Dr. Licht GmbH

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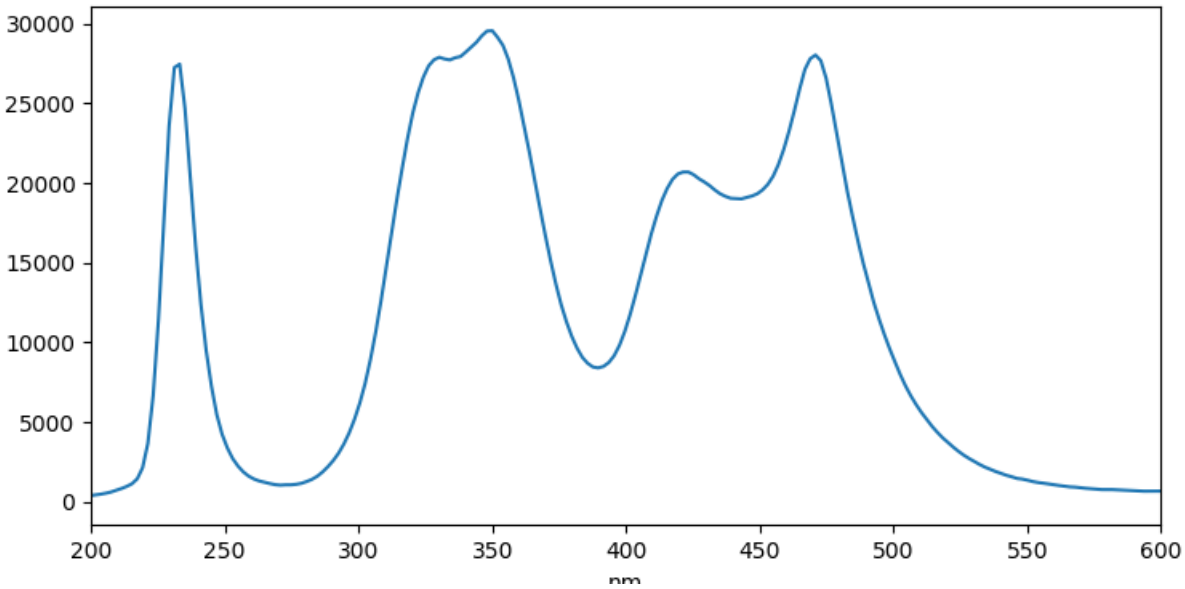
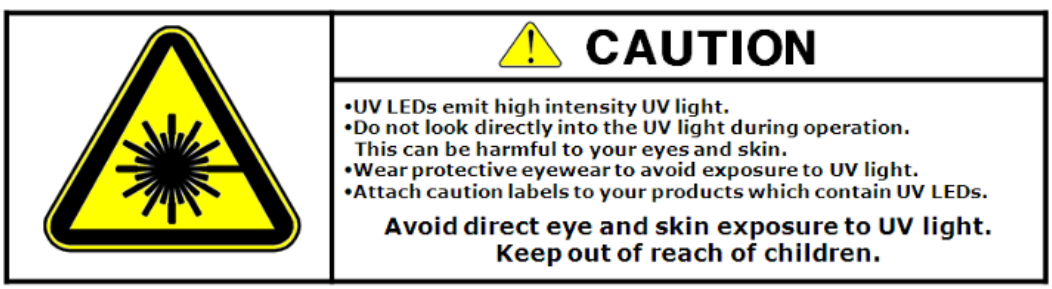
Features

- One 235nm LED powers the UV A, B and C fluorescence
- Fluorescence light without thermal radiation shift ideal for spectral anaytic
- Long operating life, RoHS compliancy ensured

Fig 1. Spectrum of the UV A-B-C LED 3535 according with speggUVVIS29





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Absolute maximum ratings of the UV A-B-C LED 3535

	Unit	Min	Max
Forward Current (continuous)	mA	20	50
Reverse Voltage	V		-5
Operating temperature range	°C	-5	50
Storage temperature	°C	-40	85

Fig 2. Forward current vs. relative output of the UV A-B-C LED 3535

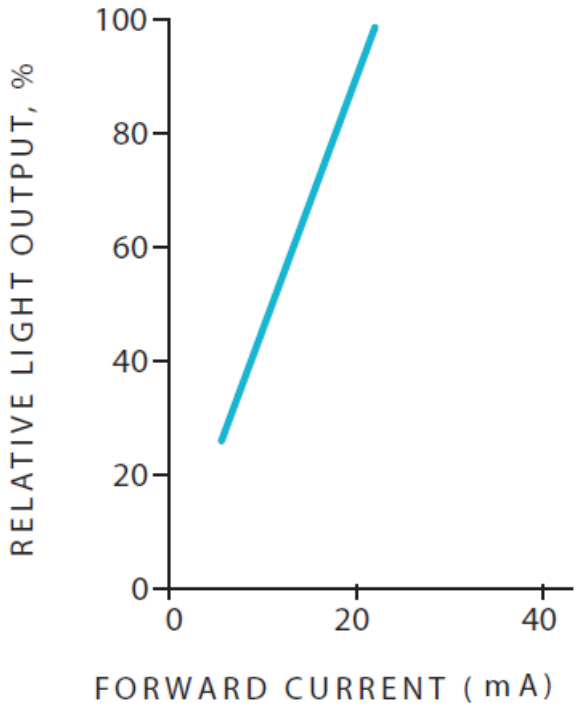

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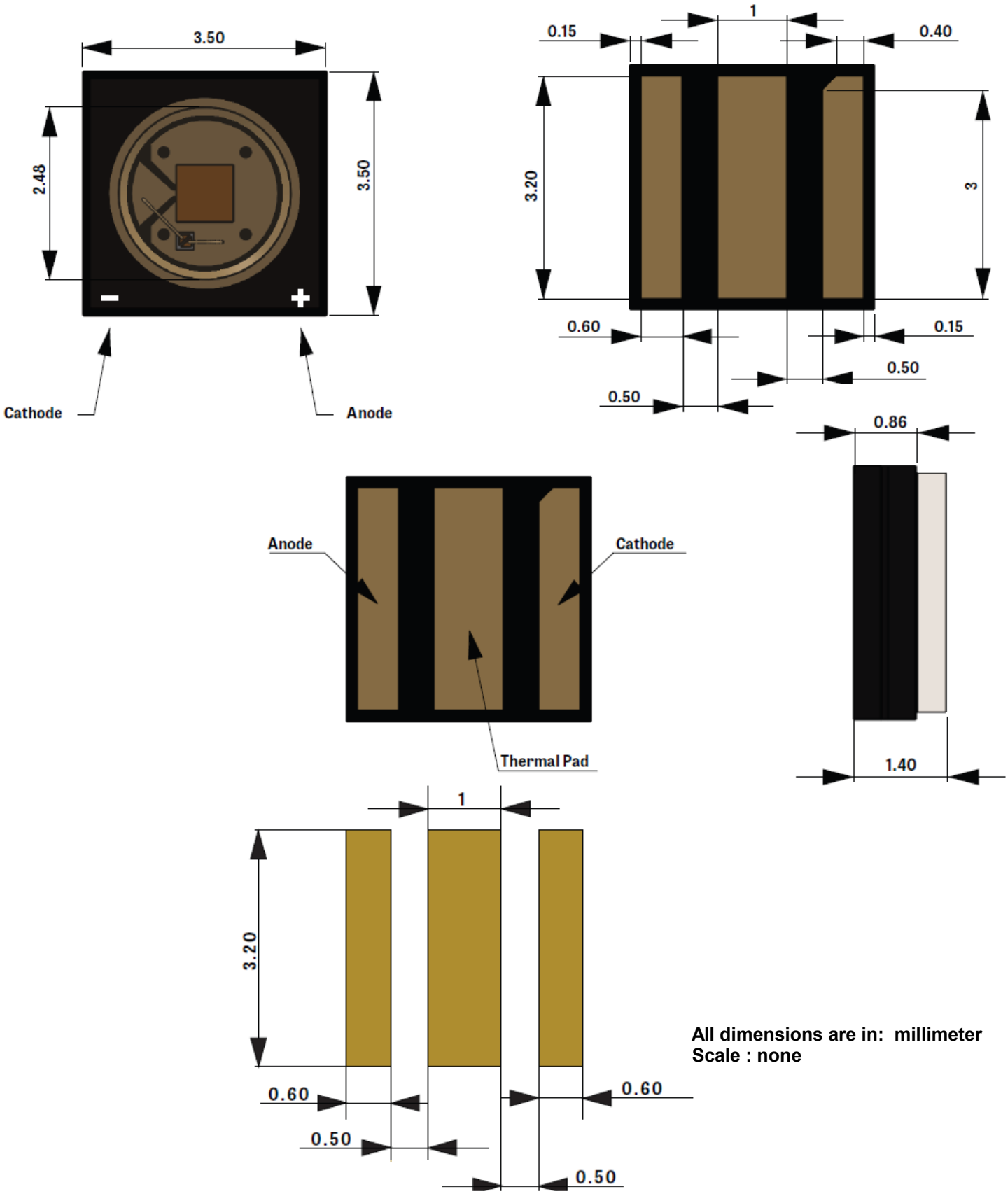
Fig 3. Dimension and recommended solder pad of UV A-B-C LED 3535



All dimensions are in: millimeter
Scale : none

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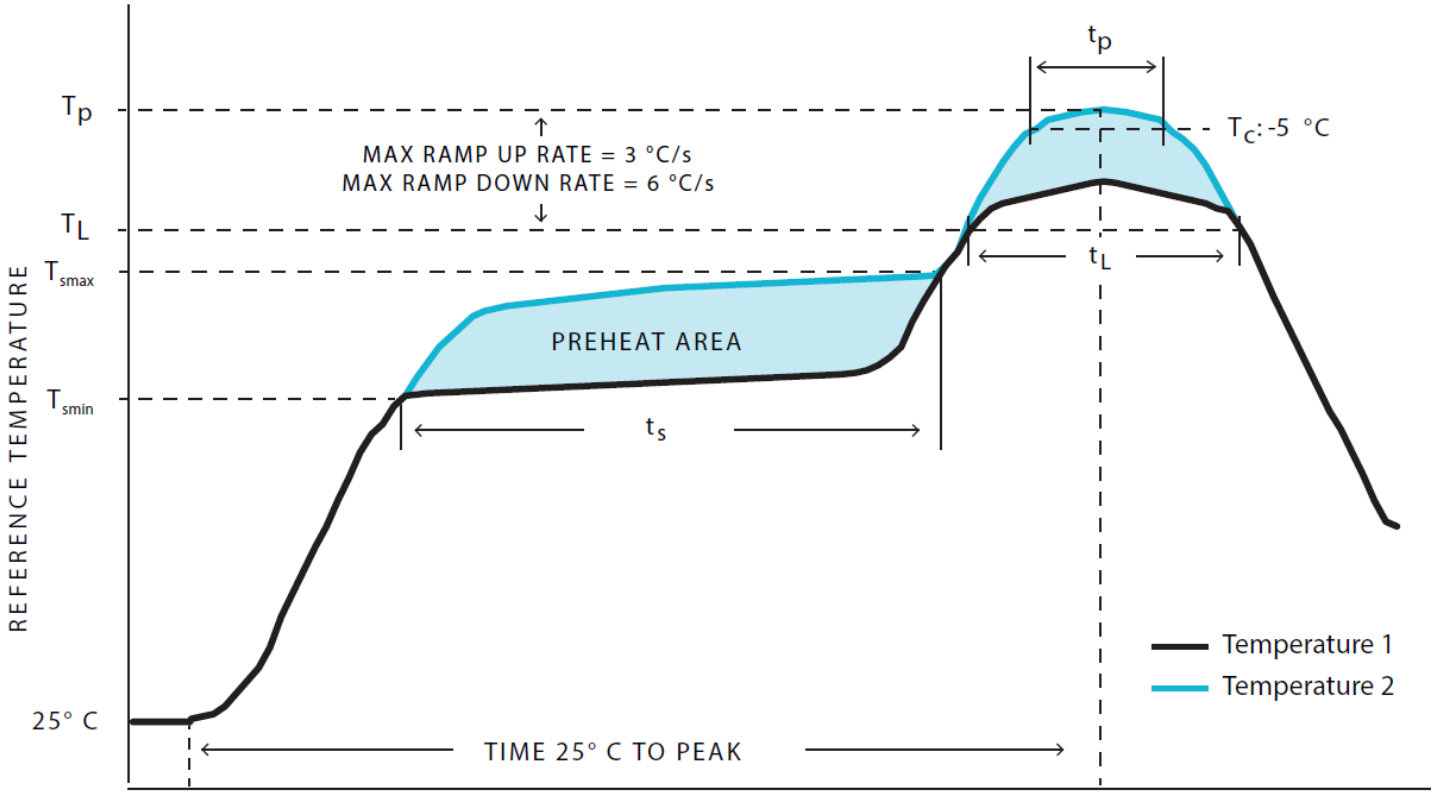
Fig 4. Reflow soldering characteristics of UV A-B-C LED 3535 follow the JEDEC standard J-STD-020D. Hand soldering is not recommended. We provide sample PCB and offer a soldering service.



GUIDELINES

Profile Feature	Pb-Free Assembly
Preheat/Soak	
Temperature Min (T_{smin})	150 °C
Temperature Max (T_{smax})	200 °C
Maximum Time (t_s) from T_{smin} to T_{smax}	60-120 seconds
Ramp-up rate (T_L to T_p)	3 °C/second max.
Liquidous Temperature (T_L)	217 °C
Time (t_L) maintained above T_L	60~150 seconds
Maximum peak package body temperature (T_p)	260 °C
Time (t_p) within 5 °C of the specified temperature (T_C)	30 seconds
Ramp-down rate (T_p to T_L)	6 °C/second max.
Maximum Time 25 °C to peak temperature	8 minutes max.

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Handling of the UV A-B-C LED 3535

(1) During processing, mechanical stress on the surface should be minimized as much as possible. Sharp objects of all types should not be used to pierce the sealing compound.

(2) In general, LEDs should only be handled from the side. By the way, this also applies to LEDs without a silicone sealant, since the surface can also become scratched.

(3) When populating boards in SMT production, there are basically no restrictions regarding the form of the pick and place nozzle, except that mechanical pressure on the surface of the resin must be prevented. This is assured by choosing a pick and place nozzle which is larger than the LED's reflector area.

(4) Silicone differs from materials conventionally used for the manufacturing of LEDs. These conditions must be considered during the handling of such devices. Compared to standard encapsulants, silicone is generally softer, and the surface is more likely to attract dust. As mentioned previously, the increased sensitivity to dust requires special care during processing. In cases where a minimal level of dirt and dust particles cannot be guaranteed, a suitable cleaning solution must be applied to the surface after the soldering of components.

(5) SVC suggests using isopropyl alcohol for cleaning. In case other solvents are used, it must be assured that these solvents do not dissolve the package or resin. Ultrasonic cleaning is not recommended. Ultrasonic cleaning may cause damage to the LED.

(6) Please do not mold this product into another resin (epoxy, urethane, etc) and do not handle this product with acid or sulfur material in sealed space.

(7) Avoid leaving fingerprints on silicone resin parts.

Precautions for Use

(1) Storage :To avoid the moisture penetration, we recommend storing LEDs in a dry box with a desiccant . The recommended storage temperature range is 5℃to 30℃and a maximum humidity of RH50%.

(2) Use Precaution after Opening the Packaging: Use proper SMD techniques when the LED is to be soldered dipped as separation of the lens may affect the light output efficiency. Pay attention to the following: Recommend conditions after opening the package - Sealing / Temperature : 5 ~ 30℃Humidity : less than RH60%

(3) Do not apply mechanical force or excess vibration during the cooling process to normal temperature after soldering.

(4) Do not rapidly cool device after soldering.

(5) Components should not be mounted on warped (non coplanar) portion of PCB.

(6) Radioactive exposure is not considered for the products listed here in.

(7) This device should not be used in any type of fluid such as water, oil, organic solvent and etc. When washing is required, (Isopropyl Alcohol) should be used.

(8) When the LEDs are in operation the maximum current should be decided after measuring the package temperature.

(9) The appearance and specifications of the product may be modified for improvement without notice.

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Precautions for Use

(11) VOCs (Volatile organic compounds) emitted from materials used in the construction of fixtures can penetrate silicone encapsulants of LEDs and discolor when exposed to heat and photonic energy. The result can be a significant loss of light output from the fixture. Knowledge of the properties of the materials selected to be used in the construction of fixtures can help prevent these issues.

(12) Attaching LEDs, do not use adhesives that outgas organic vapor.

(13) The driving circuit must be designed to allow forward voltage only when it is ON or OFF. If the reverse voltage is applied to LED, migration can be generated resulting in LED damage.

(14) LEDs are sensitive to Electro-Static Discharge (ESD) and Electrical Over Stress (EOS). Below is a list of suggestions to minimize these effects.:

a. ESD (Electro Static Discharge)
Electrostatic discharge (ESD) is the defined as the release of static electricity when two objects come into contact. While most ESD events are considered harmless, it can be an expensive problem in many industrial environments during production and storage. The damage from ESD to an LEDs may cause the product to demonstrate unusual characteristics such as:
- Increase in reverse leakage current lowered turn-on voltage
- Abnormal emissions from the LED at low current
The following recommendations are suggested to help minimize the potential for an ESD event.
One or more recommended work area suggestions:
- Ionizing fan setup
- ESD table/shelf mat made of conductive materials
- ESD safe storage containers
One or more personnel suggestion options:
- Antistatic wrist-strap
- Antistatic material shoes
- Antistatic clothes
Environmental controls:
- Humidity control (ESD gets worse in a dry environment)

b. EOS (Electrical Over Stress)
Electrical Over-Stress (EOS) is defined as damage that may occur when an electronic device is subjected to a current or voltage that is beyond the maximum specification limits of the device.
The effects from an EOS event can be noticed through product performance like:
- Changes to the performance of the LED package
(If the damage is around the bond pad area and since the package is completely encapsulated
the package may turn on but flicker show severe performance degradation.)
- Changes to the light output of the luminaire from component failure
- Components on the board not operating at determined drive power
Failure of performance from entire fixture due to changes in circuit voltage and current across total circuit causing trickle down failures. It is impossible to predict the failure mode of every LED exposed to electrical overstress as the failure modes have been investigated to vary, but there are some common signs that will indicate an EOS event has occurred:
- Anomalies noticed in the encapsulation and phosphor around the bond wires.
This damage usually appears due to the thermal stress produced during the EOS event.
c. To help minimize the damage from an EOS event Dr. Licht recommends utilizing:
- A surge protection circuit
- An appropriately rated over voltage protection device
- A current limiting device

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EYE SAFETY GUIDELINES

During operation, the LED emits high intensity ultraviolet (UV) light, which is harmful to skin and eyes. UV light is hazardous to skin and may cause cancer. Avoid exposure to UV light when LED is operational. Precautions must be taken to avoid looking directly at the UV light without the use of UV light protective glasses. Do not look directly at the front of the LED or at the LED's lens when LED is operational.

RoHS COMPLIANCE

The levels of environmentally sensitive, persistent biologically toxic (PBT), persistent organic pollutants (POP), or otherwise restricted materials in this product are below the maximum concentration values (also referred to as the threshold limits) permitted for such substances, or are used in an exempted application, in accordance with EU Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS), as adopted by EU member states on July 22, 2019.

HANDLING PRECAUTIONS

LEDs are sensitive to static electricity. When handling, proper ESD protection is required, including:

- Eliminating static charge
- Using grounded wriststrap, ESD footwear, clothes, and floors
- Grounded workstation and tools

ATTACH THE FOLLOWING WARNING LABELS ON PRODUCTS/SYSTEMS THAT USE UV LED:

DISCLAIMER

The specifications, characteristics, and technical data presented in this datasheet are subject to change without prior notice. It is recommended that the most updated specifications, characteristics, and technical data be used in your application.

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