

TESSERA



DigitalOptics

Defense and Aerospace Solutions

High-Performance, Cost-Effective Micro-Optics for Aerospace, Defense, Security and Sensing

For aerospace and defense organizations, flawless performance of micro-optic elements is literally mission-critical; that is, lives depend upon it. Today's growing security concerns drive the need for ever-more advanced defense and security devices, while government budgets dictate lower cost and maintenance.

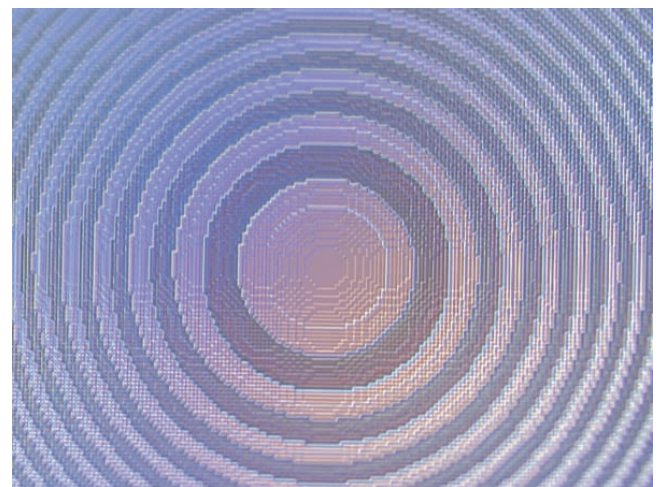
Tessera's DigitalOptics™ solutions address the advanced needs of aerospace, defense, security and sensing organizations with industry-leading micro-optic elements. These organizations depend on Tessera's innovative processes to increase efficiency, reduce costs and meet tough new performance standards. Tessera builds custom diffractive diffusers for controlled angle illumination and diffractive and refractive aspheric lenses in such materials as silicon, fused silica, germanium and other glass substrates.

Wafer-Based Lithography Improves Efficiency and Reduces Costs

Wafer-based lithography provides distinct advantages over alternative fabrication techniques such as diamond turning. Advantages include thinner elements, highly aspheric and even non-rotationally symmetric phase functions, chromatic compensation and cost-effective fabrication.

Tessera's DigitalOptics provide solutions for a wide range of applications, including:

- Head-mounted displays (HMD)
- Ultra-compact imaging systems
- Optical sensors
- Machine vision systems
- Missile guidance systems
- Near-field wavefront correction & beam shaping
- Aspheric lenses for infrared (IR) imaging
- Optical communications



Tessera's cost-effective solutions offer smaller form factor, greater system efficiency and overall accuracy for mission-critical applications.

Tessera - Transforming the Future™

Advanced Micro-Optics for Defense and Aerospace

Tessera's design process provides tight control of tolerances and alignment, and its high-volume manufacturing experience and world-class ISO-certified facilities ensure these attributes are supplied part-to-part, lot-to-lot and year-to-year. Highly-precise, sub-micron reproduction of even the most complex designs offers an unmatched design-to-fabrication correlation that consistently delivers the highest possible performance.

Tessera's DigitalOptics family of high-performance defense and aerospace products includes:

- Diffusers
- Homogenizers
- Beam shapers
- Beam splitters
- Beam steering optics
- Micro-lens arrays
- Pattern generators
- Spot array generators
- Gratings
- Chromatic correctors



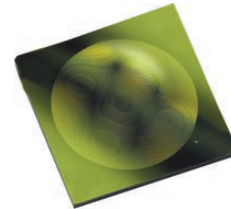
Silicon Collimating Lens



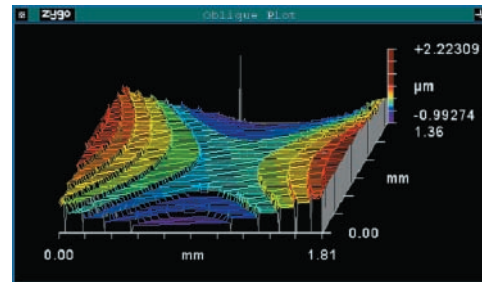
Silicon Diffractive Lens

TECHNICAL SPECIFICATIONS	
Patterning	Sub-micron patterning & alignment capabilities, single or double-sided
Dimension	Typically 0.7mm to 100.0mm
Wavelength	From 193nm to 14μm
Materials	Fused silica, silicon, germanium, crystal quartz and other glass substrates; single or double-sided anti-reflective (AR) coating and metallization

Made in the USA



Germanium Beam Shaper



White-Light Interferogram of a Germanium Beam Shaper

Transforming the Future with Innovative Micro-Optic Solutions

Tessera is a total solution provider specializing in the design and manufacture of wafer-based, custom micro-optical components and sub-assemblies. With one of the industry's largest internal teams of optical design and application engineers, and a state-of-the-art ISO-certified (9001:2000 & 14,000) optics fabrication facility, the company develops and delivers its DigitalOptics solutions on a variety of substrates,

on one or both surfaces of a wafer and in multi-wafer forms, all using photolithographic techniques.

By investing in technologies that drive new levels of innovation in electronics, optics and imaging, and delivering scalable solutions that enable manufacturers to get the right product to market, at the right time, Tessera's transformational technologies are enabling the next generation of advanced electronics products.

Contact a Tessera sales representative to learn more about high-performance, cost-effective DigitalOptics solutions for defense and aerospace.



3025 Orchard Parkway • San Jose, CA 95134
 Tel: +1.408.321.6000 • Fax: +1.408.321.8257
www.tessera.com

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