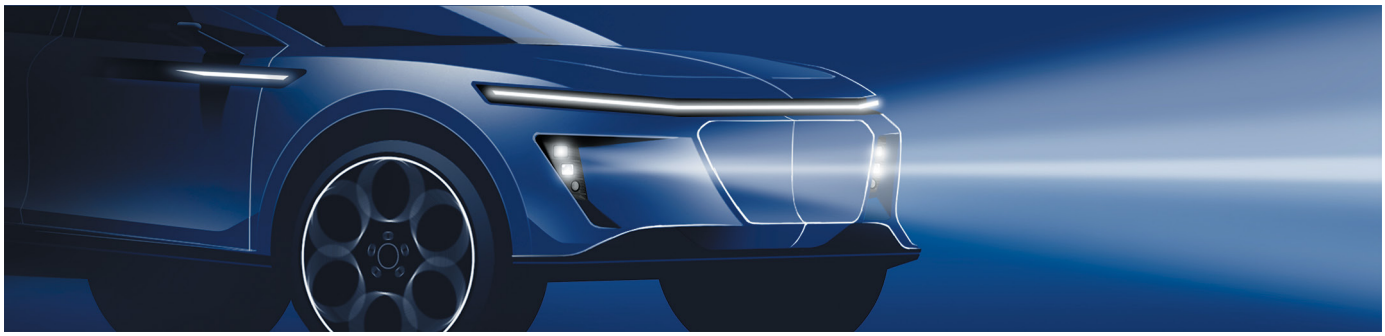
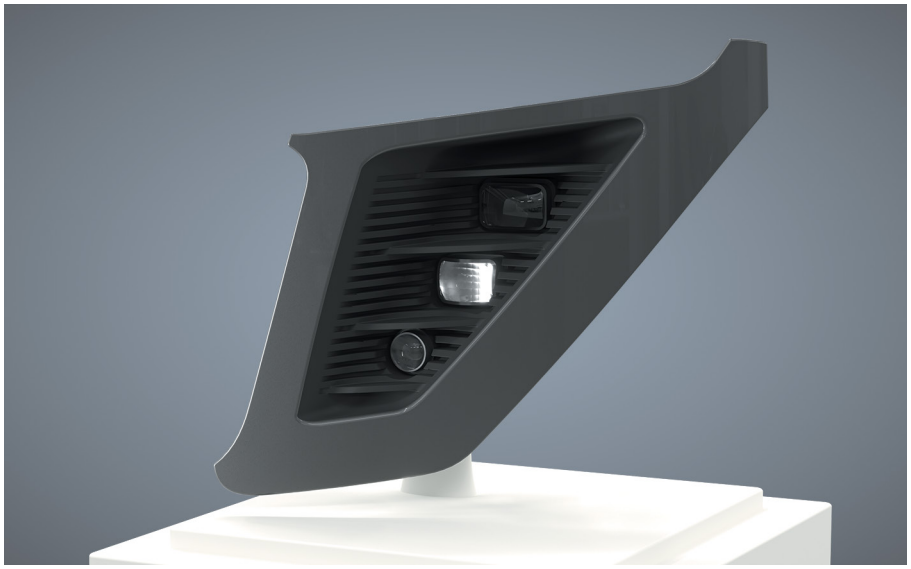
LUMILEDS

AUTOMOTIVE



LUXEON NeoExact ADB Matrix

Customized Solutions for Compact and Efficient Direct Imaging



Customized LUXEON NeoExact matrix solutions enable extremely compact, highly efficient systems with superior intensity and contrast. Using direct-imaging optical architecture with a simplified lens system reduces build-in depth and enhances integration flexibility.

FEATURES AND BENEFITS

- The proprietary thin-film side coat of LUXEON NeoExact results in an extremely compact footprint, enabling close-die spacing down to 50 µm and compact optics
- Reduced glare due to improved contrast versus conventional LEDs
- 0.5 and 1.0 mm^2 light-emitting areas (LEAs) available, allowing customization and design flexibility for the matrix configuration
- Enables direct-imaging optical architecture, eliminating the need for complex primary optics
- LUXEON NeoExact matrix-board solutions offer easy design-in integration

PRIMARY APPLICATIONS

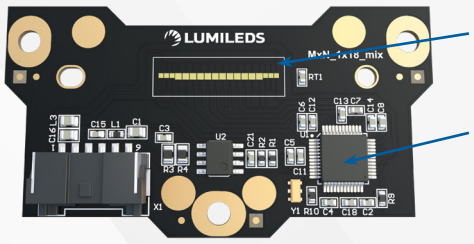
- Adaptive driving beam (ADB)
- Adaptive front-lighting system (AFS)
- Glare-free high beam

LUXEON NeoExact Customized Board Solutions for Compact ADB Systems with Direct-Imaging Optics

LUXEON NeoExact is designed for closely-spaced arrays with narrow gaps between the light-emitting areas. The arrays can be individually configured to match the needs of the optical system and desired beam performance.

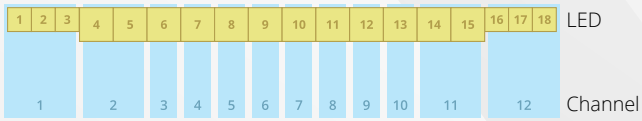
LED Array Configuration

- Single row of 18 LUXEON NeoExact: 12 × 1.0 mm² + 6 × 0.5 mm²
- Gap of 70 µm between the LEDs
- Combination of 1.0 mm² and 0.5 mm² light-emitting areas allows for the best compromise between cost, FoV, and performance.



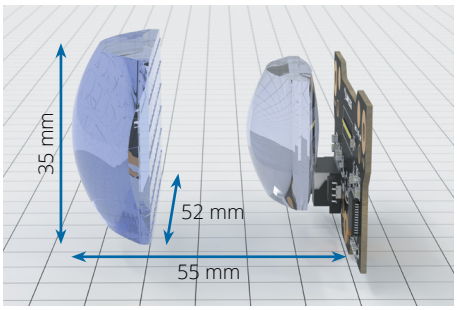
PCB Solution

- A single FR4 PCB with AlN inlay offers the best thermal performance.
- The 18 LEDs are grouped into 12 segments controlled by a single 12-channel matrix manager IC.
- The LEDs are connected in one string supplied by one LDM power channel along with intelligent PWM control.

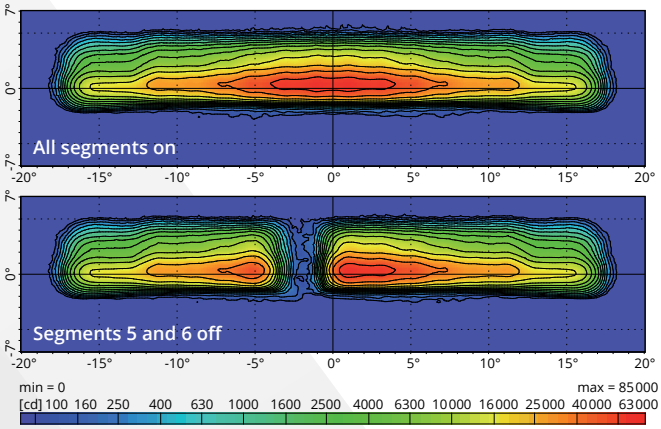


Lens System and Optical Performance

- Doublet PMMA projection lens of 52 mm × 35 mm with focal length of 55 mm conforms with mass-production molding design rules.



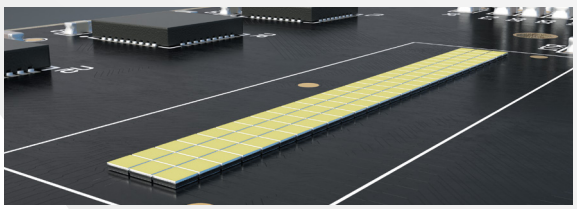
- With a flux of 300 lm from the LEDs in center:
  - Flux in beam*: 1090 lm
  - I_{max}* = 84300 cd, E_{max}* = 135 lx
  - Optical efficiency*: 41%
  - Field of view: +/-17° H, -2°/+5° V
  - Resolution of 2° at center pixel



* including losses at the cover glass

LUXEON NeoExact Matrix Solutions

Customized arrays of LUXEON NeoExact on a PCB: 1 to 4 rows; any pixel count per row; electronic controls as specified by customer.



LUXEON NeoExact	0.5 mm²	1.0 mm²
Maximum current	1.0 A	2.0 A
Typical luminous flux	188 lm (0.7 A, 85 °C)	306 lm (1.0 A, 85 °C)
Light-emitting area = package size	0.742 mm × 0.742 mm	1.046 mm × 1.046 mm
Contrast	1:400	1:400