PRODUCT SPECIFICATION

Part Number

PL84-WCRGB1

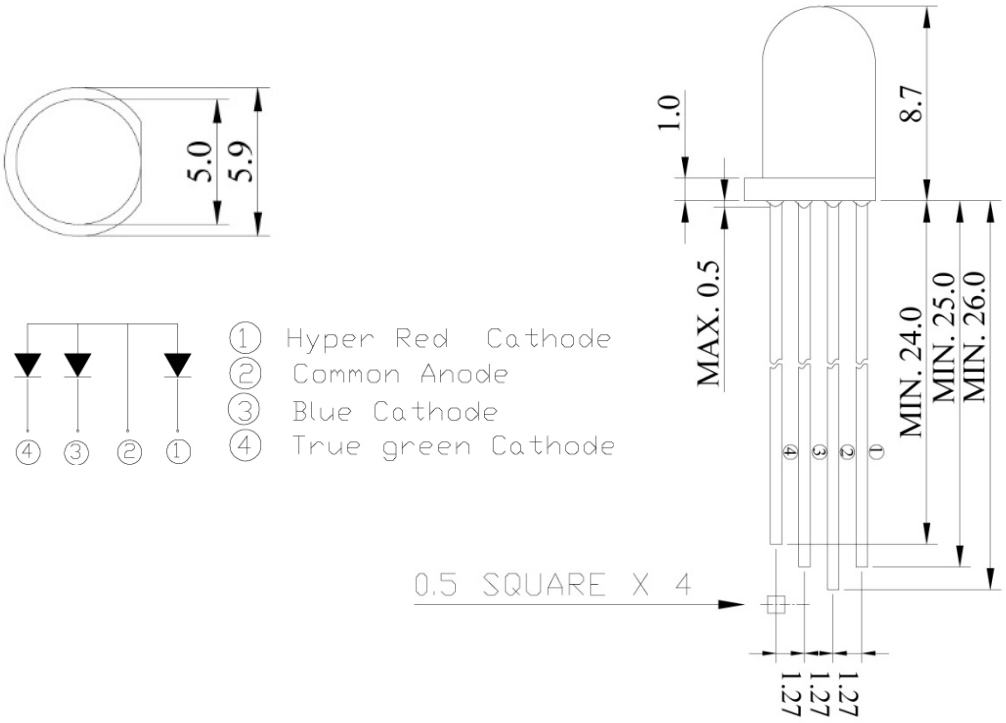
Details

- 5mm Round Full Color LED
- Four Leads
- Emitting Color: Red, Green, Blue
- AlInGaP and InGaN dice used

Features

- RoHS Compliant
- Low Power Consumption
- Rugged and Durable

Mechanical Dimensions



Notes:
1. All dimensions are in millimeters unless otherwise noted
2. Tolerance is±0.25mm unless otherwise noted
3. Specifications subject to change without notice

Device Selection Guide

Part Number	Chip	
	Material	**Emitting Color**
PL84-WCRGB1	AlInGaP	Hyper Red
	InGaN	True Green
	InGaN	Blue

Absolute Maximum Ratings at Ta=25℃

Hyper Red			
Parameter	**Symbol**	**Rating**	**Unit**
Power Dissipation	P_D	75	mW
Reverse Voltage	VR	5	V
DC Forward Current	IF	30	mA
Peak Current (duty cycle 1/10, 1KHz)	I_{PF}	100	mA
Operating Temperature	Topr	-40~+105	℃
Storage Temperature	Tstg	-40~+105	℃
Soldering Temperature (1.6mm from body)	Tsol.	Dip Soldering : 260℃ for 5 sec. Hand Soldering : 350℃ for 3 sec.	

True Green			
Parameter	**Symbol**	**Rating**	**Unit**
Power Dissipation	P_D	120	mW
Reverse Voltage	VR	5	V
DC Forward Current	IF	30	mA
Reverse (Leakage) Current	Ir	100	μA
Peak Current (duty cycle 1/10, 1KHz)	I_{PF}	100	mA
Operating Temperature	Topr	-25~+85	℃
Storage Temperature	Tstg	-40~+100	℃
Soldering Temperature (1.6mm from body)	Tsol.	Dip Soldering : 260℃ for 5 sec. Hand Soldering : 350℃ for 3 sec.	
Electrostatic discharge	ESD	300	V

Blue			
Parameter	**Symbol**	**Rating**	**Unit**
Power Dissipation	P_D	120	mW
Reverse Voltage	VR	5	V
DC Forward Current	IF	30	mA
Reverse (Leakage) Current	Ir	50	μA
Peak Current (duty cycle 1/10, 1KHz)	I_{PF}	100	mA
Operating Temperature	Topr	-25~+85	℃
Storage Temperature	Tstg	-40~+100	℃
Soldering Temperature (1.6mm from body)	Tsol.	Dip Soldering : 260℃ for 5 sec. Hand Soldering : 350℃ for 3 sec.	
Electrostatic discharge	ESD	300	V

Electrical and Optical Characteristics at Ta=25℃

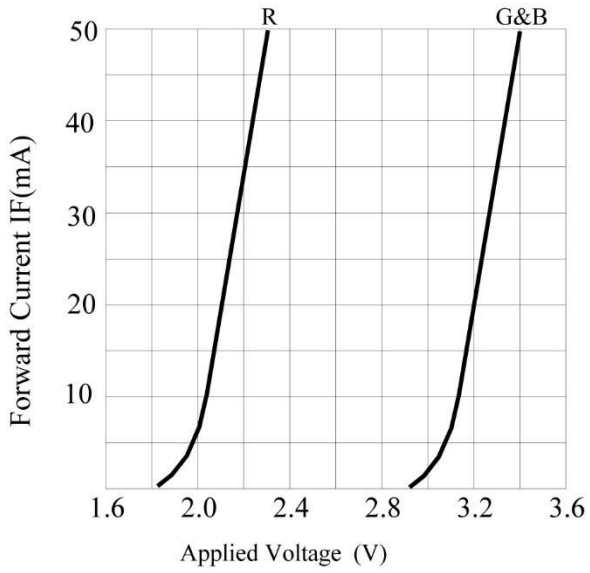
Hyper Red						
Parameter	**Symbol**	**Min.**	**Typ.**	**Max.**	**Unit**	**Condition**
Forward Voltage Per Segment	**VF**	--	2.1	2.5	V	IF=20mA
Luminous Intensity	**Iv**	2000	4000	--	mcd	IF=20mA
Peak Wavelength	**λP**	--	632	--	nm	IF=20mA
Dominant Wavelength	λd	--	625	--	nm	IF=20mA
Reverse (Leakage) Current	Ir	--	--	100	nm	Vr=5V
Viewing Angle	2θ1/2	--	40	--	--	deg
Spectrum Line Halfwidth	Δλ	--	20	--	--	IF=20mA

True Green						
Parameter	**Symbol**	**Min.**	**Typ.**	**Max.**	**Unit**	**Condition**
Forward Voltage Per Segment	**VF**	--	3.2	4.0	V	IF=20mA
Luminous Intensity	**Iv**	1000	2500	--	mcd	IF=20mA
Dominant Wavelength	λd	--	520	--	nm	IF=20mA
Reverse (Leakage) Current	Ir	--	--	50	nm	Vr=5V
Viewing Angle	2θ1/2	--	40	--	--	deg
Spectrum Line Halfwidth	Δλ	--	35	--	--	IF=20mA

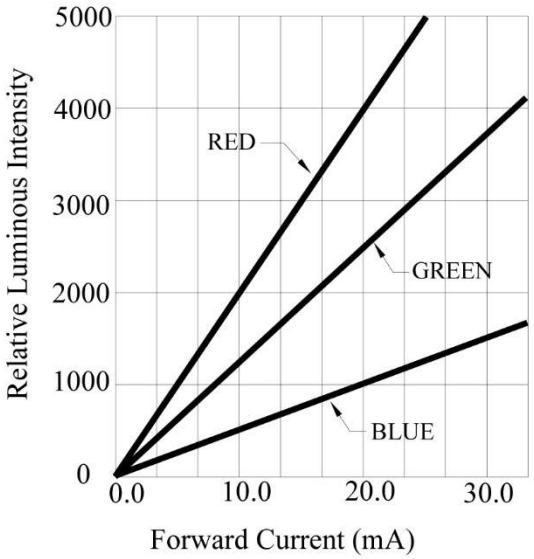
Blue						
Parameter	**Symbol**	**Min.**	**Typ.**	**Max.**	**Unit**	**Condition**
Forward Voltage Per Segment	**VF**	--	3.2	4.0	V	IF=20mA
Luminous Intensity	**Iv**	500	1000	--	mcd	IF=20mA
Dominant Wavelength	λd	--	465	--	nm	IF=20mA
Reverse (Leakage) Current	Ir	--	--	50	nm	Vr=5V
Viewing Angle	2θ1/2	--	40	--	--	deg
Spectrum Line Halfwidth	Δλ	--	26	--	--	IF=20mA

Notes: 1. IS tester used
2. Customer special requirements are welcomed.
3. Specifications subject to change without notice

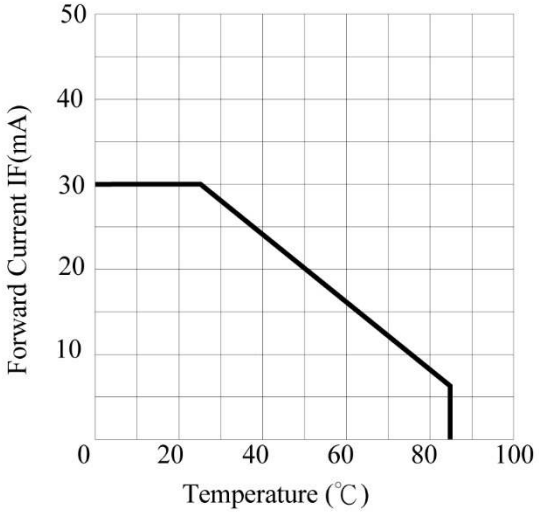
Typical Electrical / Optical Characteristic Curves



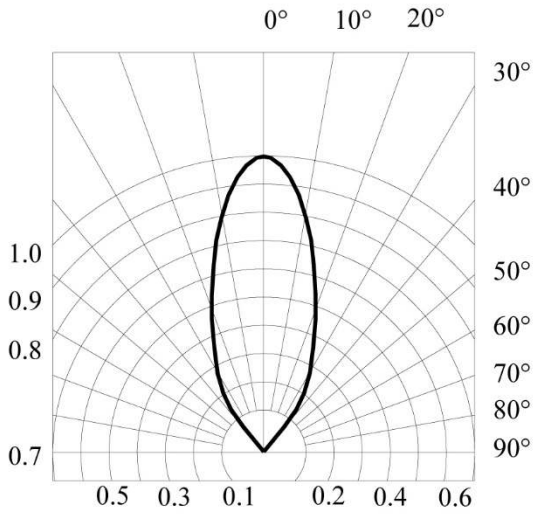
FORWARD CURRENT VS.APPLIED VOLTAGE



FORWARD CURRENT VS. LUMINOUS INTENSITY



FORWARD CURRENT VS. AMBIENT TEMPERATURE



RADIATION DIAGRAM

Precautions For Use

1. Temperature in use

Since the light generated inside the LED needs to be emitted to outside efficiently, a resin with high light transparency is used; therefore, additives to improve the heat resistance or moisture resistance (silica gel , etc) which are used for semiconductor products such as transistors cannot be added to the resin.

Consequently, the heat resistant ability of the resin used for LED is usually low; therefore, please be careful on the following during use.

Avoid applying external force, stress, and excessive vibration to the resins and terminals at high temperature. The glass transition temperature of epoxy resin used for the LED is approximately 120-130℃.

At a temperature exceeding this limit, the coefficient of liner expansion of the resin doubles or more compared to that at normal temperature and the resin is softened.

If external force or stress is applied at that time, it may cause a wire rupture.

2. Soldering

Please be careful on the following at soldering.

After soldering, avoided applying external force, stress, and excessive vibration until the products go to cooling process (normal temperature), <Same for products with terminal leads>

(1) Soldering measurements:

Distance between melted solder side to bottom of resin shall be 1.6mm or longer.

(2) Dip soldering :

Pre-heat: 90℃ max. (Backside of PCB), Within 60 seconds.

Solder bath: 260±5℃ (Solder temperature), Within 5 seconds.

(3) Hand soldering: 350℃ max. (Temperature of soldering iron tip), Within 3 seconds.

3. Insertion

Pitch of the LED leads and pitch of mounting holes need to be same.

4. Others

Since the heat resistant ability of the LED resin is low, SMD components are used on the same PCB, please mount the LED after adhesive baking process for SMD components. In case adhesive baking is done after LED lamp insertion due to a production process reason, make sure not to apply external force, stress, and excessive vibration to the LED and follow the conditions below.

Baking temperature: 120℃ max. Baking time: Within 60 seconds.

If soldering is done sequentially after the adhesive baking, please perform the soldering after cooling down the LED to normal temperature.

PL84-WCRGB1 Customer Approval Signatures	Approved By	Checked By	Prepared By

Record Of Revisions			
Rev.	**Comments**	**Page**	**Date**
0	Released Spec	--	10/02/2013
1	Added new logo	All	02/15/2017