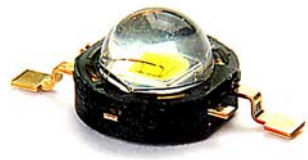
Z-POWER LED Series

Technical Datasheet for W42180



Z-Power series is designed for high current operation and high flux output applications.
Z-Power LED's thermal management perform exceeds other power LED solutions.
It incorporates state of the art SMD design and Thermal emission material.
Z Power LED is ideal light sources for general illumination applications, custom designed solutions, automotive large LCD backlights

Features

- Super high Flux output and high Luminance
- Designed for high current operation
- Low thermal resistance
- SMT solderbility
- Lead Free product
- RoHS compliant

Application

- Mobile phone flash
- Automotive interior / exterior lighting
- Automotive signal lighting
- Automotive forward lighting
- General Torch
- Architectural lighting
- LCD TV / Monitor Backlight
- Projector light source
- Traffic signals
- Task lighting
- Decorative / Pathway lighting
- Remote / Solar powered lighting
- Household appliances

Full Code of Z-Power LED Series

Full code form : $X_1\,X_2\,X_3\,X_4\,X_5\,X_6 - X_7\,X_8 - X_9\,X_{10}\,X_{11}\,X_{12}\,X_{13}$

1. Part Number

- X_1 : Color
- X_2 : Z-Power LED series number
- X_3 : LENS type
- X_4 : Chip quantity (or Power Dissipation)
- X_5 : Package outline size
- X_6 : Type of PCB

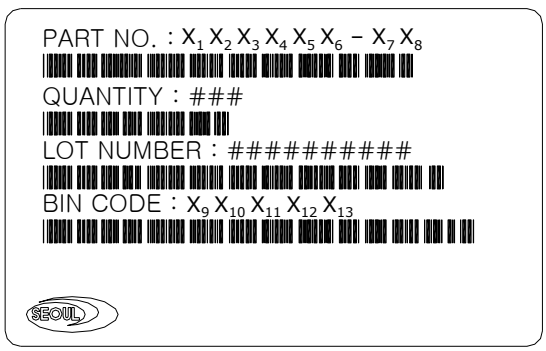
2. Internal Number

- X_7
- X_8

3. Code Labeling

- X_9 : Luminous flux (or Radiant flux for royal blue)
- $X_{10}\,X_{11}\,X_{12}$: Dominant wavelength (or x,y coordinates rank code)
- X_{13} : Forward voltage

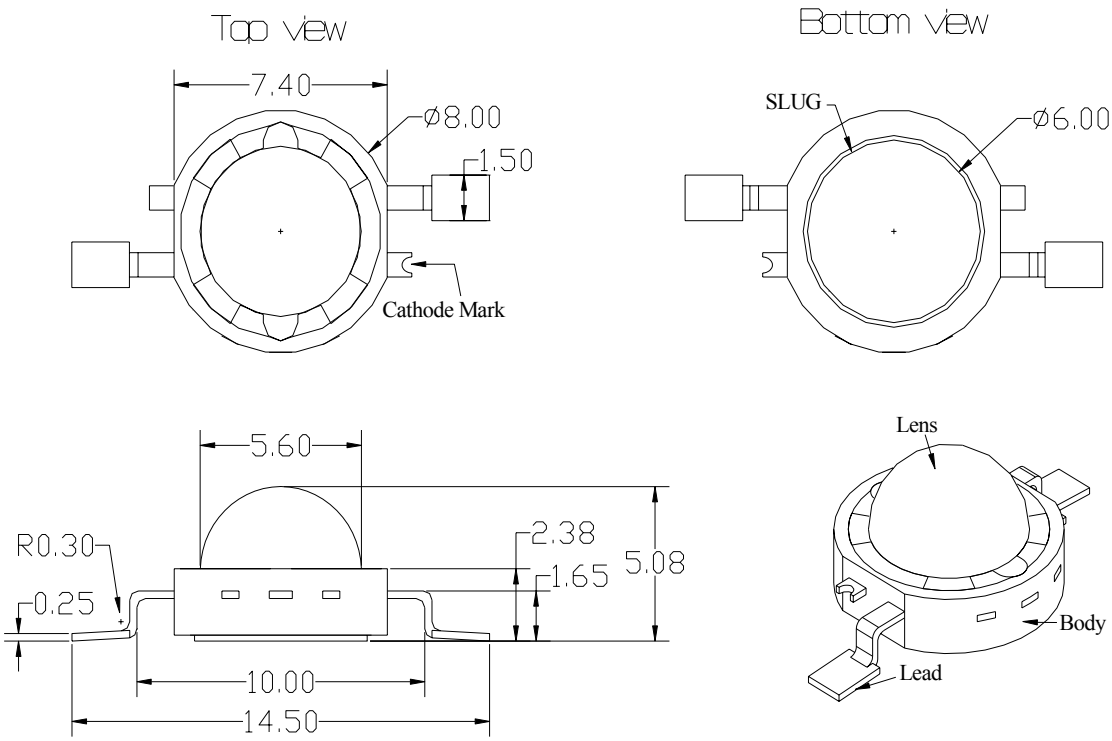
4. Sticker Diagram on Reel & Aluminum Vinyl Bag



For more information about binning and labeling, refer to the Application Note -1

Outline Dimensions

1. Dome Type



Notes :

1. All dimensions are in millimeters. (tolerance : ±0.2)
2. Scale : none
3. Slug of package is connected to anode.

*The appearance and specifications of the product may be changed for improvement without notice.

Characteristics for Dome type Z-Power LED

1. Pure White (W42180)

1-1 Electro-Optical characteristics at I_F=350mA, T_A=25ºC

Parameter		Symbol	Value			Unit
			Min	Typ	Max	
Luminous Flux [1]	T rank	Φ_V [2]	70	80	91	lm
	U rank	Φ_V [2]	91	100	-	lm
Correlated Color Temperature [3]		CCT	-	6500	-	K
CRI		R_a	65	70	-	-
Forward Voltage [4]		V_F	2.9	3.25	3.8	V
View Angle		2Θ ½	132			deg.
Thermal resistance [5]		$R\Theta_{J-B}$	8.5			ºC /W
Thermal resistance [6]		$R\Theta_{J-C}$	6.9			ºC /W

1-2 Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Forward Current	I_F	1000 (@ Tj = 90 ºC) [7]	mA
		1800 (@ 1KHz, 1/10 duty)	
Power Dissipation	P_d	4	W
Junction Temperature	T_j	145(@ $I_F \leq$ 700mA)	ºC
Operating Temperature	T_{opr}	-30 ~ +85	ºC
Storage Temperature	T_{stg}	-40 ~ +100	ºC
ESD Sensitivity [8]	-	±20,000V HBM	-

*Notes :

[1] SSC maintains a tolerance of ±10% on flux and power measurements.

[2] Φ_V is the total luminous flux output as measured with an integrated sphere.

[3] Correlated Color Temperature is derived from the CIE 1931 Chromaticity diagram. CCT ±5% tester tolerance.

[4] A tolerance of ±0.06V on forward voltage measurements

[5], [6] $R\Theta_{J-B}$ is measured with a SSC metal core pcb.(25 ºC ≤T_J ≤ 110 ºC)

$R\Theta_{J-C}$ is measured with only emitter. (25 ºC ≤T_J ≤ 110 ºC)

Break voltage of Metal PCB is 6.5kVAC.

[7] I_F Max is guaranteed under the T_J ≤90 ºC.

[8] It is included the zener chip to protect the product from ESD.

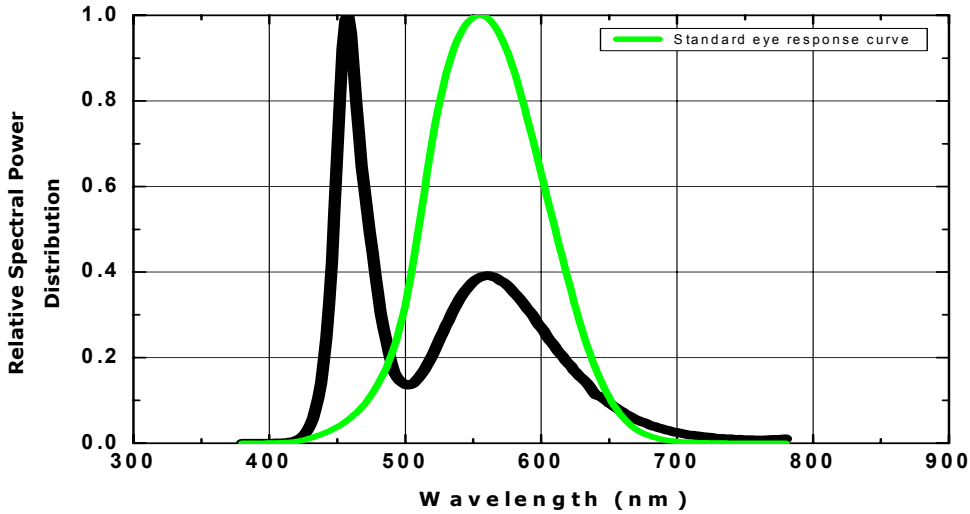
----------Caution----------

1. Please do not drive at rated current more than 5 sec. without proper heat sink.

2. The chromaticity coordinate of the LEDs can be shift as temperature of junction.

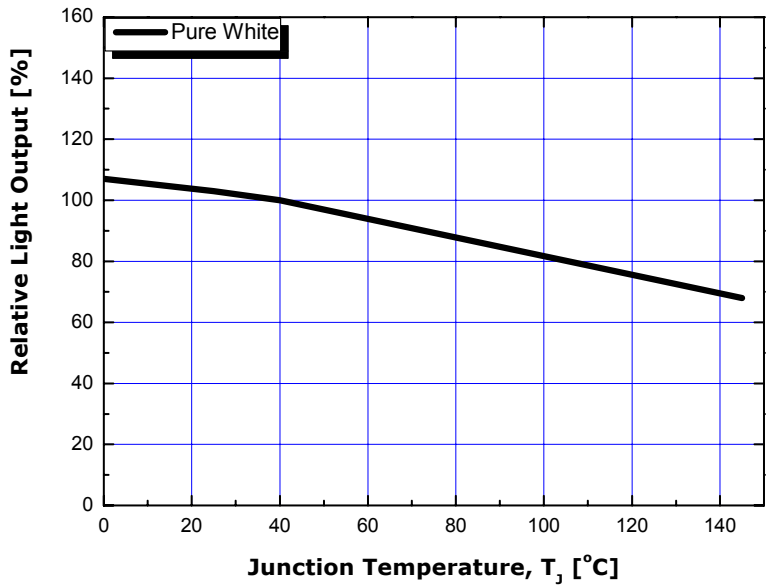
Color spectrum, T_A=25°C

1. Pure White



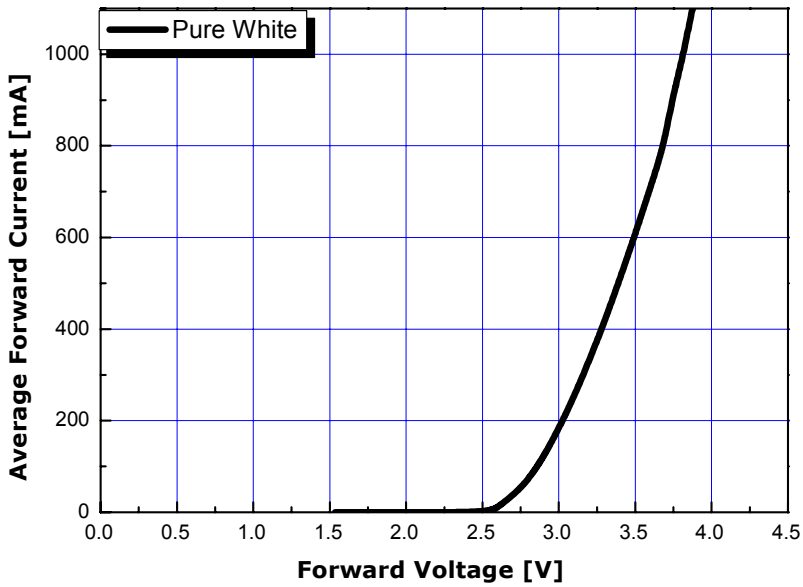
Light Output Characteristics

1. Relative Light Output vs. Junction Temperature at I_F=350mA, T_A=25℃

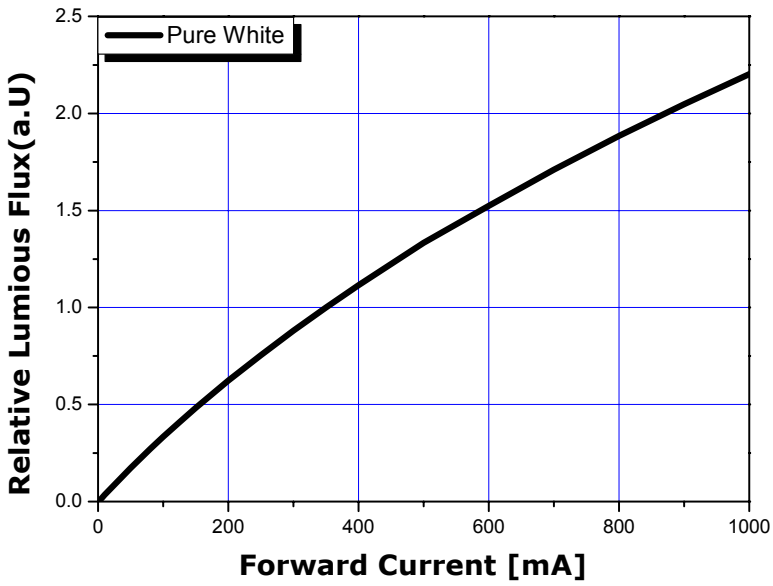


Forward Current Characteristics

1. Forward Voltage vs. Forward Current, T_A=25℃

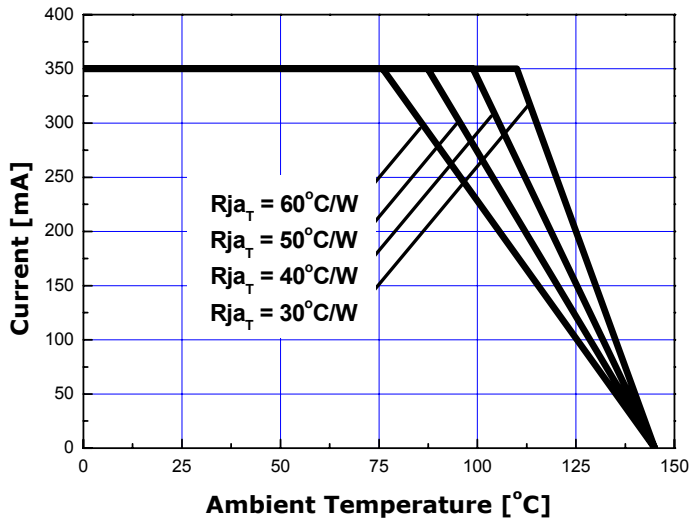


2. Forward Current vs. Normalized Relative Luminous Flux, T_A=25℃

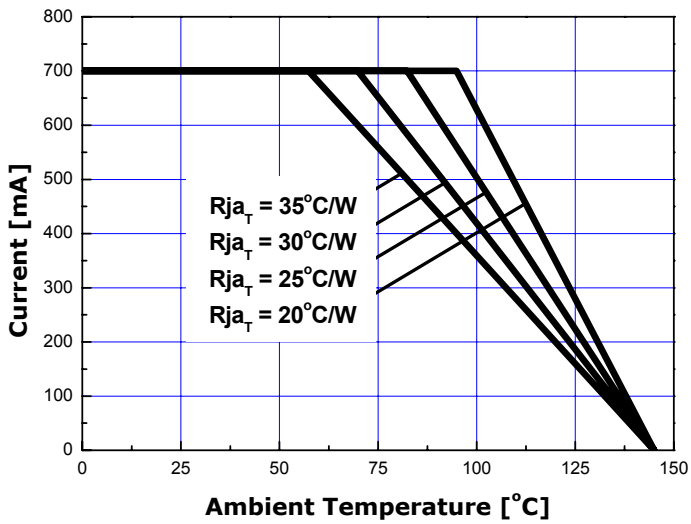


Ambient Temperature vs Allowable Forward Current

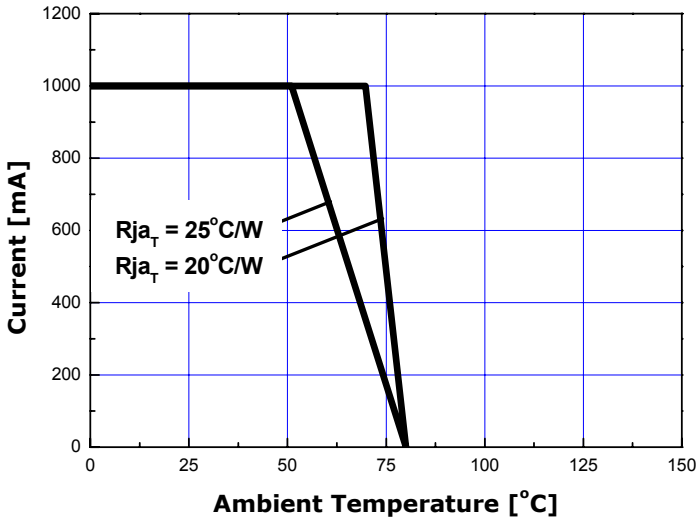
1-1. Pure White (T_{JMAX} = 145 ◦C, @350mA)



1-2. Pure White (T_{JMAX} = 145 ◦C, @700mA)

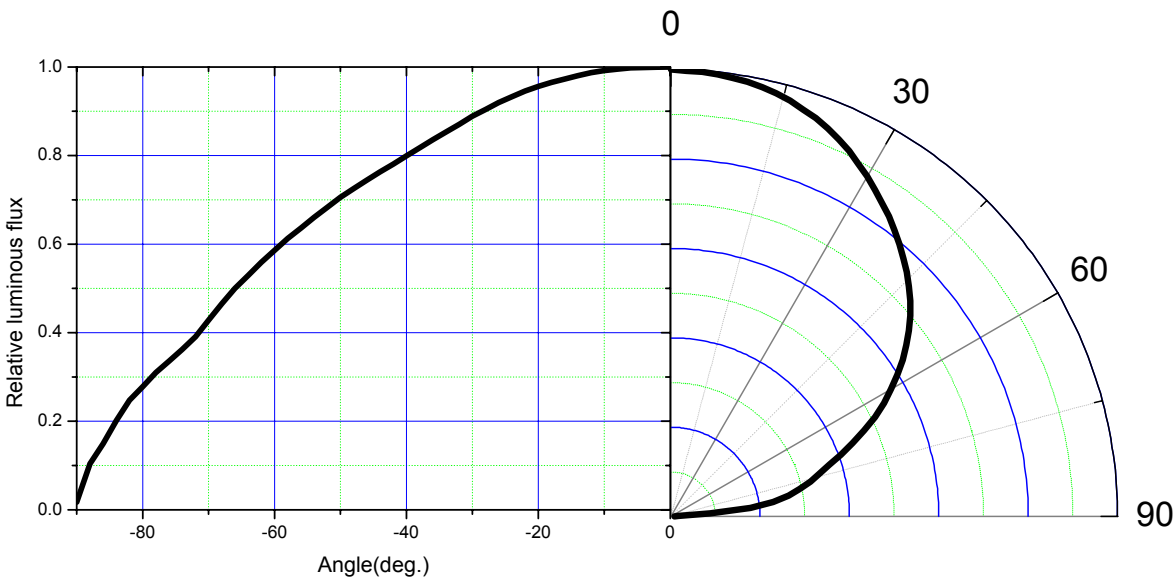


1-3. Pure White (T_{JMAX} = 90 ºC, at1000mA)



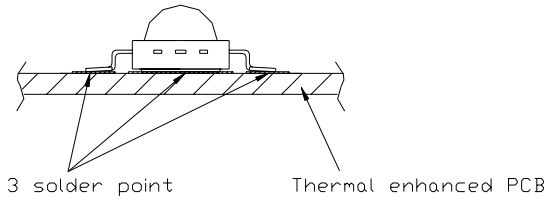
Typical Dome Type Radiation pattern

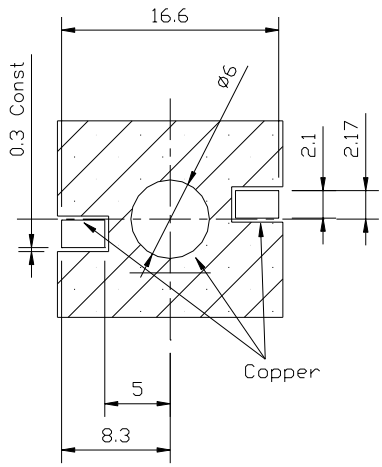
1. Pure White

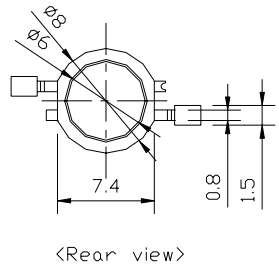


Recommended Soldering

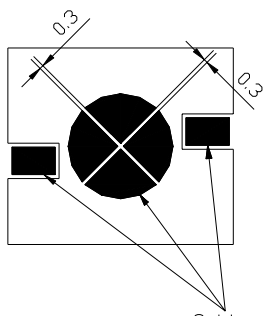
1. Solder pad







2. Solder paste pattern



1. Paste thickness : 0.2mm

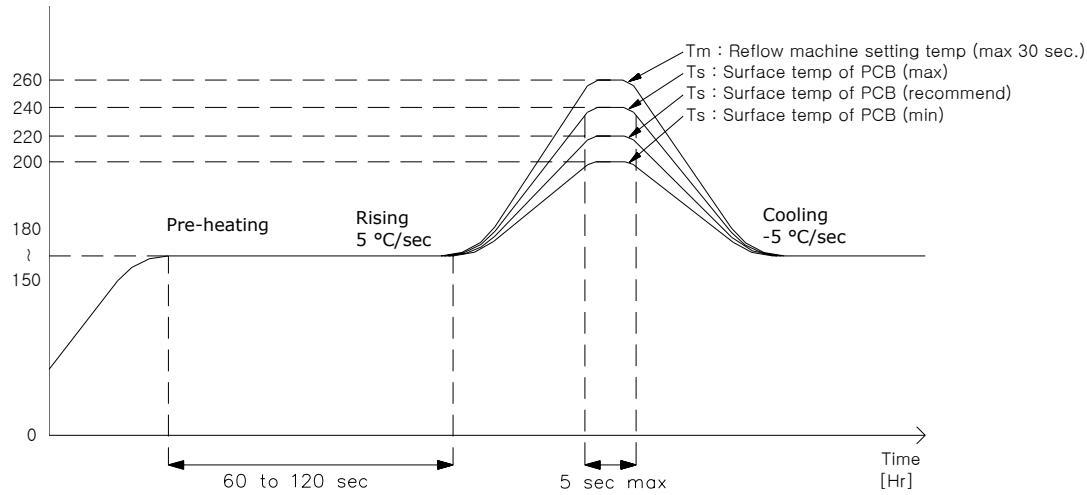
Note :

1. All dimensions are in millimeters (tolerance : ±0.2)
2. Scale none

*The appearance and specifications of the product may be changed for improvement without notice.

Soldering profile, T_A=25ºC

1. Reflow Soldering Conditions / Profile



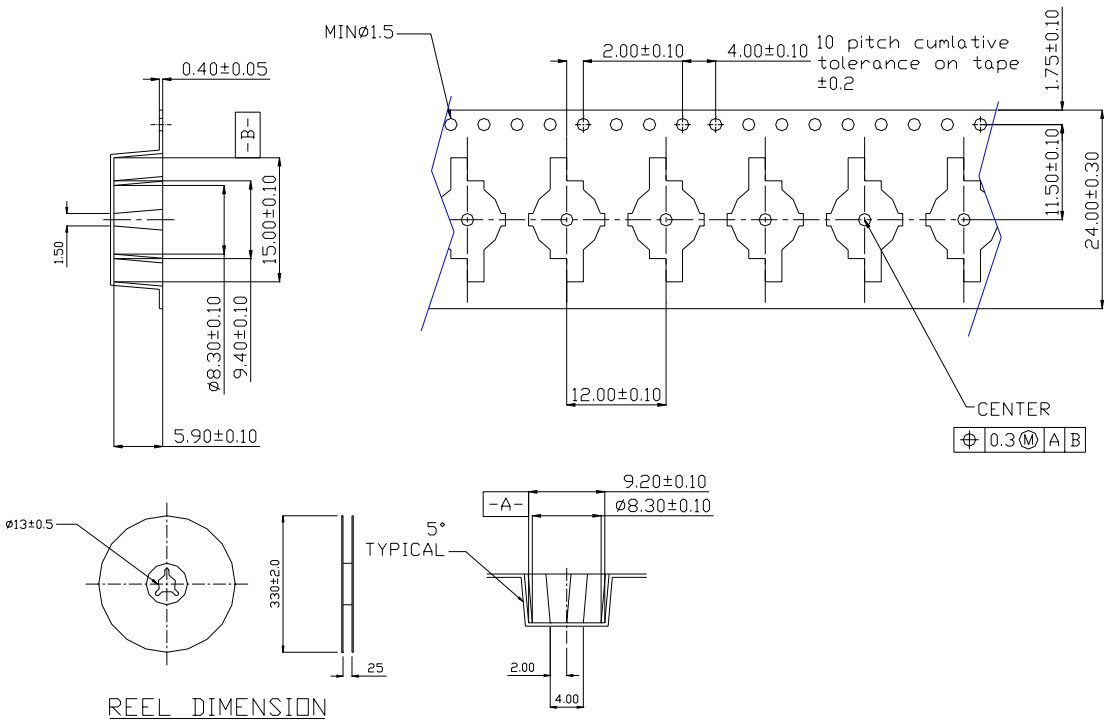
2. Hand Soldering conditions

Lead : Not more than 3 seconds @MAX280℃
Slug : Use a thermal-adhesives

*** Caution**

1. **Reflow soldering should not be done more than one time.**
2. **Repairing should not be done after the LEDs have been soldered. When repairing is unavoidable, suitable tools have to be used.**
3. **Die slug is to be soldered.**
4. **When soldering, do not put stress on the LEDs during heating.**
5. **After soldering, do not warp the circuit board.**
6. **Recommend to use a convection type reflow machine with 7 ~ 8 zones.**

Emitter Reel Packaging



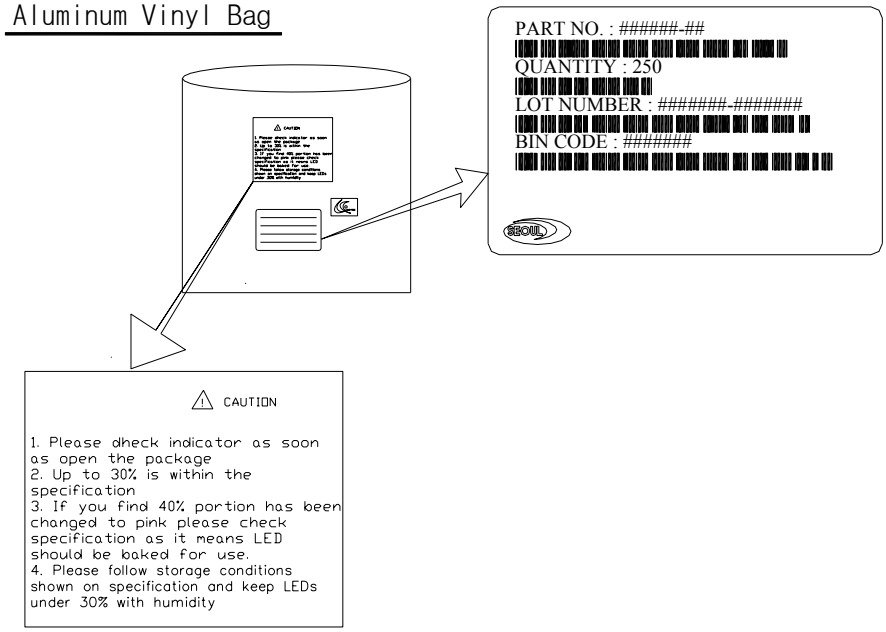
Note :

1. The number of loaded products in the reel is 250ea
2. All dimensions are in millimeters
3. Scale none

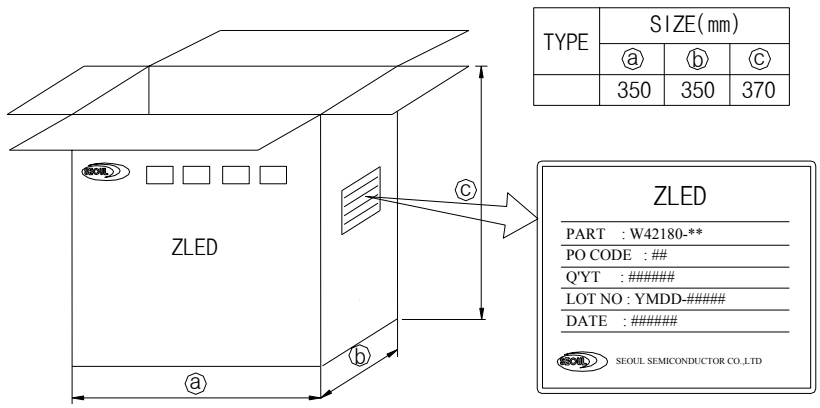
*The appearance and specifications of the product may be changed for improvement without notice.

Packaging Structure

Aluminum Vinyl Bag



Outer Box



TYPE	SIZE(mm)		
	ⓐ	ⓑ	ⓒ
	350	350	370

Note :

1. 6~10 reels are loaded in box
2. Scale none
3. For more information about binning and labeling, refer to the Application Note - 1

Precaution for use

- Storage

  To avoid the moisture penetration, we recommend storing Z Power LEDs in a dry box (or desiccator) with a desiccant . The recommended storage conditions are Temperature 5 to 30 degrees Centigrade. Humidity 50% maximum.

- Precaution after opening packaging

  However LED is correspond SMD, when LED be soldered dip, interfacial separation may affect the light transmission efficiency, causing the light intensity to drop.

  Attention in followed.

  a. Soldering should be done right after opening the package(within 24Hrs).

  b. Keeping of a fraction

  - Sealing
  - Temperature : 5 ~ 40℃ Humidity : less than 30%

  c. If the package has been opened more than 1week or the color of desiccant changes, components should be dried for 10-12hr at 60±5℃

- Any mechanical force or any excess vibration shall not be accepted to apply during cooling process to normal temp. after soldering.
- Please avoid rapid cooling after soldering.
- Components should not be mounted on warped direction of PCB.
- Anti radioactive ray design is not considered for the products listed here in.
- Gallium arsenide is used in some of the products listed in this publication. These products are dangerous if they are burned or shredded in the process of disposal. It is also dangerous to drink the liquid or inhale the gas generated by such products when chemically disposed.
- This device should not be used in any type of fluid such as water, oil, organic solvent and etc. When washing is required, IPA(Isopropyl Alcohol) should be used.
- When the LEDs are illuminating, operating current should be decided after considering the package maximum temperature.
- LEDs must be stored to maintain a clean atmosphere. If the LEDs are stored for 3 months or more after being shipped from SSC, a sealed container with a nitrogen atmosphere should be used for storage.
- The appearance and specifications of the product may be modified for improvement without notice.
- Long time exposure of sunlight or occasional UV exposure will cause lens discoloration.
- The slug is connected to the anode. Therefore, we recommend to isolate the heat sink.

Handling of Silicone resin LEDs

Z-Power LED is encapsulated by silicone resin for the highest flux efficiency.
Notes for handling of Silicone resin Z-Power LEDs

- Avoid touching silicone resin parts especially by sharp tools such as Pincette(Tweezers)
- Avoid leaving fingerprints on silicone resin parts.
- Dust sensitivity silicone resin need containers having cover for storage.
- When populating boards in SMT production, there are basically no restrictions regarding the form of the pick and place nozzle, except that mechanical pressure on the surface of the resin must be prevent.
- Please do not force over 2000 gf impact or pressure diagonally on the silicon lens. It will cause fatal damage of this product
- Please do not recommend to cover the silicone resin of the LEDs with other resin (epoxy, urethane, etc)