

SPECIFICATION

Product : 3535 Ceramic IR LED

Part No. : IWS-C3522-XI-K1

Date : 2014. 12. 23 Ver. 1.0

Proposed By	Checked By	Checked By	Checked By	Approval
결재완료				

Comment



ITSWELL Co., Ltd
58B-4L, 626-3 Gojan-dong, Namdong-gu, Incheon 405-817 KOREA
TEL:+82-32-813-1910, FAX:+82+32-822-9009
URL: <http://www.itswell.com>

Table of Contents

< Contents >	< Page >
1. Features	3
2. Applications	3
3. Outline Drawing and Dimension	3
4. Absolute Maximum Ratings	4
5. Electro-optical Characteristics	4
5.1 Radiant Flux Rank	4
5.2 Forward Voltage Rank	4
5.3 Peak Wavelength Rank	4
6. Typical Characteristics Curves	5
7. Dimension of Tape / Reel	6
7.1 Tape Dimension	6
7.2 Reel Dimension	6
8. Packing Dimension	7
9. Precaution in use	8 ~ 9
9.1 Soldering Conditions	8
9.2 Storage	8
9.3 Static Electricity	8
9.4 Cleaning	8
9.5 Heat Generation	8
9.6 Handling LED	9
10. Reliability	10
10.1 Reliability Test Item	10
10.2 Criteria for Judging the Damage	10
11. Part Name Description	11
12. Rank Description	11
13. Attention : ESD Protection	11
14. Specification Review History	12

3535 Ceramic IR LED

IWS-C3522-XI-K1



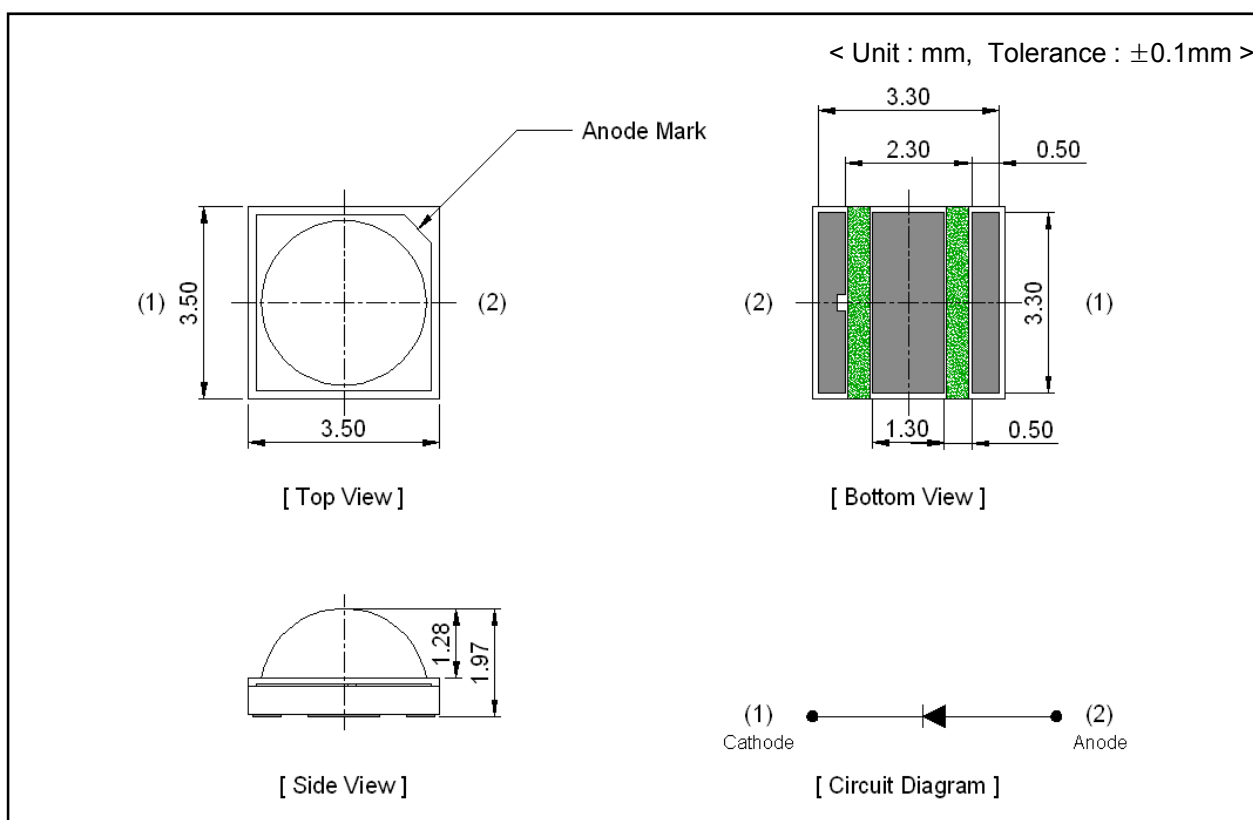
1. Features

- 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-SI	C3522-EI	C3522-NI	Unit
Power Dissipation per Chip	P_d	1.7	1.5	1.5	W
Continuous Forward Current	I_F	700	700	700	mA
Peak Forward Current ^{*1}	I_{FP}	1,000	1,000	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	$I_F = 700 \text{ mA}$	1.8	-	2.4	V
		$I_F = 700 \text{ mA}$	1.5	-	2.1	V
		$I_F = 700 \text{ mA}$	1.5	-	2.1	V
Reverse Current	I_R	$V_R = 5V$	-	-	10	μA
Radiant Flux ^{*3}	Φ_e	$I_F = 700 \text{ mA}$	400	-	600	mW
Peak Wavelength ^{*4}	W_P	$I_F = 700 \text{ mA}$	720	-	740	nm
			840	-	870	
			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
D	400 ~ 500	XI-K1
E	500 ~ 600	

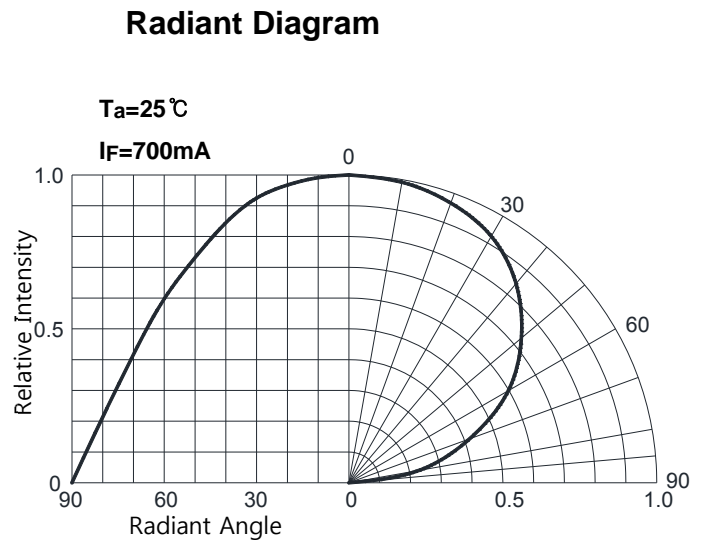
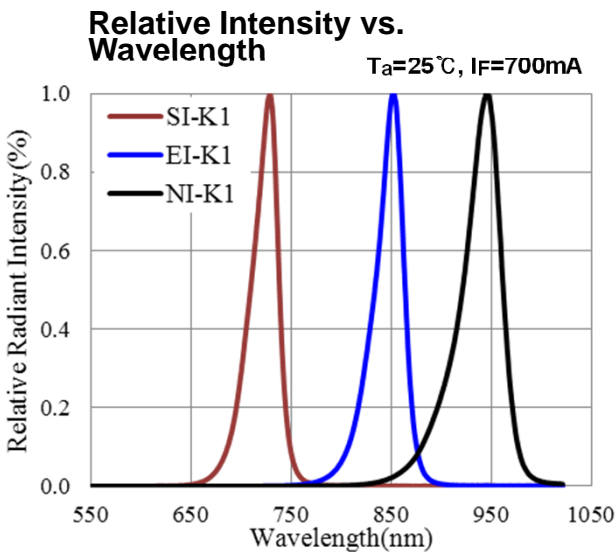
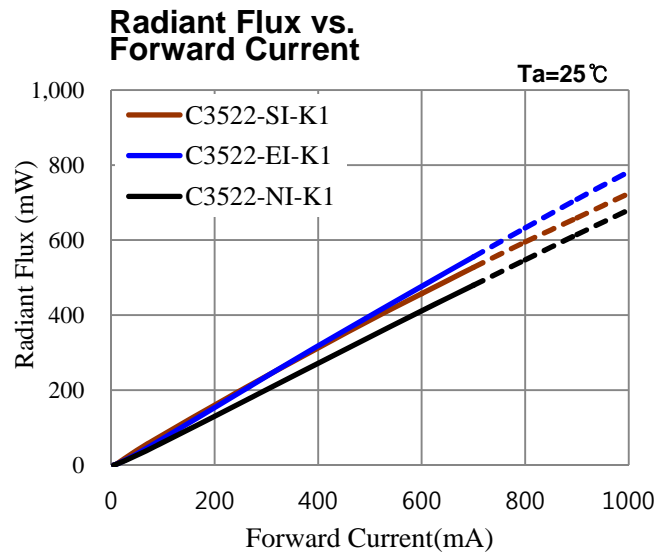
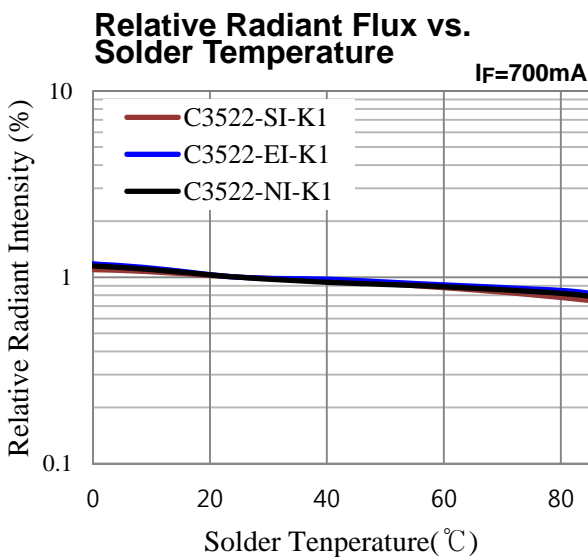
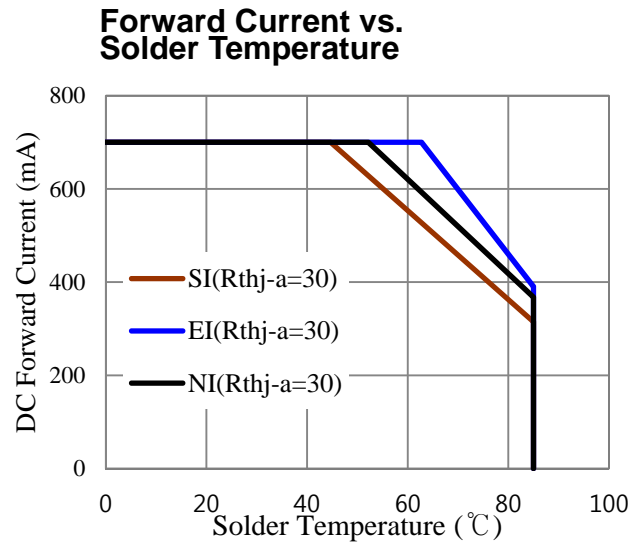
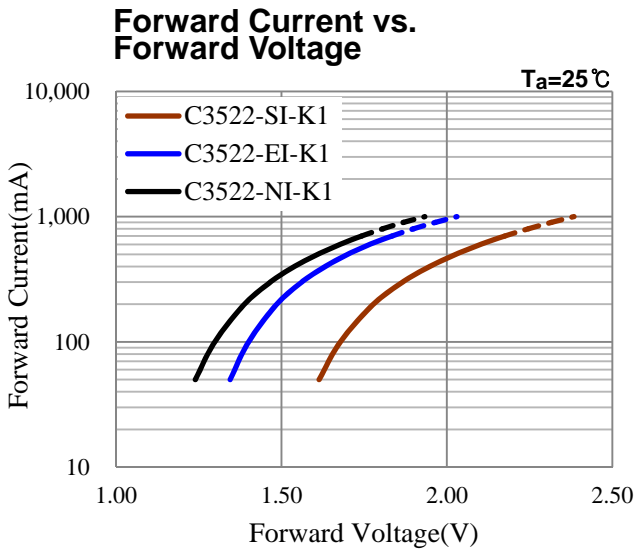
5.2 Forward Voltage Rank

Rank	Forward Voltage (V)	Remark
1	1.5 ~ 2.1	EI-K1, NI-K1
3	1.8 ~ 2.4	SI-K1

5.3 Peak Wavelength Rank

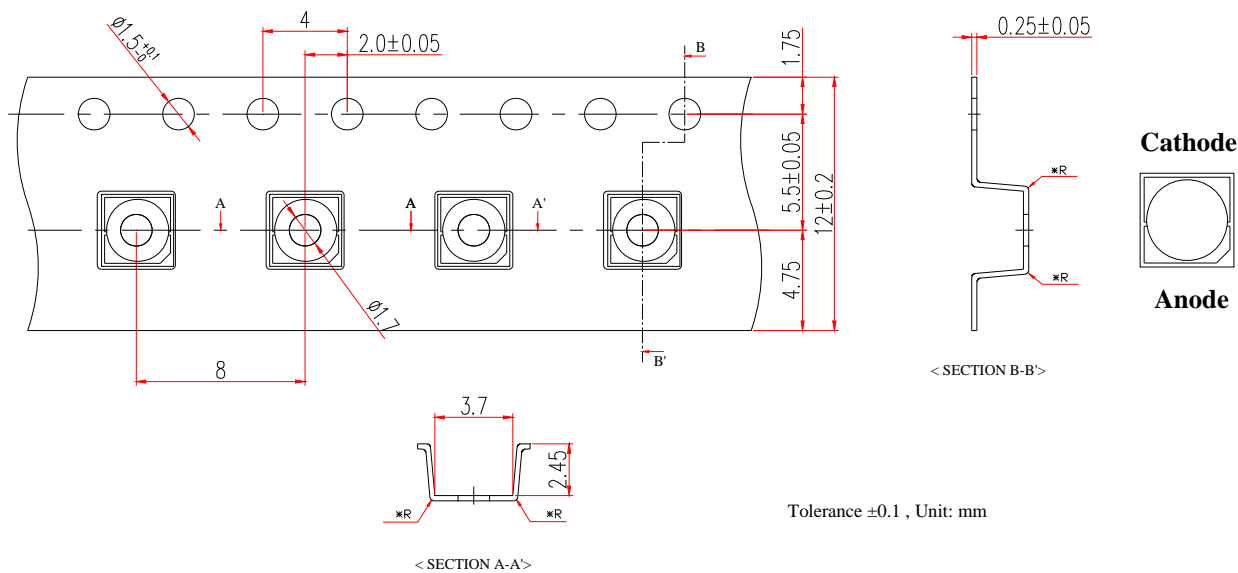
Rank	Peak Wavelength (nm)	Remark
A	720 ~ 740	SI-K1
C	840 ~ 870	EI-K1
E	930 ~ 960	NI-K1

6. Typical Characteristic Curve

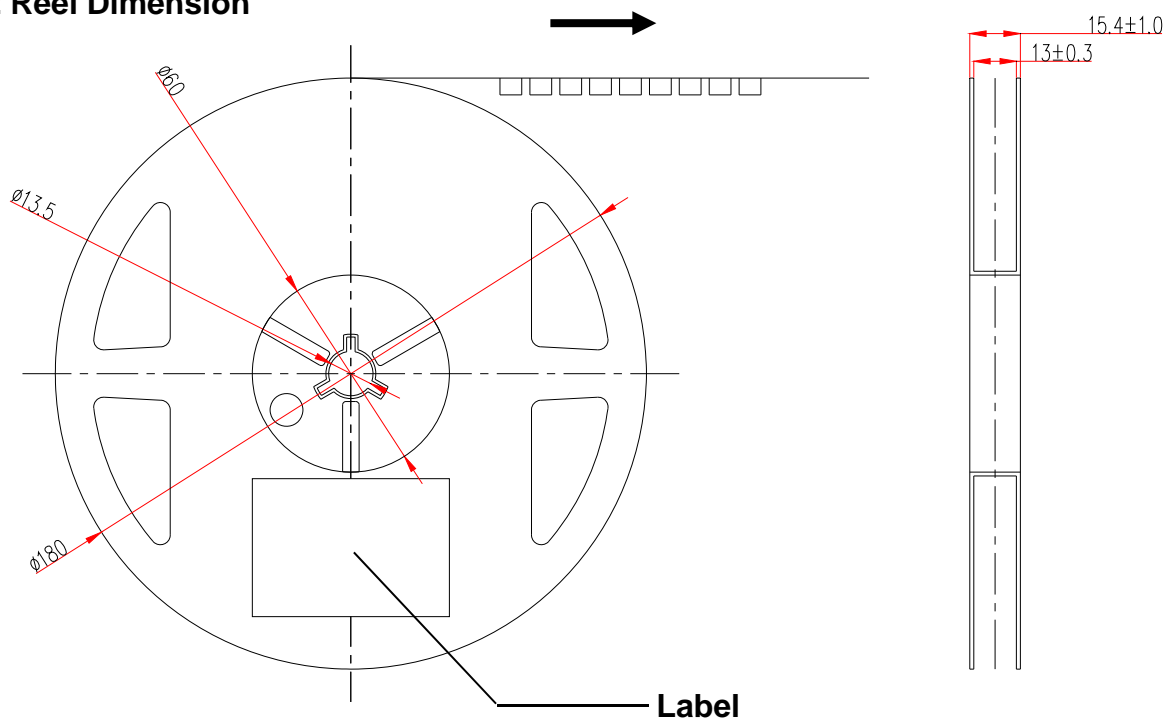


7. Dimension of Tape / Reel

7.1 Tape Dimension



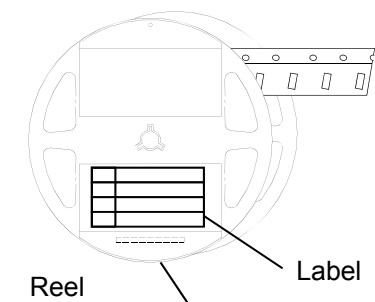
7.2 Reel Dimension



8. Packing Dimension

< Unit :mm >

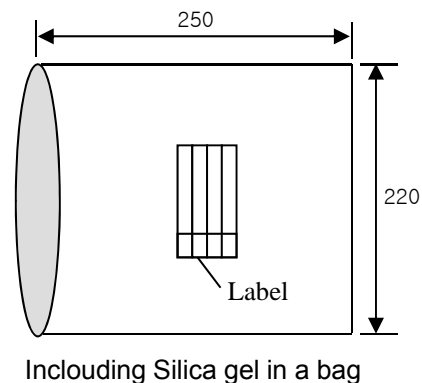
Reel



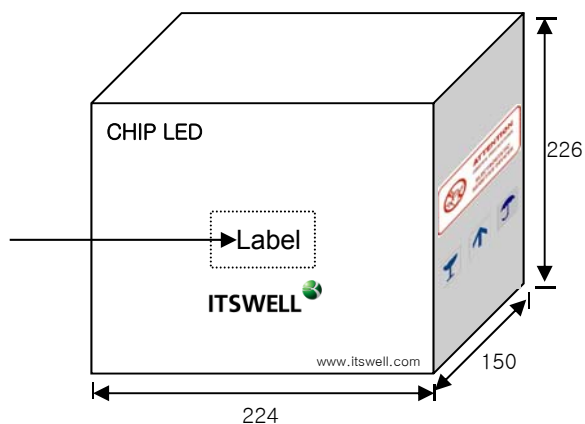
Bake: 60°C, 48hrs



Aluminum Shield Bag



Card board Box



Al Pack Label, Reel Label

(70 × 37)

ITSWELL				
Lot :	IWS-C3522-XI-K1			
	MIN	AVG	MAX	STD
V _F [Volt]				
Φ _e [mW]				
W _D [nm]				
Q'ty :	yyyy/mm/dd			

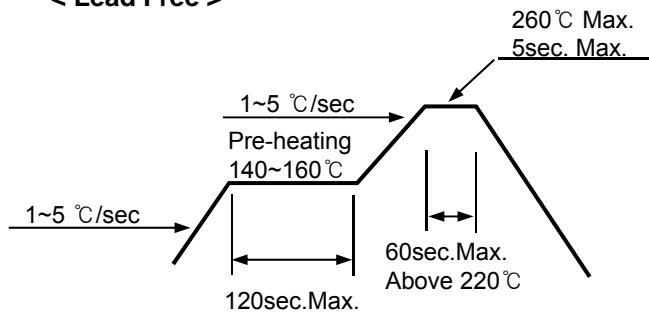
	Dimensions (mm)	Reel / Box	Q'ty / Box(pcs)
Reel	Diameter : Φ180 Width : 15mm	-	500 Max
Al Shield Bag	250 x 220	-	500 Max
Card board Box	224 x 150 x 226	8 Max	4,000 Max

9. Precaution in use

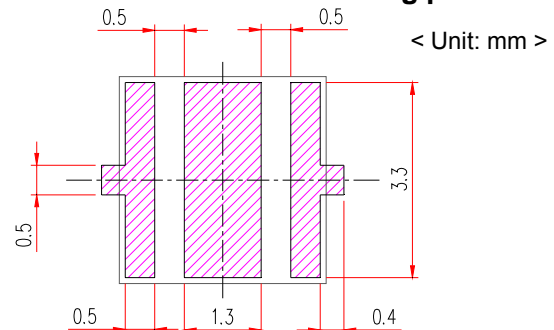
9.1 Soldering Conditions

- 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.

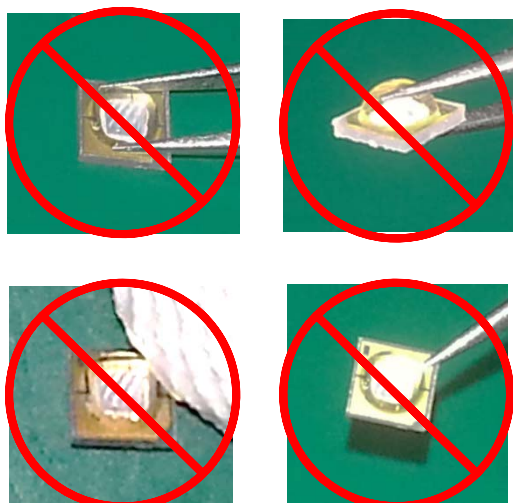
9.5 Heat Generation

- 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.

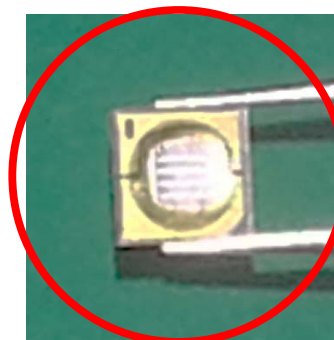
9.6 Handling LED

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.

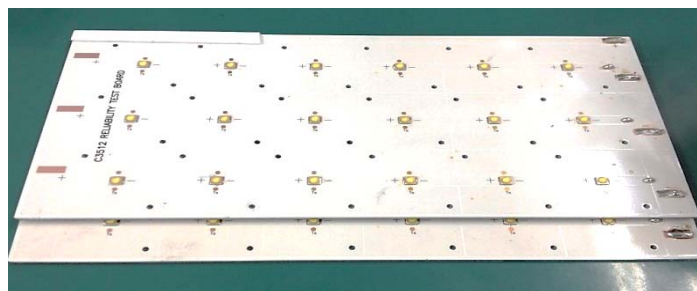


Incorrect Handling



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

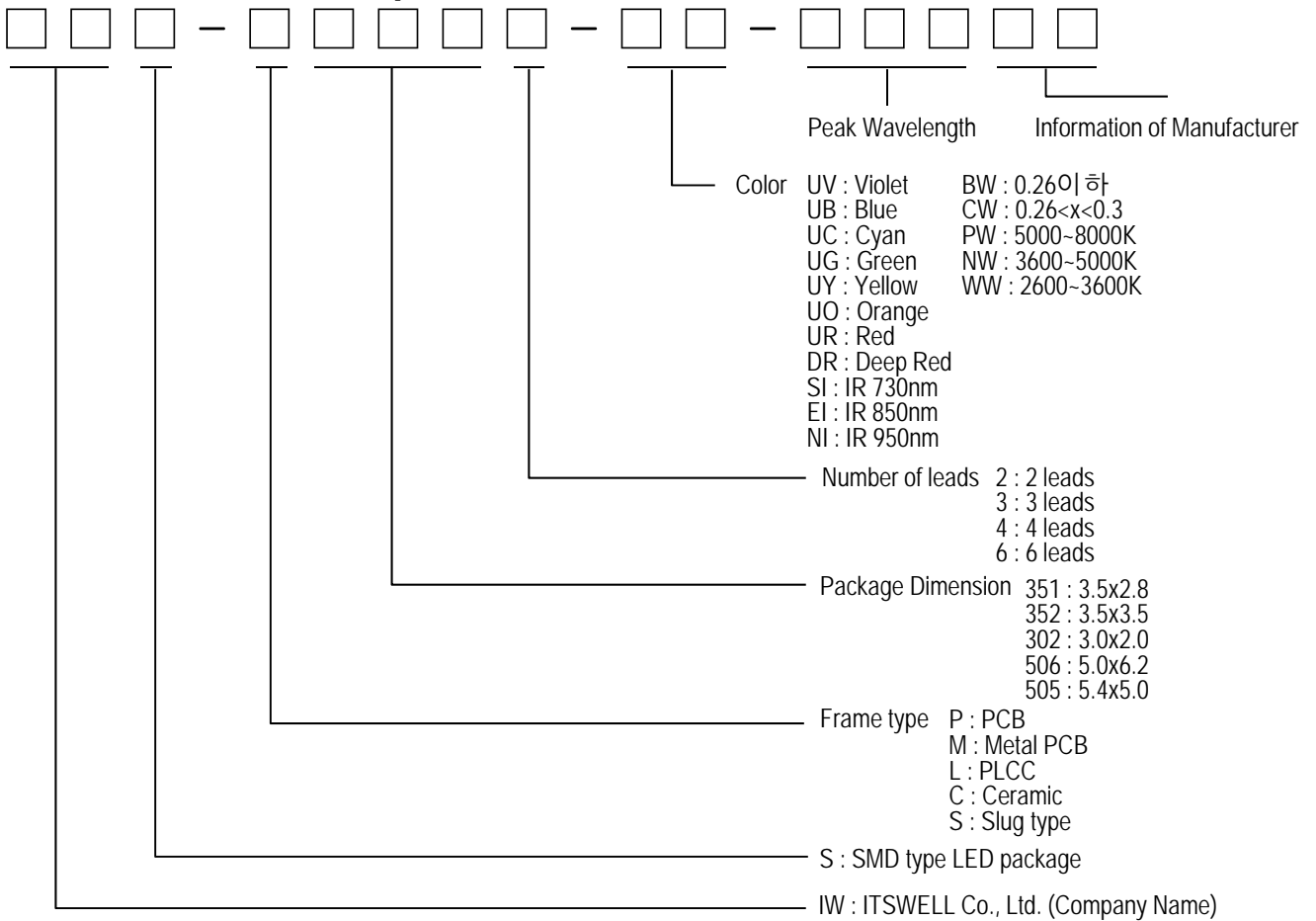
Test Items	Test Conditions	Notes
High Temperature Storage	100℃, 1,000hr.	0/10
Low Temperature Storage	-40℃, 1,000hr.	0/10
Temp. Humidity Storage	60℃, 90% RH, 1,000hr.	0/10
Steady State Operating life	25℃, 700mA, 1,000hr.	0/10
High Temperature Operating Life	85℃, 500mA, 1,000hr.	0/10
Low Temperature Operating 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

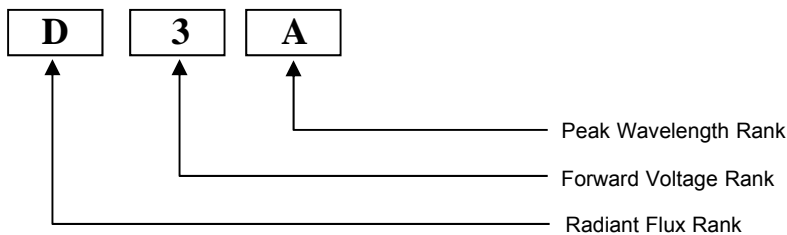
Items	Test Conditions	Criteria for judgment
Radiant Flux (Φ_e)	$I_F = 700\text{mA}$	> 70% of S
Forward Voltage (V_F)	$I_F = 700\text{mA}$	Less than $\pm 110\%$ of U

* 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..

