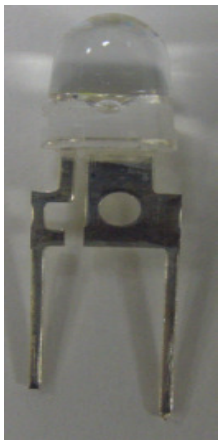
Technical Data Sheet

Preliminary

EHP-5393/UT31C-P01

Features



- Popular 10mm package.
- Typical color temperature 6500K
- View angle:25° .
- High light flux output
- Soldering methods: Dip soldering.
- Grouping parameter: total luminous flux, color coordinates.
- Optical efficiency: 30 lm/W
- Thermal resistance (junction to lead): 13K/W
- The product itself will remain within RoHS compliant version.
- ESD-withstand voltage: up to 4KV

Descriptions

- The series is specially designed for applications requiring higher brightness.
- EHP-5393 is a revolution, energy efficient and ultra compact new light source, combining the lifetime and reliability advantages of Light Emitting Diodes with the brightness of conventional lighting.

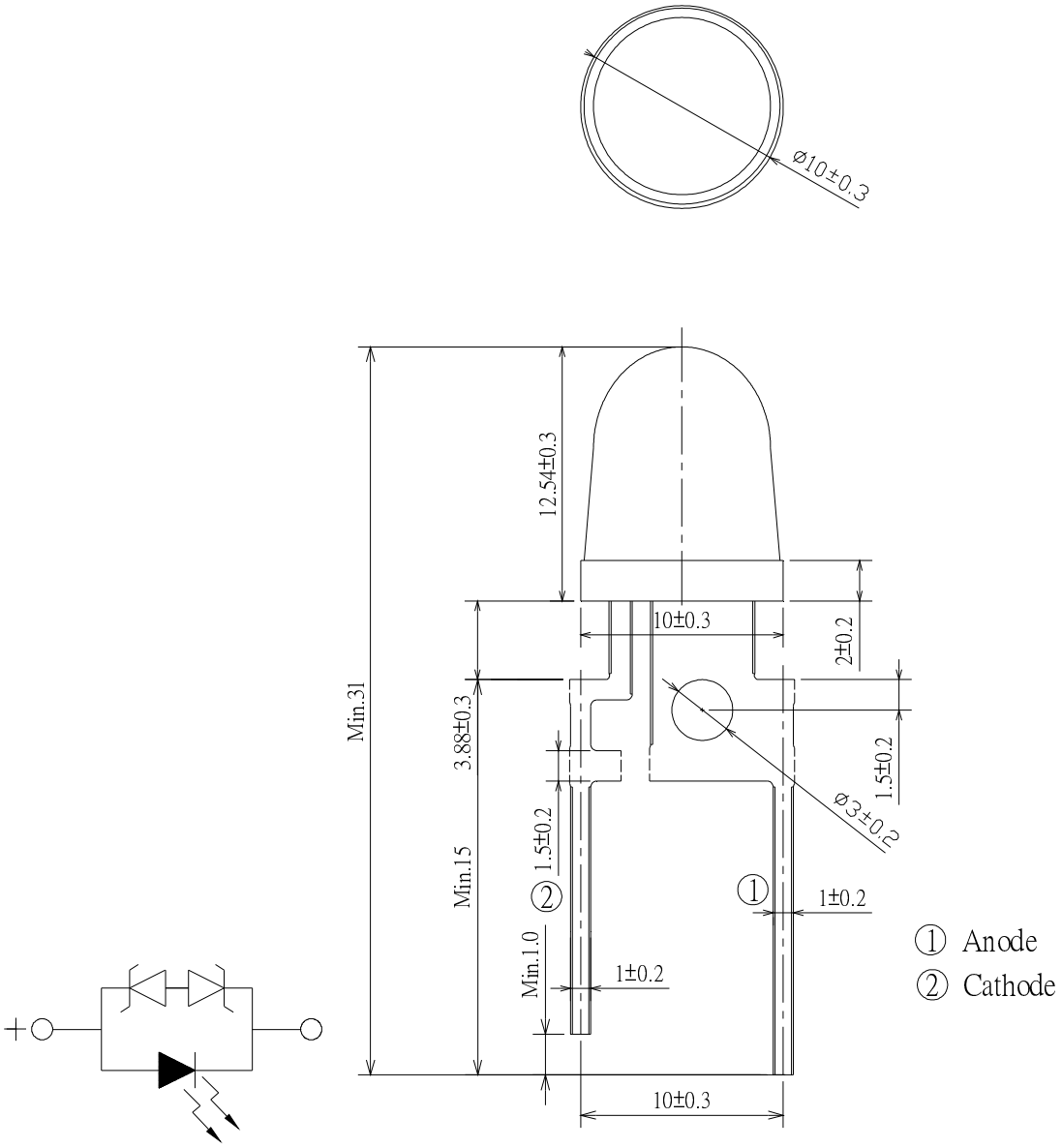
Applications

- Flash
- Sunshine light.
- Advertising Signs.
- Back lighting.

Device Selection Guide

LED Part No.	Chip		Lens Color
	Material	Emitted Color	
EHP-5393/UT31C-P01	InGaN	White	Water Clear

Package Dimensions



Notes:

- Other dimensions are in millimeters, tolerance is 0.25mm except being specified.
- Protruded resin under flange is 1.5mm Max LED.
- Bare copper alloy is exposed at tie-bar portion after cutting.

Absolute Maximum Rating (T_a=25℃)

Parameter	Symbol	Absolute Maximum Rating	Unit
Forward Current	I_F	350	mA
Junction to heat-sink thermal resistance	R_{th}	13	K/W
Operating Temperature	T_{opr}	-40 ~ +85	℃
Storage Temperature	T_{stg}	-40 ~ +100	℃
Electrostatic Discharge	ESD	4K	V
Soldering Temperature	T_{sol}	260	℃
Power Dissipation	P_d	1.4	W
Reverse Voltage	V_R	5	V
Zener Reverse Current	Iz	100	mA

Notes: Soldering time≦5 seconds.

Electro-Optical Characteristics (T_a=25℃)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Luminous Flux	Flux	33	---	52	lm	I_F=350mA
Viewing Angle	$2\theta_{1/2}$	---	25	---	deg	
Forward Voltage	V_F	3.0	3.5	4.0	V	
Reverse Current	I_R	---	---	10	μA	V_R=5V
Zener Reverse Voltage	Vz	5.2	---	---	V	Iz=5mA
Color Temperature	CCT	4500	6500	10000	K	I_F=350mA
Chromaticity Coordinates	x	---	0.29	---	---	I_F=350mA
	y	---	0.28	---	---	

Rank Combination (I_F=350mA)

Rank	J3	J4	J5	K1
Luminous Flux	33~39	39~45	45~52	52~60

*Measurement Uncertainty of Luminous Intensity: ±15% Unit:mcd

Forward Voltage Combination (V at 350mA)

Rank	1	2	3	4	5
Forward Voltage	3.0~3.2	3.2~3.4	3.4~3.6	3.6~3.8	3.8~4.0

*Measurement Uncertainty of Forward Voltage: ±0.1V Unit:V

Color Combination (at 350mA)

Y6-1		Y9-1	
X	Y	X	Y
0.283	0.284	0.29	0.27
0.274	0.301	0.283	0.284
0.281	0.309	0.289	0.291
0.289	0.291	0.295	0.276
Reference CCT: 9000~10000K			

Y6-2		Y9-2	
X	Y	X	Y
0.289	0.291	0.295	0.276
0.281	0.309	0.289	0.291
0.29	0.318	0.297	0.3
0.297	0.3	0.302	0.283
Reference CCT: 8000~9000K			

Y6-3		Y9-3	
X	Y	X	Y
0.308	0.311	0.311	0.293
0.297	0.3	0.302	0.283
0.29	0.318	0.297	0.3
0.303	0.333	0.308	0.311
Reference CCT: 7000~8000K			

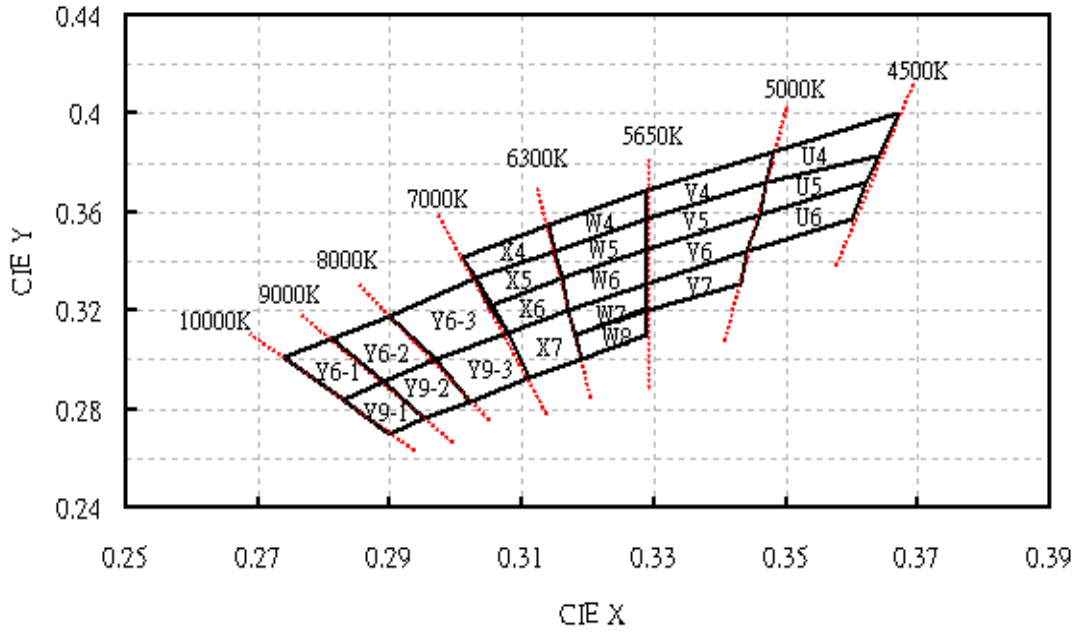
X4		X5		X6		X7	
X	Y	X	Y	X	Y	X	Y
0.301	0.342	0.305	0.322	0.308	0.311	0.308	0.311
0.314	0.355	0.303	0.333	0.305	0.322	0.317	0.32
0.315	0.344	0.315	0.344	0.316	0.333	0.319	0.3
0.303	0.333	0.316	0.333	0.317	0.32	0.311	0.293
Reference CCT: 6300~7000K							

W4		W5		W6		W7		W8	
X	Y	X	Y	X	Y	X	Y	X	Y
0.329	0.369	0.329	0.345	0.329	0.345	0.329	0.331	0.329	0.321
0.329	0.357	0.316	0.333	0.329	0.331	0.329	0.32	0.329	0.31
0.315	0.344	0.315	0.344	0.317	0.32	0.318	0.31	0.319	0.3
0.314	0.355	0.329	0.357	0.316	0.333	0.317	0.32	0.318	0.31
Reference CCT: 5650~6300K									

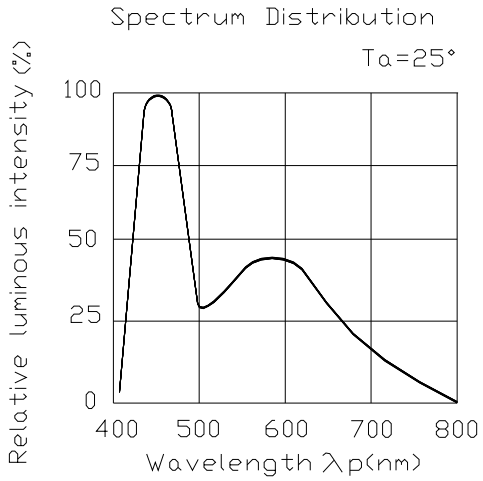
V4		V5		V6		V7	
X	Y	X	Y	X	Y	X	Y
0.329	0.357	0.329	0.345	0.329	0.331	0.329	0.331
0.329	0.369	0.329	0.357	0.329	0.345	0.344	0.344
0.348	0.385	0.347	0.372	0.346	0.359	0.343	0.331
0.347	0.372	0.346	0.359	0.344	0.344	0.329	0.32
Reference CCT: 5000~5650K							

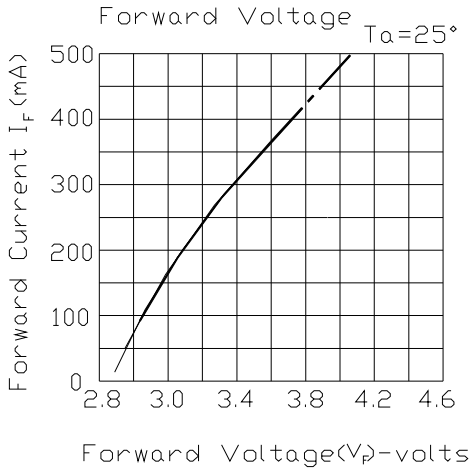
U4		U5		U6	
X	Y	X	Y	X	Y
0.364	0.383	0.364	0.383	0.362	0.372
0.367	0.4	0.362	0.372	0.36	0.357
0.348	0.385	0.346	0.359	0.344	0.344
0.347	0.372	0.347	0.372	0.346	0.359
Reference CCT: 4500~5000K					

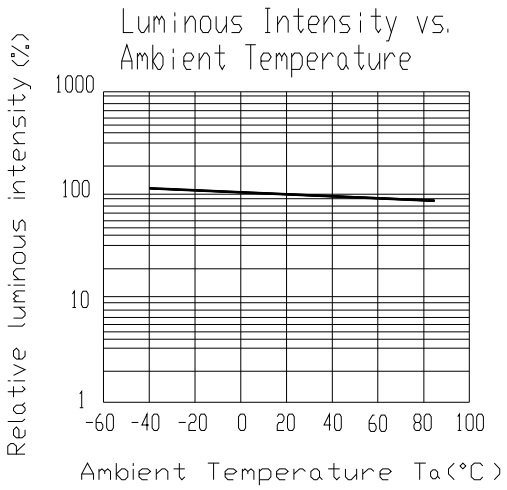
CIE Chromaticity Diagram

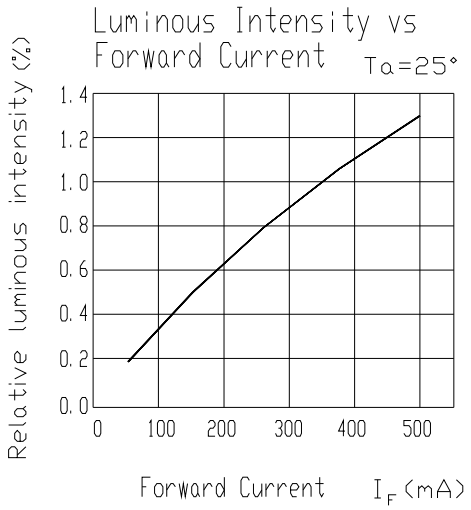


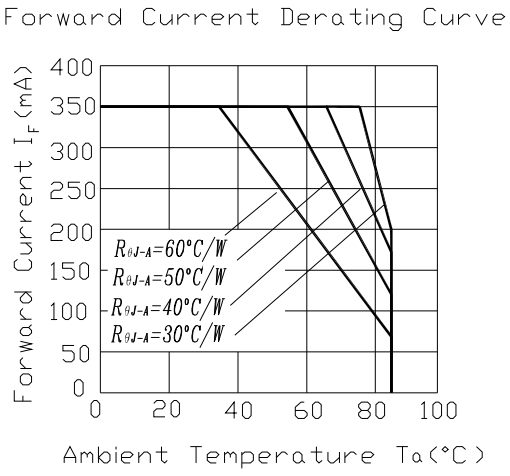
Typical Electro-Optical Characteristics Curves

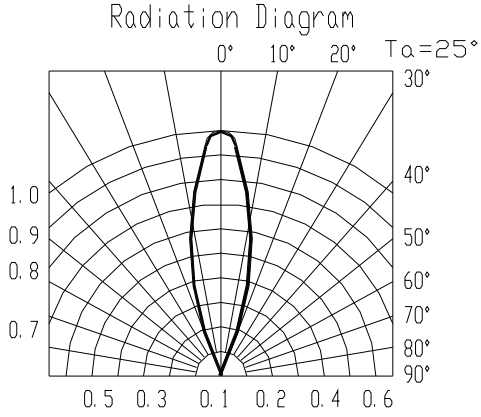






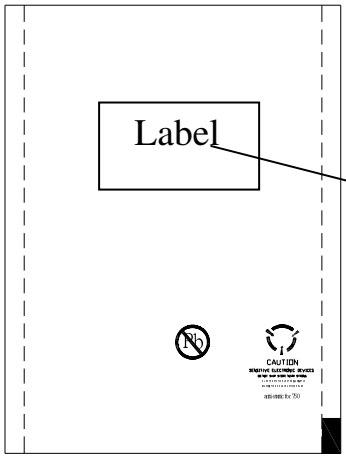






Packing Specification

- Anti-electrostatic bag



EVERLIGHT

CPN:

P/N:XXXXXXXXXX

RoHS

XXX/XXXX-XXXX

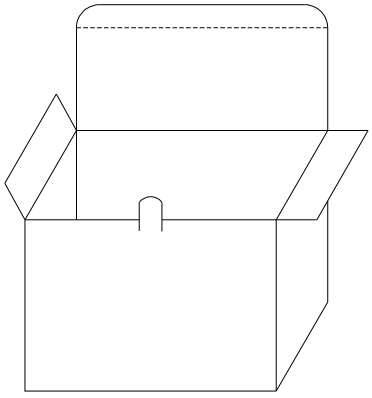
QTY：XXXX CAT:XX

HUE:XX

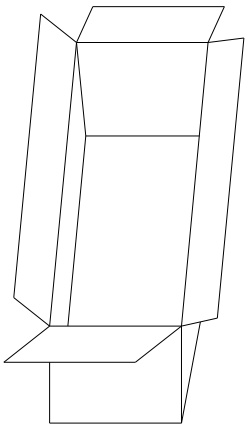
LOT NO： XXXXXXXX REF:XX

MADE IN TAIWAN

- Inner Carton



- Outside Carton



- Label Form Specification

  CPN: Customer's Production Number

  P/N : Production Number

  QTY: Packing Quantity

  CAT: Ranks of Total Flux and Forward Voltage

  HUE: Color Rank

  REF: Reference

  LOT No: Lot Number

  MADE IN TAIWAN: Production Place

- Packing Quantity

  1. 250 PCS/1 Bag，5 Bags/1 Inner Carton

  2. 10 Inner Cartons/1 Outside Carton

Notes

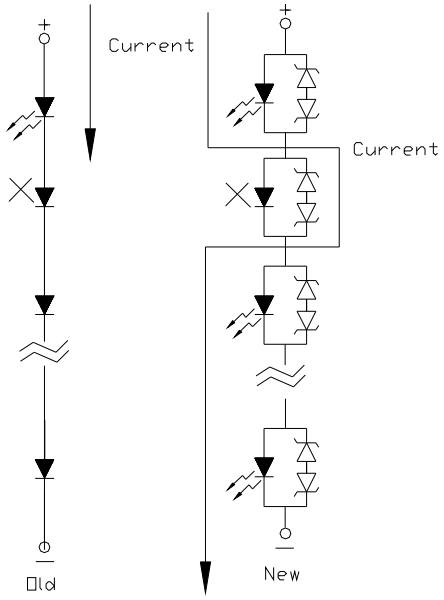
1. Lead Forming
   - During lead formation, the leads should be bent at a point at least 3mm from the base of the epoxy bulb.
   - Lead forming should be done before soldering.
   - Avoid stressing the LED package during leads forming. The stress to the base may damage the LED's characteristics or it may break the LEDs.
   - Cut the LED leadframes at room temperature. Cutting the leadframes at high temperatures may cause failure of the LEDs.
   - When mounting the LEDs onto a PCB, the PCB holes must be aligned exactly with the lead position of the LED. If the LEDs are mounted with stress at the leads, it causes deterioration of the epoxy resin and this will degrade the LEDs.
2. Storage
   - The LEDs should be stored at 30°C or less and 70%RH or less after being shipped from Everlight and the storage life limits are 3 months. If the LEDs are stored for 3 months or more, they can be stored for a year in a sealed container with a nitrogen atmosphere and moisture absorbent material.
   - Please avoid rapid transitions in ambient temperature, especially, in high humidity environments where condensation can occur.
3. Soldering
   - Careful attention should be paid during soldering. When soldering, leave more then 3mm from solder joint to epoxy bulb, and soldering beyond the base of the tie bar is recommended.
   - Recommended soldering conditions:

Hand Soldering		DIP Soldering	
Temp. at tip of iron	300℃ Max. (30W Max.)	Preheat temp.	100℃ Max. (60 sec Max.)
Soldering time	3 sec Max.	Bath temp. & time	260 Max., 5 sec Max
Distance	3mm Min.(From solder joint to epoxy bulb)	Distance	3mm Min. (From solder joint to epoxy bulb)

- Avoiding applying any stress to the lead frame while the LEDs are at high temperature particularly when soldering.
- Dip and hand soldering should not be done more than one time
- After soldering the LEDs, the epoxy bulb should be protected from mechanical shock or vibration until the LEDs return to room temperature.
- A rapid-rate process is not recommended for cooling the LEDs down from the peak temperature.
- Although the recommended soldering conditions are specified in the above table, dip or handsoldering at the lowest possible temperature is desirable for the LEDs.
- Wave soldering parameter must be set and maintain according to recommended temperature and dwell time in the solder wave.

4. Cleaning
   - When necessary, cleaning should occur only with isopropyl alcohol at room temperature for a duration of no more than one minute. Dry at room temperature before use.
   - Do not clean the LEDs by the ultrasonic. When it is absolutely necessary, the influence of ultrasonic cleaning on the LEDs depends on factors such as ultrasonic power and the assembled condition. Ultrasonic cleaning shall be pre-qualified to ensure this will not cause damage to the LED

5. Circuit Protection
   - Below the zener reference voltage Vz, all the current flows through LED and as the voltage rises to Vz, the zener diode “breakdown." If the voltage tries to rise above Vz current flows through the zener branch to keep the voltage at exactly Vz.
   - When the LED is connected using serial circuit, if either piece of LED is no light up but current can’t flow through causing others to light down. In new design, the LED is parallel with zener diode. if either piece of LED is no light up but current can flow through causing others to light up.



6. Heat Management
   - Heat management of LEDs must be taken into consideration during the design stage of LED application. The current should be de-rated appropriately by referring to the de-rating curve found in each product specification.
   - The temperature surrounding the LED in the application should be controlled. Please refer to the data sheet de-rating curve.
   - If the emitter is operated, consider using metal heat sink with the lowest possible thermal resistance. For the thermal performance using a flat heat sink, allow an exposed surface area of about 25mm^2 at least.
7. ESD (Electrostatic Discharge)
   - Electrostatic discharge (ESD) or surge current (EOS) can damage LEDs.
   - An ESD wrist strap, ESD shoe strap or antistatic gloves must be worn whenever handling LEDs.
   - All devices, equipment and machinery must be properly grounded.
   - Use ion blower to neutralize the static charge which might have built up on surface of the LEDs plastic lens as a result of friction between LEDs during storage and handing.

8. Other
   - Above specification may be changed without notice. EVERLIGHT will reserve authority on material change for above specification.
   - When using this product, please observe the absolute maximum ratings and the instructions for using outlined in these specification sheets. EVERLIGHT assumes no responsibility for any damage resulting from use of the product which does not comply with the absolute maximum ratings and the instructions included in these specification sheets.
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