

SPECIFICATION

Product : White Top-View SMD LED (5060)

Part No. : IWS-M506-UW

Date : 2008. 10. 13 Ver. 6.0

Proposed By	Checked By	Checked By	Checked By	Approval

Comment



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Topview 5060 SMD LED

IWS-M506-UW



1. Features

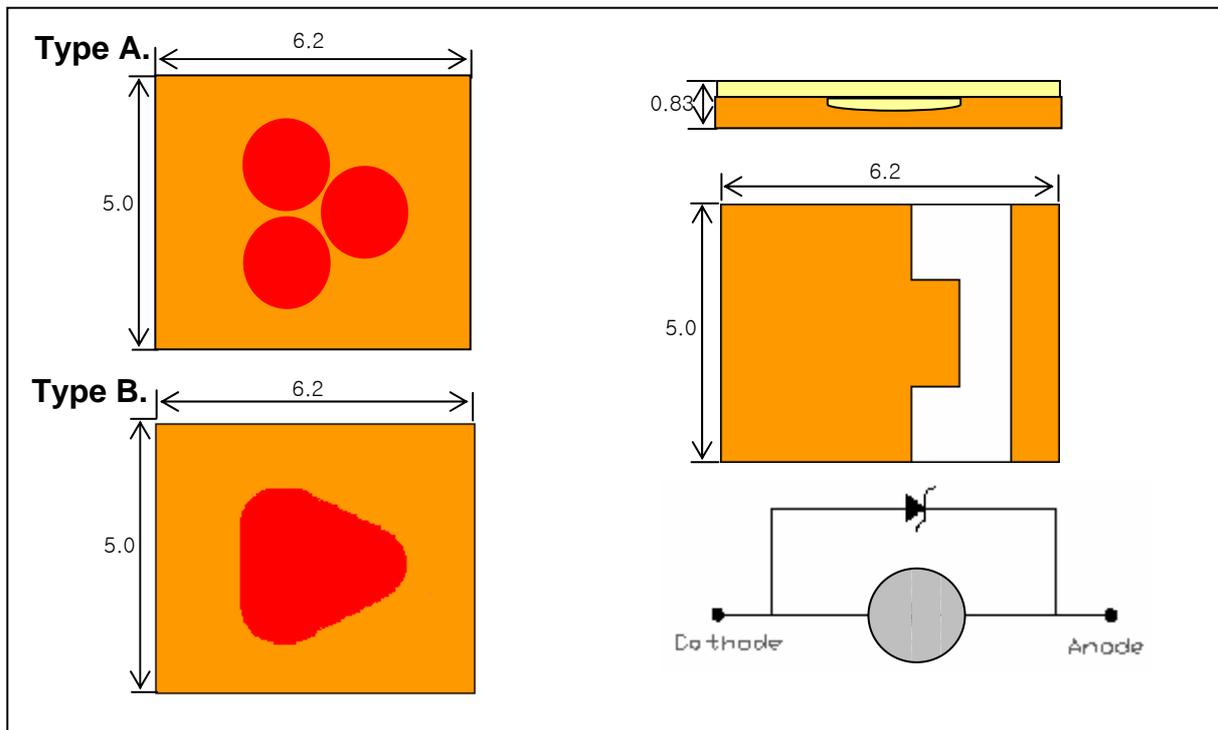
- 1chip High-Luminosity Chip LED
- 5.0 mm x 6.2 mm x 0.83 mm (W x L x H) small size surface mount type
- Wide Viewing angle
- Long operating life

2. Applications

- Automotive: Backlight in dashboard and switch
- Lighting device: Indicator, lighting
- Camera flash, Hand Carrier Flash
- General use

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)

Parameter	Symbol	Value	Unit
Power Dissipation per chip	P_d	1.60	W
Continuous Forward Current	I_F	420	mA
Peak Forward Current ^{※1}	I_{FP}	650	mA
Operating Temperature	T_{opr}	-30 ~ +85	°C
Storage Temperature	T_{stg}	-40 ~ +100	°C
Soldering Temperature	T_{sol}	260 (5sec)	°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	$I_F = 350\text{mA}$	3.0	3.4	3.8	V
Color Coordinates	CIE x CIE y	$I_F = 350\text{ mA}$	-	CIE x=0.317 CIE y=0.317	-	
Luminous Flux ^{※2}	Φ_V	$I_F = 350\text{mA}$	70	-	90	lm
View angle ^{※3}	$2\theta_{1/2}$	$I_F = 350\text{ mA}$	-	135	-	deg

※2 Luminous Flux is measured with an integrating sphere and has an accuracy of 10%.

※3 Viewing angle is the angle until 50% of brightness measured from the front part of LED.

5.1 Luminous Flux Rank (IF=350mA)

Rank	Luminous Flux (lm)
S	70 ~ 80
T	80 ~ 90

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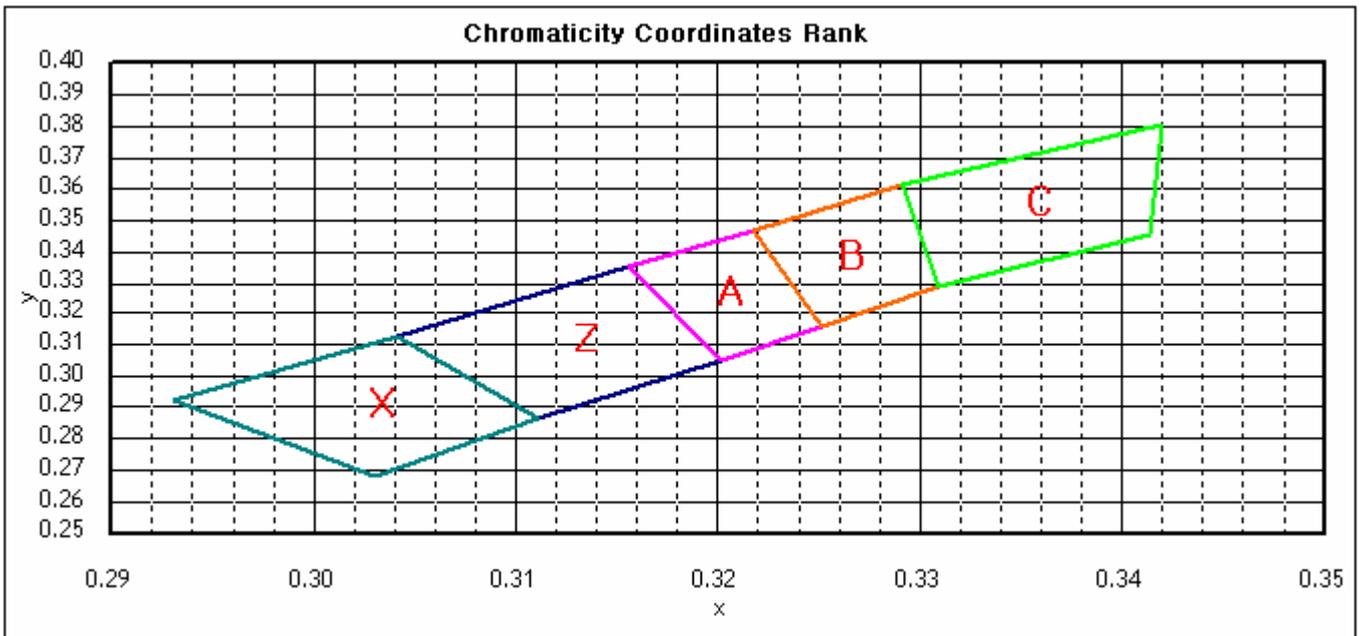


5.2 Forward Voltage Rank

Rank	Forward Voltage(V)
A	3.0 ~ 3.2
B	3.2 ~ 3.4
C	3.4 ~ 3.6
D	3.6 ~ 3.8

5.3 Color coordinates Rank (IF = 350 mA, Ta = 25 °C)

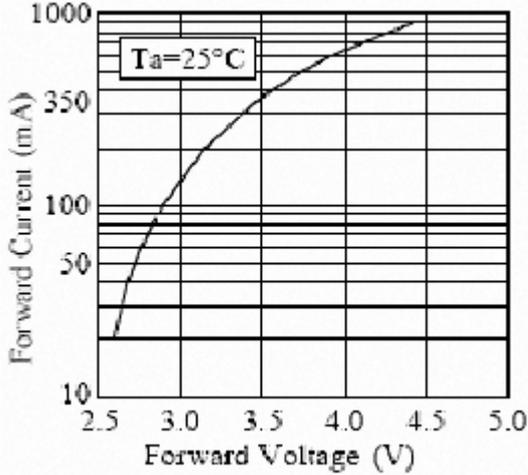
X		Z		A		B		C	
9000-7500K		7500-6500K		6500-6100K		6100-5750K		5500-5250K	
0.3025	0.2675	0.3106	0.2855	0.3197	0.3047	0.3246	0.3155	0.3304	0.3285
0.3106	0.2855	0.3197	0.3047	0.3246	0.3155	0.3304	0.3285	0.3409	0.3445
0.3036	0.3125	0.3151	0.3345	0.3212	0.3462	0.3286	0.3603	0.3415	0.3795
0.2926	0.2915	0.3036	0.3125	0.3151	0.3345	0.3212	0.3462	0.3286	0.3603



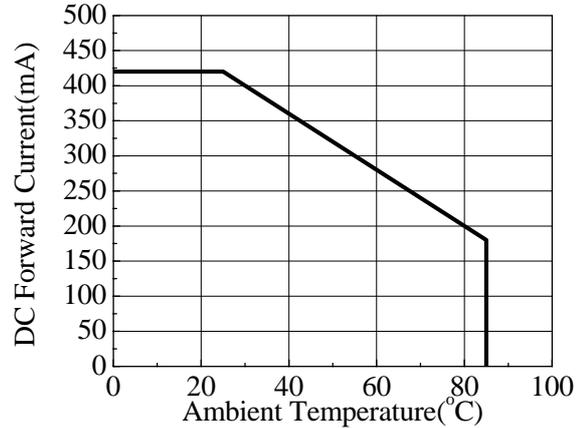
- * The CIE(1931) standard colorimetric system
- * Chromaticity coordinates Measured : 0.01sr(CIE. LED_B)
- * Measurement Uncertainty of the Color Coordinates : ±0.01

6. Typical Characteristic Curve

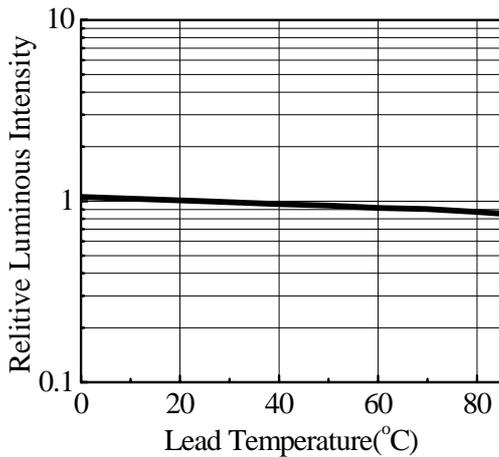
Forward Current vs. Forward Voltage



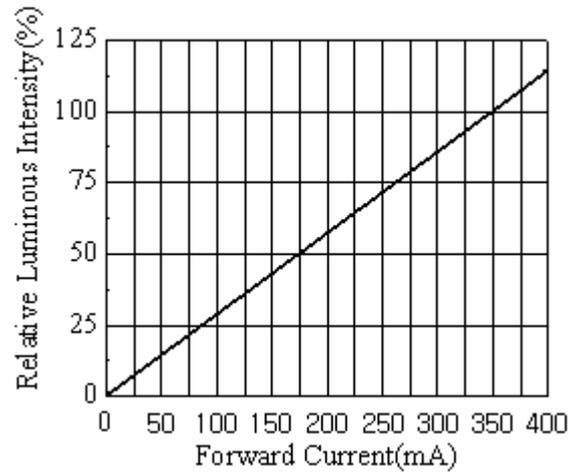
Forward Current vs. Ambient Temperature



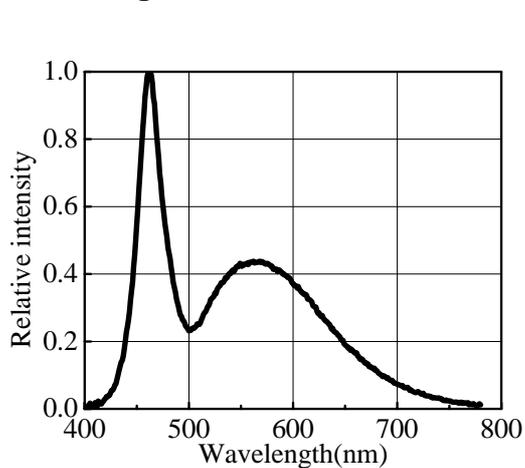
Relative Luminous Intensity vs. Ambient Temperature



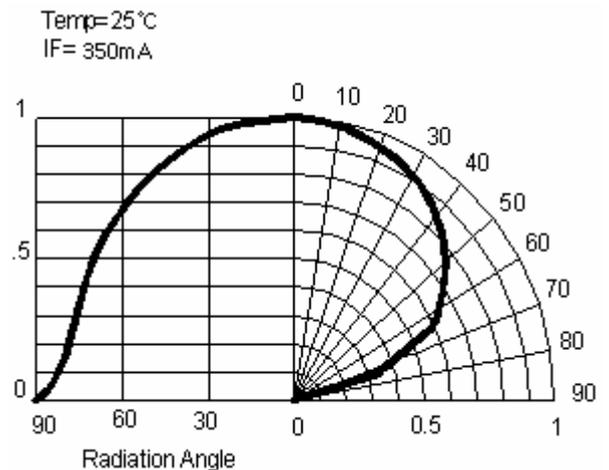
Relative Luminous Intensity vs. Forward Current



Relative Luminous Intensity vs. Wavelength



Radiation Diagram



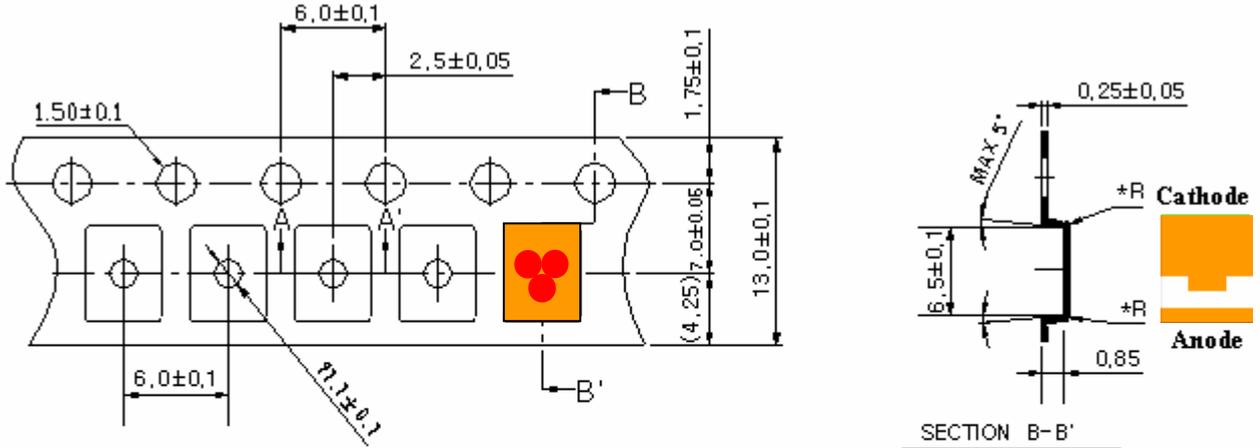
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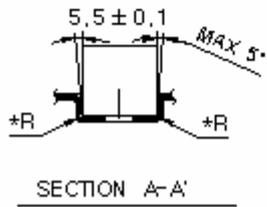


7. Dimension of Tape / Reel

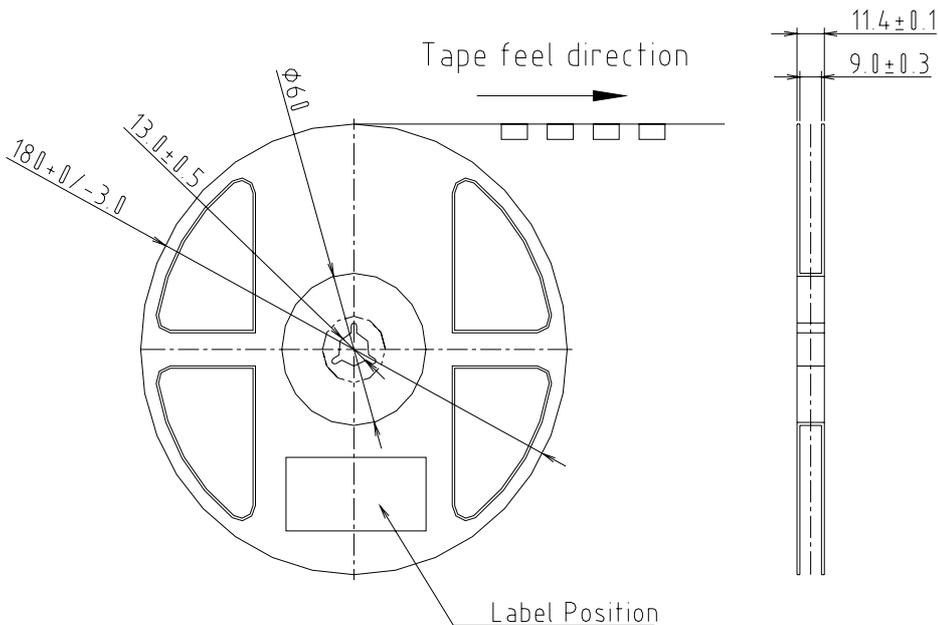
7.1 Tape Dimension



Tolerance ± 0.1 , Unit mm



7.2 Reel Dimension

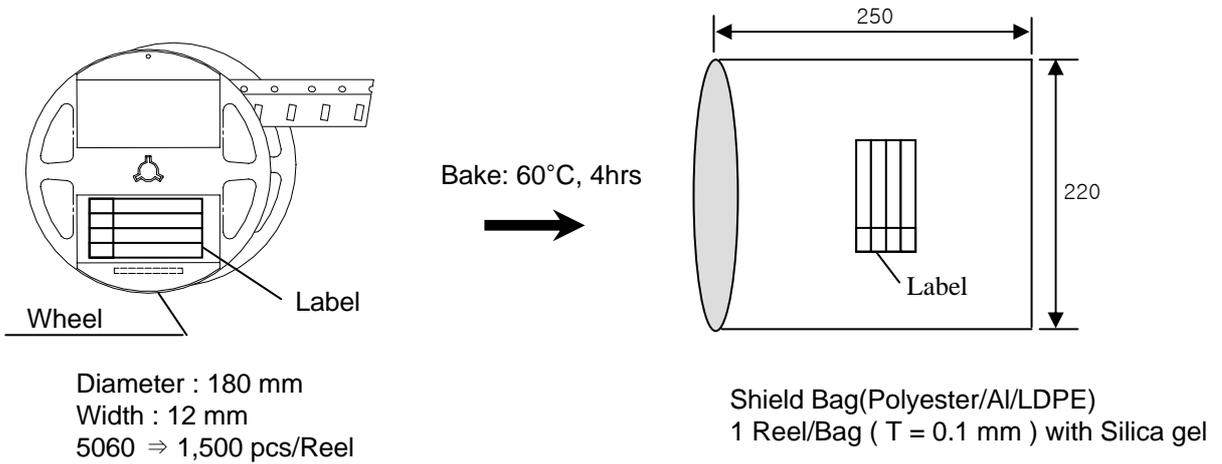


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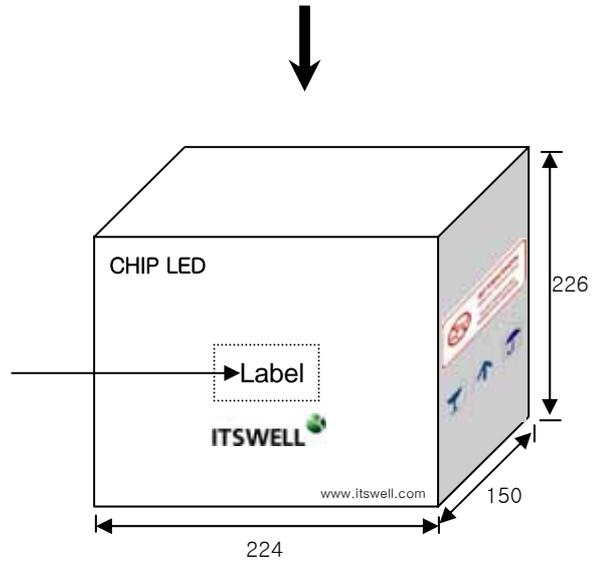
8. Packing Dimension

Unit :mm



Al Pack Label, Reel Label (70 × 37)

ITSWELL				
Lot :		IWS-M506-UW		
	MIN	AVG	MAX	STD
VF[volt]				
IV[mcd]				
CIE[x,y]				
Q'ty :		yyyy/mm/dd		



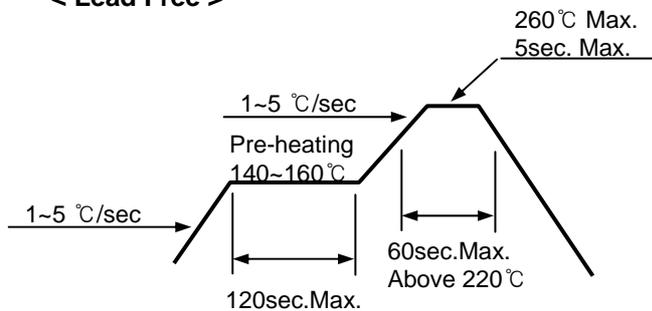
Maximum 10 Bags / 1Inner Box
5060 ⇒ 15,000 pcs / 1 Inner Box

9. Precaution in use

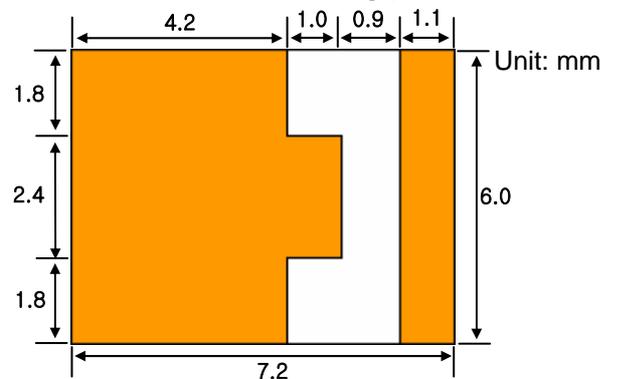
9.1 Soldering Conditions

- 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

- Use within 7 days after opening packing. Store in 10 to 30 °C. Power SMD lead frames are plated silver. The silver surface may be affected by environment which contains corrosive gases and so on. Please avoid conditions which may cause the Power SMD to corrode, tarnish or discolor.

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 1M Ω). 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 chemicals; they may cause cracks 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 considering the ambient maximum temperature.
- Please consider the heat generation of the LED when it is designed on the PCB.
- The LEDs must be mounted on MCPCB or heat sink or applied thermal pad.

9.6 Humidity

- Repack unused products with anti-moisture packing, fold to close any opening and then store in a dry place.

10. Reliability

10.1 Reliability Test Item

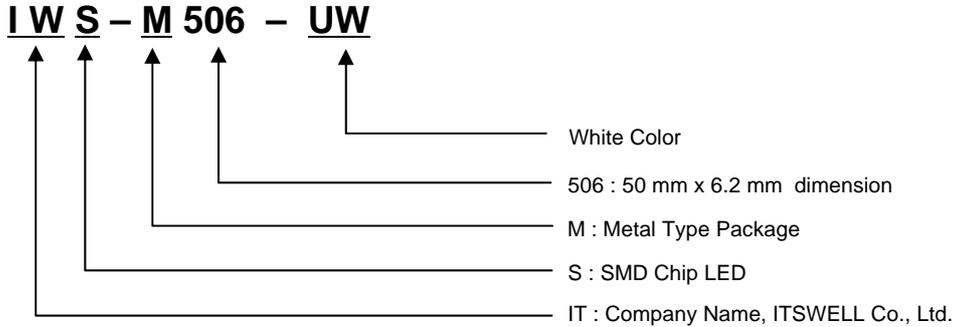
Test Items	Test Conditions	Notes
High Temperature Storage	100℃, 1,000hr.	0/25
Low Temperature Storage	-40℃, 1,000hr.	0/25
Temp. Humidity Storage	60℃, 90% RH, 1,000hr.	0/25
Steady State Operating life	25℃, 420mA, 1,000hr.	0/25
High Temperature Operating Life	85℃, 180mA, 1,000hr	0/25
Low Temperature Operating Life	-30℃, 350mA, 1,000hr.	0/25
Steady State Operating life Of High Humidity Heat	60℃, 90% RH, 270mA, 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

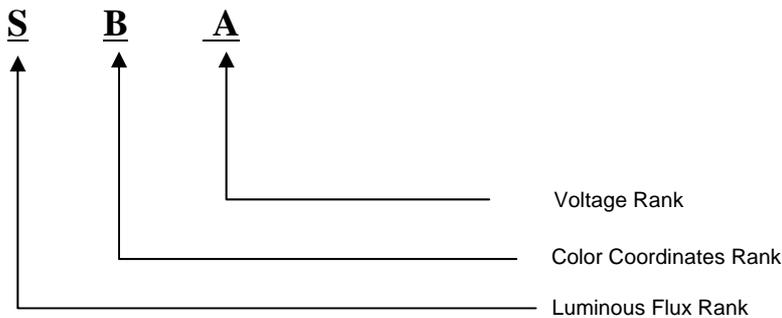
Items	Test Conditions	Criteria for judgment
Luminous Intensity (IV)	$I_F = 350\text{mA}$	> 70% of S
Forward Voltage (VF)	$I_F = 350\text{mA}$	Less than 110% of U

* 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. LED's ESD Level is 'Class II' and The range of Forward Voltage is 2000V ~ 3999V.

After opening the package, the LED's should be kept at 30% RH or less, 70%RH or less. The LEDs must be dip soldered within seven days(168 hours) after opening the moisture-proof packing. It is better not to use different rank LEDs. If use mixed rank, could not attain your object for highest quality of products.

