SPECIFICATION

Product : Topview 5550 SMD LED

Part No : IWS-505-RB

Customer :

Date : 2007. 11. 10 Ver.1.0

Customer :

Checked By	Checked By	Checked By	Checked By	Approval

Manufacturer : ITSWELL Co., LTD

Proposed By	Checked By	Checked By	Checked By	Approval
				APPROVED 2006. 7. 10 Q.A

Comment

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Topview 5550 SMD LED
IWS-505-RB

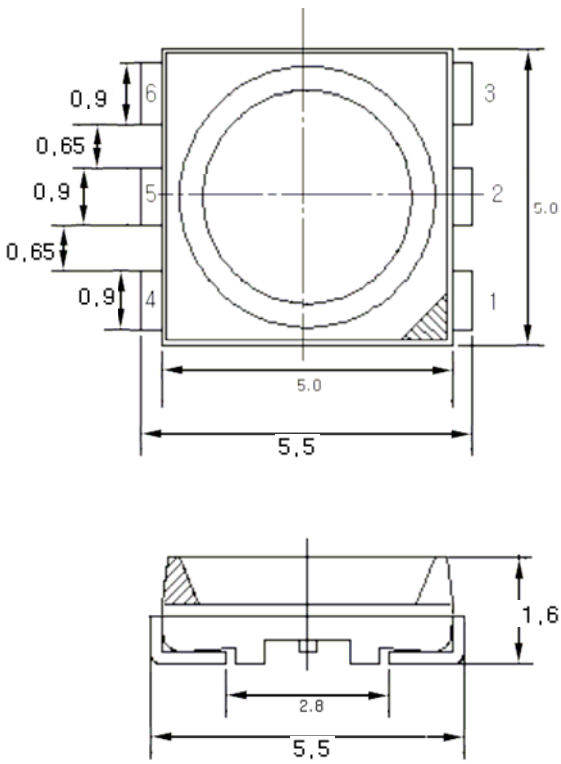
1. Features

- 3 chip high-Luminous intensity Chip LED
- 5.5 x 5.0 x 1.6 mm (L x W x H), 6-pin, 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

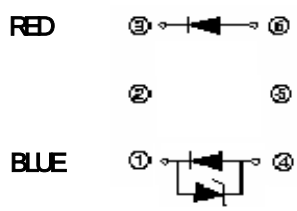
3. Outline Drawing and Dimension



Unit : mm

Tolerance : ±0.1mm

Circuit diagram



Note

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

4. Absolute Maximum Ratings(Ta = 25 □)

Parameter	Symbol	Value	Unit
Power Dissipation	P_d	144	mW
Continuous Forward Current	I_F	30	mA
Peak Forward Current □1	I_{FP}	100	mA
Operating Temperature	T_{opr}	-30 ~ 85	□
Storage Temperature	T_{stg}	-40 ~100	□
Soldering Temperature	T_{sol}	260 (5sec)	□

□1 Duty ratio = 1/10, Pulse width = 0.1ms

5. Electro-optical Characteristics(Ta = 25 □)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit.
Forward Voltage	V_F	I_F = 20 mA /Chip	1.8/3.0	2.1/3.3	2.4/3.6	V
Luminous Intensity □2	I_V	I_F = 20 mA /Chip	300/200	-	1000/400	mcd
Dominant Wavelength*3	W_D	I_F = 20 mA /Chip	618/455		635/470	
View angle □4	$2\theta_{1/2}$	I_F = 20 mA /Chip	-	120	-	º

2 Luminous Intensity is tested by a tester calibrated by CAS 140B(CIE LED_B) and has an accuracy of 10%
3 Dominant wavelength has an accuracy of ±1nm.
4 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)
A	300~ 700 / 200 ~ 400
B	700 ~ 1000 / 200 ~ 400

5.2 Dominant Wavelength

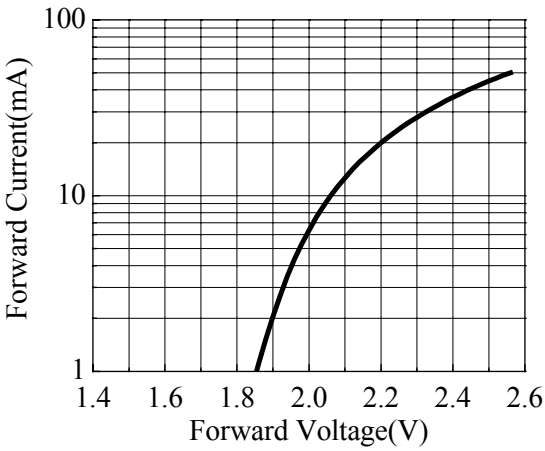
Rank	Wavelength
A	618 / 455 ~ 635 / 470

5.3 Forward Voltage

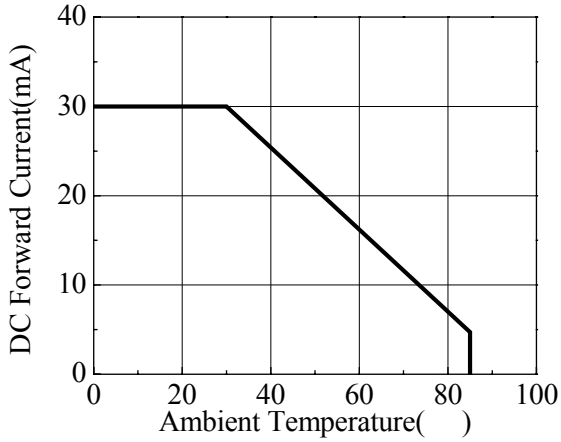
Rank	Forward Voltage (V)
a	1.8/3.0 ~ 2.4/ 3.6

6. Typical Characteristics Curves

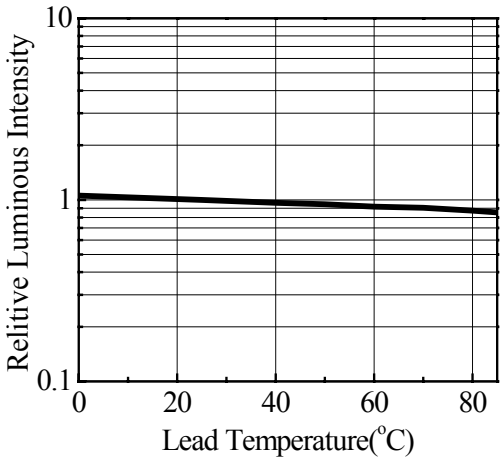
Forward Current vs. Forward Voltage



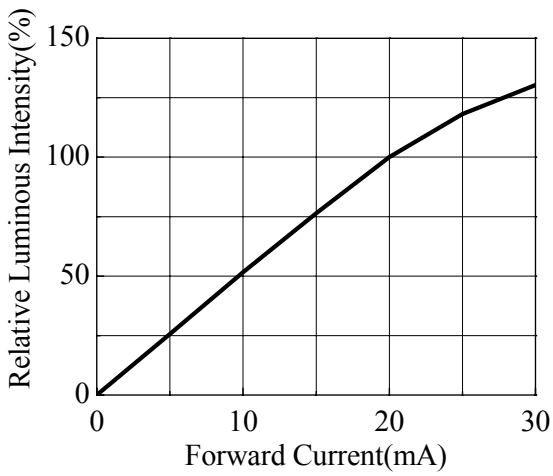
Forward Current vs. Ambient Temperature



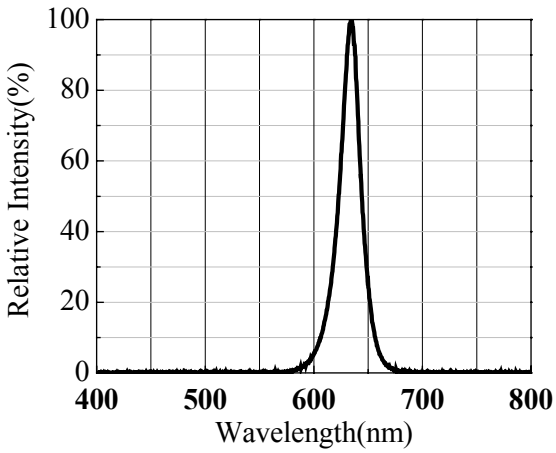
Relative Luminous Intensity vs. Ambient Temperature



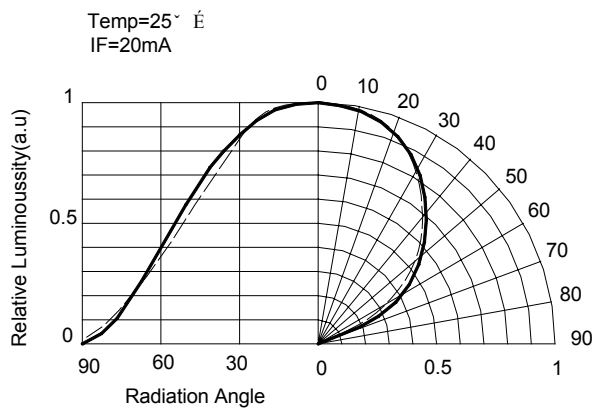
Relative Luminous Intensity vs. Forward Current



Relative Intensity vs. Wavelength

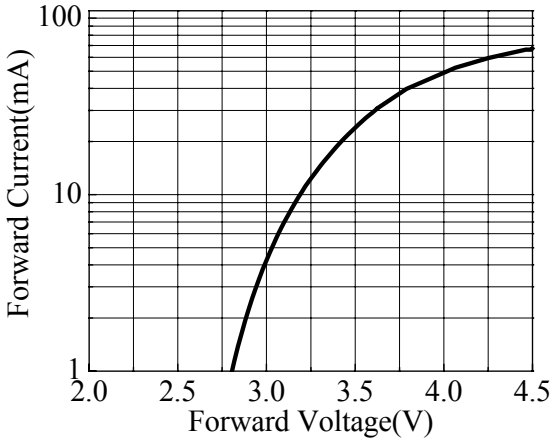


Radiation Diagram

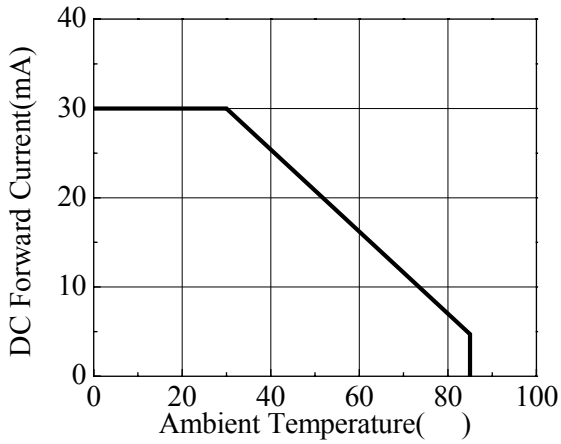


6. Typical Characteristics Curves

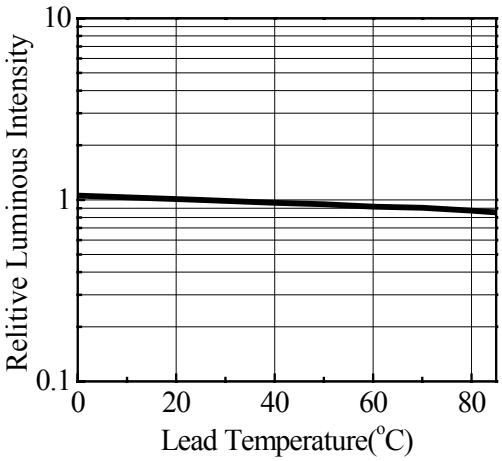
Forward Current vs. Forward Voltage



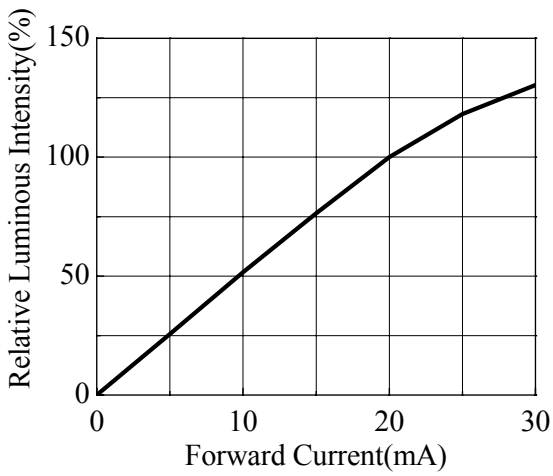
Forward Current vs. Ambient Temperature



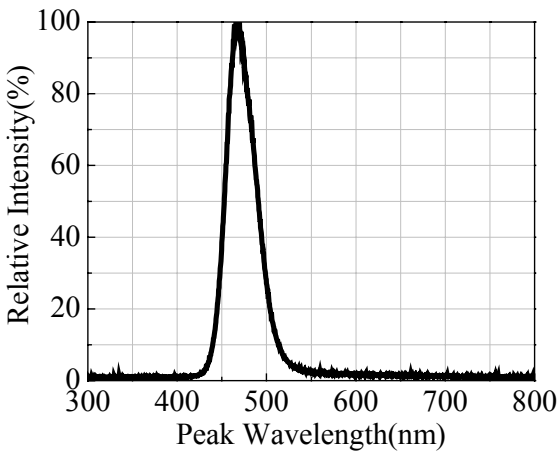
Relative Luminous Intensity vs. Ambient Temperature



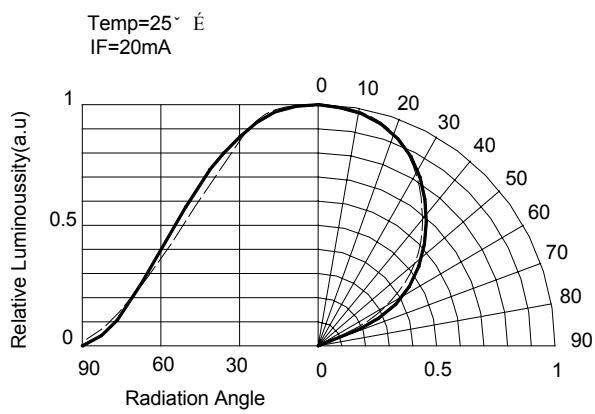
Relative Luminous Intensity vs. Forward Current



Relative Intensity vs. Wavelength



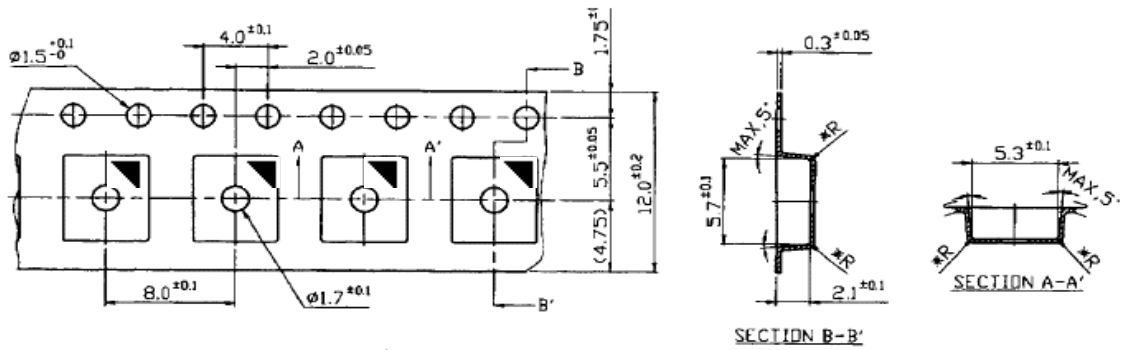
Radiation Diagram



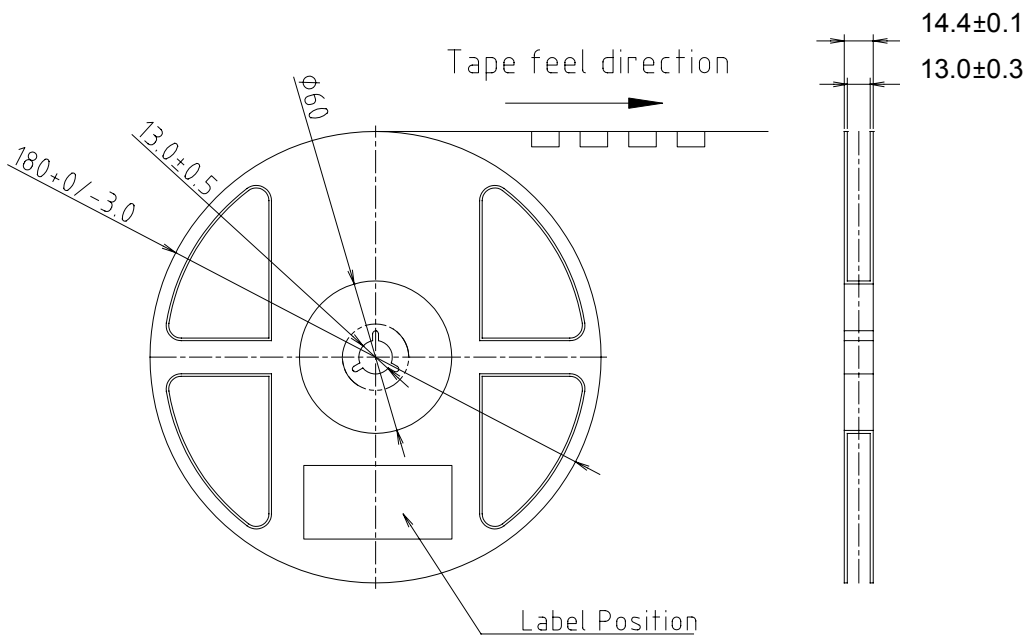
7. Dimension of Tape / Reel

7.1 Tape Dimension

(Unit : mm)



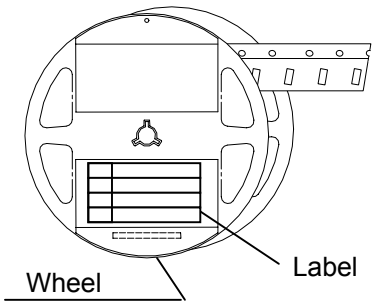
7.2 Reel Dimension



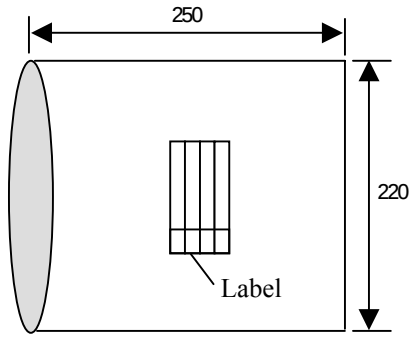
- Quantity : Product are packed in one taping reel of max. 1,000 pcs.
- Cumulative Tolerance : Cumulative Tolerance/10 pitches to be ±0.2mm
- Adhesion Strength of Cover Tape : Adhesion strength to be 0.1-0.7N when the over tape is turned off from the carrier tape at 10° angle to be the carrier tape.
- Packaging : P/N, Manufacturing data Code No. and quantity to be indicated on a damp proof Package.

8. Packing Dimension

Unit :mm



Bake: 60°C, 4hrs



Diameter : 180 mm
Width : 12 mm
5550 1,000 pcs/Reel

Shield Bag(Polyester/Al/LDPE)
1 Reel / Bag (T = 0.1 mm) with Silica gel

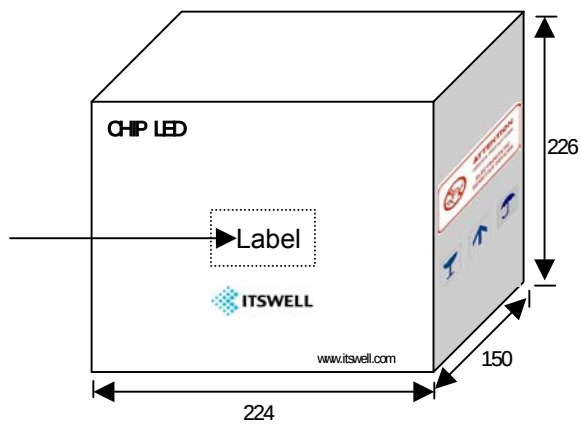
Al Pack Label, Reel Label (70 × 37)

ITSWELL RANK #

Lot : IWS-505-RB

	MIN	AVG	MAX	STD
VF[volt]				
IV[mcd]				
CIE[x,y]				

Q'ty : yyyy/mm/dd

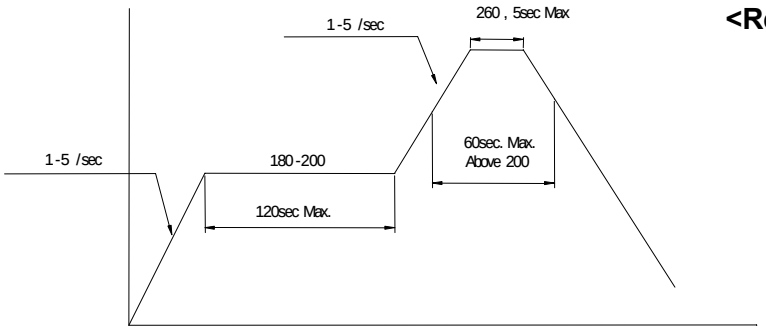


Maximum 10 Bags / 1 Inner Box
5750 8,000 pcs/ 1 Inner Box

9. Precaution in use

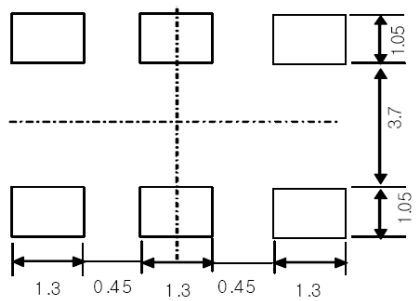
9.1 Soldering Conditions

- 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 200□ max. for 120 Seconds max.
- Soldering heat to be at 260□ max. for 5sec. Max.
- For manual Soldering is Not more than 3sec @MAX350□, under soldering iron



<Recommendable soldering pattern>

Unit: mm.



9.2 Storage

- Use with 7days after opening packing. Store in 10 to 30□ Power SMD lead frames are plated silver. The silver surface may be affected by environment which contain corrosive gases and so on. Please avoid condition which may cause the Power SMD to corroded, 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 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.

10. Reliability

10.1 Reliability Test Item

Test Items	Test Conditions	Notes
High Temperature Storage	100 , 500hr.	0/32
Low Temperature Storage	-30 , 500hr.	0/32
Temp. Humidity Storage	60 , 90% RH, 500hr.	0/32
Steady State Operating life	25 , 30mA / Chip , 500hr.	0/32
High Temperature Operating Life	85 , 5mA / Chip, 500hr	0/32
Low Temperature Operating Life	-30 , 20mA / Chip, 500hr.	0/32
Steady State Operating life Of High Humidity Heat	60 , 90% RH, 15mA /Chip, 300hr.	0/32
Temperature Cycle	-40 (30min) → 25 (5min.) → 100 (30min.) 25 (5min.) , 100 cycle	0/22
ESD	HBM, 100pF, 1.5kohm, 3 times	0/22

10.2 Criteria for Judging the Damage

Items	Test Conditions	Criteria for judgment
Luminous Intensity (I_V)	I_F =20 mA / Chip	> 70% of S
Forward Voltage (V_F)	I_F =20 mA / Chip	Less than 120% of U

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

11. Part Name Description

I W S – 505 – RB

- RB — Ultra Red,Blue
- 505 — 5.5mm x 5.0mm, 1.6mmt Dimension
- S — SMD Type Chip LED
- IW — Company Name, ITSWELL Co., Ltd.

12. Rank Description

K A a

- a — Forward Voltage Rank
- A — Color coordinates Rank
- K — Luminous Intensity Rank

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 is 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. 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□, 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.

■ Spec. Review History

Review Ver.	Date	Correction List	Etc.
Ver 1.0	2007.11.10	Establish	