SG SEMICONDUCTOR

Flat Optics

NSTIC
NATIONAL SEMICONDUCTOR TRANSLATION AND INNOVATION CENTRE

National Semiconductor Translation and Innovation Centre (NSTIC) Technical Capabilities

SiN on Glass	**Substrate**	• Wafer size: 300 mm • Wafer thickness: 775 µm
	Metasurface	• Refractive index (n): 2.02 at 530 nm • Optical loss (k): 0.0001 at 530 nm • Nanopillar shape: Circular • Nanopillar type: Free-standing • Min nanopillar CD: 100 nm • Max nanopillar height: 800 nm • Min nanopillar pitch: 250 nm • Max lens diameter: 25 mm
TiO_2 on Glass	**Substrate**	• Wafer size: 300 mm • Wafer thickness: 775 µm
	Metasurface	• Refractive index (n): 2.57 at 530 nm • Optical loss (k): 0.0001 at 530 nm • Nanopillar shape: Circular • Nanopillar type: Free-standing • Min nanopillar CD: 100 nm • Max nanopillar height: 800 nm • Min nanopillar pitch: 250 nm • Max efficiency: 85%
a-Si on Glass	**Substrate**	• Wafer size: 300 mm • Wafer thickness: 775 µm
	Metasurface	• Refractive index (n): 3.85 at 630 nm; 3.44 at 940 nm • Optical loss (k): 0.032 at 630 nm; 0 at 940 nm • Nanopillar shape: Circular • Nanopillar type: Free-standing • Min nanopillar CD: 100 nm • Max nanopillar height: 800 nm • Max aspect ratio: 8 • Min nanopillar pitch: 250 nm

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a-Si on SiO_2 on Si	**Substrate**	• Wafer size: 300 mm • Wafer thickness: 775 µm
	Metasurface	• Refractive index (n): 3.85 at 630 nm; 3.44 at 940 nm • Optical loss (k): 0.032 at 630 nm; 0 at 940 nm • Nanopillar shape: Circular • Nanopillar type: Free-standing • Min nanopillar CD: 100 nm • Max nanopillar height: 800 nm • Max aspect ratio: 8 • Min nanopillar pitch: 250 nm
c-Si on Si	**Substrate**	• Wafer size: 300 mm • Wafer thickness: 775 µm
	Metasurface	• Refractive index (n): 3.85 at 630 nm; 3.44 at 940 nm • Optical loss (k): 0.032 at 630 nm; 0 at 940 nm • Nanopillar shape: Circular, Cross, Square • Nanopillar type: Free-standing • Min nanopillar CD: 200 nm • Max nanopillar height: 4000 nm • Max aspect ratio: 20 • Min nanopillar pitch: 500 nm
3 Layers of a-Si on Glass	**Substrate**	• Wafer size: 300 mm • Wafer thickness: 775 µm
	Metasurface	• Interlayer alignment accuracy: 20 nm • Nanopillar shape: Circular • Nanopillar type: Embedded in SiO_2 • Min nanopillar CD: 100 nm • Max nanopillar height: 800 nm • Min nanopillar pitch: 250 nm • Filling material: SiO_2
Double-Sided a-Si on Glass	**Substrate**	• Wafer size: 300 mm • Wafer thickness: 775 µm
	Metasurface	• Double-sided alignment accuracy: 5 µm • Nanopillar shape: Circular • Nanopillar type: Embedded in SiO_2 • Min nanopillar CD: 100 nm • Max nanopillar height: 800 nm • Min nanopillar pitch: 250 nm

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