



LUXEON Matrix Solutions

Concept study:

Matrix solutions using LUXEON LEDs with close die spacing and simple optics to realize advanced ADB functionality



Coming LED generations will be true chip-size package meaning the size of the packaged LED is only a few μm larger than the light emitting area. We demonstrate how future generations of LUXEON Matrix Solutions can utilize this compactness to create more attractive designs for matrix headlighting and use simpler optics at the same time.

FEATURES AND BENEFITS

- Simple collimator designs without 'hairbrush structures' due to close spacing of light emitting areas
- Design proposals optimized for styling (ultra slim outer lens 10 mm) or superior optical efficiency (>50 %)

PRIMARY APPLICATIONS

- Adaptive Driving Beam (ADB)
- Glare-free high beam
- Matrix headlighting
- High beam, low beam with reflection and projection optics
- Adaptive Front-lighting Systems (AFS)

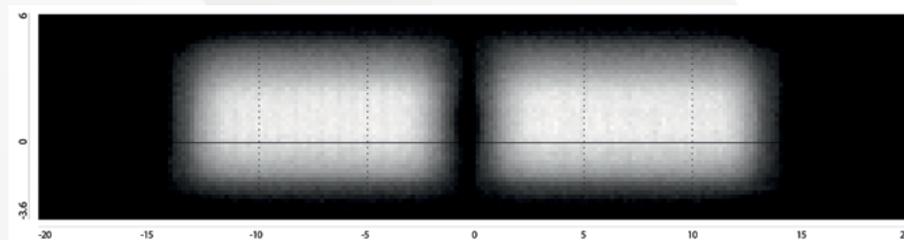
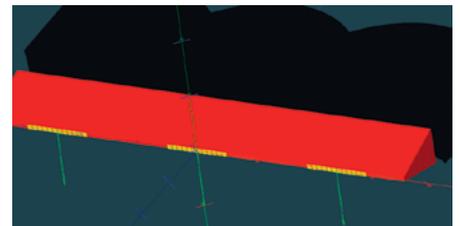
Matrix modules with close spacing of light emitting areas

Sourcing the matrix module from the LED manufacturer guarantees best possible performance and quality. The LUXEON Matrix platform will always be released with the latest LED technology and therefore allows faster time to market with reduced development effort. A wide variety of solutions and configurations are already possible based on LUXEON Neo LEDs. The portfolio will be enhanced by offering solutions for even more close die spacing.

Styling demonstrator:

A matrix module with three groups of 12 LEDs covering $\pm 14^\circ$ horizontally (0.8° resolution) is realized with an extremely thin lens of only $72 \times 10 \text{ mm}^2$ combined with a simple monolithic collimator.

A total of $3 \times 1740 \text{ lm}$ installed result in 1500 lm in the beam attributing to 29 % optical efficiency. I_{max} is 48000 cd .



High efficiency demonstrator:

A matrix module with one group of 24 LEDs covering $\pm 12^\circ$ horizontally (1° resolution) is realized with a single lens of $48 \times 28 \text{ mm}^2$ combined with a monolithic simple collimator. Each LED has a light emitting area of $\sim 0.5 \text{ mm}^2$.

A total of 3480 lm installed result in 1760 lm in the beam attributing to 50 % optical efficiency. I_{max} is 75000 cd .

