

# SPECIFICATION

Product : Topview 3020 Green SMD LED

Part No. : IWS-L3022-UG-K1

Date : 2012. 02. 08 Ver. 1.0

Proposed By	Checked By	Checked By	Checked By	Approval
결 재 완 료				

Comment

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# Topview 3020 SMD LED

## IWS-L3022-UG-K1



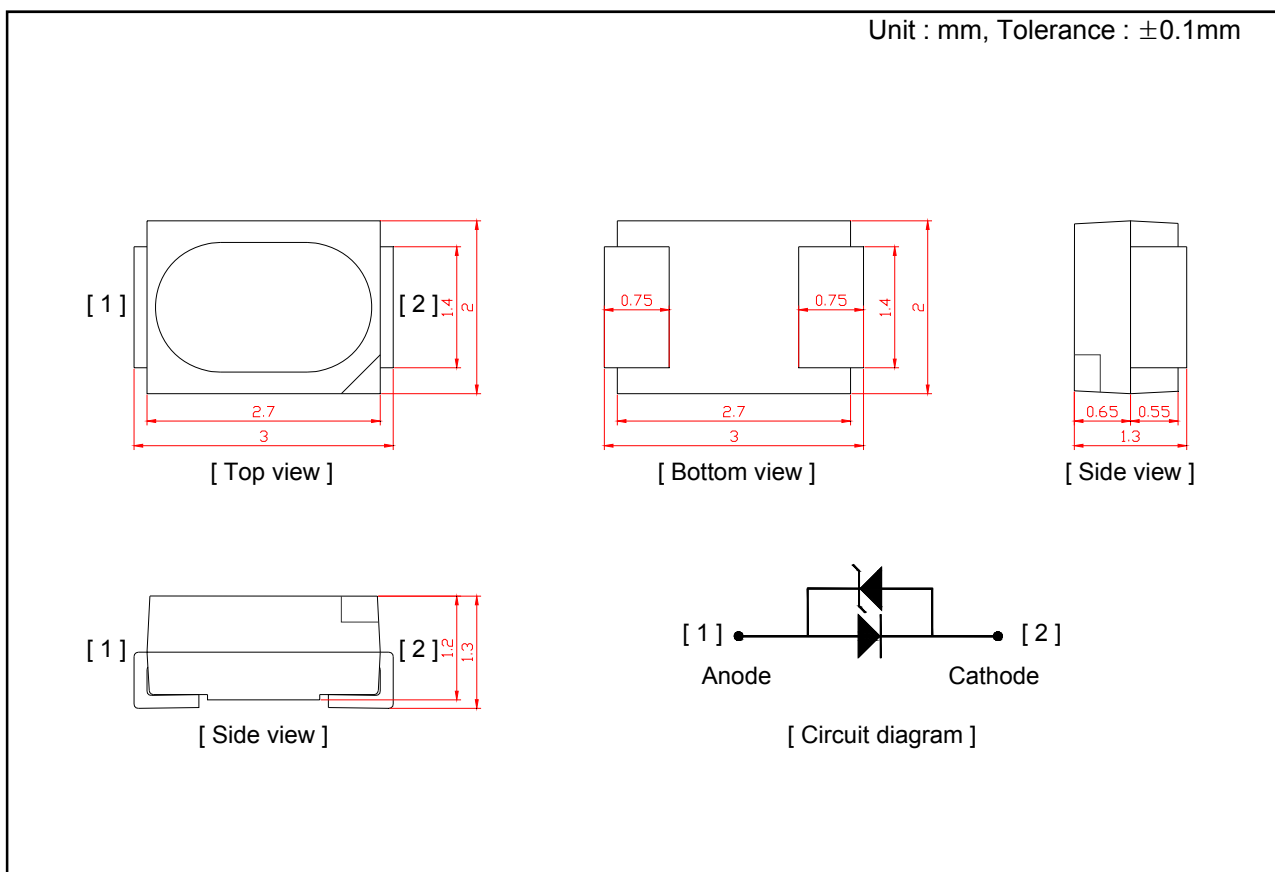
### 1. Features

- 1 Chip High-Luminosity SMD LED
- 3.0 x 2.0 x 1.2 mm (L x W x H), Small Size Surface Mount Type
- Wide Viewing Angle
- Long Operating Life

### 2. Applications

- Automotive: Backlight in Dashboard and Switch
- Lighting Device: Indicator, General Lighting
- Camera Flash, Hand Carrier Flash
- General Use

### 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(  $T_a = 25\text{ }^\circ\text{C}$  )**

Parameter	Symbol	Value	Unit
Power Dissipation	$P_d$	108	mW
Continuous Forward Current	$I_F$	30	mA
Peak Forward Current <sup>*1</sup>	$I_{FP}$	100	mA
Operating Temperature	$T_{opr}$	-40 ~ 100	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-40 ~ 100	$^\circ\text{C}$
Soldering Temperature	$T_{sol}$	260 (5sec)	$^\circ\text{C}$

<sup>\*1</sup> Duty ratio = 1/10, Pulse width = 0.1ms

**5. Electro-optical Characteristics(  $T_a = 25\text{ }^\circ\text{C}$  )**

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit.
Forward Voltage	$V_F$	$I_F = 20\text{ mA}$	2.8	3.2	3.6	V
Reverse Voltage	$V_R$	$I_R = 5\text{ mA}$	0.7	0.8	1.5	V
Luminous Intensity <sup>*2</sup>	$I_v$	$I_F = 20\text{ mA}$	720	-	1600	mcd
Dominant Wavelength <sup>*3</sup>	$W_D$	$I_F = 20\text{ mA}$	515	-	535	nm
Viewing Angle <sup>*4</sup>	$2\theta_{1/2}$	$I_F = 20\text{ mA}$	-	120	-	$^\circ$

<sup>\*2</sup> Luminous Intensity is tested by a tester calibrated by CAS 140B(CIE LED\_B) and has an accuracy of 10%

<sup>\*3</sup> Dominant Wavelength has an accuracy of  $\pm 2\text{ nm}$

<sup>\*4</sup> Viewing Angle is the angle until 50% of brightness measured from the front part of LED.

**5.1 Luminous Intensity Rank**

Rank	Luminous Intensity (mcd)
J	720 ~ 935
K	935 ~ 1200
L	1200 ~ 1600

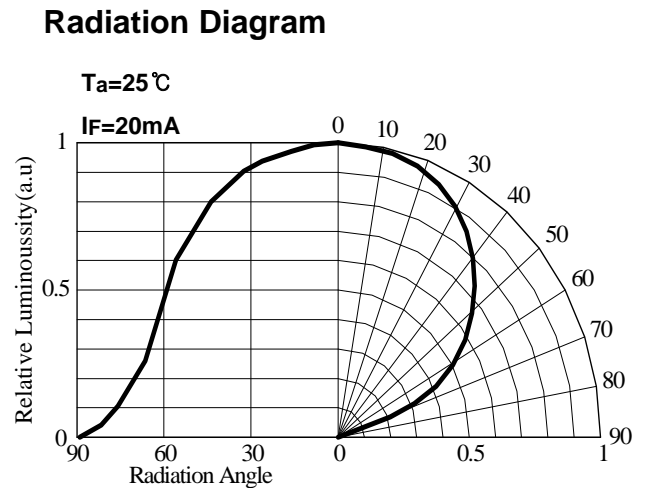
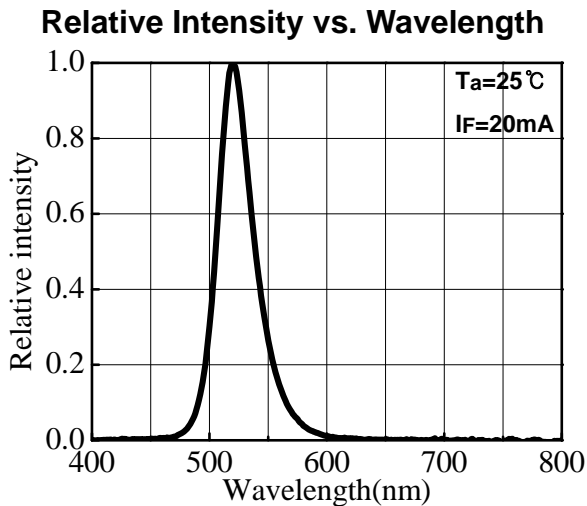
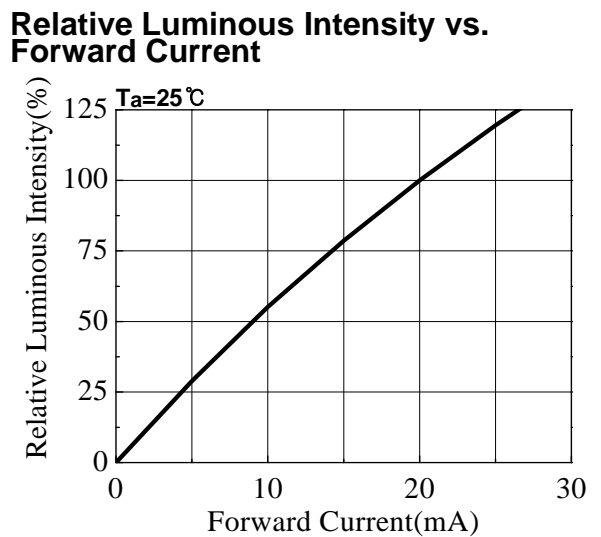
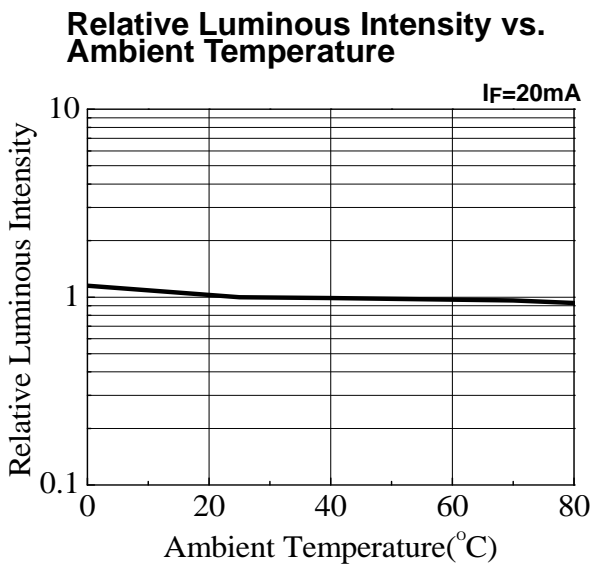
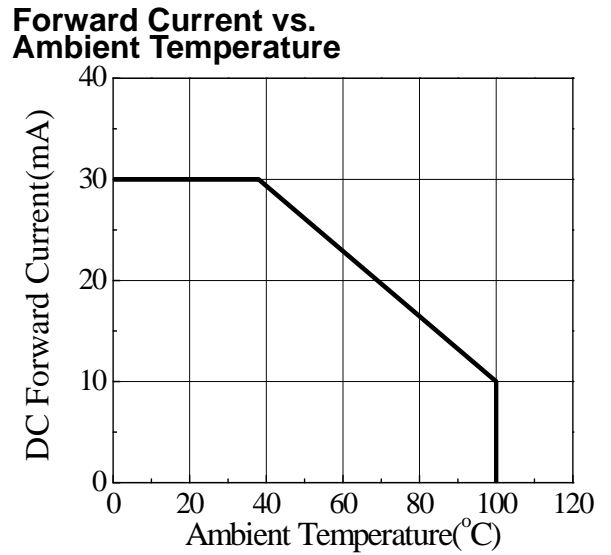
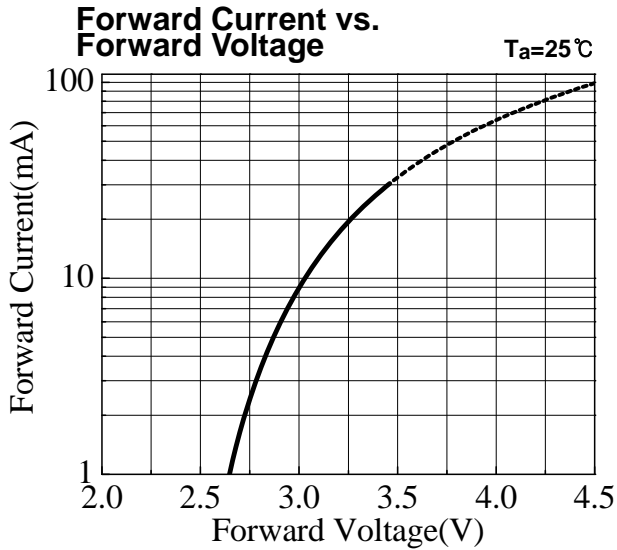
**5.2 Forward Voltage Rank**

Rank	Forward Voltage (V)
0	2.8 ~ 3.0
2	3.0 ~ 3.2
4	3.2 ~ 3.4
6	3.4 ~ 3.6

**5.3 Dominant Wavelength Rank**

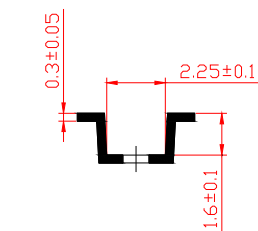
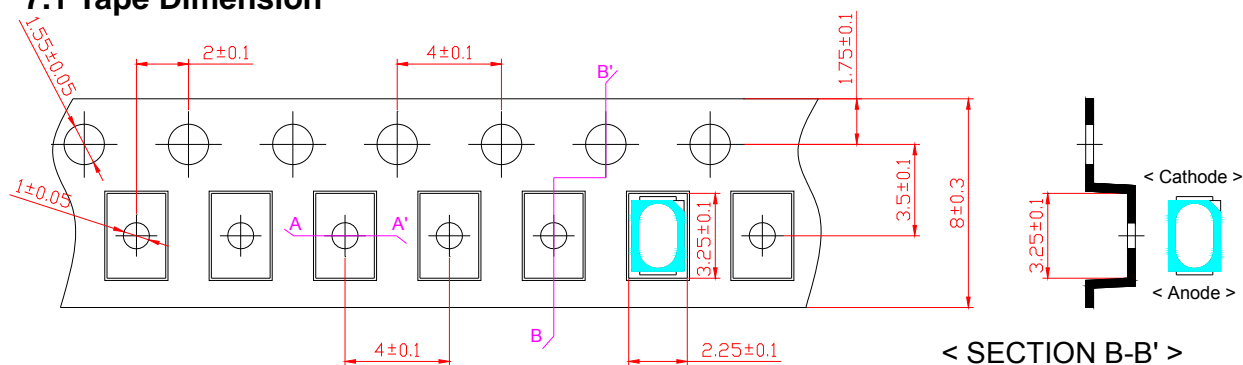
Rank	Dominant Wavelength (nm)
a	515 ~ 520
b	520 ~ 525
c	525 ~ 530
d	530 ~ 535

### 6. Typical Characteristics Curves



### 7. Dimension of Tape / Reel

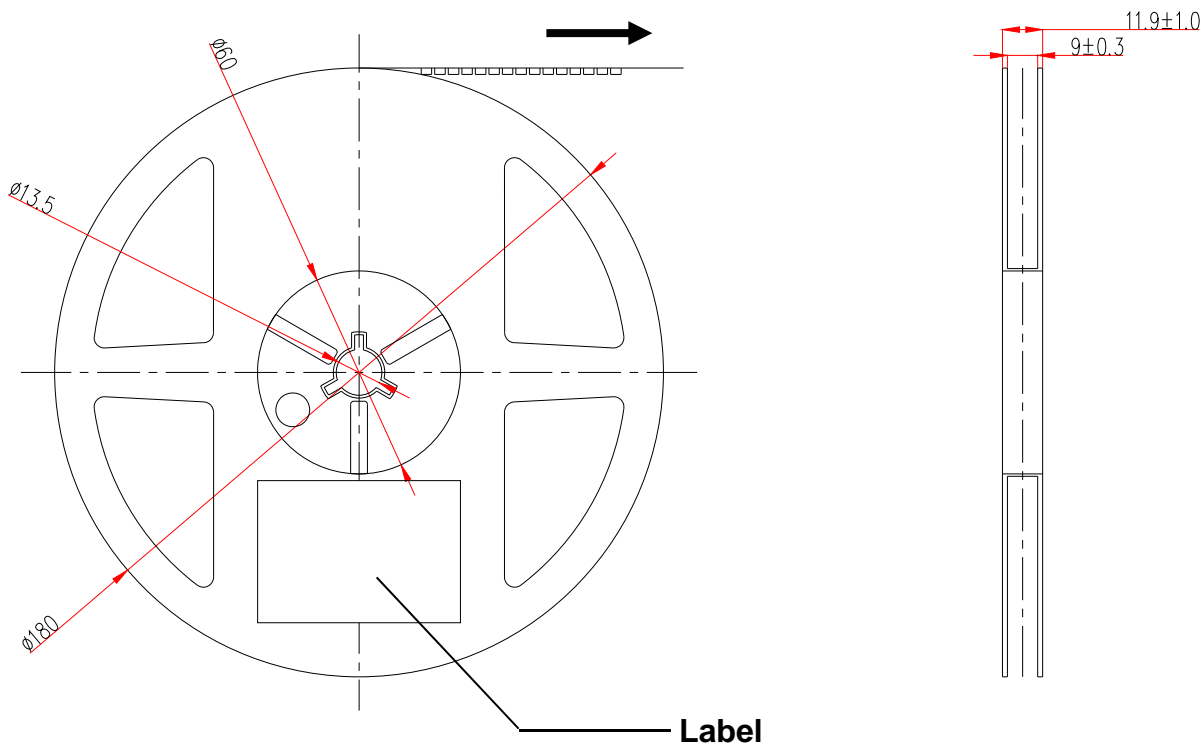
#### 7.1 Tape Dimension



< SECTION A-A' >

Tolerance  $\pm 0.1$ , Unit: mm

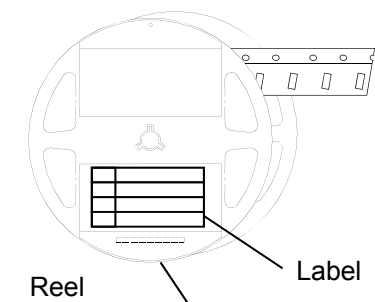
#### 7.2 Reel Dimension



### 8. Packing Dimension

Unit :mm

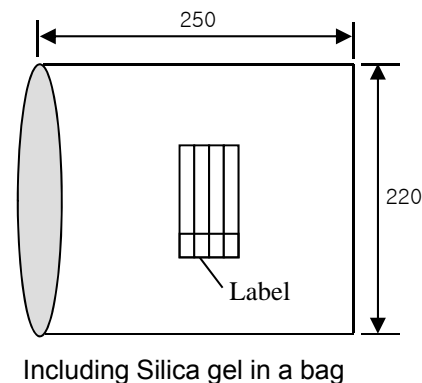
**Reel**



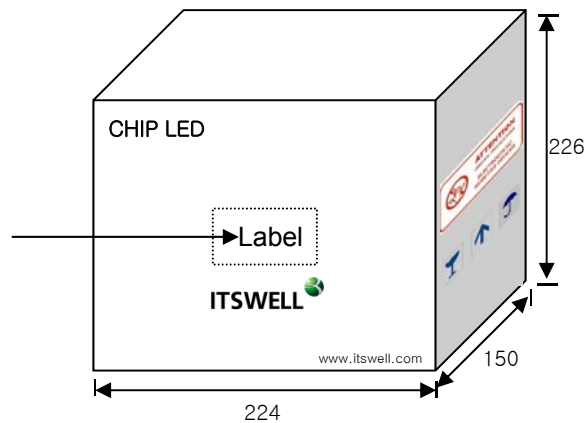
Bake: 60°C, 48hrs



**Aluminum Shield Bag**



**Card board Box**



**Al Pack Label, Reel Label**

(70 × 37)

<b>ITSWELL</b>				
Lot :	IWS-L3022-UG-K1			
	MIN	AVG	MAX	STD
V <sub>F</sub> [volt]				
I <sub>v</sub> [mcd]				
W <sub>D</sub> [nm]				
Q'ty :	yyyy/mm/dd			

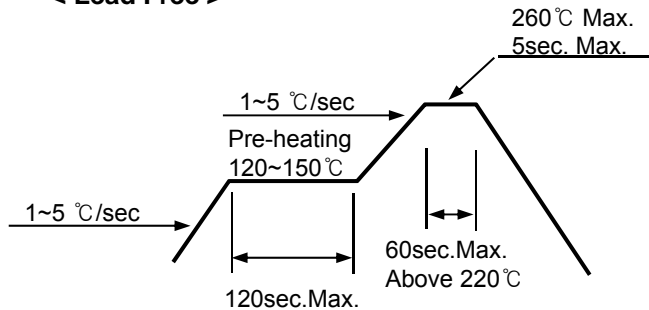
	Dimensions (mm)	Reel / Box	Q'ty / Box(pcs)
Reel	Φ180mm, 12mm Width	-	3,000 Max
Al Shield Bag	250x220	-	3,000 Max
Card board Box	224x150x226	10 Max	30,000 Max

## 9. Precaution in use

### 9.1 Soldering Conditions

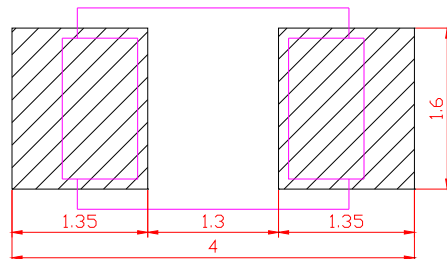
- When soldering Power SMD, Heat may affect the electrical and optical characteristics of the LEDs.
- In soldering, do not stress the lead frame and the resin part under the high temperature.
- The silicone part should be protected from mechanical stress or vibration until the Power SMD return to room temperature after soldering.
- Preliminary heating to be at 120~150 °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>

<Unit: mm>



### 9.2 Storage

- Before opening the package, the LEDs should be kept at 30 °C or less and 70%RH or less.
- After opening the package, the LEDs should be kept at 30 °C or less and 30%RH or less.
- 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 epoxy 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.

## 10. Reliability

### 10.1 Reliability Test Item

Test Items	Test Conditions	Notes
High Temperature Storage	100℃, 1,000hr.	0/25
Low Temperature Storage	-40℃, 1,000hr.	0/25
Temp. Humidity Storage	60℃, 90% RH, 1,000hr.	0/25
Steady State Operating life	25℃, 30mA, 1,000hr.	0/25
High Temperature Operating Life	100℃, 10mA, 1,000hr	0/25
Low Temperature Operating Life	-40℃, 20mA, 1,000hr.	0/25
Steady State Operating life Of High Humidity Heat	60℃, 90% RH, 15mA, 1,000hr.	0/25
Thermal Shock	-40℃(30min)↔100℃(30min.), 100 cycle	0/20
ESD	HBM, 100 pF, 1.5 kohm, 3 times	0/20

### 10.2 Criteria for Judging the Damage

Parameters	Test Conditions	Criteria for judgment
Forward Voltage ( $V_F$ )	$I_F = 20 \text{ mA}$	Less than 110% of U
Luminous Intensity ( $I_v$ )	$I_F = 20 \text{ mA}$	> 70% of S

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

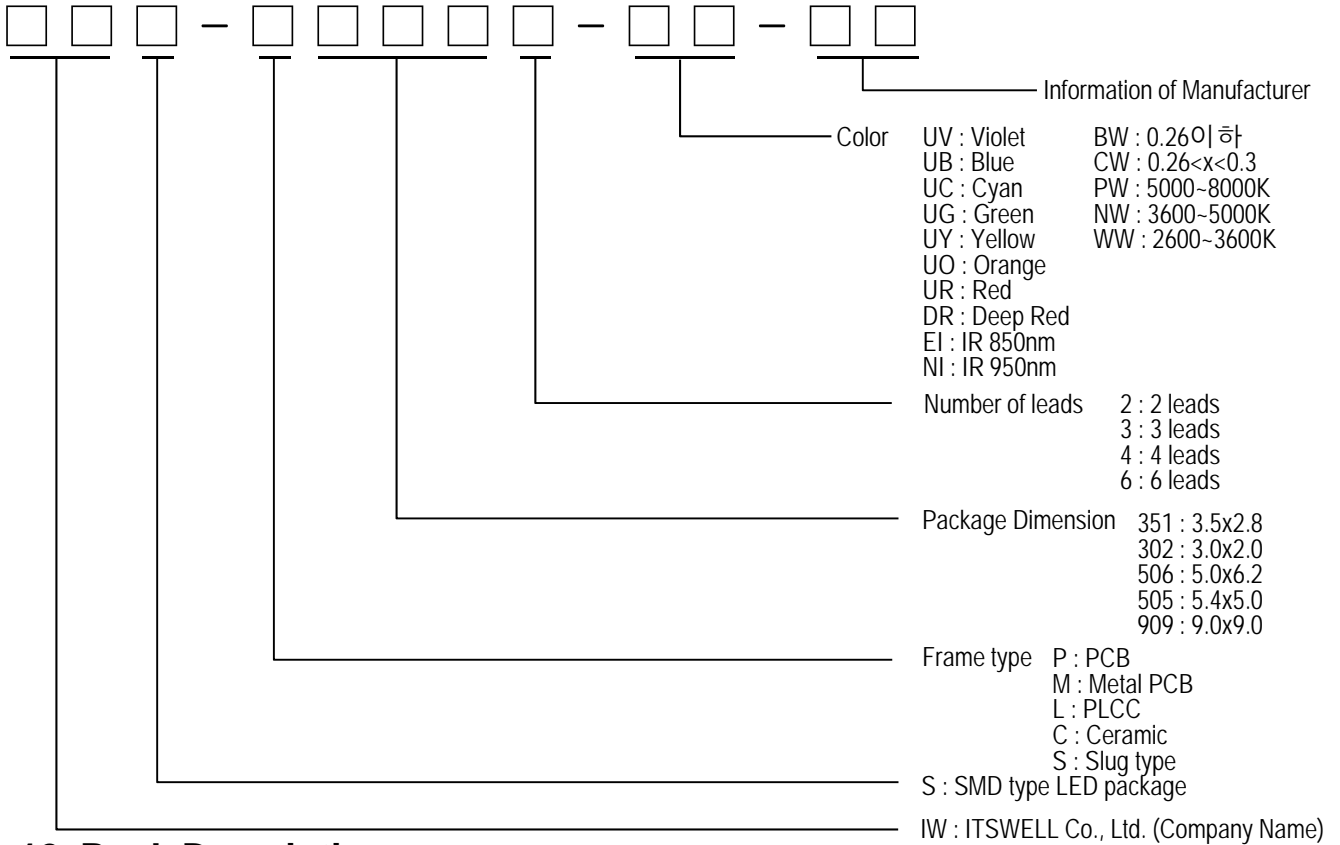


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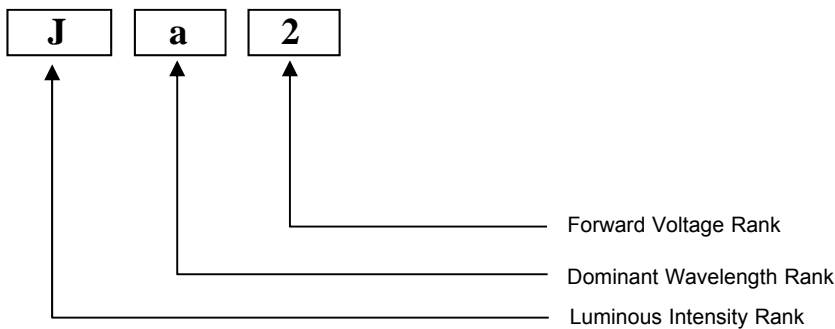
## IWS-L3022-UG-K1



### 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 considered and taken in the initial design stage. If manual work/process is needed, please ensure the device is well protective From ESD during all the process.

