LIGHT EMITTING DIODE SPECIFICATION

Revise History

Rev.	Descriptions	Date	Page
1.0	-	23-10-2017	-
2.0	Renew form	15-12-2018	-
2.1	Renew form	10-11-2020	-
2.2	Renew form	27-12-2023	-

Features:

- ●Long operating life
- ●Low Power Consumption
- ●Low voltage DC operated
- ●RoHS Compliant

Application:

●Status indicator,Traffic light,Industrial control panel,Sensor status indication,Wearable and portable devices

Part Number	Dice Material	Emitted Color	Lens Color
IE-5Y4SD-6E	AlGaInP	Yellow	Yellow Diffused

Electro-Optical Characteristics(Ta=25℃)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Luminous Intensity *1	IV	200	-	400	mcd	IF=20mA
Radiation Bandwidth	△λ	-	30	-	nm	
Forward Voltage	VF	1.80	2.00	2.40	v	
Peak Wavelength	λp	-	592	-	nm	
Dominant Wavelength *3	λd	585	590	595	nm	
Viewing Angle *2	2θ1/2	-	60	-	deg	
Reverse Current	IR	-	-	10	uA	VR=5V

Notes:

1. ALuminous intensity is measured with a light sensor and filter combination that approximates the CIE eye-response curve.

2. 2θ1/2 is the o -axis angle where the luminous intensity is 1/2 the peak intensity

3. The dominant wavelength (λd) is derived from the CIE chromaticity diagram and represents the single wavelength which defines the color of the device

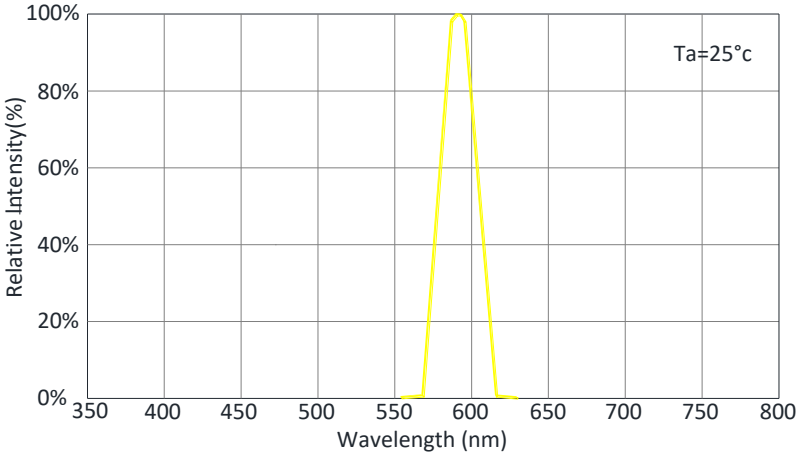
Absolute Maximum Ratings(Ta=25℃)

Parameter	Symbol	Max.	Unit
Power Dissipation	Pd	60	mW
Peak Forward Current *1	IFP	100	mA
Forward Current *2	IF	25	mA
Reverse Voltage	VR	5	v
Electrostatic Discharge	ESD	2000	v
Operating Temperature Range	Topr	-40to+85	°C
Storage Temperature Range	Tstg	-40to+85	°C
Reflow Soldering	Tsld	260℃ for 5secs	

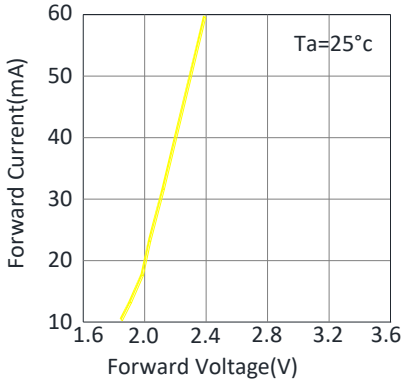
Notes: 1.Derate linearly as shown in derating curve. 2. Duty Factor = 10%, Frequency = 1 kHz

Optical & Electrical Characteristics

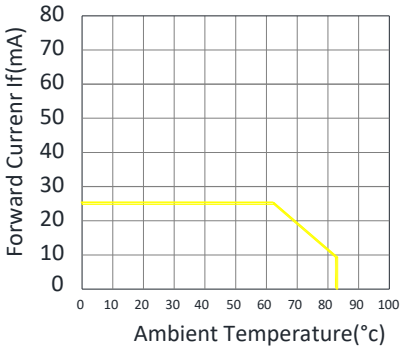
Relative Intensity vs.Wavelength



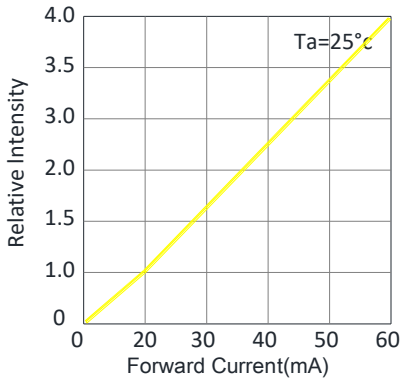
Forward Current vs.Forward Voltage



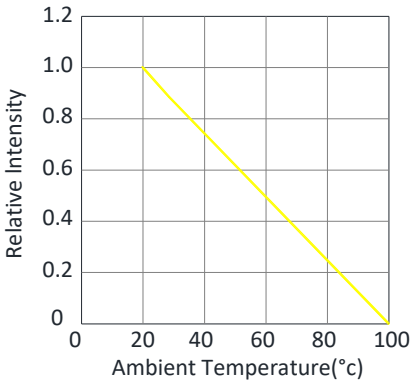
Maximum Driving Forward DC Current vs.Ambient Temperature(De-rating based on Tj max.=115°c)



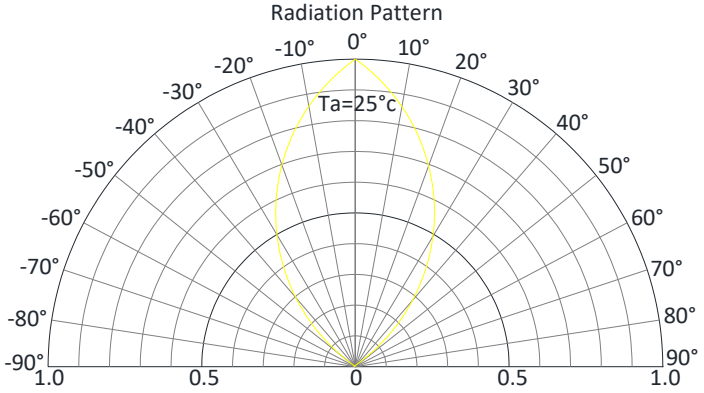
Relative Intensity vs.Forward Currenr



Relative Intensity vs.Ambient Temperature



Radiation Pattern



Bin Limits

Bin Range Of Luminous Intensity (Unit:mcd)

Bin Code	Min	Max	Condition
L1	200	400	IF=20mA
L2	-	-	
L3	-	-	

Bin Range Of Forward Voltage (Unit:V)

Bin Code	Min	Max	Condition
V1	1.8	2.0	IF=20mA
V2	2.0	2.2	
V3	2.2	2.4	
V4	-	-	
V5	-	-	

Bin Range Of Wavelength (Unit:nm)

Bin Code	Min	Max	Condition
Y1	585	590	IF=20mA
Y2	590	595	
Y3	-	-	
Y4	-	-	
Y5	-	-	
Y6	-	-	

Notes:

1.Luminous flux measurement tolerance: ±10%.

2.Wavelength measurement tolerance: ±1nm.

3.Forward voltage measurement tolerance: ±0.1V.

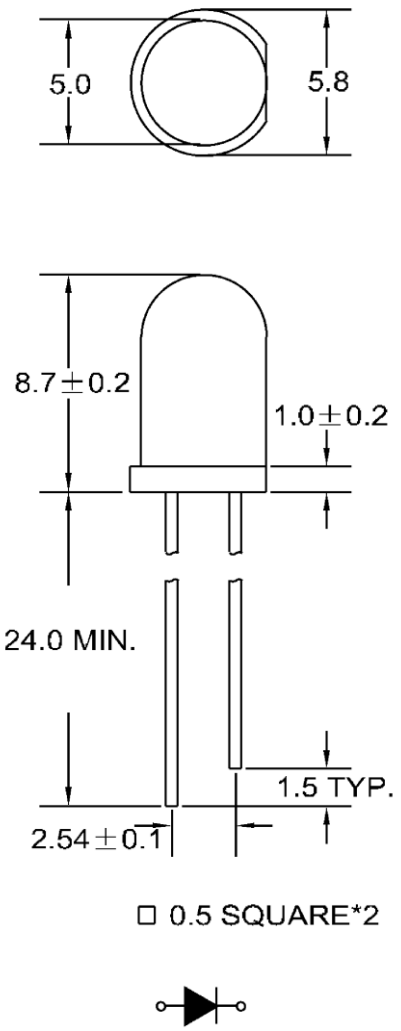
Reliability Test Items And Conditions

Test Items	Reference	Test Conditions	Time	Quantity	Criterion
Thermal Shock	MIL-STD-202G	-40℃ (30min) -100℃ (30min)	100 Cycles	22	0/22
Temperature And Humidity Cyclic	JEITA ED-4701 200 203	-10℃~65℃; 0%~90%RH	10cycles	22	0/22
High Temperature Storage	JEITA ED -4071 200 201	Ta=100℃	1000H	22	0/22
Low Temperature Storage	JEITA ED -4071 200 202	Ta=-40℃	1000H	22	0/22
High Temperature High Humidity Storage	JEITA ED -4071 100 103	Ta=85℃; RH=85%	1000H	22	0/22
High Temperature Life Test	JESD22-A108D	Ta=80℃	1000H	22	0/22
Life Test	JESD22-A108D	Ta=25℃ IF=20mA	1000H	22	0/22
Resistance to Sodering Heat	GB/T 4937, Ⅱ, 2.2&2.3	Tsol*=(240±5)℃10secs	2 times	22	0/22

Criteria For Judging Damage

Test Items	Symbol	Test Conditions	Criteria For Judging Damage
Forward Voltage	V_F	$I_F=I_{FT}$	Initial Data±10%
Recerse Current	I_R	V_R=5V	I_R≤10uA
Luminous Intensity	IV	$I_F=I_{FT}$	Average I_V degradation≤30% ; Single LED I_V degradation≤50%
Resistance to Soldering Heat	-	-	Meterial without internal cracks,no meterial between stripped,no deaded light

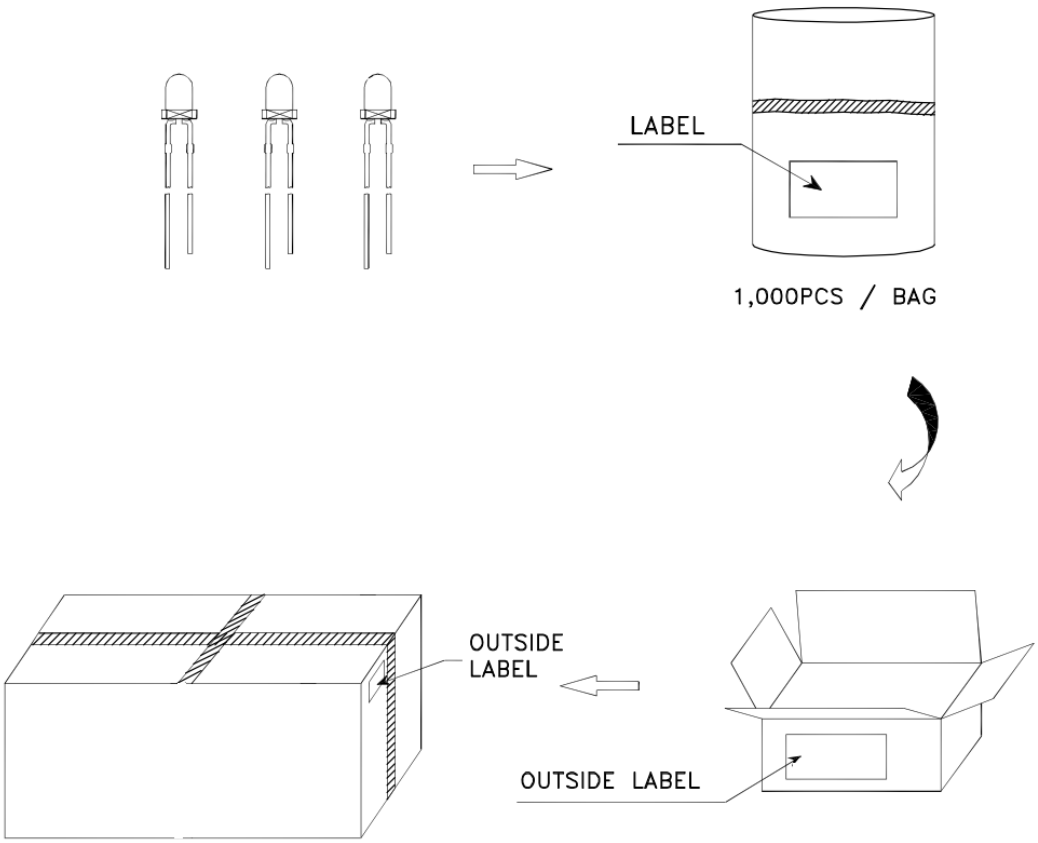
Product size (Unit:mm)



Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is ±0.25(0.01") unless otherwise noted.
3. Lead spacing is measured where the leads emerge from the package.

Packaging



Precautions

1. Lead Forming

1.1 During lead formation, the leads should be bent at a point at least 3mm from the base of the epoxy bulb.

1.2 Lead forming should be done before soldering.

1.3 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.

1.4 Cut the LED lead frames at room temperature. Cutting the lead frames at high temperatures may cause failure of the LEDs.

1.5 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

2.1 The LEDs should be stored at 30°C or less and 70%RH or less after being shipped from Ekinglux 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.

2.2 Please avoid rapid transitions in ambient temperature, especially, in high humidity environments where condensation can occur.

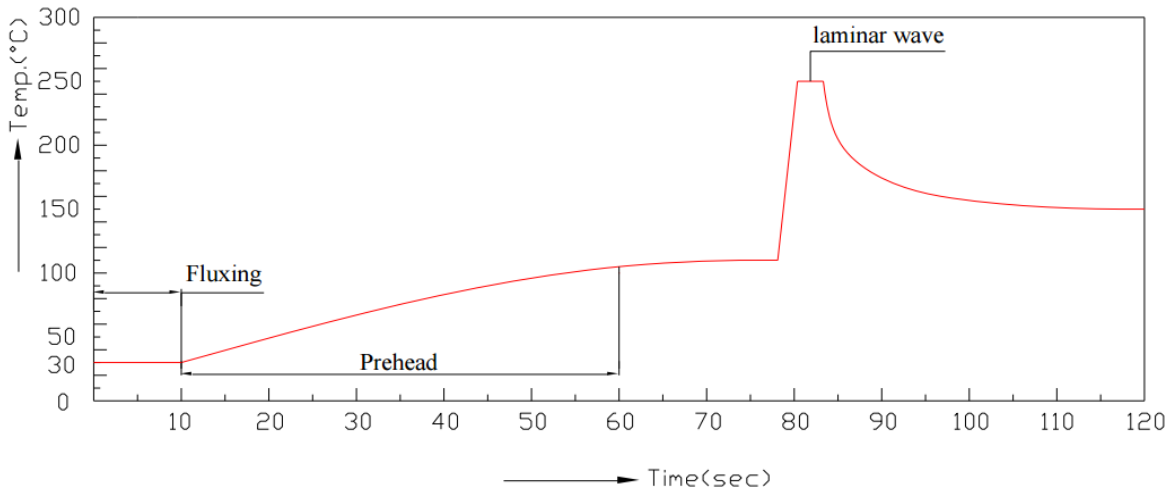
3. Soldering

3.1 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.

3.2 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)

3.3 Recommended soldering profile



3.4 Avoiding applying any stress to the lead frame while the LEDs are at high temperature particularly when soldering.

3.5 Dip and hand soldering should not be done more than one time

3.6 After soldering the LEDs, the epoxy bulb should be protected from mechanical shock or vibration until the LEDs return to room temperature.

3.7 A rapid-rate process is not recommended for cooling the LEDs down from the peak temperature.

3.8 Although the recommended soldering conditions are specified in the above table, dip or hand soldering at the lowest possible temperature is desirable for the LEDs.

3.9 Wave soldering parameter must be set and maintain according to recommended temperature and dwell time in the solder wave.

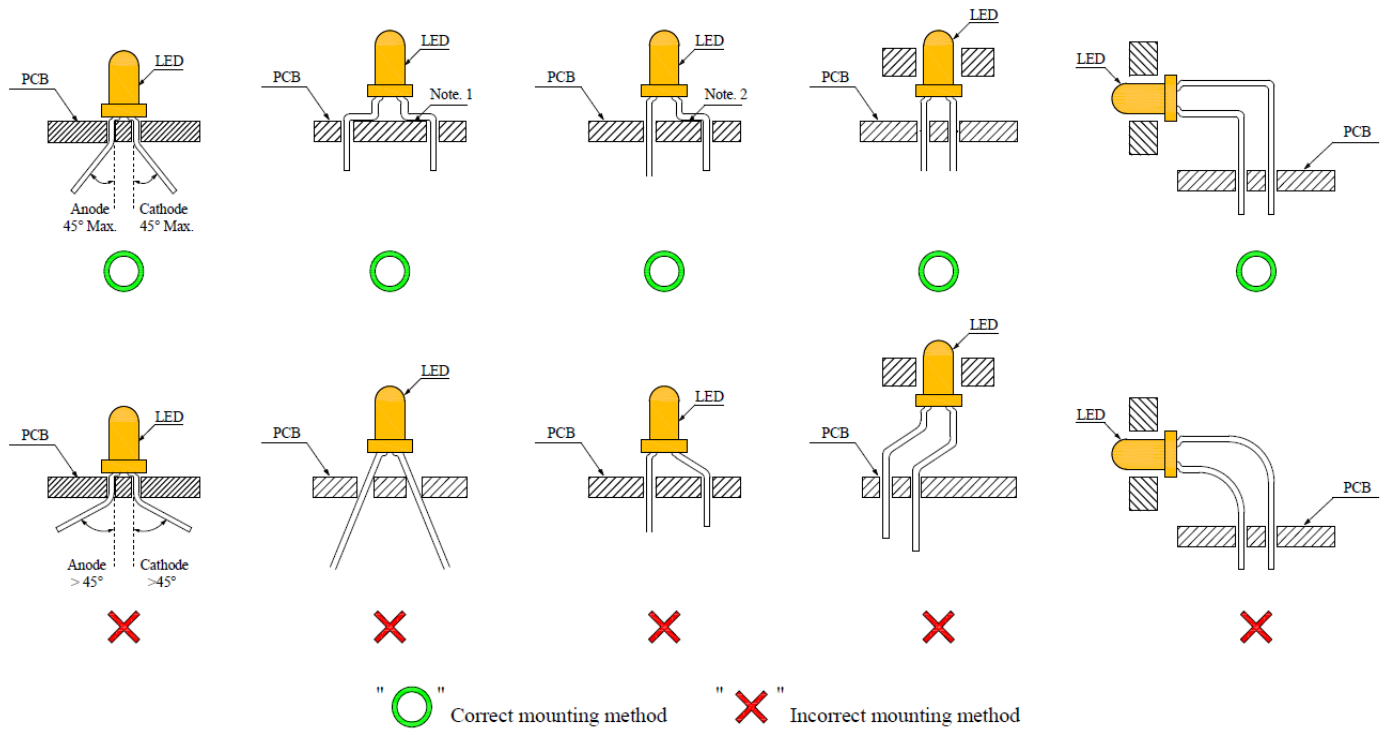
4. Cleaning

4.1 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.

4.2 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. Assembly method

The spacing between LED leadframe must match the spacing between mounting holes on the PCB when placing components. If LED leadframe need to be formed to ensure that the spacing between leadframe matches the spacing between PCB holes, please refer to the correct bracket forming process illustrated in the following figure.



Note 1-2:Do not route PCB trace in the contact area between the leadframe and the PCB to prevent short-circuits.