

# SPECIFICATION

Product : 3535 Ceramic IR LED

Part No. : IWS-C3522-XI-H1

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Proposed By	Checked By	Checked By	Checked By	Approval
결재완료				

Comment



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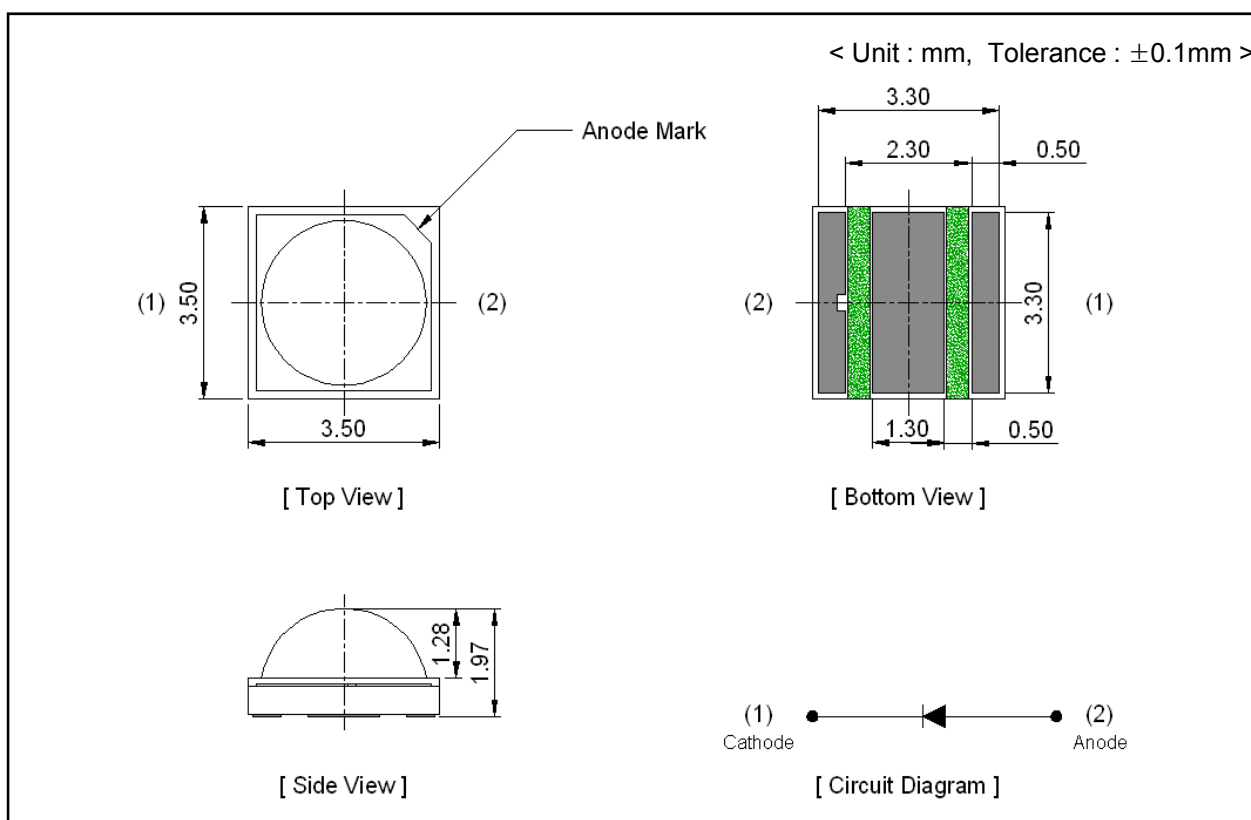
### 1. Features

- SMD Ceramic Package with Silicone Lens
- Small Size High-flux LED : 3.5 x 3.5 x 2.0mm
- Wide Viewing Angle : 130°

### 2. Applications

- Architectural Lighting
- Decorative and Entertainment Lighting
- Curing System
- General Lighting

### 3. Outline Drawing and Dimension



**Note**

1. All dimensions are in millimeters
2. All dimensions without tolerances are for reference only

### 4. Absolute Maximum Ratings ( Ta = 25 °C )

Parameter	Symbol	C3522-EI-H1	C3522-NI-H1	Unit
Power Dissipation per Chip	$P_d$	3.4	2.38	W
Continuous Forward Current	$I_F$	1,000	700	mA
Peak Forward Current *1	$I_{FP}$	2,000	1,000	mA
Operating Temperature	$T_{opr}$	-30~ +85		°C
Storage Temperature	$T_{stg}$	-40 ~ +100		°C
Soldering Temperature	$T_{sol}$	260 (5sec)		°C
Thermal Resistance	$R_{thj-s}$	10		K/W

\*1 Duty ratio = 1/10, Pulse width = 1ms

### 5. Electrical & Optical Characteristics (Ta : 25°C)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit.
Forward Voltage *2	$V_F$	$I_F = 700 \text{ mA}$	2.8	-	3.4	V
Reverse Current	$I_R$	$V_R = 5V$	-	-	10	$\mu A$
Radiant Flux *3	$\Phi_e$	$I_F = 700 \text{ mA}$	700	-	1,000	mW
Peak Wavelength *4	$W_P$	$I_F = 700 \text{ mA}$	840	-	870	nm
			930	-	960	
Viewing Angle *5	$2\theta_{1/2}$	$I_F = 700 \text{ mA}$	-	130	-	deg.

\*2 Forward Voltage has a tolerance of  $\pm 0.05 \text{ V}$ .

\*3 Radiant Flux is measured with an integrating sphere and has an accuracy of 10%.

\*4 Peak Wavelength has an accuracy of  $\pm 2 \text{ nm}$

\*5 Viewing Angle is the angle until 50% of brightness measured from the front part of LED.

#### 5.1 Radiant Flux Rank

Rank	Radiant Flux (mW)	Remark
G	700 ~ 800	EI-H1(850nm) NI-H1(940nm)
H	800 ~ 900	
J	900 ~ 1,000	

#### 5.2 Forward Voltage Rank

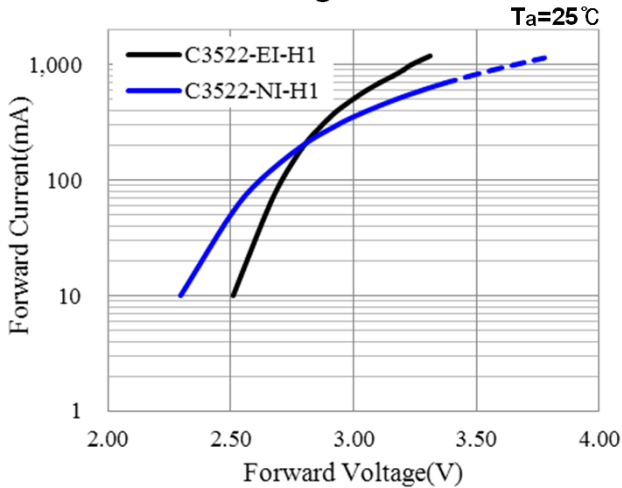
Rank	Forward Voltage (V)	Remark
0	2.8 ~ 3.0	EI-H1(850nm) NI-H1(940nm)
2	3.0 ~ 3.2	
4	3.2 ~ 3.4	

#### 5.3 Peak Wavelength Rank

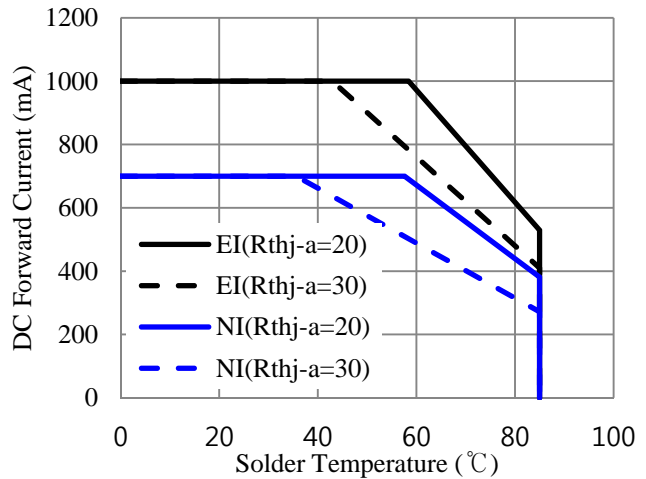
Rank	Peak Wavelength (nm)	Remark
C	840 ~ 870	EI-H1
E	930 ~ 960	NI-H1

### 6. Typical Characteristic Curve

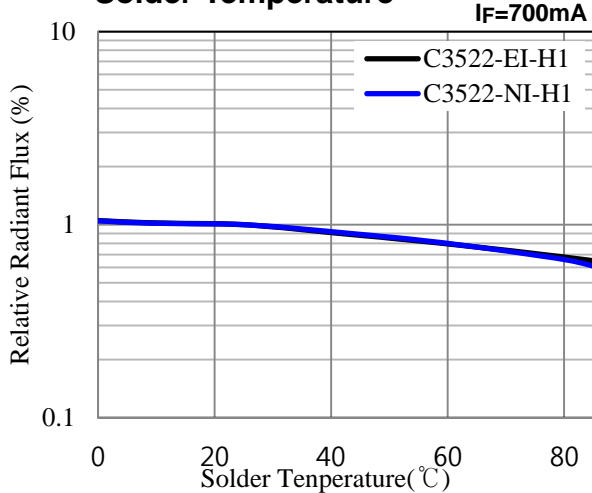
**Forward Current vs. Forward Voltage**



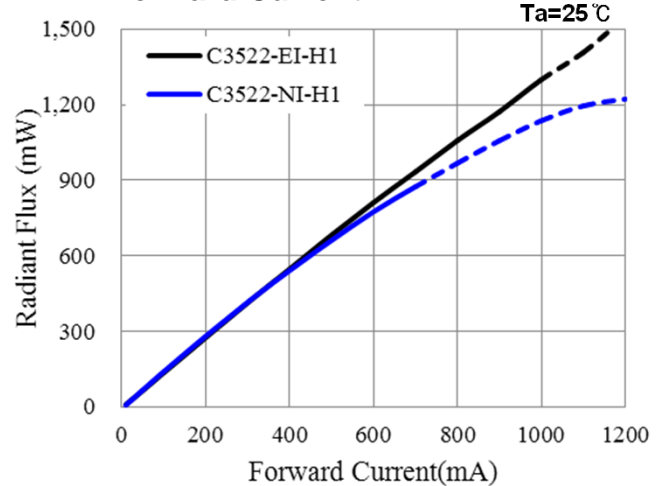
**Forward Current vs. Solder Temperature**



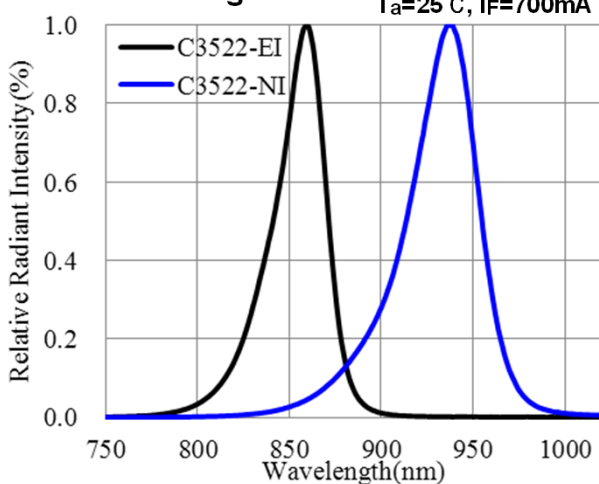
**Relative Radiant Flux vs. Solder Temperature**



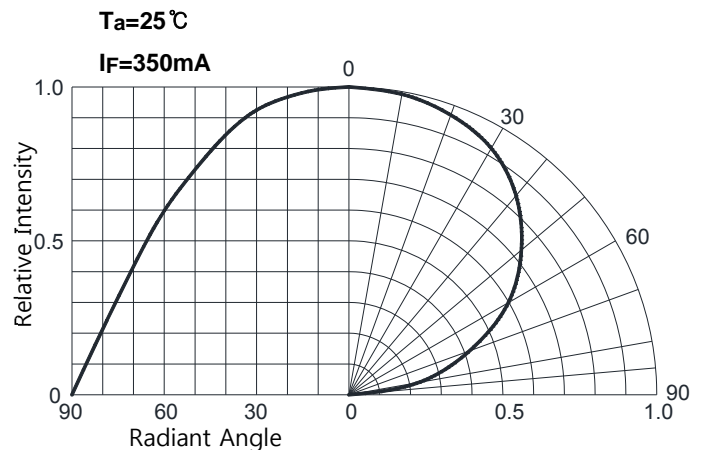
**Radiant Flux vs. Forward Current**



**Relative Intensity vs. Wavelength**

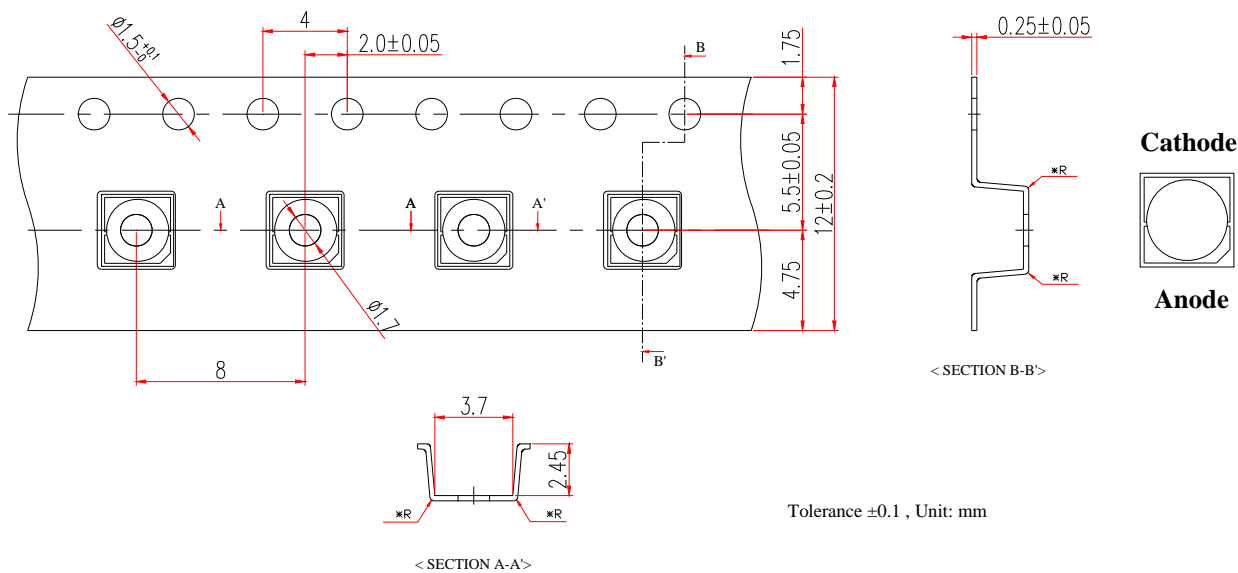


**Radiant Diagram**

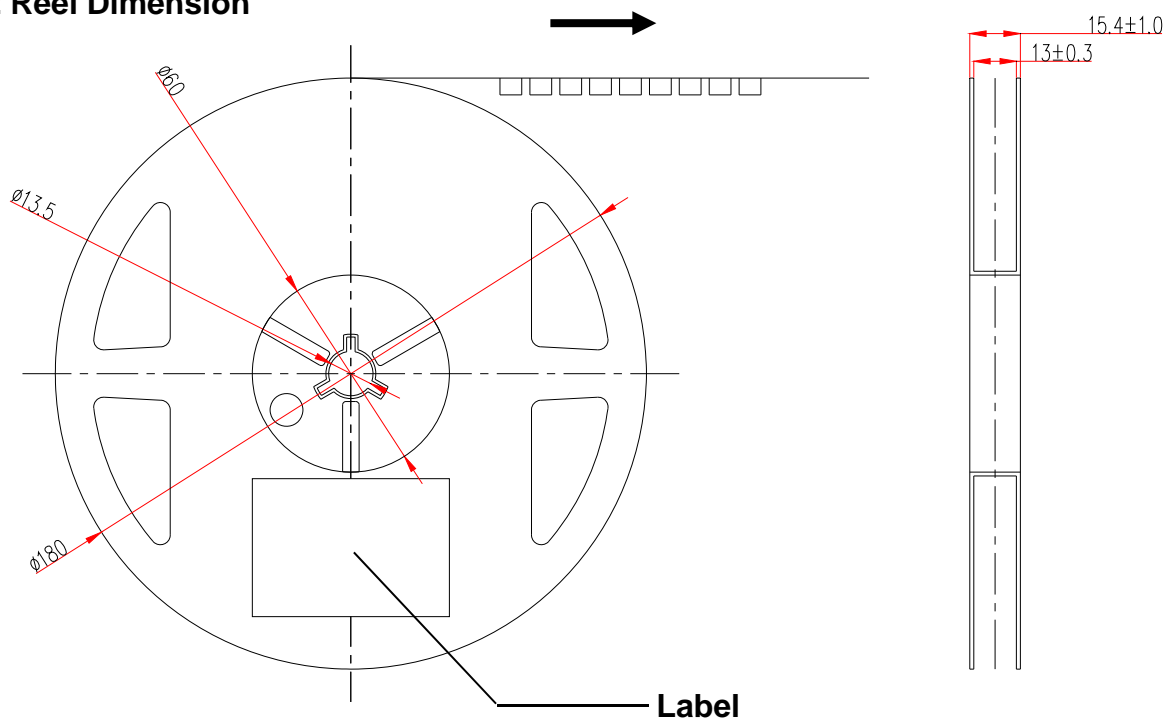


## 7. Dimension of Tape / Reel

### 7.1 Tape Dimension



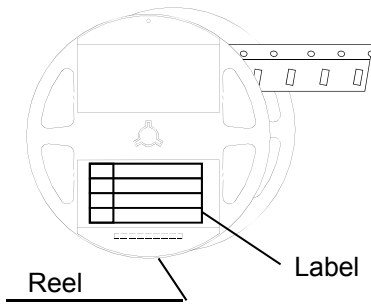
### 7.2 Reel Dimension



### 8. Packing Dimension

< Unit :mm >

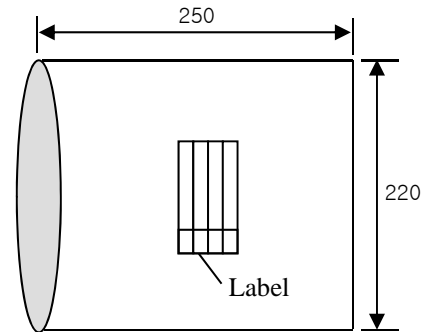
**Reel**



Bake: 60°C, 48hrs



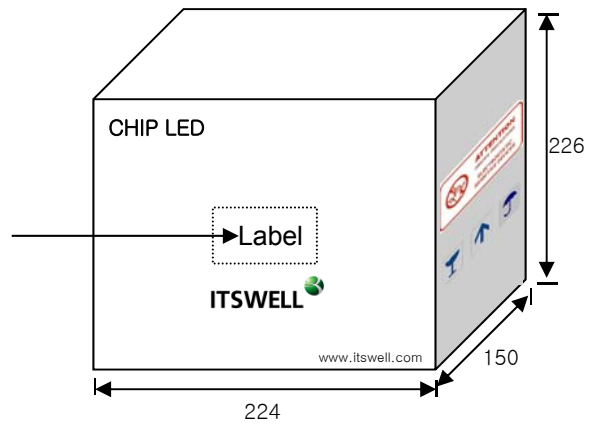
**Aluminum Shield Bag**



Including Silica gel in a bag




**Card board Box**



**Al Pack Label, Reel Label**

(70 × 37)

ITSWELL 				
Lot :		IWS-C3522-XI-H1		
	MIN	AVG	MAX	STD
V <sub>F</sub> [Volt]				
Φ <sub>e</sub> [mW]				
W <sub>D</sub> [nm]				
Q'ty :		yyyy/mm/dd		

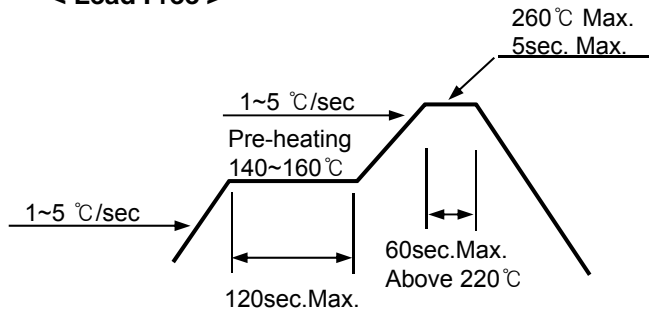
	Dimensions (mm)	Reel / Box	Q'ty / Box(pcs)
Reel	Diameter : Φ180 Width : 15mm	-	500 Max
Al Shield Bag	250 x 220	-	500 Max
Card board Box	224 x 150 x 226	8 Max	4,000 Max

## 9. Precaution in use

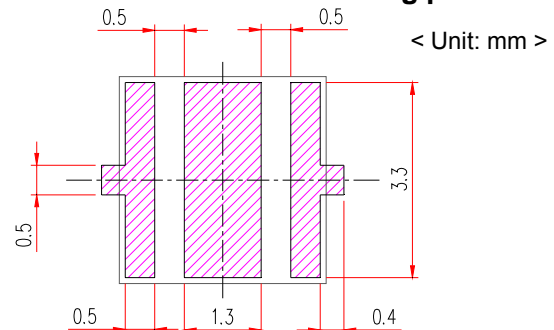
### 9.1 Soldering Conditions

- When soldering Power SMD, Heat may affect the electrical and optical characteristics of the LEDs.
- In soldering, do not stress the lead frame and the resin part under the high temperature.
- The silicone part should be protected from mechanical stress or vibration until the Power SMD return to room temperature after soldering.
- Preliminary heating to be at 160 °C max. for 120 Seconds max.
- Soldering heat to be at 260 °C max. for 5 sec. Max.
- For manual Soldering is Not more than 3 sec @MAX 350 °C, under soldering iron

#### < Lead Free >



#### <Recommendable soldering pattern>



### 9.2 Storage

- Before opening the package, the LEDs should be kept at 30 °C or less and 70%RH or less.
- The LEDs should be used within a year.
- After opening the package, the LEDs should be kept at 30 °C or less and 30%RH or less.
- The LEDs should be used within 572 hours (4 Week) after opening the package.
- If the moisture absorbent material (silicagel) has faded away or the LED have exceeded the storage time, baking treatment should be performed using the following conditions.  
 Baking treatment: 60 °C ±5 for 48 hours.

### 9.3 Static Electricity

- Static electricity or surge voltage damages the Power SMD . It is recommended that a wrist band or an anti-electrostatic glove be used when handling the LEDs.
- A tip soldering iron is requested to be grounded. An ionizer should also be installed where risk of static.
- All devices, equipment and machinery must be properly grounded (via 1MΩ). It is recommended that measures be taken against surge voltage to the equipment that mounts the Power SMD.

### 9.4 Cleaning

- Isopropyl Alcohol or Ethylene Alcohol is recommended in 5 minutes at room temperature. Don't use unspecified chemical may cause crack or haze on the surface of the silicone resin.
- Before cleaning, a pre-test should be done to confirm whether any damage to the LED will occur.
- Freon solvents should not be used to clean the LEDs because of worldwide regulations.

### 9.5 Heat Generation

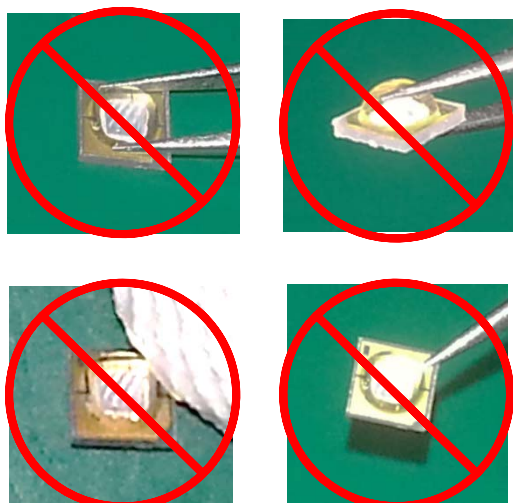
- When the LEDs are illuminating, operating current should be decided after being considering the ambient maximum temperature.
- Please consider the heat generation of the LED when it is designed the PCB.
- The LED's must be mounted on MCPCB or heat sink or applied thermal pad.



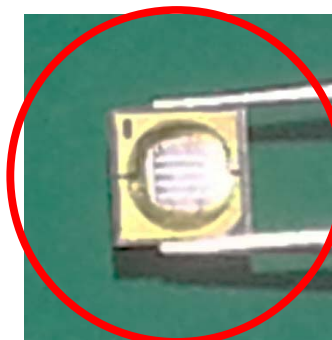
### 9.6 Handling LED

ITSWELL recommends the following at all times when handling C3522 LEDs or assemblies containing these LEDs :

- When handling the LED with tools like Tweezers or Nipper, do not apply Mechanical Forces directly on LED's Surface.
- Do not touch with hand LED Lens surface directly. It may contaminate the Lens surface and affect on optical characteristics.
- LED should be handled from side because LED's molding material may be damaged with scratching on surface, piercing molding material and broking wire.

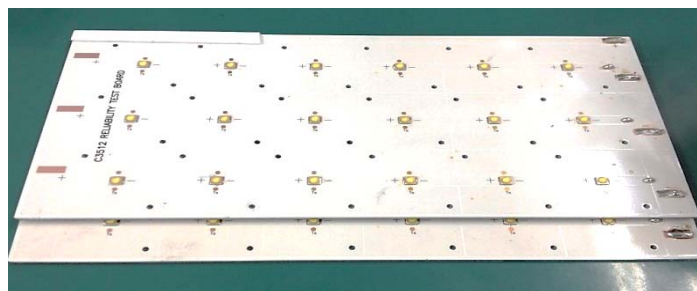


**Incorrect Handling**



**Correct Handling**

- Do not apply more than **1000gf** of shear force onto the lens. It will cause fatal damage of this product.
- Do not stack assembled PCBs together. Failure to comply may cause the resin portion of the product to be cut, chipped, delaminated, deformed, and/or the die/wire bonds to break, which will causes the LEDs not to illuminate.



**Incorrect Handling**

## 10. Reliability

### 10.1 Reliability Test Item

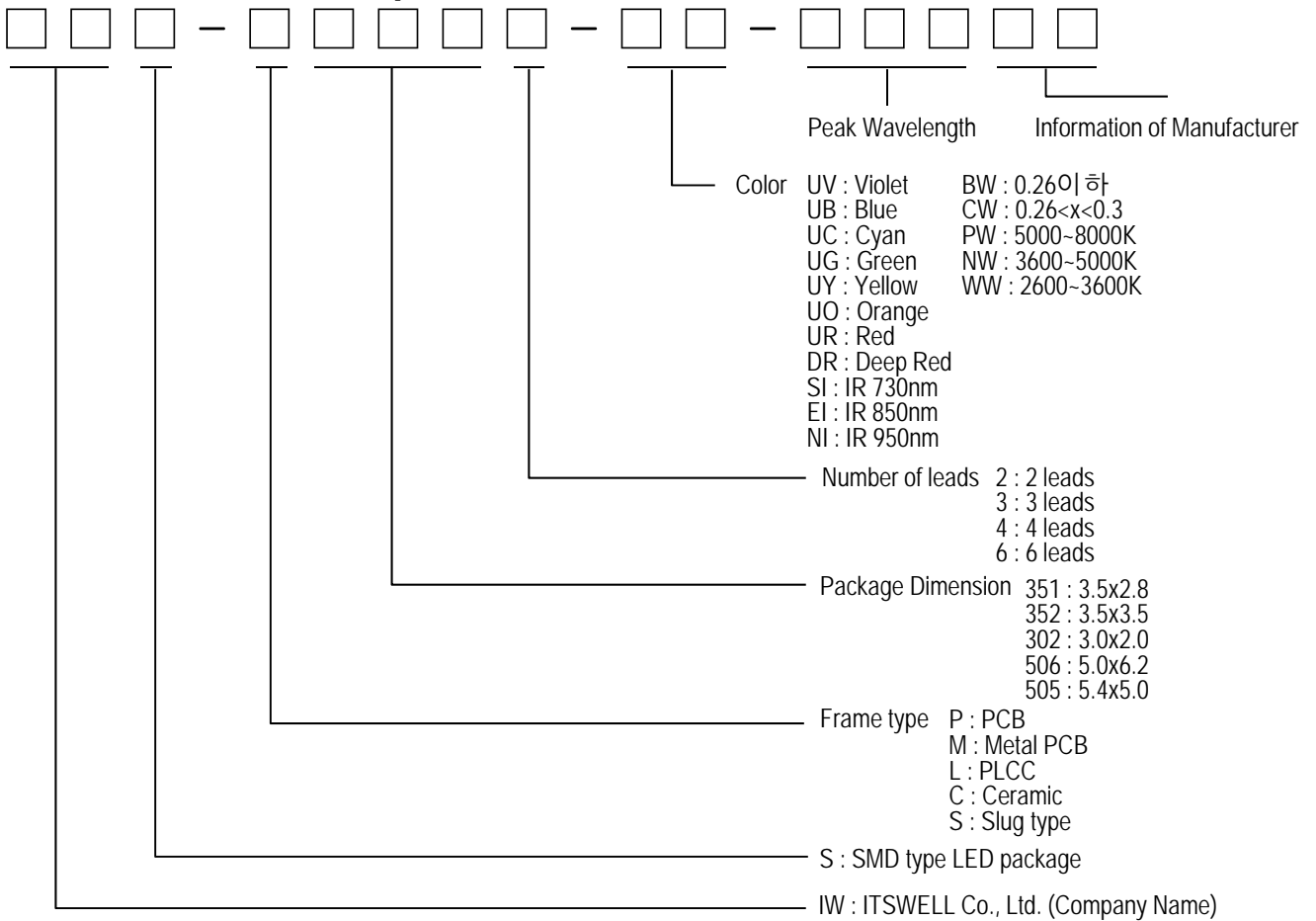
Test Items	Test Conditions	Notes
High Temperature Storage	100℃, 1,000hr.	0/10
Low Temperature Storage	-40℃, 1,000hr.	0/10
Temp. Humidity Storage	60℃, 90% RH, 1,000hr.	0/10
Steady State Operating life	25℃, 700mA, 1,000hr.	0/10
High Temperature Operating Life	85℃, 500mA, 1,000hr.	0/10
Low Temperature Operating Life	-30℃, 700mA, 1,000hr.	0/10
Steady State Operating life Of High Humidity Heat	60℃, 90% RH, 500mA, 1,000hr.	0/10
Thermal Shock	-40℃(30min)→100℃(30min.), 100 cycle	0/10
ESD	HBM, 100 pF, 1.5K ohm, 3 times	0/10

### 10.2 Criteria for Judging the Damage

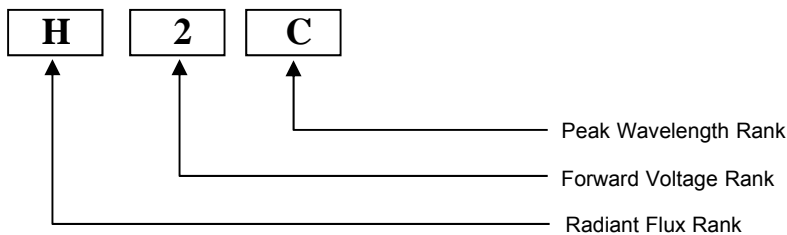
Items	Test Conditions	Criteria for judgment
Radiant Flux ( $\Phi_e$ )	$I_F = 700\text{mA}$	> 70% of S
Forward Voltage ( $V_F$ )	$I_F = 700\text{mA}$	Less than $\pm 110\%$ of U

\* U means the upper limit of specified characteristics, S means initial value.

### 11. Part Name Description



### 12. Rank Description



### 13. Attention : Electric Static Discharge (ESD) Protection



The symbol shown on the page herein to introduce 'Electro-Optical Characteristics'. ESD protection for GaP and AlGaAs based chips is still necessary even though they are safe in low static-electric discharge. Material in AlInGaP, GaP, or/and InGaN based chips are STATIC SENSITIVE devices. ESD protection has to be considered and taken in the initial design stage. If manual work/process is needed, please ensure the device is well protected from ESD during all the process..

