



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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# Create life

## General Lighting LED portfolio

Light is OSRAM

**OSRAM**  
Opto Semiconductors



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's 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®, OSLON® 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, offering 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.

### 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® S<sup>1</sup>**  
Compact professional mid-power LEDs that provide flexibility in forward voltage and luminous flux with high performance and long lifetimes
- **OSCONIQ® P**  
Professional mid-, high- and ultra-high-power LEDs with long lifetimes 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

#### 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

### 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



<sup>1</sup> Coming up

## Mid-power (0.2–1 W)

Professional	 <p><b>OSCONIQ® S 1620*</b></p> <ul style="list-style-type: none"> <li>– 28–37 lm</li> <li>– CRI 80</li> <li>– 140°</li> </ul>			 <p><b>OSCONIQ® S 3030*</b></p> <ul style="list-style-type: none"> <li>– 0.2 W (3V) 35–37 lm</li> <li>– 1.0 W (6V) 138–148 lm</li> <li>– CRI 70/80/90</li> </ul>					
	 <p><b>OSCONIQ® P 2226 white<sup>1</sup></b></p> <ul style="list-style-type: none"> <li>– 42 lm</li> <li>– CRI 80</li> </ul>			 <p><b>OSCONIQ® P 2226 color<sup>1</sup></b></p> <ul style="list-style-type: none"> <li>– Deep blue</li> <li>– Blue</li> <li>– True green</li> <li>– Yellow</li> <li>– Red</li> <li>– Hyper red</li> <li>– Far red</li> </ul>					
	 <p><b>DURIS® S 5 white</b></p> <ul style="list-style-type: none"> <li>– 0.2 W (3V) 27–30 lm</li> <li>– 1.0 W (6V) 130–140 lm</li> <li>– CRI 70/80/90</li> </ul>			 <p><b>DURIS® S 5 color (3V)</b></p> <ul style="list-style-type: none"> <li>– Deep blue</li> <li>– Blue</li> <li>– Green</li> <li>– PC Lime</li> <li>– PC Yellow</li> <li>– Amber</li> <li>– Red</li> </ul>			 <p><b>DURIS® S 5 color (6V)</b></p> <ul style="list-style-type: none"> <li>– Deep blue</li> <li>– PC Green</li> <li>– PC Amber</li> <li>– PC Red</li> </ul>		
	 <p><b>DURIS® E 3</b></p> <ul style="list-style-type: none"> <li>– 24–36 lm</li> <li>– CRI 70</li> <li>– CRI 80</li> <li>– CRI 90</li> </ul>			 <p><b>DURIS® E 5</b></p> <ul style="list-style-type: none"> <li>– 27–38 lm</li> <li>– CRI 70</li> <li>– CRI 80</li> <li>– CRI 90</li> </ul>			 <p><b>DURIS® E 2835</b></p> <ul style="list-style-type: none"> <li>– 0.2 W (3V) 25.5–30 lm</li> <li>– 0.5 W (3V) 64–72 lm</li> <li>– 1.0 W (9V) 115–135 lm</li> <li>– CRI 80/90</li> </ul>		

\*Upcoming product

<sup>1</sup>Formerly known as DURIS® P 5

Reference CCT: 5,000 K @ CRI 80

## High-power (1 – 4 W)



### OSLON® SSL white

- Up to 150 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

- Up to 320 lm
- CRI 70
- CRI 80
- CRI 90



### OSLON® Square color

- Deep blue
- Hyper red



### OSCONIQ® P 3737<sup>2</sup>

- 2.0 W up to 480 lm
- 3.0 W up to 1,160 lm
- CRI 70



CAS<sup>5</sup>

### DURIS® S 8

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



### DURIS® L 38<sup>3</sup>

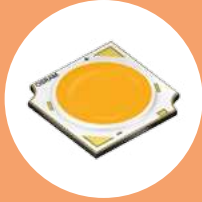
- 80–250 lm
- CRI 80
- CRI 82

<sup>2</sup>Formerly known as DURIS® P 8 and P 9    <sup>3</sup>Formerly known as SOLERIQ® L 38

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

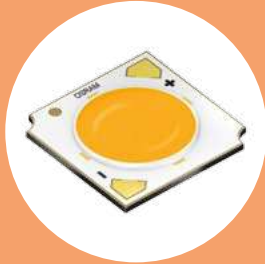


## Ultra-high-power (> 4 W)



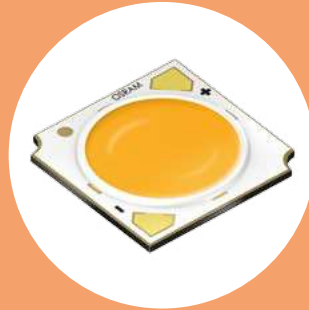
### SOLERIQ® S 9

- 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<sup>4</sup>

- 1,185 lm
- CRI 70



### 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

CAS<sup>5</sup>









\*Upcoming product

<sup>4</sup>Formerly known as DURIS® P 10

<sup>5</sup>Chip ARRAY SMD

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 <sup>1</sup>	DURIS® S 8/S 10	OSCONIQ® P 2226 <sup>2</sup> white and colors	OSCONIQ® S 1620*/ S 3030* white	OSCONIQ® P 3737 <sup>3</sup> /P 7070 <sup>4</sup>	OSLON® SSL white and colors	OSLON® Square white and colors	SOLERIQ® S
 <b>Retrofit</b>	Bulb	+++	+++	+++	+++	-	-	-	-	-	-
	Directional	-	+++	-	+++	-	-	-	+	+	+++
	Linear	+++	+	-	-	-	+++	-	-	-	-
	Smart lights	-	-	-	-	+++	+	-	+++	-	-
 <b>Home</b>	Spotlight	-	+++	-	+++	-	+	-	+	+	+++
	Pendant	+++	+++	-	+++	-	-	+	+	+	+
	Strip lighting	+++	+	-	-	-	-	-	+	-	-
	Smart lights	-	+++	-	-	+++	-	-	+++	-	-
 <b>Shop</b>	Spot	-	+	-	+++	-	+	+	+	+	+++
	Downlight	+	+++	-	+++	-	+	+	-	-	+++
	Linear/display/ freezer/shelf	+++	+	-	-	+	-	-	-	-	-
 <b>Office</b>	Downlight	+	+++	-	+++	-	-	-	-	-	+++
	Linear/area/troffer	+++	+	-	-	-	+++	-	-	-	-
 <b>Hospitality/ Architainment</b>	Accent lighting	-	+++	-	+++	+++	+++	-	+++	+	+++
	Cove/strip/ wall washer	-	+++	-	-	+	+	+	-	-	-
	Stage lighting	-	+++	-	-	+	+++	+	-	+	+++
 <b>Industry</b>	High/Low Bay	+	+++	-	+++	-	+++	+++	-	+++	+++
	Linear lights	+++	+	-	-	-	+++	-	-	-	-
	Emergency lighting	-	+	-	-	-	+++	+++	-	+++	-
	Portable lights	-	-	-	+++	-	+++	+++	-	+++	+++
 <b>Outdoor</b>	Road lighting	-	+	-	+++	-	+++	+++	+++	+++	+++
	Tunnel	-	+	-	-	-	+++	+++	+++	+++	+
	Area lighting	-	+++	-	+	+	+++	+++	+++	+++	+
	Residential	-	+++	-	+++	-	+++	+++	+++	+++	+++
 <b>Horticulture</b>	Top lighting	-	-	-	-	+++	+++	-	+++	+++	-
	Interlighting	-	-	-	-	+++	+++	-	+++	+++	-

**Guide:** +++ (perfect fit), + (OK fit), - (no fit)

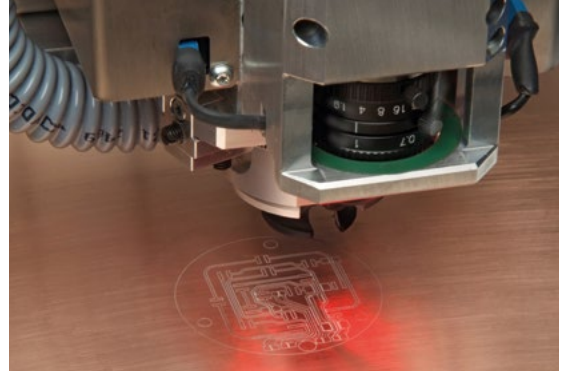
<sup>1</sup> Formerly known as SOLERIQ® L 38

<sup>2</sup> Formerly known as DURIS® P 5

<sup>3</sup> Formerly known as DURIS® P 8 and P 9

<sup>4</sup> Formerly known as DURIS® P 10

\* Upcoming products



[www.osram.com/os/pass](http://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](http://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

Save 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\*

\* Coming soon

# 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 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**



### New: Product Selector App

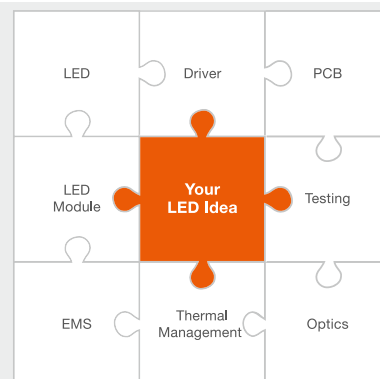
Find suitable products for your LED application quickly and easily.



To download the app just scan the QR code.

## 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.



# 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.

	<b>.Px power champ</b>	<b>.Ex economic champ</b>	<b>.Cx color champ</b>
<b>Product Benefit</b>	The power champ phosphor LEDs fulfill even the highest 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 



## 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.

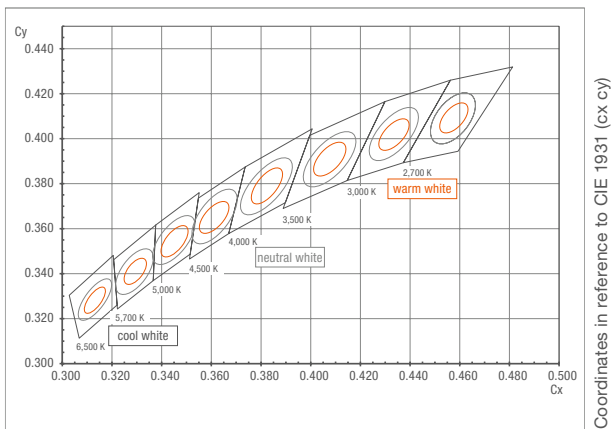
### Brilliant Color

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

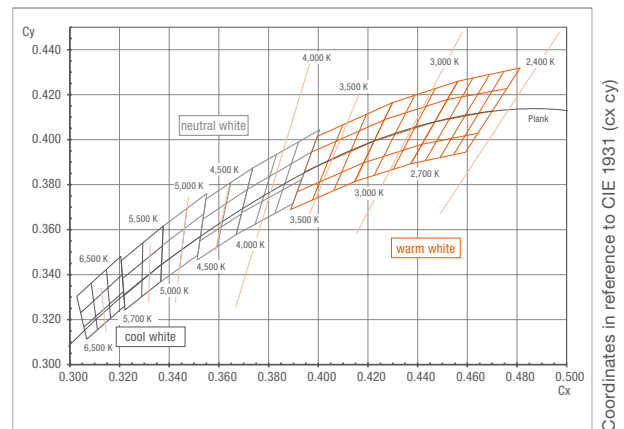
LED components vary from each other due to production process. Their difference can manifest in color, forward voltage, and flux. In the SSL field, stable and homogeneous light from products is extremely important. Additionally, the binning of LEDs means they are measured on a variety of factors. For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



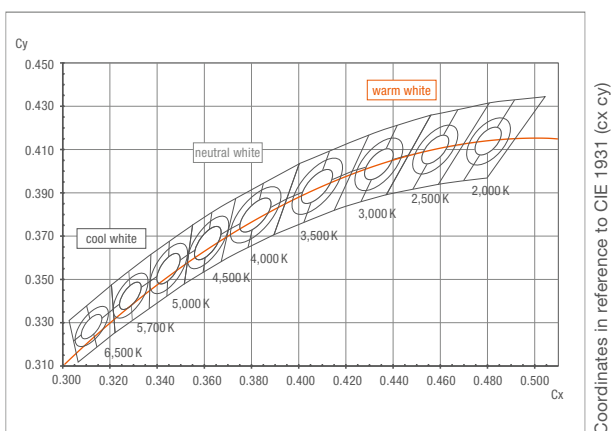
### MacAdam binning

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.



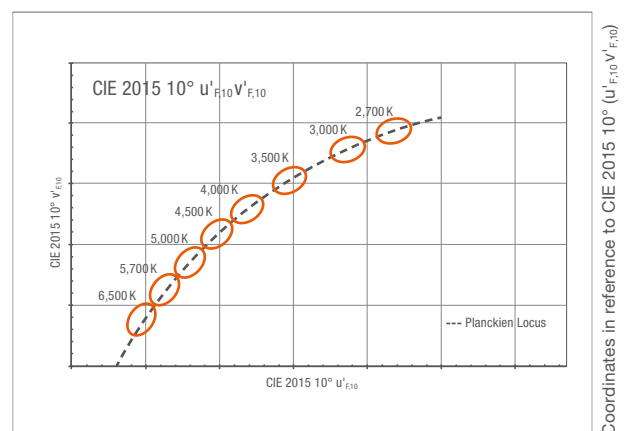
### Fine white binning

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.

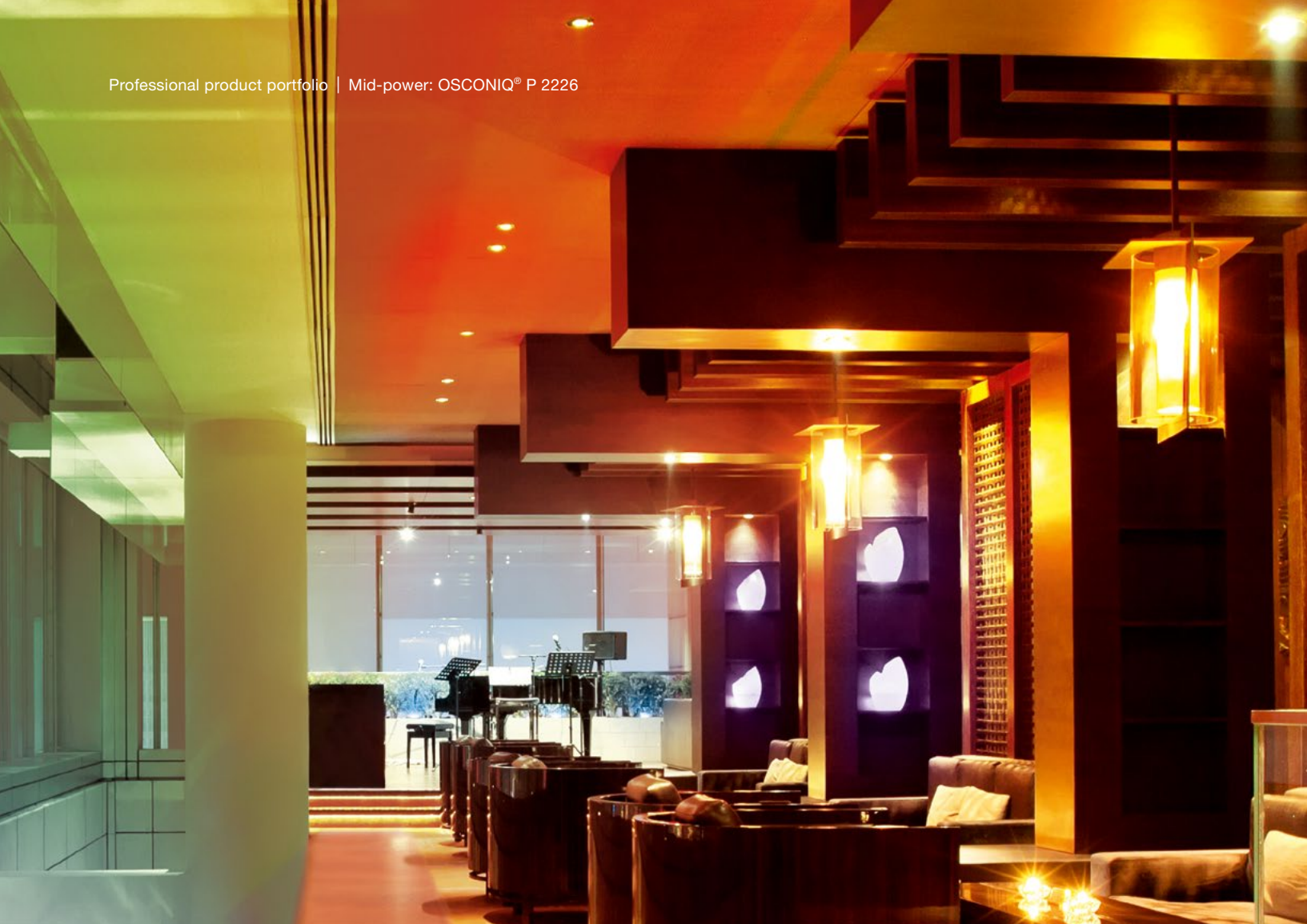


### TEN° binning

TEN° binning\* introduces 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® 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.

### **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.

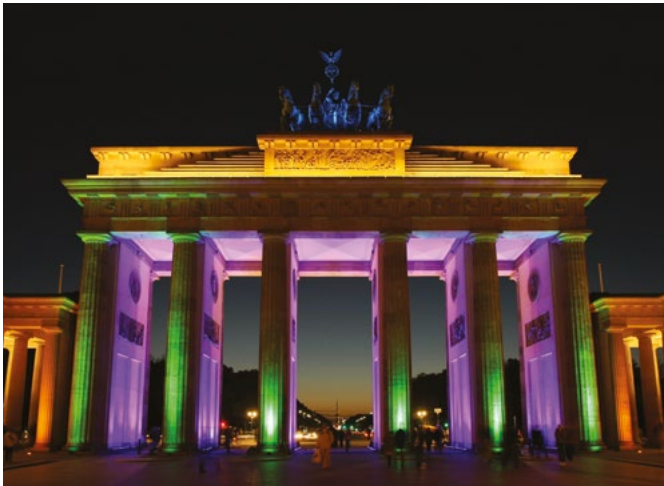
### Features

- 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

### 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



Effect lighting



Horticulture lighting



### 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
GH DASPA2.24	Hyper red	660 nm	115 mW
GF DASPA2.24	Far red	730 nm	66 mW
GW DASPA2.UC	Ultra white	—	42 lm
GW DASPA2.EC	White	—	33 lm

■ Upcoming product



# OSCONIQ® P 3737 and P 7070

Until now, costly ceramic-based LEDs are used for professional exterior lighting applications. With the OSCONIQ® P series OSRAM Opto Semiconductors is now offering epoxy-based packages that generally provide superior lumen/\$. In addition, the new OSCONIQ® P high-power and ultra-high-power LEDs 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)

### OSCONIQ® P 3737

- Long lifetime
- Maximum light output at minimized package size
- Enables very compact luminaire designs
- 2 Watt version (formerly known as DURIS® P 8) and 3 Watt version (formerly known as DURIS® P 9) 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



Professional outdoor lighting in public spaces



### OSCONIQ® P

Type	Color	Available CCT range (K)	CRI min.	Typ. Luminous flux (lm)	Power (W)	Typ. Forward Voltage $V_f$ (V)	Binning temperature (°C)	Binning CCT (K)	Viewing angle at 50 % $I_v$	Footprint (mm <sup>2</sup> )
<b>OSCONIQ® P 3737</b>										
GW PUSRA1.PM	White	3,000–6,500	70	309	2	2.80	85	5,000	120°	3.7 × 3.7
GW PUSTA1.PM	White	3,000–6,500	70	473	3	2.75	85	5,000	120°	3.7 × 3.7
<b>OSCONIQ® P 7070</b>										
GW P7STA1.PM	White	3,000–6,500	70	1,185	8	11.40	85	5,000	120°	7.0 × 7.0
GW P7STA2.PM	White	3,000–6,500	70	1,185	8	5.60	85	5,000	120°	7.0 × 7.0

# OSOLON<sup>®</sup> SSL

OSOLON<sup>®</sup> 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 need for long lifetime applications.



Strong alternatives for professional white lighting

## OSOLON<sup>®</sup> SSL white

The OSOLON<sup>®</sup> SSL white LED portfolio is impressing for providing a full CRI and CCT range in order to fit perfectly in numerous applications.

### Features

- Compact footprint (3 mm × 3 mm)
- Available in 80° and 150° viewing angles
- 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<sup>®</sup> 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



Striking accent and effect lighting



High-class horticulture lighting

**OSOLON<sup>®</sup> SSL color**

The OSOLON<sup>®</sup> SSL color portfolio provides a unique portfolio of saturated colors. It is an ideal match for all high-light-quality applications indoors as well as outdoors.

**Features**

- Best in class horticulture performance
- Compact footprint (3 mm × 3 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**

- Horticultural lighting
- Accent and effect lighting
- Architectural lighting



**OSOLON<sup>®</sup> 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



Impressive color range

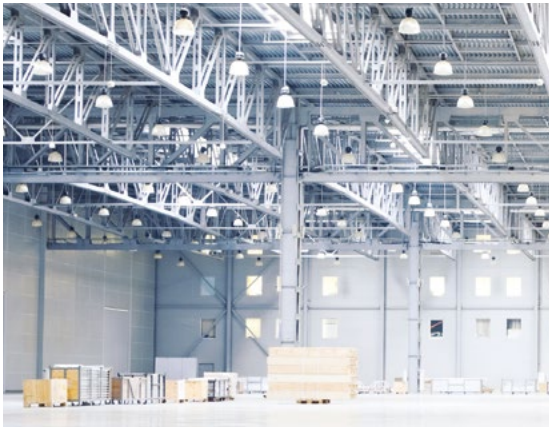
# OSOLON® Square

OSOLON® Square – the most compact high-power LED with well-known superior robustness, high reliability, long lifetime and very low thermal resistance.

The OSOLON® 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 reliability and long lifetime



Professional high bay application



Shop lighting



Perfect light choice for modern architecture and interiors

### Features

- Ultra compact footprint (3 mm × 3 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 shop lights
- Museum lighting
- Spot lights

### OSLO<sup>®</sup> Square

Type	Available CCT range (K)	CRI	Typ. Luminous flux (lm) <sup>1</sup>	Typ. Efficacy (lm/W) <sup>1</sup>	Typ. Forward voltage (V) <sup>1</sup>
GW CSSRM2.PM	3,000–6,500	min. 70	320 <sup>2</sup>	160 <sup>2</sup>	2.8
GW CSSRM2.EM	2,700–5,000	min. 80	252 <sup>3</sup>	129 <sup>3</sup>	2.8
GW CSSRM2.CM	2,700–6,500	min. 90	211 <sup>3</sup>	108 <sup>3</sup>	2.8
GW CSSRM1.BM	2,700–4,000	typ. 95 (R9 typ. 90)	193 <sup>3</sup>	98 <sup>3</sup>	2.8

<sup>1</sup> @ 700 mA, 85 °C | <sup>2</sup> @ 5,000 K, 85 °C | <sup>3</sup> @ 3,000 K, 85 °C



# 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 complements the CoB line-up.





Brilliant Lighting

### 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  $\varnothing$  9.8 mm,  $\varnothing$  13.0 mm,  $\varnothing$  14.5 mm or  $\varnothing$  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 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 – CRI 97

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

#### General features

- High luminous flux from one single LED package
- Higher lumen/\$ 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 to install with off-the-shelf solderless connectors and lenses
- Very stable brightness over lifetime
- Viewing angle at 50 %  $I_v$ : 120°
- Binning temperature of 85°C

#### 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):  $\varnothing$  9.8 mm
- Excellent color reproduction with CRI min. 80, 90, 97 (typ.)
- Full range of color temperatures: 2,700 K–6,500 K
- Available in various power classes (7.0 W, 10.5 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 KAFGB3.EM	80	2,700–6,500	960	138	200	460	34.7	1.1	3,000
GW KAFHB3.EM	80	2,700–6,500	1,395	134	300	690	34.7	0.8	3,000
GW KAFHB5.EM	80	2,700–4,000	1,478	142	300	700	34.7	*	3,000
GW KAFJB3.EM	80	2,700–6,500	1,820	131	400	920	34.7	0.5	3,000
GW KAFJB5.EM	80	2,700–4,000	2,013	145	400	1,050	34.7	*	3,000
GW KAFGB3.DM <sup>2</sup>	85	3,250	677	98	200	460	34.7	1.1	3,000
GW KAFJB3.DM <sup>2</sup>	85	3,250	1,250	90	400	920	34.7	0.5	3,000
GW KAFGB3.CM <sup>1</sup>	90	2,700–4,000	774	110	200	460	34.7	1.0	3,000
GW KAFHB3.CM	90	2,700–4,000	1,035	99	300	690	34.7	0.8	3,000
GW KAFHB5.CM	90	2,700–4,000	1,208	116	300	700	34.7	*	3,000
GW KAFJB3.CM <sup>1</sup>	90	2,700–4,000	1,453	104	400	920	34.7	0.5	3,000
GW KAFJB5.CM	90	2,700–4,000	1,638	118	400	1,050	34.7	*	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



■ Upcoming product \* Data available in Q4 2017 | <sup>1</sup> Available in “Brilliant White” | <sup>2</sup> Available in “Brilliant Color”





### 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, 90, 97 (typ.)
- Full range of color temperatures: 2,700 K–6,500 K
- Available in various power classes (7.0 W, 10.5 W, 17.5 W, 21 W, 24.5 W)

### Features SOLERIQ® S 15

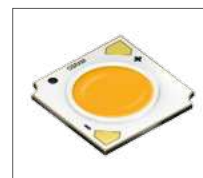
- Package size of 19.0 mm × 19.0 mm × 1.4 mm
- Light emitting surface of (LES): Ø 14.5 mm
- CRI 80, 90
- CCT 2,700 K–4,000 K
- Available power classes 17.5 W, 21 W, 24.5 W

### 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, 90
- Full range of color temperatures: 2,700 K–6,500 K
- Available in various power classes (24.5 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 <sub>th,JS el</sub> (K/W)	Binning CCT (K)
GW KAGLB3.PM <sup>2</sup>	70	4,000–6,500	3,062	148	600	1,380	34.7	0.4	5,000
GW KAGMB3.PM <sup>2</sup>	70	4,000–6,500	3,548	145	700	1,610	34.7	0.3	5,000
GW KAGGB3.EM	80	2,700–6,500	988	142	200	460	34.7	1.1	3,000
GW KAGHB3.EM	80	2,700–6,500	1,468	139	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	2,862	136	600	1,380	34.7	0.4	3,000
GW KAGMB3.EM	80	2,700–6,500	3,221	133	700	1,610	34.7	0.3	3,000
GW KAGJB3.DM <sup>2</sup>	85	3,250	1,661	96	500	1,150	34.7	0.5	3,000
GW KAGLB3.DM <sup>2</sup>	85	3,250	2,019	98	600	1,380	34.7	0.4	3,000
GW KAGMB3.DM <sup>2</sup>	85	3,250	2,188	91	700	1,610	34.7	0.3	3,000
GW KAGGB3.CM	90	2,700–4,000	741	104	200	460	34.7	1.1	3,000
GW KAGHB3.CM <sup>1</sup>	90	2,700–4,000	1,050	101	300	690	34.7	0.9	3,000
GW KAGJB3.CM <sup>1</sup>	90	2,700–4,000	1,895	109	500	1,150	34.7	0.5	3,000
GW KAGLB3.CM <sup>1</sup>	90	2,700–4,000	2,271	108	600	1,380	34.7	0.4	3,000
GW KAGMB3.CM	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	1,845	107	500	1,150	34.7	0.5	3,000
GW KAGLB5.BM	97 Typ.	2,700–3,500	2,271	108	600	1,380	34.7	0.4	3,000
GW KAGMB5.BM	97 Typ.	2,700–3,500	2,613	105	700	1,610	34.7	0.4	3,000



### SOLERIQ® S 15

GW KAGJB5.EM	80	2,700–4,000	2,63	150	500	1,470	34.7	*	3,000
GW KAGLB5.EM	80	2,700–4,000	3,081	148	600	1,680	34.7	*	3,000
GW KAGMB5.EM	80	2,700–4,000	3,997	144	800	2,100	34.7	*	3,000
GW KAGJB5.CM	90	2,700–4,000	2,082	120	500	1,470	34.7	*	3,000
GW KAGLB5.CM	90	2,700–4,000	2,457	118	600	1,680	34.7	*	3,000
GW KAGMB5.CM	90	2,700–4,000	3,221	116	800	2,100	34.7	*	3,000



### SOLERIQ® S 19

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	7,401	137	1,500	2,530	36.0	0.3	5,000
GW KAHQB2.EM	80	2,700–6,500	6,460	120	1,500	2,530	36.0	0.3	3,000
GW KAHLB2.DM <sup>2</sup>	85	3,250	3,559	93	1,050	1,920	36.4	0.3	3,000
GW KAHLB2.CM <sup>1</sup>	90	2,700–4,000	2,713	111	700	1,920	34.8	0.3	3,000



■ Upcoming product \* Data available in Q4 2017 | <sup>1</sup> Available in "Brilliant White" | <sup>2</sup> Available in "Brilliant Color"

