OSLON® Square Gen 3 PowerStar Colours

IHH-OG01-XXXX-SC221-WIR200.

Product Overview

At the heart of each PowerStar is an OSLON® SSL Square Gen 3 LED. OSLON® SSL Hyper Red LED can be driven up to 1000mA and deep blue LED can be driven up to 2000mA while OSRAM's latest power chip technology remains efficient even at the highest drive currents. A low thermal resistance of 7K/W ensures cool running and a highly efficient product. PowerStars are compact, powerful LED light sources built on aluminium substrates for optimal thermal management. Available with 200mm wires as standard.

Examples of how unique wavelengths can help with plant growth:

Colour Combination	Works For
Deep Blue + Hyper Red	Leafy greens such as lettuce and basil
Deep Blue + Hyper Red + Far Red	Leafy greens such as basil and aids in seed germination, stem elongation and leaf expansion
Deep Blue + Hyper Red + Yellow + Green	Flowering plants where biomass is the goal
True Green	Needed for leafs to get their green colour

Applications

- Horticultural Lighting
- Retail and Entertainment Lighting
- Decorative Lighting
- General Lighting

Technical Features

- OSLON® SSL Square Gen 3 PowerStars contain OSLON® SSL Square Gen 3 LEDs with integral 120 degree silicone resin Lens
- Up to 100,000 Hour lifetime to 70% of original brightness
- Mounting holes using M3 screws allows easy installation
- Size (L x W x H): 20mm x 20mm x 3.85mm
- Available with 200mm connecting wires
- Secondary Lens can be fitted – check options in suitable Lens and Reflector section
- Suitable Heatsink available – check options in Heatsink section
- Matching Power Supplies available - check options in Power Supply section
- PowerStars can be linked together to produce longer chains
- Current range for Hyper Red 100 to 1,000mA
- Current range for Deep Blue 200 to 2,000mA

*This datasheet should be read in conjunction with the relevant OSRAM Opto Semiconductors data on the LED used

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Important Information and Precautions

- The PowerStar's LED, when powered up, is very bright. Thus it is advised that you do not look directly at it. Turn the PowerStar away from you and do not shine into the eyes of others.
- PowerStars will overheat in operation if not attached to a suitable Heatsink. Over heating can cause failure or irreparable damage.
- Do not operate PowerStars with a Power Supply with unlimited current. Connection to constant voltage Power Supplies that are not current limited may cause the PowerStar to consume current above the specified maximum and cause failure or irreparable damage.
- PowerStars, when operated, can reach high temperatures thus there is risk of injury if they are touched.
- DO NOT HOT PLUG ON LED SIDE OF POWER SUPPLY
- DO NOT TOUCH or PUSH on the LED as this can cause irreparable damage.

Product Options

IHS Part Number	Colour	Wavelength*	Typical Wattage at 700mA §	Forward Voltage	Flux at † 700mA	Radiance Angle	Relevant OSRAM LED Data
IHH-OG01-DEBL-SC221-WIR200.	Deep Blue	455nm	1.96W	2.80-3.20V	1300mW	120° (±60°)	GD CSSRM3.14
IHH-OG01-HYRE-SC221-WIR200.	Hyper Red	660nm	1.33W	1.90-2.60V	825mW	120° (±60°)	GH CSSRM3.24

*Due to the special conditions of the manufacturing processes of LEDs, the typical data of technical parameters can only reflect statistical figures and do not necessarily correspond to the actual parameters of each single product which could differ from the typical data.
§ Tolerance +/- 10%
† Measured with 20mS 700mA pulse at 25˚c

Micromoles

IHS Part Number	PPF (ϕ_p) [µmol/s]		PPF/W [µmol/J]		BPF /W($\phi_{p,b}$) [µmol/s]		BPF/W [µmol/J]	
	min.	max.	min.	max.	min.	max.	min.	max.
IHH-OG01-DEBL-SC221-WIR200.	4.54	4.88	2.24	2.40	4.56	4.90	2.25	2.41
IHH-OG01-HYRE-SC221-WIR200.	4.50	4.86	3.11		4.5	4.86	3.11	

Minimum and Maximum Ratings

IHS PART NUMBER	Operating Temperature at Tc-Point [˚C]*	Storage Temperature [˚C]*	Forward Current per chip [mA]*	Reverse Voltage [Vdc]*
IHH-OG01-DEBL-SC221-WIR200.	70˚C max	- 40 to 120˚C	2,000mA max	not designed for reverse voltage
IHH-OG01-HYRE-SC221-WIR200.	70˚C max	- 40 to 120˚C	1,000mA max	not designed for reverse voltage

* Exceeding maximum ratings for operating and storage temperature will reduce expected life time or destroy the LED module. Exceeding maximum ratings for operating voltage will cause hazardous overload and will likely destroy the LED module. The temperature of the LED module must be measured at the Tc-Point according to EN60598-1 in a thermally constant status with a temperature sensor or a temperature sensitive label.

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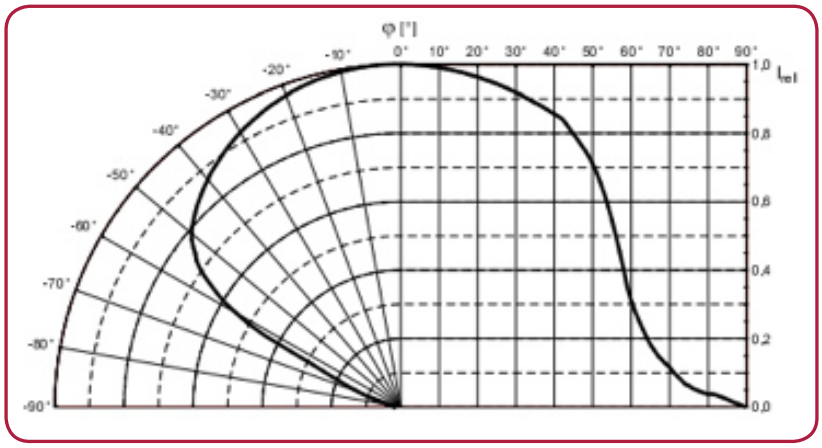
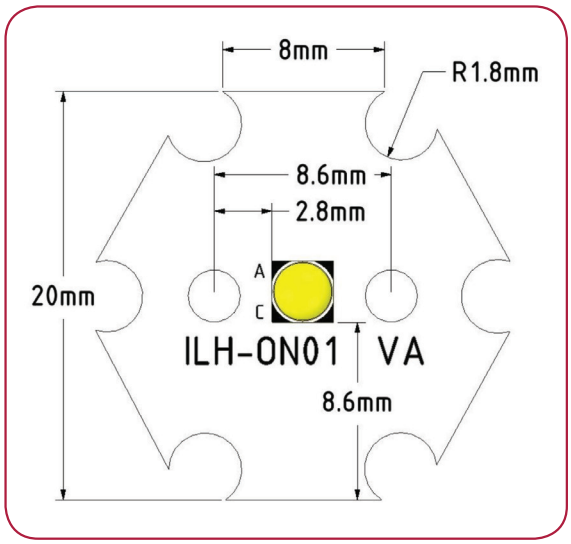
Radiation of single LED



Technical Drawing



3D drawing files are available on request from IHS. Please call or email

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OSLON® SSL Square Gen 3 LED PowerStar Lens and Reflector Options

LEDiL precision-engineered Lenses and Reflectors allow for rapid deployment of all types of light fixtures, including street lights, wall-wash, high-bay, sconces, emergency beacons, parking garage/low-bay, MR and AR downlights, and dock lights. Precision-engineered for maximum efficiency and durability, LEDiL Lenses and Reflectors are released alongside the latest product releases from our LED suppliers. You select the best LED for the application; choose LEDiL and you're selecting the best optical solution as well.

ILS Part Number	Beam	Diameter	Height	Family	FWHM	Colour	Fastening
FP13028_LISA2-M-PIN	M	9.9	6.8	Lisa	0	black	glue, pin
FP13030_LISA2-M-CLIP	M	9.9	6.8	Lisa	0	black	glue, clips
CA12377_TINA2-M	M	16	9.5	Tina	0	black	tape, pin
CA12379_TINA2-O	O	16	9.5	Tina	32+16	black	tape, pin
FA11208_TINA-RS	RS	16.1	9.5	Tina	0	black	tape, pin
FA11209_TINA-D	D	16.1	9.4	Tina	0	black	tape, pin
CA12346_TINA2-RS	RS	16.1	9.5	Tina	0	white	tape
CA12347_TINA2-D	D	16.1	9.5	Tina	0	white	tape
CA12426_TINA3-W	W	16.1	6.9	Tina	0	white	tape, pin
C13253_TINA2-R-CLIP16	WW	16.1	10.1	Tina	0	clear	clips

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OSLON® Square Gen 3 LED PowerStar Heatsink Options

IHS has a series of Aluminium Alloy Heatsinks to be used with our standard range of Strips and PowerClusters. These Heatsinks are supplied with fixing screws for the light engine and for fixing to a base plate. They also come with Thermal Interface Material (TIM) attached to the top surface. More versions will be introduced over the coming months and we are also happy to manufacture custom Heatsinks to your request.

	Operates under the recommended ILS junction temperature
	Operates under the recommended LED maximum junction temperature
	Not suitable for use
N/A	Heatsink not designed for use with this product

IHS Product		No Heat Sink, in free air	ILA-HSINK-STAR-50X20MM.	ILA-HSINK-STAR-50X40MM.	ILA-HSINK-STAR-50X60MM.	ILA-HSINK-STAR-50X80MM.	ILA-HSINK-70X70X55MM.	ILA-HSINK-78X46X25MM.
Oslon 1+ PowerStars	350mA							
	700mA							
	1000mA							
Oslon 4+ PowerStars	350mA							
	700mA							
	1000mA							
Oslon 9+ PowerStars	350mA							
	700mA							
	1000mA							
Oslon 16+ PowerClusters	350mA							
	700mA							
	1000mA							

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OSLON® Square Gen 3 PowerStar Power Supply Options

IHS has a comprehensive range of standard Power Supplies. The table below shows forward voltage of each LED driver please consult the product options table to find the forward voltage of the PowerStar used.

Additional Power Supplies are being introduced so please call us or check our website for the latest offering.

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To determine how many PowerStars can be used with each LED driver you will need the following. Forward voltage of the PowerStar and forward voltage of the LED Driver.

For example IHH-OG01-HYRE-SC221-WIR200. forward voltage of 1.9-2.60V (this can be found under Product Options page x)and IZC035-017F-0067A-SA has an output voltage of 6-48V.

To determine the minimum number of PowerStars this driver can run take the minimum output voltage of the Driver 6.00V and divide by the forward minimum voltage of the PowerStar 1.9 – 6.00÷1.9= 3.15 PowerStars. If the sum delivers a figure such as 2.3 or 7.7 when working out the minimum, you will need to round up the figure.

To determine the maximum number of PowerStars this driver can run take the maximum forward voltage 48.00V and divide this by the maximum forward voltage of the PowerStar 2.60V – 48.00÷2.60=18.46 PowerStars. If the sum delivers a figure such as 2.3 or 7.7 when working out the maximum, you will need to round the figure down.

IHS Driver Part No.	Rating (W)	Constant Current Output	Forward Voltage	
IZC035-005F-0067C-QA	5W	350mA	2-12V	
IZC070-005F-0067C-QA	5W	700mA	2-5V	
IZC035-008F-5065C-SA	8W	350mA	3-36V	
IZC070-008F-5065C-SA	8W	700mA	3-12V	
IZC035-017F-0067A-SA	17W	350mA	6-48V	
IZC035-018T-9500A-SX	18W	350mA	15-52V	
IZC050-018T-9500A-SX	18W	500mA	9-36V	
IZC070-018T-9500A-SX	18W	700mA	6-26V	

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IHS Driver Part No.	Rating (W)	Constant Current Output	Forward Voltage	
IZC035-035F-9067C-QA	35W	350mA	40-80V	
IZC070-035F-0067C-SA	35W	700mA	9-48V	
IZC045-040A-9266C-SA	40W	450mA	30-89V	
IZC070-050A-9267C-SA	50W	700mA	24-72V	
IZC050-060F-9067C-QA	60W	500mA	40-110V	
IZC070-075A-9267C-SA	75W	700mA	54-108V	
IZC105-035F-9067C-QA	35W	1050mA	16-32V	
IZC105-040A-0067C-QA	40W	1050mA	24-40V	
IZC105-060F-9067C-QA	60W	1050mA	30-60V	
IZC140-060F-9067C-QA	60W	1400mA	20-42V	
IZC140-075F-9067A-QAL	75W	1400mA	30-53V	
IZC140-120M-9065C-SAL	120W	1400mA	54-108V	

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Thermal Interface Material Options

IHS have produced a range of High-performance, cost effective Thermal Interface Materials to match perfectly their standard products.

Our product fills the air pockets between the two surfaces, forming a continuous layer to conduct heat away from the LED to the Heat Sink.

IHS offer our TIM in three options – double sided adhesive, single sided adhesive and non adhesive.

Product	Non Adhesive	Single Sided Adhesive	Double Sided Adhesive
Star	ILA-TIM-STAR-0A	ILA-TIM-STAR-1A	ILA-TIM-STAR-2A.
25x25mm Cluster	ILA-TIM-CLUSTER-25x25-0A	ILA-TIM-CLUSTER-25x25-1A	ILA-TIM-CLUSTER-25x25-2A.
30x30mm Cluster	ILA-TIM-CLUSTER-30x30-0A	ILA-TIM-CLUSTER-30x30-1A	ILA-TIM-CLUSTER-30x30-2A.
300x20mm Strip	ILA-TIM-STRIP-300x20-0A	ILA-TIM-STRIP300x20-1A	ILA-TIM-STRIP-300x20-2A.
25x15mm Strip	ILA-TIM-STRIP-25x15-0A	ILA-TIM-STRIP-25x15-1A	ILA-TIM-STRIP-25x15-2A.
58x58mm Square	ILA-TIM-SQUARE-58X58-0A	ILA-TIM-SQUARE-58X58-1A	ILA-TIM-SQUARE-58X58-2A.

Other sizes are available, including customised parts

Assembly Information

- The mounting of the OSLON® Square Gen 3 1 PowerStar has to be on a metal Heatsink.
- In order to optimise the thermal management, the metal surface needs to be clean (dirt and oil free) and planar for the best contact with the LED module. A thermal grease or heat transfer material is highly recommended.

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Safety Information

- The LED module itself and all its components must not be mechanically stressed.
- Assembly must not damage or destroy conducting paths on the circuit board.
- The mounting of the module is carried out by attaching it at the mounting holes. Metal mounting screws must be insulated with synthetic washers to prevent circuit board damage and possible short circuiting.
- To avoid mechanical damage to the connecting cables, the boards should be attached securely to the intended substrate. Heavy vibration should be avoided.
- Observe correct polarity!
- Depending on the product, incorrect polarity will lead to emission of red or no light. The module can be destroyed!
- Pay attention to standard ESD precautions when installing the OSLON® Square Gen 3 1 PowerStar.
- The OSLON® Square Gen 3 1 PowerStars, as manufactured, have no conformal coating and therefore offer no inherent protection against corrosion.
- Damage by corrosion will not be accepted as a materials defect claim. It is the user's responsibility to provide suitable protection against corrosive agents such as moisture and condensation and other harmful elements.
- For outdoor usage, a housing is definitely required to protect the board against environmental influences. The design of the housing must correspond to the IP standards in the application. It is also the responsibility of the user to ensure any housings or modifications keep the Tc junction temperature to within stated ranges.
- To also ease the luminaire/installation approval, electronic control gear for LED or LED modules should carry the CE mark and be ENEC certified. In Europe the declarations of conformity must include the following standards: CE: EC 61374-2-13, EN 55015, IEC 61547 and IEC 61000-3-2 - ENEC: 61374-2-13 and IEC/EN 62384.
- The evaluation of eye safety occurs according to the standard IEC 62471:2006 ("photobiological safety of lamps and lamp systems"). Within the risk grouping system of this CIE standard, the LED specified in this data sheet falls into the class "moderate risk" (exposure time 0.25s). Under real circumstances (for exposure time, eye pupils, observation distance), it is assumed that no endangerment to the eye exists from these devices. As a matter of principle, however, it should be mentioned that intense light sources have a high secondary exposure potential due to their blinding effect. As is also true when viewing other bright light sources (e.g. headlights), temporary reduction in visual acuity and afterimages can occur, leading to irritation, annoyance, visual impairment and even accidents, depending on the situation.

For further information please contact IHS

The values contained in this data sheet can change due to technical innovations. Any such changes will be made without separate notification.

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