LA SL500HRE

120° Hyper red Sensor LED (640 nm)

The black Sensor LED is designed for applications, where an extremely small emission point is needed and stray light needs to be avoided. The LED is produced by using a high efficiency LED chip mounted in a small black SMT package to minimize reflections.The Sensor LED is easy to handle and IR-reflow solderable.The chip placement accuracy relative to the package is very high.

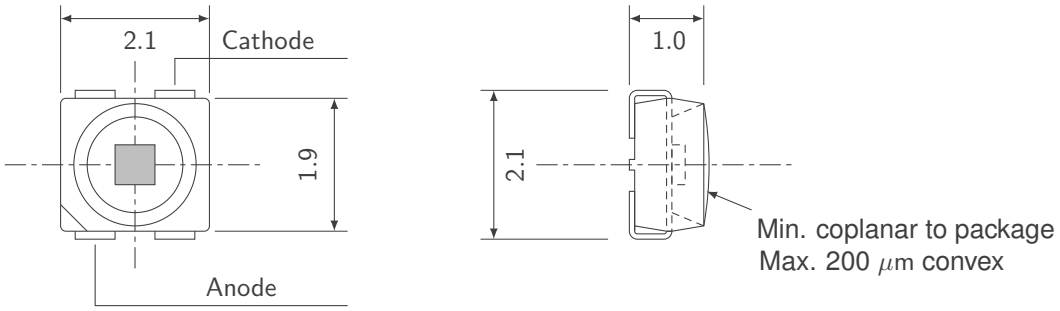
Features

- Lambertian emission pattern
- High optical efficiency
- Ultra-high-pulse performance
- Low internal reflections
- Black SMT package

Applications

- Industry
- Sensor
- Light grids
- Data communication

Dimensions



all dimensions in mm. Die placement tolerance ±0.05. Other tolerances ±0.1

Ordering information

TYPE	PEAK WAVELENGTH	RADIANT POWER
LA SL500HRE-03IT05	630 ... 650 nm	5 ... 20 mW

L A	Light Avenue
S	Sensor LED
L	Low current
5 0 0	Chip size in µm
H R	Hyper Red
E	AlInGaP extraordinary high efficiency chip
0	Peak wavelength min.: 630 nm
3	Peak wavelength max.: 650 nm
I	Radiant power min.: 5 mW
T	Radiant power max.: 20 mW
0	Voltage min.: 1,7 V
5	Voltage max.: 2,4 V

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Electro-optical characteristics ($T_A = 25°C$)[2]

PARAMETER	SYMBOL	CONDITION	MIN.	TYP.[1]	MAX.	UNIT
Radiant power	Φ_e	$I_f = 20\,mA$	5	10	20	mW
Radiant intensity	I_e	$I_f = 20\,mA$		3		mW/sr
Forward voltage	V_F	$I_f = 20\,mA$	1,7	2,1	2,4	V
Peak wavelength	λ_{peak}	$I_f = 20\,mA$	630	640	650	nm
Spectral width	RMS	$I_f = 20\,mA$		25		nm
Beam Divergence Angle	θ	$I_f = 20\,mA$		120		°

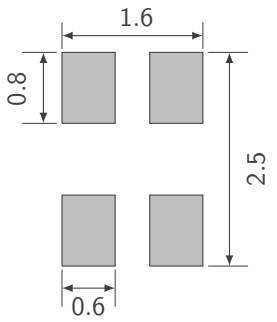
Maximum ratings ($T_A = 25°C$)

PARAMETER	SYMBOL	CONDITION	MINIMUM	MAXIMUM	UNIT
Operating Current	$I_{f,max}$			50	mA
Operating Pulse Current	$I_{fp,max}$	$t_p = 10\mu s$, D = 2%		500	mA
Operating Temperature	T_{op}		-20	85	° C
Storage Temperature	T_{st}		-20	85	° C
Junction Temperature	T_j			110	° C
Reverse Voltage	V_R		5		V

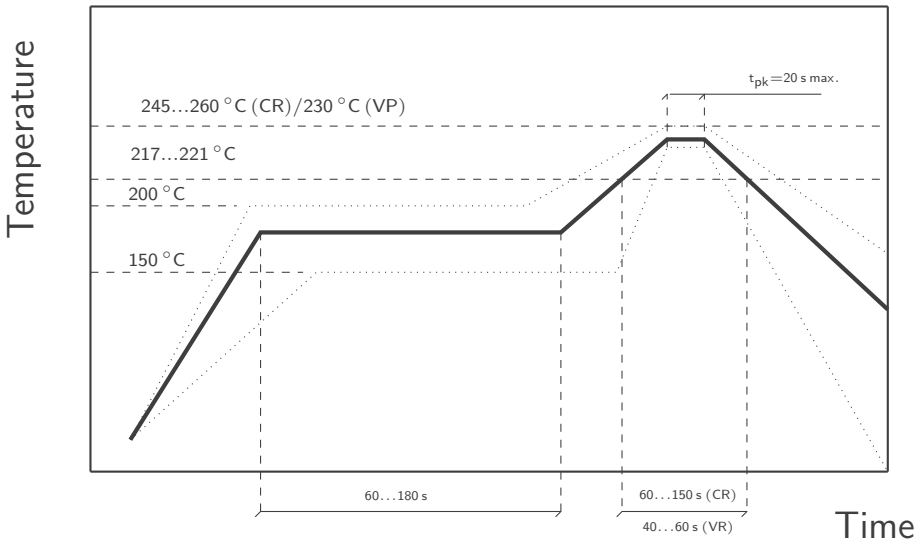
Thermal characteristics

PARAMETER	SYMBOL	VALUE	UNIT
Thermal resistance	$R\Theta_{J-Pin}$		K/W
Soldering temperature (3 seconds maximum)	T_{sold}	260	°C

Recommended Solderpad



Soldering



Recommended reflow soldering conditions following IPS/JEDEC J-STD-020.

	MAXIMUM
Temperature maintained between 150 and 200 °C	180 s
Temperature maintained above 217 °C, Convection Reflow (CR)	150 s
Temperature maintained above 217 °C, Vapor Phase (VP)	60 s
Ramp-Up Rate	+3 °C/s
Peak Temperature (t_{pk}), Convection Reflow (CR)	245 to 260 °C
Peak Temperature (t_{pk}), Vapor Phase (VP)	230 °C
Time to Peak Temperature	8 min
Time within 5°C of actual Peak Temperature	20 s
Ramp-Down Rate	-6°C/s

Actual solder profile may vary from the example given, and is very much depending on machine type and configuration, geometrical configuration, board shape etc. It is strongly recommended to optimize and evaluate the actual soldering conditions carefully for each individual project before releasing the soldering process.

General Precautions with moisture-sensitive devices

Plastic and COB-assembled LEDs are sensitive to temperature shocks and especially to reflow soldering (the popcorn effect).
The cause of the porpcorn effect is the enclosed moisture which can lead to cracks in the package with a sudden rise in temperature. All shapes and sizes of package for surface-mounted components are senstive to this effect. The sensitivity increases with the thermal stress from the respective soldering process.
Components delivered without any form of protection against moisture should therefore either be baked or stored permanently in a dry environment, in both cases until immediately prior to soldering. The user is responsible for the qualification of the preparation and further processing of the LEDs.

Important Usage and Application Information

Lead free product - RoHS compliant.
All products, product specifications and data to improve reliability, function, design or otherwise are subject to change without notice. The information describes the type of component and shall not be considered as assured characteristics.
Due to technical requirements components may contain dangerous substances. For information on the types in question please contact our Sales Organization.
The light output of the products may cause injuries to human eyes in circumstances where the products are viewed directly with unshielded eyes. LEDs can emit highly concentrated light which can be hazardous to the human eye. Products which incorporate these devices have to follow the safety precautions given in IEC 60825-1 and IEC 62471.

Handling and Storage Conditions

Please be careful when handling the products, particularly if an over-voltage exceeds the maxium rating. The overflow in energy may cause damage to the products. In addition these products are sensitive to static electricity. Customers have to take care when handling the products to ensure that the handling process is fully protected against static generation. Ensure that products are grounded and that the facility has conductive mats, antistatic uniforms and shoes. Antistatic containers are considered to be a good insurance against static electricity. The soldering iron point should be properly grounded. An atmospheric

ionizer is recommended for use in the facility where static could be generated.
Storage ambient conditions for all LEDs in sealed packages must be within $T_A = 10...40°C$ and relative humidity < 60%. LEDs in opened packages must be used within 2 weeks after opening. Storage time under the conditions above in sealed packages must not exceed 24 months.

Packing

LEDs are packaged automatically on reels and packed into paperboard containers. Labels for identification are placed on the box. The label shows company name and address, LED type, quantity and lot number. The box is hermetically sealed in a plastic bag for shipment.

Returns and Complaints

For complaints and returns of material a RMA-number is necessary. Samples for analysis purposes can be send to us without credit.

Shipping Conditions

If not otherwise arranged, the "General Terms of Business of Light Avenue GmbH" apply for any shipment. If this document is not familiar to you, please request it at our nearest sales office.

Disclaimer

Attention please! Components used in life-support devices or systems must be expressly authorized for such purpose!

Critical components[3] may only be used in life-support devices[4] or systems with the express written approval by us.

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[1]Due to the special conditions of the manufacturing processes of lasers, the typical data or calculated correlations of technical parameters can only reflect statistical figures. These do not necessarily correspond to the actual parameters of each single product, which could differ from the typical data and calculated correlations or the typical characteristic line. If requested, e.g. because of technical improvements, these typ. data will be changed without any further notice.

[2]Light Measurements are done with an accuracy of ±15%. Voltage and wavelength are measured with an accuracy of ± 0.1 V and ± 1 nm. Correlation to customer's equipment and products is required.

[3]A critical component is a component used in a life-support device or system whose failure can reasonably be expected to cause the failure of that life-support device or system, or to affect its safety or the effectiveness of that device or system.

[4]Life support devices or systems are intended(a) to be implanted in the human body,or(b) to support and/or maintain and sustain human life.If they fail, it is reasonable to assume that the health and the life of the user may be endangered..