LUMILEDS

AUTOMOTIVE

High-brightness LEDs for surround projection

Compact, efficient solutions with single LED

Emerging surround-car projection systems offer enhanced safety and comfort features.

Yet these systems present challenges in design, performance and cost.

Our high-luminance LEDs enable ultra-compact, super-efficient solutions with simple optical architectures.

FEATURES AND BENEFITS

- High-flux, high-luminance LEDs allow large projected areas with good visibility in near-daylight conditions
- High-intensity LEDs achieve high optical efficiency from a very compact system
- Single LED source lowers system complexity and cost

PRIMARY APPLICATIONS

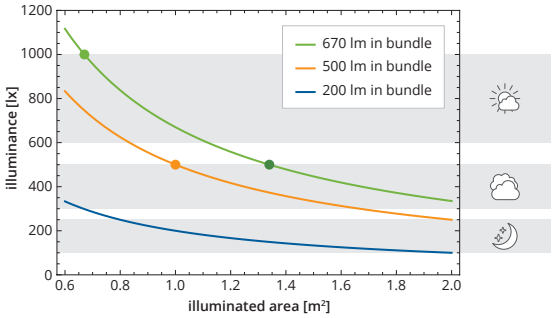
- Entry carpet / welcome light
- Back-up function
- Parking assist / maneuvering light

Surround-car projection solutions to enhance safety and comfort around the vehicle

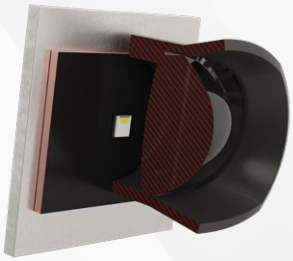
Photometric challenges

- Desired brightness levels vary between night and day
- The brightness level and lit area determine required flux in bundle
- Optical-efficiency needs govern required flux per LED
- High-luminance LEDs allow smaller system size
- Assuming 67% optical system efficiency:
  - 1000 lx @ 0.67 m² → 670 lm in bundle requiring 1000 lm from LED
  - 500 lx @ 1.3 m² → 670 lm in bundle requiring 1000 lm from LED
  - 500 lx @ 1.0 m² → 500 lm in bundle requiring 750 lm from LED

Visibility rating



Entry carpet / welcome light



Optical system architecture

- 1 x LUXEON Altilon Intense 1x2
- Very compact freeform lens with 20 mm × 23 mm footprint
- Bezel to shield stray light

Projection performance

- Projected area on ground: uniform rectangle of 1.4 m × 0.7 m
- Illuminance on ground: 500 lx
- Maximum intensity: 1300 cd
- Reference LED source flux: 700 lm
- 67% optical system efficiency

Back-up function pattern

Optical system architecture

- 1 x LUXEON Altilon Intense 1x3
- Super-compact projection lens optics with 10 mm diameter
- Customizable graphical optical block-out (gobo) to create attractive back-up function pattern
- System size determined by heatsink

Projection performance

- Projected area on ground: uniform rectangle of 1.1 m × 0.3 m
- Max. intensity: 7500 cd
- Illuminance on ground: 1500 lx at 2 m distance and 60° tilt, with a reference LED source flux of 900 lm

Lumileds high-luminance LED portfolio

	LUXEON Altilon (TopContact*) Intense 1x1	LUXEON Altilon (TopContact) Intense 1x2	LUXEON Altilon (TopContact) Intense 1x3
Typ. luminous flux	400 lm @ 1500 mA, 85 °C	800 lm @ 1500 mA, 85 °C	1200 lm @ 1500 mA, 85 °C
Max. DC current	1600 mA	1600 mA	1600 mA
Light-emitting area	0.68 mm × 0.88 mm	0.68 mm × 1.70 mm	0.68 mm × 2.72 mm
Typ. $R_{th,j\text{-}c,el}$	5.5 K/W (4.5 K/W)	3.1 K/W (1.9 K/W)	2.1 K/W (1.3 K/W)

* TopContact type in development

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