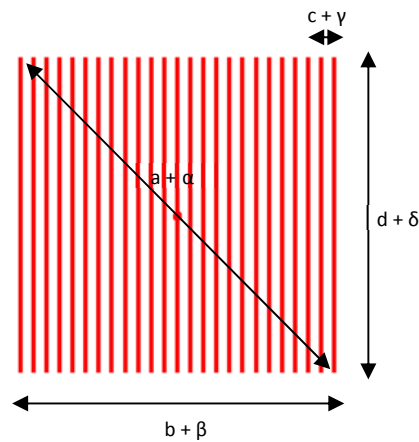


DE-R 254 Diffractive Optical Element



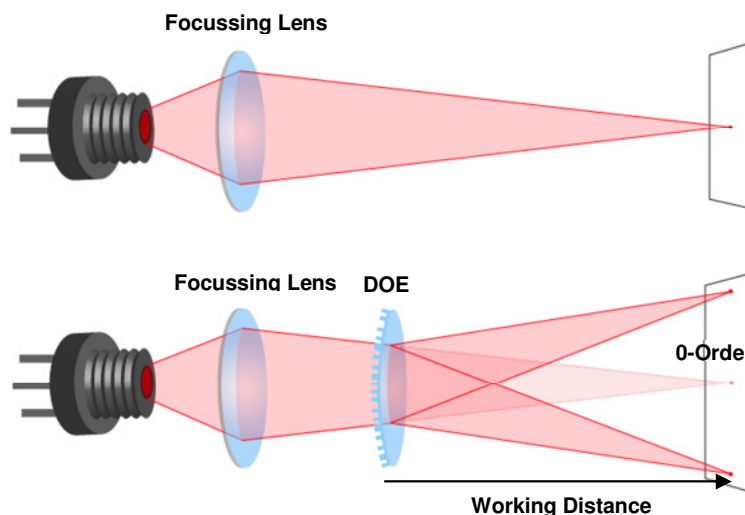
- **Element Number:** DE-R 254
- **Current Product Revision:** B
- **Description:** 25 Lines (Square)
- **Substrate material:** Polycarbonate (PC)
- **Size (Ø x Thickness):** 8 x 1.2 mm
- **Design wavelengths:** 660 nm
- **Recommended wavelength range:** 530-670 nm
- **Minimum recommended beam diameter:** 3.5-4 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 ($\Delta\lambda > 50\text{nm}$) 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 B.

Geometry and Diffraction Angles

Wavelength	Pattern Size @ 100 mm Distance				Pattern Angles			
	a	b	c	d	α	β	γ	δ
450 nm	45 mm	32 mm	1.35 mm	32 mm	25°	18°	0.77°	18°
515 nm	52 mm	37 mm	1.55 mm	37 mm	29°	21°	0.88°	21°
532 nm	54 mm	39 mm	1.61 mm	39 mm	30°	22°	0.91°	22°
635 nm	66 mm	46 mm	1.93 mm	46 mm	36°	26°	1.09°	26°
650 nm	67 mm	48 mm	1.98 mm	48 mm	37°	27°	1.11°	27°
730 nm	77 mm	54 mm	2.2 mm	54 mm	42°	30°	1.25°	30°
780 nm	83 mm	58 mm	2.4 mm	58 mm	45°	32°	1.34°	32°
808 nm	86 mm	60 mm	2.5 mm	60 mm	47°	33°	1.39°	33°

Setup



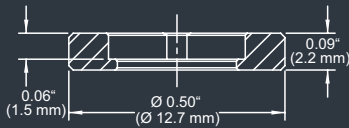
Laser diodes are the most common light source to be used with diffractive optical elements, but other laser light sources may also be used.

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.

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.



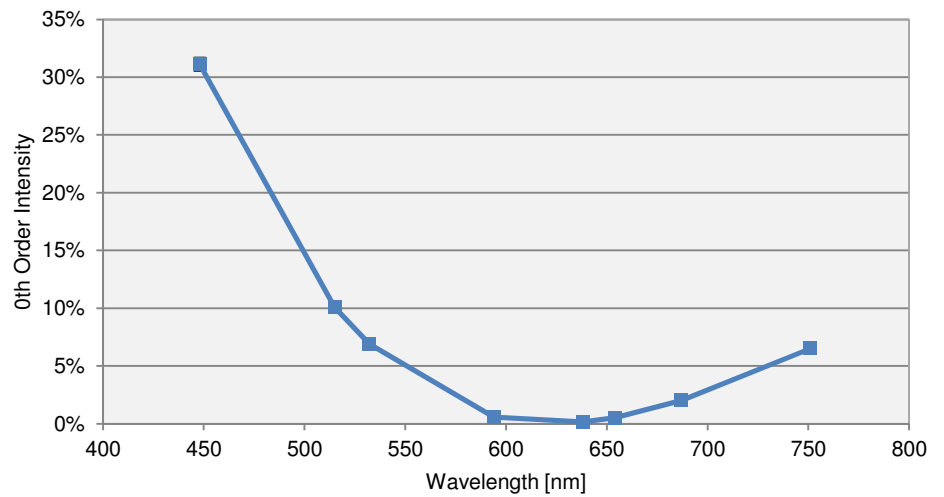
COLLIMATED / CONVERGING LASER

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.

Diffraction Zero Order Intensity:

Wavelength	0-Order Intensity
448	31%
515	10%
532	6.9%
594	0.6%
638	0.14%
654	0.5%
687	2.0%
751	6.5%



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