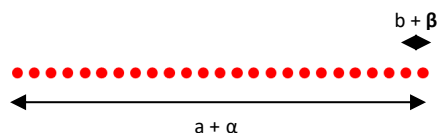


DE 803 Diffractive Optical Element

- **Element Number: DE 803**
- **Current Product Revision: A**
- Description: 1 : 25 Dot Line
- Substrate Material: Fused Silica
- AR coating on rear side of the substrate: $R < 0.5\%$ in the range 600-700 nm
- Substrate Size / Thickness: 5 mm x 5.75 mm / 0.67 mm
- Design Wavelengths: 640 nm (Batch A), 650 nm (Batch B)
- Recommended Wavelength Range: 635-645 nm (Batch A) and 645-655nm (Batch B)
- Typ. Diffraction Efficiency: 79% at design wavelength
- Minimum Recommended Beam Diameter: 0.5 mm



Within the recommended wavelength range, the zeroth order has a similar power as the off-axis beams of the dot line. Spot spacing and angular separation, and the ratio between central spot and off-axis spots ('zero order intensity', see reverse page) will vary most with the wavelength. *In the wavelength range around 750nm the element can also be used (see graph in section "Diffraction Zero Order Intensity").*

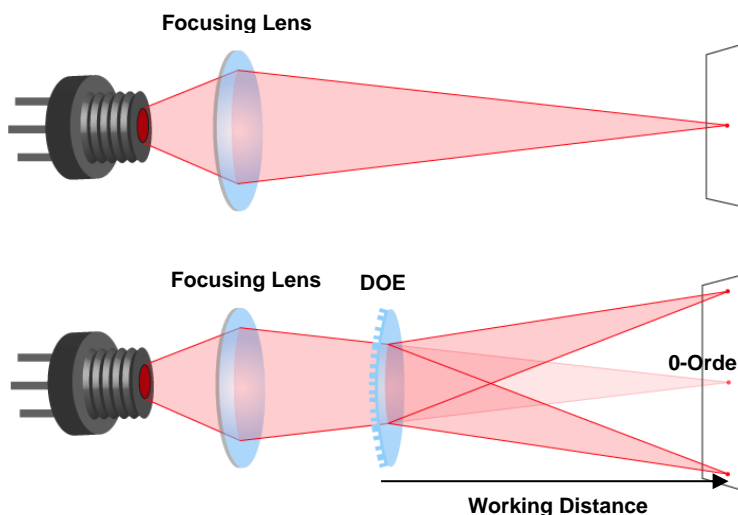
Diffraction efficiencies given on this datasheet have been measured using elements of product revision A.

Line Geometry and Diffraction Angles

Wavelength	Pattern Size @ 100 mm Distance		Pattern Angles	
λ [nm]	a [mm]	b [mm]	α [°]	β [°]
515	12.4	0.52	7.1	0.30
532	12.8	0.53	7.3	0.31
594	14.3	0.60	8.2	0.34
640	15.4	0.64	8.8	0.37
650	15.6	0.65	8.9	0.37
750	18.1	0.75	10.3	0.43
800	19.3	0.80	11.0	0.46

Table 1: Pattern size and pattern angle depending on the wavelength

Setup



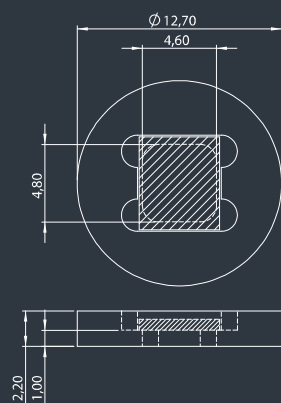
Laser diodes are the most common light source to be used with diffractive optical elements, but other laser light sources may also be used.

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.

MOUNTED VERSION

For testing or setups under laboratory conditions, we offer a version mounted in a black anodized 12.7 mm aluminum frame for use with standard laboratory holders. For other frame sizes (e.g. 8mm) please contact us at the given contact address.



12.7 mm anodized aluminum lens adapter

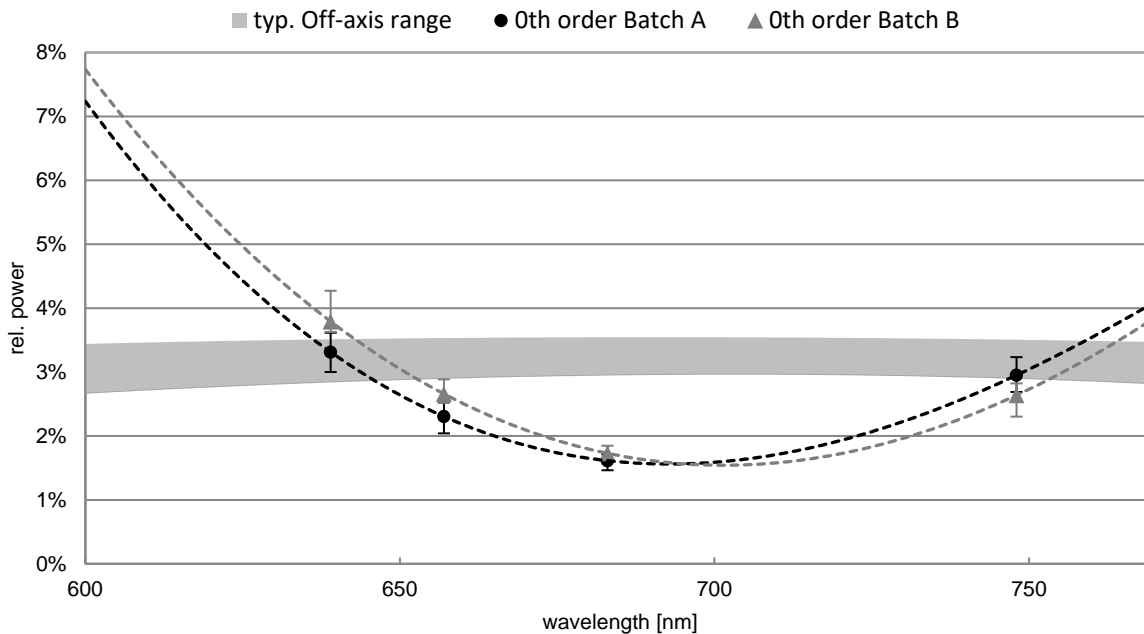
COLLIMATED / CONVERGING LASER

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.

Diffraction Zero Order Intensity:

Wavelength	Batch A (optimized for 640 nm)			Batch B (optimized for 650 nm)			Min OA Intensity	Typ. OA Intensity	Max OA Intensity
	Min 0-Order Intensity	Typ. 0-Order Intensity	Max 0-Order Intensity	Min 0-Order Intensity	Typ. 0-Order Intensity	Max 0-Order Intensity			
515	26.8%	28.0%	29.3%	28.9%	29.7%	31.2%	2.0%	2.5%	3.0%
532	21.8%	23.3%	24.7%	24.1%	25.0%	26.3%	2.2%	2.8%	3.3%
639	3.0%	3.3%	3.6%	3.6%	3.8%	4.3%	2.9%	3.1%	3.5%
657	2.0%	2.3%	2.5%	2.5%	2.7%	2.9%	2.9%	3.2%	3.5%
683	1.5%	1.6%	1.7%	1.6%	1.7%	1.8%	2.8%	3.2%	3.7%
748	2.7%	3.0%	3.2%	2.3%	2.6%	2.8%	2.8%	3.1%	3.5%

Table 2: At the recommended polarization state, the electric field is parallel to the grid lines and the generated (dot) line, OA – wanted Off-Axis orders



Line Power Profile

off-axis orders at wavelength 639nm (using recommended polarization state)

