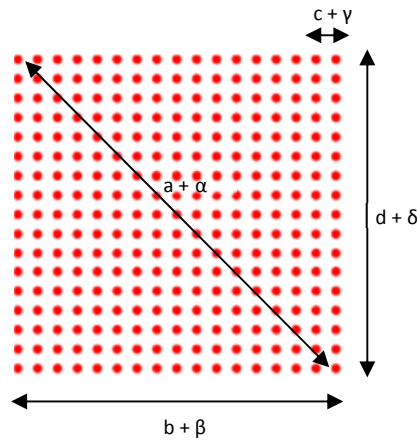


DE-R 243 Diffractive Optical Element



- **Element Number:** DE-R 243
- **Current Product Revision:** B
- **Description:** Matrix 17 x 17 Dots
- **Number of Dots:** 289 Dots
- **Substrate material:** Polycarbonate (PC)
- **Size (Ø x Thickness):** 8 x 1.2 mm
- **Design wavelengths:** 635 nm
- **Recommended wavelength range:** 550-720 nm
- **Minimum recommended beam diameter:** 0.5-1 mm

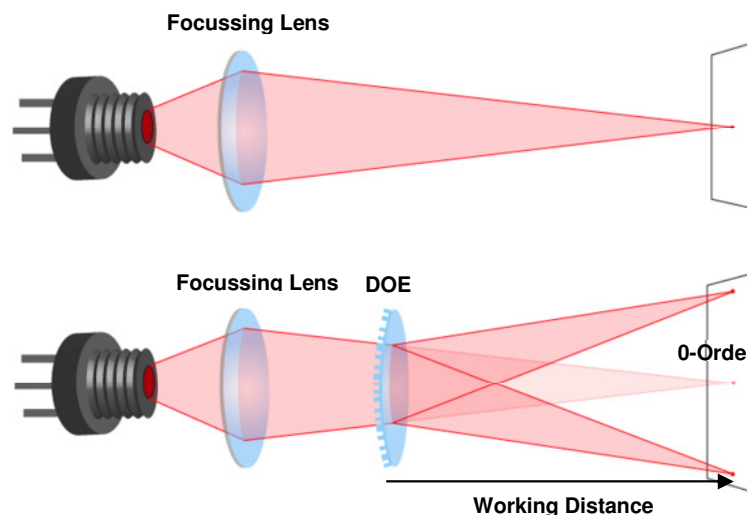
Pattern size and pattern angles and the intensity in the undiffracted central spot ('zero order intensity', see reverse page) will vary most with the wavelength. Within the recommended wavelength range, the zeroth order has a similar power than the off-axis beams of the dot matrix.

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 | 8.8 mm | 6.2 mm | 0.39 mm | 6.2 mm | 5.0° | 3.6° | 0.22° | 3.6° |
| 515 nm | 10.1 mm | 7.1 mm | 0.44 mm | 7.1 mm | 5.8° | 4.1° | 0.25° | 4.1° |
| 532 nm | 10.4 mm | 7.4 mm | 0.46 mm | 7.4 mm | 6.0° | 4.2° | 0.26° | 4.2° |
| 635 nm | 12.4 mm | 8.8 mm | 0.55 mm | 8.8 mm | 7.1° | 5.0° | 0.31° | 5.0° |
| 650 nm | 12.7 mm | 9.0 mm | 0.56 mm | 9.0 mm | 7.3° | 5.1° | 0.32° | 5.1° |
| 730 nm | 14.3 mm | 10.1 mm | 0.63 mm | 10.1 mm | 8.2° | 5.8° | 0.36° | 5.8° |
| 780 nm | 15.3 mm | 10.8 mm | 0.67 mm | 10.8 mm | 8.7° | 6.2° | 0.39° | 6.2° |
| 808 nm | 15.8 mm | 11.2 mm | 0.70 mm | 11.2 mm | 9.1° | 6.4° | 0.40° | 6.4° |

Setup



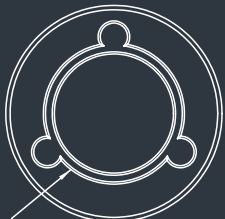
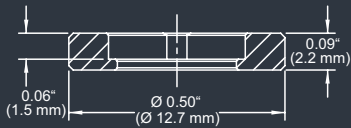
Laser diodes are the most common light source to be used with diffractive optical elements, but other laser light sources may also be used.

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.



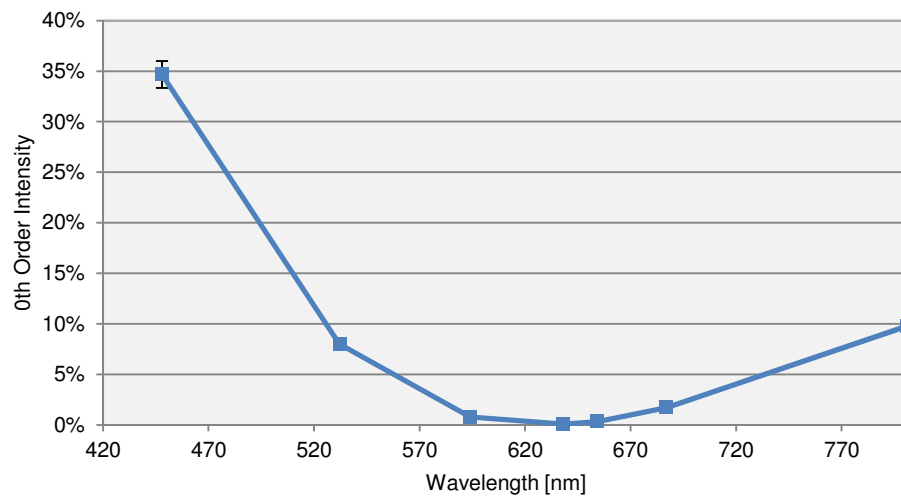
COLLIMATED / CONVERGING LASER

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 | 35% |
| 532 | 8.0% |
| 594 | 0.8% |
| 638 | 0.1% |
| 654 | 0.3% |
| 687 | 1.7% |
| 801 | 9.8% |



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