



Light is nature  
LEDs for horticulture lighting

Light is OSRAM





## Improve nature

To ensure food supply in the future, choose horticulture LED components from our cutting edge OSLON® family offering a spectrum of infinite possibilities. They stimulate photosyntheses and increase in height or width with different wavelengths, so you can breed systematically. All because of our decades of lighting experience. We are here to help you improve nature. Start something bright.

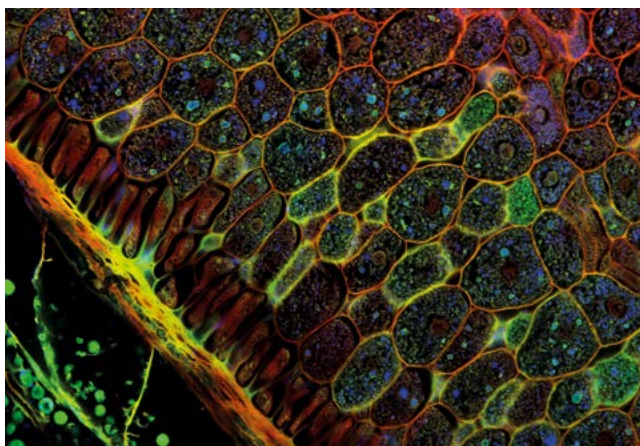
### Advantages

#### One footprint and outstanding performance for flexible and cost-effective design

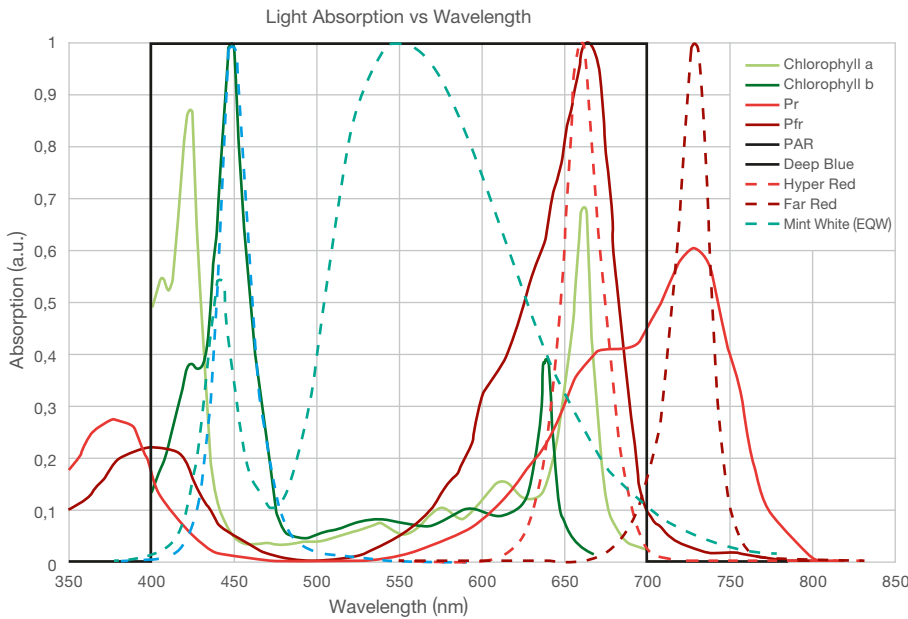
Different ratios between deep blue, hyper red and far red can be achieved simply by varying the number of the respective OSLON® family LEDs, without any change of the PCB or luminaire design. The radiation characteristics save the costs for additional lenses for those applications in which focused light or a wide viewing angle is required. The small footprint of  $3.0 \times 3.0 \text{ mm}^2$  allows a very compact clustering of the LEDs, which enables an easy and efficient design of the optics. The ceramic package can withstand very high temperatures of up to  $T_{\text{max}} = 135^\circ\text{C}$  and makes the thermal design cost-effective and stress-free.

### Features

- 100 % footprint compatible with complete color and radiation angle options
- 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
- Mint White (EQW) to add green content
- Mint White (EQW) to provide a human friendly working environment
- High energy efficacy in  $\mu\text{mol/J}$
- High maximum driving current up to 1 A
- Low thermal resistance of 3.8 – 6 K/W
- Different radiation angles – spot or wide illumination 80°, 120° and 150°
- High reliable ceramic package with superior lifetime and corrosion stability
- Robust even in humid environment



Confocal microscopy of living plant tissue



**Applications**

- Top lighting, inter lighting and multilayer cultivation
- Supplemental lighting and cultivation without natural daylight
- Photoperiodic lighting and photo-morphological control
- Urban farming and controlled environment farming
- Algae grow lights and agriculture lighting

Each sort of plant needs it's own tailored Spectral Power Distribution (SPD) to achieve the best results. Our OSLON® family portfolio provides the perfect illumination for all kind of plants and flowers.

**OSLON® family**

LED Type	Horticulture Lighting Colors						Horticulture White											
LED Type	OSLON® SSL			OSLON® SSL			OSLON® SSL			OSLON® Square			OSLON® Square			OSLON® SSL/Square		
Color	Deep Blue			Hyper Red			Far Red			Deep Blue			Hyper Red			Mint White (EQW)		
Wavelength (nm)	450 nm			660 nm			730 nm			450 nm			660 nm					
Unit	mW	µmol/s	µmol/J	mW	µmol/s	µmol/J	mW	µmol/s	µmol/J	mW	µmol/s	µmol/J	mW	µmol/s	µmol/J	lm	µmol/s	µmol/J
Radiation Angle 80°	GD CS8PM1.14			GH CS8PM1.24			GF CS8PM2.24									LUW CR7P		
Performance	690	2.60	2.48	425	2.32	3.08	270	1.63	2.52							170	2.04	1.98
Radiation Angle 120°	GD CSSPM1.14			GH CSSPM1.24			GF CSSPM1.24			LD CQAR			GH CSSRM2.24*			LUW CQAR		
Performance	690	2.60	2.48	425	2.32	3.08	270	1.63	2.52	1350	5.00	2.43	905	4.97	3.23	345	4.14	1.94
Radiation Angle 150°	GD CSHPM1.14			GH CSHPM1.24			GF CSHPM2.24									LUW CRDP		
Performance	690	2.60	2.48	425	2.32	3.08	270	1.63	2.52							170	2.04	1.98

\* upcoming product

# Overview LED Portfolio

LED Portfolio	Horticulture Lighting Colors					Horticulture White
						
<b>LED Type</b>	OSLON® SSL	OSLON® SSL	OSLON® SSL	OSLON® Square	OSLON® Square	OSLON® SSL/Square
<b>Color</b>	Deep Blue	Hyper Red	Far Red	Deep Blue	Hyper Red	Mint White (EQW)
<b>Wavelength (nm)</b>	450	660	730	450	660	
<b>Radiation Angle 80°</b>	GD CS8PM1.14	GH CS8PM1.24	GF CS8PM2.24			LUW CR7P
<b>Radiation Angle 120°</b>	GD CSSPM1.14	GH CSSPM1.24	GF CSSPM1.24	LD CQAR	GH CSSRM2.24*	LUW CQAR
<b>Radiation Angle 150°</b>	GD CSHPM1.14	GH CSHPM1.24	GF CSHPM2.24			LUW CRDP

\* upcoming product

LED Portfolio	Other Colors				
					
<b>LED Type</b>	OSLON® SSL	OSLON® SSL	OSLON® SSL	OSLON® SSL	OSLON® SSL
<b>Color</b>	Blue	True Green	Yellow	Amber	Red
<b>Wavelength (nm)</b>	470	528	590	617	623
<b>Radiation Angle 80°</b>	GB CS8PM1.13	GT CS8PM1.13	GY CS8PM1.23	GA CS8PM1.23	GR CS8PM1.23
<b>Radiation Angle 120°</b>		GT CSSPM1.13		GA CSSPM1.23	
<b>Radiation Angle 150°</b>	GB CSHPM1.13	GT CSHPM1.13	GY CSHPM1.23	GA CSHPM1.23	GR CSHPM1.23



**OSLON® family on the Internet:**  
[www.osram-os.com/horticulturelighting](http://www.osram-os.com/horticulturelighting)

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

More information about LED in General Lighting:

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



**Asia**  
 OSRAM Opto Semiconductors (China) Co., Ltd.  
 29/F., Harbour Ring Plaza  
 No.18 Xizang (M.) Road  
 Shanghai  
 P.R. China 200001  
 E-mail: [prasia@osram-os.com](mailto:prasia@osram-os.com)

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

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