



Light is brilliant  
Solid State Lighting solutions

Light is **OSRAM**

**OSRAM**  
Opto Semiconductors





OSRAM Opto Semiconductors  
has the right LED in each  
performance class for each  
application.

---

**Content**

---

**General information**

Setting standards	04
Family concept	05
PASS – Premium Application Support Services	06
LED Light for you	07
Color Rendering Index	08
White binning	09

---

**Products**

DURIS® E	10
DURIS® P	12
DURIS® S 5	14
DURIS® S 8	16
OSLON® SSL	18
OSLON® Square	20
SOLERIQ® P	22
SOLERIQ® S	26

---

**Product selection guide**

More information	31
------------------	----

---



# Go farther, faster – with our SSL LEDs

Take your projects farther, faster with OSRAM Opto Semiconductors' innovative families of SSL LEDs. These flexible LEDs have revolutionized lighting by combining affordability with ease of use to create the perfect LED lighting solution for any situation. With our products at the core of your application – from lamps to luminaires – you will benefit from outstanding quality, superior reliability and continuous improvement.

We deliver a broad portfolio of low-, mid- and high-power LEDs – all of them optimized for the lowest failure rates and longest lifetimes under real application conditions – that can be mixed and matched in endless combinations. Our intelligent family platform concept makes it easy for you to find and select the perfect solutions for your visions.



# Different families – unique advantages

OSRAM Opto Semiconductors' family concept is our modern response to the rapid development and special demands of the LED market, giving you also a better and faster way of navigating through our product portfolio.



## Simply better results with our family concept

This technology platform approach makes it easy to navigate through our comprehensive portfolio. At the same time it speeds up product development and therefore reduces time-to-market considerably for the benefit of our customers. The modularity of the family concept with its different technologies, performance classes and applications offers you maximum demand-based flexibility.

### DURIS® family

Plastic package. Product versions in all power ranges. Perfect mix of efficiency and flexibility. Suitable for many applications, indoors and outdoors. Setting new standards in homogeneity, colors and compactness.

- **DURIS® E**  
Ideal solution for all applications in which uniform distribution of light and high efficiency are required but low cost is also a major factor
- **DURIS® P**  
Ideal for professional applications in architectural and interior lighting, can be used in directional light sources such as retrofit lamps
- **DURIS® S**  
Ideal for use indoors in the professional and consumer sectors thanks to high color consistency, such as industrial lighting, downlights and retrofits

### OSLON® family

SMD ceramic package with integrated silicon lens. High-power LEDs. Highly efficient and compact. High quality, even in difficult ambient conditions. Preferred LEDs for indoor and outdoor illumination, architecture and street lighting.

- **OSLON® SSL**  
The smallest LED with outstanding efficiency and very long lifetime, optimized for use with lenses and reflectors; very broad color spectrum (RGB and other colors)
- **OSLON® SQUARE**  
One of the most popular LEDs in general illumination, key parameters are grouped at high temperatures to get as close as possible to the temperatures in the application

### SOLERIQ® family

Based on chip-on-board design. Ultra high-power state-of-the-art LED. Simple installation. Ideal for indoor lighting and spotlight applications.

- **SOLERIQ® P**  
Easily meets the requirements for use in general illumination, offering a combination of low cost and high quality, top solution for indoor spotlights
- **SOLERIQ® S**  
Specially designed for applications with high operating temperatures, perfect for all color temperatures, very efficient solution for indoor downlights



Premium  
Application  
Support  
Services

Solid State  
Lighting

## Your PASS to the future

With PASS, you'll get access to OSRAM Opto Semiconductors' application engineering expertise and lab services through a lean, affordable, à la carte program. PASS is an open, collaborative design and testing process that keeps you involved, allowing flexibility along the way.

Make it good, make it fast and make it easy – with PASS you'll access our Premium Application Support Services through a dedicated web page, where you can request services through a dynamic menu featuring simulation, prototype, LED data and system metrology services. Our qualification process determines if your business is a good fit for PASS services. And, if we can't provide everything you need, we'll help you to find the right solution through our LED Light for you program, the premier lighting solutions network of certified industry partners.

### Simulation

Simulate your system to study illumination and thermal performance before hardware is realized.

- Simulate your optical system
- Model your illumination environment
- Simulate your thermal system
- Optics and thermal design support

### Prototype

Choose from a list of standard printed circuit boards (PCBs), specify a custom PCB or work with engineering to realize an entire system mockup for proof of concept.

- Standard PCBs
- Custom PCBs
- System mockups

### LED data

LED characterization and lifetime estimation based on your specified parts and drive current.

- LED measurements
- Lumen maintenance estimation
- LM-80/TM-21 reports

### System metrology

Get photometric and thermal measurements for your solution.

- Integrating sphere measurement
- Goniophotometer measurement
- Thermal spot & area measurement
- System luminance

# LED Light for you

LED Light for you is a global network brought to you by OSRAM Opto Semiconductors. Its worldwide certified partners will support you with standard and customized solutions. From optical experts to specialists in electronics and thermal management, the LED Light for you partners have the expertise to meet your dedicated requirements.

Moreover, our system integrators will assist you at all stages of a project, from an ambitious concept and attractive design to the right layout, and from a qualified consultation up to a committed system level implementation.

## For whom?

LED Light for you serves professionals who want to realize a general lighting project powered by OSRAM LED technology. Designers, architects and light manufacturers will find worldwide experts to support them in realizing not only standard applications, but exceptional and extravagant light applications. Big projects or small ones – LED Light for you offers the right solution.



## How it works

### You are a

- Designer
- Architect
- Lighting Consultant
- Luminaire Manufacturer
- ...

### You look for

General lighting  
LED technology

### Your solution: LED Light for you Network

Certified partners participate in:



**Optical  
Solutions**



**Thermal  
Solutions**



**Electronic  
Solutions**



**System  
Integrator**

**Additional Partners**



### New: Product Selector App

Find suitable products for your LED application quickly and easily.






To download the app just scan the QR code.

# Color Rendering Index

The Color Rendering Index (CRI) was developed and published by the CIE in 1974 to evaluate the color quality of light sources. It describes the deviation of the test light source to a reference light source. If the colors are reproduced faithfully compared with daylight or an incandescent lamp, the CRI value is at its maximum of 100.

In many applications, color rendering is balanced with the efficacy of the light source. OSRAM Opto Semiconductors has employed this technique to bring you a choice of CRI and efficacy combinations, letting you choose the LED best suited to your application.

## OSLON® SSL White Versions

	.Px power champ	.Ex economic champ	.Cx color champ
<b>Product Benefit</b>	The power champ phosphor LEDs fulfill even the toughest efficacy requirements with good light quality	The economic champ phosphor LEDs is the perfect trade off between great color rendering and highest efficacy	Perfect color rendering is the objective of the color champ phosphor LEDs with an efficacy, which is still outperforming most conventional light sources
<b>Color Rendering Index <math>R_a</math></b>	min. 70	min. 80	min. 90
<b>Applications</b>	Outdoor and industrial applications 	Home and office applications 	Shop and museum applications 

### Good to know

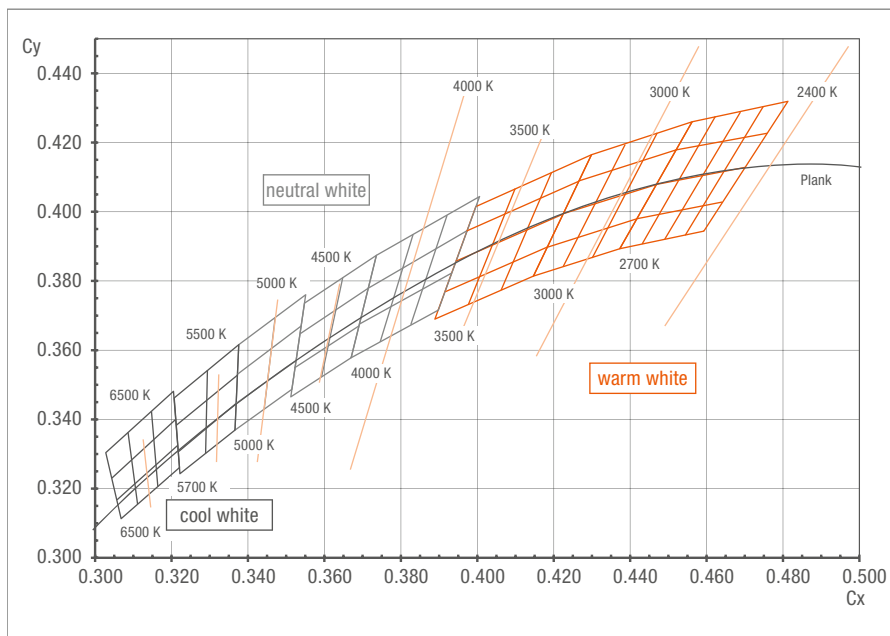
- The existing CRI is a value that indicates how good the test light source renders or reproduces colors compared to the reference light source
- A good color rendering is also known as high color fidelity
- Another aspect is color preference, which gives you an indication of how much colors are emphasized
- Thanks to this effect colors can look brilliant – even at a CRI 80 value
- The spectrum of LED light can be modified in many directions by proper choice of LEDs
- Some applications like streetlighting do not need a high CRI value at all



# White binning

Binning means the sorting of LED packages by color and brightness group in order to maintain color consistency within a finished product. Each LED is tested for specific characteristics such as luminous intensity, luminous flux, forward voltage, dominant wavelength and chromaticity.

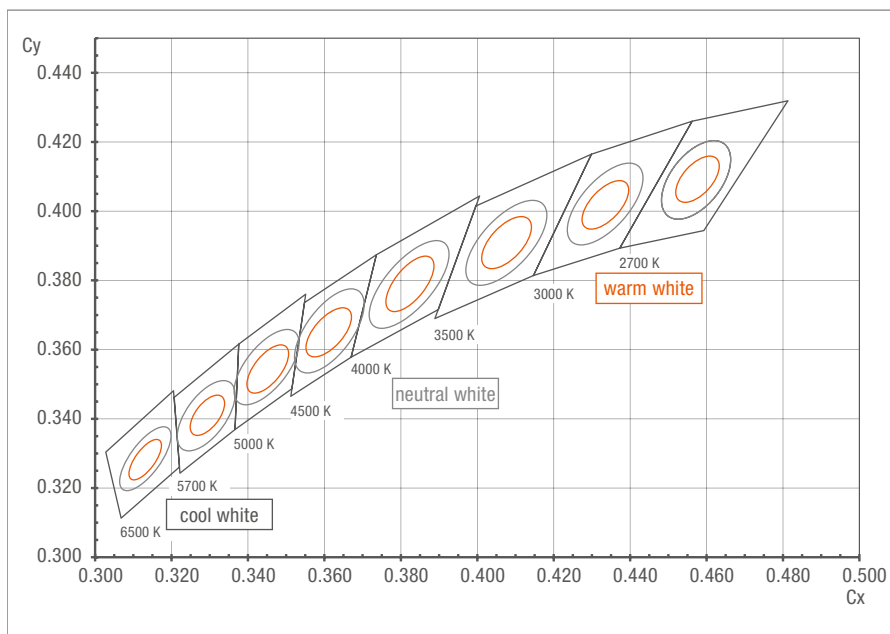
Upon completion of assembly, LEDs are measured for brightness and color and are then placed into "bins" according to their intensity group and their color group. The binned LEDs are then placed onto reels for shipment.



## Fine white binning

LEDs are available in different color temperatures from warm white 2,700 K up to cool white 6,500 K. OSRAM Opto Semiconductors' fine bin system is based on a 3-step MacAdam's ellipse to ensure color consistency in any lighting application.

Coordinates in reference to CIE 1931 (cx cy)



## MacAdam binning

The MacAdam binning simplifies the design of luminaires. The maximum color deviation defined by this binning corresponds to what is most commonly required by customers and most widely used in today's lighting applications: for projects with high demand for color consistency, a premium selection corresponding to 3-step MacAdam is available.

Coordinates in reference to CIE 1931 (cx cy)

## DURIS® E

The DURIS® E 3 and E 5 are the low- and mid-power LEDs, ideal for efficient and homogeneous lighting applications. The combination of a small/medium lumen package, a wide beam angle and a compact footprint is perfect for uniform light distribution.



**Perfect homogeneity and high efficiency**  
for cost-conscious application



Linear lighting



Light bulbs



Linear and area lighting

### Features DURIS® E

- Footprint of 3.0 mm × 1.4 mm (DURIS® E 3) / 5.6 mm × 3.0 mm (DURIS® E 5)
- Compact light source in cost-effective PLCC package
- Stable brightness over lifetime
- Test results according to IESNA LM-80 available

### Applications of all types

- Homes
- Shops
- Offices
- Industries, e.g. white goods
- Hospitality
- Signage, e.g. channel letters

### DURIS® E 3

Type	CCT	Typ. CRI	Typ. Luminous Flux (@20 mA)	Typ. Efficacy (20 mA)	Min. CRI	Typ. Forward Voltage (@20 mA)	Max. Current
LCW/LUW JNSH.EC	2700 K – 6500 K	85 @4000 K	8.1 lm @4000 K	132 lm/W @4000 K	80	3.05 V	30 mA
LCW/LUW JNSH.PC	3000 K – 6500 K	72 @4000 K	9.3 lm @4000 K	153 lm/W @4000 K	70	3.05 V	30 mA



### DURIS® E 5

Type	CCT	Typ. CRI	Typ. Luminous Flux (@120 mA)	Typ. Efficacy (65 mA)	Typ. Forward Voltage (@120 mA)	Current Temp.	Max. Current
LCW/LUW JDSH.EC	2700 K – 6500 K	85 @4000 K	50 lm @4000 K	155 lm/W @4000 K	3.1 V	25 °C	180 mA
GW JDSMS1.EC	2700 K – 6500 K	85 @4000 K	49 lm @4000 K	147 lm/W @4000 K	3.15 V	25 °C	180 mA
GW JDSMS1.PC	3000 K – 6500 K	72 @4000 K	51 lm @4000 K	153 lm/W @4000 K	3.15 V	25 °C	180 mA
GW JDSMS1.CC	2700 K – 6500 K	95 @4000 K	43 lm @4000 K	129 lm/W @4000 K	3.15 V	25 °C	180 mA
GW JDSLS1.EC	2700 K – 6500 K	85 @4000 K	46 lm @4000 K	133 lm/W @4000 K	3.25 V	25 °C	150 mA



### DURIS® E 5

Type	CCT	Typ. CRI	Typ. Luminous Flux (@120 mA)	Typ. Efficacy (65 mA)	Typ. Forward Voltage (@120 mA)	Current Temp.	Max. Current
GW JDSRS1.EC	2700 K – 6500 K	85 @4000 K	54 lm @4000 K	170 lm/W @4000 K	3 V	25 °C	180 mA
GW JDSRS1.PC	4000 K – 6500 K	72 @4000 K	58 lm @4000 K	182 lm/W @4000 K	3 V	25 °C	180 mA
GW JDSRS1.CC	2700 K – 4000 K	95 @4000 K	47 lm @4000 K	148 lm/W @4000 K	3 V	25 °C	180 mA





## DURIS® P

DURIS® P 5 and P 5 color are the new mid-power LEDs providing leading-edge technology for indoor and outdoor lighting. Both stand for top quality, established technology and high reliability. Only the color makes the difference.

### Features DURIS® P 5

- Footprint of 2.6 mm × 2.2 mm
- Test results according IESNA LM-80 available
- Long lifetime also at high temperatures and high currents (L70/B50 > 50,000 h at  $T_j = 125^\circ\text{C}$  and  $I_F = 200\text{ mA}$ )
- Superior corrosion resistance for high-quality lighting solutions
- High maximum forward current of 250 mA

### Features DURIS® P 5 color

- Excellent robustness
- High corrosion resistance
- Extreme stability for “deep blue”
- High maximum operating conditions
- Broad color portfolio (five different colors)
- Small footprint for clustering (2.6 mm × 2.2 mm)
- Compact light source in white SMT package
- 120° viewing angle at 50 %  $I_v$  (deep blue 105°)

### Applications

- Architectural lighting
- Accent and effect lighting
- Room lighting: ceiling light, cove lighting, chandeliers, pendants, sconces
- Channel letters
- Linear lights



# DURIS® P 5

Type	Color	CCT	Min. CRI	Typ. Luminous Flux (100 mA)	Binning Current	Max. Current	Typ. Efficacy	Typ. Forward Voltage	Current Temp.
GW DASPA1.EC	warm white	3000 K	80	33 lm	100 mA	250 mA	110 lm/W	3V	25 °C
GW DASPA1.EC	neutral white	4000 K	80	34.2 lm	100 mA	250 mA	114 lm/W	3V	25 °C
GW DASPA1.EC	neutral white	5000 K	80	36.5 lm	100 mA	250 mA	121 lm/W	3V	25 °C



# DURIS® P 5 color

Type	Color	Dominant Wavelength	Typ. Luminous/Radiant Flux (100 mA)
GD DASPA1.14	deep blue	439 nm – 461 nm	140 mW
GB DASPA1.13	blue	459 nm – 476 nm	8 lm
GT DASPA1.13	true green	513 nm – 543 nm	26 lm
GY DASPA1.23	yellow	583 nm – 595 nm	14 lm
GR DASPA1.23	red	612 nm – 630 nm	16 lm



Accent and effect lighting



Architectural lighting

Perfect monochrome color solutions



## DURIS® S 5

DURIS® S 5 is a new compact mid-power LED with 3 mm × 3 mm footprint in three different luminous flux packages for indoor general lighting. It provides flexibility in forward voltage and luminous flux with high lifetime even at high temperatures.



Downlight and directional retrofit  
and LED luminaire solutions



Downlight and directional retrofit and LED luminaire solutions

### Features

- Different luminous flux packages from one package family
- Small footprint (3 mm × 3 mm) for clustering
- Higher lifetime than PPA packages
- Compact light source in white SMT package, colored diffused silicone resin
- Viewing angle at 50 % I<sub>v</sub>: 120°
- Optimized driver efficiency and costs due to higher voltage option
- Color: 2,700 K – 6,500 K (white)
- CRI: 70/80/90 (typ.)
- Test results according IESNA LM-80 available

### Applications

- Indoor general lighting
- Industrial lighting
- Linear lights
- Professional downlights
- Retrofits – directional, omnidirectional and linear



General lighting with linear retrofit solutions

### DURIS® S 5

Type	Color	CCT	Min. CRI	Typical Luminous Flux	Binning Current	Typical Forward Voltage	Current Temperature	Max. Current	Typical Efficacy
GW PSLPS1.EC	white	2700 K – 6500 K	80	111 lm (3000 K)	150 mA	6.35V	25 °C	240 mA	116 lm/W
GW PSLMS1.EC	white	2700 K – 6500 K	80	28 lm (3000 K)	65 mA	2.90V	25 °C	240 mA	148 lm/W
GW PSLLS1.EC	white	2700 K – 6500 K	80	32 lm (3000 K)	80 mA	3.10V	25 °C	180 mA	129 lm/W



### DURIS® S 5

Type	Color	CCT	Min. CRI	Typical Luminous Flux	Binning Current	Typical Forward Voltage	Current Temperature	Max. Current	Typical Efficacy
GW PSLRS1.EC	white	2700 K – 6500 K	80	127 lm (3000 K)	150 mA	6.15V	25 °C	200 mA	137 lm/W
GW PSLRS1.PC	white	3000 K – 6500 K	70	151 lm (5000 K)	150 mA	6.15V	25 °C	200 mA	163 lm/W
GW PSLRS1.CC	white	2700 K – 4000 K	90	101 lm (3000 K)	150 mA	6.15V	25 °C	200 mA	109 lm/W



# DURIS® S 8

OSRAM Opto Semiconductors is setting new standards once again: DURIS® S 8 is a revolutionary compact high-power LED for indoor illumination, including directional and omnidirectional retrofit lamps. With high luminous flux out of only one small LED package, high forward voltage and high color consistency it provides totally new opportunities for all indoor lighting and especially directional retrofit applications.

## Features

- Different luminous flux packages from one package family
- Small light emitting surface improves optical behavior in directional lighting
- Low thermal resistance to enable high operating power
- High operating temperatures up to 110 °C solder point temperature permitted
- Small footprint for clustering
- Higher lifetime than PPA packages
- Optimized driver efficiency and costs due to higher voltage option
- Compact light source in white SMT package, colored diffused silicone resin
- Viewing angle at 50 %  $I_v$ : 120°
- Color: 2,700/3,000/4,000 K (white) – 3,500/5,000/5,700/6,500 K soon available
- Test results according IESNA LM-80 in progress

## Applications

- Directional retrofits, such as MR16, PAR16, AR111
- Downlights
- Spotlights
- Omnidirectional retrofits



Indoor lighting and retrofit solutions





Architectural lighting



New high-quality and cost-efficient LED luminaire design

## DURIS® S 8

Type	Color	CCT	Min. CRI	Typ. Luminous Flux	Typ. Forward Voltage	Typ. Efficacy	Binning Current	Max. Current
GW P9LMS2.EM	white	2700 K–6500 K	80	350 lm (100 °C)	19.2V	91 lm/W	200 mA	240 mA
GW P9LMS2.EM	white	2700 K–6500 K	80	440 lm (100 °C)	25.6V	85 lm/W	200 mA	240 mA



# OSLON® SSL

These remarkably compact LEDs offer beam angles optimized for use with lenses and reflectors. This revolutionary feature, combined with a broad range of color temperatures and color rendering indexes, open up new possibilities for cost-effective and efficient lighting solutions – for any application.

## Features

- The first power LED with sophisticated beam angles (80°/150°)
- Ultra-compact footprint for high-density arrays saving space and simplifying color mixing (only 3 mm × 3 mm)
- Neutral to warm white, capable of high power up to 0.8 A, cool white and all colors up to 1 A
- Compact and symmetrical, allowing dense clustering for high-flux packages
- Thermal resistance of  $R_{thJS}$  (typ.) 7 K/W
- Lifetime of more than 50,000 hours, depending on application conditions
- Different versions (LCW.CC, LCW.EC, LCW.PC, LUW) for various application requirements
- Broad color portfolio: red, green, blue, and other colors
- Light recycling by reflective layer of the package, using every single lumen

## Applications

### Interior lighting (home, office, shop & hospitality)

- Retrofits & fixtures (e.g. fluorescent replacement)
- Spotlights
- Task lights
- Shelf lighting
- Downlights

### Outdoor lighting

- Streets
- Tunnels
- Parking lots
- Pedestrian areas

### Architecture and entertainment

- Color changing fixtures (colored, white, decorative, etc.)
- Entertainment
- Stage and studio lighting



## OSLON® SSL

Type 80	Type 150	Color	CRI
LCW CR7P.CC	LCW CRDP.CC	white	90 (min.)
LCW CR7P.EC	LCW CRDP.EC	white	80 (min.)
LCW CR7P.PC	LCW CRDP.PC	white	70 (min.)
LUW CR7P	LUW CRDP	street white	70 (typ)
LD CQ7P	LD CQDP	deep blue	–
LB CP7P	LB CPDP	blue	–
LT CP7P	LT CPDP	true green	–
LY CP7P	LY CPDP	yellow	–
LA CP7P	LA CPDP	amber	–
LR CP7P	LR CPDP	red	–
LH CP7P	LH CPDP	hyper red	–
GF CS8PM1.24	GF CSHPM1.24	far-red	–



Industrial lighting



Office lighting



Indoor lighting

CCT/Wavelength	Typ. Luminous Flux (350 mA)	Typ. Efficacy (@350 mA)	Viewing angle	Max. Current
2700 K–4500 K	93 lm @3000 K	90 lm/W @3000 K	80° and 150°	800 mA
2400 K–5000 K	113 lm @3000 K	109 lm/W @3000 K	80° and 150°	800 mA
3000 K–6500 K	136 lm @5000 K	132 lm/W @5000 K	80° and 150°	800 mA
5000 K–7500 K	144 lm	139 lm/W	80° and 150°	1000 mA
455 nm	585 mW	57 % (Radiant efficacy)	80° and 150°	1000 mA
470 nm	29 lm	27 lm/W	80° and 150°	1000 mA
528 nm	99 lm	88 lm/W	80° and 150°	1000 mA
590 nm	60 lm	76 lm/W	80° and 150°	1000 mA
617 nm	80 lm	104 lm/W	80° and 150°	1000 mA
623 nm	61 lm	80 lm/W	80° and 150°	1000 mA
640 nm	370 mW	50 % (Radiant efficacy)	80° and 150°	1000 mA
730 nm	231 mW	36 % (Radiant efficacy)	80° and 150°	700 mA



# OSLON® Square

The new generation of the well-established OSLON® Square platform offers the same footprint and viewing angle, along with better performance and specs. For example, the key parameters are binned at high temperature, closer to the real application conditions. Luminaire manufacturers and other suppliers can benefit from very stable light output at different temperatures, very low thermal resistance, and improved lifetime in existing designs. Further important benefits are increased maximum junction temperature, increased maximum forward current and increased maximum de-rating limits.







Perfect light choice for modern architecture and interiors



Presenting new attractive lighting opportunities

### Features

- Different luminous flux packages from one package family
- High luminous efficacy at high currents
- Superior corrosion robustness
- Binned at 85 °C
- 135 °C T<sub>j</sub> max.
- Package: SMT ceramic package with silicone resin and silicone lens
- Full CCT range available: 2,400 K–5,000 K (warm and neutral white)
- CRI: min. 80 (typ. 82)
- Viewing angle at 50 % I<sub>v</sub>: 120°
- Lumen maintenance: test results according to IESNA LM-80 available

### Applications

- Professional indoor and outdoor luminaires
- Directional retrofit lamps and fixtures
- Spotlights
- Accent and effect lighting
- Museum lighting
- Shop lighting

### OSLON® Square

Type	Color	CCT	Min. CRI	Typ. Luminous Flux	Binning current @85°C	Typ. Forward Voltage	(Improved) Typ. R <sub>th</sub> JS real	Max. Current	Typ. Efficacy
GW CSSRM1.EC	white	2400 K–5000 K	80	209 lm @3000 K	700 mA	2.85V	3 K/W	1800 mA	105 lm/W @3000 K
GW CSSRM1.PC	white	3000 K–6500 K	70	257 lm @5000 K	700 mA	2.85V	3 K/W	1800 mA	129 lm/W @5000 K
GW CSSRM1.CC	white	2700 K–4000 K	90	193 lm @3000 K	700 mA	2.85V	3 K/W	1800 mA	97 lm/W @3000 K





## SOLERIQ® P

SOLERIQ® P complements OSRAM Opto Semiconductors' innovative SOLERIQ® range. The new LEDs are optimized for cd/W driven applications, easy to use with Chip-on-Board design and no SMT assembly required. A very small light emitting surface (LES) enables easy optics design, sharp shadows and sparkle appearance.



Museum lighting



Shop lighting

### General features

- High luminous flux out of a single LED package
- Higher lm/\$ compared to ceramic based packages
- Uniform illumination without multi shadows due to uniform light emitting surface
- Color consistency within a 3-step MacAdam's ellipse
- Easy-to-use metal core board
- Easy mounting without SMD soldering: gluing, screws or brackets
- Easy to install with off-the-shelf solderless connectors and lenses
- Stable brightness over lifetime
- High energy efficacy

### Features SOLERIQ® P 6

- Package size of 11.8 mm × 11.8 mm × 1.5 mm
- Light emitting surface of (LES): Ø 6.0 mm
- Excellent color reproduction with CRI min. 90 and CRI min. 80
- Full range of color temperatures: 2,700 K–4,000 K (CRI min. 90) and 2,700 K–5,000 K (CRI min. 80)

### SOLERIQ® P 6 Applications

- Spotlights
- Shop lighting
- Museum lighting
- Outdoor lighting

### SOLERIQ® P 6

Type	Color	CCT	Typ. CRI	Typ. Luminous Flux @350 mA & T <sub>s</sub> = 25 °C	Typ. Luminous Flux @350 mA & T <sub>s</sub> = 85 °C	Max. Current	Binning Current	Typ. Forward Voltage	Typ. Efficacy @T <sub>s</sub> = 85 °C
GW MAEGB1.CM	warm white	2700 K	95	740 lm	690 lm	700 mA	350 mA	26V	76 lm/W
GW MAEGB1.CM	warm white	3000 K	95	795 lm	735 lm	700 mA	350 mA	26V	81 lm/W
GW MAEGB1.CM	warm white	3500 K	95	800 lm	740 lm	700 mA	350 mA	26V	81 lm/W
GW MAEGB1.CM	neutral white	4000 K	95	890 lm	820 lm	700 mA	350 mA	26V	90 lm/W
GW MAEGB1.EM	warm white	2700 K	82	880 lm	830 lm	700 mA	350 mA	26V	91 lm/W
GW MAEGB1.EM	warm white	3000 K	82	910 lm	860 lm	700 mA	350 mA	26V	95 lm/W
GW MAEGB1.EM	warm white	3500 K	82	975 lm	920 lm	700 mA	350 mA	26V	101 lm/W
GW MAEGB1.EM	neutral white	4000 K	82	1000 lm	945 lm	700 mA	350 mA	26V	104 lm/W
GW MAEGB1.EM	neutral white	5000 K	82	1025 lm	970 lm	700 mA	350 mA	26V	107 lm/W





SOLERIQ® P 9

Outdoor lighting



Shop lighting

#### Features SOLERIQ® P 9

- Viewing angle at 50 %  $I_v$ : 120°
- Package size of 15 mm × 15 mm × 1.5 mm
- Light emitting surface of (LES): Ø 9.0 mm
- Excellent color reproduction with CRI min. 90 and CRI min. 80
- Full range of color temperatures: 2,700 K–4,000 K (CRI min. 90) and 2,700 K–5,000 K (CRI min. 80)

#### SOLERIQ® P 9 Applications

- Spotlights
- Shop lighting
- Museum lighting

#### SOLERIQ® P 9

Type	Color	CCT	Typ. CRI	Typ. Luminous Flux @700 mA & T <sub>s</sub> = 25 °C	Typ. Luminous Flux @700 mA & T <sub>s</sub> = 85 °C	Max. Current	Binning Current	Typ. Forward Voltage	Typ Efficacy @T <sub>s</sub> = 85 °C
GW MAFJB1.CM	warm white	2700 K	95	1650 lm	1570 lm	1400 mA	700 mA	29V	79 lm/W
GW MAFJB1.CM	warm white	3000 K	95	1830 lm	1730 lm	1400 mA	700 mA	29V	87 lm/W
GW MAFJB1.CM	warm white	3500 K	95	1890 lm	1790 lm	1400 mA	700 mA	29V	90 lm/W
GW MAFJB1.CM	neutral white	4000 K	95	1960 lm	1850 lm	1400 mA	700 mA	29V	93 lm/W
GW MAFJB1.EM	warm white	2700 K	82	2050 lm	1940 lm	1400 mA	700 mA	29V	97 lm/W
GW MAFJB1.EM	warm white	3000 K	82	2150 lm	2040 lm	1400 mA	700 mA	29V	103 lm/W
GW MAFJB1.EM	warm white	3500 K	82	2300 lm	2170 lm	1400 mA	700 mA	29V	109 lm/W
GW MAFJB1.EM	neutral white	4000 K	82	2430 lm	2300 lm	1400 mA	700 mA	29V	116 lm/W
GW MAFJB1.EM	neutral white	5000 K	82	2410 lm	2280 lm	1400 mA	700 mA	29V	115 lm/W





**Features SOLERIQ® P13**

- Package: Chip-on-Board
- Viewing angle at 50 %  $I_v$ : 120°
- Color: 2,700 K–4,000 K (white),  
CRI min. 90
- CRI: min. 90 (typ. 95)
- Color: 2,700 K–5,000 K,  
CRI min. 80
- CRI: min. 80 (typ. 82)

**SOLERIQ® P 13 Applications**

- Spotlights
- Shop lighting
- Museum lighting



Museum lighting



Shop lighting

**SOLERIQ® P 13**

Type	Color	CCT	Typ. CRI	Typ. Luminous Flux @1050 mA & T <sub>s</sub> = 25 °C	Typ. Luminous Flux @1050 mA & T <sub>s</sub> = 85 °C	Max. Current	Binning Current	Typ. Forward Voltage	Typ. Efficacy @T <sub>s</sub> = 85 °C
GW MAGMB1.CM	warm white	2700 K	95	3326 lm	3060 lm	2100 mA	1050 mA	38V	77 lm/W
GW MAGMB1.CM	warm white	3000 K	95	3587 lm	3300 lm	2100 mA	1050 mA	38V	83 lm/W
GW MAGMB1.CM	warm white	3500 K	95	3716 lm	3419 lm	2100 mA	1050 mA	38V	86 lm/W
GW MAGMB1.CM	neutral white	4000 K	95	3893 lm	3581 lm	2100 mA	1050 mA	38V	90 lm/W
GW MAGMB1.EM	warm white	2700 K	82	3974 lm	3760 lm	2100 mA	1050 mA	38V	94 lm/W
GW MAGMB1.EM	warm white	3000 K	82	4228 lm	4000 lm	2100 mA	1050 mA	38V	100 lm/W
GW MAGMB1.EM	warm white	3500 K	82	4317 lm	4084 lm	2100 mA	1050 mA	38V	102 lm/W
GW MAGMB1.EM	neutral white	4000 K	82	4393 lm	4156 lm	2100 mA	1050 mA	38V	104 lm/W
GW MAGMB1.EM	neutral white	5000 K	82	4661 lm	4410 lm	2100 mA	1050 mA	38V	111 lm/W



## SOLERIQ® S

SOLERIQ® S is the latest addition to OSRAM Opto Semiconductors' state-of-the-art easy to use SOLERIQ® LED family. These new innovative LEDs offer Chip-on-Board design, high luminous efficacy and are specifically designed for spotlight applications.



### General Features

- High luminous flux out of the single LED package
- Higher lm/\$ compared to ceramic based packages
- Uniform illumination without multi shadows due to uniform light emitting surface
- Color consistency within 3-step MacAdam
- Easy-to-use metal core board
- Easy mounting without SMD soldering: gluing, screws or holders
- Easy to install with off-the-shelf solderless connectors and lenses
- Stable brightness over lifetime
- Viewing angle at 50 % I<sub>v</sub>: 120°
- High energy efficacy

### Features SOLERIQ® S 13

- Package size of 18.0 mm × 18.0 mm × 1.55 mm
- Light emitting surface of (LES): Ø 13.5 mm
- Excellent color reproduction with CRI min. 90 and CRI min. 80
- Full range of color temperatures: 2,700 K – 6,500 K (white)
- Available in CRI min. 80 and CRI min. 90



Elegant professional indoor lighting

### SOLERIQ® S 13

Type	Color	CCT	Typ. CRI	Typ. Luminous Flux @500 mA & T <sub>s</sub> = 25°C	Typ. Luminous Flux @500 mA & T <sub>s</sub> = 85°C	Max. Current	Binning Current	Typ. Forward Voltage	Typ. Efficacy @T <sub>s</sub> = 85°C
GW KAGHB1.CM	warm white	2700 K	95	1380 lm	1240 lm	720 mA	500 mA	33V	75 lm/W
GW KAGHB1.CM	warm white	3000 K	95	1425 lm	1280 lm	720 mA	500 mA	33V	78 lm/W
GW KAGHB1.CM	neutral white	4000 K	95	1500 lm	1350 lm	720 mA	500 mA	33V	82 lm/W
GW KAGHB1.EM	warm white	2700 K	85	1525 lm	1375 lm	720 mA	500 mA	33V	83 lm/W
GW KAGHB1.EM	warm white	3000 K	85	1575 lm	1420 lm	720 mA	500 mA	33V	86 lm/W
GW KAGHB1.EM	neutral white	4000 K	85	1625 lm	1460 lm	720 mA	500 mA	33V	89 lm/W
GW KAGHB1.EM	neutral white	5000 K	85	1650 lm	1485 lm	720 mA	500 mA	33V	90 lm/W
GW KAGHB1.EM	cool white	5700 K	85	1650 lm	1485 lm	720 mA	500 mA	33V	90 lm/W
GW KAGHB1.EM	cool white	6500 K	85	1650 lm	1485 lm	720 mA	500 mA	33V	90 lm/W





### Features SOLERIQ® S 19

- Package size of 24.0 mm × 24.0 mm × 1.33 mm
- Light emitting surface of (LES): Ø 19.0 mm
- Excellent color reproduction with CRI min. 90 and CRI min. 80
- Full range of color temperatures: 2,700 K – 4,000 K (white)
- Available in CRI min. 80 and CRI min. 90

### Applications

SOLERIQ® S are specifically designed for applications requiring large flux packages out of a compact area. The SOLERIQ® S is perfectly suitable for indoor general lighting and especially spotlight solutions – in commercial application fields, but also for residential use.

- Hospitality
- Restaurants
- Shops
- Homes
- Spotlights
- Ambient lighting
- Indoor general lighting

### SOLERIQ® S 19

Type	Color	CCT	Typ. CRI	Typ. Luminous Flux @700 mA & T <sub>s</sub> = 25 °C	Typ. Luminous Flux @700 mA & T <sub>s</sub> = 85 °C	Max. Current	Binning Current	Typ. Forward Voltage	Typ. Efficacy @T <sub>s</sub> = 85 °C
GW KAHLB1.EM	warm white	2700 K	82	3901 lm	3477 lm	1000 mA	700 mA	46,5V	107 lm/W
GW KAHLB1.EM	warm white	3000 K	82	4067 lm	3625 lm	1000 mA	700 mA	46,5V	111 lm/W
GW KAHLB1.EM	warm white	3500 K	82	4271 lm	3807 lm	1000 mA	700 mA	46,5V	117 lm/W
GW KAHLB1.EM	neutral white	4000 K	82	4431 lm	3950 lm	1000 mA	700 mA	46,5V	121 lm/W
GW KAHLB1.CM	warm white	2700 K	95	3355 lm	2990 lm	1000 mA	700 mA	46,5V	92 lm/W
GW KAHLB1.CM	warm white	3000 K	95	3487 lm	3108 lm	1000 mA	700 mA	46,5V	95 lm/W
GW KAHLB1.CM	warm white	3500 K	95	3673 lm	3274 lm	1000 mA	700 mA	46,5V	101 lm/W
GW KAHLB1.CM	neutral white	4000 K	95	3815 lm	3400 lm	1000 mA	700 mA	46,5V	104 lm/W



Type	Color	CCT	Typ. CRI	Typ. Luminous Flux @500 mA & T <sub>s</sub> = 25 °C	Typ. Luminous Flux @500 mA & T <sub>s</sub> = 85 °C	Max. Current	Binning Current	Typ. Forward Voltage	Typ. Efficacy @T <sub>s</sub> = 85 °C
GW KAHJB1.EM	warm white	2700 K	82	2771 lm	2470 lm	700 mA	500 mA	48V	103 lm/W
GW KAHJB1.EM	warm white	3000 K	82	2880 lm	2567 lm	700 mA	500 mA	48V	107 lm/W
GW KAHJB1.EM	warm white	3500 K	82	3034 lm	2704 lm	700 mA	500 mA	48V	113 lm/W
GW KAHJB1.EM	neutral white	4000 K	82	3142 lm	2800 lm	700 mA	500 mA	48V	117 lm/W
GW KAHJB1.CM	warm white	2700 K	95	2383 lm	2124 lm	700 mA	500 mA	48V	89 lm/W
GW KAHJB1.CM	warm white	3000 K	95	2477 lm	2208 lm	700 mA	500 mA	48V	92 lm/W
GW KAHJB1.CM	warm white	3500 K	95	2609 lm	2325 lm	700 mA	500 mA	48V	97 lm/W
GW KAHJB1.CM	neutral white	4000 K	95	2715 lm	2420 lm	700 mA	500 mA	48V	101 lm/W



Type	Color	CCT	Typ. CRI	Typ. Luminous Flux @1050 mA & T <sub>s</sub> = 25 °C	Typ. Luminous Flux @1050 mA & T <sub>s</sub> = 85 °C	Max. Current	Binning Current	Typ. Forward Voltage	Typ. Efficacy @T <sub>s</sub> = 85 °C
GW KAHNB1.EM	warm white	2700 K	82	5289 lm	4714 lm	1400 mA	1050 mA	44V	102 lm/W
GW KAHNB1.EM	warm white	3000 K	82	5497 lm	4899 lm	1400 mA	1050 mA	44V	106 lm/W
GW KAHNB1.EM	warm white	3500 K	82	5791 lm	5161 lm	1400 mA	1050 mA	44V	112 lm/W
GW KAHNB1.EM	neutral white	4000 K	82	6015 lm	5361 lm	1400 mA	1050 mA	44V	116 lm/W
GW KAHNB1.CM	warm white	2700 K	95	4549 lm	4054 lm	1400 mA	1050 mA	44V	88 lm/W
GW KAHNB1.CM	warm white	3000 K	95	4727 lm	4213 lm	1400 mA	1050 mA	44V	91 lm/W
GW KAHNB1.CM	warm white	3500 K	95	4979 lm	4438 lm	1400 mA	1050 mA	44V	96 lm/W
GW KAHNB1.CM	neutral white	4000 K	95	5172 lm	4610 lm	1400 mA	1050 mA	44V	100 lm/W





# Choose perfection – easily

## ✓ recommendation

	DURIS® E	DURIS® P	DURIS® P 5 color	DURIS® S	OSLON® SSL	OSLON® Square	SOLERIQ® P	SOLERIQ® S
<b>Retrofit</b>								
Omnidirectional	✓	✓		✓	✓	✓		✓
Directional				✓	✓	✓	✓	✓
Linear	✓	✓		✓				
<b>Home</b>								
Pendant lighting			✓	✓	✓	✓		✓
Strip lighting	✓			✓		✓	✓	
Spotlight				✓	✓		✓	✓
<b>Shop</b>								
Shop spot lighting				✓	✓	✓	✓	✓
Shop downlights	✓			✓	✓	✓	✓	✓
Shop linear lighting	✓	✓	✓	✓	✓			
Freezer/display	✓	✓		✓	✓	✓		
Shelf lighting	✓	✓	✓	✓	✓	✓	✓	✓
<b>Office</b>								
Office downlights	✓			✓	✓	✓		✓
Office linear/area lights	✓	✓		✓	✓	✓		
<b>Architainment/Hospitality</b>								
Accent/mood lighting	✓	✓	✓	✓	✓	✓	✓	✓
Cove lighting	✓	✓	✓	✓	✓	✓		✓
Strip lights	✓	✓	✓	✓				
Stage lighting					✓	✓	✓	✓
Wall washer		✓	✓		✓	✓	✓	✓
<b>Page</b>	10	12	13	14	18	20	22	26

## ✓ recommendation

	DURIS® E	DURIS® P	DURIS® P 5 color	DURIS® S	OSLON® SSL	OSLON® Square	SOLERIQ® P	SOLERIQ® S
<b>Industrial</b>								
Portable lighting				✓	✓	✓	✓	✓
Emergency lighting		✓		✓	✓	✓	✓	
High/low bay				✓	✓	✓	✓	✓
Linear lighting	✓	✓	✓	✓	✓			
<b>Outdoor</b>								
Street		✓			✓	✓	✓	
Tunnel		✓			✓	✓	✓	
Parking		✓			✓	✓	✓	
Path lighting		✓			✓	✓	✓	
Effect landscape lighting		✓	✓		✓	✓	✓	
<b>Horticultural</b>		✓	✓		✓	✓		
<b>Page</b>	10	12	13	14	18	20	22	26



# Be informed – completely

Looking for more information and data on our products for LEDs in general lighting or LEDs in general? All you need to know about our state-of-the-art products, modern LED technology and the latest LED trends can be found on our website along with other related links.

## [catalog.osram-os.com](http://catalog.osram-os.com)

Our complete product catalog with all available products

## [www.osram-os.com/solid-state-lighting](http://www.osram-os.com/solid-state-lighting)

Products and solutions for general lighting/solid state lighting

## [ledlight.osram-os.com](http://ledlight.osram-os.com)

The leading source of LED information, resources, tools, technology & LED lighting solutions for the solid state lighting and general illumination sectors

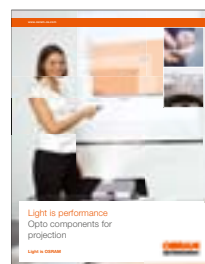
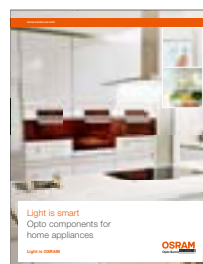
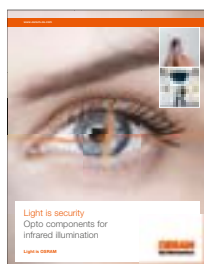
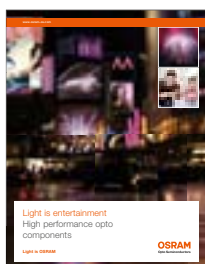
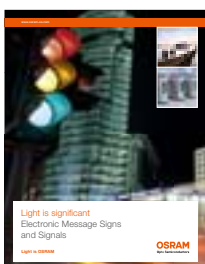
## [www.ledlightforyou.com](http://www.ledlightforyou.com)

The network for LED lighting technology – powered by OSRAM



## 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](http://www.osram-os.com/downloads).



**Solid State Lighting** on the Internet:

[www.osram-os.com](http://www.osram-os.com)

For further **information on the available products** please visit our product catalog at  
<http://catalog.osram-os.com>

**More information about LED in General Lighting:**

LED Light Site  
[www.ledlight.osram-os.com](http://www.ledlight.osram-os.com)

PASS Service Portal  
[www.ledlight.osram-os.com/pass](http://www.ledlight.osram-os.com/pass)

LED Light for you Network  
[www.ledlightforyou.com](http://www.ledlightforyou.com)

**New: Product Selector App**  
Find suitable products for your LED application quickly and easily.

To **download** the app just scan the QR code



**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](mailto: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](mailto: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](mailto:info@osram-os.com)