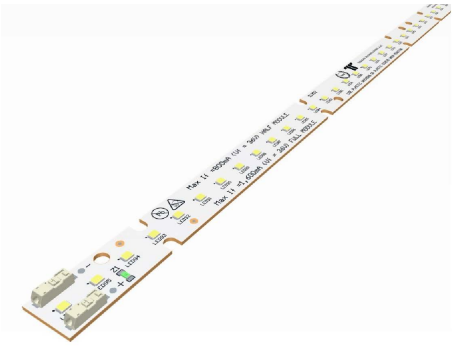
LED Solution

DC Board

TT21252-96Lxxx



Product Brief

Applications

Key Applications

- Architectural
- Channel Lighting
- Outdoor
- Office/Retail/Living Space
- Troffer/Linear/Pendant

Features & Benefits

- High Efficacy & Long Life
- Industry Standard Mechanical Attributes
- Optimized for Industry Standard Power Supplies
- 3 SDCM
- Multiple Nanometer

Table 1. Product Selection - Flux@ 25˚C

Order Code	Part No.	Luminous Flux (lm) or Radiometric Power (mW)		CCT (K)
		Minimum	Typical	CCT
TT21252-96L730	TT21252-96L	9350	9500	Far Red
TT21252-96L660		10400	11000	Deep Red
TT21252-96L625		1600	1800	Red
TT21252-96L615		1900	2100	Red-Orange
TT21252-96L595		4500	4700	PC Amber
TT21252-96L550		7100	7300	Mint
TT21252-96L565		7300	7500	Lime
TT21252-96L530		4500	4700	Green
TT21252-96L500		2500	2700	Cyan
TT21252-96L474		1500	1700	Blue
TT21252-96L447		19700	21000	Royal Blue

Table 2. Product Selection - Vf@25˚C

Part No.	Vf Bin	Forward Voltage (Vdc)	Forward Current (mA)
TT21252-96L	ALL	-	1050

References

Performance Characteristics

Table 3. Electro Optical Characteristics, T_a = 25˚C(1) , I_F = 1050mA

Nanometer	Symbol	Value			Unit	Mark
		Min.	Typ.	Max.		
Far Red	-	720	730	740	nm	-
Deep Red		650	660	670		-
Red		620	625	630		-
Red-Orange		610	615	620		-
PC Amber		590	595	600		-
Mint		545	550	555		-
Lime		560	565	570		-
Green		520	530	540		-
Cyan		490	500	510		-
Blue		469	474	480		-
Royal Blue		440	447	455		
CRI	Ra	80	82	-	-	-
Efficacy lm/w	η	-	180	-	lm/W	-
Input Voltage	V_{in}	24	34	37	Vdc	-
Forward Current	I_F	-	1050	-	mA	-
Po	P	-	120	-	W	-

Notes :

1) The above data were tested at T_a = 25˚C
2) Φ_v is the total luminous flux output measured with an integrated sphere. Its tolerance is ±5%.
3) Correlated Color Temperature is derived from the CIE 1931 Chromaticity diagram. Tolerance of Duv is ±0.003.
4) To use the module properly, recommend to drive the module by a Constant Current Source (CCS). But the Maximum output voltage of the CCS should be limited by referring to this sheet. Tolerance of Voltage, Power Consumption is ±2%.

Spectral Power Distribution Characteristics

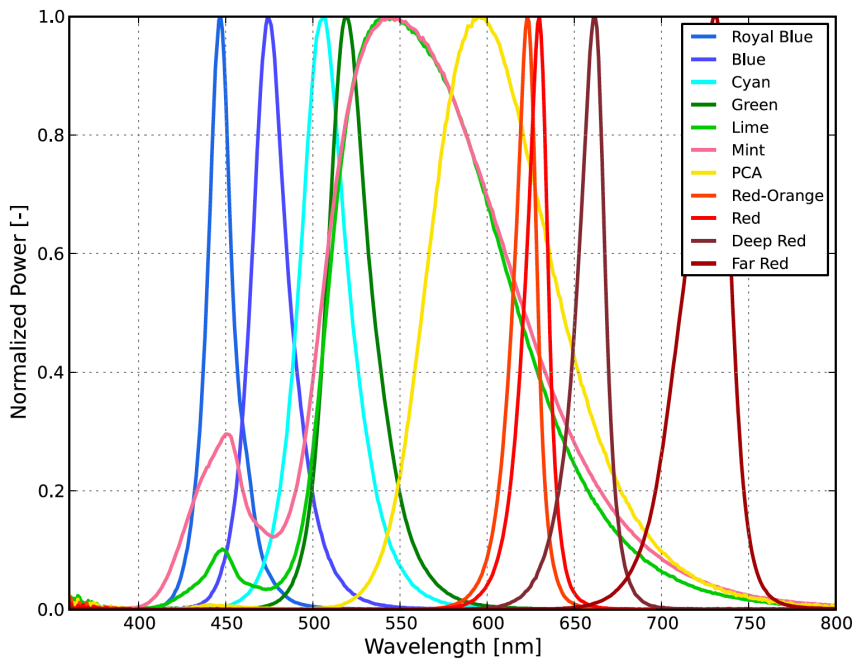


Figure 1. Typical normalized power vs wavelength for 2835 Colors at 120mA, $T_j = 25^\circ C$.

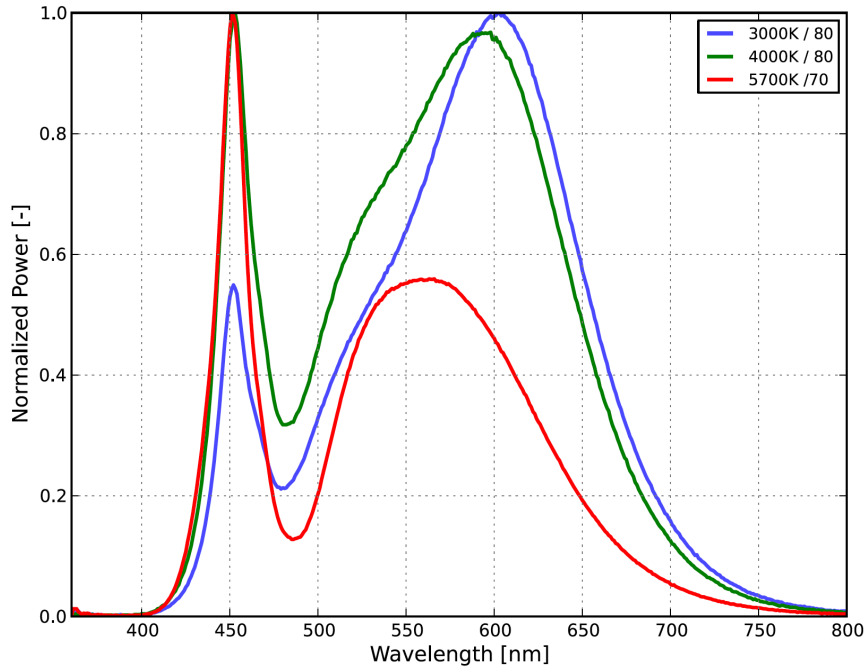
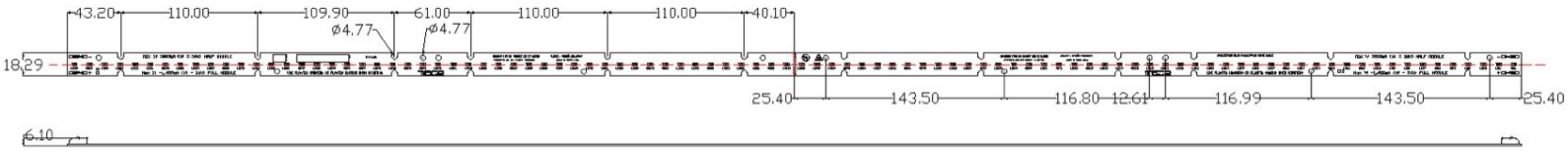


Figure 2. Typical normalized power vs wavelength for 2835 White at 120mA, $T_j = 25^\circ C$.

Mechanical Dimensions

Image 1. Mechanical Dimensions



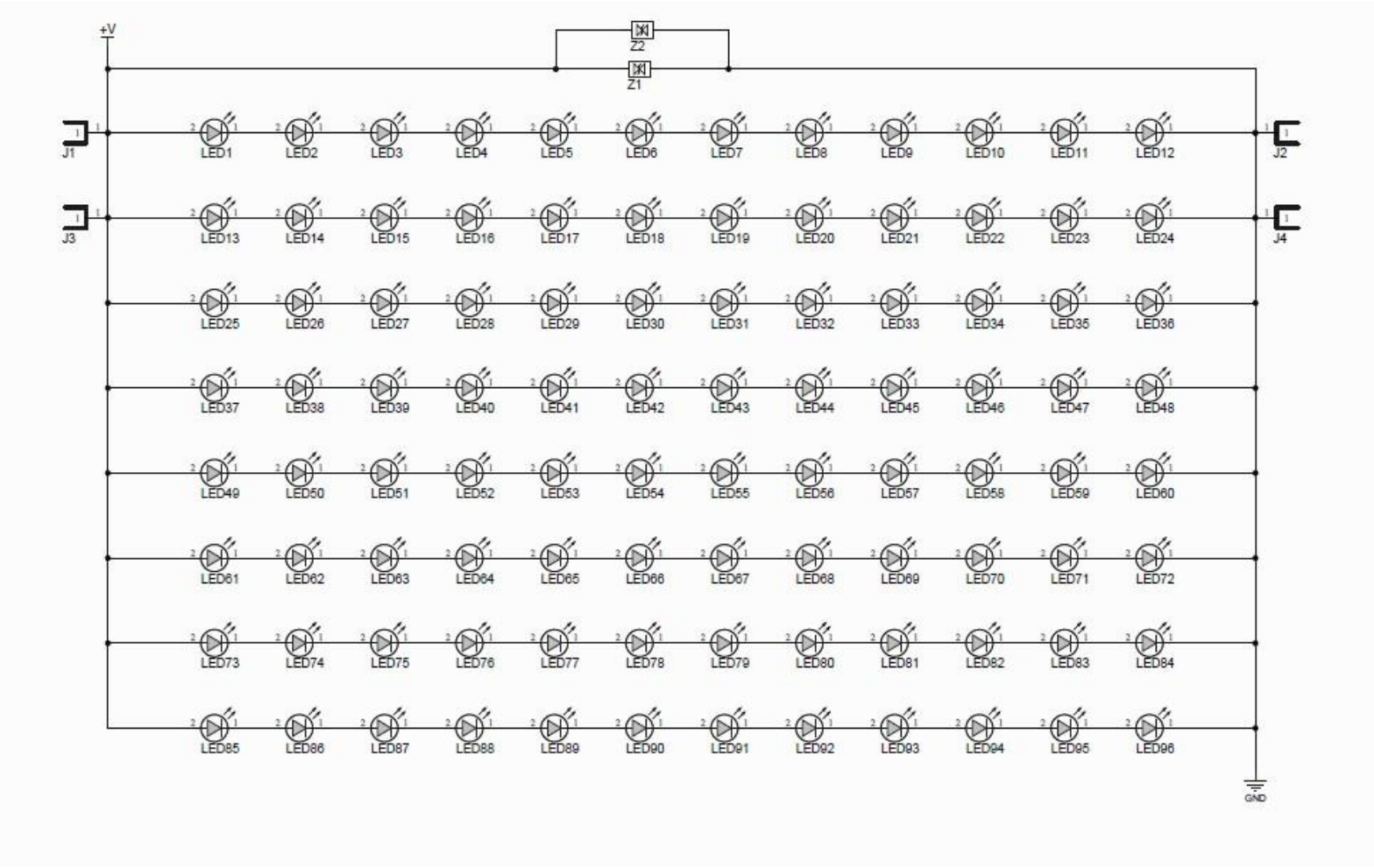
Notes:

(1) All dimensions are in millimeters.

(2) Scale : None

(3) Module thickness : 1.6 ±0.10

Image 2. Circuit Schematic



Part Information

Table 4. Part List

No.	Part	Reference	Specification	Qty
1	LED PKG	L1~L196	LUMILEDS 2835	96
2	PCB	-	MCPCB 1layer / 18.3(W)x1168.4(L)x1.6(T)mm / Cu=1oz / OSP	1
3	Connector	CN1-CN4	2060-451/998-404	4
4	TVS	Z1,Z2	SMF60A	2

Figure 1. Part Information

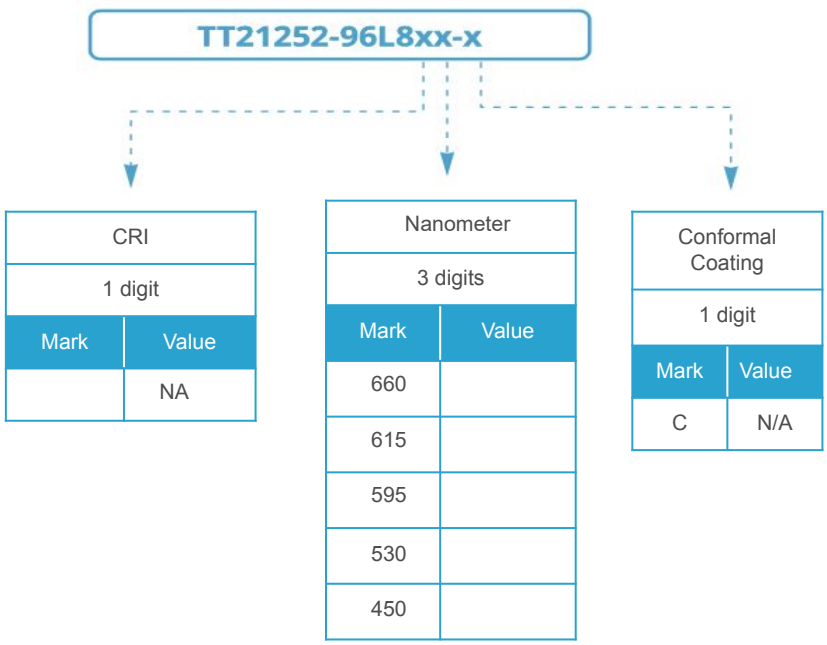


Table 5. Marking Point & Information

MF. Date (YYMMDD)	Module Rank(1)				Customer Part No.	Serial No.
	Flux Rank	CCT Rank	CRI Rank	Vf Rank		
200519				ALL	TT21252-96L8xx-x	00001

Notes :

(1) Customer part no.:

(3) Module CCT ran

Marking Information

Notes :

1) Marking information should be printed in two places

Image 4. Marking point 1
Do ink printing into marking border (from LED L83 to L80)

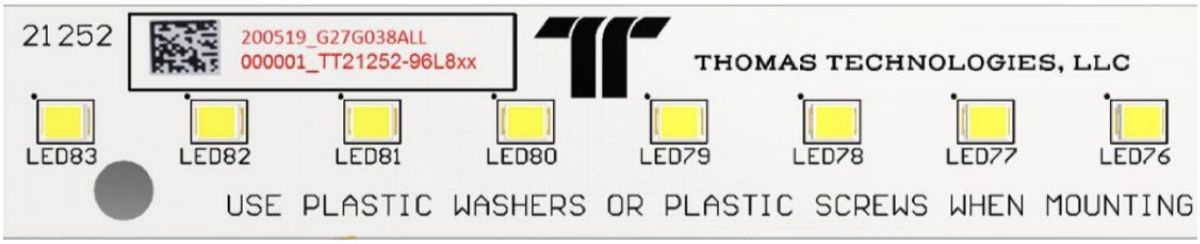
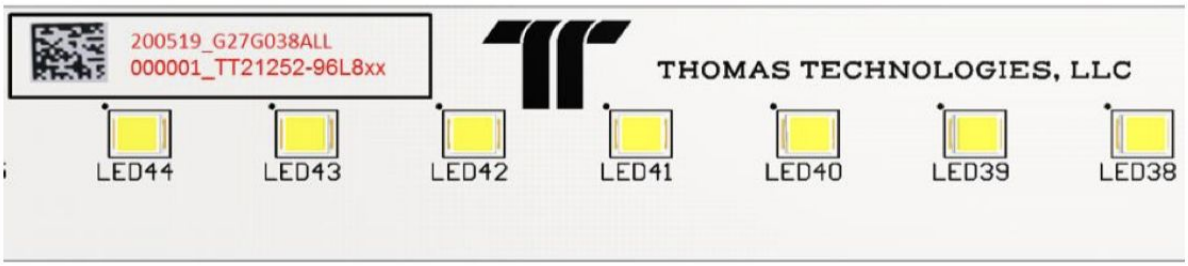


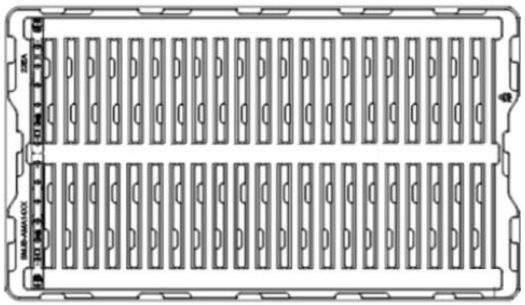
Image 5. Marking point 2:
Marking point 2: Do ink printing from L45 to L42



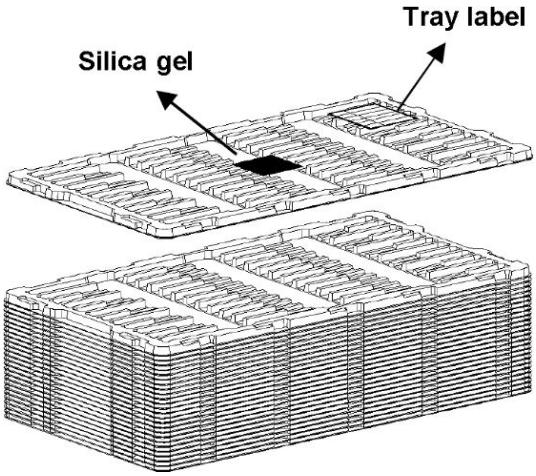
Packing

Table 6. Packing

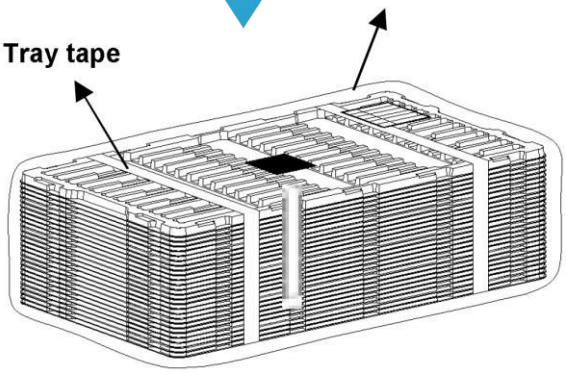
Tray			Box			Pallet		
Size (mm)	Module Qty (EA)	Material	Size (mm)	Tray Qty (EA)	Module Qty (EA)	Size (mm)	Box Qty (EA)	Module Qty (EA)
1210 X 335 X 26	22	Anti-static PET	1230 X 355 X 139	5(+1) Trays	110	1300x1100 x 150	21	2310



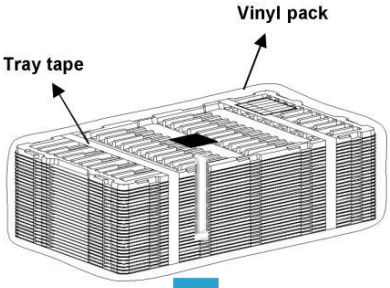
20 pcs LED module per Tray



5 pcs Tray with LED Module
1 pcs Dummy Tray with No LED Module should be covered LED module trays on top



1. Taping the bunch of Trays by 3 positions:
   - 2 outer side and middle
2. Packing Anti-static vinyl



1 box = 5pcs Tray
= 100pcs LED Modules

Conditions of Acceptable Usage

This component has been judged on the basis of the required spacing distances in the Standard for LED Equipment for Use in Lighting Products, UL 8750.

1) The LED modules are intended for connection to a constant current, Class 2 power supply. When the arrays are connected and used with power supplies other than class 2, the need for an additional evaluation shall be considered in the end use product investigation.
2) The LED modules shall be installed in compliance with the mounting, spacing, casualty, and the segregation requirements applicable to the ultimate application.
3) The LED modules were not subjected to the Normal Temperature Test. A Temperature Test shall be conducted in the end product with considerations for the following components, their ratings, and LED-to-LED spacing:
   - Printed Wiring Board – 105°C
   - Connectors – 105°C
4) The LED modules are intended for use in dry and damp locations when connected to a Class 2 power supply. Use in other than dry and damp locations powered by a Class 2 power supply shall be evaluated to the end use application.
5) All models shall be marked with any voltage and current rating that doesn't exceed the maximum ratings in the ELECTRICAL RATINGS table of this report. All models are to be used within their marked ratings.

Precaution for Use

1) Please review the module Application Note for proper protective circuitry usage.
2) DO NOT touch any of the circuit board, components or terminals with body or metal while circuit is active
3) Please do not add or change wires while module circuit is active.
4) Long time exposure to sunlight or UV can cause the lens to discolor.
5) Please do not use adhesives to attach the LED that outgas organic vapor.
6) Please do not use together with the materials containing Sulfur.
7) Please do not assemble in conditions of high moisture and/or oxidizing gas such as Cl, H2S, NH3, SO2 , NOx , etc.
8) Please do not make any modification on module.
9) Please be cautious when soldering to board so as not to create a short between different trace patterns
10) LEDs are sensitive to Electrostatic Discharge (ESD) and Electrical Over Stress (EOS).
    Below is a list of suggestions that Seoul Semiconductor purposes 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

Precaution for Use

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.

- Damaged may be noticed to the bond wires (appearing similar to a blown fuse).
- Damage to the bond pads located on the emission surface of the LED package (shadowing can be noticed around the bond pads while viewing through a microscope).
- 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 Seoul Semiconductor recommends utilizing

- A surge protection circuit
- An appropriately rated over voltage protection device
- A current limiting device

Handling of Silicone Resin for LEDs

1) LED is encapsulated with silicone resin for high optical efficiency.
2) Please do not touch the silicone resin area with sharp objects such as pincette(tweezers).
3) Finger prints on silicone resin area may affect the performance.
4) Please store LEDs in covered containers to prevent dust accumulation as this may affect performance.
5) Excessive force more than 3000gf to the silicone lens can result in fatal or permanent damage with LEDs.
6) Please do not cover the silicone resin area with any other resins such as epoxy, urethane, etc.