www.osram-os.com

Light is game-changing

Infinite lighting solutions for automotive applications

Light is OSRAM

OSRAM
Opto Semiconductors

Light is our passion.

OSRAM Opto Semiconductors' spectrum of infinite answers for automotive lighting applications is the result of unceasing research, meticulous engineering, and our passion for perfection. Our focus is always on enabling our customers to achieve their goals.

Content

New challenges. Better light.

In the field of automotive LED illumination, OSRAM Opto Semiconductors consistently offers an innovative perspective with new, cutting-edge products and solutions. Exterior or interior automotive applications, ready-to-use or customized for special needs and requirements–OSRAM Opto Semiconductors supplies a broad portfolio of state-of-the-art LEDs, laser diodes, and infrared components in all performance classes, always with extremely reliable products and energy-efficient LED technology.

Visible light:

- Fog light
- Position light
- Daytime running light
- High-beam headlight
- Low-beam headlight
- Front turn indicator
- Side turn indicator
- Rear turn indicator
- Rear combination light
- Center high mounted stop light
- Welcome functions

OSRAM Opto Semiconductors delivers a broad portfolio of state-of-the-art LEDs, laser diodes and infrared components in every performance class. Ready to use or customized for special needs and requirements. Thus we are a one-stop-shop for our customers, enabling them to realize virtually every vision and design wish – for exterior or interior applications. For automobile exteriors, we can offer perfect solutions for the most diversified and innovative applications.

Exterior applications. Top-notch answers.

Key requirements for exterior automotive lighting applications are to deliver the best visibility, safety, and iconic styling recognition. To meet these requirements, OSRAM Opto Semiconductors offers a broad and highly diversified portfolio of LED and IRED components for virtually all exterior automotive applications. LED components by OSRAM Opto Semiconductors for visible light in fog lights, position lights, daytime running lights, headlights, turn indicators, and center high-mounted stop lights enable our customers to find the best possible solution. The same applies to our groundbreaking technology, including all IRED components for night vision, adaptive cruise control, precrash sensing, pedestrian protection, and blind spot detection. We develop solutions for all of these applications in close cooperation with our customers to implement their specific customized products.

Infrared light & sensors:

- Night vision
- Adaptive cruise control
- Precrash sensing
- Pedestrian protection
- Prefield recognition
- Gesture recognition

Interior applications. Individual options.

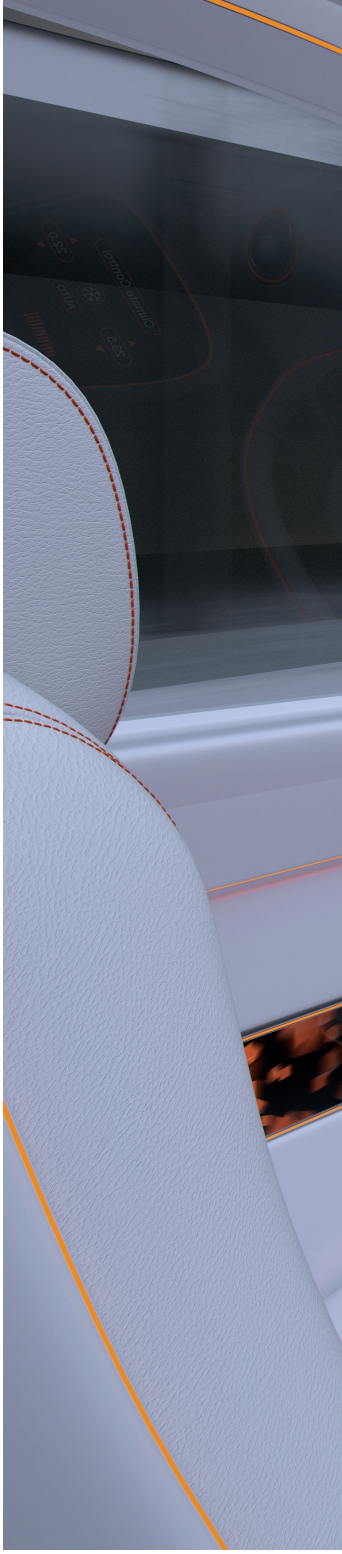
Visible light:

- Dashboard lights
- Ambient lighting
- Dome and map lighting
- Center stack
- Head-up display

IR Infrared light & sensors:

- Drowsy driver detection
- Occupancy detection
- Gesture recognition

In the field of interior automotive applications, our full palette of LED colors (including color on demand), lasers, and IRED components cover all performance classes and package styles and sizes. Interior LEDs and IR components solve many customer branding problems using light–as a colorful, digital, connected solution that delivers a safer driver experience. Products by OSRAM Opto Semiconductors excel in extreme reliability and low energy consumption, be they designed as dashboard illumination, warning signals, ambience effects, task lighting with map/dome, or advanced components in head-up displays, driver monitoring, and rain-light-tunnel sensors. Many of these products have been created through close customer relationships, in which we have first tackled their specific demands, then developed new highly customized products for their needs.



Covering all performance classes, package sizes and colors (even colors on demand), OSRAM Opto Semiconductors offers a highly diversified portfolio of LED, laser and IRED components for almost every conceivable interior automotive application.

Whether for control lights, ambient lighting, dome and map lighting, or operating devices, head-up displays, active safety systems and gesture recognition, you will certainly find the perfect product from OSRAM Opto Semiconductors. Providing solutions for all these applications, we are also open for discussions to find out your specific demands and develop customized products.

Increased visibility. Enhanced safety.

Adaptive front lighting systems (AFS) enhance the visibility of car and driver while simultaneously reducing glare for other road users.

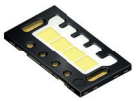
Just one of many shining examples, the glare-free, always-on high beam automatically adapts the distribution of light according to traffic requirements and enhances safety and comfort for both drivers and other road users.
A pioneer in the field of AFS, OSRAM Opto Semiconductors' LED technology takes AFS matrix beam applications to the next level, with new styling options and improved functionality and scalability.

Lighting functions that can be realized with LED matrix beam technology

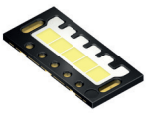
- Pedestrian area light
- Town light
- Country road light
- Motorway light
- Dynamic bending light
- Cornering light
- Intersection light
- Adaptive Driving Beam

OSLON® Black Flat S

KW HJL531.TE

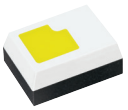


KW HKL531.TE

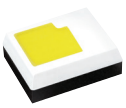


KW HLL531.TE

OSLON® Compact



LUW CEUN.CE



LUW CEUP.CE

OSRAM OSTAR® Headlamp

5 Chip
LE UW U1A5 05

"No mechanical components, small size, less weight, high efficiency."

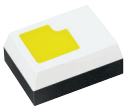
Lots of advantages. Great design scope.

LEDs by OSRAM Opto Semiconductors combine all of these advantages. Consequently, they offer entirely new options in design and can be used for features such as fog light, highway light or turn light. In addition, thanks to their extreme longevity, lamp replacements are virtually eliminated.
Last but not least, LED's color temperatures are similar to daylight, making driving even safer by reducing driver fatigue.

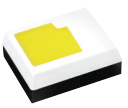
OSRAM OSTAR® Headlamp Pro, OSLON® Black Flat and OSLON® Compact

- High luminous flux at high temperatures
- Long lifetime
- High efficiency
- "Best in class" for thermal resistance
- OSRAM OSTAR® Headlamp Pro's chip arrangement is scalable, and thus 100% adjustable to all application requirements
- Available with or without connector

OSLON® Compact

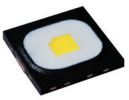


LUW CEUN.CE



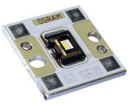
LUW CEUP.CE

OSLON® Black Flat

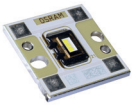


LUW HWQP

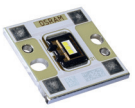
OSRAM OSTAR® Headlamp Pro



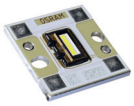
2 Chip
LE UW U1A2 01



3 Chip
LE UW U1A3 01



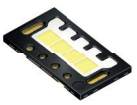
4 Chip
LE UW U1A4 01



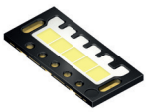
5 Chip
LE UW U1A5 01

OSLON® Black Flat S

KW HJL531.TE



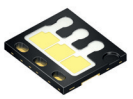
KW HKL531.TE



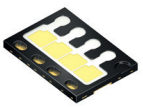
KW HLL531.TE

OSLON® Black Flat

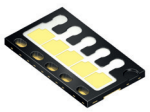
KW H2L531.TE



KW H5L531.TE



KW H4L531.TE



KW H3L531.TE

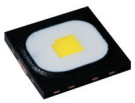
High efficiency.
Optimum perception.

OSLON® Black Flat,
OSLON® LX 120

- Compact package
- High luminous flux at high temperatures
- Long lifetime
- ESD protection
- High efficiency
- Variety of radiation characteristics
- Individual board design
- Compatible within the OSLON® family – thanks to identical soldering pads
- OSLON® family is available with or without isolated heat conduction pad
- Robust package design

LEDs are increasingly used for position lights and daytime running lights (DRL), given their obvious advantages of high efficiency and long life. Compared to conventional warm white incandescent lamp solutions, cold white LED color temperatures can be seen far earlier by other road users.
Featuring more compact dimensions and higher adaptability, LEDs allow far greater freedom of design, outshining other light sources in terms of esthetics, and can be used for emerging applications such as welcome functions.

OSLON® Black Flat



LUW HWQP

OSLON® LX 120

LUW CVBP.CE

Innovation driver.

Forging paths and driving innovation for wide-ranging new automotive lighting applications has always been at the heart of OSRAM Opto Semiconductors' pioneering mission, with thoroughly convincing results over the last 40 years.

SYNIOS® P2720

- Full performance
- High flexibility
- One footprint for various power classes and applications
- Improved brightness and cost advantages
- Design freedom
- High reliability
- Scalability
- SYNIOS Converted Yellow .FY for front turn and .23 for side and turn indicators

SYNIOS® P2720

KB DMLN31.13

KW DMLN31.SG

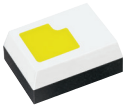
KW DMLQ31.SG

KW DMLS31.SG

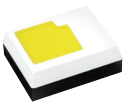
OSLON® Compact

- Ceramic package
- 120° Lambertian emitter
- Improved corrosion robustness
- C2 Technology (Ceramic Conversion) for maximum temperature performance

OSLON® Compact



LUW CEUN.CE



LUW CEUP.CE

Pointing the direction. Competitive solutions.

Yellow LEDs are always used for front, side and turn indicators. To meet the multitude of requirements, OSRAM Opto Semiconductors offers an extensive product range, even including sidemarker lights which have to be switched on at all times when driving. LEDs by OSRAM Opto Semiconductors are the core ingredient when cost-effective solutions are needed. They are especially suitable for light guide applications and applications at high ambient temperatures (> 60 °C at continuous operation).

Global player.

With headquarters in Germany, the USA, and China, as well as production sites and an extensive sales and marketing network around the globe, OSRAM Opto Semiconductors is always close to customers and partners, and easily accessible.

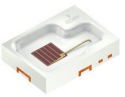
SYNOS® P2720

KY DMLN31.FY

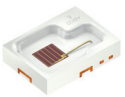
KY DMLQ31.FY

KY DMLS31.FY

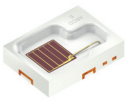
SYNOS® P2720



KY DMLN31.23



KY DMLQ31.23

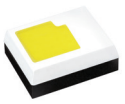


KY DMLS31.23

Power SIDELED®

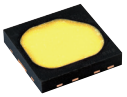
LY B6SP

OSLON® Compact



LCY CEUP

OSLON® Black Flat



LCY H9PP

Perfect choice.
Unlimited design freedom.

OSLON® Black

LUW H9GP.CE

Power SIDELED®

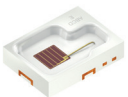
LA B6SP

LR B6SP

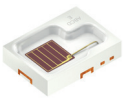
LS B6SP

SYNOS® P2720

KS DMLN31.23
KR DMLN31.23



KS DMLQ31.23
KR DMLQ31.23



KS DMLS31.23
KR DMLS31.23

No matter whether the customers' innovative rear light solutions include pixel, point, area, or light guide designs–LEDs by OSRAM Opto Semiconductors are the perfect choice when it comes to guaranteeing unlimited freedom of design, allowing customers to combine up to four different light functions in a single light source. Solutions for rear combination lights (RCL) and center high-mounted stop lights (CHMSL) meet all relevant norms and standards while providing simple and cost-effective solutions. A wide range of products are available for this area of application, focusing on the colors White, Amber, Red, and Super Red.

Dual binning:
one LED, multiple light functions
Thanks to dual binning technology, various light functions can easily be implemented with a single LED to produce rear combination lights with appropriate ECE tail-lamp design:

Rear and stop light: two different currents are adjusted via series resistors – 4 mA for the rear light, 50 mA for the brake light function (e. g. with Power TOPLED® LA E67F)
Stop and fog light: e. g. with Advanced Power TOPLED® LA G6SP

Trusted listener.

OSRAM Opto Semiconductors builds on intense engagement and close cooperation with customers and partners to deliver optimum results. A strategy that leads to a continuous flow of new ideas, in turn inspiring innovative products and illumination sensing and visualization solutions.

Perfect performance.
Perfect control.

OSRAM Opto Semiconductors supplies optimum LEDs for illuminating multiple dashboard instruments and control displays, such as speedometers, tachometers, fuel indicators, turn indicator lights, lights on/off signs, and many more central interior automotive applications. LEDs by OSRAM Opto Semiconductors are available in all relevant performance classes and colors, as well as custom colors. In addition, they span all brightness values and are supplied in different colors and package sizes.

TOPLED®, Power TOPLED®, PointLED®, Synios® MULTILED® and Mini TOPLED®

- Broad portfolio
- Variety of chip technologies for different brightness needs
- Variety of package sizes for individual customer requirements
- Suitable for all SMT
- Assembly methods
- Wide range of colors available (see color selection guide, page 44/45)

TOPLED®

Power TOPLED®

PointLED®

MULTILED®

Mini TOPLED®

Trendsetting solutions. Engineering individuality.

Individually adjustable interior lighting according to mood and time of day is one of the most important trends in modern automotive LED applications. OSRAM Opto Semiconductors is trendsetting, offering a vast and creative range of red, green, and blue ambient lighting functions such as footwell lights, headliner lights, spotlights, and side door lights, all of which can be easily implemented with light guides.

TOPLED®, MULTILED®, SIDELED®, Mini TOPLED® and PointLED®

- Broad portfolio
- Trendsetters
- Fit perfectly into light guide solutions
- Freedom of design
- Variety of size packages – no design limits
- Wide range of colors available (see color selection guide, page 44/45)

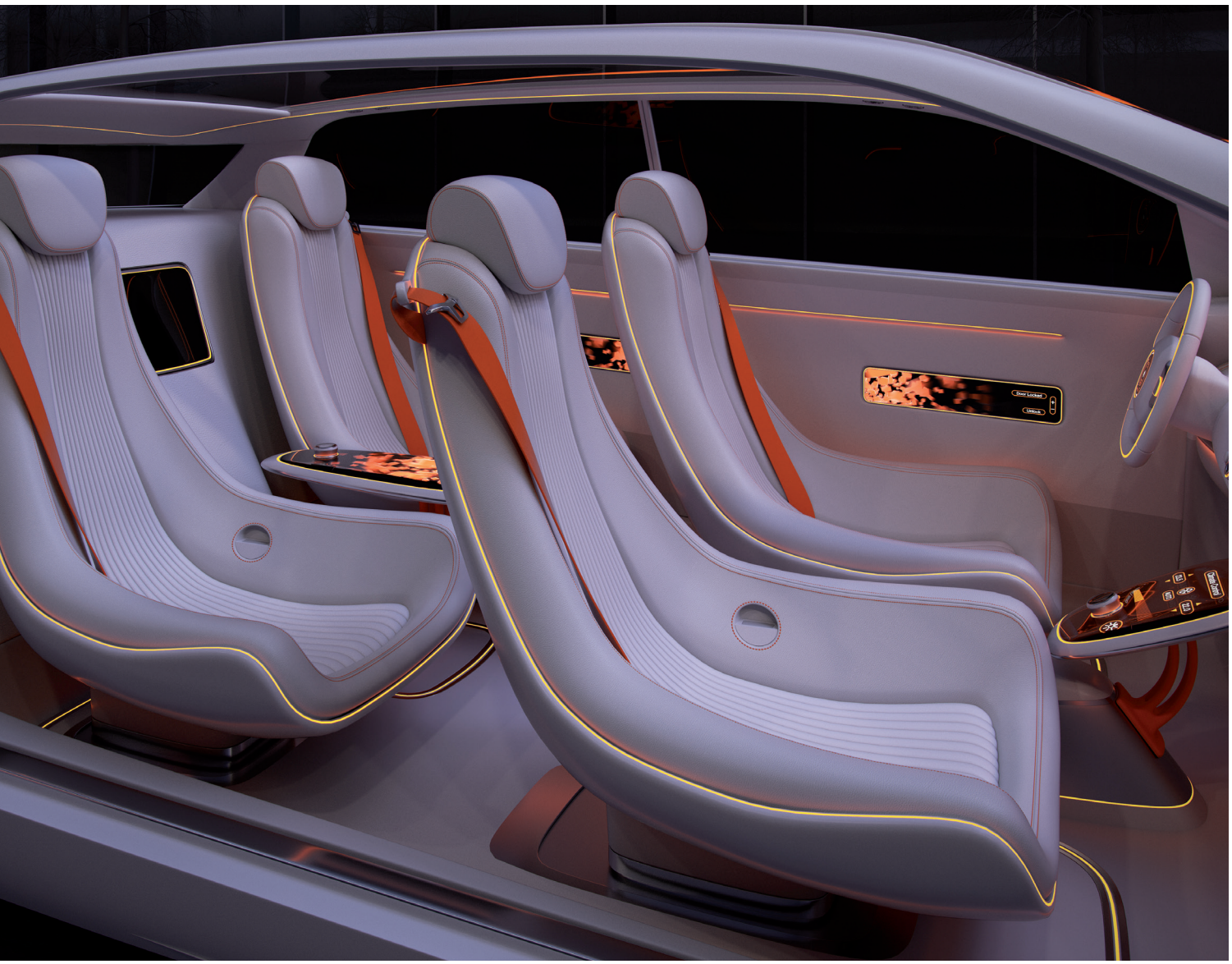
TOPLED®

MULTILED®

SIDELED®

Mini TOPLED®

PointLED®



"Individually adjustable interior lighting according to mood and time of day is one of the most important trends in modern automotive LED applications."

Increasing comfort. Best view.

For classic interior lighting applications such as dome lighting, map lighting, glove box, make-up mirror, and reading lights, the high performance, compact packaging and wide gamut of LEDs provide consumers with enhanced lighting flexibility. OSRAM Opto Semiconductors is leading the way in LED lighting, optimizing the appropriate specification and adjusting the white light from warm to cool to reflect day or night-time by means of sophisticated phosphor control technology. To achieve a living-room-like atmosphere and a high level of comfort for the driver, LEDs by OSRAM Opto Semiconductors harmonize functional requirements with elegant dynamic ambient lighting.

OSLON® Black, Advanced Power TOPLED®, Mini TOPLED®, TOPLED® and SYNIOS® E4014

- No design limits
- Controlled viewing angles
- Single white color binning
- High color rendering index (CRI)
- All power classes (0.1–1 Watt)
- Range of white color temperatures from 3,000 K to 6,500 K (see color selection guide, page 44/45)

SYNIOS® E4014

- SMT package, colored silicone resin
- Available colors for display applications: multiphosphor white (sRGB), Cx/Cy = 0.26/0.22, general BLU binning
- Typical brightness 35 lm @120 mA @ Cx/Cy 0.265/0.25
- Optical efficiency of 85 lm/W
- Tailored for LCD backlighting

OSLON® Black

Advanced Power TOPLED®

Mini TOPLED®

SYNIOS® E4014

High flexibility. Best usability.

A further core application for LED is lighting for controls, especially for center stack elements such as radio, navigation, climate control (HVAC system: Heating, Ventilation, Air Conditioning), and switches and buttons. LEDs by OSRAM Opto Semiconductors deliver perfect usability through all colors and package sizes, at appropriate brightness levels for backlighting switches and buttons. Driver distraction is prevented by proper intensity and color binning with LED selection, featuring maximum-efficiency scalable chip technologies. Interior applications need precise brightness and color control to provide a uniform esthetic appearance for driver and passenger. OSRAM Opto Semiconductors offers solutions for all critical tasks in even the most advanced light guide applications, by providing wider color gamut, higher brightness, and optical coupling LEDs with latest chip technologies and packages.

TOPLED®, Mini TOPLED®, PointLED®, Synios® and SIDELED®

- Packages available with multiple binning currents
- Precise color and intensity binning
- Latest innovative and appropriately scaled chip technologies
- Suitable for optimal light guide coupling in most applications
- Wide range of colors available (see color selection guide, page 44/45)

TOPLED®

Mini TOPLED®

PointLED®

SIDELED®

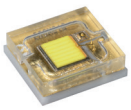
Uninterrupted streetview. Improved safety.

Head-up displays improve road safety enormously by keeping the driver's attention focused on the street while projecting information from the speedometer, tachometer, distance control, and navigation system into the field of vision. OSRAM Opto Semiconductors offer highly efficient projection LEDs and laser diodes for this specific application, including TFT, DLP and MEMs head-up display applications.

OSRAM OSTAR® Compact and Projection Compact

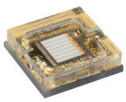
- Package: SMD package
- Chip technology: ThinFilm and ThinGaN®
- Small form factor
- High luminance thanks to "chip on air"

OSRAM OSTAR® Compact



LE UW Q9WP

OSRAM OSTAR® Projection Compact



LE x Q8WP

Single-mode laser PL 450B and PL 520

- Single transverse mode laser
- Perfect beam quality
- Miniaturized TO38 ICut package
- High modulation capability

Single-mode laser

PL 450B

PL 520

OSLON® Compact CL

LUW CEUP.HD

Answer provider.

Today OSRAM Opto Semiconductors boasts a vast portfolio of optical semiconductor products, providing an almost infinite wealth of answers and application engineering support for creative light applications in the automotive industry.

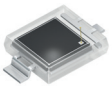
Light dimming.

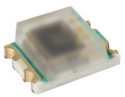
Special photo detectors adapted to the spectral sensitivity of the human eye (λ-curve) generate a photo current in direct proportion to the illuminance (lux). This enables lights to be dimmed according to the brightness sensitivity of the human eye.

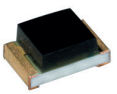
"This enables lights to be dimmed according to the brightness sensitivity of the human eye."

Light dimming


SFH 3410


SFH 2430


SFH 5711


SFH 3711

Gesture recognition:

This sensor acts as an intelligent switch and can replace mechanical switches, sliders, rotary knobs, etc. Detection ranges up to 20 cm are achievable, and the range can easily be extended by using an external driver circuit together with high power emitters.

Gesture recognition

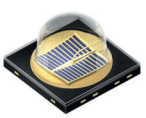

SFH 4650


SFH 4258


SFH 4258S


SFH 4259


SFH 4259S


SFH 4715S


APPROACHING VECHICLE
SLOW DOWN
4.7 km continue along this road for 3:20 min
Comfort Mode
4.7km
Morton St
Barrow St
Greenwich St
Christopher St

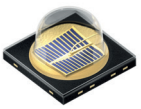
Danger detected. Safety provided.

IR pulse lasers by OSRAM Opto Semiconductors in adaptive cruise control (ACC) systems play a significant role in measuring the distance and relative speed of the car in front. The distance from this car is then adjusted automatically, basing measurement on the propagation time of a very short light pulse generated by the laser.

Hybrid Pulsed Laser Diodes

SPL LL90 3

IR OSLON® Black Series



SFH 4715S

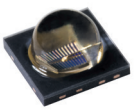
IR SYNIOS® P2720

SFH 4770S A01

Fatigue detected.
Driver wakened.

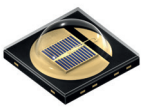
OSRAM Opto Semiconductors plays a leading role in continuously developing better IREDs, used to illuminate the driver's face with invisible infrared (IR) light. To detect whether the driver is fatigued or distracted, an IR-sensitive camera (best results are obtained with 850 nm IR) monitors the face, especially the eyes, and detects fatigue based on blinking frequency. A driver warning is activated in case of drowsiness.

IR OSLON® Black Series



SFH 4725S

IR OSLON® Black Series



SFH 4726S

IR SYNIOS® P2720

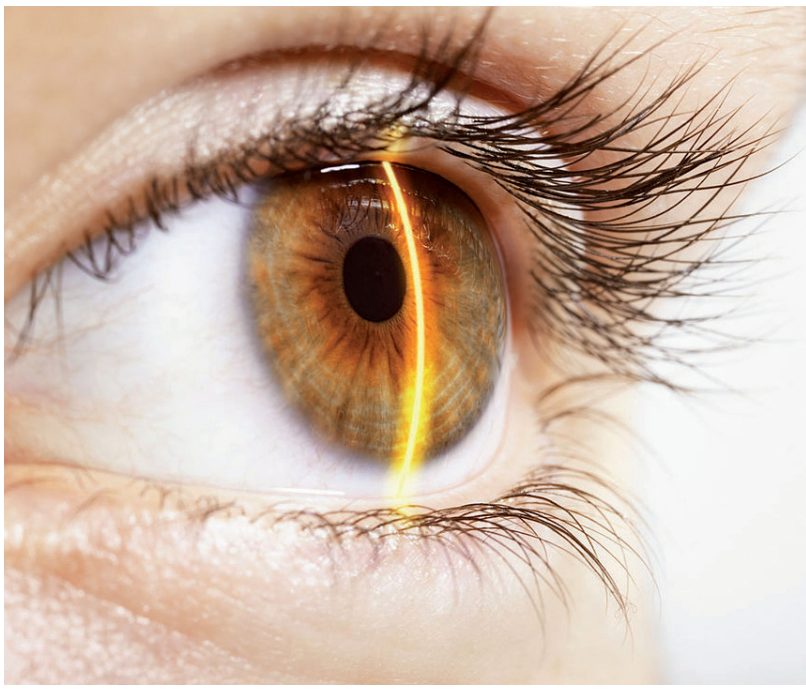
SFH 4770S A01

IR OSLON® Black Series

SFH 4715S

Position detected.
Airbag adjusted.

A major element in occupancy detection systems comprises LEDs by OSRAM Opto Semiconductors. They provide invisible IR light and a CMOS camera, which monitors the front passenger seat. Occupants are recognized and their size and position are measured to ensure appropriate deployment of the airbag in case of an accident.

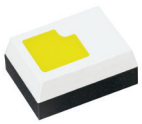
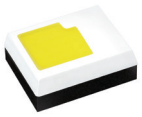
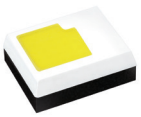


Invisible light.
Visible obstacles.

To address one of the numerous focal issues concerning improvement in driving safety, OSRAM OPTO Semiconductors has developed strong IR LEDs (850 nm IR light for optimum results) which are powerful enough to illuminate the road up to 150–200 m ahead (similar to high-beam operation). In a night vision system, a camera records the road scene and shows the image on a display or head-up display. The system captures obstacles or moving objects to alert the driver.

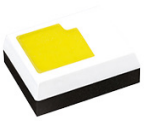
Product information

OSLON® Compact

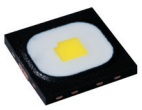
	LUW CEUN.CE	LUW CEUP.CE	LCY CEUP
Dimensions (x, y, z)	1.6 × 1.2 × 0.75	1.9 × 1.5 × 0.75	1.9 × 1.5 × 0.75
Viewing angle	120°	120°	120°
Luminous flux (typ.)	110 lm @350 mA	240 lm @700 mA	155 lm @700 mA
Thermal resistance (typ electrical)	6.4 K/W	4.1 K/W	4.3 K/W
Max junction temperature (T_j)	up to 150 °C	up to 150 °C	up to 150 °C
Relative luminous flux at T_j = 100 °C	90 %	90 %	87 %
Max forward current I_F	700 mA	1.5 A	1 A

OSLON® Compact CL



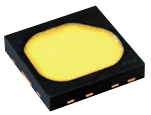
	LUW CEUP.HD
Package	Ceramic package
Technology	ThinGaN (UX:3)
Viewing angle at 50 % IV	120°
Color	Cx = 0.28, Cy = 0.25 acc. to CIE 1931 (ultra white)

OSLON® Black Flat



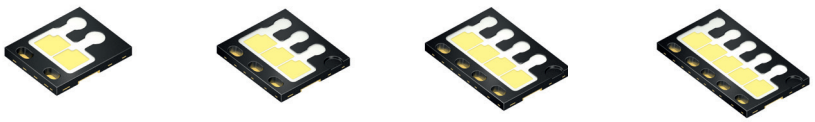
	LUW HWQP
Dimensions (x, y, z)	3.8 × 3.8 × 0.5
Viewing angle	120°
Luminous flux (typ.)	335 lm @1 A
Thermal resistance (typ electrical)	3.0 K/W
Max junction temperature (T_j)	up to 150 °C
Relative luminous flux at T_j = 100 °C	90 %
Max forward current I_F	1.5 A

OSLON® Black Flat



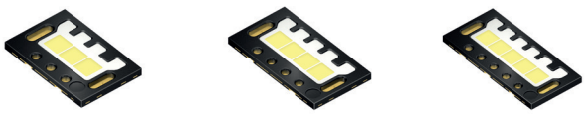
	LCY H9PP
Dimensions (x, y, z) in mm	3.75 × 3.75 × 0.7
Viewing angle	120°
Luminous flux (typ.)	70 lm @350 mA
Thermal resistance (typ electrical)	4.7 K/W
Max junction temperature (T_j)	up to 150 °C
Relative luminous flux at T_j = 100 °C	89 %
Max forward current I_F	700 mA

OSLON® Black Flat



	KW H2L531.TE	KW H3L531.TE	KW H4L531.TE	KW H5L531.TE
Dimensions (x, y, z)	3.1 × 3.8 × 0.4	4.2 × 3.8 × 0.4	5.3 × 3.8 × 0.4	6.4 × 3.8 × 0.4
Viewing angle	120°	120°	120°	120°
Luminous flux (typ.)	675 lm @1 A	1015 lm @1 A	1350 lm @1 A	1690 lm @1 A
Thermal resistance (typ electrical)	1.1 K/W	0.9 K/W	0.7 K/W	0.6 K/W
Max junction temperature (T_j)	up to 150 °C	up to 150 °C	up to 150 °C	up to 150 °C
Relative luminous flux at T_j = 100 °C	90 %	90 %	90 %	90 %
Max forward current I_F	1.5 A	1.2 A	1.2 A	1.2 A

OSLON® Black Flat S



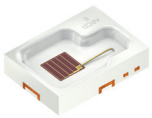
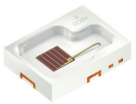
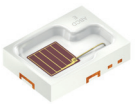
	KW HJL531.TE	KW HKL531.TE	KW HLL531.TE
Dimensions (x, y, z)	5.7 x 3.5 x 0.43	6.8 x 3.5 x 0.43	7.9 x 3.5 x 0.43
Luminous flux (typ.)	1000lm @ 1000mA	1350lm @ 1000mA	1675lm @ 1000mA
Thermal resistance (typ electrical)	0.9 K/W	0.7 K/W	0.6 K/W
Max junction temperature (Tj)	up to 150°C	up to 150°C	up to 150°C
Relative luminous flux at Tj = 100 °C	89%	89%	89%
Max forward current If	1.5 A	1.5 A	1.5 A

SYNOS® P2720



	KY DMLN31.FY	KY DMLQ31.FY	KY DMLS31.FY
Dimensions (x, y, z)	2.7 × 2.0 × 0.6	2.7 × 2.0 × 0.6	2.7 × 2.0 × 0.6
Viewing angle	120°	120°	120°
Luminous flux (typ.)	29 lm @150 mA	58 lm @300 mA	125 lm @600 mA
Thermal resistance (typ electrical)	16 K/W	8 K/W	5.6 K/W
Max junction temperature (T_j)	150°	150°	150°
Relative luminous flux at T_j = 100 °C	89%	89%	89%
Max forward current I_F	200mA	400mA	700mA

SYNIOS® P2720

	KY DMLN31.23	KY DMLQ31.23	KY DMLS31.23
Dimensions (x, y, z)	2.7 × 2.0 × 0.6	2.7 × 2.0 × 0.6	2.7 × 2.0 × 0.6
Viewing angle	120°	120°	120°
Luminous flux (typ.)	30 lm @200 mA (590nm)	44 lm @350 mA (590nm)	91 lm @700 mA (590nm)
Thermal resistance (typ electrical)	26 K/W	11 K/W	7.7 K/W
Max junction temperature (T_j)	150°	150°	150°
Max forward current I_F	250mA	500mA	1000mA

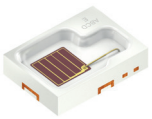
SYNIOS® P2720



	KW DMLN31.SG	KW DMLQ31.SG	KW DMLS31.SG
Dimensions (x, y, z)	2.7 × 2.0 × 0.6	2.7 × 2.0 × 0.6	2.7 × 2.0 × 0.6
Viewing angle	120°	120°	120°
Luminous flux (typ.)	65 lm @200 mA	125 lm @350 mA	255 lm @700 mA
Thermal resistance (typ electrical)	14 K/W	7 K/W	4.9 K/W
Max junction temperature (T_j)	150°	150°	150°
Relative luminous flux at T_j = 100 °C	95%	95%	95%
Max forward current I_F	300mA	700mA	1000mA

SYNIOS® P2720

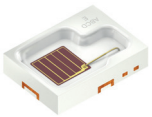




	KS DMLN31.23	KS DMLQ31.23	KS DMLS31.23
Dimensions (x, y, z)	2.7 × 2.0 × 0.6	2.7 × 2.0 × 0.6	2.7 × 2.0 × 0.6
Viewing angle	120°	120°	120°
Luminous flux (typ.)	19 lm @200 mA (632nm)	37 lm @350 mA (632nm)	70 lm @700 mA (632nm)
Thermal resistance (typ electrical)	21 K/W	9,1 K/W	6,3 K/W
Max junction temperature (T_j)	150°	150°	150°
Max forward current I_F	250mA	500mA	1000mA

SYNIOS® P2720





	KR DMLN31.23	KR DMLQ31.23	KR DMLS31.23
Dimensions (x, y, z)	2.7 × 2.0 × 0.6	2.7 × 2.0 × 0.6	2.7 × 2.0 × 0.6
Viewing angle	120°	120°	120°
Luminous flux (typ.)	40 lm @200 mA (615nm)	75 lm @350 mA (615nm)	123 lm @700 mA (615nm)
Thermal resistance (typ electrical)	14 K/W	7 K/W	4.9 K/W
Max junction temperature (T_j)	150°	150°	150°
Max forward current I_F	300mA	700mA	1000mA

SYNIOS® P2720

	KB DMLN31.13
Dimensions (x, y, z)	2.7 x 2.0 x 0.6
Viewing angle	120°
Luminous flux (typ.)	12 lm
Thermal resistance (typ electrical)	11 K/W
Max junction temperature (T_j)	150°
Relative luminous fl ux at T_j = 100 °C	112 %
Max forward current I_F	300mA

IR SYNIOS® P2720

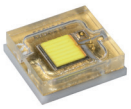
	SFH 4770S A01
LED package size in mm	2.75 x 2.0 x 0.6
Wavelength	850 nm
Typ. radiant intensity, Ie	530 mW/sr @1500 mA
Total radiant flux, Φe	1710mW @1500 mA
Viewing angle	+/- 60°

Power SIDELED®



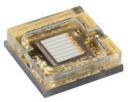

	LA B6SP	LR B6SP	LS B6SP	LY B6SP
Dimensions (x, y, z)	3.8 × 4.8 × 4.6	3.8 × 4.8 × 4.6	3.8 × 4.8 × 4.6	3.8 × 4.8 × 4.6
Viewing angle	120°	120°	120°	120°
Luminous intensity	8.5 cd @140 mA (615nm)	6.1 cd @140 mA (625nm)	4.4 cd @140 mA (632nm)	6.9 cd @140 mA (590nm)
Thermal resistance (typ electrical)	35 K/W	35 K/W	35 K/W	35 K/W
Max junction temperature (T_j)	up to 125 °C	up to 125 °C	up to 125 °C	up to 125 °C
Max forward current I_F	200 mA	200 mA	200 mA	200 mA

OSRAM OSTAR® Compact



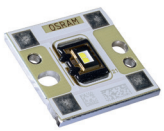
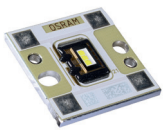
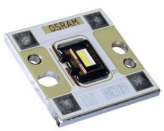
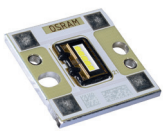
	LE UW Q9WP
Top emitting area in mm	1.5 × 1.2
LED package size in mm	3.9 × 3.7 × 1.2
Thermal resistance $R_{th\ JS\ (real)}$	6.7 K/W
Typ. Color coordinate @25 °C	0.31/0.32 @1.4 A
Typ. forward voltage per chip @25 °C	3.4 V @1.4 A
Typ. brightness @25 °C	320 lm @1.4 A

OSRAM OSTAR® Projection Compact



	LE x Q8WP
Top emitting area in mm	1.5 × 1.2
LED package size in mm	3.9 × 3.7 × 1.2
Thermal resistance $R_{th\ JS\ (real)}$	3 K/W
Typ. dominant wavelenght @25 °C	A: 617 nm T: 536 nm CG: 0.32/0.64 B: 459 nm @1.4 A
Typ. forward voltage per chip @25 °C	A: 2.3 V T: 3.6 V CG: 3.45 V B: 3.45 V @1.4 A
Typ. brightness @25 °C	A: 160 lm T: 250 lm CG: 540 lm B: 1.60 W @1.4 A

OSRAM OSTAR® Headlamp Pro

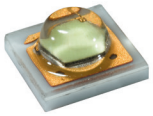





	2 Chip LE UW U1A2 01	3 Chip LE UW U1A3 01	4 Chip LE UW U1A4 01	5 Chip LE UW U1A5 01
Dimensions (x, y, z)	20.0 × 20.0 × 2.4	20.0 × 20.0 × 2.4	20.0 × 20.0 × 2.4	20.0 × 20.0 × 2.4
Luminous flux (typ.)	700 lm @1 A	1050 lm @1 A	1400 lm @1 A	1750 lm @1 A
Thermal resistance (typ. real)	1.8 K/W	1.4 K/W	1.3 K/W	1.1 K/W
Max junction temperature (T_j)	up to 150 °C	up to 150 °C	up to 150 °C	up to 150 °C
Relative luminous flux at T_j = 100 °C	90 %	90 %	90 %	90 %
Max forward current I_F	1.5 A	1.5 A	1.5 A	1.5 A

OSRAM OSTAR® Headlamp

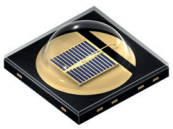
	5 Chip LE UW U1A5 05
Dimensions (x, y, z)	20.0 × 20.0 × 2.4
Luminous flux (typ.)	970 lm @500 mA
Thermal resistance (typ electrical)	1.6 K/W
Max junction temperature (T_j)	up to 150 °C
Relative luminous flux at T_j = 100 °C	89 %
Max forward current I_F	1.2 A

OSLON® LX 120



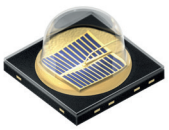
	LUW CVBP.CE
Dimensions (x, y, z)	3.0 × 3.0 × 1.85
Viewing angle	120°
Luminous flux (typ.)	145 lm @350 mA
Thermal resistance (typ electrical)	9.1 K/W
Max junction temperature (T_j)	up to 150 °C
Relative luminous flux at T_j = 100 °C	88 %
Max forward current I_F	1 A

IR OSLON® Black Series



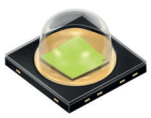
	SFH 4726S
LED package size in mm	3.75 × 3.75 × 1.51
Wavelength	940 nm
Typ. radiant intensity, Ie	215 mW/sr @1000 mA
Total radiant flux, Φe	990 mW @1000 mA
Viewing angle	+/–75°

IR OSLON® Black Series



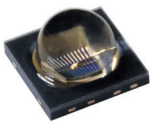
	SFH 4715S
LED package size in mm	3.75 × 3.75 × 2.29
Wavelength	850 nm
Typ. radiant intensity, Ie	440 mW/sr @1000 mA
Total radiant flux, Φe	1030 mW @1000 mA
Viewing angle	+/–45°

OSLON® Black



	LUW H9GP.CE
Dimensions (x, y, z)	3.85 × 3.85 × 2.29
Viewing angle	90°
Luminous flux (typ.)	125 lm @350mA
Thermal resistance (typ electrical)	6.5 K/W
Max junction temperature (T_j)	up to 150 °C
Relative luminous flux at T_j = 100 °C	88 %
Max forward current I_F	1 A

IR OSLON® Black Series



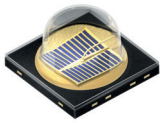
	SFH 4725S
LED package size in mm	3.75 × 3.75 × 2.3
Wavelength	940 nm
Typ. radiant intensity, Ie	450 mW/sr @1000 mA
Total radiant flux, Φe	980 mW @1000 mA
Viewing angle	+/– 45°

Gesture recognition




	SFH 4650	SFH 4258	SFH 4258S	SFH 4259
Package type	MIDLED® Toplooker	Power TOPLED® with lens	Power TOPLED® with lens	Power TOPLED® with lens
LED package size in mm	3.1 × 2.25 × 1.6	3.5 × 2.8 × 3.8	3.5 × 2.8 × 3.8	3.5 × 2.8 × 3.5
Wavelength	850 nm	850 nm	850 nm	850 nm
Typ. radiant intensity, Ie	90 mW/sr @100 mA	110 mW/sr @100 mA	185 mW/sr @100 mA	55 mW/sr @100 mA
Total radiant flux, Φe	60 mW @100 mA	70 mW @100 mA	115 mW @100 mA	70 mW @100 mA
Viewing angle	+/–15°	+/–15°	+/–15°	+/–25°

Gesture recognition

	SFH 4259S	SFH 4715S
Package type	Power TOPLED® with lens	IR OSLON® Black Series
LED package size in mm	3.5 × 2.8 × 3.5	3.75 × 3.75 × 2.29
Wavelength	850 nm	850 nm
Typ. radiant intensity, Ie	85 mW/sr @100 mA	440 mW/sr @1000 mA
Total radiant flux, Φe	115 mW @100 mA	1030 mW @1000 mA
Viewing angle	+/–25°	+/–45°

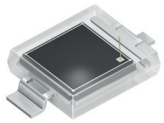
Hybrid Pulsed Laser Diodes

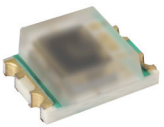
	SPL LL90 3
Type	Pulse laser
Package size in mm	4.9 × 2.4 × 12.2
Wavelength (nm; typ.)	905
Opt. peak power	70 W
Beam divergence	30° × 15°

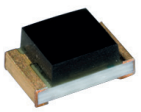
Single-mode laser

	PL 450B	PL 520
Output power	80 mW	50 mW
Emission wavelength typ.	450 nm	520 nm
Threshold current typ.	30 mA	45 mA
Operating current typ.	100 mA	150 mA
Wall plug efficiency	14 %	5–6 %
Package type	TO38 icut	TO38 icut

Light dimming







	SFH 3410	SFH 2430	SFH 5711	SFH 3711
Device type	Photo transistor	Photodiode	Opto hybrid	Photo transistor
LED package size in mm	2.0 × 4.6 × 1.05	3.85 × 6.45 × 1.15	2.8 × 2.2 × 1.1	1.25 × 2.0 × 0.8
Signal in µA@1000 lx	500	6.3	30 logarithmic	50
Sensitivity range in klux	1–100	5–100	3–80	1–100

Advanced Power TOPLED®

	LUW GVCP	LW G6CP	LA G6SP	LR G6SP	LS G6SP	LCY G6SP
Dimensions (x, y, z)	3.3 × 3.4 × 1.9	3.3 × 3.4 × 1.9	3.3 × 3.4 × 1.9	3.3 × 3.4 × 1.9	3.3 × 3.4 × 1.9	3.3 × 3.4 × 1.9
Viewing angle	120°	120°	120°	120°	120°	120°
Luminous intensity (typ.)	10.1 cd @140 mA	10.1cd @140 mA	6.35 cd @140 mA	5.05 cd @140 mA	4.02 cd @140 mA	5.05 cd @140 mA
Thermal resistance (max. real)	40 K/W	40 K/W	60 K/W	60 K/W	60 K/W	40 K/W
Max junction temperature (T_j)	up to 150 °C	up to 150 °C	up to 150 °C	up to 150 °C	up to 150 °C	up to 150 °C
Max forward current I_F	250 mA	250 mA	200 mA	200 mA	200 mA	250 mA
Forward Voltage	3.05 V @350 mA	3.30 V @140 mA	2.15 V @140 mA	2.10 V @140 mA	2.15 V @140 mA	3.30 V @140 mA

OSLON® MX ECE

	LUW CN7N
Dimensions (x, y, z)	3.0 × 3.0 × 2.4
Viewing angle	80°
Luminous flux (typ.)	90 lm @350 mA
Thermal resistance (max. real)	20 K/W
Max junction temperature (T_j)	up to 150 °C
Max forward current I_F	500 mA
Forward Voltage	3.4 V @350 mA

OSLON® Black

	LUW HWQP	LA H9PP	LR H9PP
Dimensions (x, y, z)	3.8 × 3.8 × 0.5	3.75 × 3.75 × 0.7	3.75 × 3.75 × 0.7
Viewing angle	120°	120°	120°
Luminous flux (typ.)	300 lm @1A	66 lm @350 mA	49 lm @350 mA
Thermal resistance (max. real)	3.0 K/W	11 K/W	11 K/W
Max junction temperature (T_j)	up to 150 °C	up to 150 °C	up to 150 °C
Max forward current I_F	1.5 A	1.0 A	1.0 A
Forward Voltage	3.20 V @1 A	2.2 V @350 mA	2.15 V @350 mA

Power TOPLED®

	LY E67F	LY E6SF	LY ETSF	LA E67F	LR E67F	LS E67F
Dimensions (x, y, z)	3.2 × 2.8 × 1.9	3.2 × 2.8 × 1.9	3.2 × 2.8 × 1.9	3.2 × 2.8 × 1.9	3.2 × 2.8 × 1.9	3.2 × 2.8 × 1.9
Viewing angle	120°	120°	120°	120°	120°	120°
Luminous intensity (typ.)	2020 mcd @50 mA	2020 mcd @50 mA	2020 mcd @50 mA	2520 mcd @50 mA	2520 mcd @50 mA	1260 mcd @50 mA
Thermal resistance (max. real)	130 K/W	130 K/W	130 K/W	130 K/W	130 K/W	130 K/W
Max junction temperature (T_j)	up to 125 °C	up to 125 °C	up to 125 °C	up to 125 °C	up to 125 °C	up to 125 °C
Max forward current I_F	70 mA	70 mA	70 mA	70 mA	70 mA	70 mA
Forward Voltage	2.15 V @50 mA	2.15 V @50 mA	2.15 V @50 mA	2.15 V @50 mA	2.15 V @50 mA	2.15 V @50 mA

TOPLED®

	LA T67F	LR T67F	LS T67F
Dimensions (x, y, z)	3.2 × 2.8 × 1.9	3.2 × 2.8 × 1.9	3.2 × 2.8 × 1.9
Viewing angle	120°	120°	120°
Luminous intensity (typ.)	1010 mcd @20 mA	635 mcd @20 mA	610 mcd @20 mA
Thermal resistance (max. real)	280 K/W	280 K/W	280 K/W
Max junction temperature (T_j)	up to 125 °C	up to 125 °C	up to 125 °C
Max forward current I_F	50 mA	50 mA	50 mA
Forward Voltage	2.15 V @20 mA	2.05 V @20 mA	2.05 V @20 mA

SIDELED®

	LA A67F
Dimensions (x, y, z)	4.0 × 3.6 × 4.0
Viewing angle	120°
Luminous intensity (typ.)	1800 mcd @30 mA
Thermal resistance (max. real)	180 K/W
Max junction temperature (T_j)	up to 125 °C
Max forward current I_F	50 mA
Forward Voltage	2.00 V @30 mA

LY G6SP
3.3 × 3.4 × 1.9
120°
5.05 cd @140 mA
60 K/W
up to 150 °C
200 mA
2.25 V @140 mA

OSLON® SX ECE

	LUW CN7M
Dimensions (x, y, z)	3.0 × 3.0 × 2.2
Viewing angle	90°
Luminous flux (typ.)	49 lm @200 mA
Thermal resistance (max. real)	30 K/W
Max junction temperature (T_j)	up to 150 °C
Max forward current I_F	250 mA
Forward Voltage	3.4 V @200 mA

OSLON® SX

	LY CN5M
Dimensions (x, y, z)	3.0 × 3.0 × 2.4
Viewing angle	60°
Luminous intensity (typ.)	12 cd @140 mA
Thermal resistance (max. real)	30 K/W
Max junction temperature (T_j)	up to 150 °C
Max forward current I_F	200 mA
Forward Voltage	2.25 V @140 mA

LS H9PP	LY H9PP	LCY H9PP
3.75 × 3.75 × 0.7	3.75 × 3.75 × 0.7	3.75 × 3.75 × 0.7
120°	120°	120°
42 lm @350 mA	57 lm @350 mA	67 lm @350 mA
11 K/W	11 K/W	7.5 k/W
up to 150 °C	up to 150 °C	up to 150 °C
1.0 A	1.0 A	700 mA
2.15 V @350 mA	2.2 V @350 mA	2.95 V @350 mA

LA E6SF	LR E6SF	LS E6SF	LA ETSF	LA E65F	LA E63F	LS E63F
3.2 × 2.8 × 1.9	3.2 × 2.8 × 1.9	3.2 × 2.8 × 1.9	3.2 × 2.8 × 1.9	3.2 × 2.8 × 3.5	3.2 × 2.8 × 3.8	3.2 × 2.8 × 3.8
120°	120°	120°	120°	60°	30°	30°
2520mcd @50 mA	1600 mcd @50 mA	1600 mcd @50 mA	2520 mcd @50 mA	6350 mcd @50 mA	16000 mlx @50 mA	8050 mlx @50 mA
130 K/W	130 K/W	130 K/W	130 K/W	130 K/W	130 K/W	130 K/W
up to 150 °C	up to 150 °C	up to 150 °C	up to 150 °C	up to 125 °C	up to 125 °C	up to 125 °C
70 mA	70 mA	70 mA	70 mA	70 mA	70 mA	70 mA
2.15 V @50 mA	2.15 V @50 mA	2.15 V @50 mA	2.15 V @50 mA	2.15 V @50 mA	2.15 V @50 mA	2.15 V @50 mA

LR A67F	LS A67F
4.0 × 3.6 × 4.0	4.0 × 3.6 × 4.0
120°	120°
1600 mcd @30 mA	1100 mcd @30 mA
180 K/W	180 K/W
up to 125 °C	up to 125 °C
50 mA	50 mA
2.00 V @30 mA	2.00 V @30 mA

Choose perfection – easily

✓ **recommendation**

	OSRAM OSTAR® Headlamp Pro	OSLON® Black Flat				OSLON® Black Flat			OSLON® Compact		
	white	2 Chip	3 Chip	4 Chip	5 Chip	1 Chip	yellow, conversion yellow	red, amber, superred	white	yellow, conversion yellow	
Lighting Function											
Adaptive Driving Beam | Adaptive Forward Lighting System	✓								✓		
Low beam	✓	✓	✓	✓	✓	✓			✓		
High beam	✓	✓	✓	✓	✓	✓			✓		
Fog		✓				✓			✓		
Signaling Function											
Daytime Running Light	✓	✓				✓			✓		
Position light						✓			✓		
Front turn indicator							✓			✓	
Side markers							✓			✓	
Rear turn indicator							✓	✓		✓	
Rear Combination Light											
Stop/Tail								✓			
CHMSL								✓			
Backup						✓			✓		
Rear fog light								✓			

	OSLON® LX 120	OSLON® Black		Power SIDELED®		Advanced Power TOPLED®			OSLON® SX	OSLON® SX ECE	OSLON® MX ECE	MULTILED®
	white	white	amber	yellow, conversion yellow	red, amber, superred	yellow	white	amber	yellow, concersion yellow	yellow	white	white	
	✓	✓											
	✓	✓									✓	✓	
	✓	✓					✓				✓	✓	
	✓	✓					✓				✓	✓	
				✓					✓	✓			✓
				✓	✓	✓			✓	✓			✓
			✓	✓	✓	✓		✓	✓	✓			✓
			✓		✓			✓					
			✓		✓			✓					
	✓	✓					✓				✓	✓	
			✓					✓					

Range of available colors

✓ available

		white	warmwhite	ultrawite	yellow	orange	amber	red	superred	puregreen	green	truegreen	blue	Color on demand
Interior illumination														
SIDELED®	Lx A67F				✓	✓	✓	✓	✓					
	Lx A673	✓										✓	✓	✓
	Lx A676				✓	✓	✓		✓	✓	✓			
	Lx A6SG	✓										✓	✓	✓
	Lx T67D				✓	✓	✓	✓	✓					✓
TOPLED®	Lx T67F				✓	✓	✓	✓	✓	✓	✓			
	Lx T676				✓	✓	✓	✓	✓	✓	✓			
	Lx T67K				✓	✓			✓	✓	✓			
	Lx T6SG	✓											✓	✓
	Lx TTSD	✓												✓
	Lx T673	✓										✓	✓	
	Lx T67D				✓	✓	✓	✓	✓					✓
Power TOPLED®	Lx E67F				✓	✓	✓	✓	✓					
	Lx E6SG	✓										✓	✓	✓
PointLED®	Lx P47F				✓		✓	✓	✓	✓				
	Lx P476				✓	✓			✓					
	Lx P473	✓											✓	✓
	Lx P4SG	✓										✓	✓	✓
MULTILED®	LSG T676													
	LSY T676													
Mini TOPLED®	Lx M676				✓	✓	✓		✓	✓	✓			
	Lx M67F				✓	✓	✓		✓			✓	✓	
	Lx M673	✓												✓
	Lx M67C	✓												✓

✓ available

		white	warmwhite	ultrawite	yellow	orange	amber	red	superred	puregreen	green	truegreen	blue	Color on demand
Ambient Lighting														
TOPLED®	Lx T67F				✓	✓	✓	✓	✓	✓	✓			
	Lx T676				✓	✓	✓		✓	✓	✓			
	Lx T6SG	✓											✓	✓
	Lx TTSD	✓										✓	✓	✓
	Lx T673	✓												✓
	Lx T67D				✓	✓	✓	✓	✓					✓
SIDELED®	Lx A67F				✓	✓	✓	✓	✓					
	Lx A6SG	✓										✓	✓	✓
PointLED®	Lx P47F				✓		✓	✓	✓	✓				
	Lx P476				✓	✓			✓					
	Lx P4SG	✓										✓	✓	✓
	Lx P473	✓											✓	✓
MULTILED®	LRTB G6SG													
	LTRB GFSF													
Mini TOPLED®	Lx M676				✓	✓	✓		✓	✓	✓			
	Lx M67F				✓	✓	✓		✓			✓	✓	
	Lx M673	✓												✓
	Lx M67C	✓												✓
Dome and Map Lighting														
OSLON® Black	Lx H9GP		✓	✓										
Advanced Power TOPLED®	Lx G6CP	✓	✓											
Advanced Power TOPLED® Plus	Lx G5GP		✓	✓										
TOPLED®	Lx E6SG	✓	✓											✓
	Lx M67K				✓	✓			✓	✓	✓			
	Lx M67S													✓

Choose perfection – easily

VIS ✓ available

	Mini TOPLED®	TOPLED®	Power TOPLED®	SIDELED®	PointLED®	MULTILED®	Advanced Power TOPLED®	OSLON® Black	OSRAM OSTAR® Projection Compact	OSRAM OSTAR® Compact	SYNIOS® E4014
Interior Illumination	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
Head-up display								✓	✓	✓	
Ambient lighting	✓	✓	✓	✓	✓	✓					
Dome and map lighting		✓	✓	✓			✓	✓			
LCD backlighting											✓
Page	16, 17, 18, 19	16, 17, 19	16	17, 19	16, 17, 19	16, 17	18	18	20	20	18,19

IR ✓ available

	Single-mode laser	Proximity + ALS Sensor	Power TOPLED® with lens	MIDLED® Toplooker	IR Platinum DRAGON®	IR OSLON® Black Series	Hybrid Pulsed Laser
Head-up display	✓						
Gesture recognition | Light dimming		✓	✓	✓	✓	✓	✓
ACC | Pre-crash sensing | Pedestrian protection					✓	✓	
Drowsy driver | Occupancy detection						✓	
Night vision					✓	✓	
Page	21	23	23	23	25, 27	23, 25, 26, 27	25

Complete information.
At your fingertips.

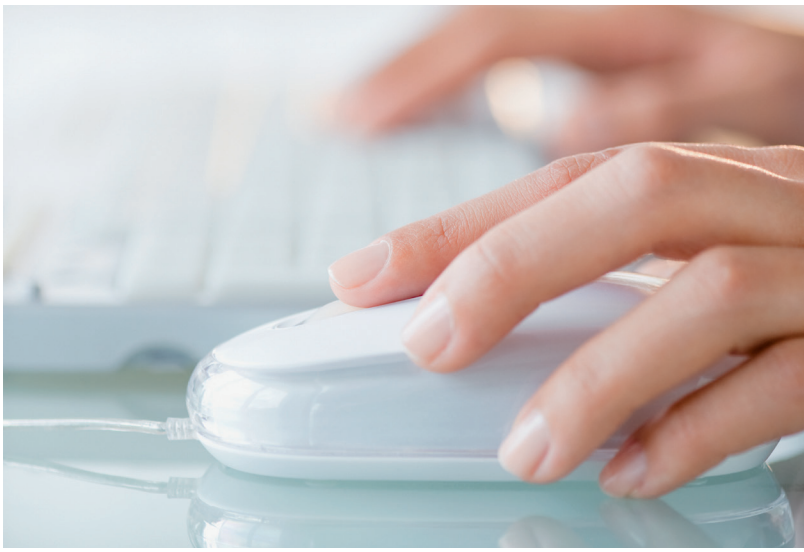
The innovative products offered by OSRAM Opto Semiconductors open up an entirely new application universe. Need assistance with your specific design? Just contact us (for contact information see the back page), or download our application brochures: www.osram-os.com/downloads.
Looking for more information and data on our products for LEDs in general lighting, or LEDs in general? Check out our website for comprehensive information about our state-of-the-art products, modern LED technology, and the latest LED trends.

products.osram-os.com
Our complete product catalog with all available products

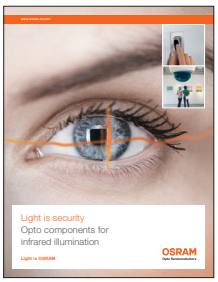
www.ledlightforyou.com
Your network for LED lighting technology – powered by OSRAM

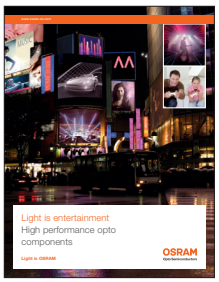
LED Light for you
powered by OSRAM

www.osram-os.com



Application brochures available from OSRAM Opto Semiconductors
Our innovative products open up a wide variety of applications. Just contact us for assistance with your specific design (for contact information see last page) or order our application brochures: www.osram-os.com/downloads.





Asia
OSRAM Opto Semiconductors Asia Ltd.
16/F China Resources Building
26 Harbour Road, Wan Chai
Hong Kong SAR
Phone: +852 3652 5522
Fax: +852 2802 0880
E-mail: prasia@osram-os.com

Europe
OSRAM Opto Semiconductors GmbH
Leibnizstraße 4
D-93055 Regensburg, Germany
Phone: +49 941 850 1700
Fax: +49 941 850 3302
E-mail: support@osram-os.com

USA
OSRAM Opto Semiconductors Inc.
1150 Kifer Road, Suite 100
Sunnyvale, CA 94086, USA
Main Phone number: (408) 962-3700
Main Fax: (408) 738-9120
Inbound Toll Free: (866) 993-5211
E-mail: info@osram-os.com

OSRAM
Opto Semiconductors

502W010GB 12/2016 OSRAM Opto Semiconductors Subject to change without notice. Errors and omission excepted.