



# DATA SHEET

Model: High Power LED-3W

File No.: THIGHPOWERLED-3W302

Version: 1.1

## Description:

- Lambertian
- Focusing
- Side Emitting



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## Model: High Power LED-3W

### Features:

- ※ Small package with high efficiency
- ※ Various colors
- ※ Low voltage DC operated
- ※ Instant light
- ※ Cool beam, safe to the touch
- ※ High luminous flux output
- ※ More energy efficient than incandescent and most halogen lamps
- ※ No UV
- ※ Very long operating life (50,000h)

### Applications

- ※ Street lamp
- ※ General lights
- ※ LCD display backlight
- ※ Decorative and entertainment illumination
- ※ Exterior and interior automotive illumination
- ※ Portable flashlight

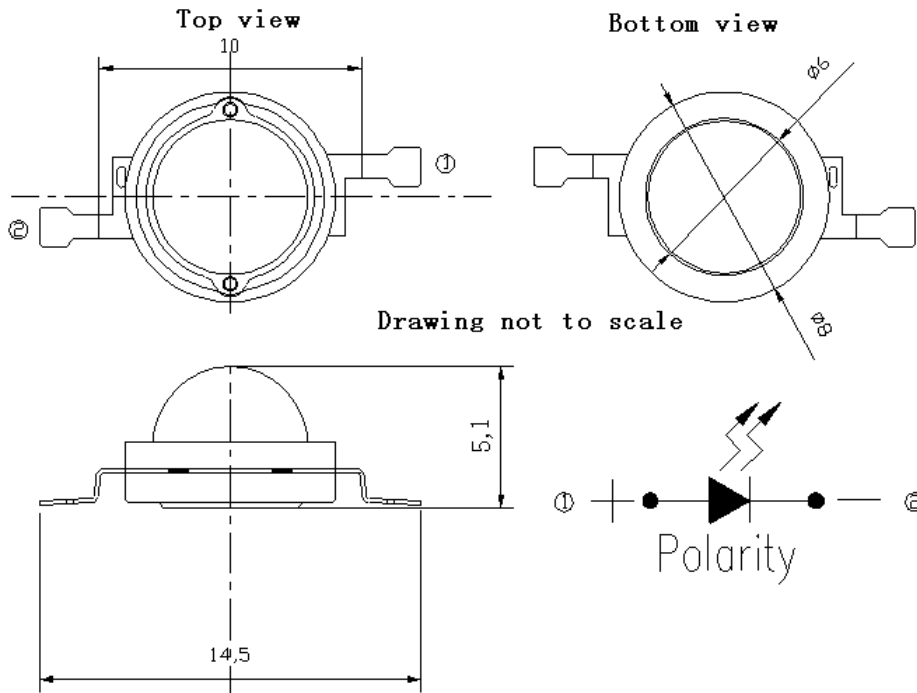
### Materials

Items	Description
Housing black body	Heat resistant polymer
Encapsulating Resin	Silicone
Lens	Heat resistant clear polymer
Electrodes	Plating copper alloy
Die attach	Silver paste

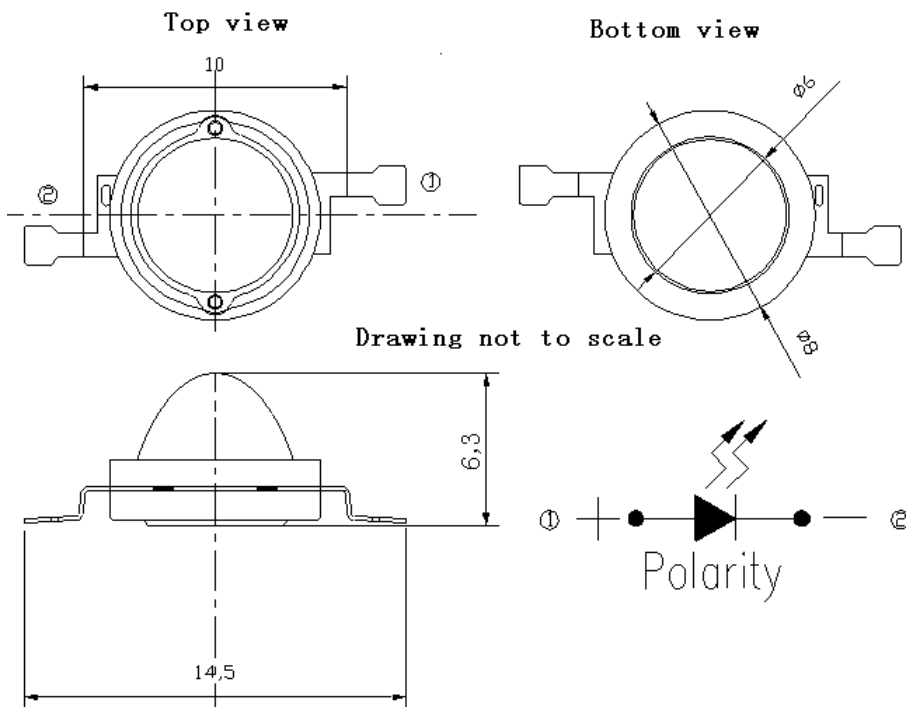


## Dimensions

### Lambertian

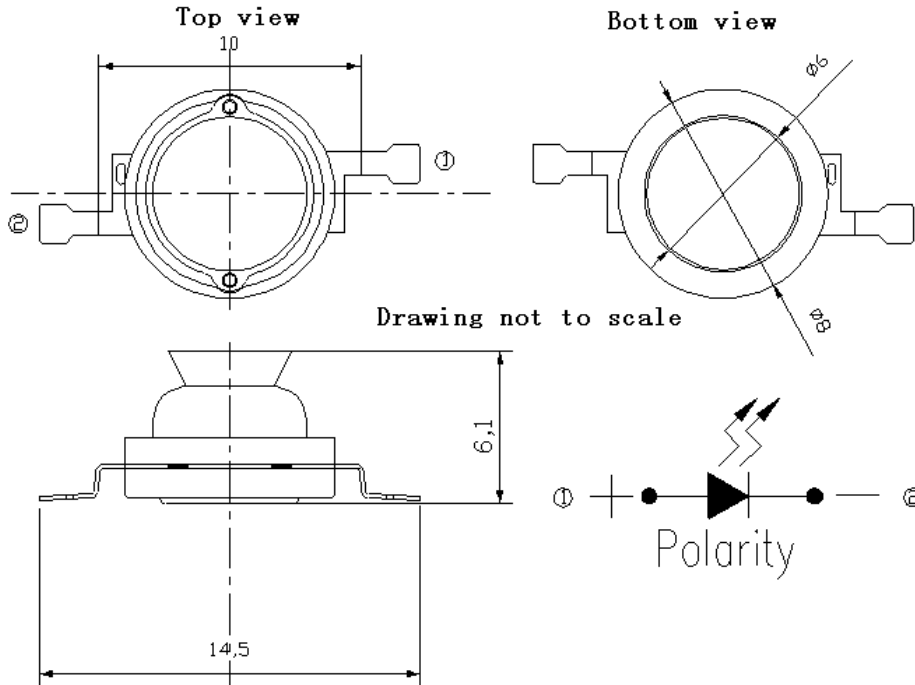


### Focusing





Side emitting



- Notes:
1. Dimensions are in millimeters
  2. Tolerances unless dimensions  $\pm 0.3\text{mm}$
  3. The lens height of Focusing are for reference only (for  $2\theta 1/2=30$ ).

### Maximum Ratings (T Ambient=25°C)

Parameter	Symbol	Rating	Unit
Operating Temperature	T <sub>opr</sub>	-30 ~ +100	°C
Storage Temperature	T <sub>stg</sub>	-40 ~ +120	°C
Junction temperature	T <sub>j</sub>	120	°C
Electrostatic Discharge	ESD	1500	V
DC Forward Current	I <sub>F</sub>	350	mA
Peak pulse current;(t <sub>p</sub> ≤100μs,Duty cycle=0.25)	I <sub>pulse</sub>	500	mA
Reverse Voltage	V <sub>R</sub>	5	V
Manual Soldering Time at 260°C	T <sub>sol</sub>	5	second



**Luminous Flux Characteristics at IF=350mA (T Ambient=25°C)**

Lens Item	Part No.	Color	Flux			Units
			Min.	Typ.	Max.	
<b>Lambertian</b>	HH-HNOR1M120	Red	60	70	—	Lm
	HH-HNOY1M120	Yellow	60	70	—	Lm
	HH-HNOB1M120	Blue	30	35	—	Lm
	HH-HNOG1M120	Green	110	120	—	Lm
	HH-HNOWW1M120	White	120	130	—	Lm
	HH-HNOWR1M120	Warm White	110	120	—	Lm
<b>Side Emitting</b>	HH-HNOR1L80	Red	60	70	—	Lm
	HH-HNOY1L80	Yellow	60	70	—	Lm
	HH-HNOB1L80	Blue	30	35	—	Lm
	HH-HNOG1L80	Green	110	120	—	Lm
	HH-HNOWW1L80	White	120	130	—	Lm
	HH-HNOWR1L80	Warm White	110	120	—	Lm
<b>Focusing</b>	HH-HNOR1M60	Red	60	70	—	Lm
	HH-HNOY1M60	Yellow	60	70	—	Lm
	HH-HNOB1M60	Blue	30	35	—	Lm
	HH-HNOG1M60	Green	110	120	—	Lm
	HH-HNOWW1M60	White	120	130	—	Lm
	HH-HNOWR1M60	Warm White	110	120	—	Lm

Note: Luminous flux measurement tolerance : ±10%



**Optical Characteristics at IF=350mA (T Ambient=25°C)**

Lens Item	Color	Dominant Wavelength or Color		Spectral Half-width $\Delta\lambda_{1/2}$	Viewing Angle $\theta_{1/2}$ (degree)
		Min.	Max.		
<b>Lambertian</b>	Red	620	635	20	120
	Yellow	585	595	15	120
	Blue	460	475	25	120
	Green	515	535	35	120
	White	4500	10000	—	120
	Warm White	2800	3800	—	120
<b>Side Emitting</b>	Red	620	635	20	80
	Yellow	585	595	15	80
	Blue	460	475	25	80
	Green	515	535	35	80
	White	4500	10000	—	80
	Warm White	2800	3800	—	80
<b>Focusing</b>	Red	620	635	20	60
	Yellow	585	595	15	60
	Blue	460	475	25	60
	Green	515	535	35	60
	White	4500	10000	—	60
	Warm White	2800	3800	—	60

- Notes:
1. CCT tolerance :  $\pm 10\%$
  2. Tolerance of Wavelength:  $\pm 1\text{nm}$
  3.  $\theta_{1/2}$  is the off axis angle from lamp centerline where the luminous intensity is 1/2 of the peak value
  4. All red,yellow products built with Aluminum Indium Gallium Phosphide(AlInGaP)
  5. All white, warm white, green and blue products built with Indium Gallium Nitride or Indium Gallium Aluminum Nitride (InGaN/InGaAlN)



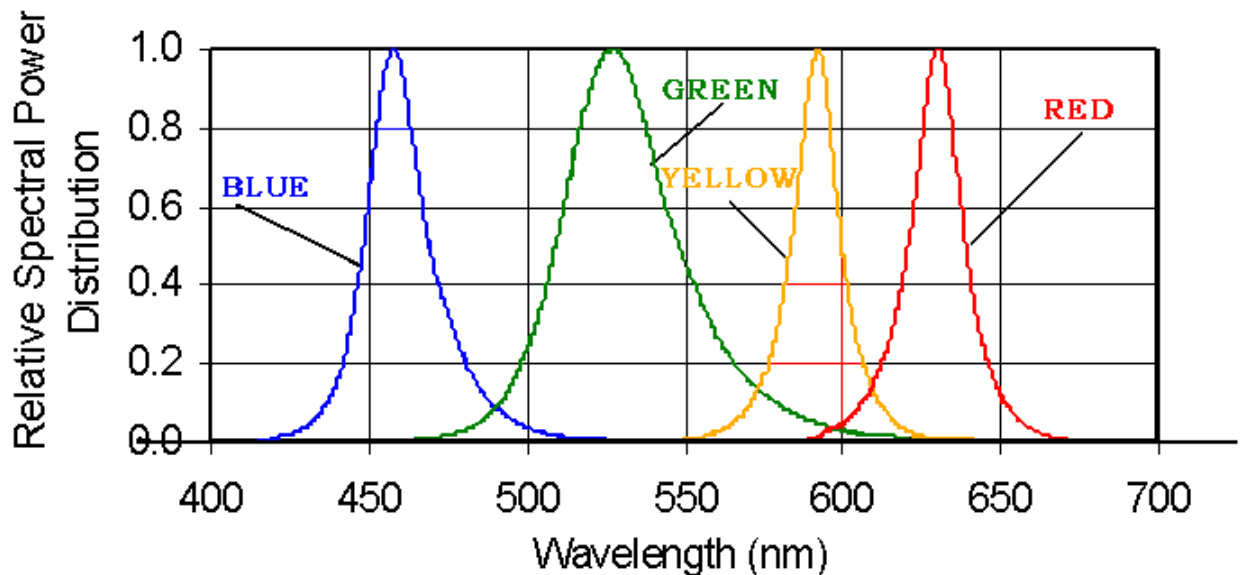
**Electrical Characteristics at IF=350mA(T Ambient=25°C)**

Lens Item	Color	Forward Voltage VF(V)			Dynamic Resistance (Ω)RD
		Min.	Typ.	Max.	
<b>Lambertian</b>	Red	2.4	—	3.0	2.4
	Yellow	2.4	—	3.0	2.4
<b>Side Emitting</b>	Blue	3.4	—	4.0	1.0
	Green	3.4	—	4.0	1.0
<b>Focusing</b>	White	3.4	—	4.0	1.0
	Warm White	3.4	—	4.0	1.0

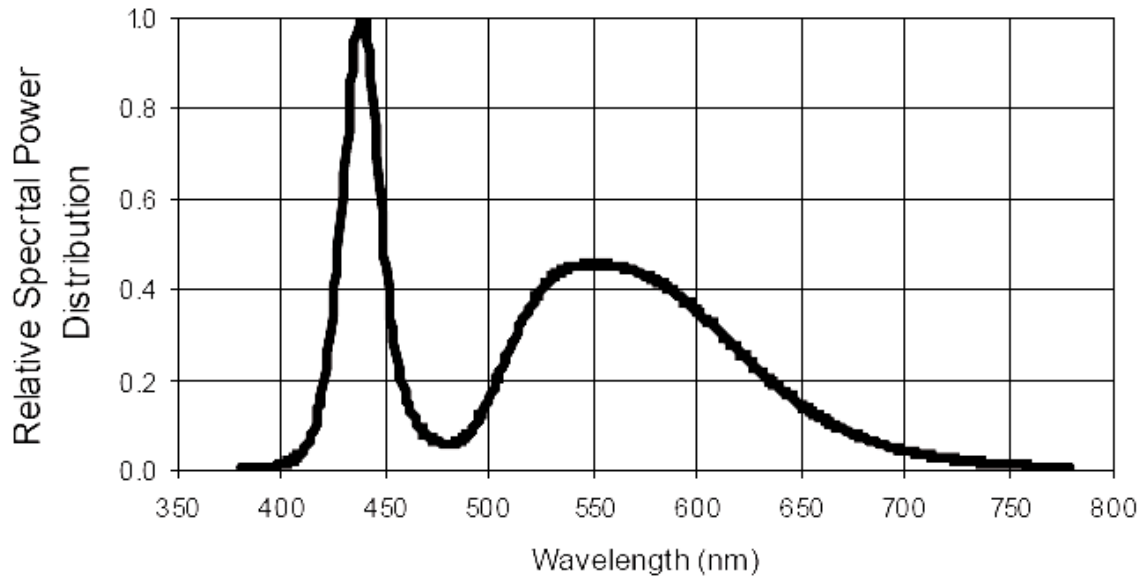
Notes:

- 1.Tolerance of Forward Voltage: ±0.1V
- 2.Dynamic resistance is the inverse of the slope in linear forward voltage model for LEDs.

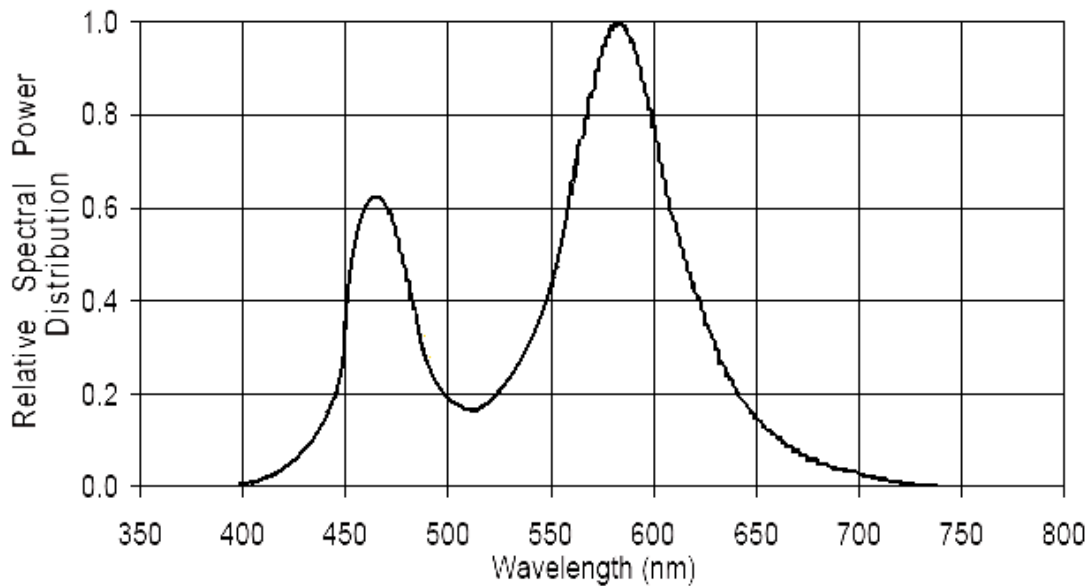
**Typical Electro-Optical Characteristics Curves**



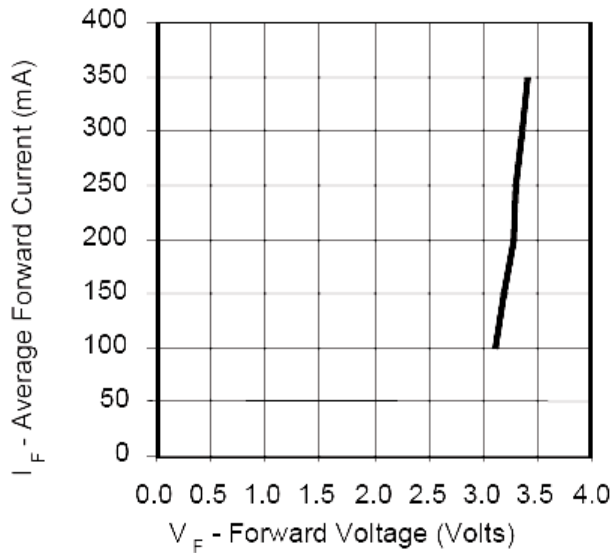
Relative Intensity vs. Wavelength



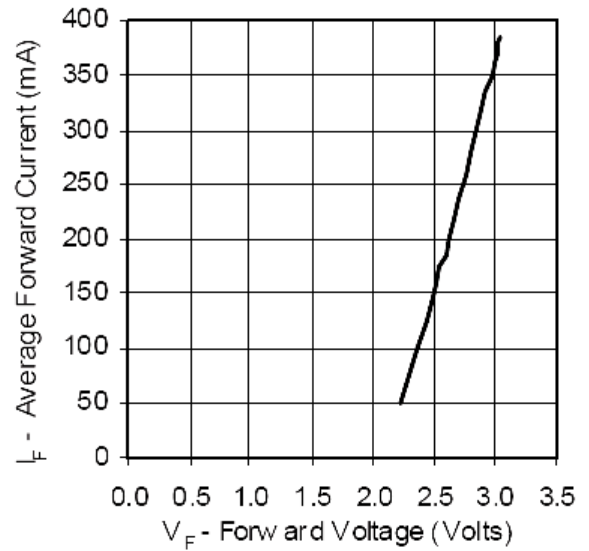
White Color Spectrum



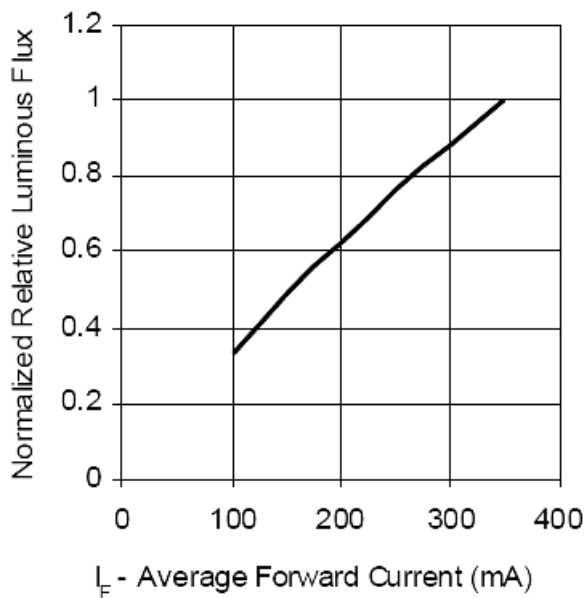
Warm White Color Spectrum



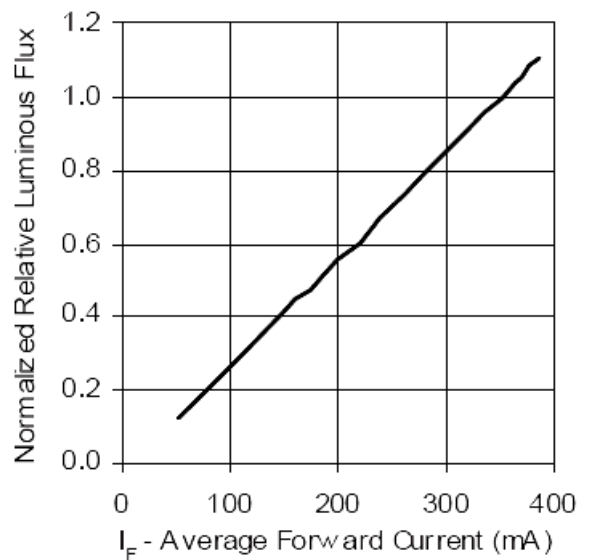
Forward Current vs. Forward Voltage for White, Warm White, Green, and Blue



Forward Current vs. Forward Voltage for Red, Yellow



Relative Luminous Flux vs Forward Current for White, Warm White, Green, and Blue at  $T_J=25^{\circ}\text{C}$  maintained

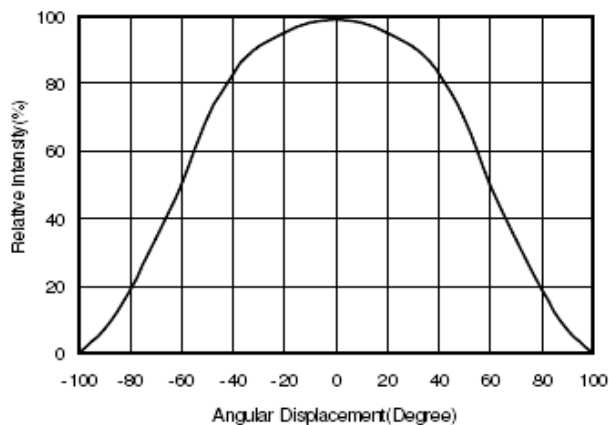


Relative Luminous Flux vs. Forward Current for Red, and Yellow at  $T_J=25^{\circ}\text{C}$  maintained

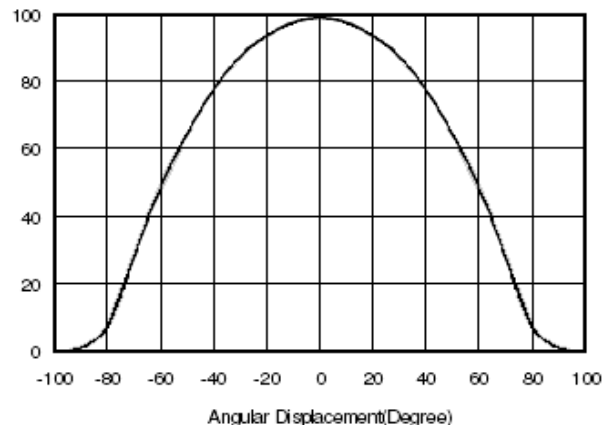


## Typical Radiation Pattern:

### Lambertian

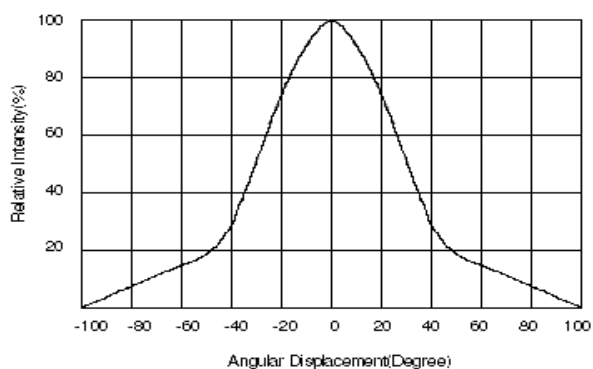


for Red, Yellow

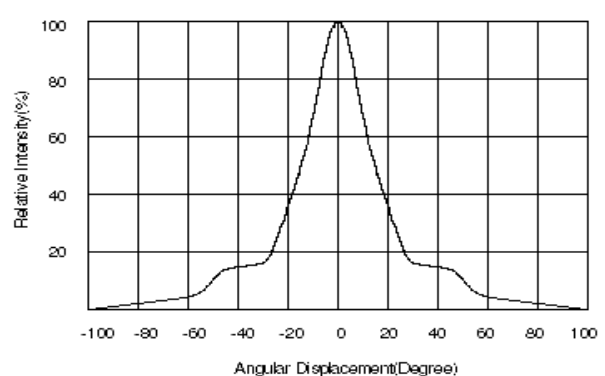


for White, Warm White, Green, Blue

### Focusing (for all colors)



$2\theta_{1/2}$ : 60 degree



$2\theta_{1/2}$ : 30 degree

### Side Emitting (for all colors)

