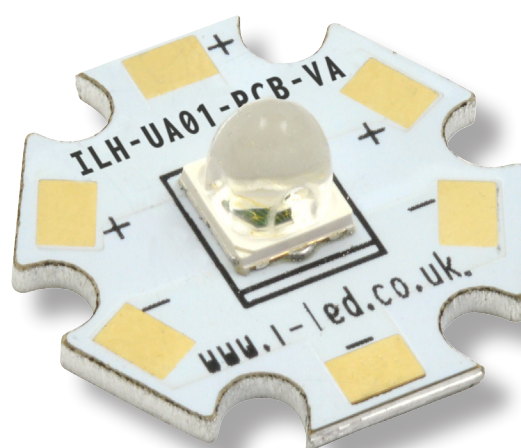
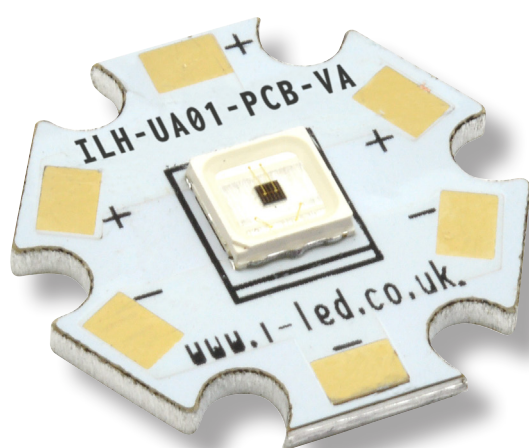


USHIO SMBB 1 PowerStar SWIR

ILH-Ux01-xxxx-SC201-WIR200

At the heart of each PowerStar is an SMBB LED from Ushio. With a copper heatsink-equipped 5 mm x 5.2 mm package, these surface-mounted, record-breaking LEDs are available in single cip form. These LEDs are supplied with a +/- 64 deg lens or +/-9 deg lens. PowerStars are compact, powerful LED light sources built on aluminium substrates for optimal thermal management. Available with 200mm wires as standard.



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APPLICATIONS

- » Surveillance systems
- » IR illumination for cameras
- » Machine vision
- » Night vision light
- » Driver assistance systems

TECHNICAL FEATURES

LED Family	USHIO SMBB Series
Mounting	Mounting holes using M3 screws allow easy installation
Dimensions	(L x W x H) with +/- 64° lens 20mm x 20mm x 2.6mm (L x W x H) with +/- 9° lens 20mm x 20mm x 7.1mm
Wiring	Available with 200mm connecting wires
Secondary Optics	A secondary optic can be fitted. Suitable options on page 6 or visit our website for a full range
Heatsinks	Required over 350mA. Suitable options on page 8 or visit our website for a full range
Power Supply	5-108W non-dimming. Suitable options on page 9 or visit our website for a full range
Chain	PowerStars can be linked together to produce longer chains

PRODUCT OPTIONS

Peak Wavelength	IR centroid wavelength	Radiant Power	Forward Voltage†	Radiance Angle	Relevant USHIO LED Data Sheet
ILH-UN01-1200-SC201-WIR200.	1200nm	290mW	1.6-2.3V	+/- 9 deg	SMBB1200D-1100-02
ILH-UN01-1300-SC201-WIR200.	1300nm	240mW	1.6-2.3V	+/- 9 deg	SMBB1300D-1100-02
ILH-UW01-1450-SC201-WIR200.	1450nm	87mW	1.6-2.3V	+/- 64 deg	SMBB1450D-1100
ILH-UW01-1550-SC201-WIR200.	1550nm	84mW	1.6-2.3V	+/- 64 deg	SMBB1550D-1100
ILH-UN01-1550-SC201-WIR200.	1550nm	75mW	1.6-2.3V	+/- 9 deg	SMBB1550D-1100-02
ILH-UW01-1650-SC201-WIR200.	1650nm	62mW	1.6-2.3V	+/- 64 deg	SMBB1650D-1100
ILH-UN01-1650-SC201-WIR200.	1650nm	78mW	1.6-2.3V	+/- 9 deg	SMBB1650D-1100-02
ILH-UN01-1900-SC201-WIR200.	1900nm	30mW	1.2-1.6V	+/- 9 deg	SMBB1900D-1100-02

Due to the special conditions of the manufacturing processes of LEDs, the typical data of technical parameters can only reflect overall 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 1500mA pulse at 25 °C

MINIMUM AND MAXIMUM RATINGS

ILS Part Number	Operating Temperature at Tc-Point [° C]	Storage Temperature [° C]	Maximum Current per chip [mA]*	Surge Current per chip [mA]*	Reverse Voltage [Vdc]*
ILH-UN01-1200-SC201-WIR200.	-40 ~ +100 °C	-40 ~ +100 °C	1500mA	4000mA	5V
ILH-UN01-1300-SC201-WIR200.	-40 ~ +100 °C	-40 ~ +100 °C	1500mA	4000mA	5V
ILH-UW01-1450-SC201-WIR200.	-40 ~ +100 °C	-40 ~ +100 °C	1500mA	4000mA	5V
ILH-UW01-1550-SC201-WIR200.	-40 ~ +100 °C	-40 ~ +100 °C	1500mA	4000mA	5V
ILH-UN01-1550-SC201-WIR200.	-40 ~ +100 °C	-40 ~ +100 °C	1500mA	4000mA	5V
ILH-UW01-1650-SC201-WIR200.	-40 ~ +100 °C	-40 ~ +100 °C	1500mA	4000mA	5V
ILH-UN01-1650-SC201-WIR200.	-40 ~ +100 °C	-40 ~ +100 °C	1500mA	4000mA	5V
ILH-UN01-1900-SC201-WIR200.	-40 ~ +100 °C	-40 ~ +100 °C	1000mA	2000mA	2V

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.

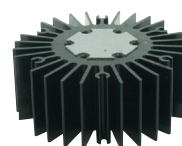
ACCESSORIES

Secondary Optics 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 products from our LED suppliers. Suitable options on [page 6](#) or visit [our website](#) for a full range.

Heatsinks



ILS has a series of aluminium alloy heatsinks to be used with our standard range of PowerStars 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. Suitable options on [page 6](#) or visit [our website](#) for a full range.

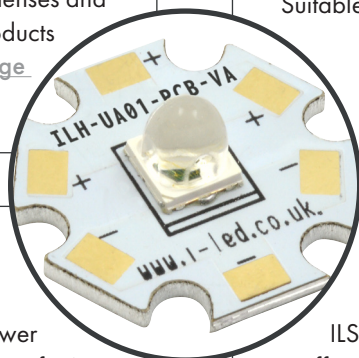
Power Supplies

ILS has a comprehensive range of standard power supplies. The table below shows the total number of ILS products each power supply can drive. Additional power supplies are being introduced so please call us or [check our website](#) for the latest offering. Suitable options on [page 7](#)

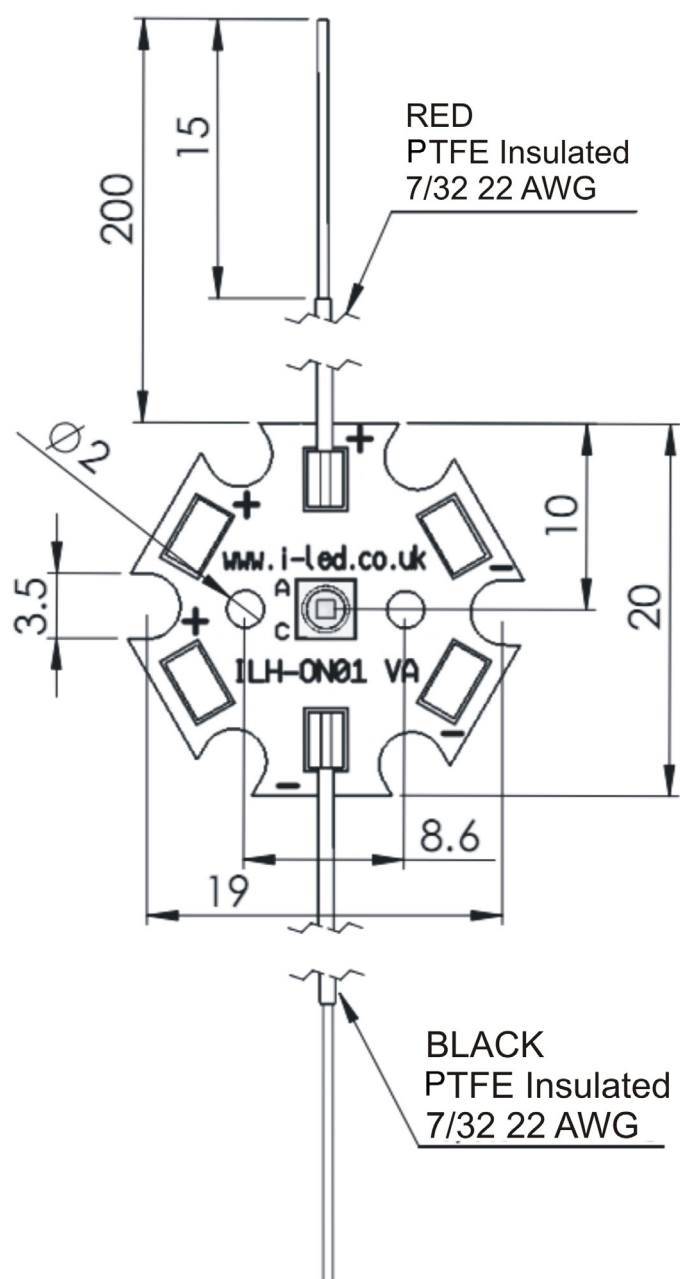


Thermal Interface Material (TIM)

ILS has produced a range of high-performance, cost effective thermal interface materials to perfectly match 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. ILS offers TIM in three options – double sided adhesive, single sided adhesive and non adhesive. Suitable options on [page 7](#) or visit [our website](#) for a full range.

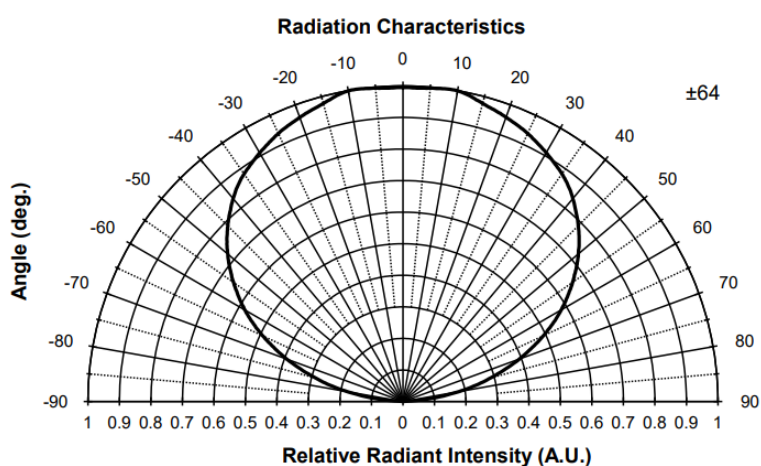


TECHNICAL DRAWINGS (MM)

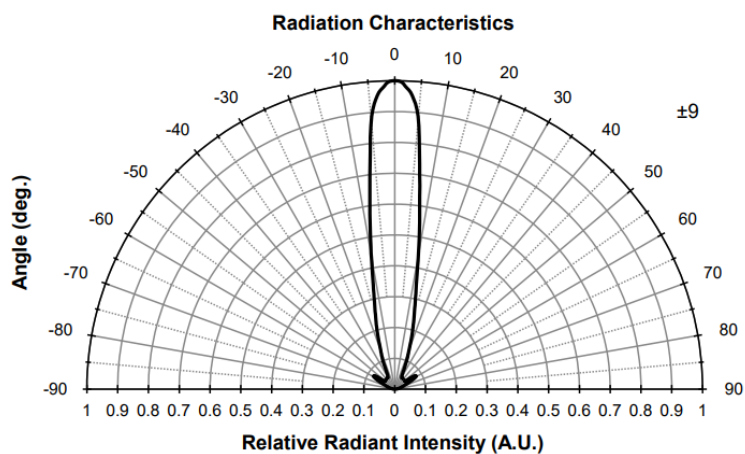


RADIATION OF SINGLE LED

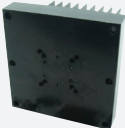
Radiation of single LED (UW)



Radiation of single LED (UN)



HEATSINK OPTIONS

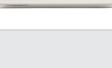
ILS Product		USHIO SMBB 1 PowerStars		
		350mA	700mA	1000mA
No Heatsink, in free air				
ILA-HSINK-STAR-50X20MM				
ILA-HSINK-STAR-50X40MM				
ILA-HSINK-STAR-50X60MM				
ILA-HSINK-STAR-50X80MM				
ILA-HSINK-70X70X55MM				
ILA-HSINK-78X46X25MM				

KEY

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

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POWER SUPPLY OPTIONS

	ILS Driver Part Number	Rating	Current	LED Driver Voltage	Dimming
	ILA-1 CH-LED-TESTER-PREC-01	16W	10-700mA	2-20V	
	IZC070-004F-4065C-SAL	4W	700mA	2-6V	
	IZC035-004F-4065C-SAL	4W	350mA	3-12V	
	IZC035-008F-5065C-SAL	8W	350mA	3-36V	
	IZC070-008F-5065C-SAL	8W	700mA	3-12V	
	IZC035-017F-0067A-SAL	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	
	IZC070-035F-0067C-SAL	35W	700mA	9-48V	
	IZC045-040A-9266C-SA	40W	450mA	30-89V	
	IZC095-040M-9067C-SAL	40W	950mA	25-42V	
	IZCVAR-040M-9020C-SAL	40W	350mA 500mA 600mA 700mA 900mA 1050mA	2-100V 2-80V 2-67V 2-57V 2-45V 2-40V	
	IZC070-050A-9267C-SA	50W	700mA	24-72V	
	IZC050-060F-9067C-QA	60W	500mA	40-110V	
	IZC070-075A-9267C-SA	75W	700mA	54-108V	
	IZC140-120M-9065C-SAL	120W	1400mA	54-108V	

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THERMAL INTERFACE MATERIAL OPTIONS

Non Adhesive	Single Sided Adhesive	Double Sided Adhesive
ILA-TIM-STAR-0A	ILA-TIM-STAR-1A	ILA-TIM-STAR-2A
Other sizes are available, including customised parts		

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ASSEMBLY INFORMATION

- » The mounting of the 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.

IMPORTANT INFORMATION AND PRECAUTIONS



The LED module's LED, when powered up, is very bright. Thus it is advised that you do not look directly at it. Turn the LED module away from you and do not shine into the eyes of others.



LED modules, when operated, can reach high temperatures thus there is risk of injury if they are touched.



LED modules will overheat in operation if not attached to a suitable heatsink. Overheating can cause failure or irreparable damage.



DO NOT HOT PLUG ON LED SIDE OF POWER SUPPLY.



Do not operate LED modules with a power supply with unlimited current. Connection to constant voltage power supplies that are not current limited may cause the LED module to consume current above the specified maximum and cause failure or irreparable damage.



DO NOT TOUCH or PUSH on the LED as this can cause irreparable damage.

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 LED modules.



The LED modules, 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 T_c 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 datasheet 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.

FURTHER INFORMATION

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

If you require further assistance or have a specific or custom enquiry, please contact the ILS team via email or phone. Alternatively please visit our website for more product information and to see our full ranges.



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ABOUT ILS

ILS offers a high level of technical skill, professionalism and commercial understanding to companies requiring market-leading optoelectronics solutions. Offering conceptual advice, electronics design and manufacturing capability, we use high quality production resources both in-house and in Asia, providing project support from prototyping to mass production. We also understand the need to provide cost-effective solutions and we do so using high quality components to ensure that the end product's reliability and quality is uncompromised. Apart from LEDs in the visible spectrum, we have a wide range of Infrared, UV LEDs, UV tubes, and lasers.

ILS is a division of Intelligent Group Solutions Ltd (IGS) a well-established respected industry leading Optoelectronics solutions provider. Much of IGS' business comes from providing semi-custom or custom products both in component and sub-assembly form, and from providing design support and prototyping within the European market place. We can deliver production displays to wherever in the world that the customer's manufacturing or assembly is being undertaken.

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