

OrionTM
by metalenz

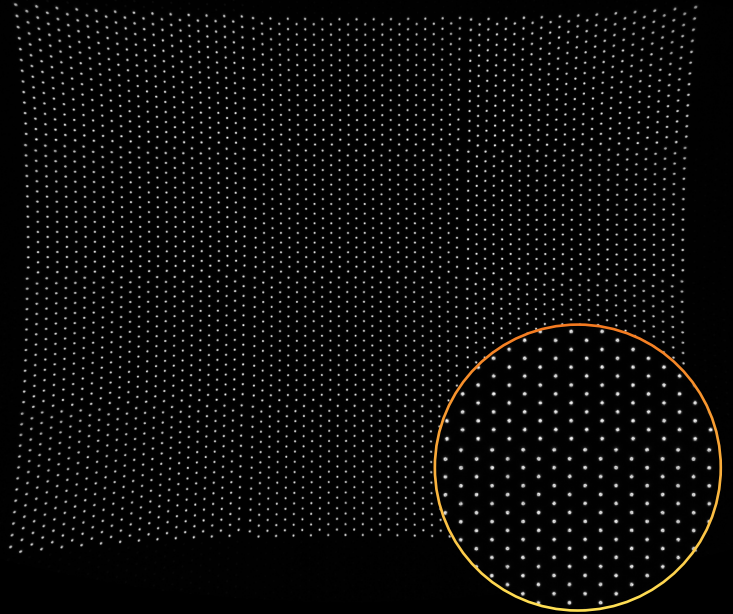
3.9K Dot Projector

Metalenz's revolutionary technology simplifies 3D sensing optical systems by providing collimation and dot projection functions with a single optical element while exceeding the performance of traditional multi-element designs.



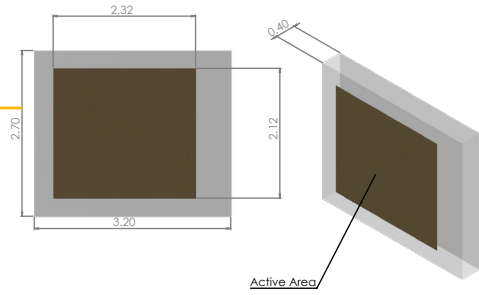
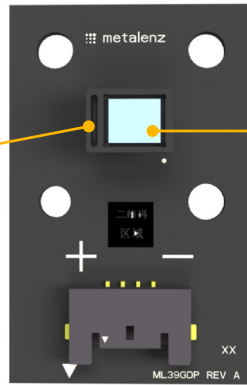
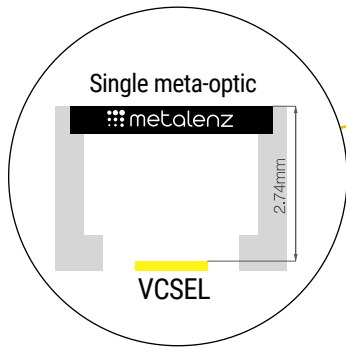
The Orion 3.9K infrared dot pattern projector evaluation kit (EVK) demonstrates the benefits of Metalenz's revolutionary technology for 3D sensing applications. Dot projector modules consist of a VCSEL array light source and pattern projecting optics. Conventionally, the optics consist of multiple elements: refractive lenses for collimation and diffractive optical elements for the patterning. Metalenz produces the dot pattern directly from the VCSEL array with a single meta-optic (one metalens with a single metasurface layer).

Orion meta-optic dot pattern design outperforms conventional configurations in smartphones and consumer electronic applications. Orion meta-optic pattern projectors by Metalenz have a single element with relaxed placement tolerances; reducing assembly time and cost, and improving overall yields. Uniformity of $\leq 10\%$ is maintained to improve sensing over longer distances. Based on Metalenz's breakthrough optical metasurface technology, the Orion family of infrared pattern projectors are significantly simpler, wider in field of illumination, temperature stable, and reflow compatible.

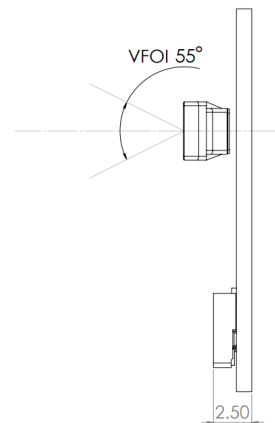
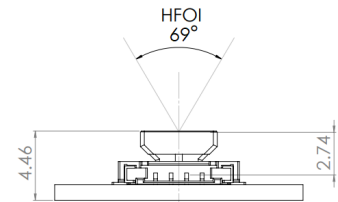
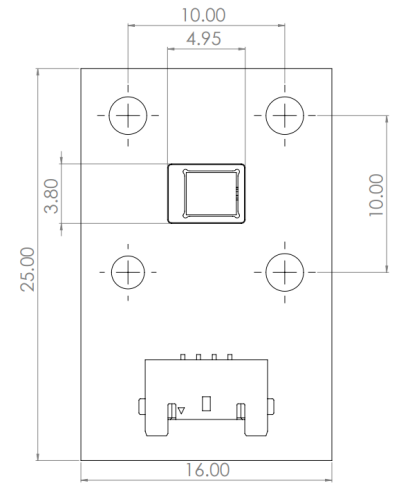


Key Features

- smaller packages
- significantly simpler
- multifunction
- wider field of illumination
- extreme temp stability
- reflow compatible
- inherent eye safety



Wire assembly included in kit



Typical Optical Characteristics (Preliminary)¹

Wavelength	940nm
Dot Width (FW1/e ²)	0.35°
Contrast Ratio ²	50:1
Field of Illumination (H)	69°
Field of Illumination (V)	55°
Number of Dots in FOI	3850
Total Number of Dots	3900
Dot Power Efficiency	65%
Peak Power Per Dot	0.7mW
Distortion ³	17%
Working Distance	>65cm

¹Data collected at EVK drive conditions, not ToF conditions.

²Mean of 95th percentile of the dot intensity over the mean intensity of background in low light conditions.

³Distortion calculated from irradiance image. See application note for further details.

Electrical and Mechanical Characteristics

EVK Mechanical Dimensions	25mmx16mmx4.5mm
Total Track Length	2.74mm
EVK Driving Conditions	2.7A, 0.1ms pulse, 1% duty cycle
Operating Voltage	3.25V @ 50°C
VCSEL Power Conversion Efficiency	45%
VCSEL Operating Temp (nominal)	50°C
VCSEL Operating Temp (max)	105°C
EVK Ambient Temp Operating Range	-20°C min 85°C max

Safe Handling Note

- Avoid any contact with lens surface
- Use ESD precautions when handling



WARNING This kit includes a class 3B laser emitting device. It has not been rated for eye safety at the operating conditions of benchtop evaluation. Follow IEC 60825-1 eye safety precautions. Use appropriate protective eyewear when possible.

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