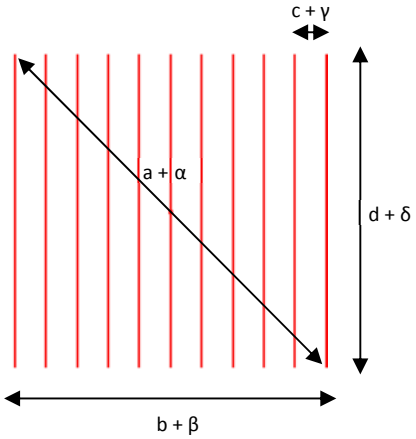
DE-R 253 Diffractive Optical Element

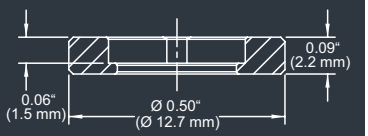


- **Element Number: DE-R 253**
- **Current Product Revision: A**
- Description: 11 Lines (Square – Thin Lines)
- Substrate material: Polycarbonate (PC)
- Size (Ø x Thickness): 8 x 1.2 mm
- Design wavelengths: 635 nm
- Recommended wavelength range: 530-670 nm
- Minimum recommended beam diameter: 3-4 mm

Within the recommended wavelength range, the zeroth order central spot is not visible on the line. This Large-angle pattern is subject to geometrical distortion due to its symmetry properties, if the DOE is used at laser wavelengths significantly different (Δλ > 50nm) 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.

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.



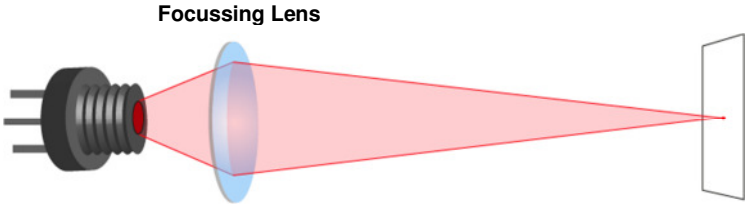
COLLIMATED / CONVERGING LASER

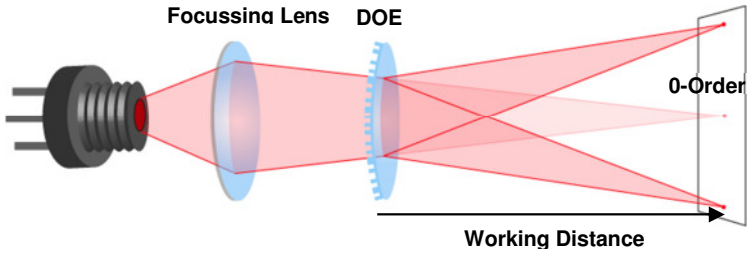
The laser can be collimated for long range use or converging for a fixed working distance. Please note that the size/thickness of each spot or line depends on the focusing of the laser.

Geometry and Diffraction Angles

Wavelength	Pattern Size @ 100 mm Distance				Pattern Angles			
	a	b	c	d	α	β	γ	δ
488 nm	57 mm	41 mm	4.1 mm	41 mm	32°	23°	2.3°	23°
543 nm	64 mm	46 mm	4.6 mm	46 mm	36°	26°	2.6°	26°
594 nm	71 mm	50 mm	5.0 mm	50 mm	39°	28°	2.8°	28°
635 nm	76 mm	54 mm	5.4 mm	54 mm	42°	30°	3.0°	30°
650 nm	79 mm	55 mm	5.5 mm	55 mm	43°	31°	3.1°	31°
730 nm	90 mm	63 mm	6.3 mm	63 mm	48°	35°	3.5°	35°
780 nm	98 mm	68 mm	6.8 mm	68 mm	52°	37°	3.7°	37°
808 nm	101 mm	70 mm	7.0 mm	70 mm	54°	39°	3.9°	39°

Setup





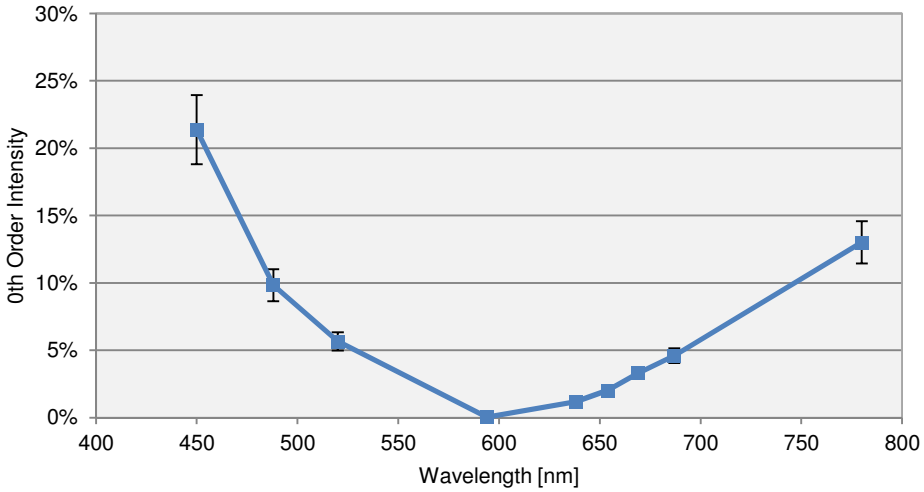
Laser diodes are the most common light source to be used with diffractive optical elements, but other laser light sources may also be used.

The DOEs are best 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
488	9.8%
520	5.7%
594	0.1%
638	1.2%
654	2.0%
669	3.3%
687	4.6%
780	13.0%



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