Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832
Email & Skype: info@chipsmall.com Web: www.chipsmall.com
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

Technical Data Sheet

SEOUL SEMICONDUCTOR

X42180-07

X42180-07

Z-Power series is designed for high current operation and high flux output applications.

Z-Power LED's thermal performance 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 and large LCD backlights.

Features

- Super high flux output and high luminance
- Designed for high current operation
- Low thermal resistance
- SMT solderable
- Lead free product
- RoHS compliant

Applications

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

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

Full Code of Z-Power LED Series

Full code form : $X_1\ X_2\ X_3\ X_4\ X_5\ X_6\ X_7 - X_8\ X_9 - X_{10}\ X_{11}\ X_{12}\ X_{13} X_{14}$

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
- X_7 : Grade of characteristic code

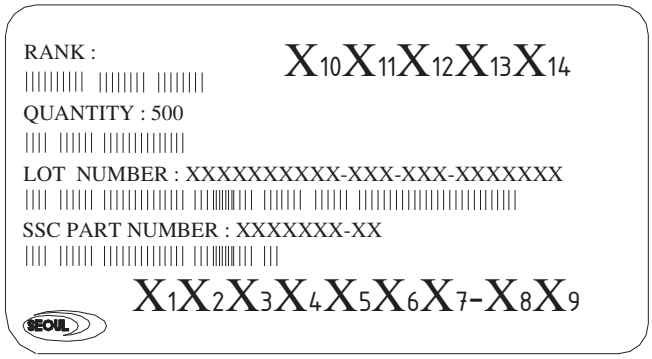
2. Internal Number

- $X_{8,}\ X_9$: Revision No.

3. Code Labeling

- X_{10} : Luminous flux (or Radiant flux for royal blue)
- $X_{11}\ X_{12}\ X_{13}$: Dominant wavelength (or x,y coordinates rank code)
- X_{14} : Forward voltage

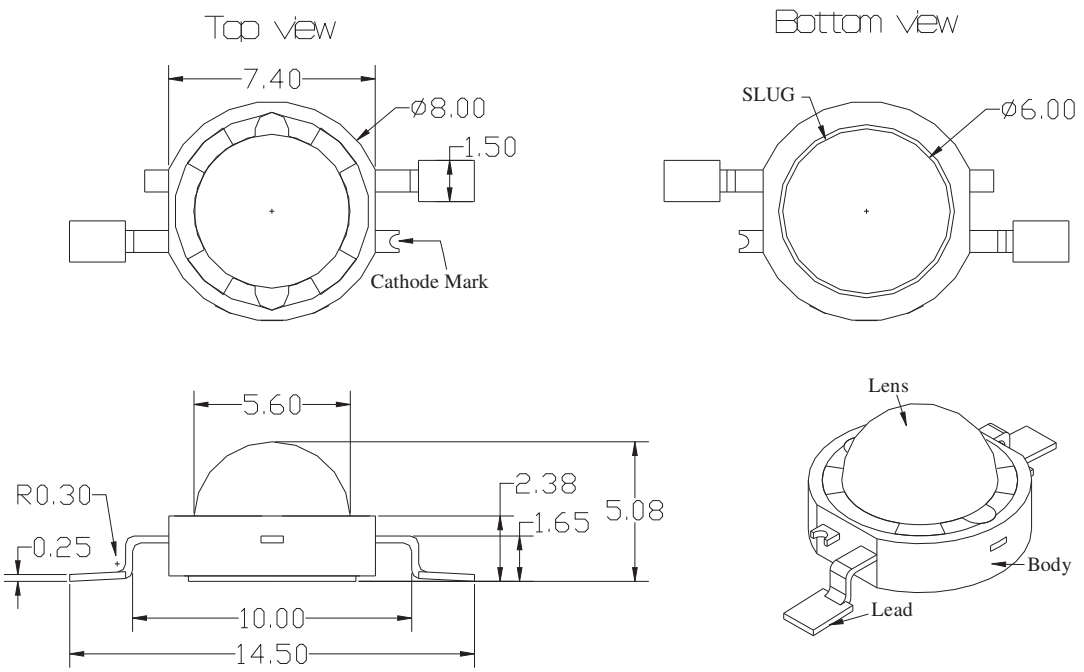
4. Sticker Diagram on Reel & Aluminum Vinyl Bag



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

Outline Dimension

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 Z-Power LED

1. Pure White (W42180-07)

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	108	118.5	lm
Correlated Color Temperature [3]		CCT	-	6300	-	K
CRI		R_a	-	73	-	-
Forward Voltage [4]		V_F	-	3.1	-	V
View Angle		2Θ ½	127			deg.
Thermal resistance [5]		$R\theta_{J-B}$	10.1			ºC /W
Thermal resistance [6]		$R\theta_{J-C}$	8.5			ºC /W

1-2 Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Forward Current	I_F	800	mA
Power Dissipation	P_d	3.28	W
Junction Temperature	T_j	145	ºC
Operating Temperature	T_{opr}	-40 ~ +85	ºC
Storage Temperature	T_{stg}	-40 ~ +100	ºC
ESD Sensitivity [7]	-	±10,000V 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 integrating 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)

[7] 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.

Characteristics for Z-Power LED

2. Warm White (N42180-07)

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]	-	72	-	lm
Correlated Color Temperature [3]	CCT	-	3000	-	K
CRI	R_a	-	93	-	-
Forward Voltage [4]	V_F	-	3.1	-	V
View Angle	2Θ 1/2	126			deg.
Thermal resistance [5]	$R\theta_{J-B}$	10.1			ºC /W
Thermal resistance [6]	$R\theta_{J-C}$	8.5			ºC /W

2-2 Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Forward Current	I_F	800	mA
Power Dissipation	P_d	3.28	W
Junction Temperature	T_j	145	ºC
Operating Temperature	T_{opr}	-40 ~ +85	ºC
Storage Temperature	T_{stg}	-40 ~ +100	ºC
ESD Sensitivity [7]	-	±10,000V 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 integrating 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)

[7] 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

Characteristics for Z-Power LED

3. Warm White (N42180H-07)

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]	-	90	-	lm
Correlated Color Temperature [3]	CCT	-	3000	-	K
CRI	R_a	-	80	-	-
Forward Voltage [4]	V_F	-	3.1	-	V
View Angle	2Θ 1/2		127		deg.
Thermal resistance [5]	$R\theta_{J-B}$		10.1		ºC /W
Thermal resistance [6]	$R\theta_{J-C}$		8.5		ºC /W

3-2 Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Forward Current	I_F	800	mA
Power Dissipation	P_d	3.28	W
Junction Temperature	T_j	145	ºC
Operating Temperature	T_{opr}	-40 ~ +85	ºC
Storage Temperature	T_{stg}	-40 ~ +100	ºC
ESD Sensitivity [7]	-	±10,000V 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 iintegrating 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)

[7] 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

Characteristics for Z-Power LED

4. Natural White (S42180-07)

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]	-	76	-	lm
Correlated Color Temperature [3]	CCT	-	4000	-	K
CRI	R_a	-	93	-	-
Forward Voltage [4]	V_F	-	3.1	-	V
View Angle	2Θ 1/2		126		deg.
Thermal resistance [5]	$R\theta_{J-B}$		10.1		ºC /W
Thermal resistance [6]	$R\theta_{J-C}$		8.5		ºC /W

4-2 Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Forward Current	I_F	800	mA
Power Dissipation	P_d	3.28	W
Junction Temperature	T_j	145	ºC
Operating Temperature	T_{opr}	-40 ~ +85	ºC
Storage Temperature	T_{stg}	-40 ~ +100	ºC
ESD Sensitivity [7]	-	±10,000V 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 integrating 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)

[7] 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

Characteristics for Z-Power LED

5. Natural White (S42180H-07)

5-1 Electro-Optical characteristics at I_F=350mA, T_A=25ºC

Parameter	Symbol	Value			Unit
		Min	Typ	Max	
Luminous Flux [1]	Φ_V [2]	-	98	-	lm
Correlated Color Temperature [3]	CCT	-	4000	-	K
CRI	R_a	-	80	-	-
Forward Voltage [4]	V_F	-	3.1	-	V
View Angle	2Θ 1/2		127		deg.
Thermal resistance [5]	$R\theta_{J-B}$		10.1		ºC /W
Thermal resistance [6]	$R\theta_{J-C}$		8.5		ºC /W

5-2 Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Forward Current	I_F	800	mA
Power Dissipation	P_d	3.28	W
Junction Temperature	T_j	145	ºC
Operating Temperature	T_{opr}	-40 ~ +85	ºC
Storage Temperature	T_{stg}	-40 ~ +100	ºC
ESD Sensitivity [7]	-	±10,000V 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 integrating 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)

[7] 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

Characteristics for Z-Power LED

6. Blue (B42180-07)

6-1 Electro-Optical characteristics at I_F=350mA, T_A=25ºC

Parameter	Symbol	Value			Unit
		Min	Typ	Max	
Luminous Flux [1]	Φ_V [2]	-	22	-	lm
Dominant Wavelength[3]	λ_D	455	465	475	nm
Forward Voltage [4]	V_F	-	3.2	-	V
View Angle	2Θ 1/2		130		deg.
Thermal resistance [5]	$R\theta_{J-B}$		10.1		ºC /W
Thermal resistance [6]	$R\theta_{J-C}$		8.5		ºC /W

6-2 Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Forward Current	I_F	800	mA
Power Dissipation	P_d	3.28	W
Junction Temperature	T_j	145	ºC
Operating Temperature	T_{opr}	-40 ~ +85	ºC
Storage Temperature	T_{stg}	-40 ~ +100	ºC
ESD Sensitivity [7]	-	±10,000V 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 integrating 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

[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)

[7] 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. Blue power light sources represented here are in risk group2(Medium) according to IEC 62471

Characteristics for Z-Power LED

7. Royal Blue (D42180-07)

7-1 Electro-Optical characteristics at I_F=350mA, T_A=25ºC

Parameter	Symbol	Value			Unit
		Min	Typ	Max	
Radiant Power [1]	Φ_V [2]	-	468	-	mW
Dominant Wavelength [3]	λ_D	455	457	460	nm
Forward Voltage [4]	V_F	-	3.2	-	V
View Angle	2Θ 1/2		130		deg.
Thermal resistance [5]	$R\theta_{J-B}$		10.1		ºC /W
Thermal resistance [6]	$R\theta_{J-C}$		8.5		ºC /W

7-2 Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Forward Current	I_F	800	mA
Power Dissipation	P_d	3.28	W
Junction Temperature	T_j	145	ºC
Operating Temperature	T_{opr}	-40 ~ +85	ºC
Storage Temperature	T_{stg}	-40 ~ +100	ºC
ESD Sensitivity [7]	-	±10,000V HBM	-

*Notes :

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

[2] Φ_V is the total Radiant power output as measured with anintegrating 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)

[7] 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. Blue power light sources represented here are in risk group2(Medium) according to IEC 62471

Characteristics for Z-Power LED

8. Photosynthetic Red (P42180-07)

11-1 Electro-Optical characteristics at I_F=350mA, T_A=25ºC

Parameter	Symbol	Value			Unit
		Min	Typ	Max	
Radiant Power [1]	Φ_V [2]	150	240	280	mW
Peak Wavelength[3]	λ_P	655	660	665	nm
Forward Voltage [4]	V_F	2.0	2.4	3.0	V
View Angle	2Θ 1/2		130		deg.
Thermal resistance [5]	$R\theta_{J-C}$		9		ºC /W

11-2 Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Forward Current	I_F	700	mA
Power Dissipation	P_d	2.1	W
Junction Temperature	T_j	125	ºC
Operating Temperature	T_{opr}	-40 ~ +85	ºC
Storage Temperature	T_{stg}	-40 ~ +100	ºC
ESD Sensitivity [6]	-	±10,000V HBM	-

*Notes :

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

[2] Φ_V is the total Radiant power output as measured with an integrating sphere.

[3] Peak wavelength is derived from the CIE 1931 Chromaticity diagram.
A tolerance of ±1nm for peak wavelength

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

[5] $R\theta_{J-C}$ is measured with only emitter.

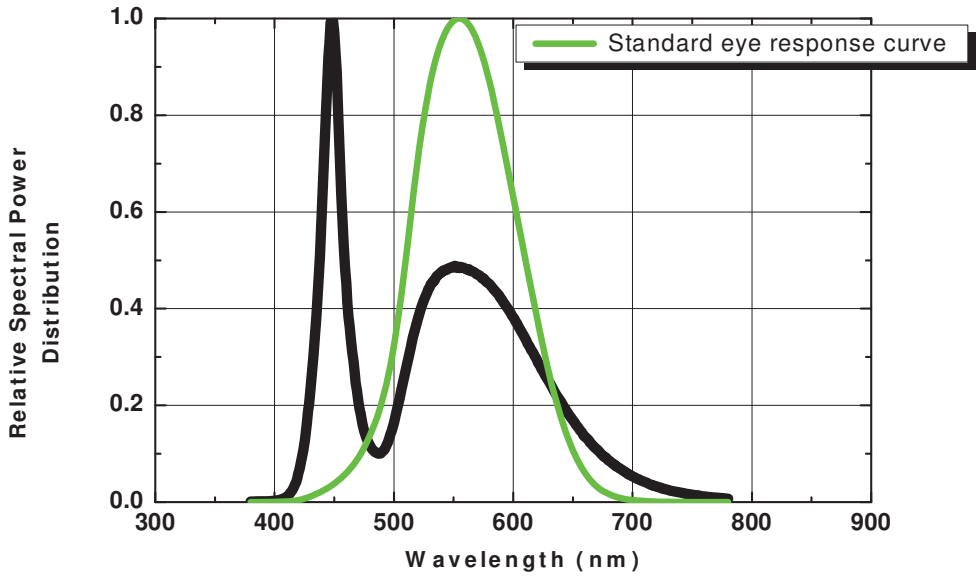
[6] It is included the zener chip to protect the product from ESD.

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

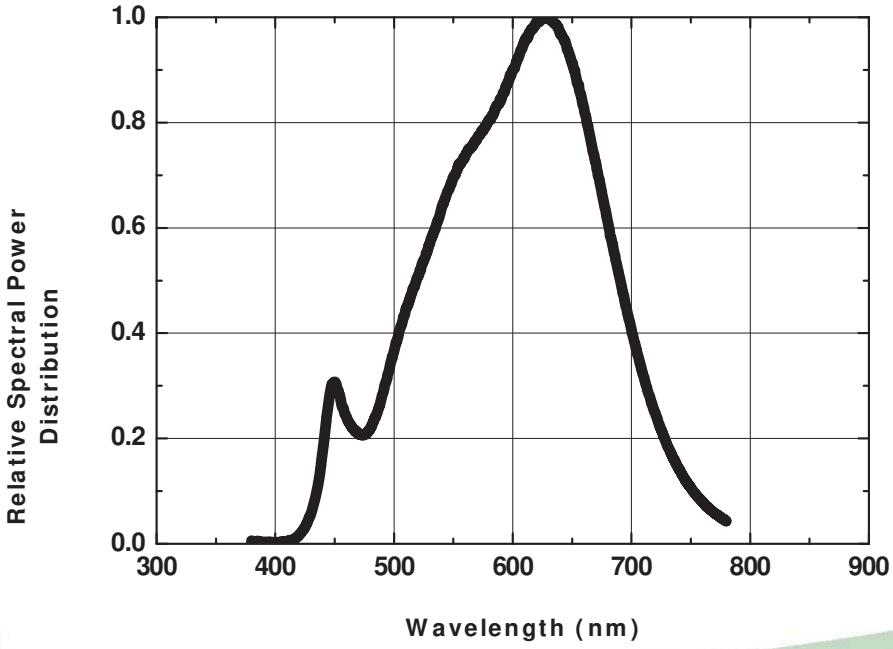
1. Please do not drive at rated current more than 5 sec. without proper heat sink

Color Spectrum, T_A= 25ºC

1. Pure White(W42180-07)

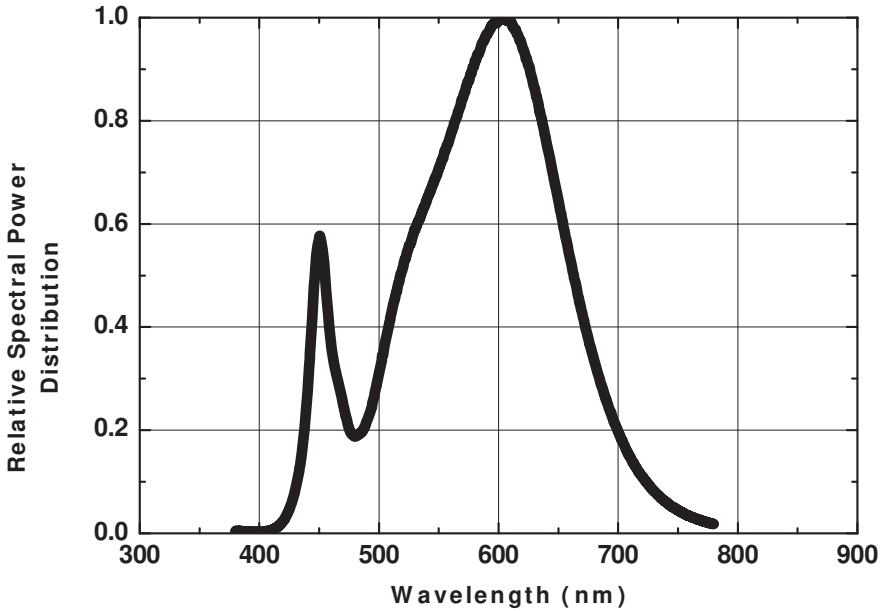


2. Warm White (N42180-07)

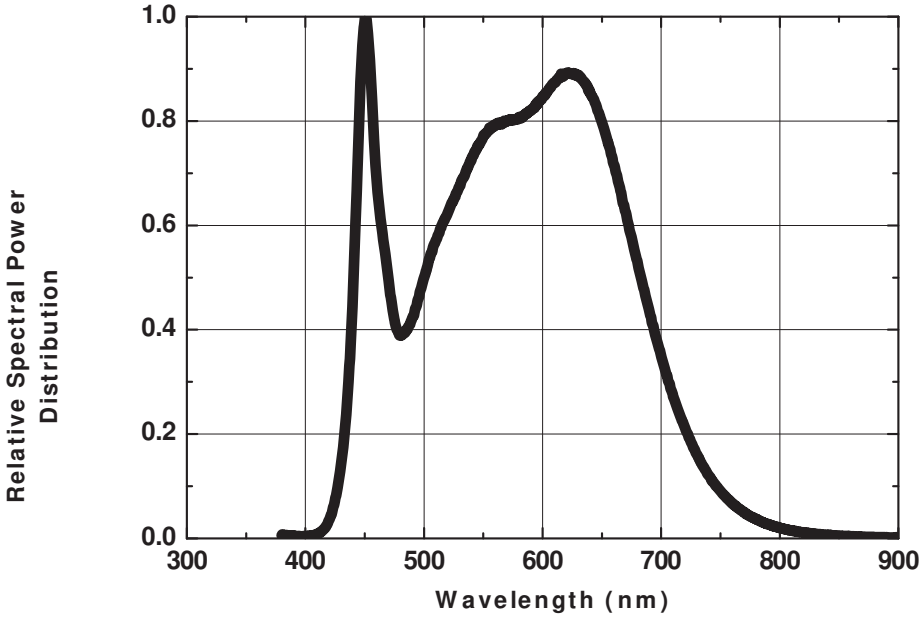


Color Spectrum, T_A= 25ºC

3. Warm White (N42180H-07)

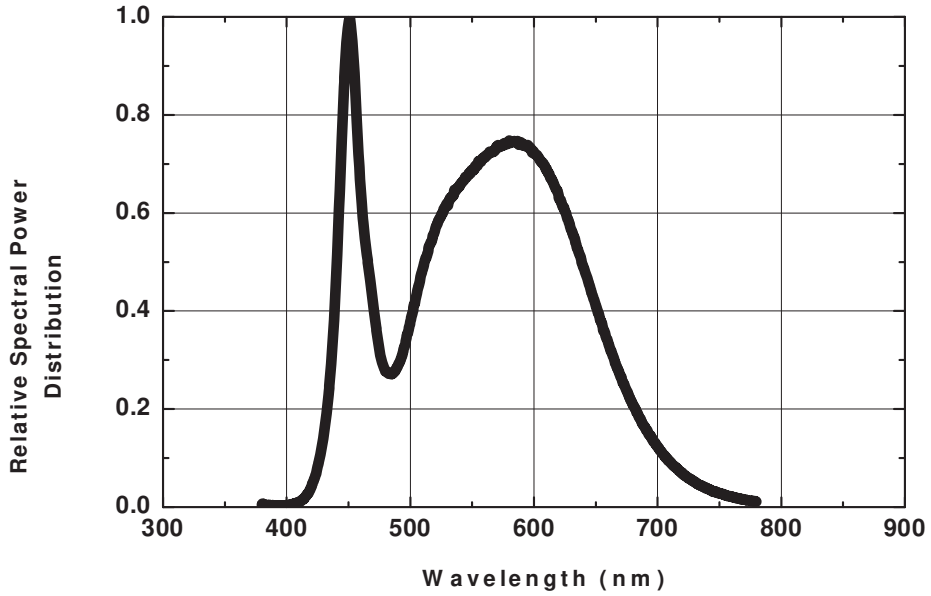


4. Natural White (S42180-07)

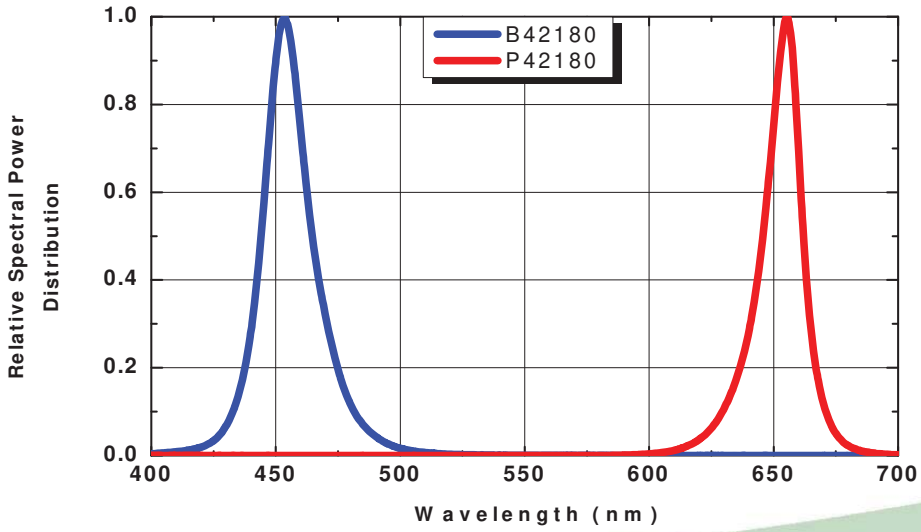


Color Spectrum, T_A= 25ºC

5. Natural White (S42180H)

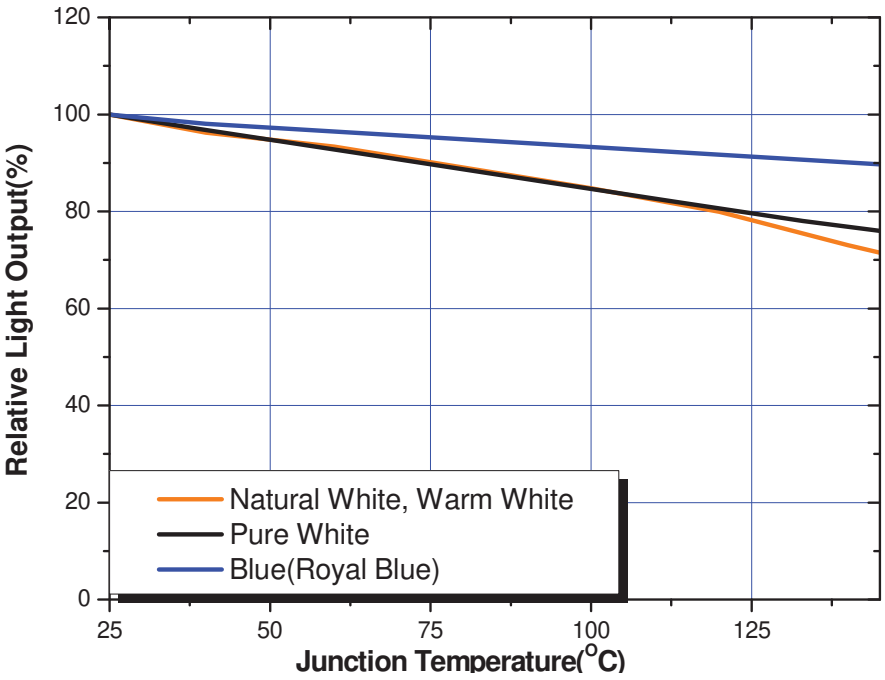


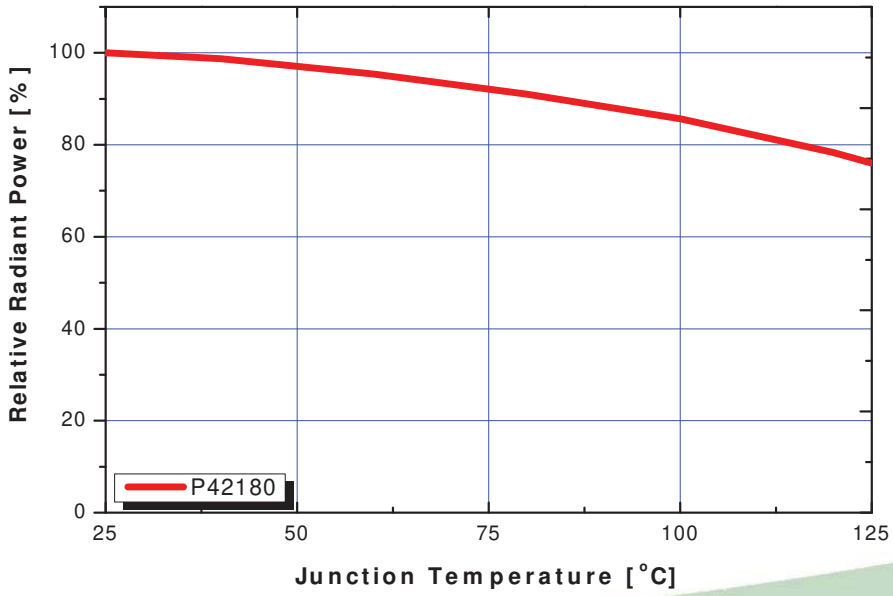
6. Blue(Royal Blue), Photosynthetic Red



Junction Temperature Characteristics

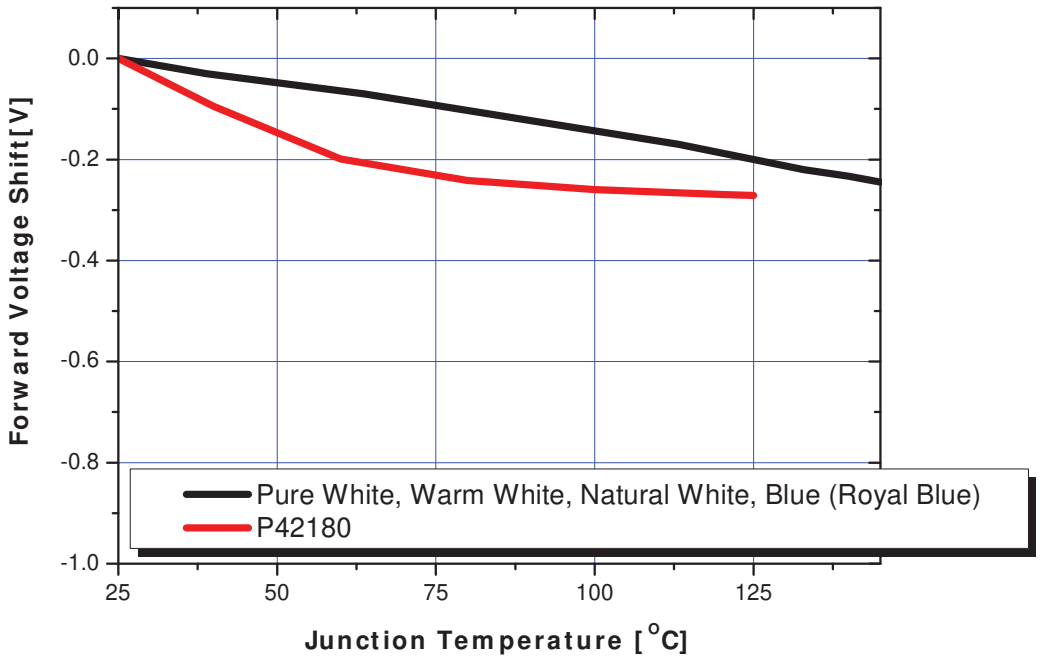
1. Relative Light Output vs. Junction Temperature at I_F= 350mA



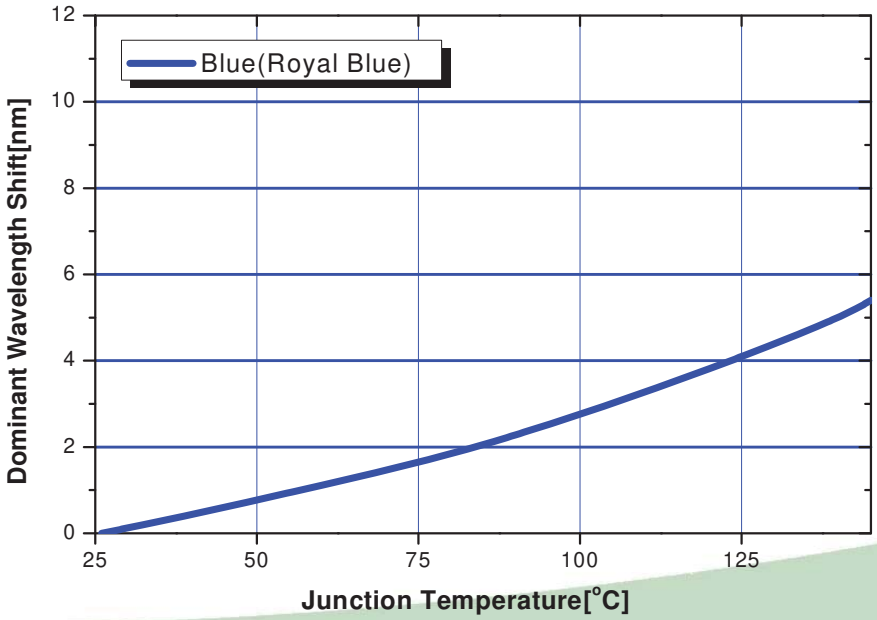


Junction Temperature Characteristics

2. Forward Voltage Shift vs. Junction Temperature at I_F= 350mA

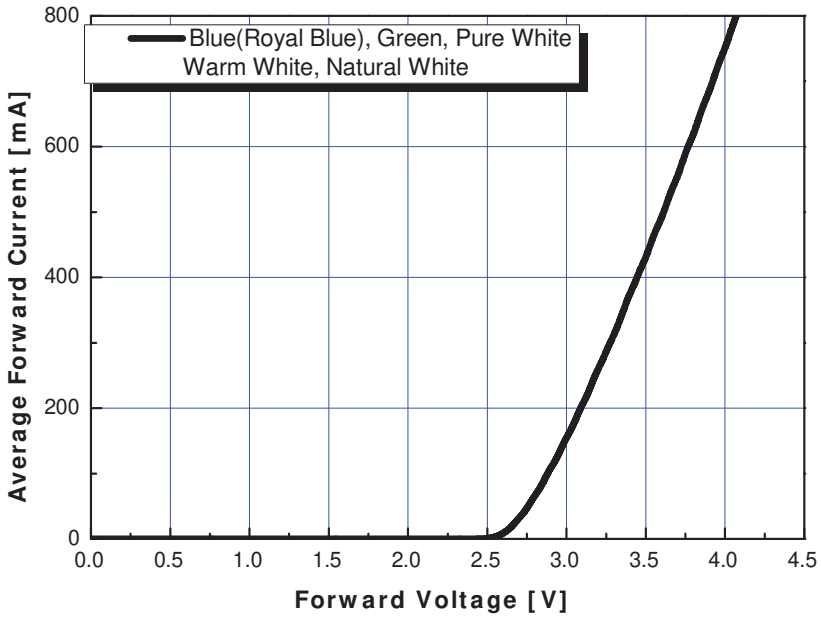


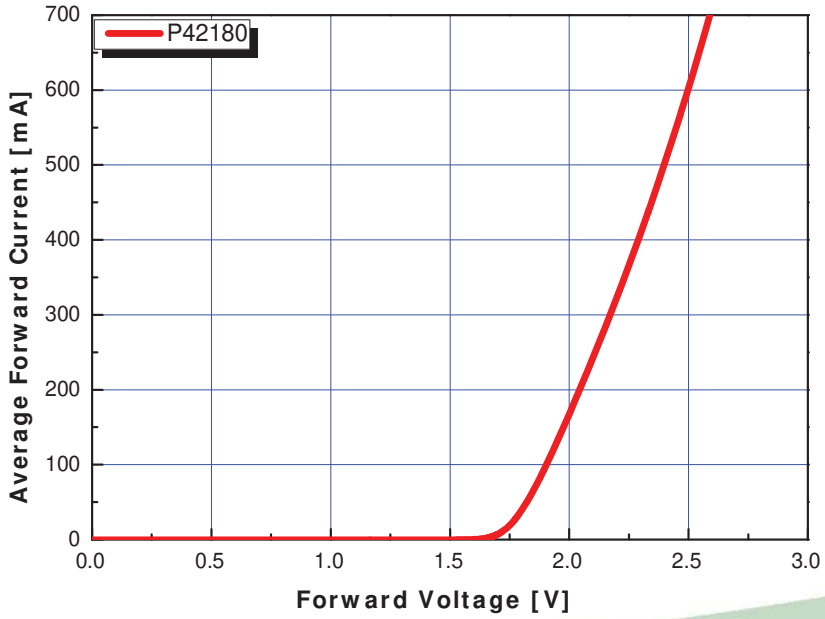
3. Wavelength Shift vs Junction Temperature at I_F= 350mA



Forward Current Characteristics

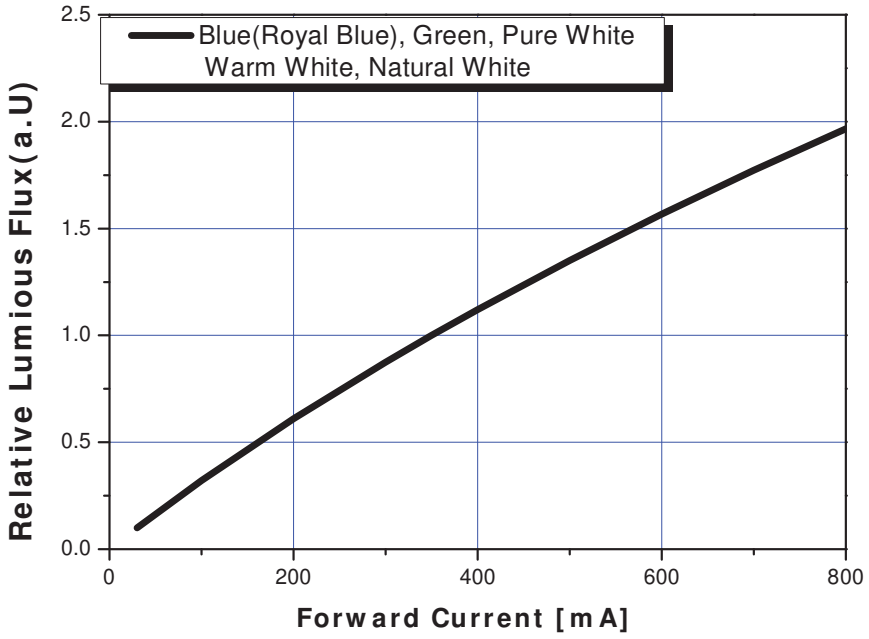
1. Forward Voltage vs. Forward Current , T_A= 25 ºc

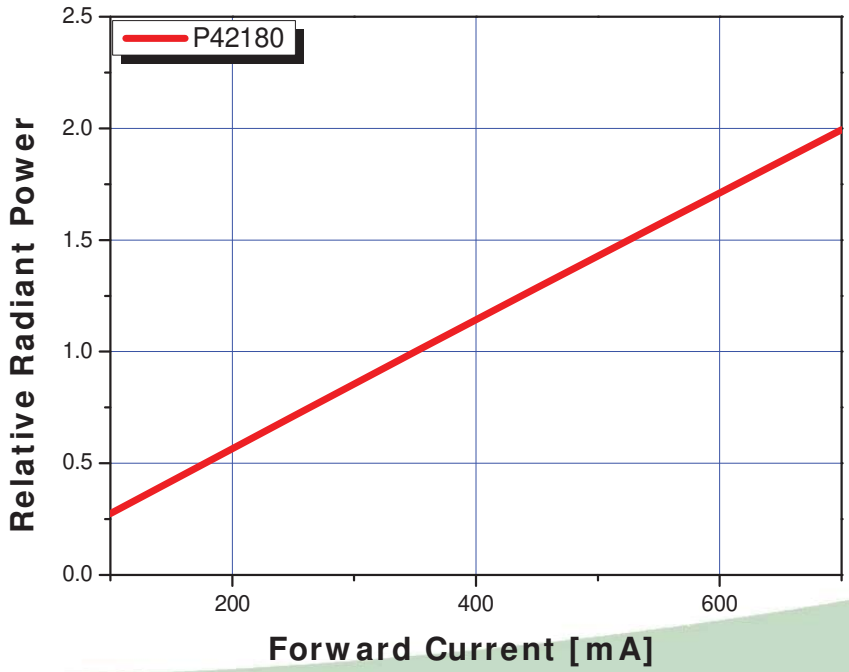




Forward Current Characteristics

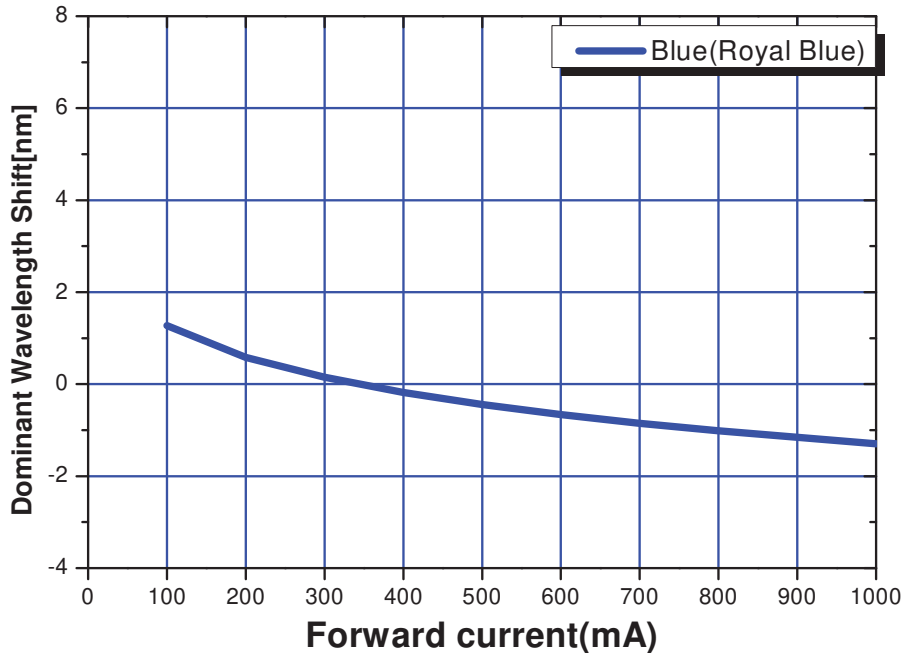
2. Forward Current vs. Normalized Relative Luminous Flux, T_A= 25 ºc

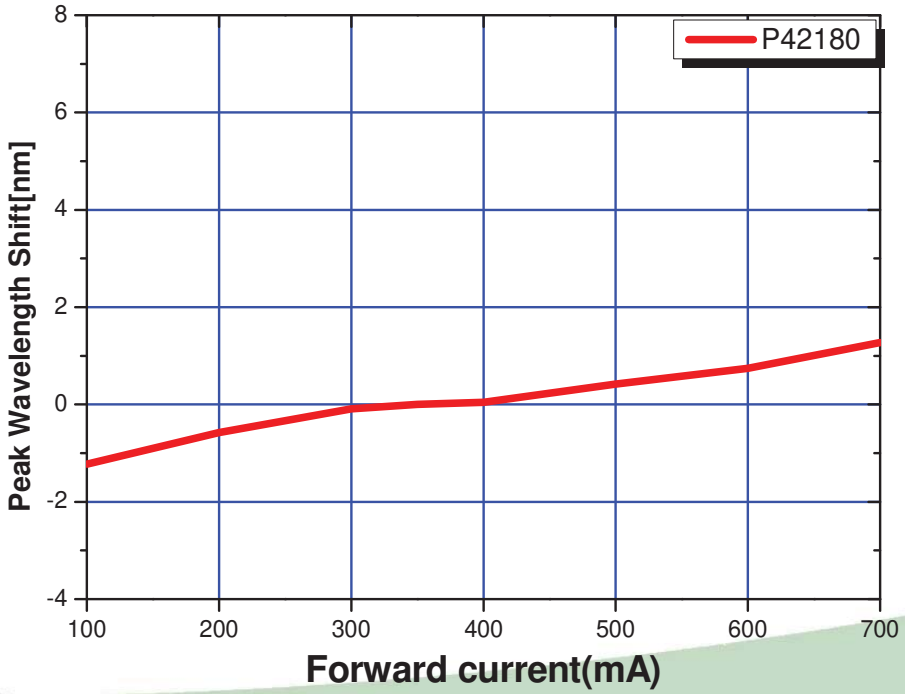




Forward Current Characteristics

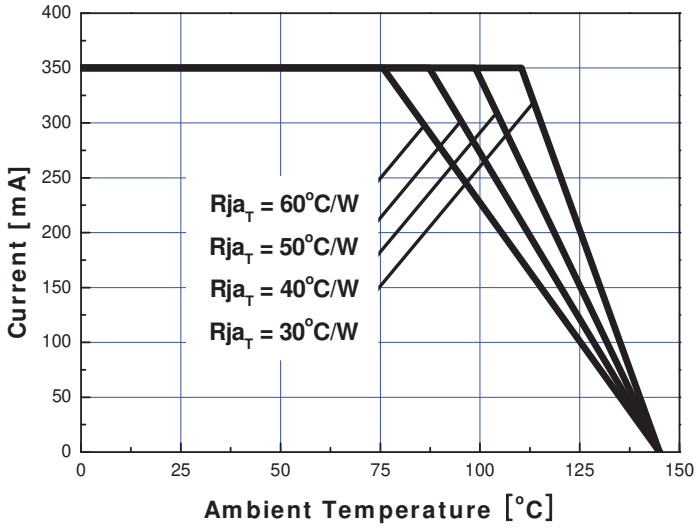
3. Forward Current vs Wavelength Shift, T_A= 25 ºc



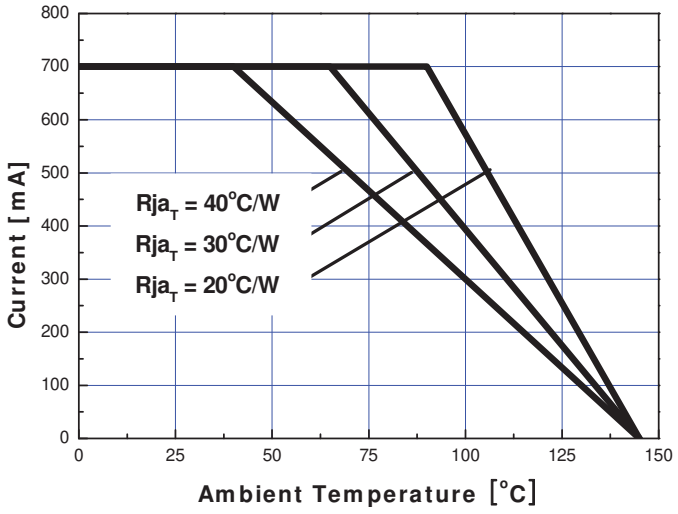


Ambient Temperature vs Allowable Forward Current

1-1. Pure White, Warm White, Natural White, Blue(Royal Blue) (T_{JMAX}= 145 ºC, @350mA)

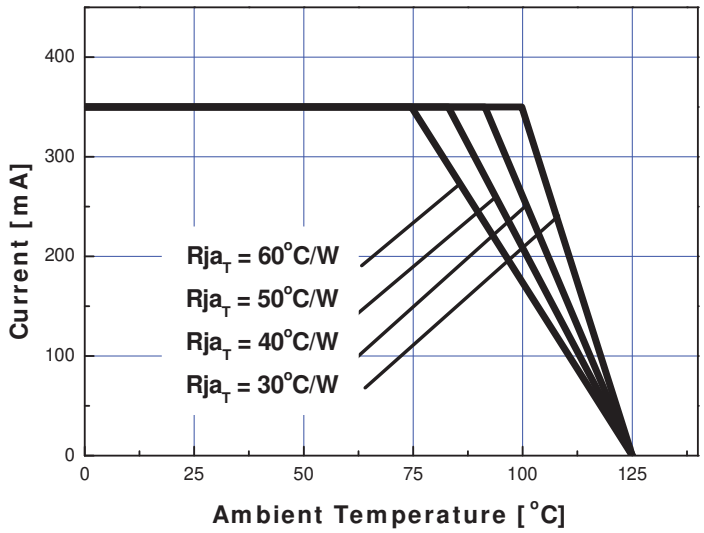


1-2. Pure White, Warm White, Natural White, Blue(Royal Blue) (T_{JMAX}= 145 ºC, @700mA)

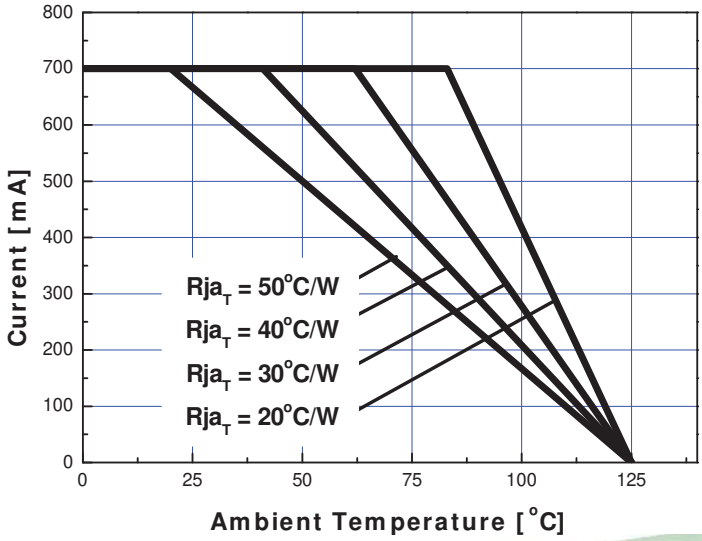


Ambient Temperature vs Allowable Forward Current

1-3. Photosynthetic Red (T_{JMAX} = 125 ºC, at 350mA)

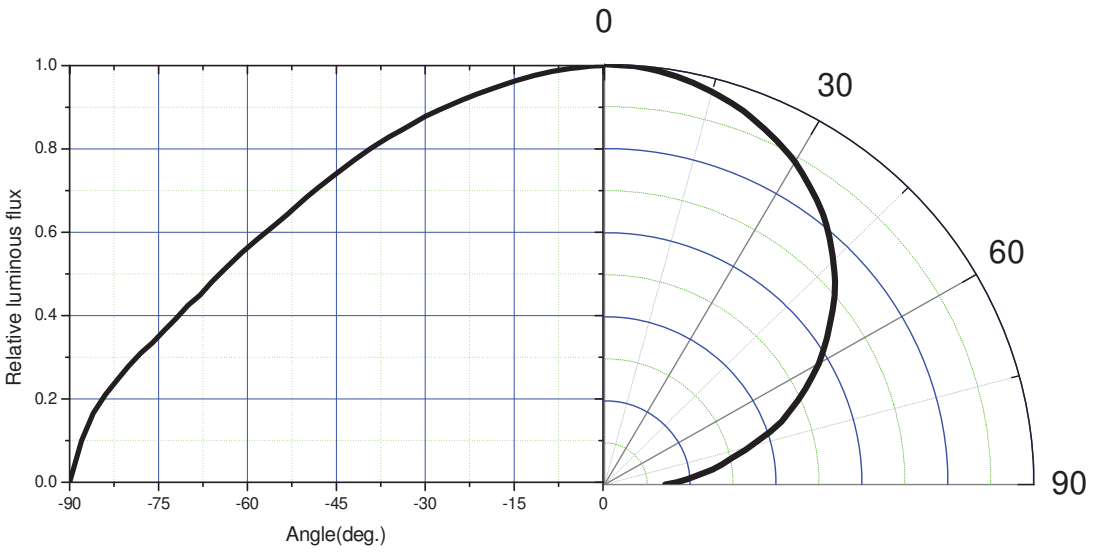


1-4. Photosynthetic Red (T_{JMAX} = 125 ºC, @700mA)

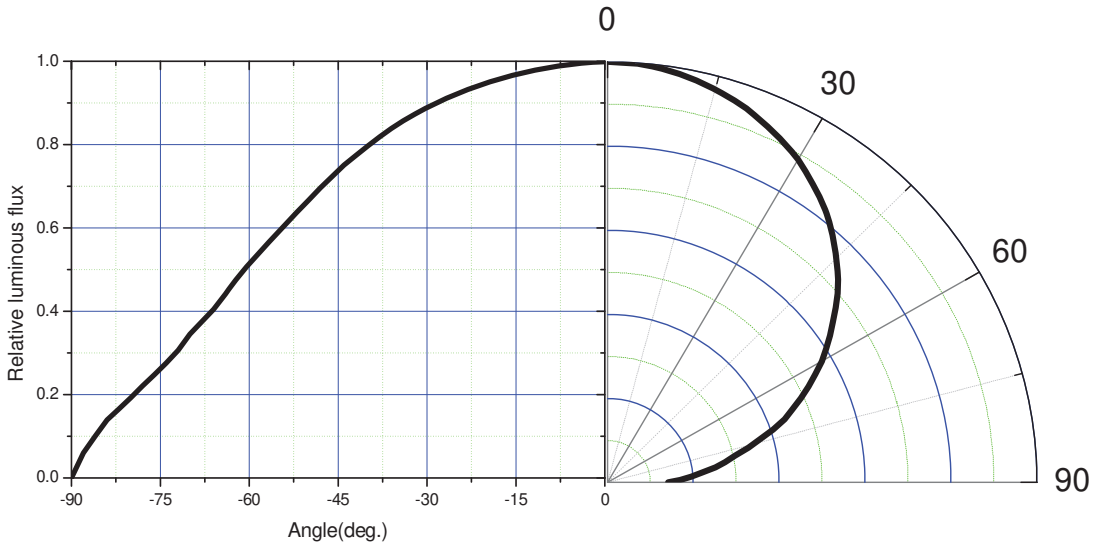


Typical Dome Type Radiation pattern

1. Pure White

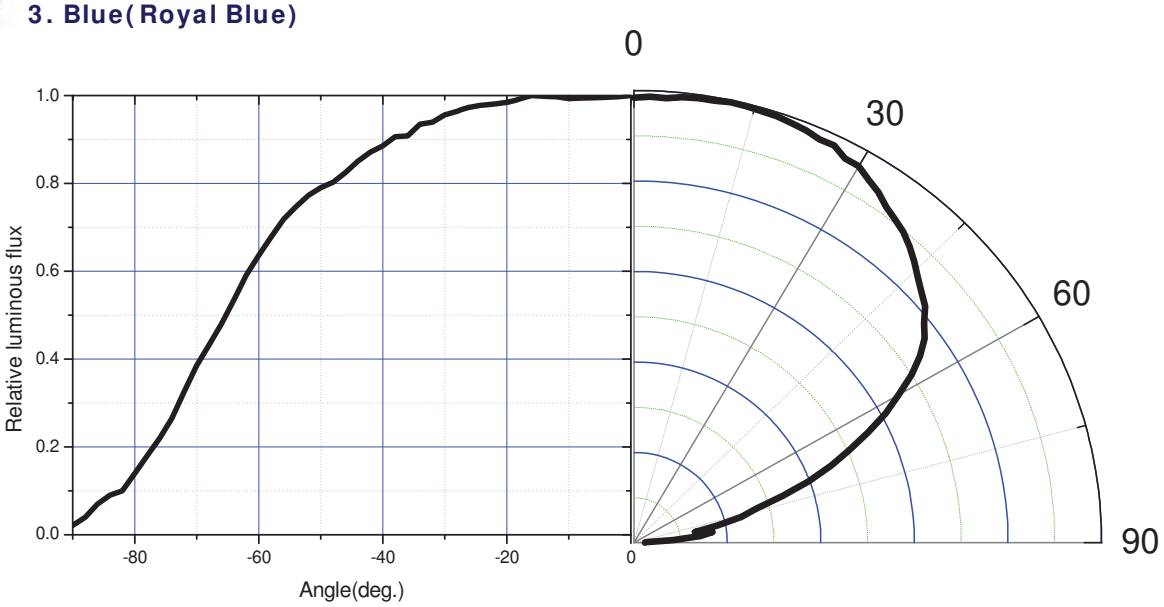


2. Warm White, Natural White

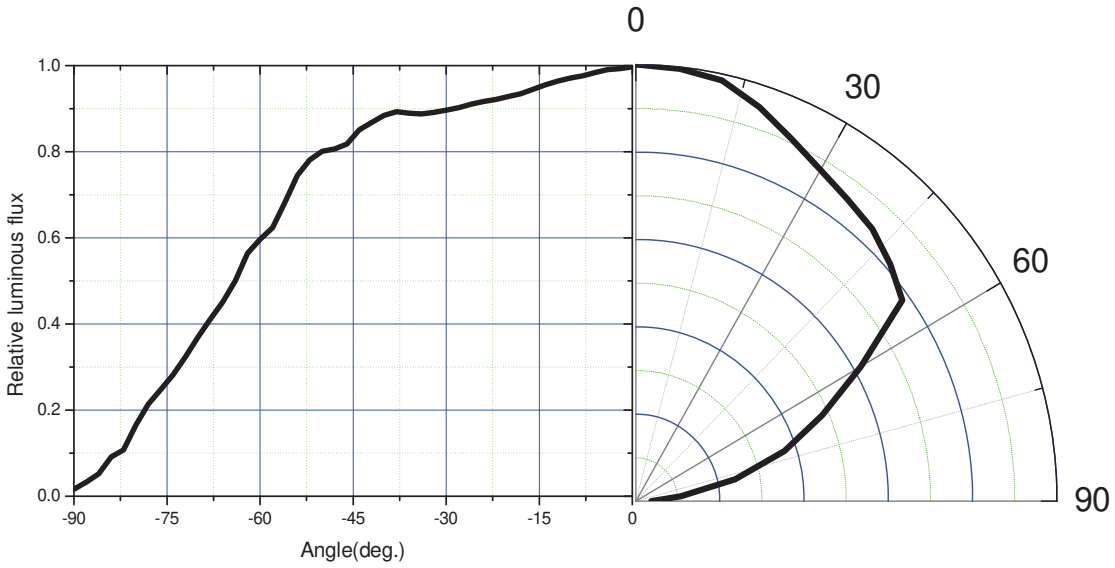


Typical Dome Type Radiation pattern

3. Blue(Royal Blue)

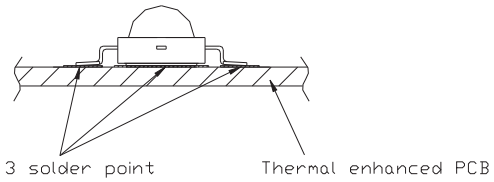


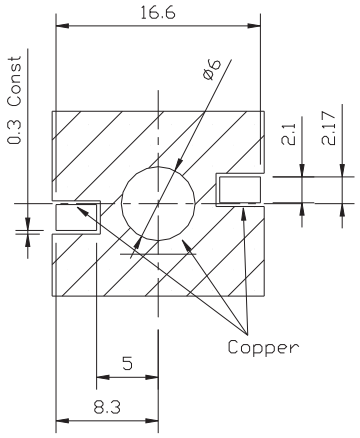
4. Photosynthetic Red

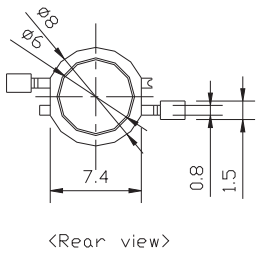


Recommended Solder pad

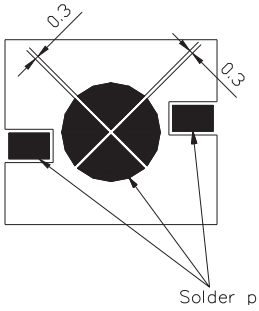
1. Solder pad







2. Solder paste pattern

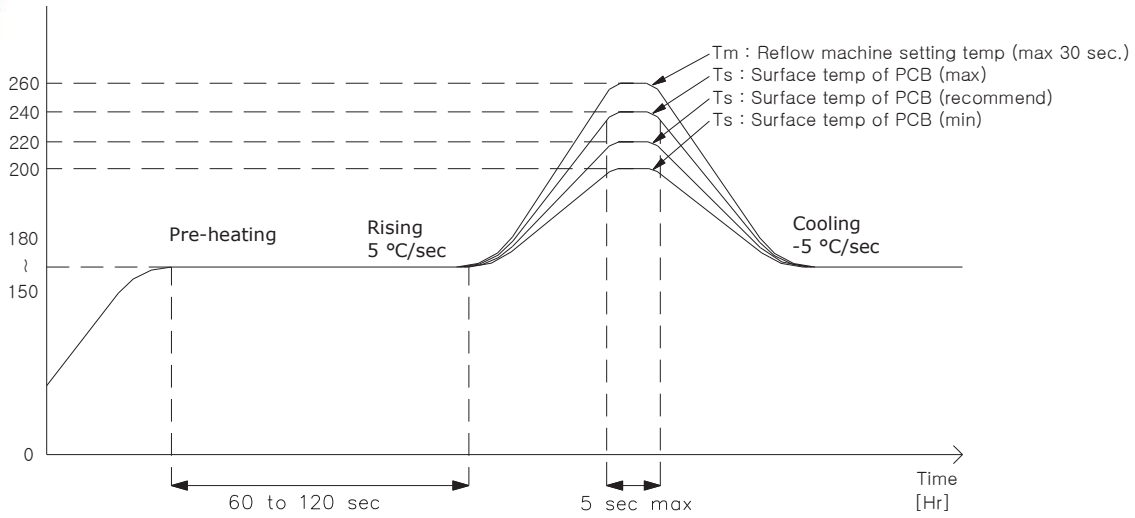


Note :

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.

3. Reflow Soldering Conditions / Profile



4. 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. **The bottom of the emiter 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.**