Technical Data Sheet

SEOUL SEMICONDUCTOR

Preliminary Spec.

Z-POWER LED Series

Technical Datasheet

F5-II

Features

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

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.
Full color Z-Power LED is the first full color package, using 3 RGB power chips and rendering 7colors.
In case of the full color product used in architectural lighting or decoration, it emits 7colors in one package so that it can render a clear mixed color when it is mixed with other colors.

Applications

- General Illumination
  - Outdoor & Indoor architectural lighting
  - Decorative lighting
  - Torch lighting
  - Portable lighting (Flash and lamp) and Reading lighting
  - Traffic signaling

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서식번호 : SSC-QP-7-07-24 (Rev.00)

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

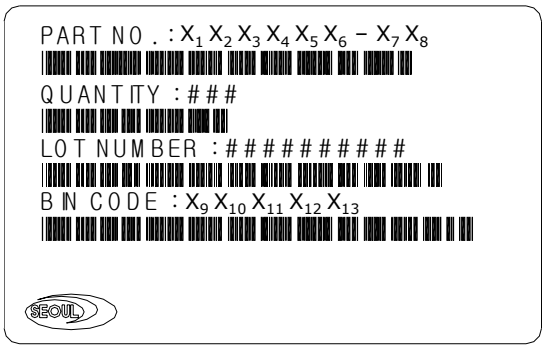
2. Internal Number

- 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

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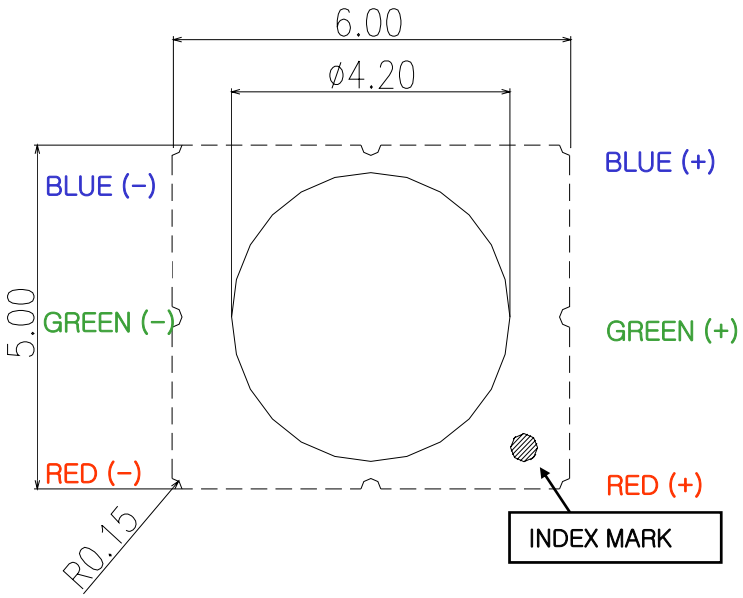
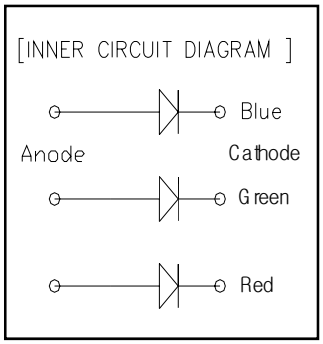
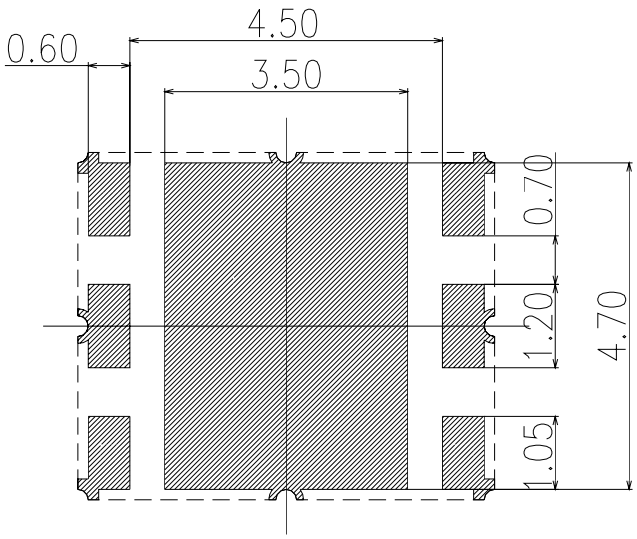
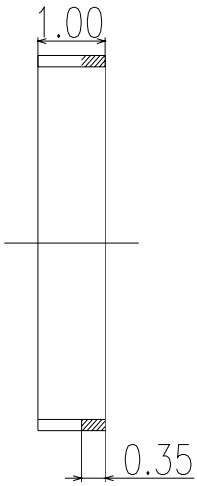
Outline Dimensions

1. Emitter Type









<Rear view>

Notes :

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.

Characteristics for Z-Power LED

1. Electro-Optical characteristics at (Red, Green, and Blue All Color in use)

1-1 Electro-Optical characteristics at T_A=25ºC

Parameter	Symbol	Value			Unit
		Min	Typ	Max	
Luminous Flux [1]	Φ_V [2]	-	105 (78) [3]	-	lm
Forward Voltage [4]	V_F	-	R: 2.5 G: 3.5 B:3.2	-	V
Forward Current	I_F	R,G,B:350			mA
View Angle [5]	2Θ 1/2	120			deg.

*Notes :
[1] SSC maintains a tolerance of ±10% on flux and power measurements.
[2] ΦV is the total luminous flux output as measured with an integrated sphere under 350 mA red,green and blue.
[3] Reference white balance current condition(IF=R:220, G:350, B:100 mA)
[4] A tolerance of ±0.1V on forward voltage measurements
[5] Viewing angle is the reference condition.

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

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

2. Blue

2-1 Electro-Optical characteristics at I_F=350mA, T_A=25ºC

Parameter	Symbol	Value			Unit
		Min	Typ	Max	
Luminous Flux [1]	Φ_V [2]	-	13	-	lm
Dominant Wavelength [3]	λ_D	455	460	475	nm
Forward Voltage [4]	V_F	-	3.5	-	V
View Angle	2Θ 1/2	120			deg.

3. Green

3-1 Electro-Optical characteristics at I_F=350mA, T_A=25ºC

Parameter	Symbol	Value			Unit
		Min	Typ	Max	
Luminous Flux [1]	Φ_V [2]	-	57	-	lm
Dominant Wavelength [3]	λ_D	520	525	535	nm
Forward Voltage [4]	V_F	-	3.2	-	V
View Angle	2Θ 1/2	120			deg.

4. Red

4-1 Electro-Optical characteristics at I_F=350mA, T_A=25ºC

Parameter	Symbol	Value			Unit
		Min	Typ	Max	
Luminous Flux [1]	Φ_V [2]	-	35	-	lm
Dominant Wavelength [3]	λ_D	618	625	630	nm
Forward Voltage [4]	V_F	-	2.5	-	V
View Angle	2Θ 1/2	120			deg.

*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] Dominant wavelength is derived from the CIE 1931 Chromaticity diagram.
A tolerance of ±0.5nm for dominant wavelength

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

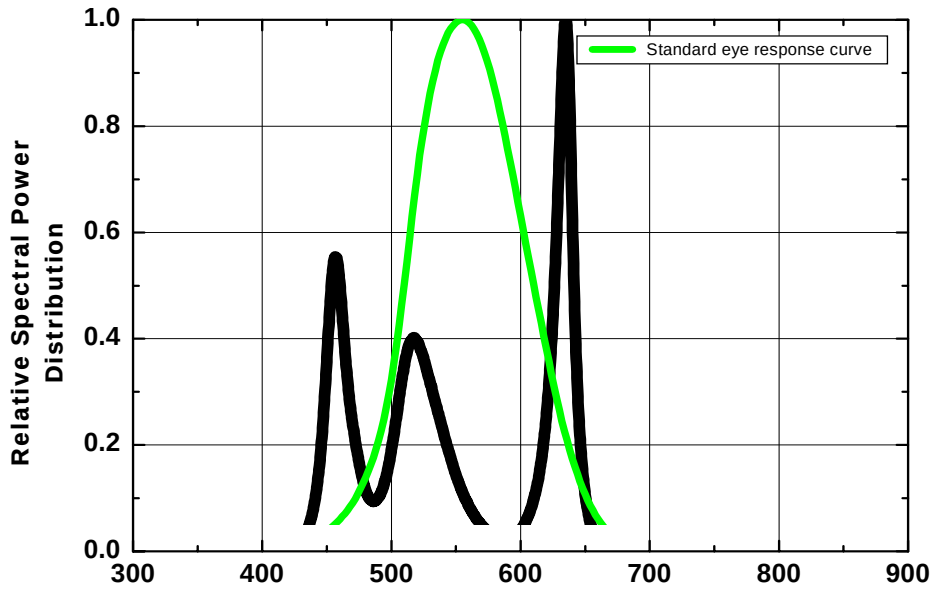
----------Caution----------

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

2. Blue power light sources represented here are IEC825 Class 2 for eye safety

Color spectrum, T_A=25°C

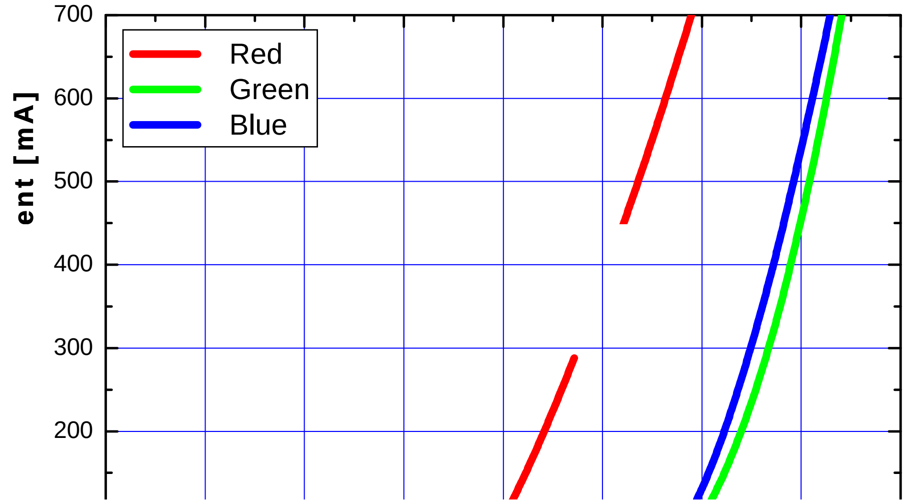
1. Pure White (IF = R:220, G:350, B:100 mA for the reference condition)



2. Blue, Green, Red (IF= 350mA)

Forward Current Characteristics

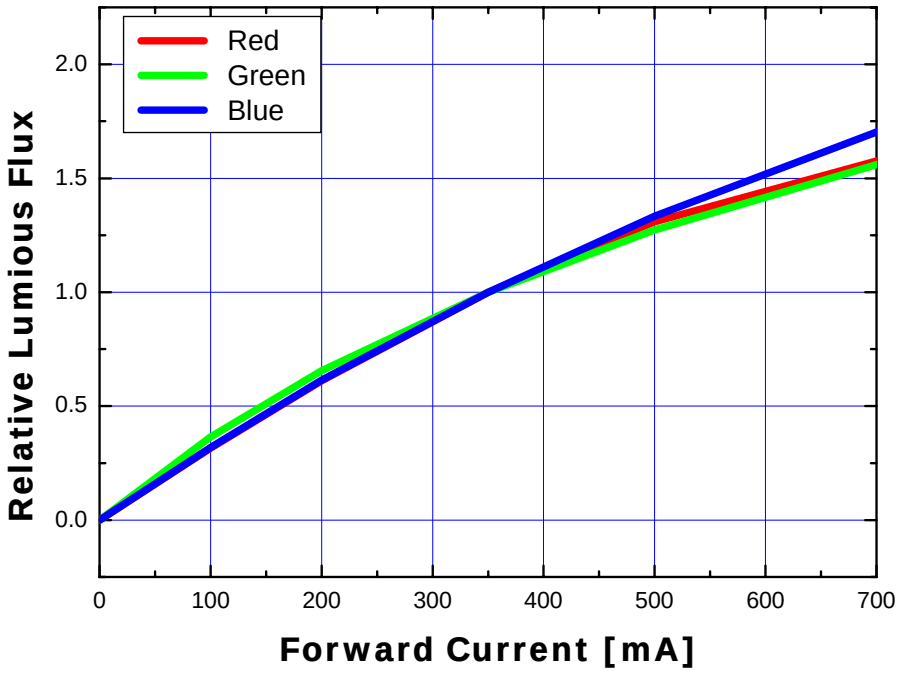
1. Forward Voltage vs. Forward Current, T_A=25℃



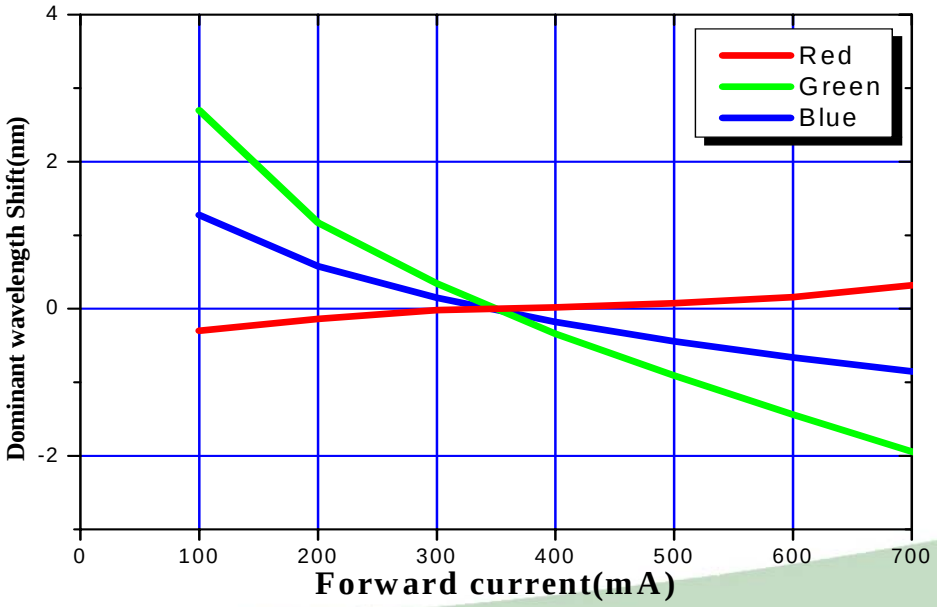
0.0

.5

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

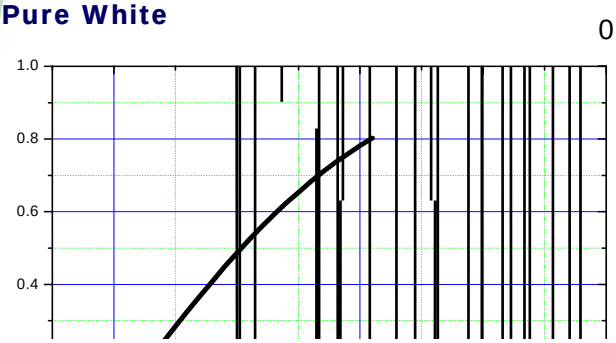


3. Forward Current vs Wavelength shift T_A=25℃



Typical Dome Type Radiation pattern

1. Pure White



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.

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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 Tweezers
- Avoid leaving fingerprints on silicone resin parts.
- Please store the LEDs away from dusty areas or seal the product against dust.
- 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 prevented.
- Please do not mold over the silicone lens with another resin. (epoxy, urethane, etc)