

SPECIFICATION

Product : TopView 3W Power RGB LED

Part No. : IWS - S83D6 - RGB - K3

Date : 2012. 08. 09 Ver. 1.0

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

Comment



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TopView 3W Power RGB LED

IWS-S83D6-RGB-K3



1. Features

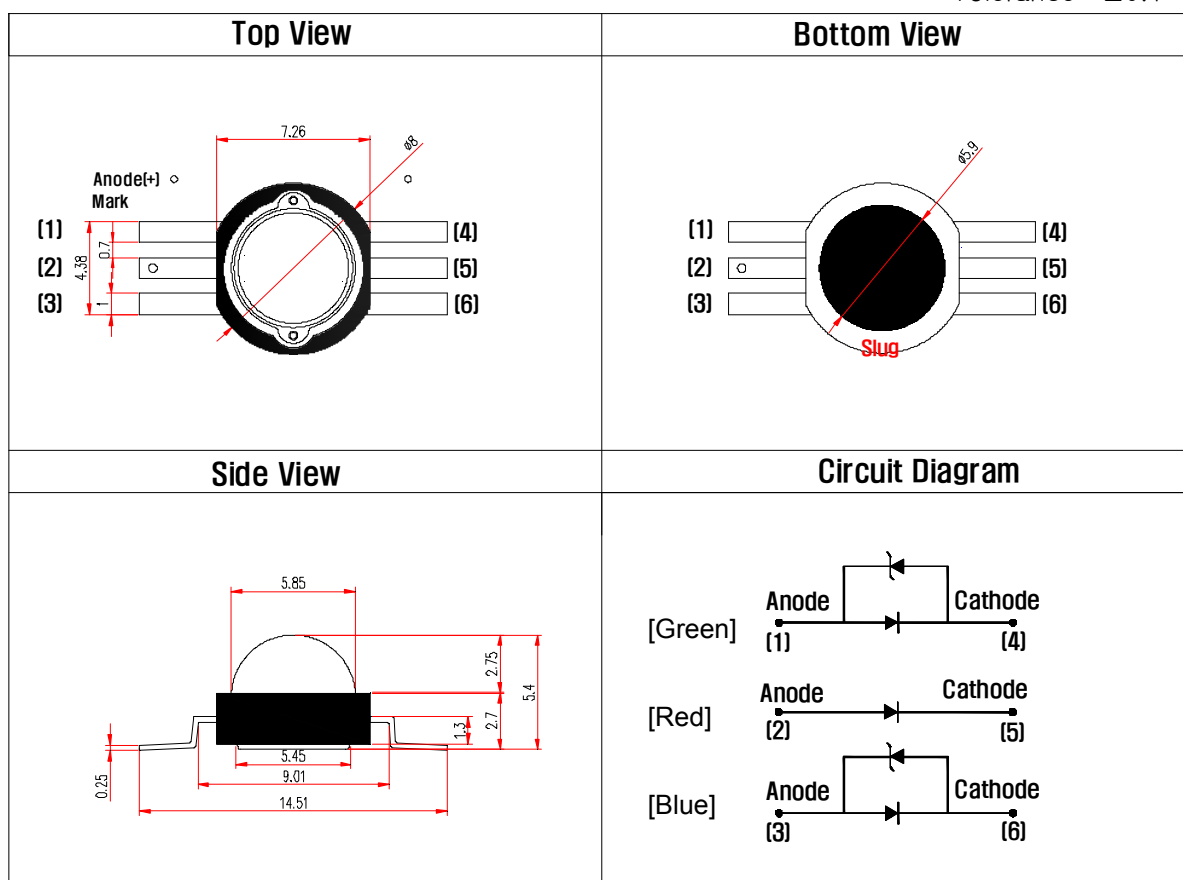
- R, G, B Three in One Package
- High Power and High Efficiency Package
- Long Operating Life
- SMT Solderability

2. Applications

- General Lighting and Interior Lighting
- Flood Lighting
- Indoor and outdoor Commercial Light
- Portable Light for Flashlight & Bicycle

3. Outline Drawing and Dimension

Unit : mm
Tolerance : ± 0.1



Note

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

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

Parameter	Symbol	Value			Unit
		Red	Green	Blue	
Power Dissipation	P_d	1.2	1.8	1.8	W
Continuous Forward Current	I_F	500	500	500	mA
Peak Forward Current ^{*1}	I_{FP}	1000	1000	1000	mA
Operating Temperature	T_{opr}	-30 ~ +85			°C
Storage Temperature	T_{stg}	-40 ~ +100			°C
Soldering Temperature	T_{sol}	260(5sec)			°C
Junction Temperature	T_{jmax}	125			°C

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

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

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit.
Forward Voltage	V_F	$I_F = 350mA$	Red	1.8	-	2.4	V
			Green	2.8	-	3.6	
			Blue	3.0	-	3.6	
Reverse Current	I_R	$V_R = 5V$	Red	-	-	10	uA
Reverse Voltage	V_{RZ}	$I_{RZ} = 5mA$	Green	0.7	0.8	1.5	V
			Blue	0.7	0.8	1.5	V
Dominant ^{*2} Wavelength	λ_d	$I_F = 350mA$	Red	615	-	635	nm
			Green	515	-	535	
			Blue	455	-	475	
Luminous Flux ^{*3}	Φ_V	$I_F = 350mA$	Red	20	-	35	lm
			Green	35	-	55	
			Blue	10	-	17	
Viewing Angle ^{*4}	$2\theta_{1/2}$	$I_F = 350mA$		120			deg

*2 Dominant Wavelength has an accuracy of ± 0.01 .

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

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

* Do not use maximum 1.0A for this package.

5.1 Luminous Flux Rank ($I_F = 350\text{mA}$)

RANK		RED	GREEN	BLUE
C				10 ~ 12
D				12 ~ 14
E				14 ~ 17
F				
G		20 ~ 24		
H		24 ~ 29		
J		29 ~ 35		
K			35 ~ 42	
L	L1		42 ~ 46	
	L2		46 ~ 50	
M	M1		50 ~ 55	

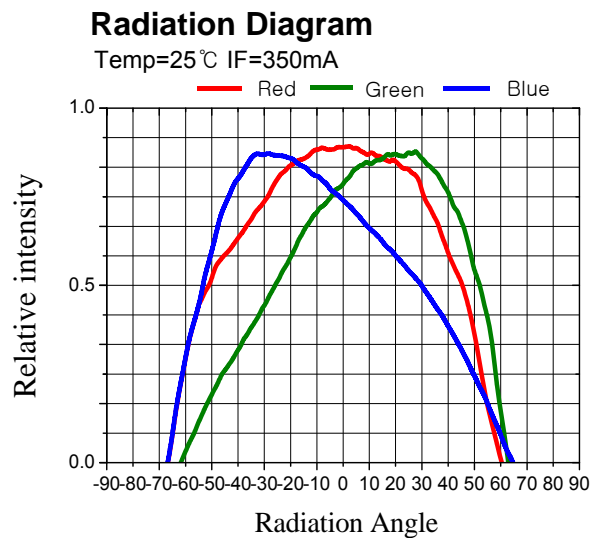
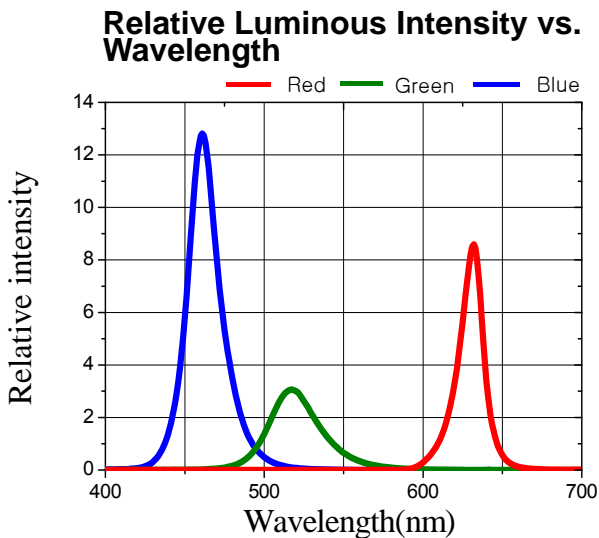
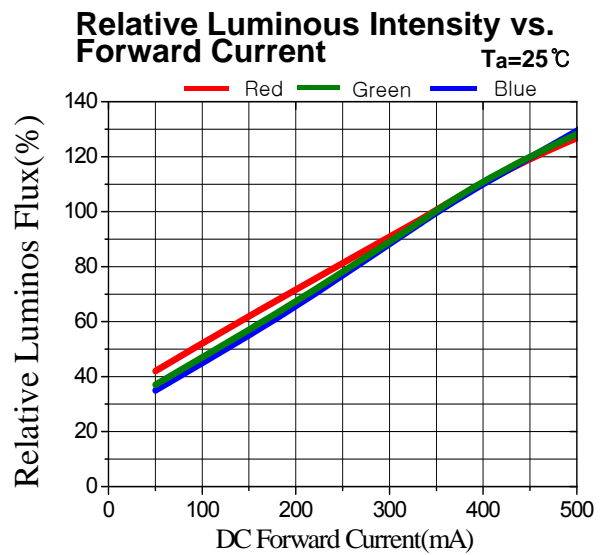
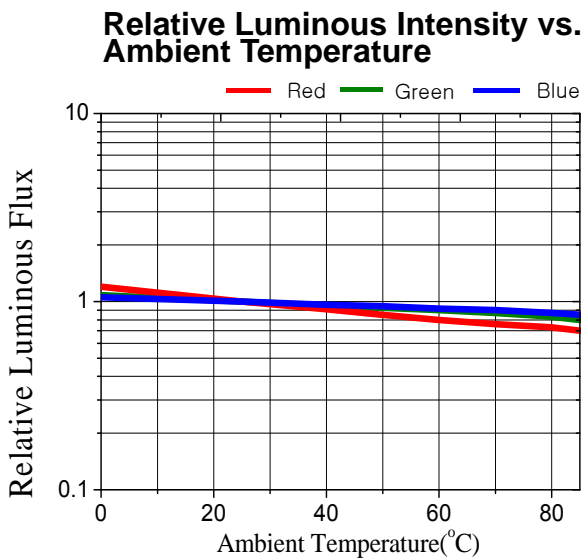
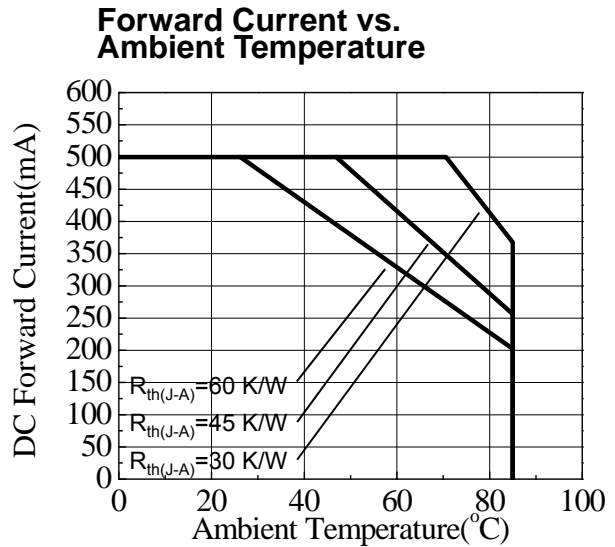
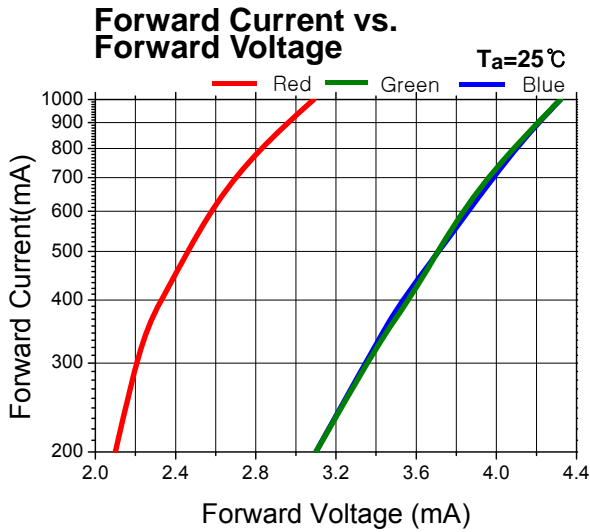
5.2 Dominant Wavelength Combination Rank(nm, $I_F = 350\text{mA}$)

RANK	RED	GREEN	BLUE
A	615-635	515-535	455-475

5.3 Forward Voltage Rank (V, $I_F = 350\text{mA}$)

RANK	RED	GREEN	BLUE
0		2.8 - 3.0	
2	1.8 - 2.1	3.0 - 3.2	3.0 - 3.2
4	2.1 - 2.4	3.2 - 3.4	3.2 - 3.4
6		3.4 - 3.6	3.4 - 3.6

6. Typical Characteristic Curve

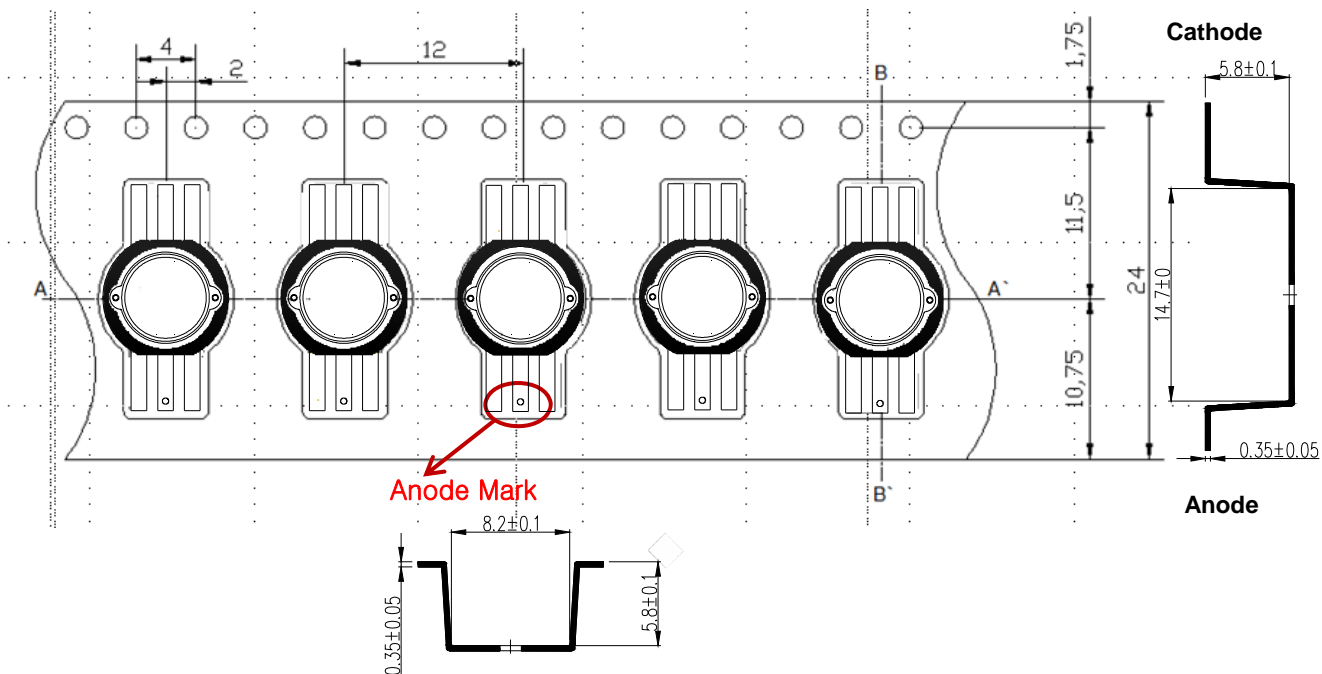


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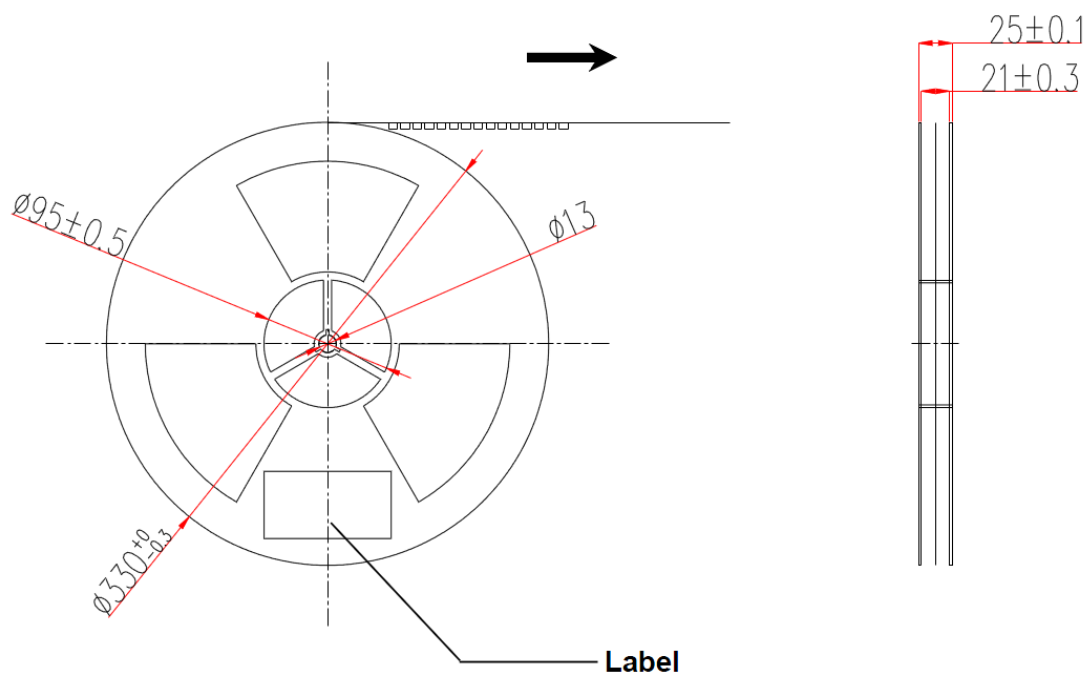


7. Dimension of Tape / Reel

7.1 Tape Dimension

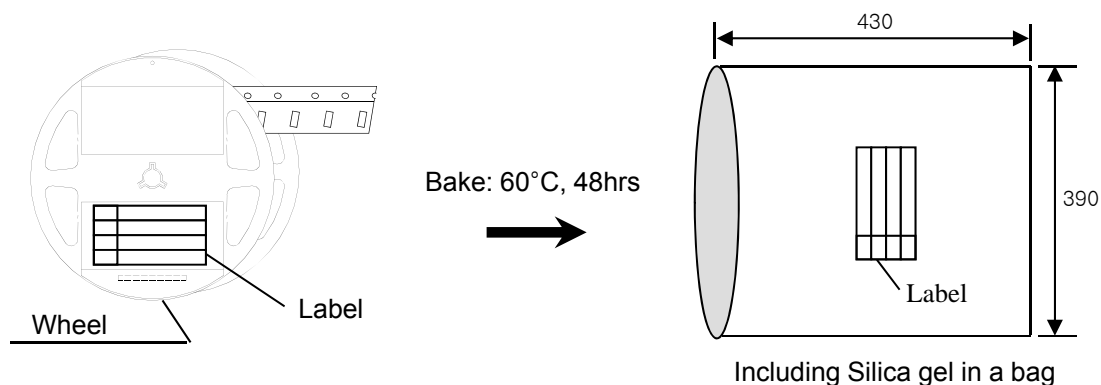


7.2 Reel Dimension



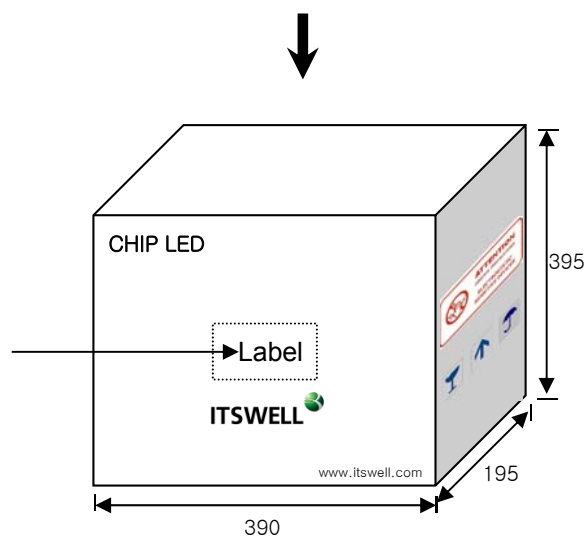
8. Packing Dimension

Unit :mm



Al Pack Label, Reel Label (70 × 37)

ITSWELL				
Lot :	IWS-S83D6-RGB-K3			
	MIN	AVG	MAX	STD
V _F [Volt]	R/G/B	-	R/G/B	
Φ _V [Im]	R/G/B	-	R/G/B	
WD [nm]	R/G/B	-	R/G/B	
Q'ty :	yyyy/mm/dd			



	Dimensions (mm)	Reel /Box	Q'ty / Box(pcs)
Reel	Diameter :Φ330 Width :25	-	500 Max
Al Shield Bag	430x 390	-	500 Max
Outer Box	395 x 195 x 390	10 Max	5,000 Max

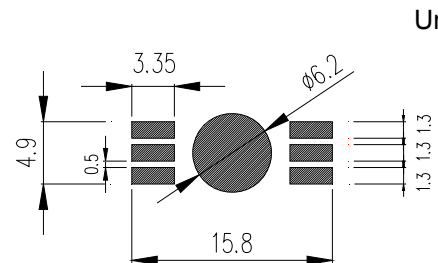
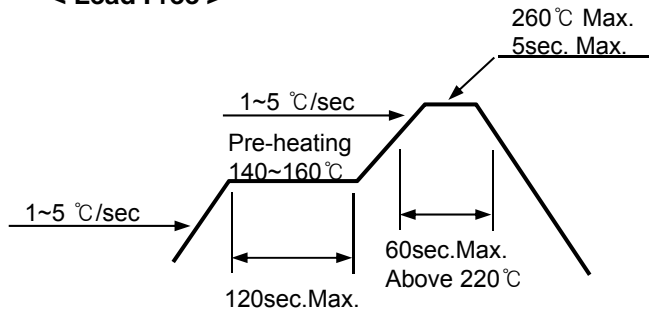
9. Precaution in use

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 140~160 °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

<Recommendable soldering pattern>

< Lead Free >



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 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.

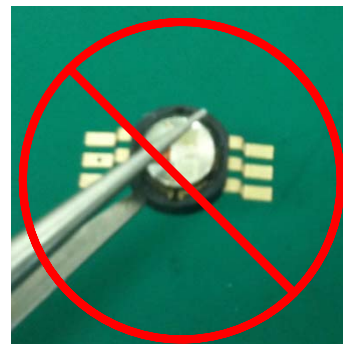
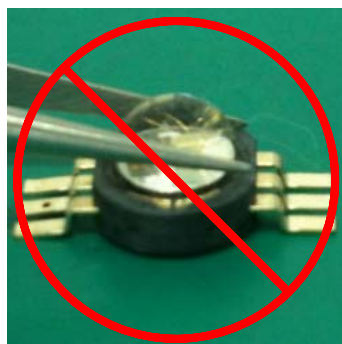
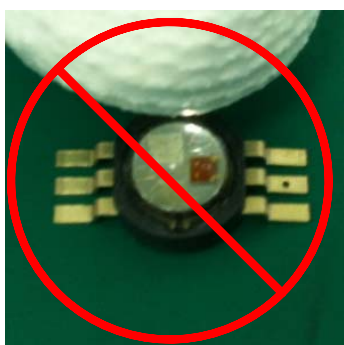
9.5 Heat generation

- 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.
- The LED's must be mounted on MCPCB or heat sink or applied thermal pad.

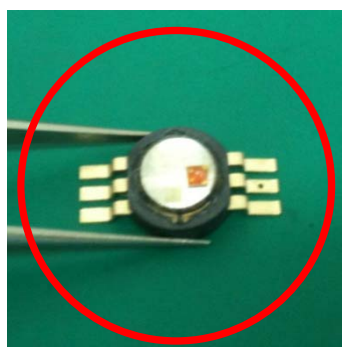
9.6 Handling LED

ITSWELL recommends the following at all times when handling S8xDx LEDs or assemblies containing these LEDs :

- When handling the LED with tools like Tweezer 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.

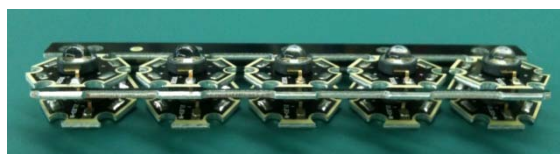


 **Incorrect Handling**



 **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.

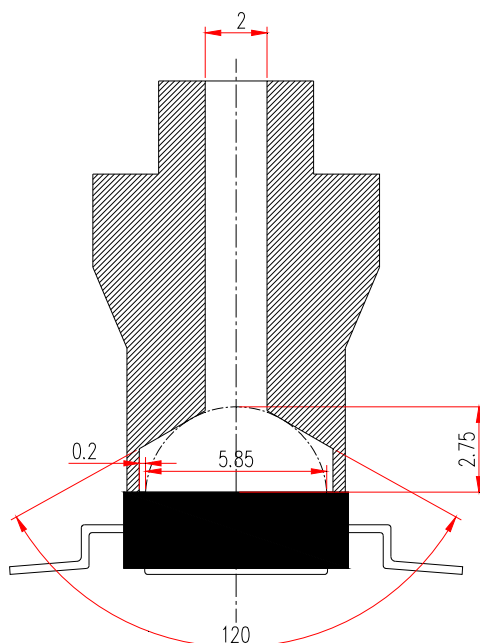


 **Incorrect Handling**

9.7 Pick & Place Nozzle

For pick and place nozzles coming into contact with silicone-covered LED components, ITSWELL is recommending pick up from the lens but only under the guidelines below.

- The nozzles be constructed of non-metallic material.
- The collet surface is the same profile as the ITSWELL S8xDx lens.



Pick & Place collet

- When utilizing a pick & place machine, the collect must not place excessive pressure on this lens of the LEDs. Ensure the inner surface of the collect is clean.
- When using a nozzle that rotate, please confirm that the there are no misplacements on the board.

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℃, 420mA, 1,000hr.	0/10
High Temperature Operating Life	85℃, 175mA, 1,000hr	0/10
Low Temperature Operating Life	-30℃, 350mA, 1,000hr.	0/10
Steady State Operating life Of High Humidity Heat	60℃, 90% RH, 260mA, 1,000hr.	0/10
Thermal Shock	-40℃(30min)→100℃(30min.), 100 cycle	0/10
ESD	HBM, 100 pF, 1.5 kohm, 3 times	0/10

10.2 Criteria for Judging the Damage

Items	Test Conditions	Criteria for judgment
Luminous Flux (ϕ_v)	$I_F = 350\text{mA}$	> 70% of S
Forward Voltage (V_F)	$I_F = 350\text{mA}$	Less than 110% of U

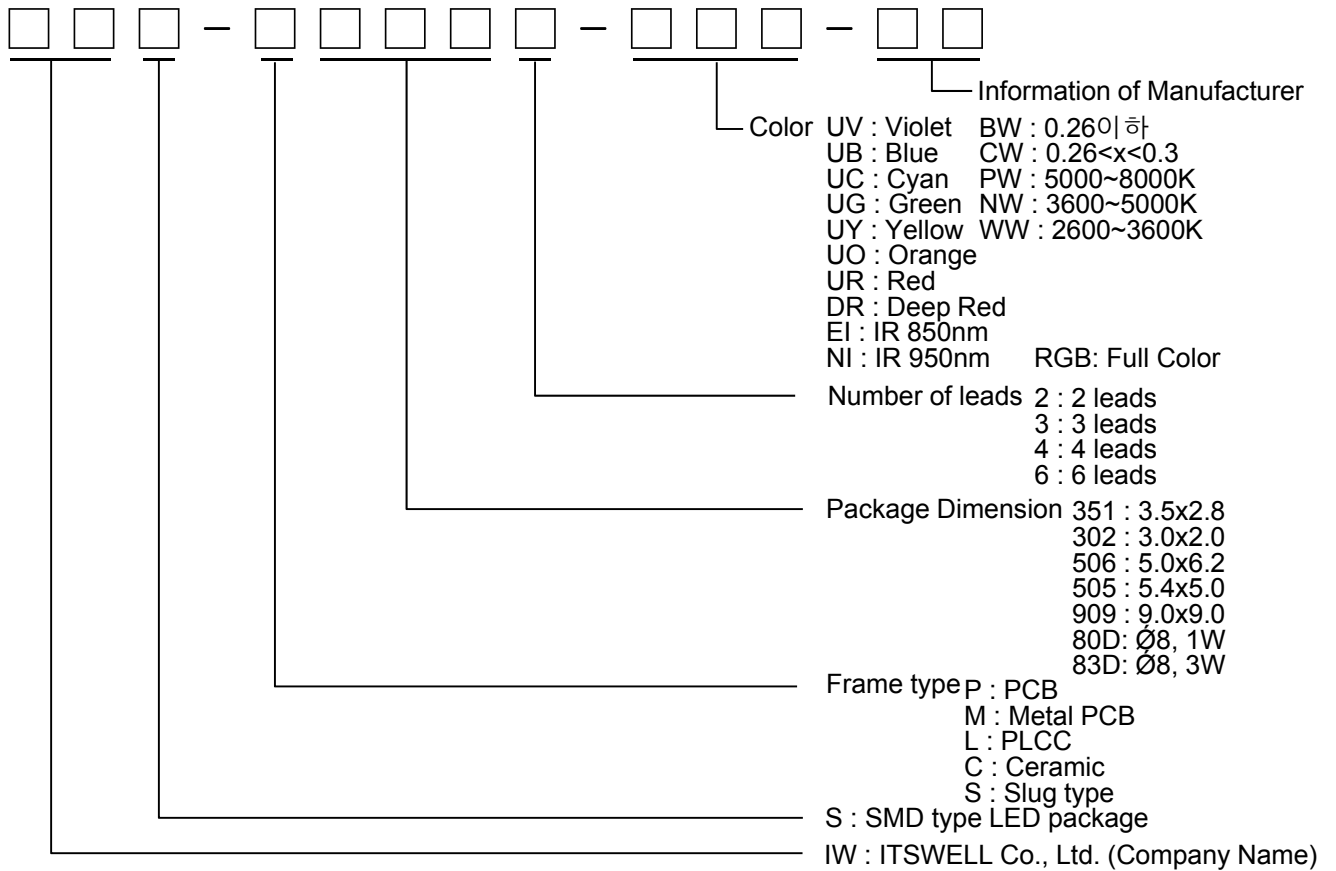
* U means the upper limit of specified characteristics, S means initial value.

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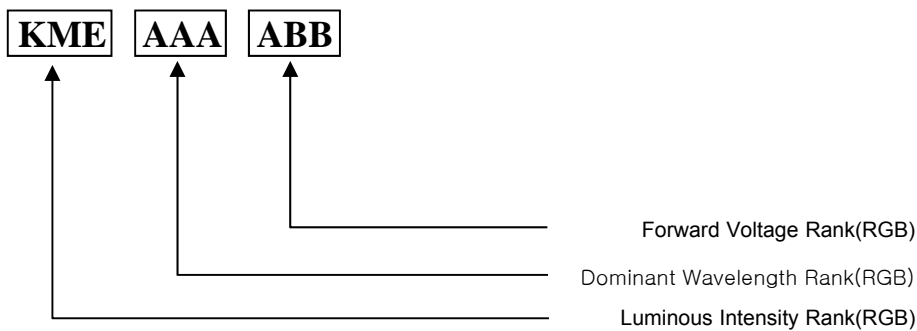
IWS-S83D6-RGB-K3



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.

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■ Spec. Review History

Review Ver.	Date	Correction List	Etc.
Ver 1.0	2012.08.09	Establish	