Dr. Licht GmbH

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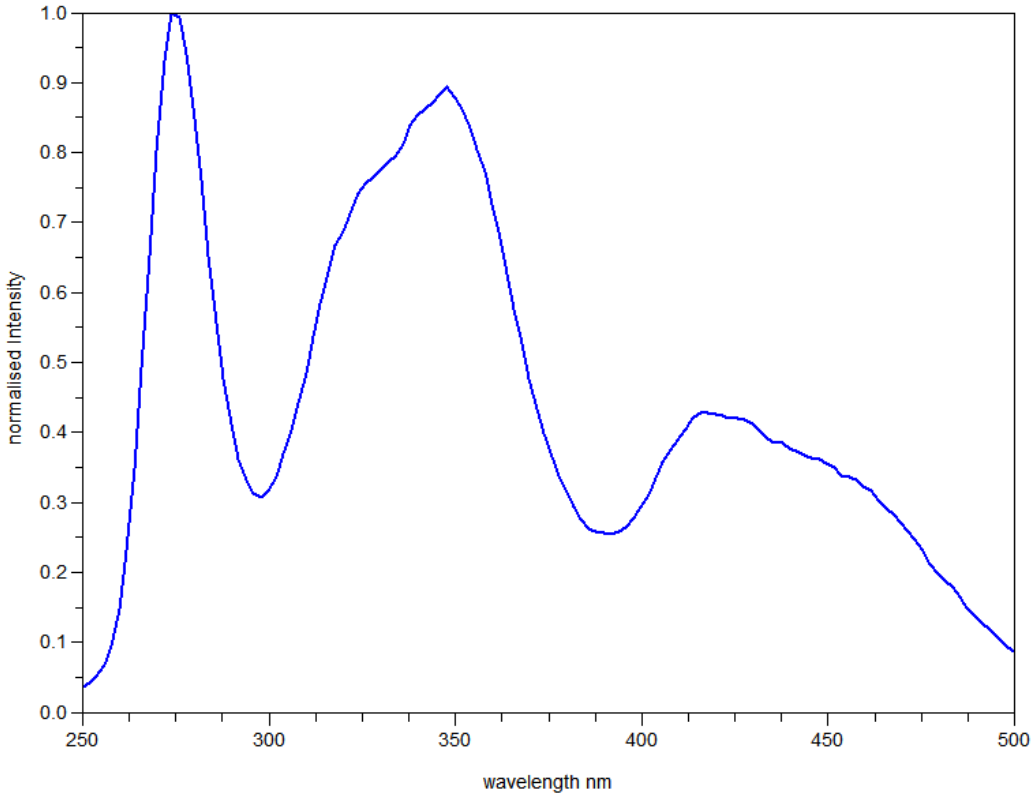
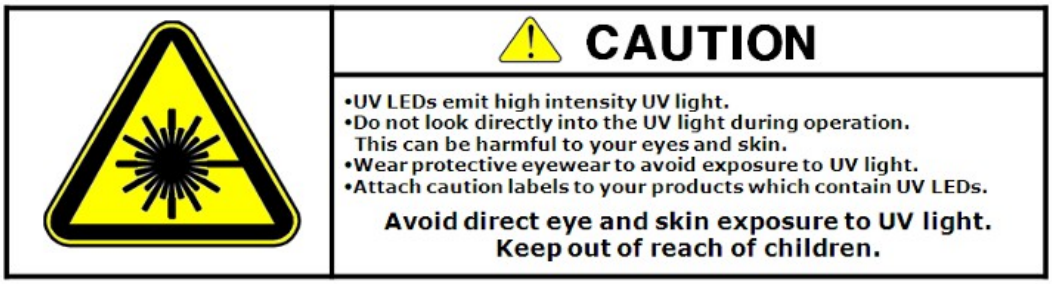
Features

- One 270nm LED power the UVA and B fluoreszenz
- Fluoreszenz light without thermal radiation shift ideal for spectral anaytic
- Long operating life, RoHS compliant, aluminum case, ESD protection

Fig 1. spectrum of the blue UVA-B LED E635 according with spegg29





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Absolute Maximum Ratings at Ta=25°C		
Parameter	Value	Unit
Forward Current	200	mA
Peak Forward Current	200	mA
Reverse Voltage	5	V
Electrostatic Discharge	2000	V
Operating Temperature	from -30 to +60	°C
Storage Temperature	from -40 to +100	°C
Thermal resistance chip to board	26	°C/W

Fig 2. Forward Current vs. Forward Voltage of the blue UVA-B LED E635

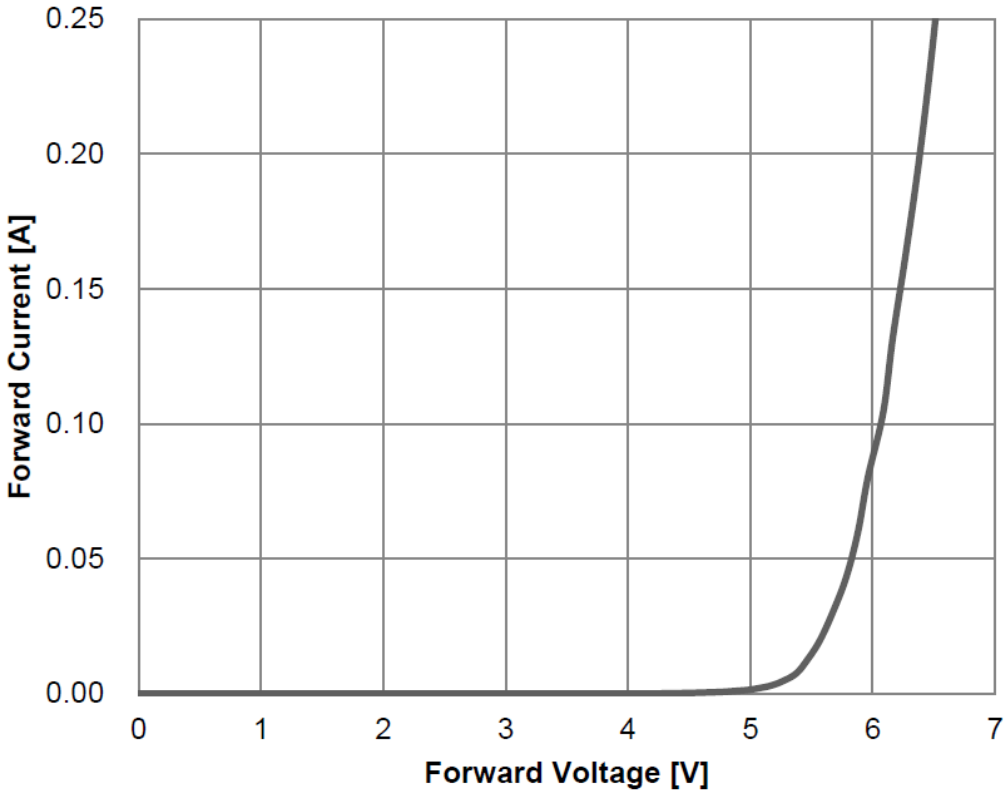

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Fig 3. Relative Radiant Flux vs. Ambient Temperature blue UVA-B LED E635

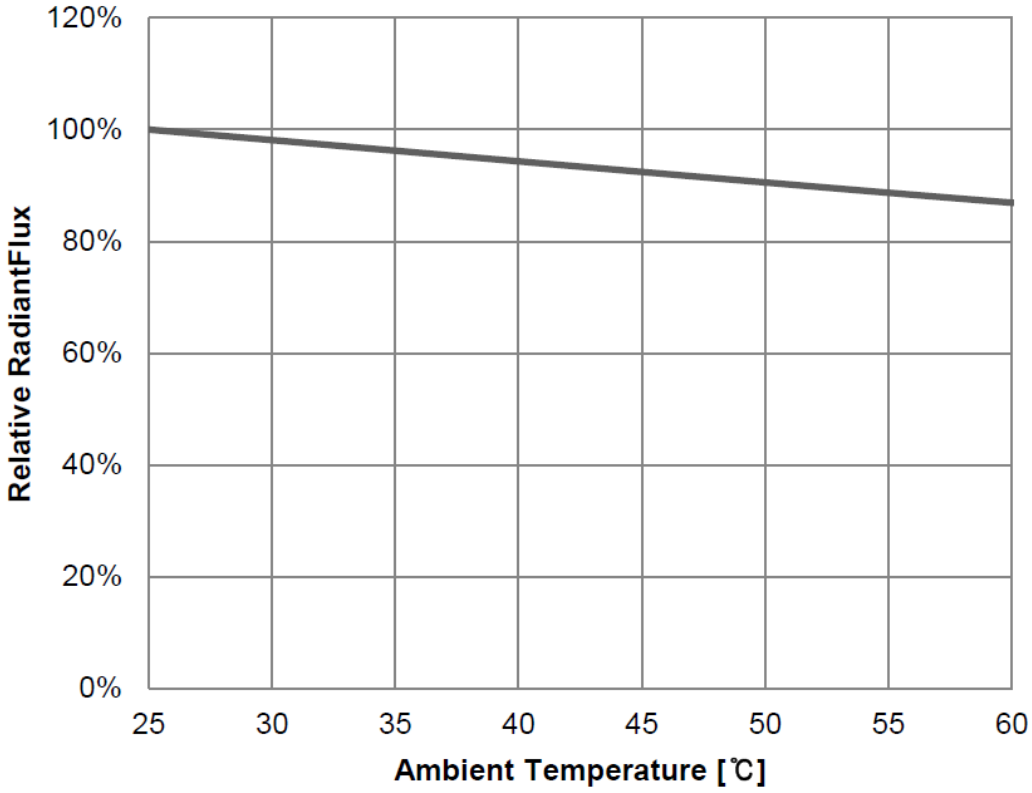

Fig. 4 Forward Voltage [V] vs. Ambient Temperature [C °] blue UVA-B LED E635

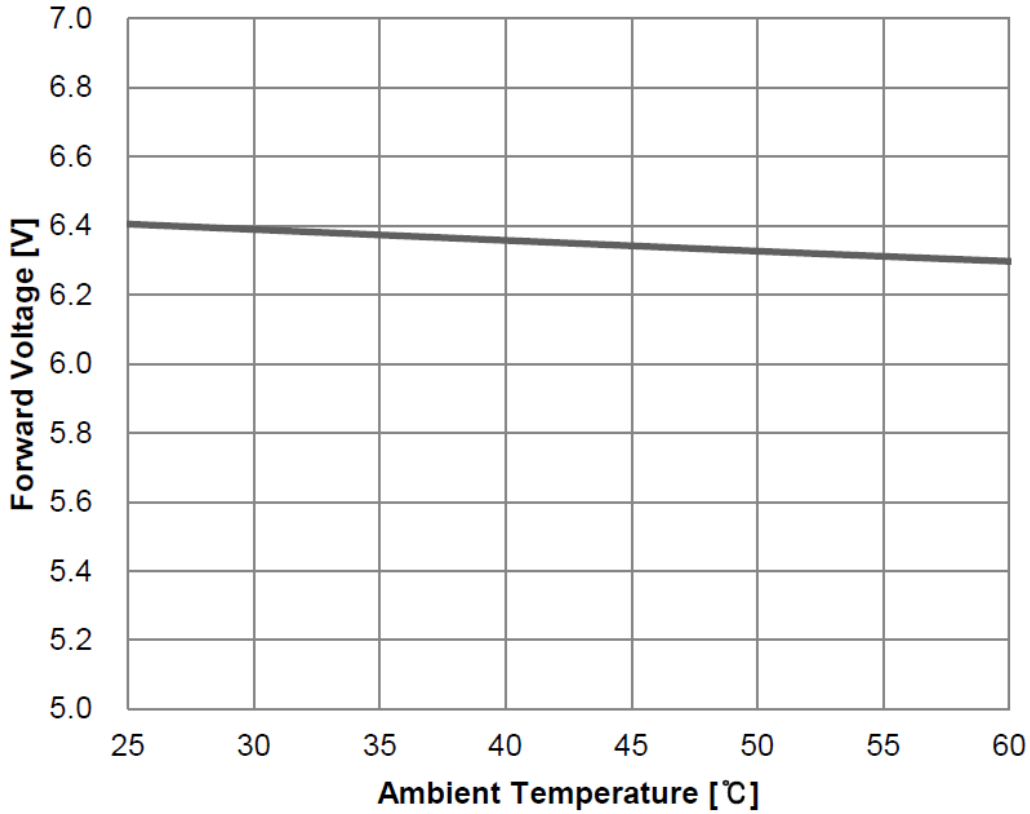

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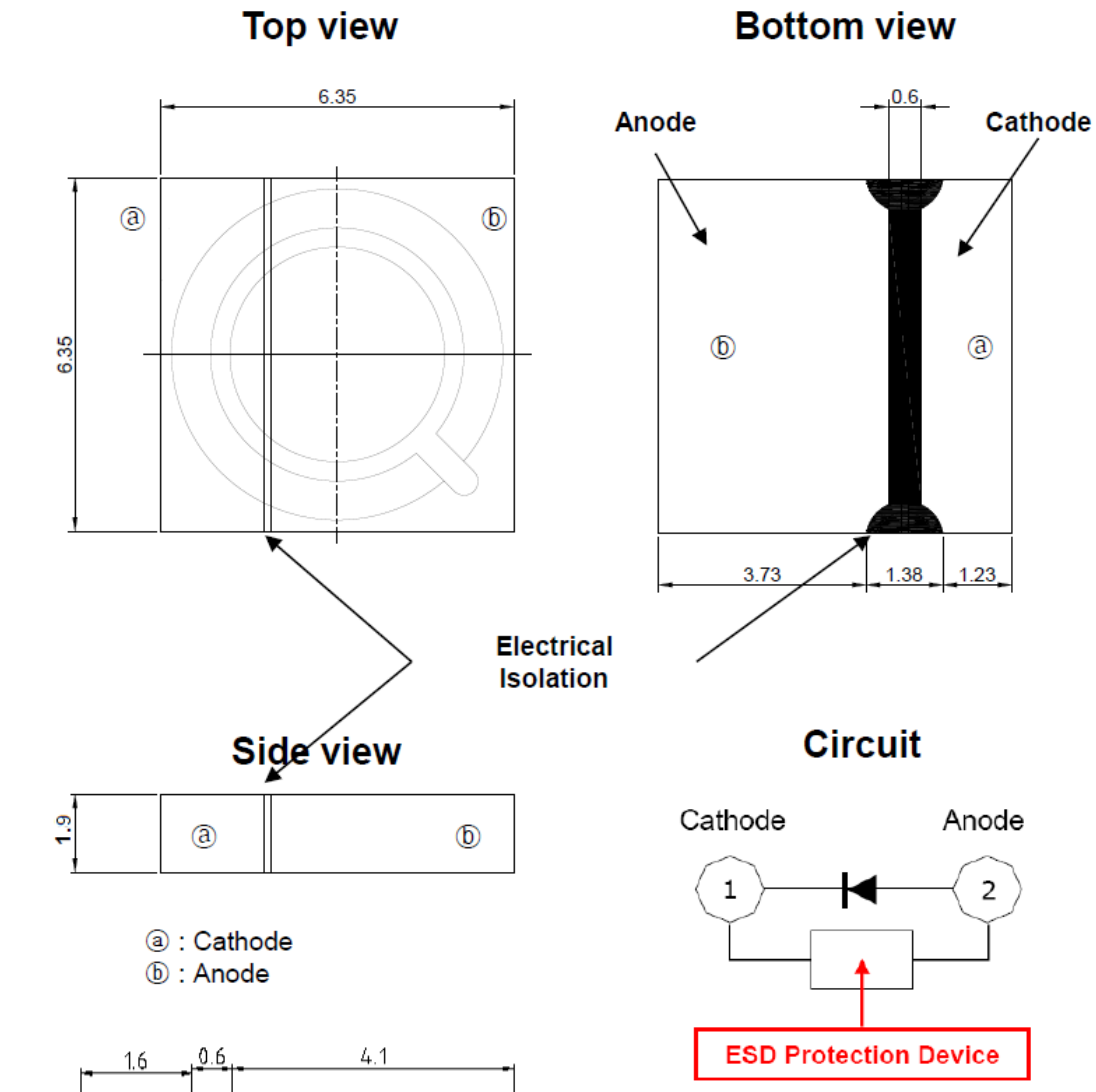
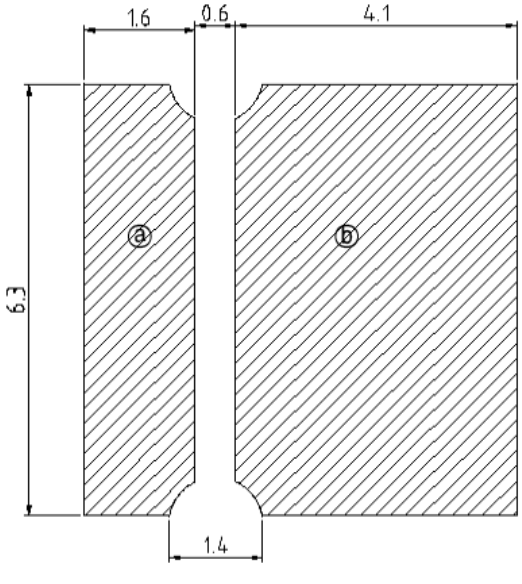
Fig 5. Dimension and recommended solder pad of blue UVA-B LED E635





Recommended PCB solder pad

All dimensions are in: millimeter
Scale : none

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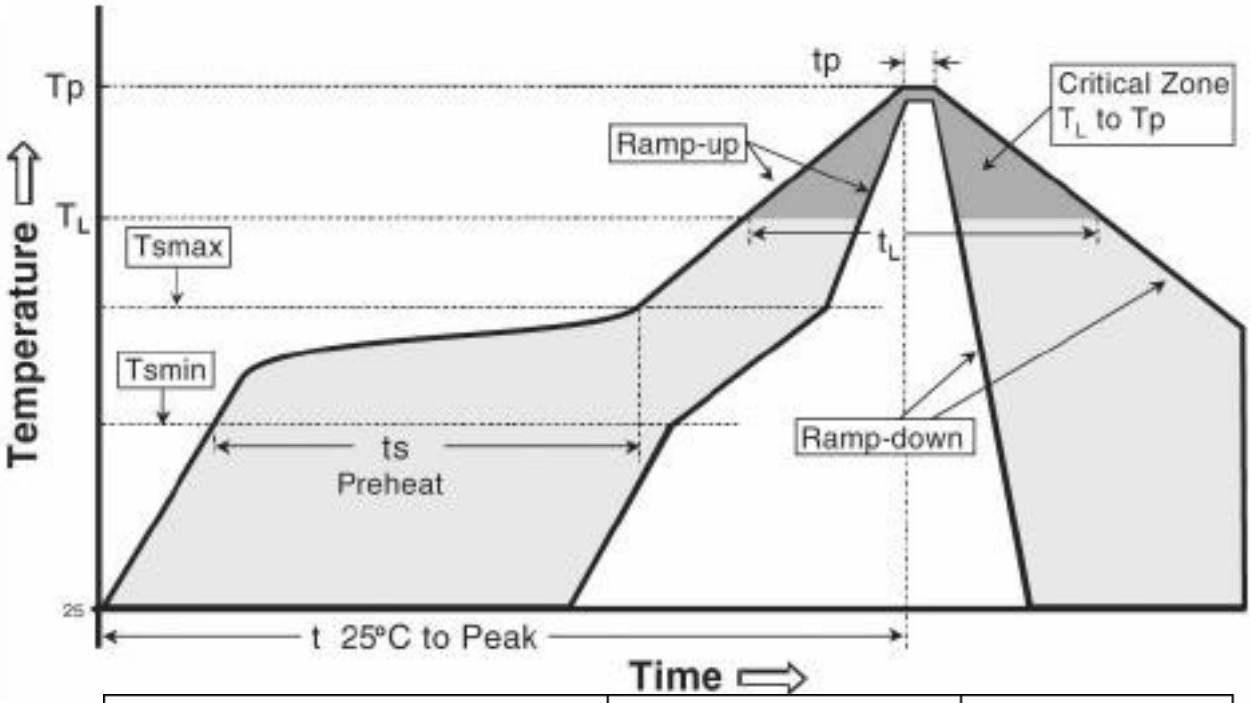
Fig 6. reflow soldering characteristic of blue UVA-B LED E635



Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Average ramp-up rate (Tsmax to Tp)	3° C/second max.	3° C/second max.
Preheat - Temperature Min (Tsmin) - Temperature Max (Tsmax) - Time (Tsmin to Tsmax) (ts)	 100 °C 150 °C 60-120 seconds	 150 °C 200 °C 60-180 seconds
Time maintained above: - Temperature (TL) - Time (tL)	 183 °C 60-150 seconds	 217 °C 60-150 seconds
Peak Temperature (Tp)	215℃	260℃
Time within 5°C of actual Peak Temperature (tp)2	10-30 seconds	20-40 seconds
Ramp-down Rate	6 °C/second max.	6 °C/second max.
Time 25°C to Peak Temperature	6 minutes max.	8 minutes max.

* Caution
1. Reflow soldering should not be done more than one time.
2. Repairs should not be done after the LEDs have been soldered.
When repair is unavoidable, suitable tools must be used.
3. Die slug is to be soldered.
4. When soldering, do not put stress on the LEDs during heating.
5. After soldering, do not warp the circuit board.
6. Recommend to use a convection type reflow machine with 7 ~ 8 zones.

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Handling of the blue UVA-B LED E635

(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.

Precaution 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:
a. Recommend conditions after opening the package - Sealing / Temperature : 5 ~ 30℃Humidity : less than RH60%
b. If the package has been opened more than 4 weeks or the color of the desiccant changes, components should be dried for 10-24hr at 65±5℃

(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) LEDs must be stored in a clean environment. We recommend LEDs store in nitrogen-filled container.

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

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Precaution 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