



Light is Nature

LEDs for Horticulture Lighting

Light is OSRAM

OSRAM
Opto Semiconductors

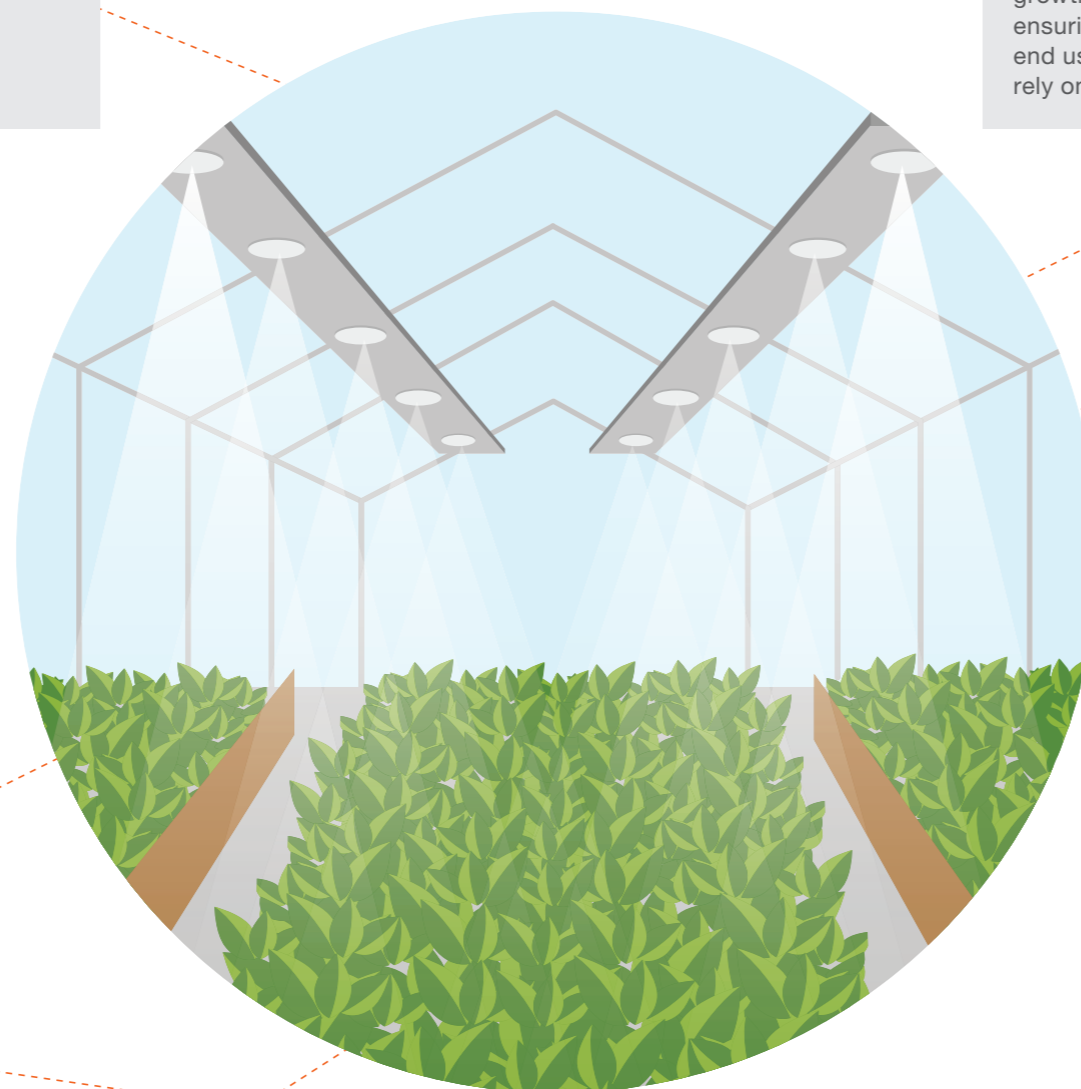
Grow your Life

Leadership and expertise in professional LED horticulture applications and technologies. OSRAM Opto Semiconductors offers a broad horticulture LED portfolio for professional top lighting, inter lighting and vertical farming applications. Our High and Mid Power LED families include 660 nm (hyper red), 450 nm (deep blue) and 730 nm (far red). All important wavelengths in three different radiation angles 80°, 120° and 150° to support the perfect lighting for all types of plants and flowers.

OSLON® Square Hyper Red

The new standard for professional horticulture applications

With the expansion of LED lighting into horticulture, the real test of expertise and know-how lies within offering consistent growth practices and responsible use of energy whilst ensuring the cultivation of high quality crops for growers and end users. Most Total Cost of Ownership (TCO) calculations rely on high efficacy and sustainable long-term light output.



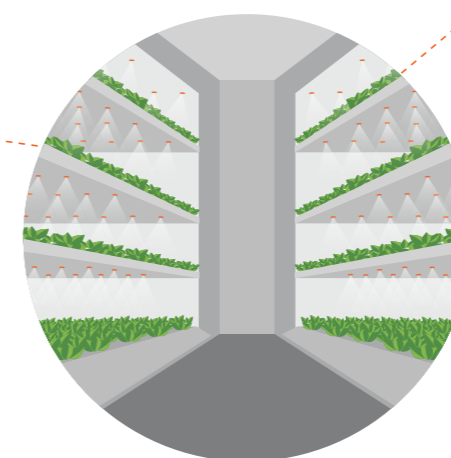
Regardless of weather, season and time of day, plants much like humans, need light to thrive. The right light strategy is key. In its next generation Hyper Red, the OSLON® Square offers a radiant flux of 1035mW at 73% WPE and a photon flux of 5,7μmol/s at an efficacy of 4.0 μmol/J at 700mA. Performance levels which allow for fixture designs which have never been possible before. For applications with higher efficacy requirements the LED provides 78% at a driving current of 350mA. Respectively 80% at 250mA.

Reducing fixture size, reducing shadowing and ultimately lowering the fixture Bill of materials (BOM) cost. The significantly improved efficiency values help customers save energy and lower the overall system cost.

The OSLON® Square. An easy drop-in upgrade for horticultural lighting applications based on previous OSLON® Square Hyper Red generations. Same mechanical and optical characteristics.

Improve nature

To ensure food supply in the future, choose horticulture LED components from our broad portfolio for professional top lighting, inter lighting and vertical farming applications. They enable photosynthesis and can influence the photo-morphogenesis, so you can grow systematically.



OSLON® and OSCONIQ® families:

Professional horticulture applications

Advantages

Market leading performance and robustness with the OSLON® Square Hyper Red 660nm reaching up to 80% wall plug efficiency. The OSLON® SSL and OSCONIQ® product families complete the LED portfolio for professional horticultural lighting. The small 3.0 mm x 3.0 mm footprint allows for very compact clustering. Flexible and efficient designs for professional top lighting, inter lighting and vertical farming applications.

If it is **highest performance, high robustness** and **long lifetime** you seek – the OSLON® Square will guide the way. Industry leading performance based on a 2mm² die LED.

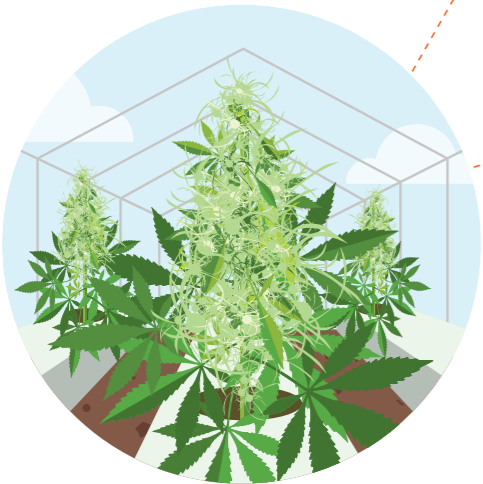
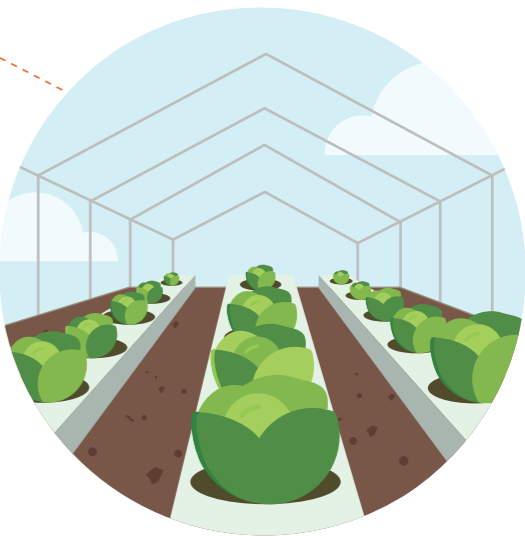
For high performance, high robustness and long lifetime at best value – the OSCONIQ® P and OSLON® SSL series will provide ample design solutions for your horticulture applications using a 1mm² die LED.

Features

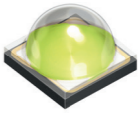
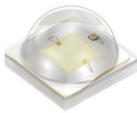
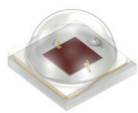
- Deep blue (450 nm) and hyper red (660 nm) to provide the light for the photosynthesis
- Far red (730 nm) to control the plant from germination to vegetative growth and flowering
- White to provide a human friendly working environment
- High energy efficacy in $\mu\text{mol/J}$
- High maximum driving current
- Low thermal resistance
- Best in class flux with hot/cold factor (85 °C to 25 °C)
- Different radiation angles – spot or wide illumination 80°, 120°, 150°
- High reliable packages with superior lifetime and corrosion stability
- Robust even in humid environment
- Additional colors like Blue, True Green, Yellow, Red are also available for special light recipes

Applications

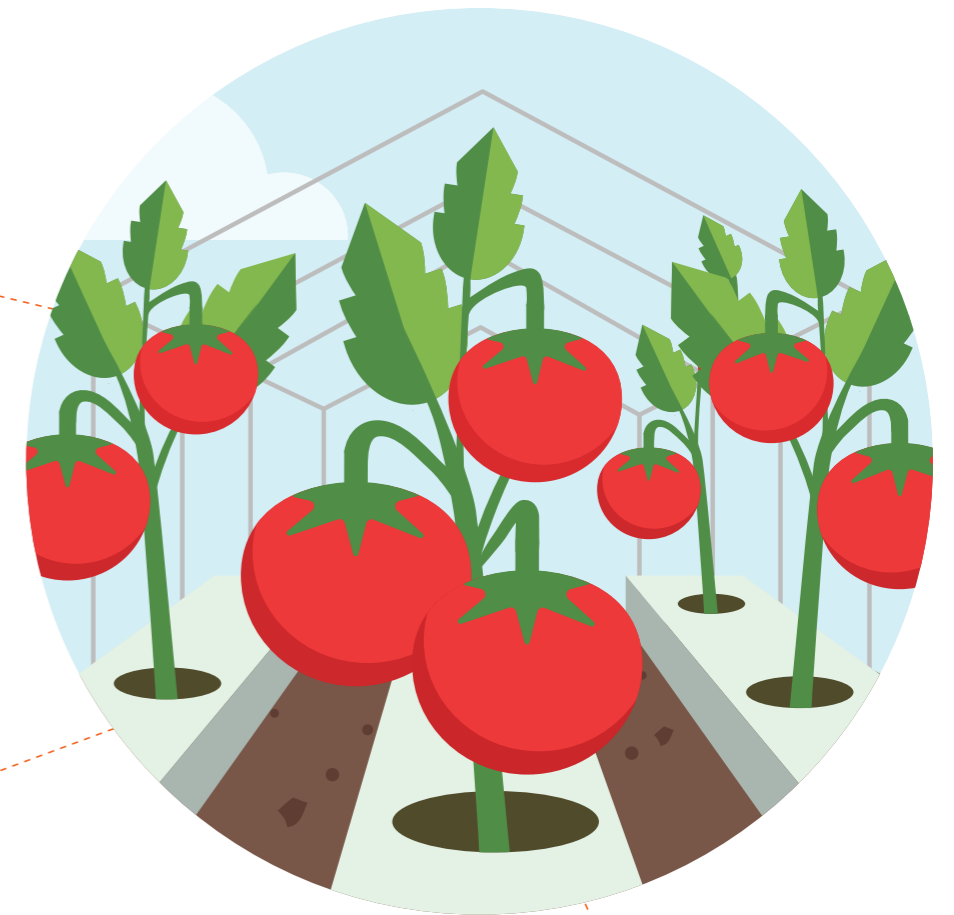
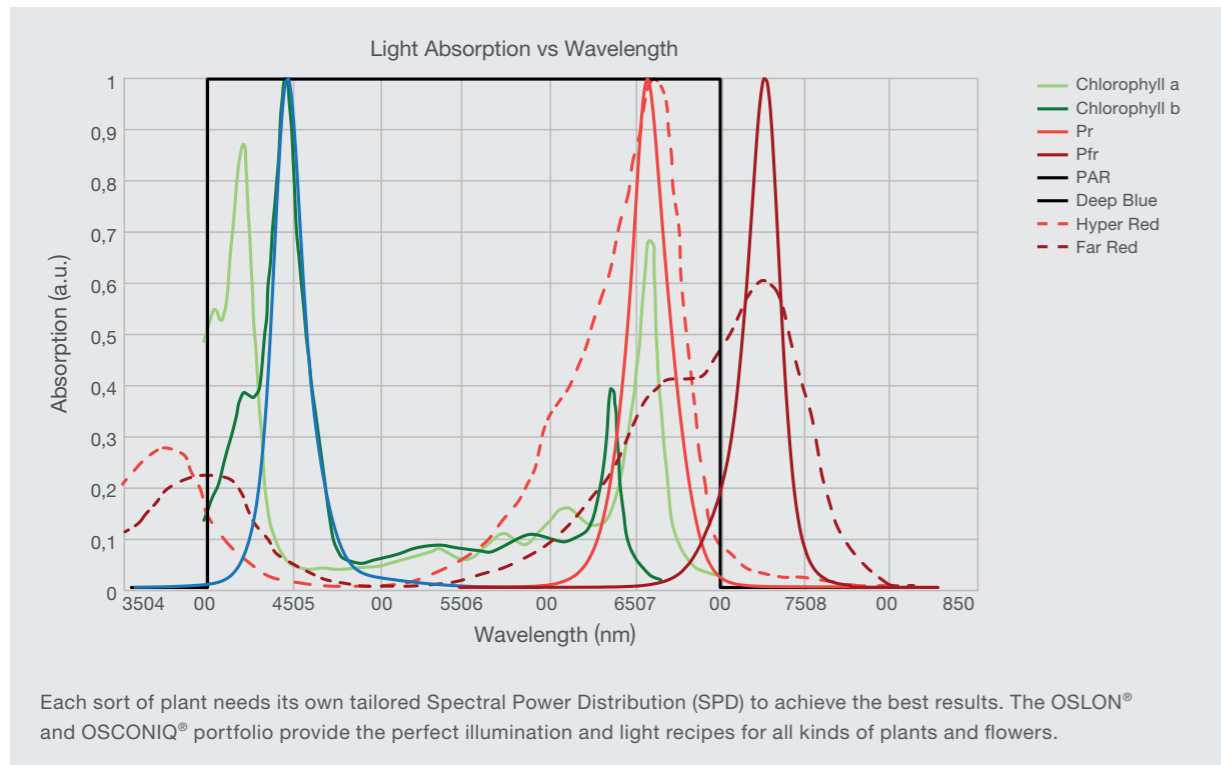
- Top lighting, inter lighting and vertical farming
- Supplemental lighting and cultivation without natural daylight
- Photoperiodic lighting and photo-morphological control
- Urban farming and controlled environment farming
- Medical Cannabis
- Algae grow lights and agriculture lighting
- Agricultural lighting
- Fish & Poultry lighting



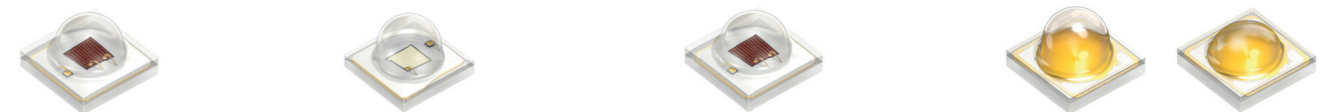
High Power Components (2.0 W)



OSLON® Square 3.0 mm x 3.00 mm								
GH CSSRM4.24 Hyper Red 660 nm			GD CSSRM2.14 Deep Blue 450 nm			GW CSSRM3.HW Horti White		
mW	$\mu\text{mol/s}$	$\mu\text{mol/J}$	mW	$\mu\text{mol/s}$	$\mu\text{mol/J}$	mW	$\mu\text{mol/s}$	$\mu\text{mol/J}$
1035	5.66	4.04	1512	5.67	2.79	1140	4.98	2.41



High Power Components (1.0 W)



OSLON® SSL 3.0 mm x 3.0 mm											
GH CSSPM1.24 Hyper Red			GD CSSPM1.14 Deep Blue			GF CSSPM2.24 Far Red			GW CS8PM1.PM GW CSHPM1.PM White 5000 K, CRI 70		
660 nm			450 nm			730 nm					
mW	μmol/s	μmol/J	mW	μmol/s	μmol/J	mW	μmol/s	μmol/J	lm	μmol/s	μmol/J
475	2.60	3.59	760	2.87	2.88	384	2.3	3.55	152	2.11	2.12

OSLON® SSL is also available in additional colors and CRIs.
(Blue, True Green, Yellow, Red)
(CRI 70, CRI 80, CRI 90 from 2200 K to 6500 K)

High Power Components (1.0 W)



OSCONIQ® P 3030 3.0 mm x 3.00 mm											
GH QSSPA1.24 Hyper Red			GD QSSPA1.14 Deep Blue			GFQ SSPA1.24 Far Red			GW QSSPA1.PM White		
660 nm			450 nm			730nm			5000 K, CRI 70		
mW	μmol/s	μmol/J	mW	μmol/s	μmol/J	mW	μmol/s	μmol/J	lm	μmol/s	μmol/J
467	2.56	3.48	737	2.79	2.8	360	2.16	3.30	160	2.22	2.23

OSCONIQ® P 3030 is also available in additional colors and CRIs.
(Amber, Blue, Red, True Green, Verde, Yellow, Mint)
(CRI 70, CRI 80 from 2200 K to 6500 K)



Horticulture Web Tool

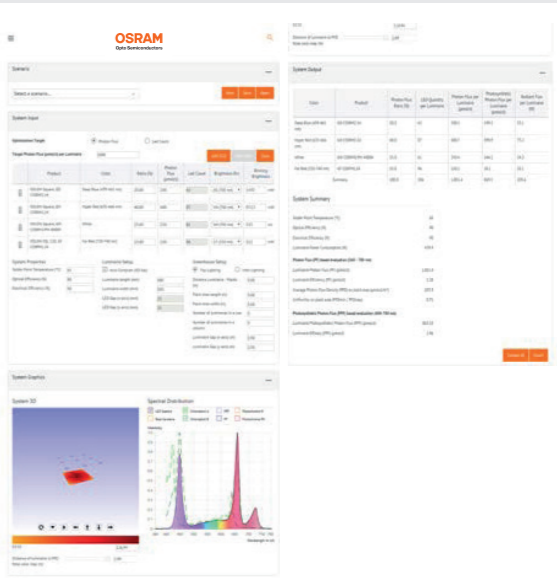
LED Lighting design can be customized to deliver exactly the right light for every growing environment.

Choosing and configuring the right LED recipe can take a lot of complicated calculations. The new OSRAM Opto Semiconductor's Horticulture Web Tool makes the configuration of LEDs easier than ever. You select the target photon and a customized LED blend, then see the results instantly in a 3D heatmap that shows you the homogeneity of the light.

It is visible how much growing light the plants are getting in both photosynthetic and biological photon flux. You can save your solution to work on later or to share with OSRAM's expert engineers.



Horticulture Web Tool on the Internet:
<https://apps.osram-os.com/Horticulture/>



DURIS®:

Consumer horticulture applications

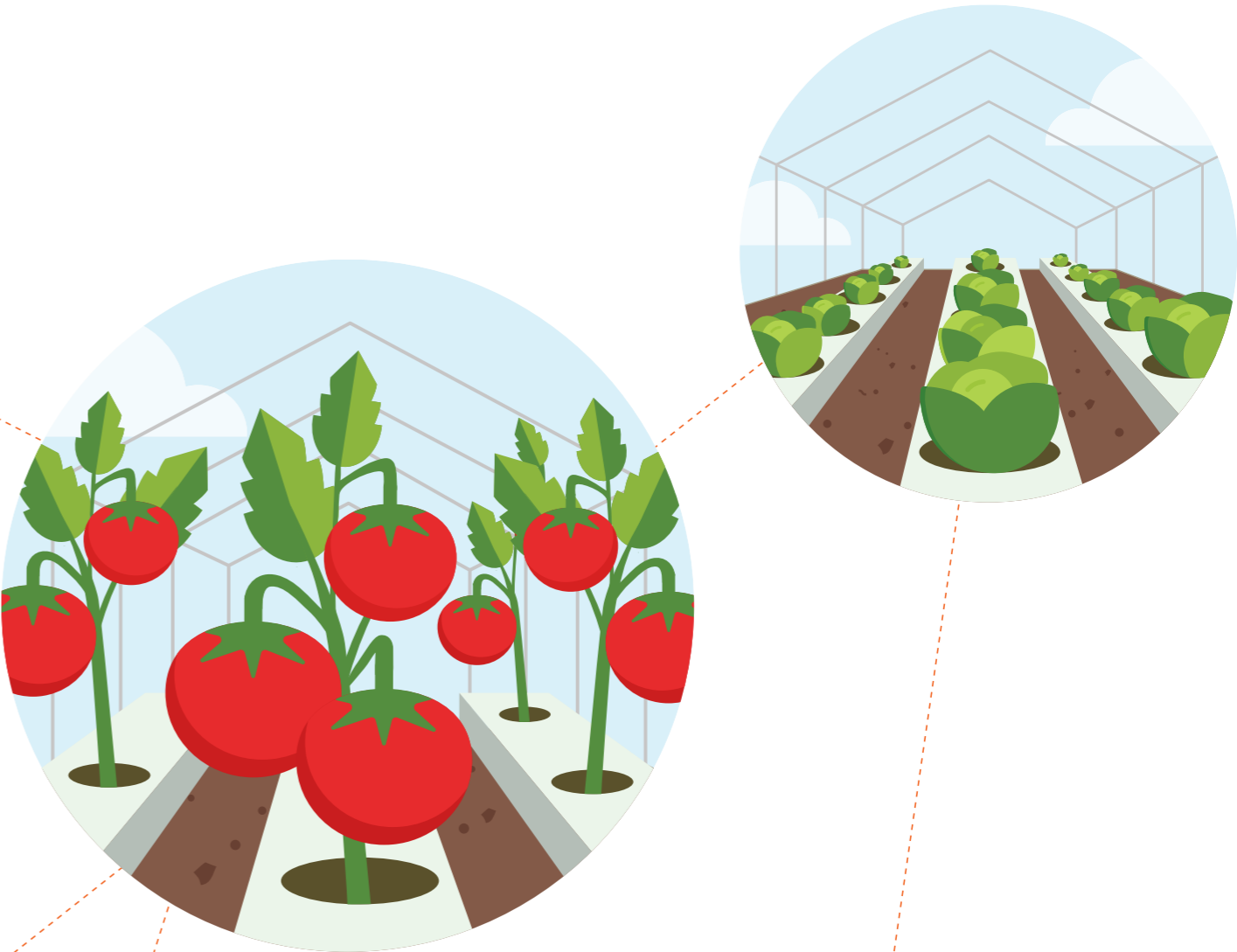
Advantages
DURIS® LEDs are offering exciting opportunities for innovative applications and designs. Thanks to OSRAM Opto Semiconductors' innovative color spectrum with a focus on 450 nm and 660 nm users will be able to grow their own food inhouse with horticultural lighting for home applications. The purple color achieves state-of-the-art efficacy and brightness. The standard footprints of 3.0 mm x 3.0 mm and 2.8 mm x 3.5 mm allow for cost-efficient horticulture designs.

Features

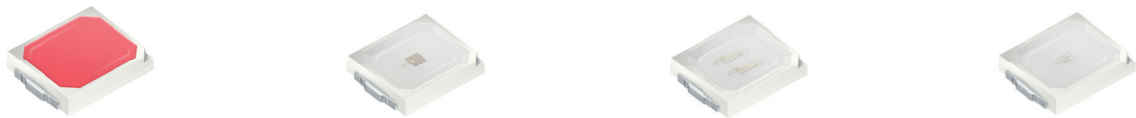
- Wide spectrum color solution
- Complete portfolio with industry standard footprints (3030/2835) 3.0 mm x 3.0 mm and 2.8 mm x 3.5 mm.

Applications

- Consumer horticulture applications
- Horticulture retrofit bulb



Mid Power Components (0.5 W)



DURIS® E 2835 2.8 mm x 3.5 mm											
GP JTLPS1.14 PC Purple			GH JTLPS1.24 Hyper Red			GD JTLPS1.14 Deep Blue			GF JTLPS1.24 Far Red		
450 nm + 650 nm			660 nm			455 nm			730 nm		
mW	μmol/s	μmol/J	mW	μmol/s	μmol/J	mW	μmol/s	μmol/J	lm	μmol/s	μmol/J
203	0.93	2.56	132	0.72	2.21	286	1.07	2.43	103	0.08	0.30

DURIS® E 2835 is also available in additional colors and CRIs. (Blue, True Green, Red) (CRI 80, CRI 90 from 2200 K to 6500 K)

Mid Power Components (0.5 W/ 1.0 W)



DURIS® S 5 3.0 mm x 3.00 mm											
GP PSLR31.13 GP PSLM31.13 PC Purple			GW PSLM32.UL PC Lime White			GW PSLR31.FM GW PSLM31.FM Full Spectrum			GW PSLT33.PM White		
450 nm + 650 nm			570 nm			4000 K / 5000 K			4000 K, CRI 70		
mW	μmol/s	μmol/J	lm	μmol/s	μmol/J	lm	μmol/s	μmol/J	lm	μmol/s	μmol/J
341	1.77	1.89	66	0.70	2.35	113	1.95	2.05	157	2.07	2.25

DURIS® S 5 is also available in additional colors and CRIs. (Deep Blue, Blue, True Green, Amber, Red, Yellow, Mint) (CRI 70, CRI 80, CRI 90 from 2700 K to 6500 K)

Horticulture Lighting on the Internet:
www.osram-os.com/horticulturelighting



For further information on the available products please visit our product catalog at www.osram.com/illumination

LED Light for you Network
www.ledlightforyou.com



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