



# 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

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- 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
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## PRIMARY APPLICATIONS

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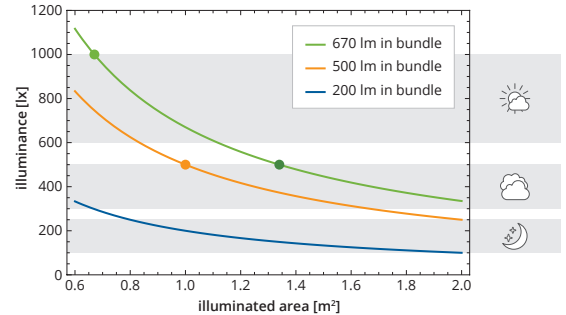
- Entry carpet / welcome light
  - Back-up function
  - Parking assist / maneuvering light
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# Surround-car projection solutions to enhance safety and comfort around the vehicle

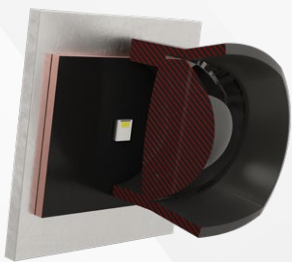
## Photometric challenges

- 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 m<sup>2</sup> → 670 lm in bundle requiring 1000 lm from LED
  - 500 lx @ 1.3 m<sup>2</sup> → 670 lm in bundle requiring 1000 lm from LED
  - 500 lx @ 1.0 m<sup>2</sup> → 500 lm in bundle requiring 750 lm from LED

## Visibility rating



## Entry carpet / welcome light



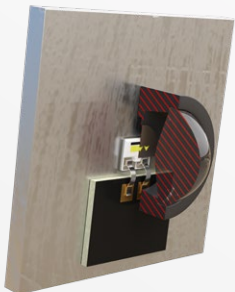
## Optical system architecture

- 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. $R_{thj-c,e}$	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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