

# IHS PowerCluster OSLO<sup>®</sup> Square Colours

IHR-OG09-xxxx-SC221-WIR200.

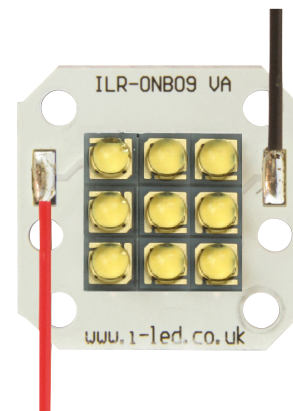
## Product Overview

At the heart of each PowerCluster are 9 OSLO<sup>®</sup> Square LEDs. OSLO<sup>®</sup> Squares 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 1.4K/W ensures cool running and a highly efficient product. PowerClusters are compact, powerful LED light sources built on aluminium substrates for optimal thermal management. Available with 200mm wires as standard.

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
White	Whites are added when the end application has no daylight, and these products offer the only source of useable wavelengths.

## Applications

- Horticultural lighting
- General lighting
- Environmental Chambers
- Propagators
- Vertical farms
- Indoor farming
- Schools and universities
- Research institutes



## Technical Features

- OSLO<sup>®</sup> Square 9 PowerClusters contain 9 OSLO<sup>®</sup> Square LEDs with integral 120 degree silicone resin lenses
- Up to 100,000 Hour lifetime to 70% of original brightness
- Mounting holes using M3 screws allows easy installation
- Available with 200mm connecting wires
- Suitable Heatsinks available – check options in Heatsink section
- Matching Power Supply available – check options in Power Supply section
- Suitable Thermal Interface Material available – check options in Thermal Interface Material section
- Size (L x W x H): 25 x 25 x 3.77mm
- PowerClusters can be linked together to produce longer chains
- Current range Deep Blue: 200 to 2000mA
- Current range Hyper Red: 100 to 1000mA

\*This datasheet should be read in conjunction with the relevant OSRAM data for the LED used

## Important Information and Precautions

- PowerClusters, when powered up, are very bright. Thus it is advised that you do not look directly at them. Turn the PowerCluster product away from you and do not shine into the eyes of others.
- PowerCluster products will overheat in operation if not attached to a suitable Heatsink. Overheating can cause failure or irreparable damage.
- Do not operate PowerCluster products with a power supply with unlimited current. Connection to constant voltage power supplies that are not current limited may cause the PowerCluster product to consume current above the specified maximum and cause failure or irreparable damage.
- PowerCluster products, when operated, can reach high temperatures thus there is a 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 might cause irreparable damage.

## Product Options

IHS Part Number	Colour	Dominant Wavelength *	Typical Wattage at 700mA §	Forward Voltage	Luminous Flux † at 700mA	Radiance Angle	Relevant OSRAM LED Data
IHR-OG09-DEBL-SC221-WIR200.	Deep Blue	455nm	18.27W	25.2V to 28.8V	11700mW	120° (+/- 60°)	GDCSSRM2.14
IHR-OG09-HYRE-SC221-WIR200.	Hyper Red	660nm	12.6W	16.2V to 19.8V	8640mW	120° (+/- 60°)	GHCSSRM4.24
IHR-OG09-HYRE-SC231-WIR200.	Hyper Red	660nm	12.6W	16.2V to 19.8V	8640mW	120° (+/- 60°)	GHCSSRM4.24

\* 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 700mA pulse at 85 °C

## Micromoles

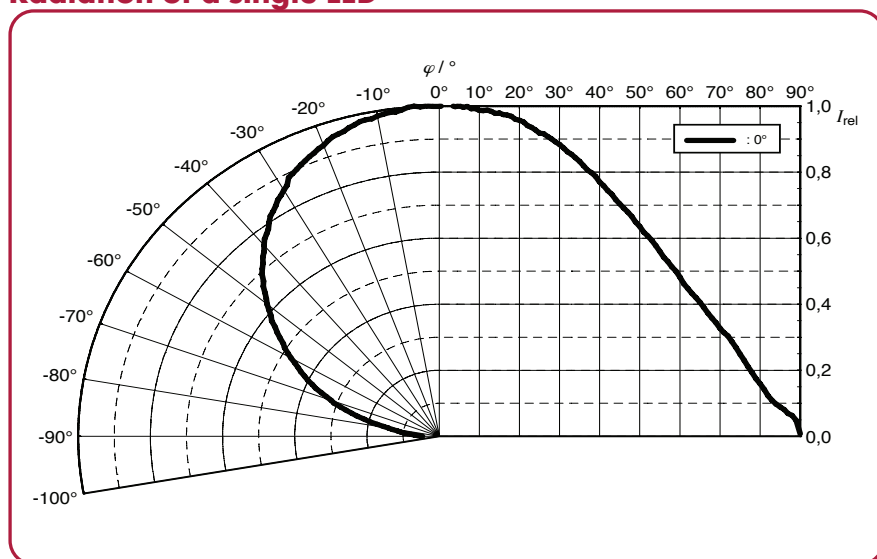
IHS Part Number	PAR (400-700nm)	Photon Flux (240-790nm)	DIN5031-10 (400-725nm)	McCree (400-700nm)	McCree 300-800nm)
IHR-OG09-DEBL-SC221-WIR200.	44.12 umol/s	44.18 umol/s	41.58 YPF umol/s	32.51 YPF umol/s	32.51 YPF umol/s
IHR-OG09-HYRE-SC221-WIR200.	47.13 umol/s	47.27 umol/s	37.92 YPF umol/s	44.08 YPF umol/s	44.12 YPF umol/s
IHR-OG09-HYRE-SC231-WIR200.	47.13 umol/s	47.27 umol/s	37.92 YPF umol/s	44.08 YPF umol/s	44.12 YPF umol/s

## Minimum and Maximum Ratings

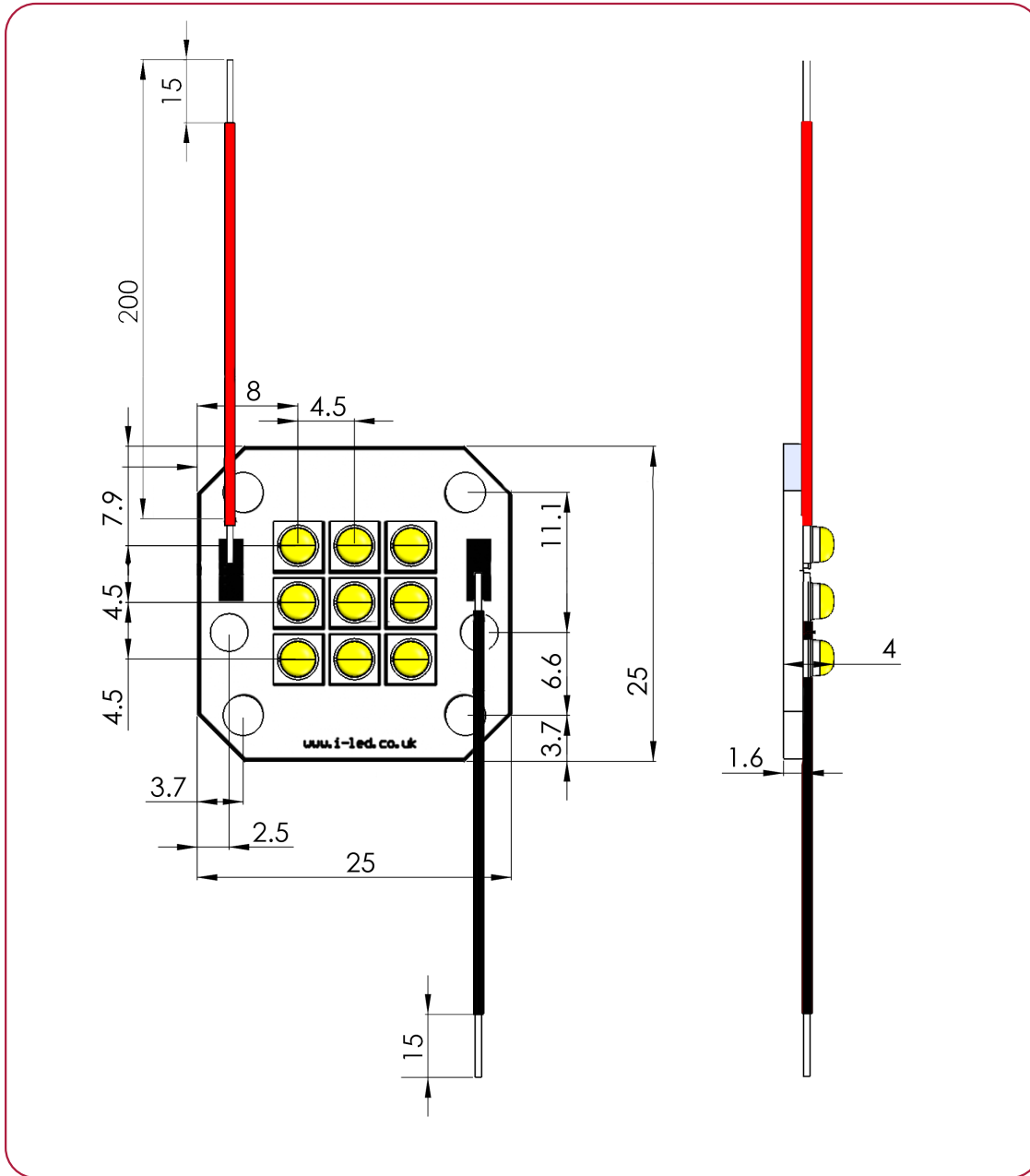
IHS Part Number	Operating Temperature	Storage Temperature	Forward Current per chip	Reverse Voltage
IHR-OG09-DEBL-SC221-WIR200.	-40 ... 120 (°C)	-40 ... 120 (°C)	200mA ... 2000mA	Not designed for reverse
IHR-OG09-HYRE-SC221-WIR200.	-40 ... 125 (°C)	-40 ... 125 (°C)	100mA ... 1000mA	Not designed for reverse
IHR-OG09-HYRE-SC231-WIR200.	-40 ... 125 (°C)	-40 ... 125 (°C)	100mA ... 1000mA	Not designed for reverse

\* 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 is likely to 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.

### Radiation of a single LED



### Technical Drawing (mm)



3D drawing files are available on request from IHS. Please call or email  
**OSLON® Square 9 PowerCluster 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.



Currently there are no Lens options designed for the OSLO<sup>®</sup> 9 range of products. Please refer to the ILS reflector adaptors for larger **LED arrays**.

## OSLO<sup>®</sup> Square 9 PowerCluster Heatsink Options

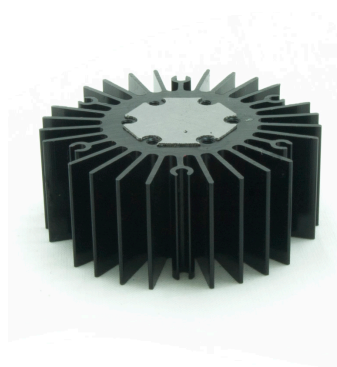
IHS has a series of Aluminium Alloy Heatsinks to be used with our standard range of PowerStars, PowerClusters and PowerLinear Engines. Some Heatsinks are supplied as kits with fixing screws and Thermal Interface Material (TIM). IHS is continually expanding its Heatsink range and we are equally happy to manufacture custom Heatsinks upon your request.

IHS Product		No Heatsink, 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
OSLO 9 PowerCluster	350mA							
	700mA							
	1000mA							

## OSLO<sup>®</sup> Square 9 PowerCluster Power Supply Options




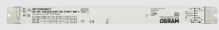

### Key

- Operates under the recommended IHS junction temperature
- Operates under the recommended LED maximum junction temperature
- Not suitable for use
- Heatsink not designed for use with this product



IHS has a comprehensive range of standard Power Supplies. Additional Power Supplies are frequently being introduced so please call us or check our website for the latest offering.

IHS Driver Part No.	Rating Watts	Current	Output Volts	
IZC035-008F-5065C-SA	8W	350mA	3-36V	
IZC035-017F-0067A-SA	17W	350mA	6-48V	
IZC035-018T-9500A-SX	18W	350mA	15-52	
IZC050-018T-9500A-SX	18W	500mA	9-36V	
IZC070-018T-9500A-SX	18W	700mA	6-26V	
OTE-25/220-240/700-PC	25W	700mA	18-36V	
ELEMENT-ID-30/220-240/700	30W	700mA	21-42V	
Oti-30/120-277/1A0-DX-L	30W	150-1050mA	10-56V	
IZC070-035F-0067C-SA	35W	700mA	9-48V	
Oti-DALI-35/220...240/1A0-LT2-NFC	35W	350-1050mA	15-54V	
IZCVAR-040M-9020C-SAL	40W	350mA, 500mA, 600mA, 700mA, 900mA, 1050mA	350mA 2-100V, 500mA 2-80V, 600mA 2-67V, 700mA 2-57V,900mA 2-45V, 1050mA 2-40V	

IHS Driver Part No.	Rating Watts	Current	Output Volts	
OTI-DALI-50/220-240/1A4-LT2-L-G2	50W	600-1400mA	15-54V	
IZC070-050A-9267C-SA	50W	700mA	24-72V	
IZC050-060F-9067C-QA	60W	500mA	40-110V	
OT-FIT-150/220-240/1A0-D-NFC-IND-L	150W	250-1000mA	64-300V	
OT-FIT-380/230-400/1A4-D-NFC-HC-L	380W	400-1400mA	150-550V	

### OSLON® Square 9 PowerCluster Thermal Interface Material Options

IHS has 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 Heatsink.

Product	Non Adhesive	Single Sided Adhesive	Double Sided Adhesive
<b>OSLON® Square 9 PowerCluster</b>	ILA-TIM-CLUSTER-25x25-0A	ILA-TIM-CLUSTER-25x25-1A	ILA-TIM-CLUSTER-25x25-2A

Other sizes are available, including customised parts.

### Assembly Information

- The mounting of the PowerCluster 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.

## 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 PowerCluster.
- The PowerCluster, as manufactured, has no conformal coating and therefore offers 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 datasheet can change due to technical innovations. Any such changes will be made without separate notification.