OptoSupply
Light It Up

3mm Ultra Red & Blue LED

OSRB3132A

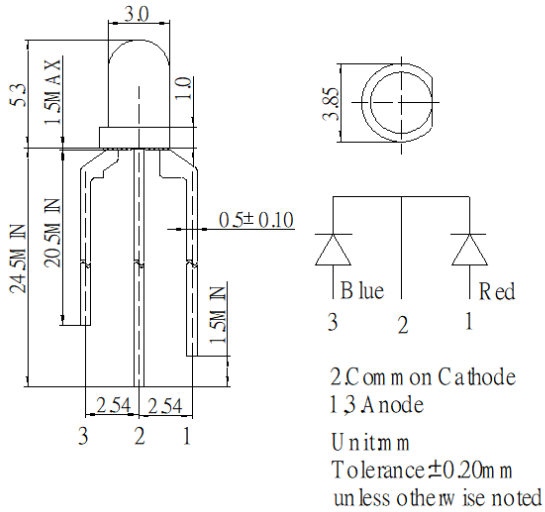
▪Features

- High Luminous LEDs
- 3mm Round Standard Directivity
- UV Resistant Epoxy
- White Diffused Type
- Common Cathode Type

▪Applications

- Toys
- Games
- Audio
- Other Lighting

▪Outline Dimension

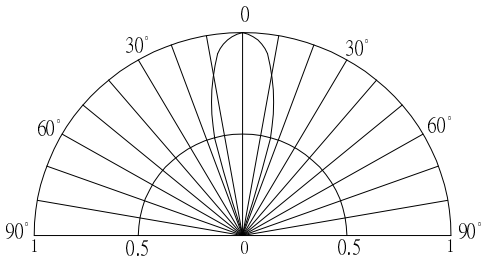


▪Absolute Maximum Rating (Ta=25℃)

Item	Symbol	Value		Unit
		Red	Blue	
DC Forward Current	I_F	30	30	mA
Pulse Forward Current#	I_{FP}	100	100	mA
Reverse Voltage	V_R	5	5	V
Power Dissipation	P_D	78	108	mW
Operating Temperature	Topr	-30~ +85		℃
Storage Temperature	Tstg	-40 ~ +100		℃
Lead Soldering Temperature	Tsol	260℃/5sec		-

#Pulse width Max.10ms Duty ratio max 1/10

▪Directivity



▪Electrical -Optical Characteristics (Ta=25℃)

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
DC Forward Voltage*1	V_F (Red)	I_F=20mA	1.8	2.1	2.6	V
	V_F (Blue)	I_F=20mA	2.8	3.1	3.6	V
DC Reverse Current	I_R	V_R=5V	-	-	10	μA
Domi. Wavelength*2	λ_D (Red)	I_F=20mA	620	625	630	nm
	λ_D (Blue)	I_F=20mA	465	470	475	nm
Luminous Intensity*3	Iv (Red)	I_F=20mA	-	200	-	mcd
	Iv (Blue)	I_F=20mA	-	150	-	mcd
50% Power Angle	$2\theta_{1/2}$	I_F=20mA	-	30	-	deg

*1 Tolerance of measurements of forward voltage is ±0.1V
*2 Tolerance of measurements of dominant wavelength is ±1nm
*3 Tolerance of measurements of luminous intensity is ±15%

LED & Application Technologies

ISO 9001:2008

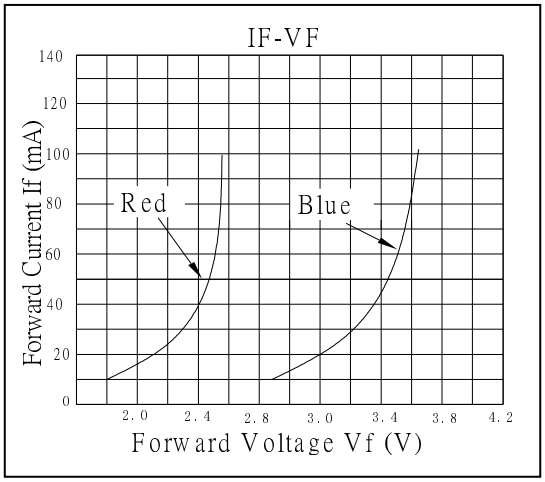
RoHS Compliant EU 2002/95/EC

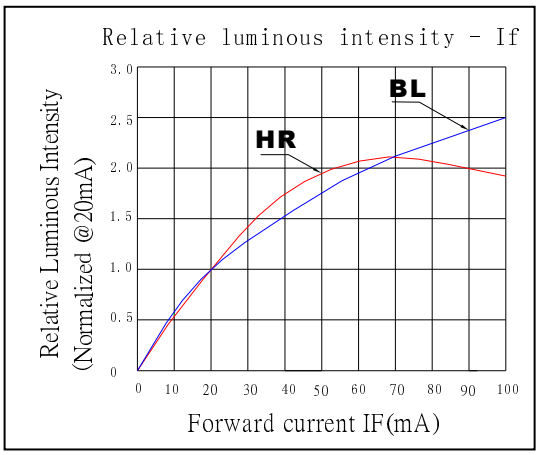
REACH The new EU chemicals legislation

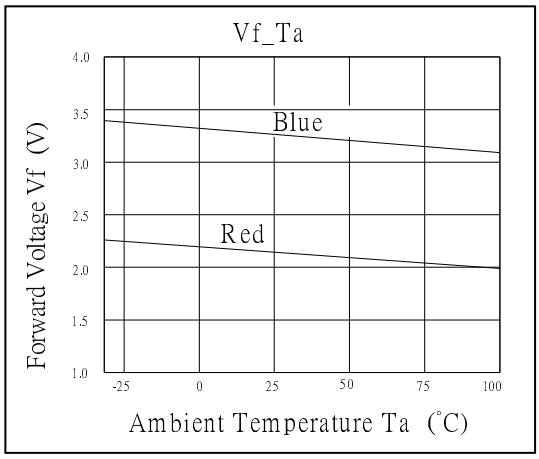
ATTENTION
OBSERVE PRECAUTIONS
ELECTROSTATIC
SENSITIVE DEVICES

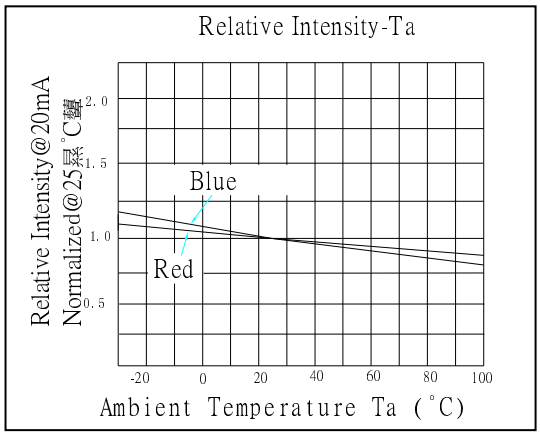
AlGaInP and InGaN LED

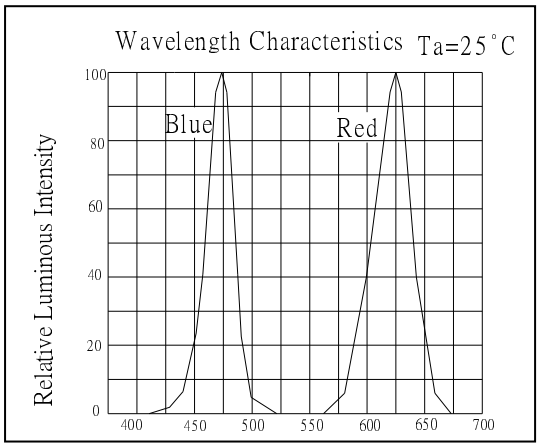
TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES

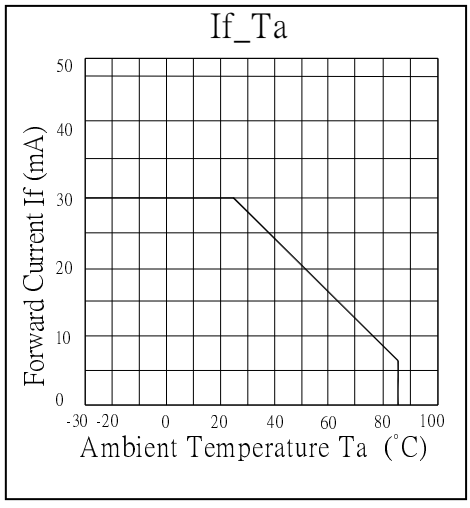






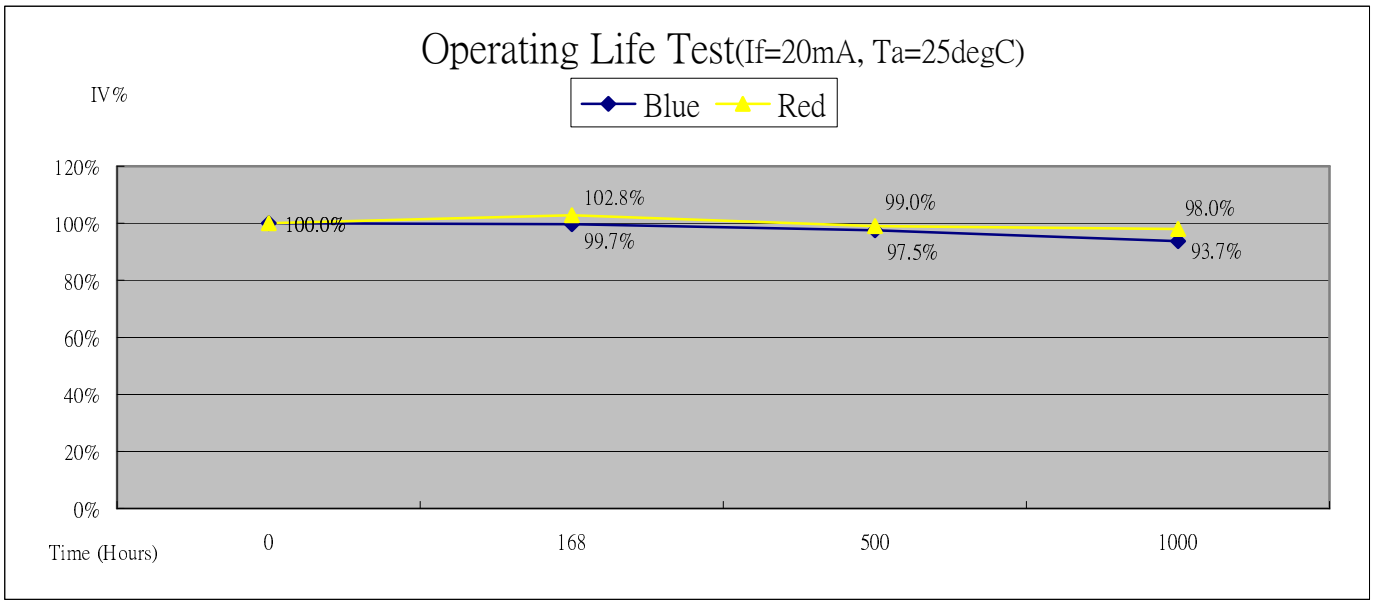






The Operating Life Reliability of 3mm Red & Blue LED

Part No：OSRB3132A



Notes:

1. The test condition：Ta=Round 25℃,If=20mA.
2. LEDs are all operating on-time.

MTBF and Operating Life

Operational on-time is determined by an on-time duty factor. For example, a daylight lamp is typically on 35％of the calendar time, thus the on-time duty factor=0.35. Certainly, unworking time factor is 0.50(typically on 65％of the calendar time). Thus, a daylight lamp with 50,000 hours of elapsed time calendar hours, would accumulate 17,500 operational on-time (illumination) hours.

Predicted attenuation rate per 1000 hours of operation is used to determine the reliability Factor, R (％), of a Precision Optical Performance LED lamp in a daylight lamp.

$R(\%) = \left[e^{-\lambda t}\right] \cdot 100$

There:

R=reliability factor, percent probability of survival over a given period of time at specified operating conditions

t =given amount of LED on-time in hours.

λ=Predicted Luminous Flux attenuation rate/1000hours.

e =2.7183.

Assume a precision Optical Performance daylight lamp, which is on(illuminated) 50％of the time, is operating in a ambient of 25℃. Over an elapsed time period of 10,000 hours, the daylight lamp is assumed to be on for 3,500 hours. Thus, the reliability factor for the Precision Optical Performance LED lamps operating in this illumination over the elapsed time period of 10,000 hours without the need for replacement is 97.92％. Here, the data is summed when IV for LEDs which is operating is very low change, which is the characteristic of LED.

$R(\%) = 【e^{-\lambda t}】 \cdot 100$

$= \{ 2.7183^{-(0.006/(1000hrs) \cdot (0.35 \cdot 10000hrs)} \} \cdot 100$

$= \{ 2.7183^{-0.021} \} \cdot 100$

$=97.92\%$

According as the above, it，s an elapsed time period of 115,524 hours when R(％)=50％.

$t = -【(\log_e 50\%)/\lambda】$

$= -【(\log_{2.7183} 50\%)/(0.006/1000hrs)】$

$=115,524hrs$

So, an elapsed time period=t/(8/24)=115,524hrs/(8/24)=346,571hrs.

The Reliability factors for the LEDs Operating are as follows:

Color	Forward Current IF (mA)	Ambient Operating Temperature(℃)	IV Decay Rate,λ [%/1000hours]	MTBF (Hours)	Survival Percent, R%≧50%
Blue	20	25	6.3%	10,000 20,000 30,000	80.21% 64.33% 51.71%
Red	20	25	2%	10,000 20,000 30,000 40,000 50,000	93.24% 86.93% 81.06% 75.58% 70.04%