



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!



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X42180

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.

X42180

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.

Rev. 17

January. 2011

Full Code of Z-Power LED Series

Full code form : X₁ X₂ X₃ X₄ X₅ X₆ X₇ - X₈ X₉ - X₁₀ X₁₁ X₁₂ X₁₃ X₁₄

1. Part Number

- X₁ : Color
- X₂ : Z-Power LED series number
- X₃ : LENS type
- X₄ : Chip quantity (or Power Dissipation)
- X₅ : Package outline size
- X₆ : Type of PCB
- X₇ : Grade of characteristic code

2. Internal Number

- X₈, X₉ : Revision No.

3. Code Labeling

- X₁₀ : Luminous flux (or Radiant flux for royal blue)
- X₁₁ X₁₂ X₁₃ : Dominant wavelength (or x,y coordinates rank code)
- X₁₄ : Forward voltage

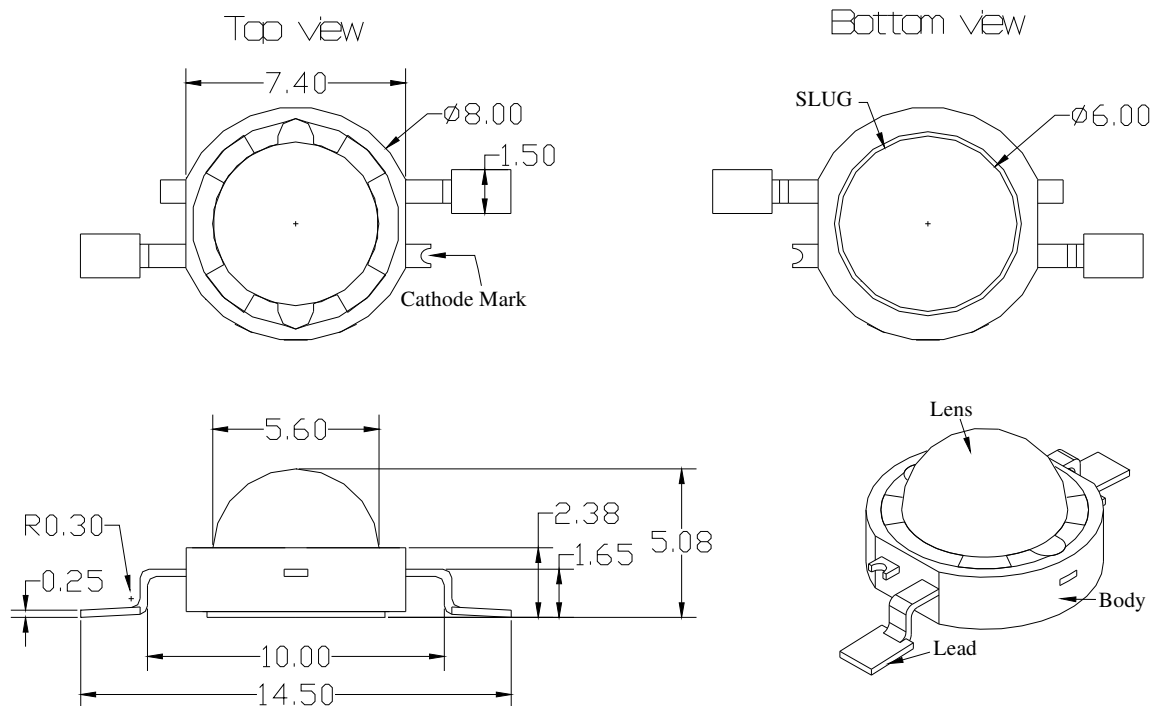
4. Sticker Diagram on Reel & Aluminum Vinyl Bag

RANK :	X ₁₀ X ₁₁ X ₁₂ X ₁₃ X ₁₄
QUANTITY : 500	
LOT NUMBER : XXXXXXXXXXX-XXX-XXX-XXXXXXXX	
SSC PART NUMBER : XXXXXXX-XX	
X ₁ X ₂ X ₃ X ₄ X ₅ X ₆ X ₇ -X ₈ X ₉	

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)

1-1 Electro-Optical characteristics at $I_F = 350\text{mA}$, $T_A = 25^\circ\text{C}$

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	3.0	3.3	4	V
View Angle		$2\Theta \frac{1}{2}$	127			deg.
Thermal resistance ^[5]		$R\theta_{J-B}$	10.1			$^\circ\text{C} / \text{W}$
Thermal resistance ^[6]		$R\theta_{J-C}$	8.5			$^\circ\text{C} / \text{W}$

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	$^\circ\text{C}$
Operating Temperature	T_{opr}	-40 ~ +85	$^\circ\text{C}$
Storage Temperature	T_{stg}	-40 ~ +100	$^\circ\text{C}$
ESD Sensitivity ^[7]	-	$\pm 10,000\text{V HBM}$	-

* Notes :

- [1] SSC maintains a tolerance of $\pm 10\%$ 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 $\pm 5\%$ tester tolerance.
- [4] A tolerance of $\pm 0.06\text{V}$ on forward voltage measurements
- [5], [6] $R\theta_{J-B}$ is measured with a SSC metal core pcb. ($25^\circ\text{C} \leq T_j \leq 110^\circ\text{C}$)
 $R\theta_{J-C}$ is measured with only emitter. ($25^\circ\text{C} \leq T_j \leq 110^\circ\text{C}$)
- [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)

2-1 Electro-Optical characteristics at $I_F = 350\text{mA}$, $T_A = 25^\circ\text{C}$

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	3.0	3.3	4	V
View Angle	2θ 1/2	126			deg.
Thermal resistance ^[5]	$R\theta_{J-B}$	10.1			$^\circ\text{C} / \text{W}$
Thermal resistance ^[6]	$R\theta_{J-C}$	8.5			$^\circ\text{C} / \text{W}$

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	$^\circ\text{C}$
Operating Temperature	T_{opr}	-40 ~ +85	$^\circ\text{C}$
Storage Temperature	T_{stg}	-40 ~ +100	$^\circ\text{C}$
ESD Sensitivity ^[7]	-	$\pm 10,000\text{V HBM}$	-

* Notes :

- [1] SSC maintains a tolerance of $\pm 10\%$ 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 $\pm 5\%$ tester tolerance
- [4] A tolerance of $\pm 0.06\text{V}$ on forward voltage measurements
- [5], [6] $R\theta_{J-B}$ is measured with a SSC metal core pcb. ($25^\circ\text{C} \leq T_J \leq 110^\circ\text{C}$)
 $R\theta_{J-C}$ is measured with only emitter. ($25^\circ\text{C} \leq T_J \leq 110^\circ\text{C}$)
- [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)

3-1 Electro-Optical characteristics at $I_F = 350\text{mA}$, $T_A = 25^\circ\text{C}$

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	3.0	3.3	4	V
View Angle	2θ 1/2	127			deg.
Thermal resistance ^[5]	$R\theta_{J-B}$	10.1			$^\circ\text{C} / \text{W}$
Thermal resistance ^[6]	$R\theta_{J-C}$	8.5			$^\circ\text{C} / \text{W}$

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	$^\circ\text{C}$
Operating Temperature	T_{opr}	-40 ~ +85	$^\circ\text{C}$
Storage Temperature	T_{stg}	-40 ~ +100	$^\circ\text{C}$
ESD Sensitivity ^[7]	-	$\pm 10,000\text{V HBM}$	-

* Notes :

- [1] SSC maintains a tolerance of $\pm 10\%$ 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 $\pm 5\%$ tester tolerance
- [4] A tolerance of $\pm 0.06\text{V}$ on forward voltage measurements
- [5], [6] $R\theta_{J-B}$ is measured with a SSC metal core pcb. ($25^\circ\text{C} \leq T_J \leq 110^\circ\text{C}$)
 $R\theta_{J-C}$ is measured with only emitter. ($25^\circ\text{C} \leq T_J \leq 110^\circ\text{C}$)
- [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)

4-1 Electro-Optical characteristics at $I_F = 350\text{mA}$, $T_A = 25^\circ\text{C}$

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	3.0	3.3	4	V
View Angle	2θ 1/2	126			deg.
Thermal resistance ^[5]	$R\theta_{J-B}$	10.1			$^\circ\text{C} / \text{W}$
Thermal resistance ^[6]	$R\theta_{J-C}$	8.5			$^\circ\text{C} / \text{W}$

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	$^\circ\text{C}$
Operating Temperature	T_{opr}	-40 ~ +85	$^\circ\text{C}$
Storage Temperature	T_{stg}	-40 ~ +100	$^\circ\text{C}$
ESD Sensitivity ^[7]	-	$\pm 10,000\text{V HBM}$	-

* Notes :

- [1] SSC maintains a tolerance of $\pm 10\%$ 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 $\pm 5\%$ tester tolerance.
- [4] A tolerance of $\pm 0.06\text{V}$ on forward voltage measurements
- [5], [6] $R\theta_{J-B}$ is measured with a SSC metal core pcb. ($25^\circ\text{C} \leq T_J \leq 110^\circ\text{C}$)
 $R\theta_{J-C}$ is measured with only emitter. ($25^\circ\text{C} \leq T_J \leq 110^\circ\text{C}$)
- [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)

5-1 Electro-Optical characteristics at $I_F=350\text{mA}$, $T_A=25^\circ\text{C}$

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	3.0	3.3	4	V
View Angle	2θ 1/2	127			deg.
Thermal resistance ^[5]	$R\theta_{J-B}$	10.1			$^\circ\text{C} / \text{W}$
Thermal resistance ^[6]	$R\theta_{J-C}$	8.5			$^\circ\text{C} / \text{W}$

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	$^\circ\text{C}$
Operating Temperature	T_{opr}	-40 ~ +85	$^\circ\text{C}$
Storage Temperature	T_{stg}	-40 ~ +100	$^\circ\text{C}$
ESD Sensitivity ^[7]	-	$\pm 10,000\text{V HBM}$	-

* Notes :

- [1] SSC maintains a tolerance of $\pm 10\%$ 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 $\pm 5\%$ tester tolerance.
- [4] A tolerance of $\pm 0.06\text{V}$ on forward voltage measurements
- [5], [6] $R\theta_{J-B}$ is measured with a SSC metal core pcb. ($25^\circ\text{C} \leq T_J \leq 110^\circ\text{C}$)
 $R\theta_{J-C}$ is measured with only emitter. ($25^\circ\text{C} \leq T_J \leq 110^\circ\text{C}$)
- [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)

6-1 Electro-Optical characteristics at $I_F = 350\text{mA}$, $T_A = 25^\circ\text{C}$

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	3.0	3.25	4	V
View Angle	2Θ 1/2	130			deg.
Thermal resistance ^[5]	$R\theta_{J-B}$	10.1			$^\circ\text{C} / \text{W}$
Thermal resistance ^[6]	$R\theta_{J-C}$	8.5			$^\circ\text{C} / \text{W}$

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	$^\circ\text{C}$
Operating Temperature	T_{opr}	-40 ~ +85	$^\circ\text{C}$
Storage Temperature	T_{stg}	-40 ~ +100	$^\circ\text{C}$
ESD Sensitivity ^[7]	-	$\pm 10,000\text{V}$ HBM	-

* Notes :

- [1] SSC maintains a tolerance of $\pm 10\%$ 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 $\pm 0.5\text{nm}$ for dominant wavelength
- [4] A tolerance of $\pm 0.06\text{V}$ on forward voltage measurements
- [5], [6] $R\theta_{J-B}$ is measured with a SSC metal core pcb. ($25^\circ\text{C} \leq T_J \leq 110^\circ\text{C}$)
 $R\theta_{J-C}$ is measured with only emitter. ($25^\circ\text{C} \leq T_J \leq 110^\circ\text{C}$)
- [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)

7-1 Electro-Optical characteristics at $I_F = 350\text{mA}$, $T_A = 25^\circ\text{C}$

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	3.0	3.25	3.8	V
View Angle	2Θ 1/2	130			deg.
Thermal resistance ^[5]	$R\theta_{J-B}$	10.1			$^\circ\text{C} / \text{W}$
Thermal resistance ^[6]	$R\theta_{J-C}$	8.5			$^\circ\text{C} / \text{W}$

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	$^\circ\text{C}$
Operating Temperature	T_{opr}	-40 ~ +85	$^\circ\text{C}$
Storage Temperature	T_{stg}	-40 ~ +100	$^\circ\text{C}$
ESD Sensitivity ^[7]	-	$\pm 10,000\text{V HBM}$	-

* Notes :

- [1] SSC maintains a tolerance of $\pm 10\%$ on flux and power measurements.
- [2] Φ_V is the total Radiant power output as measured with an integrating sphere.
- [3] Correlated Color Temperature is derived from the CIE 1931 Chromaticity diagram.
CCT $\pm 5\%$ tester tolerance
- [4] A tolerance of $\pm 0.06\text{V}$ on forward voltage measurements
- [5], [6] $R\theta_{J-B}$ is measured with a SSC metal core pcb. ($25^\circ\text{C} \leq T_J \leq 110^\circ\text{C}$)
 $R\theta_{J-C}$ is measured with only emitter. ($25^\circ\text{C} \leq T_J \leq 110^\circ\text{C}$)
- [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)

11-1 Electro-Optical characteristics at $I_F=350\text{mA}$, $T_A=25^\circ\text{C}$

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			$^\circ\text{C} / \text{W}$

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	$^\circ\text{C}$
Operating Temperature	T_{opr}	-40 ~ +85	$^\circ\text{C}$
Storage Temperature	T_{stg}	-40 ~ +100	$^\circ\text{C}$
ESD Sensitivity ^[6]	-	$\pm 10,000\text{V}$ HBM	-

* Notes :

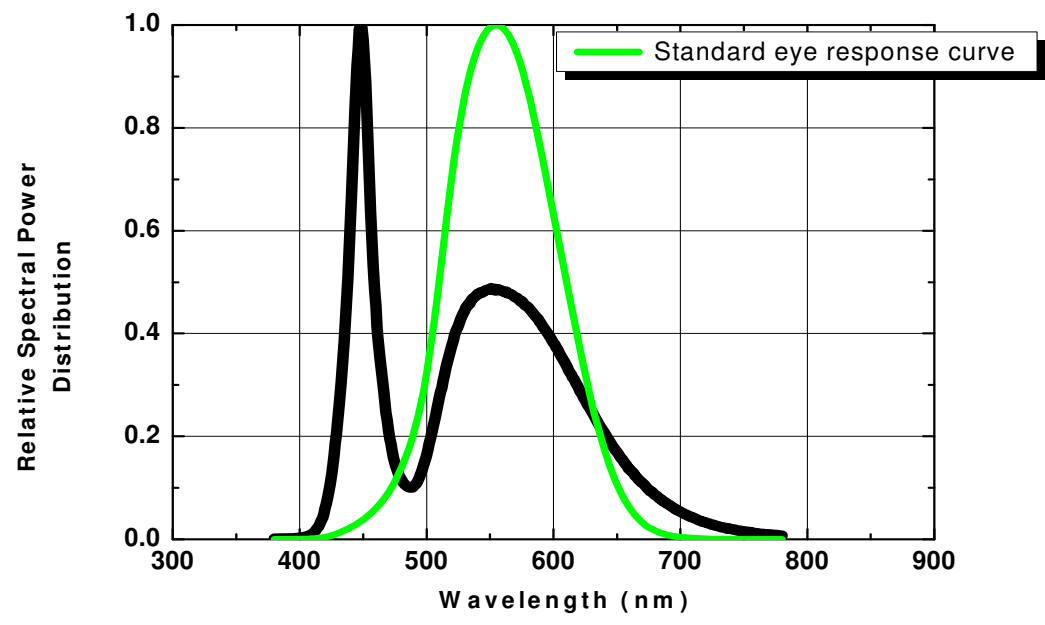
- [1] SSC maintains a tolerance of $\pm 10\%$ on flux and power measurements.
- [2] Φ_V is the total Radiant power output as measured with an integrating sphere.
- [3] Peak wavelength is derived from the CIE 1931 Chromaticity diagram.
A tolerance of $\pm 1\text{nm}$ for peak wavelength
- [4] A tolerance of $\pm 0.06\text{V}$ 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-----

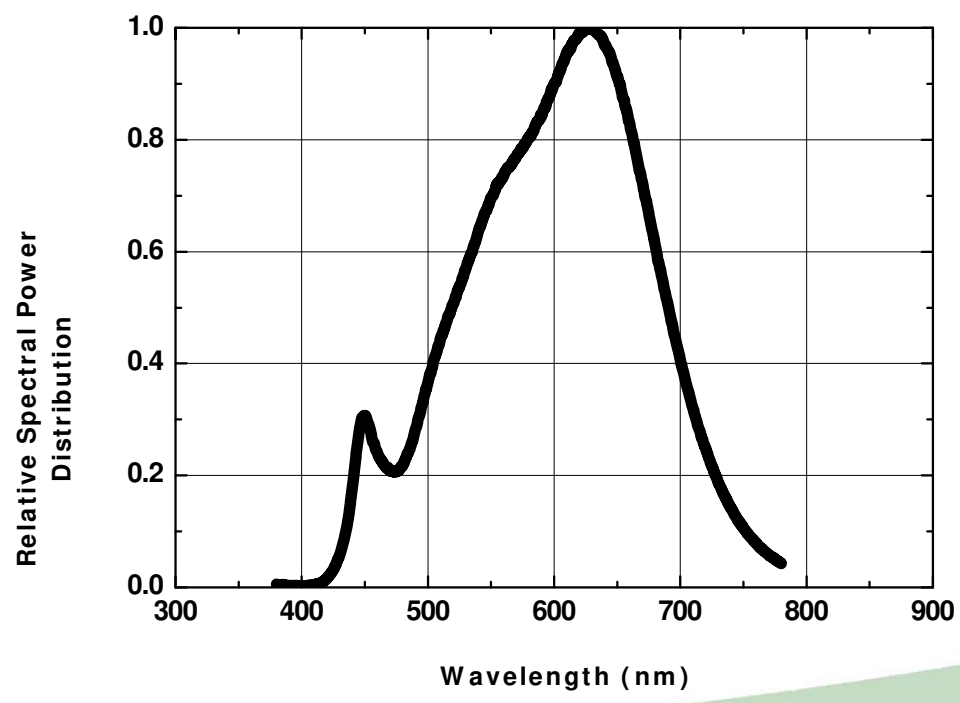
1. Please do not drive at rated current more than 5 sec. without proper heat sink

Color Spectrum, $T_A = 25^\circ C$

1. Pure White

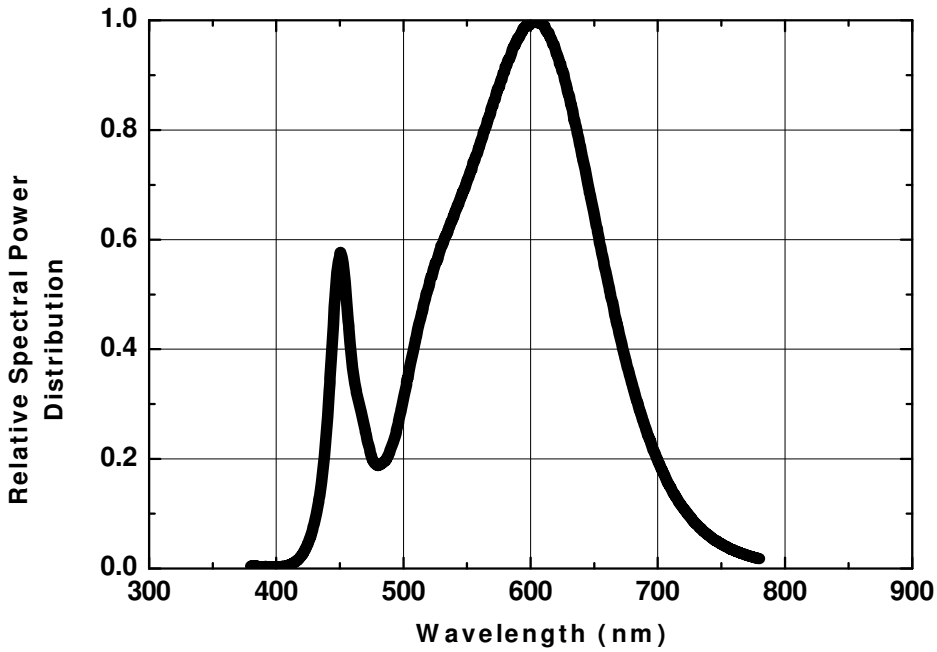


2. Warm White (N42180)

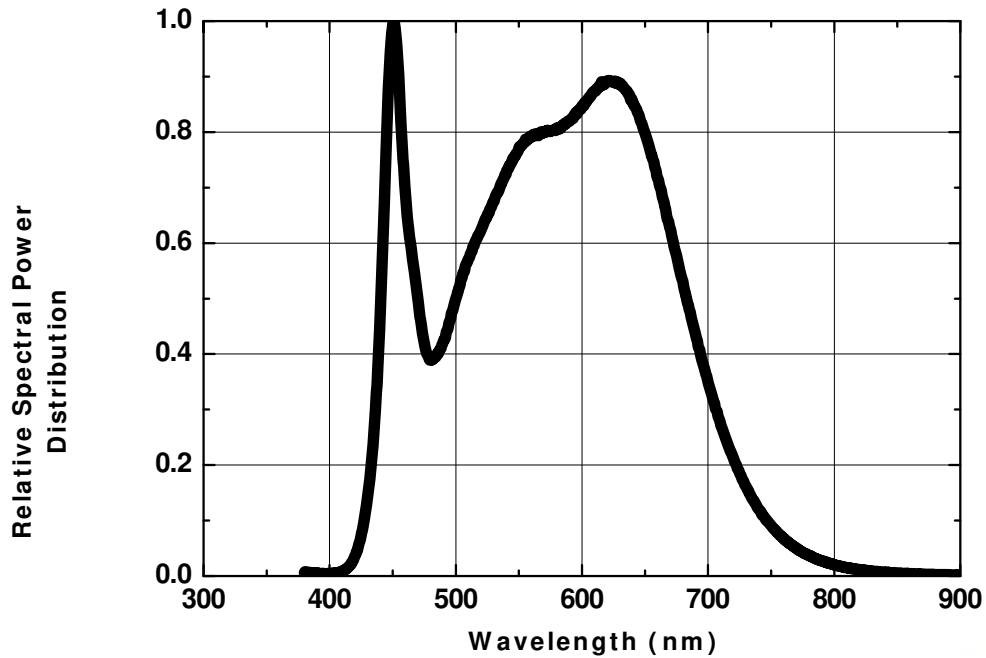


Color Spectrum, $T_A = 25^\circ C$

3. Warm White (N42180H)

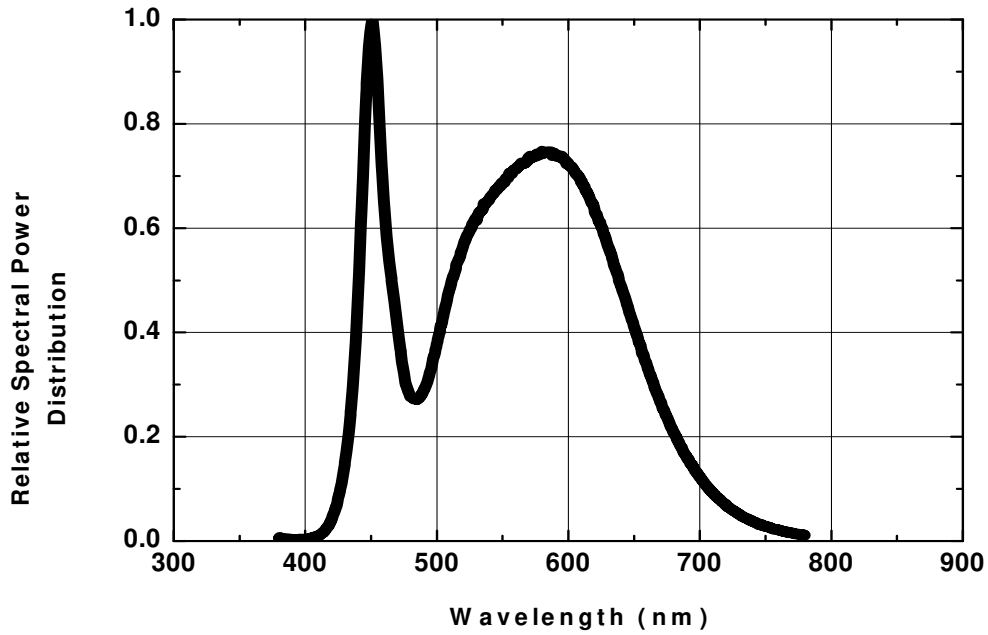


4. Natural White (S42180)

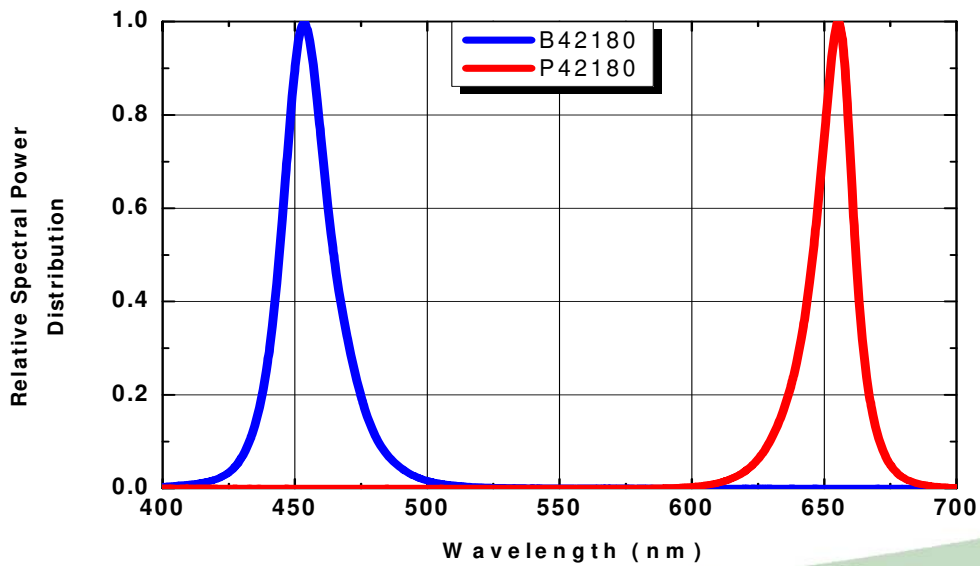


Color Spectrum, $T_A = 25^\circ C$

5. Natural White (S42180H)

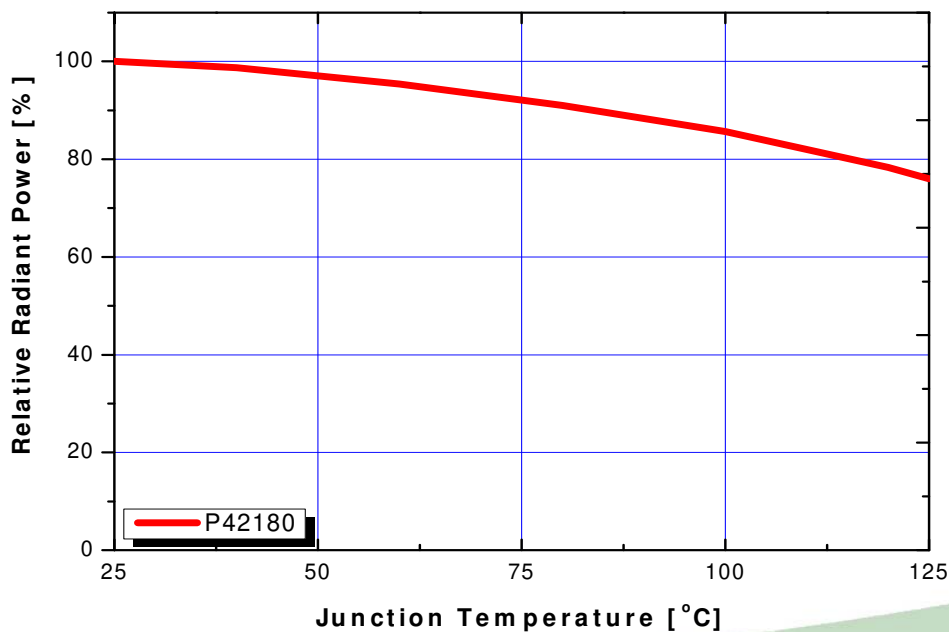
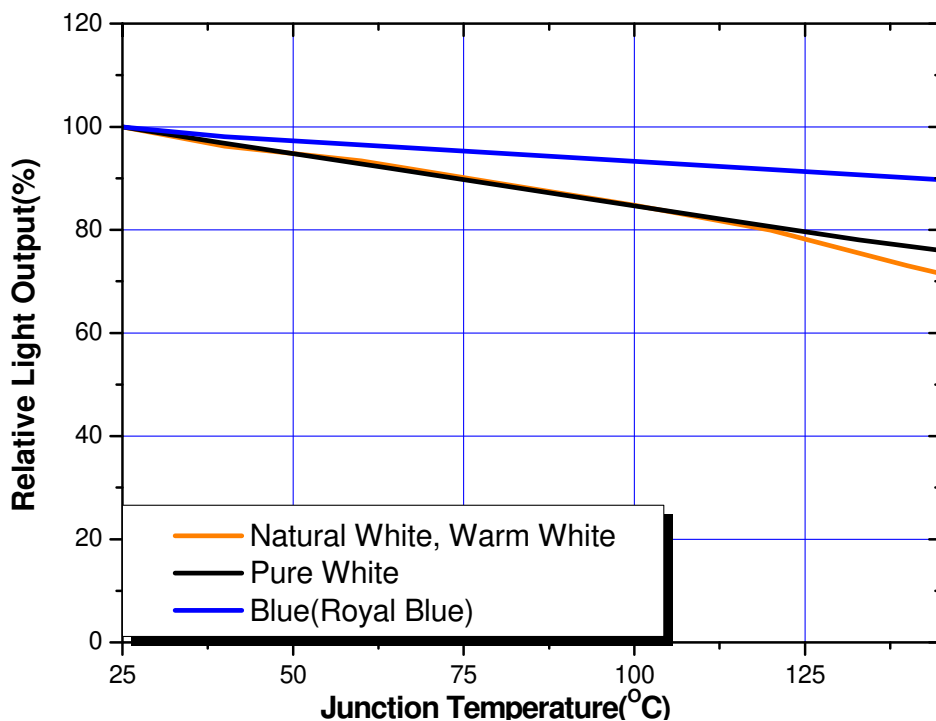


6. Blue(Royal Blue), Photosynthetic Red



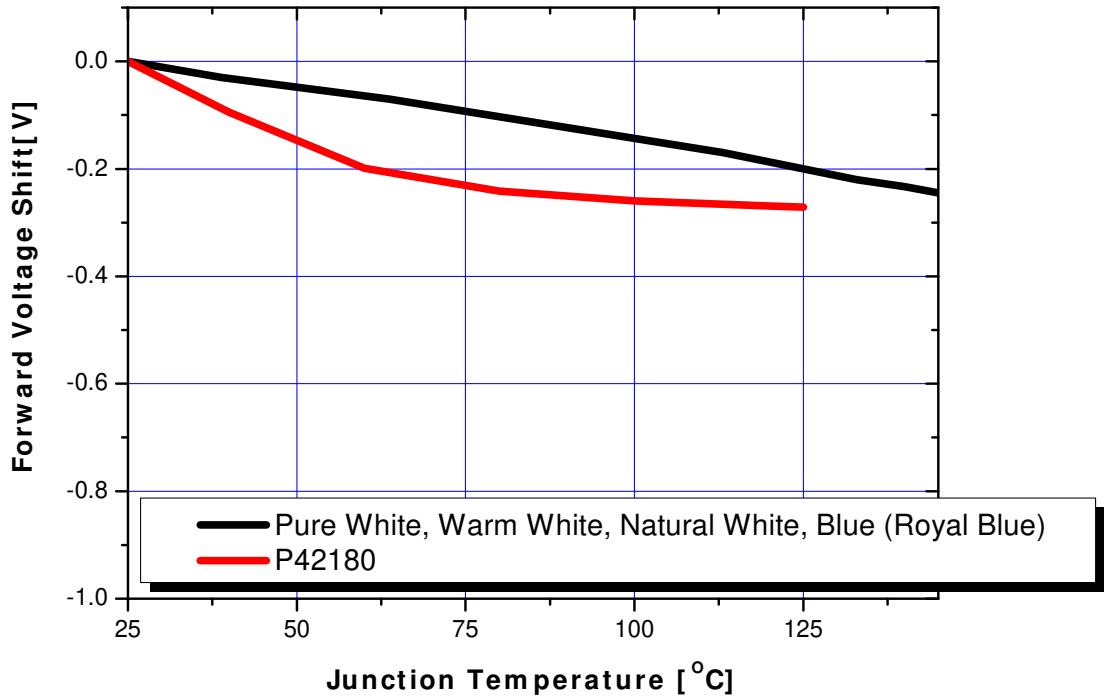
Junction Temperature Characteristics

1. Relative Light Output vs. Junction Temperature at $I_F = 350\text{mA}$

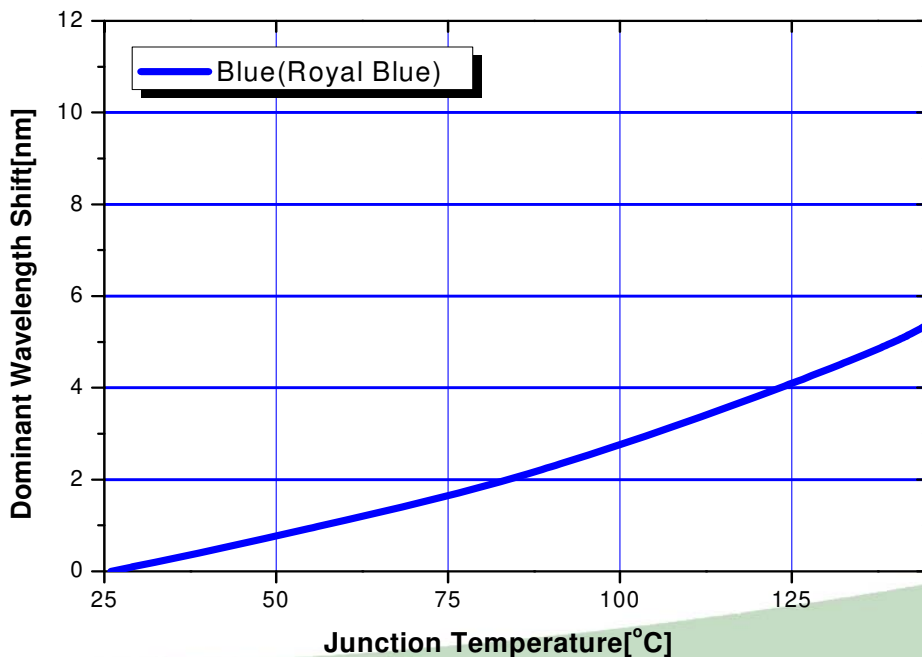


Junction Temperature Characteristics

2. Forward Voltage Shift vs. Junction Temperature at $I_F = 350\text{mA}$

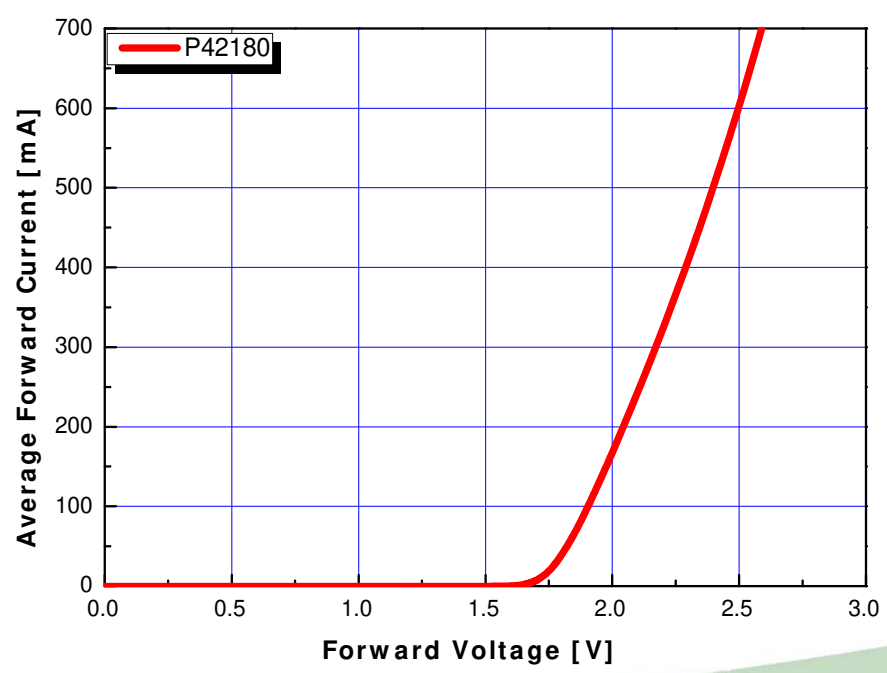
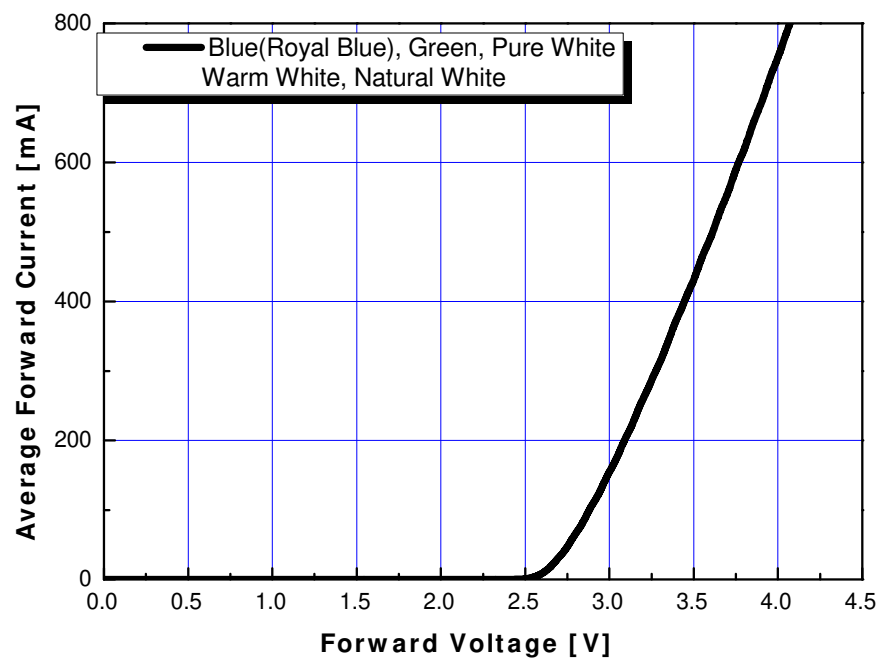


3. Wavelength Shift vs Junction Temperature at $I_F = 350\text{mA}$



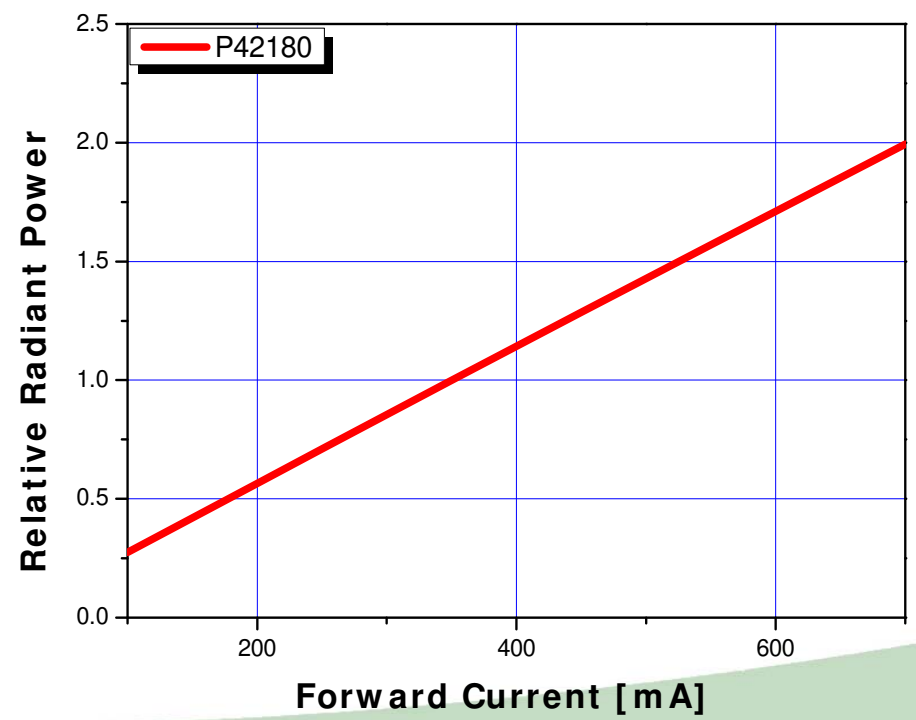
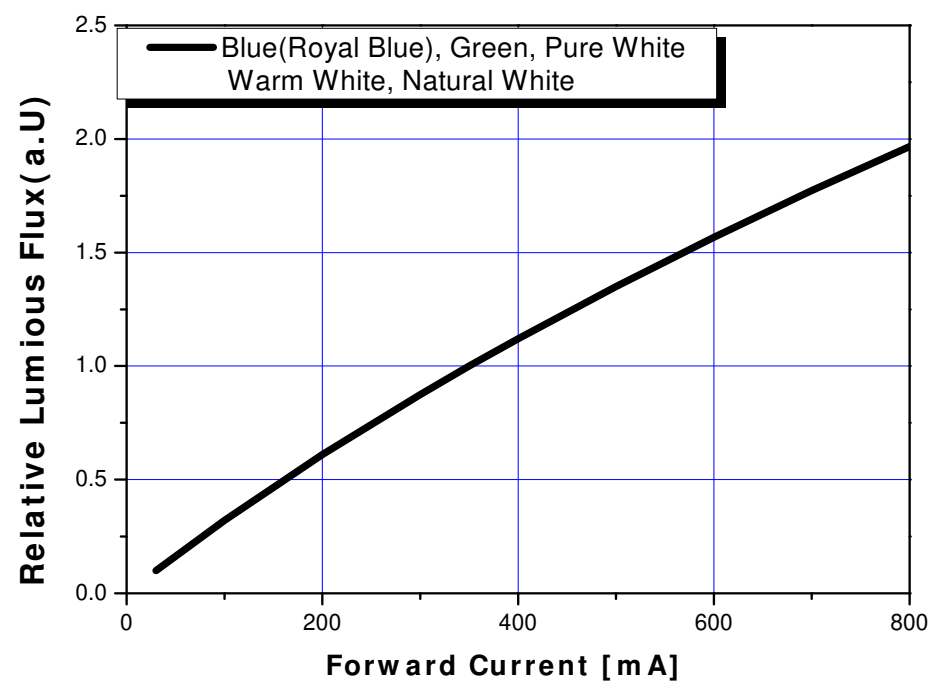
Forward Current Characteristics

1. Forward Voltage vs. Forward Current , $T_A = 25^\circ\text{C}$



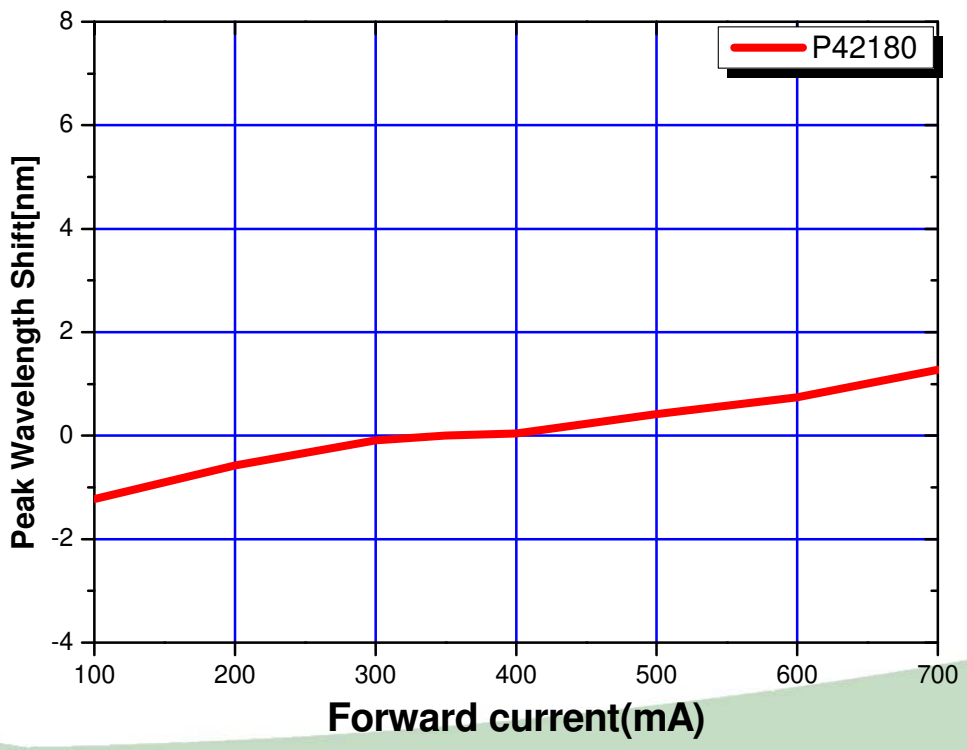
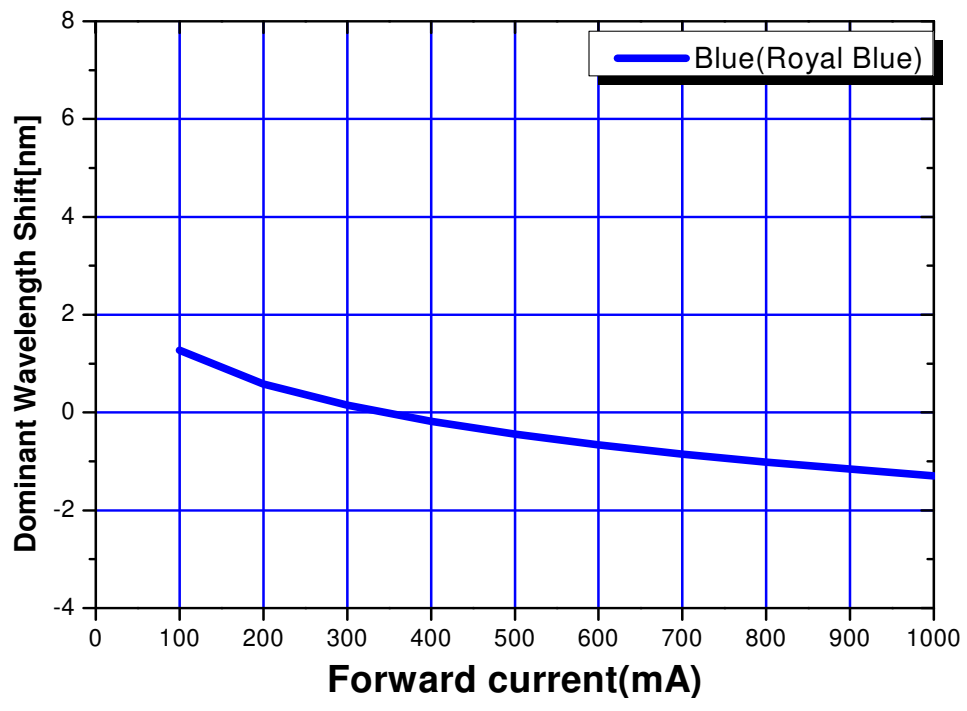
Forward Current Characteristics

2. Forward Current vs. Normalized Relative Luminous Flux, $T_A = 25^\circ\text{C}$



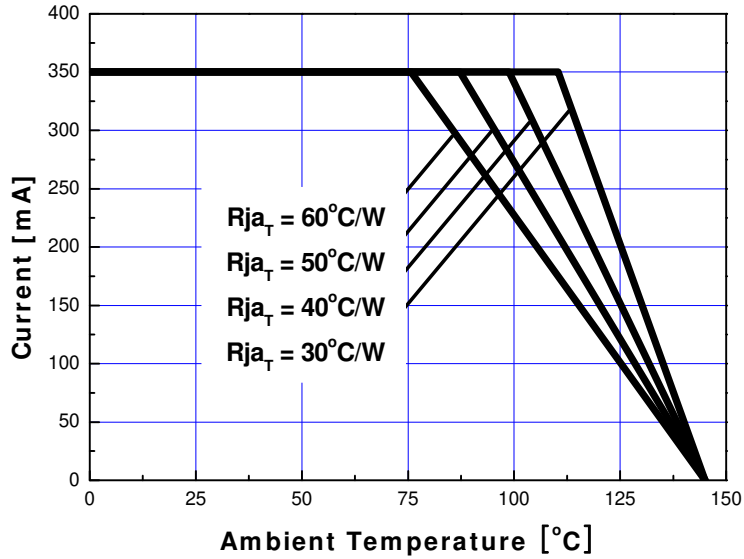
Forward Current Characteristics

3. Forward Current vs Wavelength Shift, $T_A = 25^\circ\text{C}$

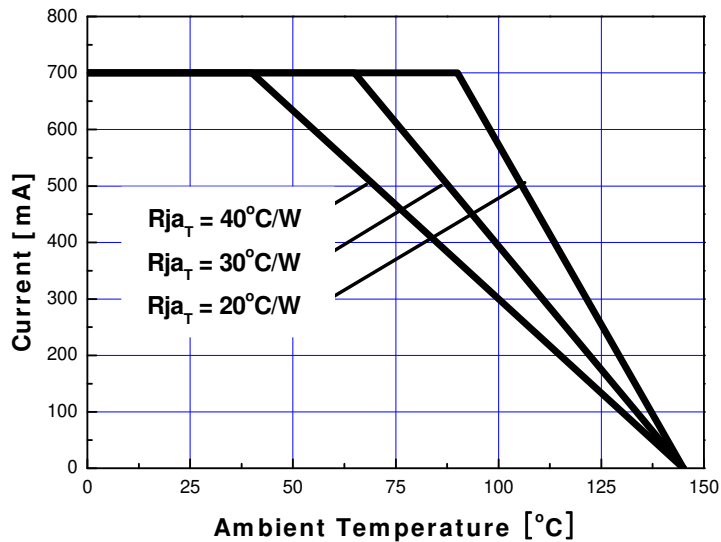


Ambient Temperature vs Allowable Forward Current

1-1. Pure White, Warm White, Natural White, Blue(Royal Blue) ($T_{MAX} = 145\text{ }^{\circ}\text{C}$, @350mA)

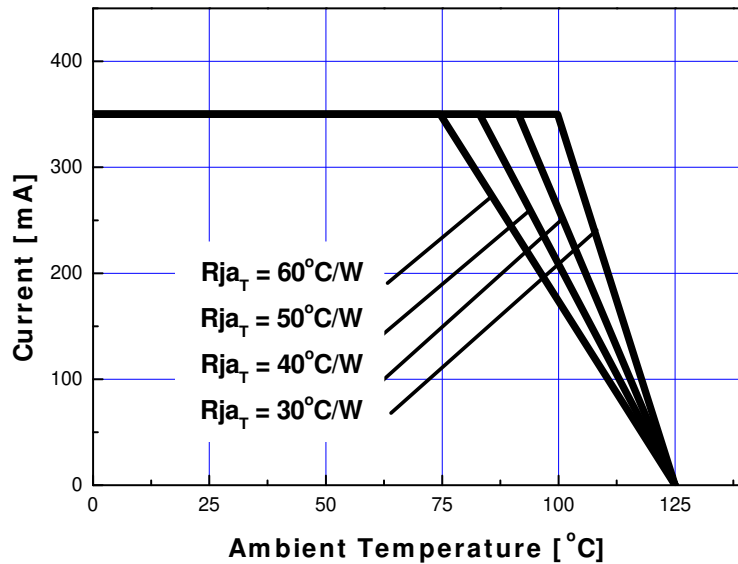


1-2. Pure White, Warm White, Natural White, Blue(Royal Blue) ($T_{MAX} = 145\text{ }^{\circ}\text{C}$, @700mA)

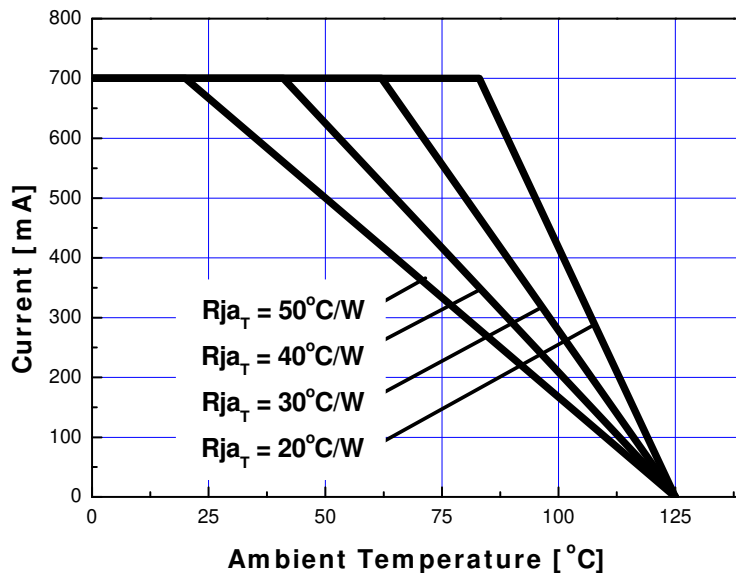


Ambient Temperature vs Allowable Forward Current

1-3. Photosynthetic Red ($T_{JMAX} = 125\text{ }^{\circ}\text{C}$, at 350mA)

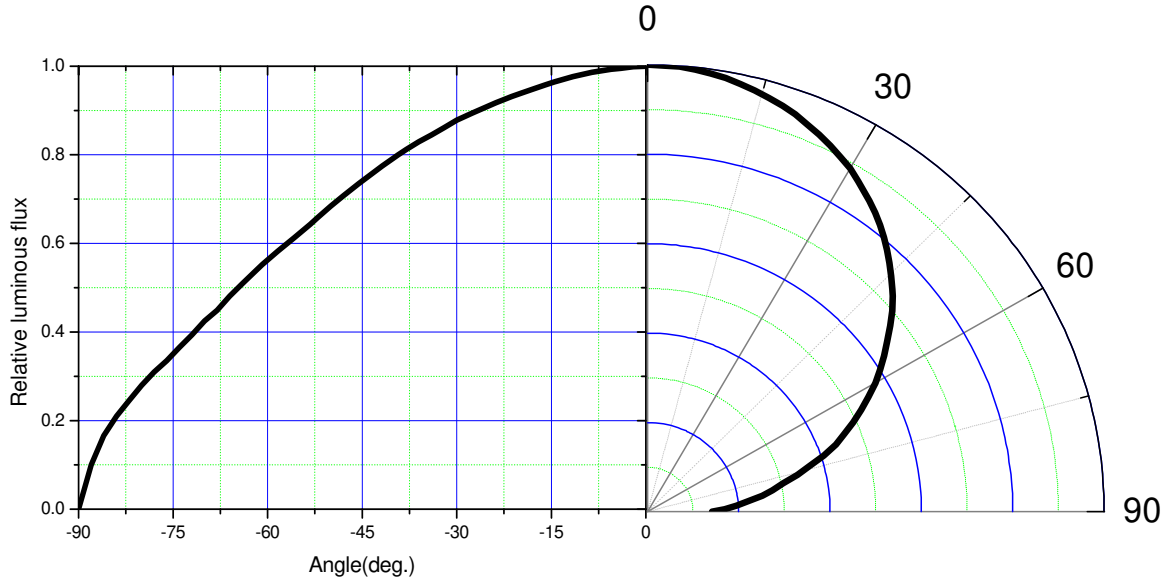


1-4. Photosynthetic Red ($T_{JMAX} = 125\text{ }^{\circ}\text{C}$, @700mA)

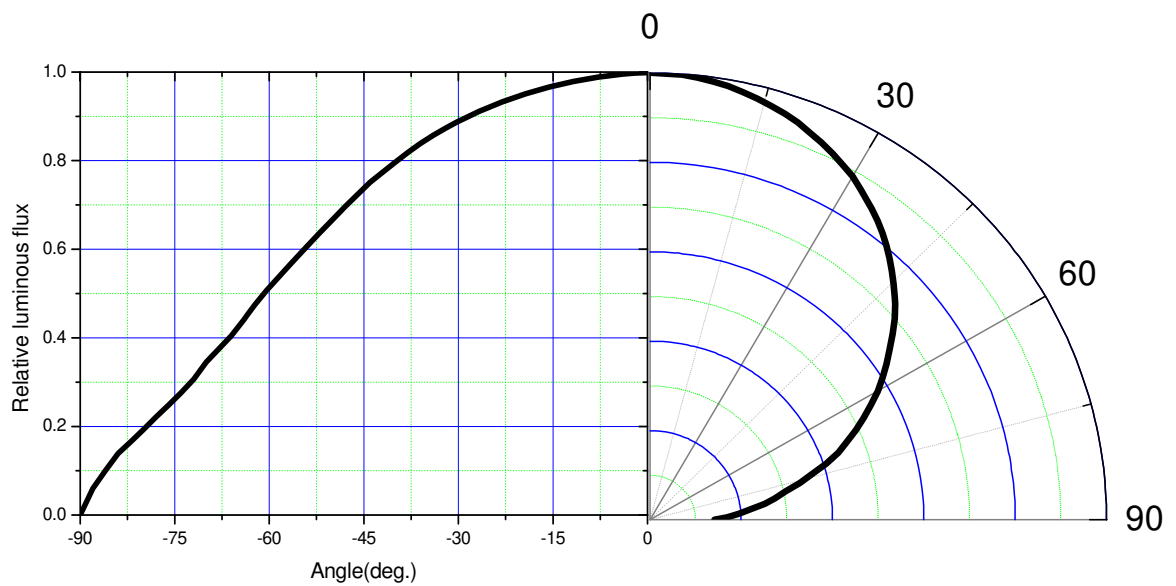


Typical Dome Type Radiation pattern

1. Pure White

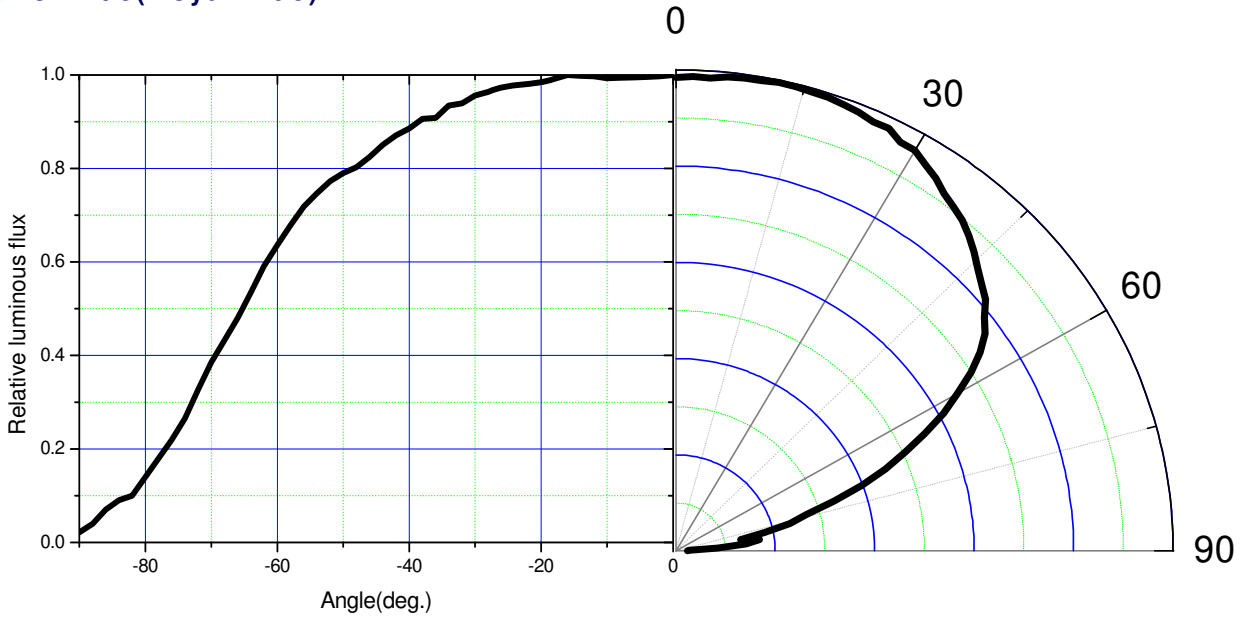


2. Warm White, Natural White

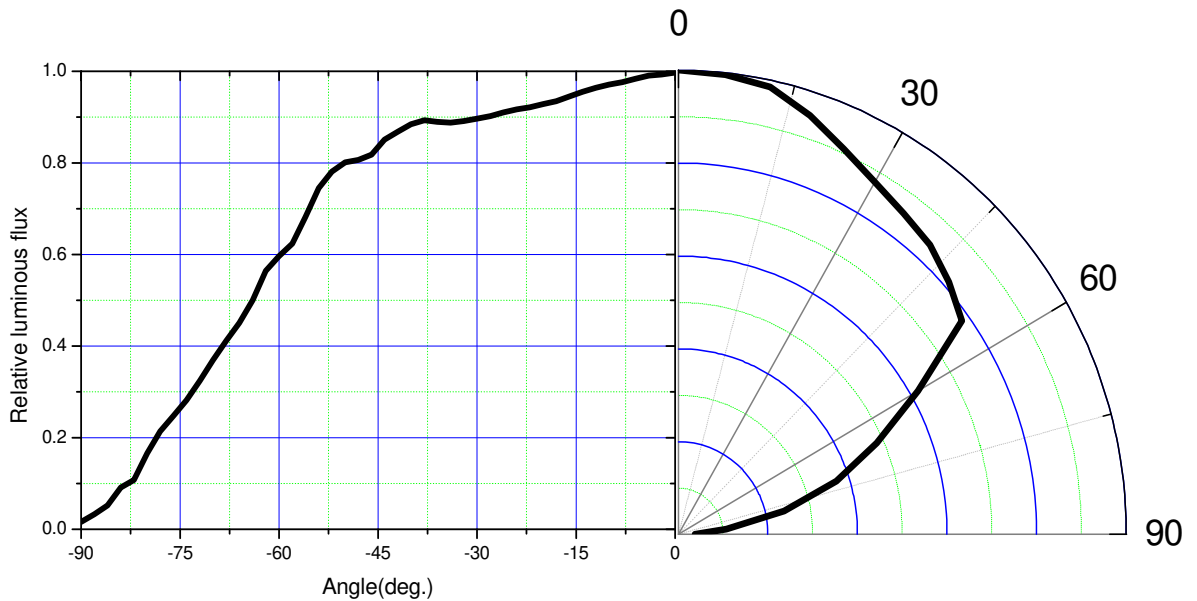


Typical Dome Type Radiation pattern

3. Blue(Royal Blue)

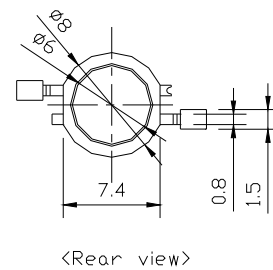
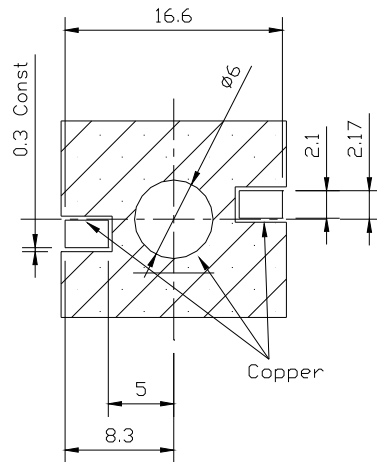
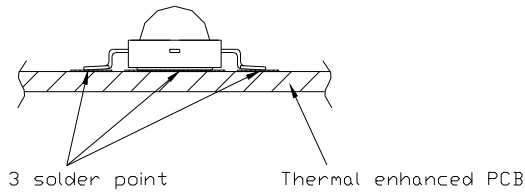


4. Photosynthetic Red

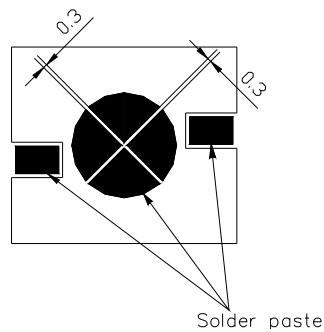


Recommended Solder pad

1. Solder pad



2. Solder paste pattern

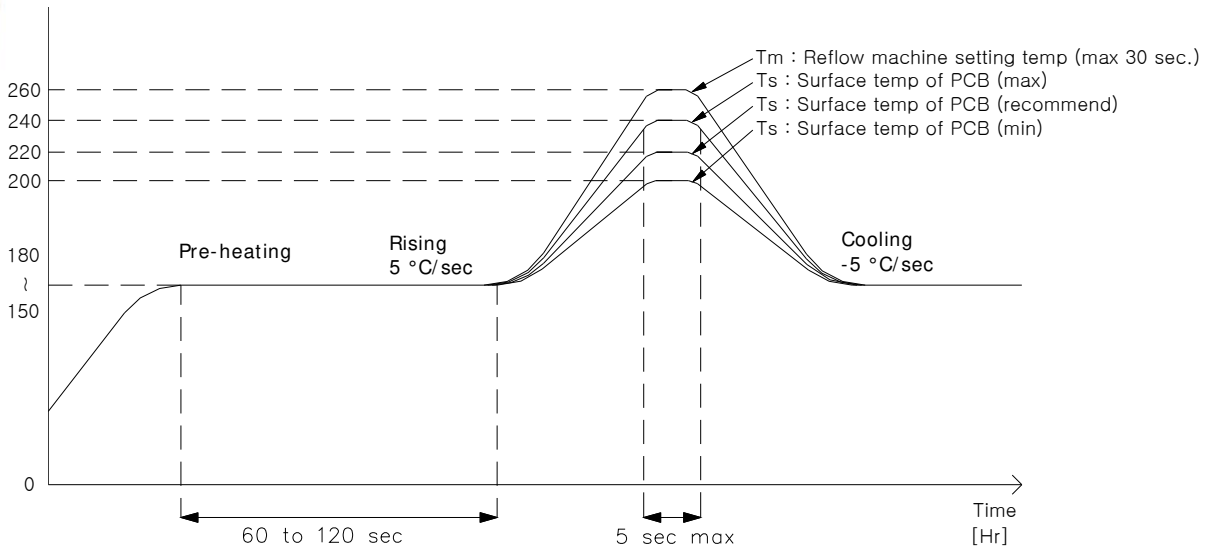


Note :

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 °C

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 emitter 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.