



Create life
General Lighting LED portfolio

Light is OSRAM





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

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Create life with OSRAM Opto Semiconductors' extensive product portfolio for General Lighting

The vision for future urban living is more than just concrete and glass. It's a comprehensive concept covering vastly different needs which require an advanced technological solution. Because, the bolder the plan, the more the details matter. Like the durability of small parts or ensuring special legal requirements are met.



So when it comes to lighting, choose LED components from a partner with decades of experience and the power to help you accomplish your project. OSRAM Opto Semiconductors' broad portfolio from low- to ultra-high-power LEDs offers a spectrum of infinite possibilities: thanks to our intelligent family platforms, you can mix and match them in endless combinations. At the same time, you can be sure they always fulfill your requirements in terms of outstanding performance and continuous improvement.

To ensure your project runs smoothly, choose from our product families OSCONIQ®, OSLO® and SOLERIQ® for all your professional applications and our DURIS® family specially designed for consumer needs. All families come from new state-of-the-art production facilities and fulfill the strictest government regulations. They are also recognized for their extensive set of IP rights due to our long-standing tradition of cutting-edge innovations. We are at the heart of your application – from lamps to luminaires – and a precious detail in your plan to help shape the future. We have been leading the market for nearly four decades and are here to help you create life. Start something bright.

Definition professional and consumer LEDs

OSRAM Opto Semiconductors offers a broad LED portfolio. To meet the different requirements the components are specially designed for consumer or professional lighting applications. The benefit of the consumer products is the optimized cost-performance ratio, whereas the professional products come with best-in-class reliability and performance.

Different families – unique advantages

OSRAM Opto Semiconductors' family concept is our modern response to the rapid development and special demands of the LED market.

Simply better results with our family concept

This technology platform approach makes it easy to navigate through our comprehensive portfolio. The modularity of the family concept with its different technologies, performance classes and applications offers you maximum demand-based flexibility.

Professional product families

OSCONIQ® family

High performance LEDs from mid- to ultra-high-power. Designed for high reliability and long lifetime for professional indoor and outdoor applications.

- **OSCONIQ® S¹**
Compact professional mid-power LEDs that provide flexibility in forward voltage and luminous flux with high performance and long lifetime
- **OSCONIQ® P**
Professional mid-, high- and ultra-high-power LEDs with long lifetime and extreme high performance providing leading edge technology for professional indoor and outdoor lighting applications

OSLON® family

High-power LEDs with superior performance. Highly efficient and compact. High quality, even in difficult ambient conditions. Preferred LEDs for indoor and outdoor illumination, architecture and street lighting.

- **OSLON® SSL**
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 temperature in the application
- **OSLON® Pure¹**
These LEDs provide lambertian emission at smallest form factor possible. The real chip scale package presents superior quality without bond wires and is the perfect fit for dense clustering and high luminous flux output at smallest size

SOLERIQ® family

Ultra-high-power state-of-the-art CoB LEDs. Simple installation. Ideal for indoor lighting and spotlight applications.

- **SOLERIQ® S**
The new innovative LEDs that offer flexibility in optics design via smaller LES, high luminous efficacy without compromising the product performance

¹Coming up

Consumer product families

DURIS® family

Cost-performance optimized LEDs from mid- to ultra-high-power designed for indoor and outdoor consumer applications.

- **DURIS® E**
Ideal for lighting applications requiring a homogeneous distributed light source, like fluorescent tube replacements or retrofit bulbs
- **DURIS® S**
Mid- to ultra-high-power compact LEDs that provide flexibility in forward voltage and luminous flux even at high temperature distribution. The product portfolio covers the full range of lumen packages for white and colored LEDs
- **DURIS® L**
The perfect choice for all indoor retrofits with a beam angle of 360° to bring modern LED technology into traditional light bulb design
- **DURIS® T**
Customizable filament design with good color rendering up to CRI min. 91 and good heat dissipation with metal based substrate. Package size and lumen packages adjustable according to customers' requirements



Mid-power (0.2–1 W)

Professional



OSCONIQ® S 3030

- 0.2 W (3V) 35–37 lm
- 1.0 W (6V) 137–156 lm
- CRI 70/80/90



OSCONIQ® P 2226 white

- 37–42 lm
- CRI 60
- CRI 80



OSCONIQ® P 2226 color

- Deep blue
- Blue
- True green
- Yellow
- Red
- Hyper red
- Far red

Consumer



DURIS® S 5 white

- 0.2 W (3V) 25–40 lm
- 1.0 W (6V) 102–129 lm
- CRI 80/90



DURIS® S 5 color (3V)

- Deep blue
- Blue
- True Green
- Amber
- Red
- PC Lime
- PC Yellow
- PC Purple
- Full spectrum



DURIS® S 5 color (6V)

- Deep blue
- PC Green
- PC Amber
- PC Red
- PC Purple
- Full spectrum



DURIS® E 3

- 26–32 lm
- CRI 70
- CRI 80
- CRI 90



DURIS® E 5

- 30–38 lm
- CRI 70
- CRI 80
- CRI 90



DURIS® E 2835

- 0.2 W (3V) 27–30 lm
- 0.5 W (3V) 55–72 lm
- 1.0 W (9V) 102–120 lm
- CRI 80/90

High-power (1 – 4 W)



OSLON® SSL white

- 160 lm
- 80°, 150°
- CRI 70
- CRI 80
- CRI 90



OSLON® SSL color

- 80°, 120°, 150°
- Deep blue
- Blue
- True Green
- Yellow
- Amber
- Red
- Hyper red
- Far red



OSLON® Square white

- 340 lm
- CRI 70
- CRI 80
- CRI 90



OSLON® Square color

- Deep blue
- Hyper red



OSLON® Pure 1010*

- 100 lm
- 120°
- CRI 80
- CRI 90



OSCONIQ® P 3737

- 2.0 W 320 lm
- 3.0 W 490 lm
- CRI 70/80/90



DURIS® L 38

- 80–300 lm
- CRI 80
- CRI 82



DURIS® T 49

- Customizable filament design



CAS¹

DURIS® S 8

- 350–580 lm
- CRI 70
- CRI 80
- CRI 90

*Upcoming product

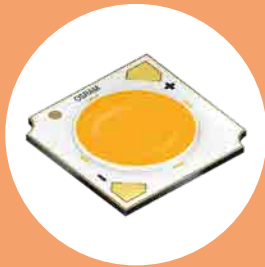
Reference CCT: 5,000 K @ CRI 70, DURIS® L 38: 2,700 K @ CRI 80

Ultra-high-power (> 4 W)



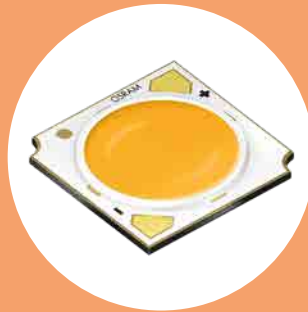
SOLERIQ® S 9

- 700–2,000 lm
- CRI 80/85/90
- Brilliant White
- Brilliant Color



SOLERIQ® S 13

- 710–3,700 lm
- CRI 70/80/85/90
- Brilliant White
- Brilliant Color



SOLERIQ® S 15

- 2,500–4,000 lm
- CRI 80/90



SOLERIQ® S 19

- 2,500–7,900 lm
- CRI 70/80/85/90
- Brilliant White
- Brilliant Color



OSCONIQ® P 7070

- 1,185 lm
- CRI 70/80*



DURIS® S 8

- 500–720 lm
- CRI 70
- CRI 80
- CRI 90



DURIS® S 10

- 850–1,730 lm
- CRI 70
- CRI 80
- CRI 90









CAS¹

¹ Chip ARRAY SMD

*Upcoming product

Reference CCT: 3,000K @ CRI 80, OSCONIQ® P 7070: 5,000 K @ CRI 70

Choose perfection – easily

		DURIS® E	DURIS® S 5 white and colors	DURIS® L 38/ DURIS® T	DURIS® S 8/S 10	OSCONIQ® S 3030 white	OSCONIQ® P 2226 white and colors	OSCONIQ® P 3737/P 7070	OSLON® SSL white and colors	OSLON® Square white and colors	OSLON® Pure	SOLERIQ® S
 Retrofit	Bulb	+++	+++	+++	+++	–	–	–	–	–	–	–
	Directional	+	+++	–	+++	–	–	–	+	+	–	+++
	Linear	+++	+	–	–	+++	–	–	–	–	–	–
	Smart lights	+	–	+	–	+	+++	–	+++	–	–	–
 Home	Spotlight	–	+++	–	+++	+	–	–	+	+	–	+++
	Pendant	+++	+++	–	+++	–	–	+	+	+	–	+
	Strip lighting	+++	+	–	–	–	–	–	+	–	–	–
	Smart lights	+	+++	–	–	–	+++	–	+++	–	–	–
 Shop	Spot	+	+	–	+++	+	–	+	+	+	+++	+++
	Downlight	+	+++	–	+++	+	–	+	–	–	+++	+++
	Linear/display/ freezer/shelf	+++	+	–	–	–	+	–	–	–	–	–
 Office	Downlight	+	+++	–	+++	–	–	–	–	–	+++	+++
	Linear/area/troffer	+++	+	–	–	+++	–	–	–	–	–	–
 Hospitality/ Architainment	Accent lighting	+	+++	–	+++	+++	+++	–	+++	+	–	+++
	Cove/strip/ wall washer	+	+++	–	–	+	+	+	–	–	–	–
	Stage lighting	–	+++	–	–	+++	+	+	–	+	–	+++
 Industry	High/low bay	+	+++	–	+++	+++	–	+++	–	+++	–	+++
	Linear lights	+++	+	–	–	+++	–	–	–	–	–	–
	Emergency lighting	–	+	–	–	+++	–	+++	–	+++	–	–
	Portable lights	–	–	–	+++	+++	–	+++	–	+++	–	+++
 Outdoor	Road lighting	–	+	–	+++	+++	–	+++	+++	+++	–	+++
	Tunnel	–	+	–	–	+++	–	+++	+++	+++	–	+
	Area lighting	–	+++	–	+	+++	+	+++	+++	+++	–	+
	Residential	–	+++	–	+++	+++	–	+++	+++	+++	–	+++
 Horticulture	Top lighting	–	–	–	–	–	+++	–	+++	+++	–	–
	Interlighting	–	+	–	–	–	+++	–	+++	+++	–	–

Guide: +++ (perfect fit), + (OK fit), – (no fit)

*Upcoming products



Premium
Application
Support
Services
Solid State
Lighting

www.osram.com/os/pass

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 (www.osram.com/os/pass), 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

Also see the lighting tools for General Lighting

Safe time and effort to find additional information for our LEDs by using the OSRAM Opto Semiconductors' lighting tools.

- My Luminator
- OSRAM Opto Semiconductors Product Selector
- LED Information Base
- Horticulture Lighting Tool

LED Light for you

LED Light for you (LLFY) is a successful global network brought to you by OSRAM Opto Semiconductors. Its worldwide certified partners will support you with a huge portfolio of accessories such as lenses and reflectors and also customized solutions for your specific application. From optical and electrical experts to specialists in thermal and system 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. LED Light for you has further expanded its support for you. With Underwriters Laboratories, DEKRA and TÜV SÜD, three leading global experts for testing and certification are complementing the existing LLFY expert pool. Furthermore, connectors suitable for all SOLERIQ® devices are now available at the LLFY Product Selector, offering you even more aligned accessories and support based on your selection.

For whom?

LED Light for you serves professionals who want to realize a General Lighting project powered by OSRAM Opto Semiconductors 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

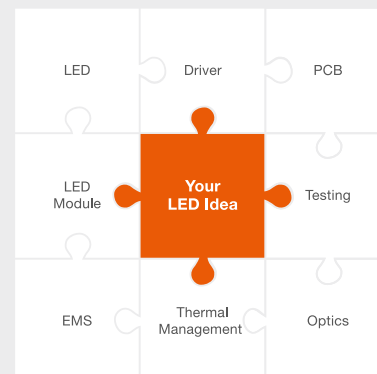


Connector Solutions

Additional Partners

Your LED Idea




Our focus is always your idea and the best support for it. Since different ideas require different approaches, OSRAM Opto Semiconductors brings together all competencies in LED lighting for you – at LED Light for you. According to our one stop philosophy, we cover every stage of the value chain for your lighting project. Whatever you need, the LED Light for you partners turn your idea into reality.



Light quality – 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 colors illuminated with a test light source compared 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.

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

Brilliant White & Brilliant Color



The “Brilliant White” and “Brilliant Color” LEDs are especially designed for shop lighting applications as they feature a high color quality similar to HID lamps.

Brilliant White

The “Brilliant White” range is able to deliver the natural whiteness of white objects. This feature is particularly important for professional lighting solutions in shops or museums, where items on display have to look as attractive and genuine as possible. With “Brilliant White” LEDs, the true whiteness of the illuminated object can be rendered and it will look simply eye-catching and exceptionally white. The CoB LEDs (Chip-on-Board) are also the perfect choice for professional downlights, spotlights and general indoor lighting.

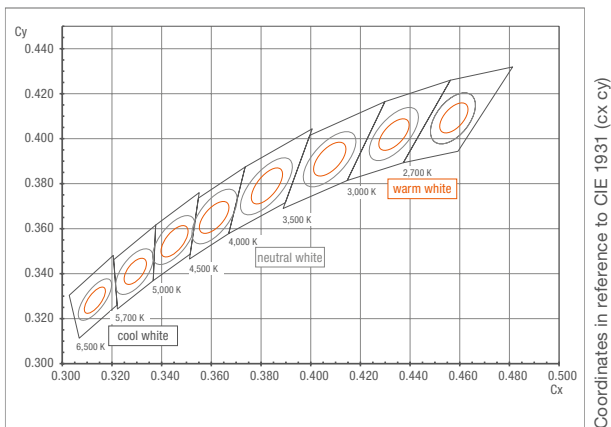
Brilliant Color

The “Brilliant Color” range enables more saturated and distinct colors, better color contrast and clarity, which leads to the best FCI (Feeling of Contrast Index) of typ. 136. Beside rich and saturated colors, “Brilliant Color” LEDs also provide a high quality of white. The color consistency lies within 3-step MacAdam and the increased color gamut, together with the high color rendering index (CRI) of typ. 85 ensure a good rendering of colors. This originally was a key feature of high intensity discharge lamps and, until now, has been barely seen as a characteristic of LEDs. The CoB LEDs are ideal for shop lighting, emphasizing and creating an appealing appearance for commercial products.

White binning

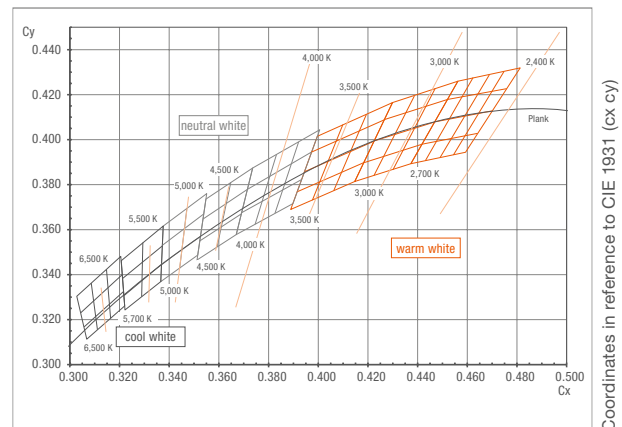
LED components vary from each other due to production process. Their difference can manifest in color, forward voltage, and flux. In the field of General Lighting stable and homogeneous light from products is extremely important. Additionally, the binning of LEDs means they are measured on a variety of factors. For each individual component this is done under the exact same conditions regarding tempera-

ture, voltage, etc. Measurement data is divided into classes, which we call bins, and the LED components are sorted accordingly. For this reason, OSRAM Opto Semiconductors consistently improves its binning system and ensures batches of LEDs delivered have only the slightest deviations in performance from one another. Our most advanced development in setting new standards in white binning is our TEN° binning.



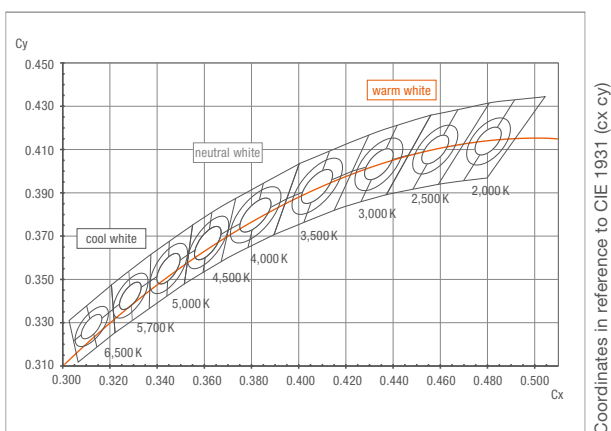
MacAdam binning

For projects with high demand for color consistency, a premium selection corresponding to 3-step MacAdam is available. The maximum color deviation defined by this binning corresponds to what is most widely used in today's lighting applications.



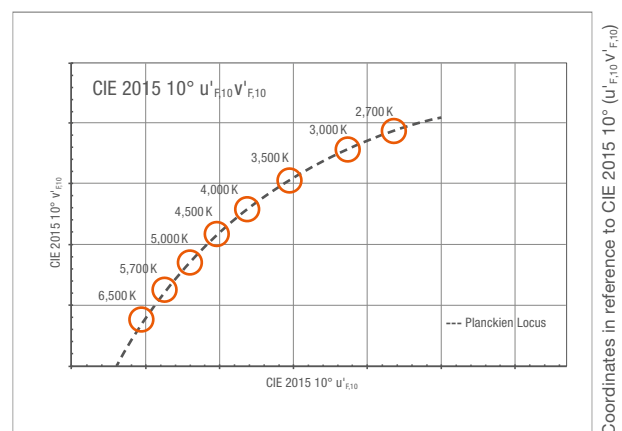
Fine white binning

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 ellipse to ensure color consistency in any lighting application.



Hybrid binning scheme

Combining, harmonizing and standardizing our own Fine Bin Group and MacAdam ellipse, the Hybrid binning scheme subdivides the color temperature into 9 subgroups, being also further expandable due to further extension of CCTs.



TEN° binning

TEN° binning* is using a more accurate 10° color space based on CIE 170-2:2015, using the latest fundamental color matching functions to create a chromaticity diagram with physiological axes. That allows to capture color differences in the measurements and binning, which would be visible only in the application otherwise.



* For availability please contact our sales team



OSCONIQ® S 3030

New professional mid-power LEDs with long lifetime, high performance and best-in-class reliability

OSCONIQ® S 3030 is the new mid-power LED from OSRAM Opto Semiconductors for state-of-the-art professional demands in a wide variety of general lighting applications. With the profound know-how on epitaxy, conversion, chip and package design OSRAM Opto Semiconductors understands and controls all processes inhouse. The professional mid power components are characterized by long lifetime, high performance and best-in-class reliability.



OSCONIQ® S 3030

This professional mid power device provides flexibility in forward voltage and luminous flux with high lifetime even at high temperature. Optimized phosphor, EMC (epoxy molding compound) lead frame material and chip design lift this LED to a new level of performance in terms of efficacy and lifetime.





Features

- Outdoor ready EMC package for superior lm/\$
- High Efficacy enable better energy saving.
- Tight 5lumen bin enhance fixture output accuracy and reduce fixture to fixture output variation.
- Low thermal resistance enables lower system cost
- Full range of color temperatures:
2,700 K – 6,500 K (white)
- Small footprint (3.0 mm × 3.0 mm) for clustering

Applications

- Professional Outdoor lighting
- High bay & low bay industrial lighting
- Professional downlights
- Professional lamps fixtures



OSCONIQ® S 3030

Type	Typ. R _{th,JS et} (K/W)	Available CCT range (K)	CRI min.	Typ. Luminous flux (lm)	Typ. Efficacy (lm/W)	Max. Current (mA)	Typ. Binning current (mA)	Typ. Binning temperature (°C)	Typ. Voltage (V)	Max. Voltage (V)	Binning CCT (K)	Viewing angle (typ.)
GW QSLR31.PM	8,9	3,000 – 6,500	70	155	164	200	150	25	6.3	6.6	4,000	120°
GW QSLR31.EM	9,5	2,700 – 6,500	80	138	146	200	150	25	6.3	6.6	3,000	120°
GW QSLM31.EM*	7,0	2,700 – 6,500	80	36	198	180	65	25	2.8	3.1	4,000	120°

*Upcoming product



OSCONIQ® P 2226

OSCONIQ® P 2226 is a professional mid-power LED providing leading-edge technology for indoor and outdoor lighting applications requiring monochrome colors. The new types create new opportunities and fit perfectly into the existing OSRAM Opto Semiconductors' LED color portfolio.



Effect lighting

Advantages

Combining high performance, compactness and extreme robustness.

OSCONIQ® P 2226 enables superior fixture and lamp designs for a great variety of indoor and outdoor applications. It combines a compact package with high performance and a wide operating range of current and temperature, thus allowing complete new design flexibility. OSCONIQ® P 2226 offers freedom to choose from different colors and white versions with the same small footprint.

Features

- Full mid-power color portfolio
- Professional grade robustness and corrosion resistance
- Compact footprint of 2.6 mm × 2.2 mm
- Wide operating range of current and temperature



Horticulture lighting

Applications

Because of its high corrosion resistance and wide operating range the OSCONIQ® P 2226 is perfectly suitable for professional lighting applications.

- Architectural lighting
- Accent and effect lighting
- Interior lighting: ceiling light, cove lighting, chandeliers, pendants, sconces, linear lights
- Channel letters
- Horticulture lighting for vertical farming

OSCONIQ® P 2226

Type	Color	Dominant wavelength	Typ. Luminous/ Radiant flux [100 mA]
GD DASPA2.14	Deep blue	439–461 nm	166 mW
GB DASPA2.13	Blue	459–476 nm	8 lm
GT DASPA2.13	True green	513–543 nm	30 lm
GY DASPA2.23	Yellow	583–595 nm	16 lm
GR DASPA2.23	Red	612–630 nm	19 lm
GF DASPA2.24	Far red	730 nm	66 mW
GH DASPA2.24	Hyper red	660 nm	115 mW
GW DASPA2.UC	Ultra white	—	42 lm
GW DASPA2.EC	White	—	33 lm



OSCONIQ® P 2226 color



OSCONIQ® P 2226 white

OSCONIQ® P 3737 and P 7070

OSRAM Opto Semiconductors' high- and ultra-high-power LEDs provide versatile opportunities for high-quality and cost-efficient outdoor lighting. In addition, the OSCONIQ® P series provide uncompromising reliability and performance. To achieve this, we have transferred our special automotive experience in combining competitive lead frame technology and high-power chips in the field of high volume products for General Lighting.



Powerful LEDs for street lighting applications

Features

- Superior corrosion robustness and long lifetime
- Best in class second board reliability compared to ceramic packages
- Key parameters binned at 85 °C

Applications

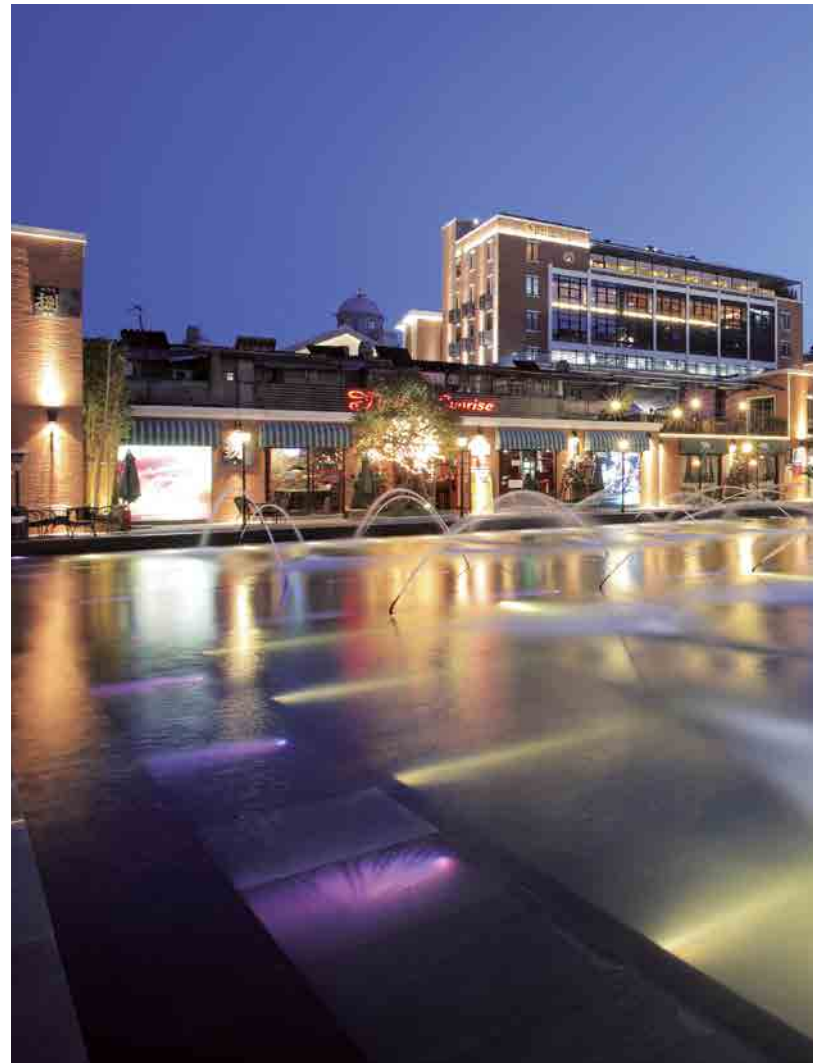
- Professional outdoor lighting (street and tunnel lighting)
- High mast lighting
- Industrial luminaires (high bay, low bay)
- Architecture Lighting
- Stadium Lighting

OSCONIQ® P 3737

- Long lifetime
- Maximum light output at minimized package size
- Enables very compact luminaire designs
- 2 Watt version and 3 Watt version available

OSCONIQ® P 7070

- Enables significant reduction in system costs
- Reconciliation of thermal behavior and best in class second board reliability
- A broad choice of lens for secondary optics is readily available on the market
- Package: 8kV acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 3B)
- Typ. power 7.84 Watt



Professional outdoor lighting in public spaces

OSCONIQ® P

Type	Available CCT range (K)	CRI min.	Typ. Luminous flux (lm)	Typ. Luminous efficacy (lm/W)	Power (W)	Typ. Forward Voltage V_f (V)	Binning CCT (K)	Viewing angle at 50 % I_v	Footprint (mm ²)
OSCONIQ® P 3737									
GW PUSRA1.PM	3,000–6,500	70	318	159	2	2.86	5,000	120°	3.7 × 3.7
GW PUSRA1.EM*	3,000–6,500	80	260	130	2	2.86	3,000	120°	3.7 × 3.7
GW PUSTA1.PM	3,000–6,500	70	490	169	3	2.78	5,000	120°	3.7 × 3.7
GW PUSTA1.EM*	2,700–5,700	80	418	143	3	2.78	3,000	120°	3.7 × 3.7
GW PUSTA1.CM*	5,000–5,700	90	390	134	3	2.78	3,000	120°	3.7 × 3.7
GW PULTA1.CM*	5,000–5,700	90	366	127	3	2.78	3,000	120°	3.7 × 3.7
OSCONIQ® P 7070									
GW P7STA1.PM	3,000–6,500	70	1,186	146	8	11.40	5,000	120°	7.0 × 7.0
GW P7STA1.EM*	2,700–5,700	80	1,032	131	8	11.40	3,000	120°	7.0 × 7.0
GW P7STA2.PM	3,000–6,500	70	1,186	146	8	5.70	5,000	120°	7.0 × 7.0
GW P7STA2.EM*	2,700–5,700	80	1,032	131	8	5.70	3,000	120°	7.0 × 7.0

* upcoming product





Architectural lighting

OSOLON[®] SSL

OSOLON[®] SSL delivers the high efficacy that is necessary for professional indoor and outdoor lighting. The ceramic based package with its superior corrosion robustness addresses perfectly the needs for long lifetime applications.

OSOLON[®] SSL white

The OSOLON[®] SSL white LED portfolio impresses by providing a full CRI and CCT range in order to fit perfectly to numerous applications.

Features

- Compact footprint (3.0 mm × 3.0 mm)
- Available in 80° and 150° viewing angle of choice
- Wide options of CRI and CCT ranges available
- Key parameters are binned at 85 °C
- Very low thermal resistance
- Maximum driving current up to 1.3A

Applications

- Street and tunnel lighting
- Architectural lighting
- Professional spot lights for shop and museums lighting

OSOLON[®] SSL white

Type	Viewing angle	Available CCT range (K)	Typ. Luminous flux (lm)	CRI min.	Binning CCT (K)
GW CSxPM1.PM	80°, 150°	3,000–6,500	144	70	5,000
GW CSxPM1.EM	80°, 150°	2,500–5,000	117	80	3,000
GW CSxPM1.CM	80°, 150°	2,700–4,000	103	90	3,000





High-class horticulture lighting



Striking accent and effect lighting

OSOLON® SSL color

The OSOLON® SSL color portfolio provides a unique portfolio of saturated colors. It is an ideal match to all high-light-quality applications in indoor as well as outdoor environment. The portfolio also includes 450 nm, 660 nm and 730 nm LEDs for professional horticulture lighting applications.

Features

- Compact footprint (3.0 mm × 3.0 mm)
- Broad range of color selection (450 nm – 730 nm)
- Available in 80°, 120° and 150° viewing angle
- Very low thermal resistance
- Maximum driving current up to 1 A

Applications

- Accent and effect lighting
- Architectural lighting
- Horticultural lighting
- Stage lighting



Impressive color range

OSOLON® SSL color

Type	Viewing angle	Color	Wave length (nm)
GD CSxPM1.xx	80°, 120°, 150°	Deep blue	450
GB CSxPM1.xx	80°, 150°	Blue	470
GT CSxPM1.xx	80°, 120°, 150°	True green	528
GY CSxPM1.xx	80°, 150°	Yellow	590
GA CSxPM1.xx	80°, 120°, 150°	Amber	617
GR CSxPM1.xx	80°, 150°	Red	623
GH CSxPM1.xx	80°, 120°, 150°	Hyper red	660
GF CSxPM1.xx	80°, 120°, 150°	Far red	730
GF CSxPM2.xx	80°, 150°	Far red	730



OSLO[®] Square

OSLO[®] Square – the most compact high-power LED with well-known superior robustness, high reliability, long lifetime and very low thermal resistance. The OSLO[®] Square family is designed for professional outdoor and indoor lighting, based on different color rendering. The key parameters are binned at high temperature which is closer to the real application conditions of our customers.



Modern street lighting with high performance and long lifetime



Professional high bay application



Professional product portfolio | High-power: OSOLON® Square

Horticulture top lighting

Features

- Ultra compact footprint (3.0 mm × 3.0 mm) for high-density arrays to simplify circuit designs
- Available with CRI 70, 80, 90
- Wide range of CCT selection
- Binned at 85 °C
- Very low thermal resistance
- Superior robustness and long lifetime
- Extendable range of current driving condition

Applications

- Street lighting
- Tunnel lighting
- Path lighting
- Architectural lighting
- Low bay, high bay
- Professional retail lighting
- Museum lighting
- Spot lights
- Horticulture lighting



Professional retail lighting

OSOLON® Square white

Type	Available CCT range (K)	CRI min.	Typ. Luminous flux (lm) ¹	Typ. Efficacy (lm/W) ¹	Typ. Forward voltage V _f (V) ¹	Design
GW CSSRM1.BM	2,700–4,000	95 (R9 typ. 90)	193 ¹	98 ¹	2.8	1
GW CSSRM2.CM	2,700–6,500	90	228 ¹	117 ¹	2.8	2
GW CSSRM2.EM	2,700–5,000	80	270 ¹	138 ¹	2.8	2
GW CSSRM2.PM	3,000–6,500	70	328 ²	167 ²	2.8	2
GW CSSRM3.PM*	3,000–6,500	70	338 ²	172 ²	2.8	2

* Upcoming product

¹ @ 3,000 K, 85 °C | ² @ 5,000 K, 85 °C



OSOLON® Square color

Type	Viewing angle	Color	Wave length (nm)
GD CSSRM2.14	120°	Deep blue	450
GH CSSRM2.24	120°	Hyper red	660





OSLO[®] Pure

Perfect lambertian emitters with real chip scale package for small luminaire designs

OSRAM Opto Semiconductors' new OSLO[®] Pure LEDs are lambertian emitters at real chip scale package presenting the highest luminance available on the market. Their superior quality without bond wires or need for spacing makes them the perfect fit for dense clustering and high

luminous flux output, seamless and flexible assembly on boards also enables customer specific CoB-replacements. OSLO[®] Pure provides lambertian emission at smallest form factor possible for 1 mm² die, simplifying luminaire design.

OSLO[®] Pure 1010

Maximum emitting at a minimum size

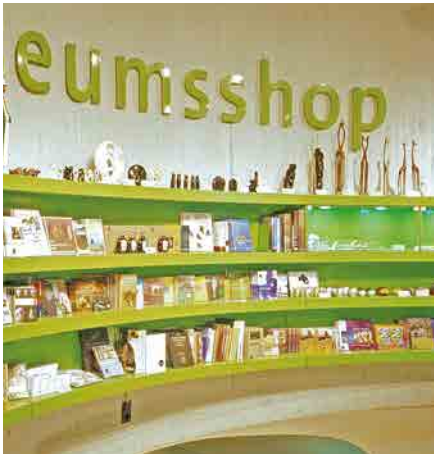
- Top emitting flip chip
- Size:
1.0 mm x 1.0 mm x 0.2 mm
- Phosphor layer at top of chip

Spotlight miniaturization

OSLO[®] Pure enables smallest and narrowest beam angle spot light!

Relative reflector size

Device	Radius (%)	Height (%)
High power lens device	~95	~95
High power flat device	~65	~65
OSLO [®] Pure	~45	~55



Features and Benefits

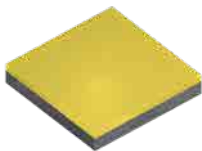
- Real chip scale package (1.0 mm × 1.0 mm) with top emitter perfect fit for high dense clustering, tunable CCT and miniature narrow viewing angle spot light
- Best in class Color over Angle (CoA)
- Available with CRI 80, 90
- Wide range of CCT selection
- Amount and format of OSLO[®] Pure assembly can match all sorts of requirements for luminous flux and efficacy

Applications

- High class retail lighting
- Brand fashion boutiques
- Jewelry stores
- Customized CoB designs
- Small luminaire designs



OSLO[®] Pure Family



Type	Typ. R _{th JS et} (K/W)	Available CCT range (K)	CRI min.	Typ. Luminous flux (lm)	Typ. Efficacy (lm/W)	Max. Current (mA)	Typ. Binning current (mA)	Typ. Binning temperature (°C)	Max. Temperature T _{max} (°C)	Typ. Voltage (V)	Max. Voltage (V)	Binning CCT (K)	Viewing angle (typ.)
GW VJLPE1.EM*	7	2,200–5,000	80	100	102	1,000	350	85	125	2.8	3.1	3,000	120°
GW VJLPE1.CM*	7	1,800–6,500	90	72	73	1,000	350	85	125	2.8	3.1	3,000	120°

*Upcoming product

SOLERIQ® S

SOLERIQ® S is OSRAM Opto Semiconductors' state-of-the-art easy to use Chip-on-Board family specifically designed for professional lighting applications. The “Brilliant White” and “Brilliant Color” versions extend the CoB portfolio by offering superior light quality solutions. “Brilliant White” delivers more natural white appearance while “Brilliant Color” offers natural white plus an enhancement in illuminating colored objects. The new CRI 97 series and the high efficacy products complements the CoB line-up.



SOLERIQ® S 9, S 13, S 15, S 19

Full portfolio, strong performance, superb color quality

SOLERIQ® S is specifically designed for applications requiring large flux packages from a compact light emitting area. With a comprehensive list of accessories ranging from connectors to lenses and reflectors, SOLERIQ® S is easy for lighting manufacturers to use. With a light emitting surface (LES) of Ø 9.8 mm, Ø 13.0 mm, Ø 14.5 mm or Ø 19.0 mm, the SOLERIQ® platform increases the flexibility for various designs, supports LED interchangeability and even enables Zhaga standard designs for LES 9, 13, 15 and 19.

SOLERIQ® S “Brilliant White” and “Brilliant Color”

The SOLERIQ® S “Brilliant White” range offers pure, clean and clear white light, free of greenish or yellowish tints – white just appears whiter. The SOLERIQ® S “Brilliant Color” range offers the same appearance of natural white and also enhances the appearance of colored objects – with more saturated and distinct colors, better color discrimination and clarity, an effect well-known from HID lamps.

SOLERIQ® S – high CRI 97, high efficacy CRI 80 and CRI 90

Premium color rendering offers superior performance for high-end interior applications.



Brilliant White and high CRI 97: Museums and Shops

General features

- Single light source from a compact area offering premium color rendering with superior performance for high-end interior application
- Uniform illumination without multi shadows due to uniform light emitting surface
- Industry leading LM-80 report meeting DLC Premium top tier, producing very stable brightness over lifetime
- Superior over-driving capabilities, extending lumen output performance
- Superior Color over Angle (CoA)
- Easy to install with off-the-shelf solderless connectors and lenses

Applications

- Professional spotlighting, e.g. in shops or museums
- High-end home lighting, e.g. spotlights or downlights
- Outdoor lighting

Features SOLERIQ® S 9

- Package size of 13.5 mm × 13.5 mm × 1.4 mm
- Light emitting surface of (LES): Ø 9.8 mm
- Excellent color reproduction with CRI min. 80, 85, 90, 97 (typ.)
- Full range of color temperatures: 2,700K–6,500K
- Available in various power classes (7 W, 10 W, 14 W)

SOLERIQ® S 9

Type	CRI min.	Available CCT range (K)	Typ. Luminous flux (lm)	Typ. Efficacy (lm/W)	Typ. Binning current (mA)	Max. Current (mA)	Typ. Binning voltage (V)	Typ. R _{th JS el} (K/W)	Binning CCT (K)
GW KAFGB5.EM	80	2,700–4,000	1,032	146	200	460	34.7	1.1	3,000
GW KAFHB5.EM	80	2,700–4,000	1,519	142	300	700	34.7	0.7	3,000
GW KAFJB5.EM	80	2,700–4,000	2,098	150	400	1,050	34.7	0.6	3,000
GW KAFGB3.DM ²	85	3,250	690	98	200	460	34.7	1.1	3,000
GW KAFJB3.DM ²	85	3,250	1,390	98	400	920	34.7	0.5	3,000
GW KAFGB3.CM ¹	90	2,700–4,000	774	110	200	460	34.7	1.1	3,000
GW KAFGB5.CM	90	2,700–4,000	823	117	200	460	34.7	1.1	3,000
GW KAFHB5.CM	90	2,700–4,000	1,239	116	300	700	34.7	0.7	3,000
GW KAFJB3.CM ¹	90	2,700–4,000	1,507	107	400	920	34.7	0.5	3,000
GW KAFJB5.CM	90	2,700–4,000	1,698	121	400	1,050	34.7	0.6	3,000
GW KAFGB5.BM	97 Typ.	2,700–3,500	760	109	200	460	34.7	1.9	3,000
GW KAFHB5.BM	97 Typ.	2,700–3,500	1,102	105	300	690	34.7	1.3	3,000
GW KAFJB5.BM	97 Typ.	2,700–3,500	1,453	104	400	920	34.7	0.5	3,000



¹ Available in "Brilliant White" | ² Available in "Brilliant Color"



Special Colors: Food Stores and Restaurants

Features SOLERIQ® S 13

- Package size of 19.0 mm × 19.0 mm × 1.4 mm
- Light emitting surface of (LES): Ø 13.0 mm, enables Zhaga standard design
- Excellent color reproduction with CRI min. 70, 80, 85, 90, 97 (typ.)
- Full range of color temperatures: 2,700 K–6,500 K
- Available in various power classes (7 W, 10 W, 17 W, 21 W, 24 W)

Features SOLERIQ® S 15

- Package size of 19.0 mm × 19.0 mm × 1.4 mm
- Light emitting surface of (LES): Ø 14.5 mm
- CRI min. 80, 90
- CCT 2,700 K–4,000 K
- Available power classes (17 W, 21 W, 28 W)

Brilliant Color: Supermarkets, Shops, High-end Retail

Features SOLERIQ® S 19

- Package size of 24.0 mm × 24.0 mm × 1.4 mm
- Light emitting surface of (LES): Ø 19.0 mm, enables Zhaga standard design
- Excellent color reproduction with CRI min. 70, 80, 85, 90
- Full range of color temperatures: 2,700 K–6,500 K
- Available in various power classes (24 W, 38 W, 53 W)

SOLERIQ® S 13

Type	CRI min.	Available CCT range (K)	Typ. Luminous flux (lm)	Typ. Efficacy (lm/W)	Typ. Binning current (mA)	Max. Current (mA)	Typ. Binning voltage (V)	Typ. R _{th JS el} (K/W)	Binning CCT (K)
GW KAGLB3.PM	70	4,000–6,500	3,342	160	600	1,380	34.7	0.4	5,000
GW KAGMB3.PM ²	70	4,000–6,500	3,548	145	700	1,610	34.7	0.3	5,000
GW KAGHB3.EM	80	2,700–6,500	1,482	141	300	690	34.7	0.9	3,000
GW KAGJB3.EM	80	2,700–6,500	2,496	143	500	1,150	34.7	0.5	3,000
GW KAGLB3.EM	80	2,700–6,500	3,200	137	600	1,380	34.7	0.4	3,000
GW KAGMB3.EM	80	2,700–6,500	3,425	139	700	1,610	34.7	0.3	3,000
GW KAGJB3.DM ²	85	3,250	1,661	96	500	1,150	34.7	0.5	3,000
GW KAGLB3.DM ²	85	3,250	2,019	98	600	1,380	34.7	0.4	3,000
GW KAGMB3.DM ²	85	3,250	2,188	91	700	1,610	34.7	0.3	3,000
GW KAGHB3.CM	90	2,700–4,000	1,236	117	300	690	34.7	0.9	3,000
GW KAGJB3.CM ¹	90	2,700–4,000	2,021	113	500	1,150	34.7	0.5	3,000
GW KAGLB3.CM ¹	90	2,700–4,000	2,271	108	600	1,380	34.7	0.4	3,000
GW KAGMB3.CM ¹	90	2,700–4,000	2,613	100	700	1,610	34.7	0.3	3,000
GW KAGJB5.BM	97 Typ.	2,700–3,500	1,840	106	500	1,150	34.7	0.5	3,000
GW KAGLB5.BM	97 Typ.	2,700–3,500	2,245	108	600	1,380	34.7	0.4	3,000
GW KAGMB5.BM	97 Typ.	2,700–3,500	2,593	107	700	1,610	34.7	0.4	3,000



¹ Available in "Brilliant White" | ² Available in "Brilliant Color"


SOLERIQ® S 15

Type	CRI min.	Available CCT range (K)	Typ. Luminous flux (lm)	Typ. Efficacy (lm/W)	Typ. Binning current (mA)	Max. Current (mA)	Typ. Binning voltage (V)	Typ. $R_{th JS el}$ (K/W)	Binning CCT (K)
GW KAGJB5.EM	80	2,700–4,000	2,603	153	500	1,470	34.7	0.3	3,000
GW KAGLB5.EM	80	2,700–4,000	3,096	152	600	1,680	34.7	0.3	3,000
GW KAGMB5.EM	80	2,700–4,000	3,997	144	800	2,100	34.7	0.2	3,000
GW KAGJB5.CM	90	2,700–4,000	2,094	123	500	1,470	34.7	0.3	3,000
GW KAGLB5.CM	90	2,700–4,000	2,457	118	600	1,680	34.7	0.3	3,000
GW KAGMB5.CM	90	2,700–4,000	3,308	119	800	2,100	34.7	0.2	3,000


SOLERIQ® S 19

Type	CRI min.	Available CCT range (K)	Typ. Luminous flux (lm)	Typ. Efficacy (lm/W)	Typ. Binning current (mA)	Max. Current (mA)	Typ. Binning voltage (V)	Typ. $R_{th JS el}$ (K/W)	Binning CCT (K)
GW KAHLB2.PM	70	4,000–6,500	4,027	165	700	1,920	34.8	0.3	5,000
GW KAHQB2.PM	70	4,000–6,500	7,973	146	1,500	2,530	36.0	0.3	5,000
GW KAHQB2.EM	80	2,700–5,000	6,863	127	1,500	2,530	36.0	0.3	3,000
GW KAHLB2.DM ²	85	3,250	3,559	93	1,050	1,920	36.4	0.3	3,000
GW KAHLB2.CM ¹	90	2,700–4,000	2,713	111	700	1,920	34.8	0.3	3,000


¹ Available in "Brilliant White" | ² Available in "Brilliant Color"



Small and medium lumen packages with compact footprint

Features DURIS® E 2835

- Footprint of 2.8 mm × 3.5 mm
- Value package with optimum lumen package to retrofit and linear light
- Viewing angle of 120° ideal for homogeneous linear light distribution
- With high value in lumen per dollar

Features DURIS® E 3

- Footprint of 3.0 mm × 1.4 mm
- Compact light source in cost-effective PLCC package
- Stable brightness over lifetime
- Viewing angle of 120° ideal for homogeneous linear light distribution
- Mid efficacy device with industrial standard footprint

Perfect homogeneity and high efficiency
for cost-conscious applications

DURIS® E

DURIS® E, a mid-power LED portfolio from OSRAM Opto Semiconductors, is ideal for efficient and homogeneous lighting applications. An industrial standard footprint with the combination of a small/medium lumen package and a wide beam angle is perfect for uniform light distribution.

Advantages

Benefit from homogeneous illumination and optimized cost-performance ratio

The DURIS® E meets the user requirements for consumer applications. That's why they are the preferred choice for replacing fluorescent tubes or light bulbs in the field of home, shop and office.

Applications in indoor general lighting, e.g. residential, office

- Linear lights including fluorescent replacement lamps
- Area lights including troffer and panel lights
- Signage e.g. channel letters
- Industry applications e.g. white goods
- Retrofit bulbs

Features DURIS® E 5

- Footprint of 5.6 mm × 3.0 mm
- Long lifetime even at high temperatures and high currents (L70/B50 > 50,000 h at $T_j = 120^\circ\text{C}$ and $I_f = 180\text{ mA}$)
- Viewing angle of 120° ideal for homogeneous linear light distribution
- High efficacy device with industrial standard footprint





Modern office application



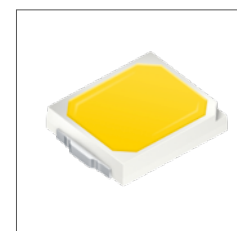
Retrofit bulb application



Area lights

DURIS® E 2835

Type	Typ. $R_{th JS \text{ el}}$ (K/W)	Available CCT range (K)	CRI min.	Typ. Luminous flux (lm)	Typ. Efficacy (lm/W)	Max. Current (mA)	Typ. Binning current (mA)	Typ. Binning temperature (°C)	Typ. Binning voltage (V)	ESD withstand voltage (kV)	Binning CCT (K)
GW JTLMS1.EM	35.0	2,200–6,500	80	27	150	150	60	25	3.00	2.00	5,000
GW JTLMS1.CM	28.0	2,200–6,500	90	23	126	150	60	25	3.00	2.00	4,000
GW JTLRS1.EM	13.0	2,200–6,500	80	118	123	120	100	25	9.60	2.00	2,700
GW JTLRS1.CM	13.0	2,200–6,500	90	102	107	150	100	25	9.50	2.00	2,700
GW JTLPS1.EM (STD)	15.0	2,200–6,500	80	70	153	250	150	25	3.05	2.00	4,000
GW JTLPS1.EM (PLUS)	9.8	2,200–6,500	80	74	162	250	150	25	3.05	2.00	4,000
GW JTLPS1.CM (STD)	16.0	2,200–6,500	90	60	131	250	150	25	3.05	2.00	4,000
GW JTLPS1.CM (PLUS)	17.0	2,200–6,500	90	62	136	250	150	25	3.05	2.00	4,000
GW JTLPS2.EM	15.0	2,200–6,500	80	67	146	250	150	25	3.05	5.00	4,000
GW JTLPS2.CM	16.0	2,200–6,500	90	58	126	250	150	25	3.06	5.00	4,000



DURIS® E 3

Type	Typ. $R_{th JS \text{ el}}$ (K/W)	Available CCT range (K)	CRI min.	Typ. Luminous flux (lm)	Typ. Efficacy (lm/W)	Max. Current (mA)	Typ. Binning current (mA)	Typ. Binning temperature (°C)	Typ. Binning voltage (V)	Binning CCT (K)
GW JCLPS2.EM	24	2,000–6,500	80	31.5	159	150	65	25	3.05	5,000
GW JCLPS2.CM	24	2,700–6,500	90	26.0	131	150	65	25	3.05	4,000



DURIS® E 5

Type	Typ. $R_{th JS \text{ el}}$ (K/W)	Available CCT range (K)	CRI min.	Typ. Luminous flux (lm)	Typ. Efficacy (lm/W)	Max. Current (mA)	Typ. Binning current (mA)	Typ. Binning temperature (°C)	Typ. Binning voltage (V)	Binning CCT (K)
GW JDSTS2.CM (PLUS)	12.0	2,700–6,500	90	30.0	164	180	65	25	2.80	4,000
GW JDSTS2.EM (ECO)	20.0	2,700–6,500	80	34.1	181	180	65	25	2.90	5,000
GW JDSTS2.EM (STD)	16.0	2,700–6,500	80	35.3	191	180	65	25	2.85	5,000
GW JDSTS2.EM (PLUS)	12.0	2,700–6,500	80	36.5	201	180	65	25	2.80	5,000
GW JDSTS3.EM	7.1	2,700–6,500	80	37.0	207	180	65	25	2.75	5,000





Hospitality lighting

DURIS® S 5

The proven, innovative DURIS® S 5 family consists of various white and colored medium, mid-power LEDs with the standard 3030 dimensions and excellent efficiency, offering manufacturers and designers great versatility and flexibility.

DURIS® S 5 white: bright benefits

DURIS® S 5 white provides flexibility in forward voltage and luminous flux with long lifetime even at high temperature. Optimized phosphor, lead frame and chip design lift the LEDs to a new level of performance.

Features

- Various luminous flux packages from one package family
- Small footprint (3.0 mm × 3.0 mm) for clustering
- Longer lifetime than PPA packages
- Compact light source in white SMT package, colored diffused silicone resin
- Viewing angle at 50 % I_v: 120°
- Optimized driver efficiency and costs due to higher voltage option
- Full range of color temperatures: 2,700 K–6,500 K (white)
- Test results according to IESNA LM-80
- Excellent color reproduction with CRI min. 70, 80 and 90
- LM-80 report available

Applications

- Retrofit (omnidirectional, directional, linear)
- Home (pendant lighting, strip lighting, spotlight)
- Shop (spotlight, downlight, linear lighting, freezer/display, shelf lighting)
- Office (downlight, linear/area lighting)
- Architainment and hospitality (accent/mood lighting, cove lighting, strip lighting)
- Industrial (portable lighting, emergency lighting, high/low bay, linear lighting)
- Outdoor (streetlight)



Architainment lighting

DURIS® S 5 white

Type	Typ. R _{th, JS et} (K/W)	Available CCT range (K)	CRI min.	Typ. Luminous flux (lm)	Typ. Efficacy (lm/W)	Max. Current (mA)	Typ. Binning current (mA)	Typ. Binning voltage (V)
GW PSLR31.CM ¹⁾	11	2,700–4,000	90	103	109	200	150	6.30
GW PSLR31.EM ¹⁾	11	2,700–6,500	80	131	138	200	150	6.30
GW PSLR31.PM ¹⁾	11	4,000–6,500	70	144	152	200	150	6.30
GW PSLR32.CM ¹⁾	11	2,700–6,500	90	42	122	400	120	2.85
GW PSLR32.EM ¹⁾	11	2,700–6,500	80	55	160	400	120	2.85
GW PSLM31.CM ¹⁾	20	2,700–4,000	90	26	137	200	65	2.90
GW PSLM31.EM ¹⁾	20	2,700–6,500	80	32	170	200	65	2.90
GW JSLPS1.EM ¹⁾	15	2,700–6,500	80	125	134	200	150	6.20



¹⁾ Binning conditions: 3,000 K, 25 °C



Hospitality lighting

DURIS® S 5 color: striking options

DURIS® S 5 is also available in seven color versions, offering exciting and efficient opportunities for innovative applications and designs. Thanks to OSRAM Opto Semiconductors' innovation color chip UX:3 & TF, all colors achieve state-of-the-art efficacy and brightness. All these colors enable less LED usage and smaller PCB design, and thus cost savings in assembly.



Consumer horticulture lighting



Residential outdoor lighting

Features

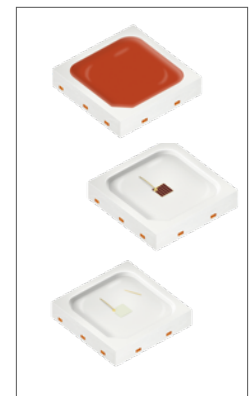
- Wide spectrum color solution
- Complete portfolio with industrial standard footprint (3030) of 3.0 mm × 3.0 mm
- Epoxy based package
- Best in class flux with hot/cold factor (85 °C to 25 °C)

Applications

- Smart lighting
- Architecture lighting
- Hospitality
- Color changing mood lighting designs (cove lighting)
- High color quality tunable white retrofits
- High color quality tunable white LEDfits (RGB solution to achieve tunable white)
- Consumer horticulture lighting

DURIS® S 5 color

Type	Color	Wave-length (nm)	Typ. V _f (V)	Typ. Luminous flux (lm)	Typ. Efficacy (lm/W)	Radiant power (mW)	Radiant Efficacy (%)	Max. Current (mA)
GR PSLR31.13	Red	620	6.25	24.00	26	—	—	200
GR PSLM31.23	Red	623	2.11	17.00	81	—	—	200
GA PSLR31.13	Amber	610	6.25	45.00	48	—	—	200
GA PSLM31.23	Amber	617	2.11	21.50	102	—	—	200
GW PSLM32.UL	PC Lime	—	2.95	58.00	197	—	—	200
GY PSLM31.13	PC Yellow	—	2.96	32.60	110	—	—	200
GT PSLR31.13	True Green	540	6.25	164.00	175	—	—	200
GT PSLM31.13	True Green	528	2.90	35.60	123	—	—	200
GB PSLM31.13	Blue	470	2.85	9.00	32	—	—	200
GD PSLR31.13	Deep Blue	450	6.25	—	—	480.0	51	200
GD PSLM31.13	Deep Blue	455	2.85	—	—	163.0	57	200
GP PSLR31.13	PC Purple	—	6.37	—	—	332.7	35	200
GP PSLM31.14	PC Purple	—	2.86	—	—	124.3	43	200
GW PSLM31.FM ²	Full spectrum	—	2.77	25.56	140	—	—	200
GW PSLR31.FM ²	Full spectrum	—	6.35	110.70	115	—	—	200



2) Binning Conditions: 4,000 K, 25°C



Vintage design with modern LED technology

DURIS® L and DURIS® T

DURIS® L and DURIS® T are the filament versions in the OSRAM Opto Semiconductors' component portfolio for all indoor retrofits with a beam angle of 360°. Our innovative linear and stick LEDs enable luminaire manufacturers and lighting designers to combine the advantages of modern LED technology and the aesthetics of traditional light bulbs.

Advantages

- Realization of traditional solutions with innovative LED technology
- Well proven OSRAM Opto Semiconductors component quality and reliability
- Established pre-delivery controls and measurements to ensure consistent product performance
- Homogeneous light quality due to tight binning
- Simple integration of LED in classic lamp production
- Customizable filament designs - various lumen packages and adjustable package size

DURIS® L

- Package size of 38 mm × 1.8 mm and 38 mm × 2.2 mm (l × Ø)
- Available with various lumen packages of 80 - 250 lm
- Warm white light with from 2,200K–4,000K
- Good heat dissipation due to blue chips and yellow ceramic converter
- Good color rendering with CRI min. 80 and 82
- 3-step MacAdams binned at 85 °C



Traditional light design with latest technology

DURIS® T

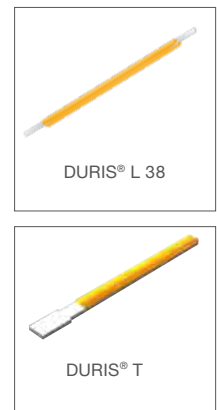
- Good color rendering to CRI min. 90 according to customer's requirements
- Good heat dissipation due to metal based substrate

Applications

- All types of classic omnidirectional "light bulb" luminaires, e.g. chandeliers and open light fixtures
- For a wide variety of hospitality and home applications, e.g. hotel rooms, foyers, restaurants, boutiques and workspaces
- Suitable lamp types: A17-A19, A5-A60, B12, ST64, G25-G40

DURIS® L 38

Typ	Typ. R _{th,JA el} (K/W) ¹	Available CCT range (K)	CRI	Current (mA)			Voltage (V)		Power class (W)		Brightness/flux (lm)	Efficacy (lm/W)
				min.	typ.	max.	typ.	max.	typ.	max.		
GW T3LMF1.EM	26	2,200–4,000	80	10	15	60	64	0.60	0.96	92	153	
GW T3LPF1.EM	26	2,200–2,700	80	10	15	67	70	0.67	1.05	107	159	
GW T3LRF1.EM	26	2,200–4,000	80	10	15	86	90	0.86	1.35	126	146	
GW T3LSF1.EM	26	2,200–4,000	80	10	15	92	96	0.92	1.44	142	154	
GW T3LSF2.EM	18	2,200–2,700	82	30	40	27	30	0.81	1.20	142	175	
GW T3LSF3.EM	18	2,200–2,700	82	15	20	54	57	0.81	1.14	150	185	
GW T3LTF1.EM	18	2,200–2,700	82	15	20	67	70	1.01	1.40	185	183	
GW T3LWF1.EM	15	2,200–2,700	82	30	40	50	53	1.50	2.12	250	167	



¹ Helium condition, 4 filament in A60 bulb

DURIS® S 8

DURIS® S 8 is part of the revolutionary OSRAM Opto Semiconductors' Chip ARRAY SMD (CAS) consumer product line. This multi chip LED family combines the well-known advantages of mid-power SMT package technology with high luminous flux performance of devices. It allows completely new designs or consumer indoor and outdoor applications.

Features

- Footprint: 5.0 mm × 5.0 mm
- Various 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
- Optimized driver efficiency and costs due to higher voltage option
- Full range of color temperatures: 2,700K–6,500K (white)
- Test results according IESNA LM-80 available
- High efficacy
- Outdoor stability

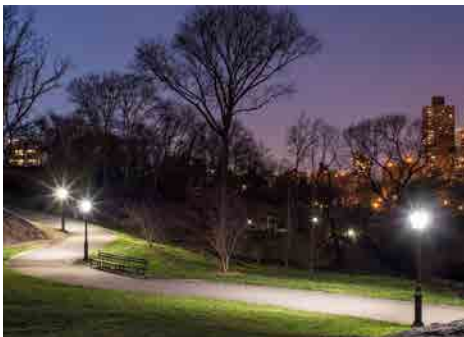
Applications

DURIS® S 8 is a perfect solution for all directional lights and also a perfect replacement for small clusters of mid-power LEDs, providing the advantage of a single spot appearance.

- Directional lights for shops, hospitality and home
- Directional retrofits, e.g. MR16
- Non directional retrofits, e.g. A-lamps
- High luminous flux clusters, e.g. high bay lights
- Residential Streetlight
- Consumer outdoor lighting



Residential indoor lighting



Outdoor and industrial lighting





Pedestrian streetlight



Residential outdoor lighting

DURIS® S 8

Type	Typ. R _{m, JS et} (K/W)	Available CCT range (K)	CRI min.	Typ. Luminous flux (lm)	Typ. Efficacy (lm/W)	Max. Current (mA)	Typ. Binning current (mA)	Typ. Binning temperature (°C)	Typ. Voltage (V)	Binning CCT (K)
GW P9LR31.EM	3.5	2,700–6,500	80	520	140	200	150	25	24.8	3,000
GW P9LR31.PM	3.5	3,000–6,500	70	580	152	200	150	25	25.5	5,000
GW P9LR32.EM	3.5	2,700–6,500	80	520	140	800	600	25	6.2	3,000
GW P9LR32.CM	3.5	2,700–4,000	90	430	116	800	600	25	6.2	3,000
GW P9LR33.CM	3.5	2,700–4,000	90	430	116	200	150	25	24.8	3,000
GW P9LR34.PM	1.5	3,000–5,700	70	200	200	200	45	25	22.2	4,000
GW P9LR35.PM	1.5	3,000–5,700	70	200	200	800	180	25	5.5	4,000
GW P9LT31.EM	2.6	2,700–6,500	80	640	138	200	150	25	31.0	3,000
GW P9LT31.CM	2.6	2,700–4,000	90	520	112	200	150	25	31.0	3,000
GW P9LT31.PM	2.6	3,000–6,500	70	740	159	200	150	25	31.5	5,000
GW P9LT32.EM	2.6	2,700–6,500	80	640	138	1,000	750	25	6.2	3,000
GW P9LT32.CM	2.6	2,700–4,000	90	518	111	1,000	750	25	6.2	3,000
GW P9LT32.PM	2.6	3,000–6,500	70	740	159	1,000	750	25	6.3	5,000



DURIS® S 10

DURIS® S 10 is a member of OSRAM Opto Semiconductors' successful Chip ARRAY SMD (CAS) family, using an array of LEDs to create a single spot light design with an easy-to-assemble SMD component. Combining the proven reliability of all DURIS® family packages with a new level of light output up to 1,730 lumen, DURIS® S 10 opens up great new opportunities for both powerful and cost-effective General Lighting solutions.



Single spot design with a new level of performance



Advantages

A truly strong and really brilliant alternative to CoBs
DURIS® S 10 is available in different lumen packages and CRI versions, with the same footprint and a wide range of color temperatures from 2,700 K to 6,500 K. The new LEDs enable a very flexible, powerful single light source design without multiple shadows, allowing also simple optics design and flexibility to fit various accessories. The combination of small light-emitting surface and high lumen package provides excellent optical control and very narrow angle design. The brilliant result for manufacturers and designers: DURIS® S 10.



High bay application



Retail lighting

Features

- CCTs: 2,700 K, 3,000 K, 3,500 K, 4,000 K, 4,500 K, 5,000 K, 5,700 K, 6,500 K (white)
- Available with CRI 70, 80 and 90
- Available with 15 V, 28 V, 38 V and 44 V
- MacAdams ellipse binning in 3 SDCM and 5 SDCM
- Viewing angle of 120° (FWHM)
- Single spot appearance
- No multiple shadows
- Same optics useable for various lumen replacements
- Footprint of 7.0 mm × 7.0 mm
- Epoxy-based package in high-power class

Applications

- Directional retrofits (PAR38 and MR16 in 9 W and 12 W)
- Omnidirectional retrofits (A60 and A75 in 9 W and 12 W)
- Directional spot luminaires
- Downlights
- Track lights
- High bay
- Streetlight
- Residential outdoor lighting



Flexibility to fit various applications

DURIS® S 10

Type	Typ. R _{th,JS el} (K/W)	Available CCT range (K)	CRI min.	Typ. Luminous flux (lm)	Typ. Efficacy (lm/W)	Max. Current (mA)	Typ. Binning current (mA)	Typ. Binning temperature (°C)	Typ. Voltage (V)	Max. Voltage (V)	Binning CCT (K)	Viewing angle (typ.)
GW P7LP32.EM	1.2	2,700–6,500	80	1,460	128	400	300	25	38.0	40	3,000	120°
GW P7LP32.CM	1.2	2,700–4,000	90	1,120	98	400	300	25	38.0	40	3,000	120°
GW P7LP32.PM	1.2	3,000–6,500	70	1,730	152	400	300	25	38.0	39	5,000	120°
GW P7LM32.EM	1.4	2,700–6,500	80	1,100	131	400	300	25	28.5	30	3,000	120°
GW P7LM32.CM	1.4	2,700–4,000	90	850	101	400	300	25	28.5	30	3,000	120°
GW P7LM32.PM	1.4	3,000–6,500	70	1,350	158	400	300	25	28.5	29	5,000	120°





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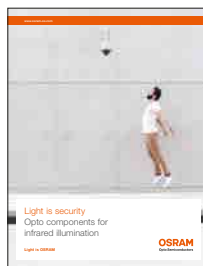
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