SPECIFICATION

Product : Topview 3528 RG SMD LED

Part No. : IWS-L3514-RG

Date : 2011. 06. 28 Ver. 1.0

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

Comment

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1. Features

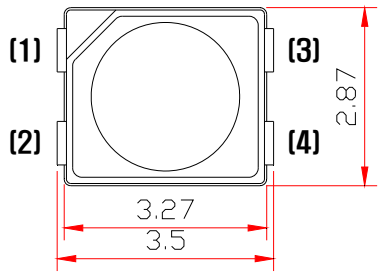
- 2 Chip High-Luminosity SMD LED
- 3.5 x 2.8 x 1.9 mm (L x W x H), Small Size Surface Mount Type
- Wide Viewing Angle
- Long Operating Life

2. Applications

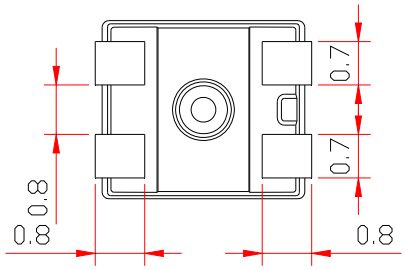
- Automotive: Backlight in Dashboard and Switch
- Lighting Device: Indicator, General Lighting
- General Use

3. Outline Drawing and Dimension

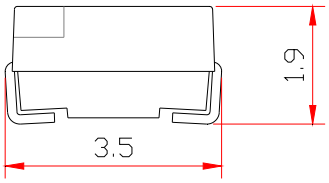
Unit : mm, Tolerance : ±0.1mm



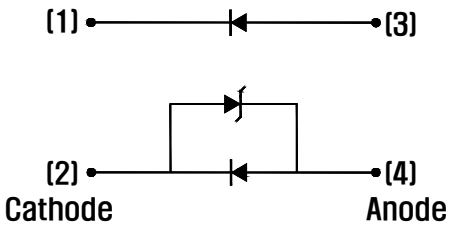
[Top view]



[Bottom view]



[Side view]



[Circuit diagram]

Note

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

4. Absolute Maximum Ratings(T_a = 25 ℃)

Parameter	Symbol	Value		Unit
		Red	Green	
Power Dissipation	P_d	72	108	mW
Continuous Forward Current	I_F	30	30	mA
Peak Forward Current ※1	I_{FP}	100	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(T_a = 25 ℃)

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit.
Forward Voltage※2	V_F	I_F = 20mA/Chip	Red	1.8	-	2.4	V
			Green	2.9	-	3.6	V
Reverse Current	I_R	V_R = 5V	Red	-	-	10	㎂
Reverse Voltage	V_{ZR}	Iz = 5mA	Green	0.7	0.8	1.5	V
Dominant Wavelength※3	W_D	I_F = 20mA/Chip	Red	618	-	635	nm
			Green	520	-	535	nm
Luminous Intensity※4	I_V	I_F = 20mA/Chip	Red	600	-	800	mcd
			Green	600	1000	1400	mcd
View angle※5	$2\theta_{1/2}$	I_F = 20mA/Chip	-	-	120	-	deg

※2 Forward Voltage has an accuracy of ±0.1V

※3 Dominant Wavelength has an accuracy of ±2nm

※4 Luminous Intensity is tested by a tester calibrated by CAS 140B(CIE LED_B) and has an accuracy of 10%

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

5.1 Luminous Intensity Rank (mcd, I_F = 20mA)

Rank	Red	Green
A	600 ~ 800	600 ~ 900
B		900 ~ 1400

5.2 Dominant Wavelength Rank (nm, I_F = 20mA)

Rank	Red	Green
A	618 ~ 635	520 ~ 535

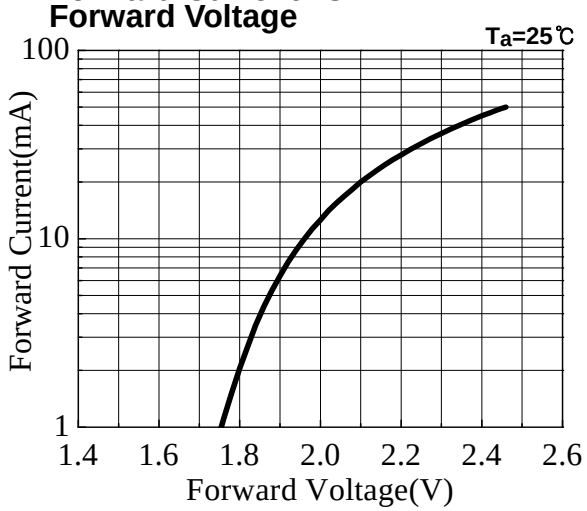
5.2 Forward Voltage Rank

Rank	Red	Green
1	1.8 ~ 2.4	2.9 ~ 3.2
2		3.2 ~ 3.4
3		3.4 ~ 3.6

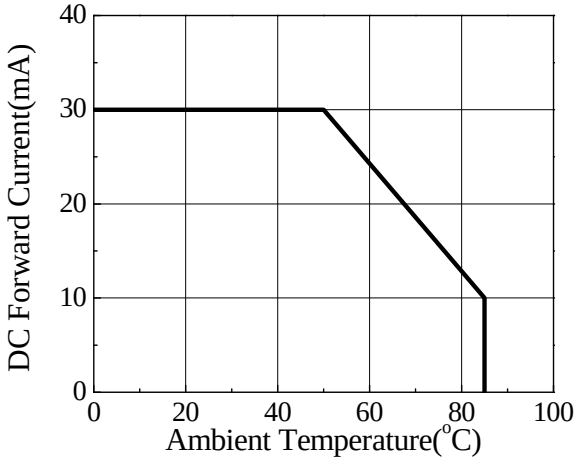
6. Typical Characteristics Curves

6.1 Red

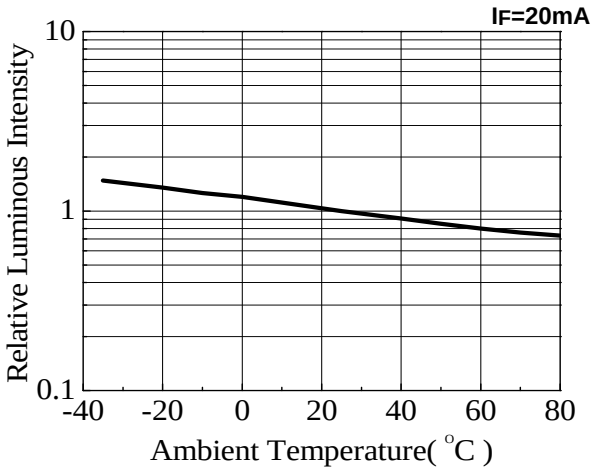
Forward Current vs. Forward Voltage



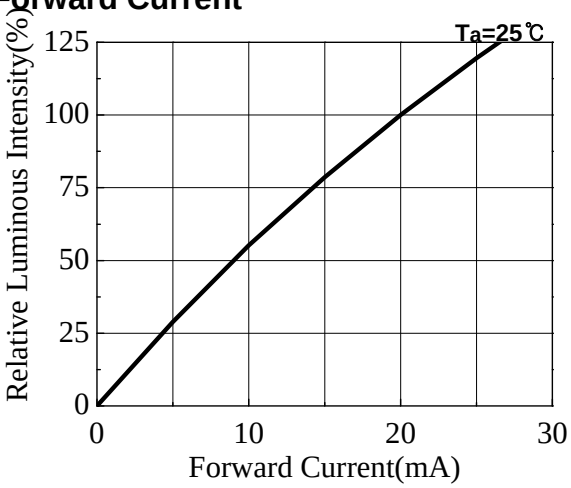
Forward Current vs. Ambient Temperature



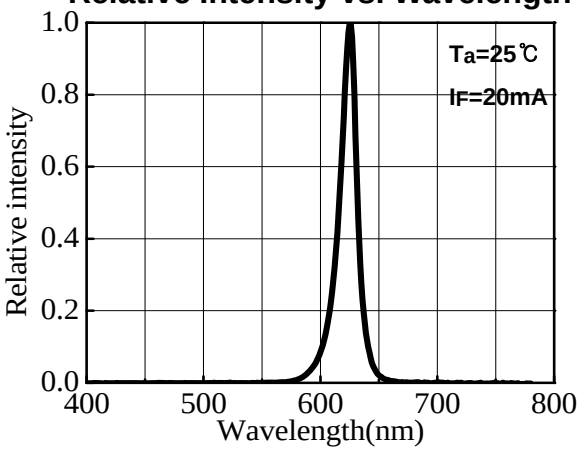
Relative Luminous Intensity vs. Ambient Temperature



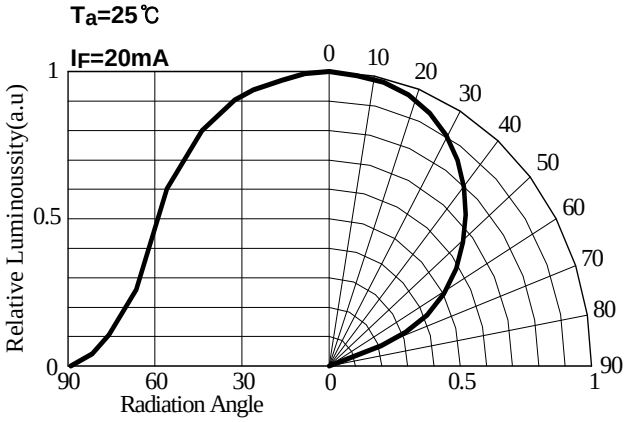
Relative Luminous Intensity vs. Forward Current



Relative Intensity vs. Wavelength



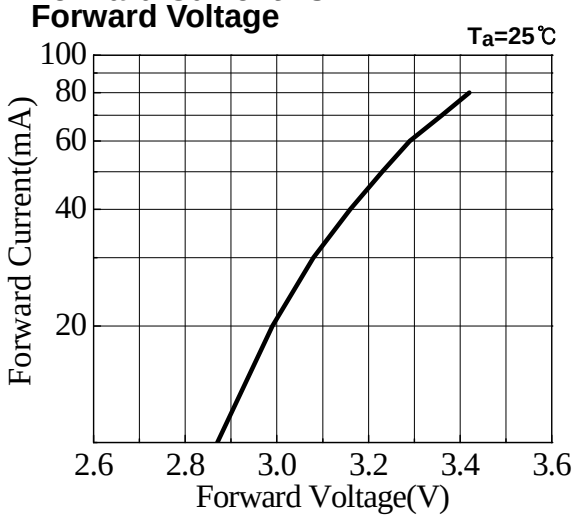
Radiation Diagram



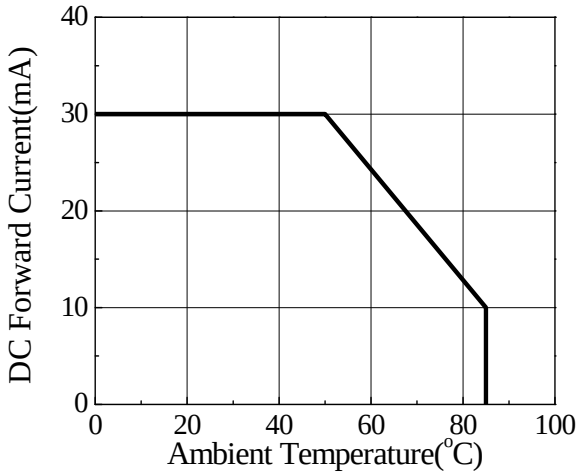
6. Typical Characteristics Curves

6.2 Green

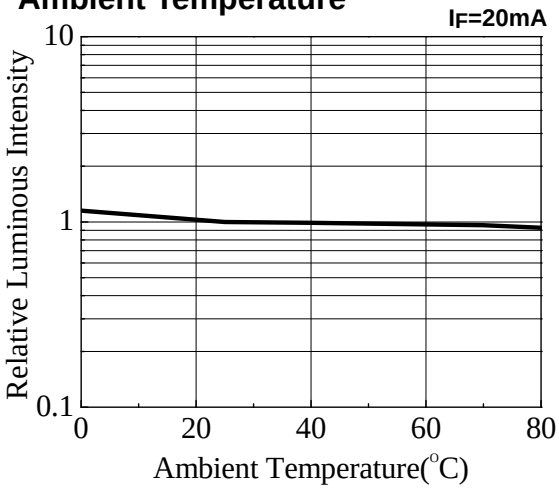
Forward Current vs. Forward Voltage



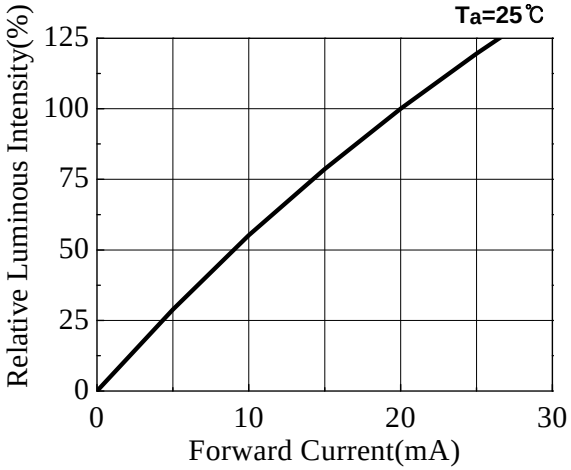
Forward Current vs. Ambient Temperature



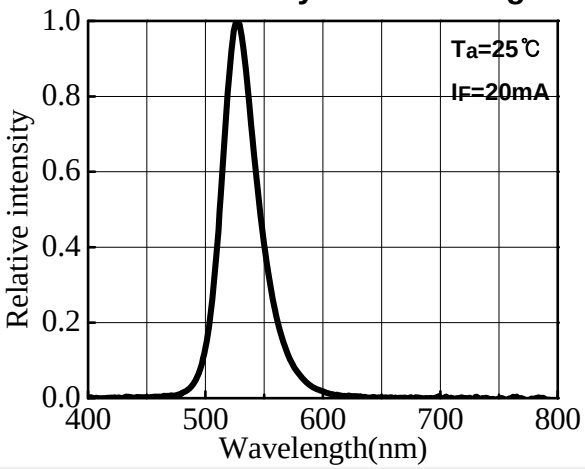
Relative Luminous Intensity vs. Ambient Temperature



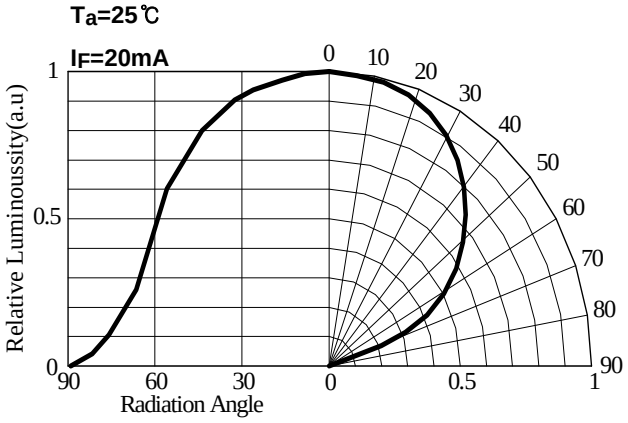
Relative Luminous Intensity vs. Forward Current



Relative Intensity vs. Wavelength

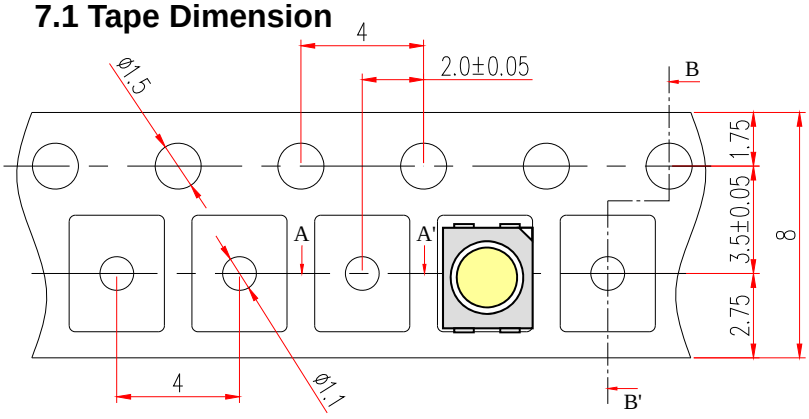


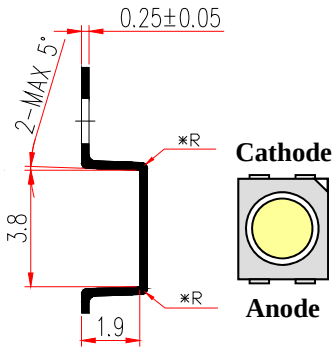
Radiation Diagram



7. Dimension of Tape / Reel

7.1 Tape Dimension





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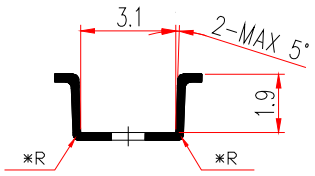

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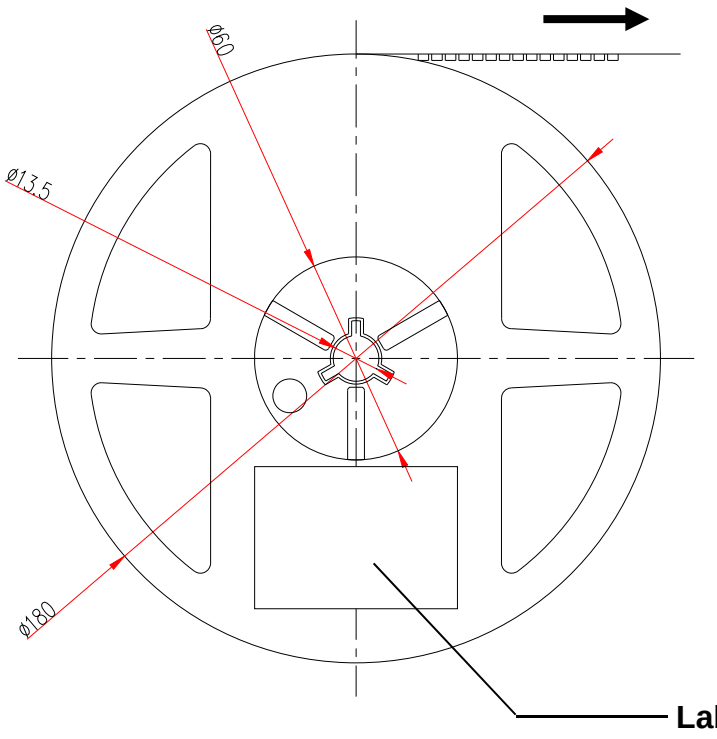
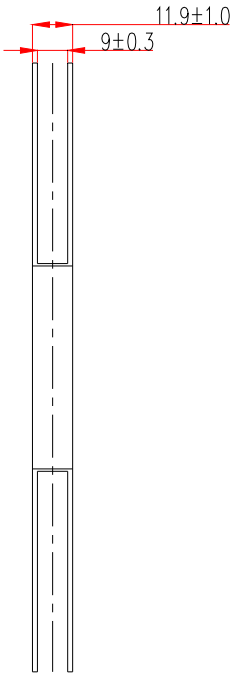
Tolerance ±0.1 , Unit: mm

7.2 Reel Dimension

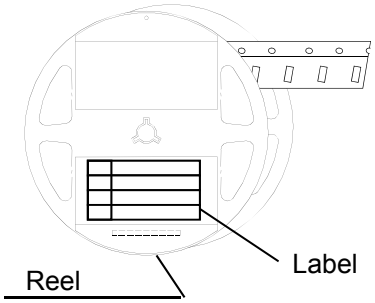




8. Packing Dimension

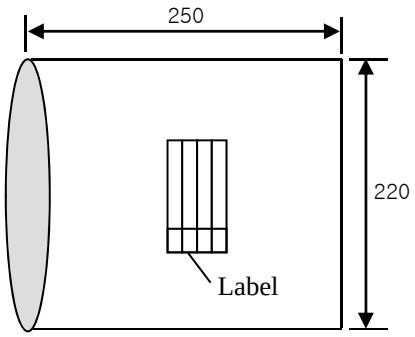
Unit :mm

Reel



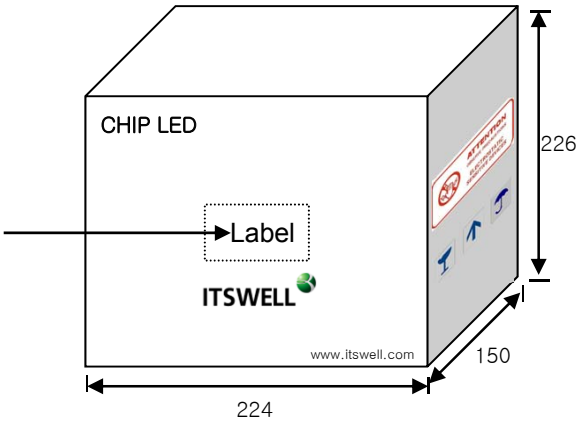
Bake: 60°C, 48hrs

Aluminum Shield Bag



Inclouding Silica gel in a bag

Card board Box



Al Pack Label, Reel Label (70 × 37)

ITSWELL

Lot : IWS-L3514-RG

	MIN	AVG	MAX	STD
V_F[volt] Iv[mcd] W_D[nm]				

Q'ty : yyyy/mm/dd

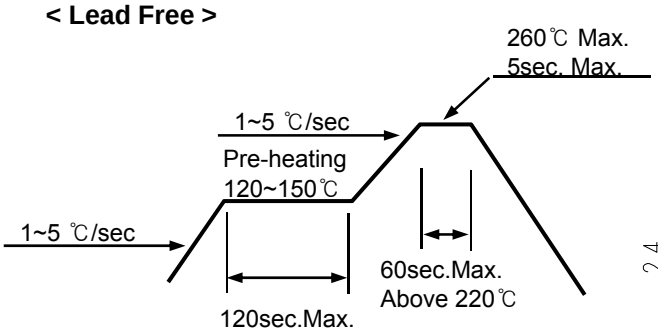
	Dimensions (mm)	Reel / Box	Q'ty / Box(pcs)
Reel	Φ180mm, 12mm Width	–	2,000 Max
Al Shield Bag	250x220	–	2,000 Max
Card board Box	224x150x226	10 Max	20,000 Max

9. Precaution in use

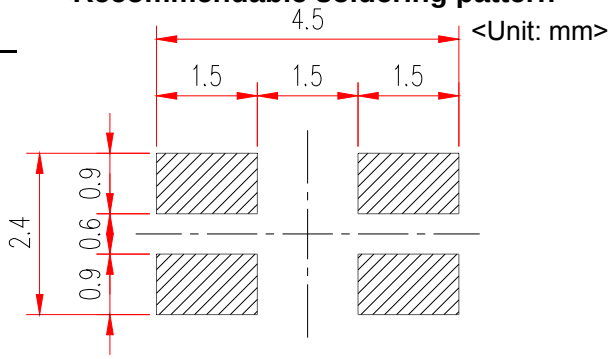
9.1 Soldering Conditions

- 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 ℃ max. for 120 Seconds max.
- Soldering heat to be at 260 ℃ max. for 5 sec. Max.
- For manual Soldering is Not more than 3 sec @MAX 350 ℃, under soldering iron

< Lead Free >



<Recommendable soldering pattern>



9.2 Storage

- Before opening the package, the LEDs should be kept at 30℃ 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℃ or less and 30%RH or less.
- The LEDs should be used within 168 hours (7 day) 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℃±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	-45℃, 1,000hr.	0/25
Temp. Humidity Storage	50℃, 95% RH, 1,000hr.	0/25
Steady State Operating life	25℃, 30mA/Chip , 1,000hr.	0/25
High Temperature Operating Life	80℃, 10mA/Chip, 1,000hr	0/25
Low Temperature Operating Life	-25℃, 20mA/Chip, 1,000hr.	0/25
Steady State Operating life Of High Humidity Heat	50℃, 95% RH, 15mA/Chip, 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 mA/Chip	Less than 110% of U
Luminous Intensity (I_V)	I_F = 20 mA/Chip	> 70% of S

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

11. Part Name Description

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Information of Manufacturer

Color
UV : Violet
UB : Blue
UC : Cyan
UG : Green
UY : Yellow
UO : Orange
UR : Red
DR : Deep Red
EI : IR 850nm
NI : IR 950nm
RG : Red/Green

BW : 0.26이하
CW : 0.26<x<0.3
PW : 5000~8000K
NW : 3600~5000K
WW : 2600~3600K

Number of leads
2 : 2 leads
3 : 3 leads
4 : 4 leads
6 : 6 leads

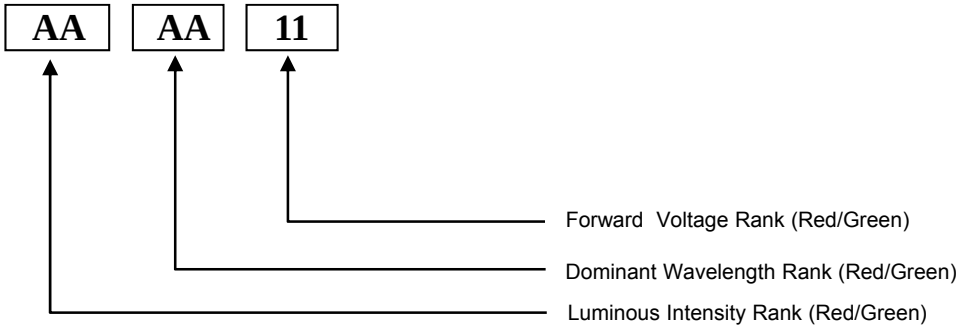
Package Dimension
351 : 3.5x2.8
302 : 3.0x2.0
506 : 5.0x6.2
505 : 5.4x5.0
909 : 9.0x9.0

Frame type
P : PCB
M : Metal PCB
L : PLCC
C : Ceramic
S : Slug type

S : SMD type LED package

IW : ITSWELL Co., Ltd. (Company Name)

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 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.

■ Spec. Review History

Review Ver.	Date	Correction List	Etc.
Ver 1.0	2011.06.28	Established	