Specifications for Approval

Customer Part No.:

Inhere Part No.: PLC-LE-RGB-ADA

Part Name: 3528 全彩 LED

Spec Issue Date: 2016-03-11

Revision No.: A

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LakeView

We submit herewith the following information for your approval:

■Sample ☐OQC Inspection Record ■LED Dimension

■Electrical Characteristics Curve ■Internal Circuit Diagram

■Soldering recommendation

Prepared by: Lily	Checked by: Tom	Approved by: James
Date: 2016-03-11	Date: 2016-03-11	Date: 2016-03-11

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Customer Opinion

☐ Approve and no objection

☐ Reject with the following reason:

_____

SPECIFICATIONS

Features

- 3.5mm x 2.8mm TOP LED, 1.8mm thickness.
- Low power consumption.
- Wide view angle.
- Package: 2,000pcs/reel.
- RoHS compliant.

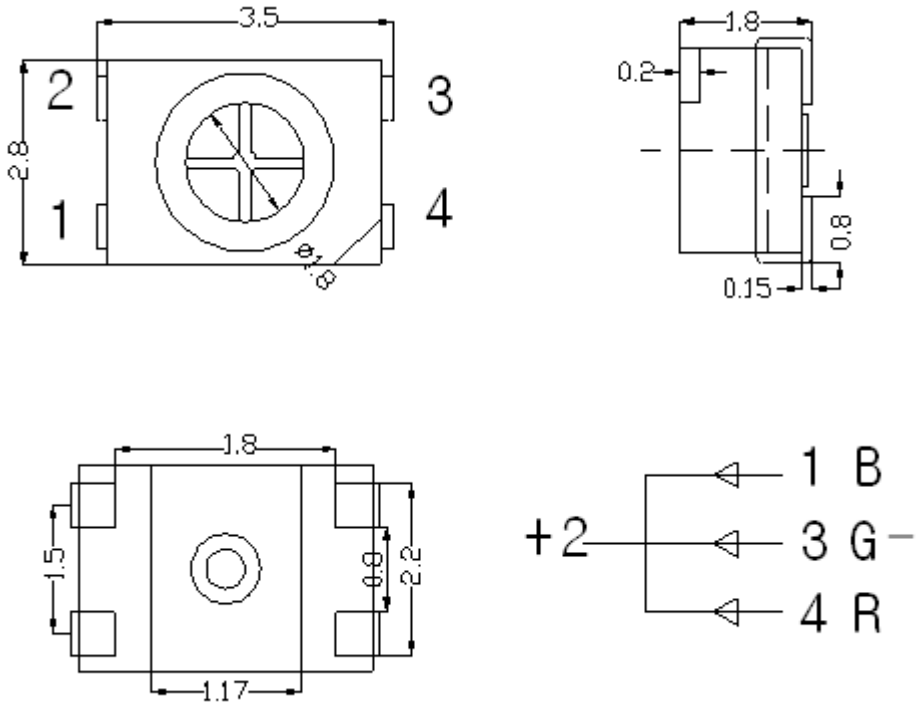
Description

- The Red source color devices are made with AlGaInP on GaAs Light Emitting Diode.
- The Green source color devices are made with InGaN/GaN on Al_2O_3 Light Emitting Diode.
- The Blue source color devices are made with InGaN/GaN on Al_2O_3 Light Emitting Diode

Applications

- Ideal for back light and indicator.
- Various colors and lens types available.

Dimensions



Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is ±0.25(0.01”) unless otherwise noted.
3. Lead spacing is measured where the leads emerge from the package.
4. Specifications are subject to change without notice.

Selection Guide

Part No.	Dice	Emitting Color	Lens Type	I_V (mcd) @ 20mA			Viewing Angle(°)
				Min.	Typ.	Max.	$2\theta_{\frac{1}{2}}$
S3528QPRGBT-009	AlGaInP	Red	Water Clear	200	400	--	130
	InGaN/GaN	Green		1000	2000	--	
	InGaN/GaN	Blue		300	500	--	

Note:

1. $\theta_{\frac{1}{2}}$ is the angle from optical centerline where the luminous intensity is $\frac{1}{2}$ the optical centerline value.

2. The tolerance of luminous intensity (Iv)is ±15％.

Electrical / Optical Characteristics (at T_a = 25℃)

Parameter	Symbol	Color	Value			Unit	Test Condition
			Min.	Typ.	Max.		
Forward Voltage	V_F	Red	1.8	--	2.4	V	I_F = 20mA
		Green	2.8		3.4		
		Blue	2.8		3.4		
Dominant Wavelength	λ_D	Red	620	--	630	nm	I_F = 20mA
		Green	518		523		
		Blue	465		475		
Reverse Current	I_R	Red	--	--	10	μA	V_R = 5V
		Green					
		Blue					

Note:

1. The tolerance of dominant wavelength is ±1nm.

2. The tolerance of forward voltage is ±0.05V.

3. This specification is a standard specification of our factory, can make in accordance with customer's special requirement.

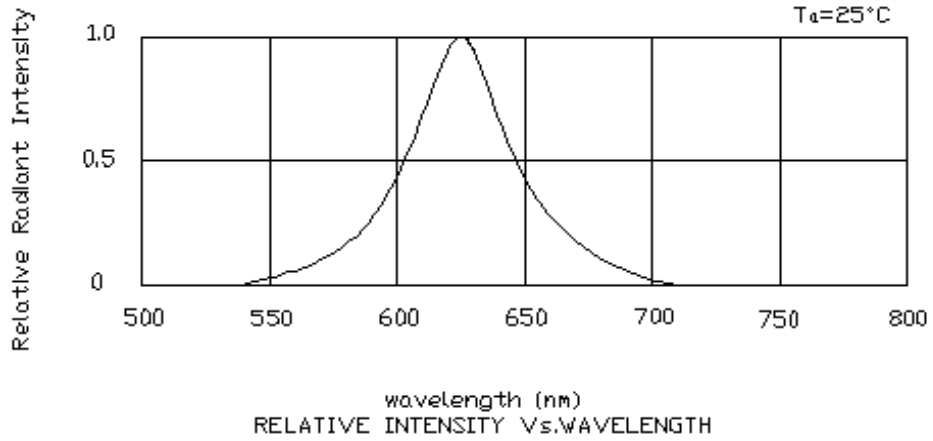
Absolute Maximum Ratings (at T_a = 25℃)

Parameter	Symbol	Value			Unit
		R	G	B	
Power Dissipation	P_D	72	102	102	mW
Pulse Forward Current(Duty 1/10 @ 1 kHz)	I_{FP}	100			mA
Forward Current	I_F	30			mA DC
Reverse Voltage	V_R	5			V DC
Operating Temperature	T_{opr}	-40 ～ +85			℃
Storage Temperature	T_{stg}	-40 ～ +85			℃
Soldering Temperature	T_{sol}	260℃ for 5 sec			

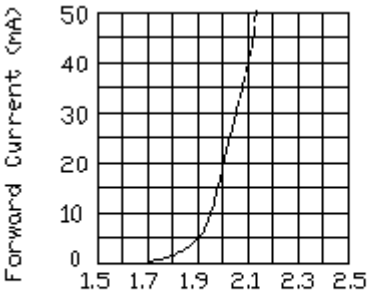
Reliability Testing Conditions

NO	Test Item	Test Conditions	Duration	Sample	Ac/Re
1	Temperature Cycle	-40℃±5℃～25℃±5℃～100℃±5℃～25℃±5℃ 30min 5min 30min 5min	100cycles	22	0/1
2	High Temp. Storage	Ta=100℃±5℃	1000hours	22	0/1
3	Temp.& Humidity Test	Ta=85℃±5℃ RH=85%±5%	1000hours	22	0/1
4	Low Temp. Storage	Ta=-40℃±5℃	1000hours	22	0/1
5	Operating Life Test	Ta=25±5℃ DC IF=20mA	1000hours	22	0/1
6	Solder Heat	Tsol=260±5℃，5s	1times	22	0/1
7	Thermal Shock	-40±5℃→100±5℃ 15min 15min	100cycles	22	0/1

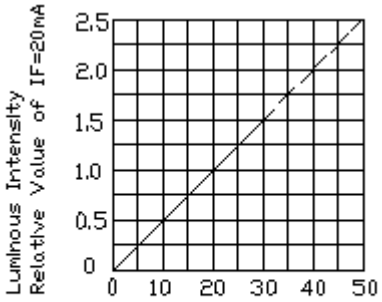
Optical Characteristic Curves (Red)



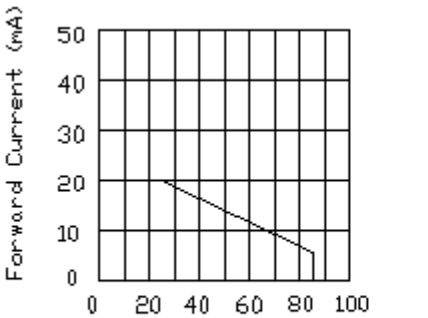
RELATIVE INTENSITY Vs.WAVELENGTH



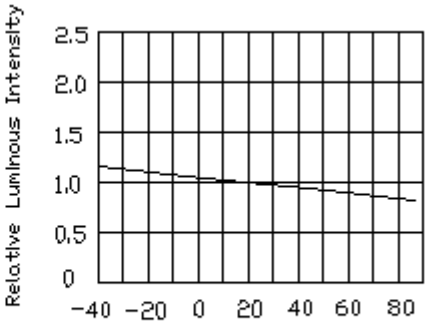
FORWARD CURRENT Vs.
FORWARD VOLTAGE



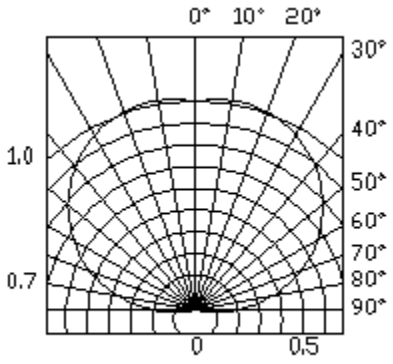
LUMINOUS INTENSITY Vs.
FORWARD CURRENT



FORWARD CURRENT
DERATING CURE

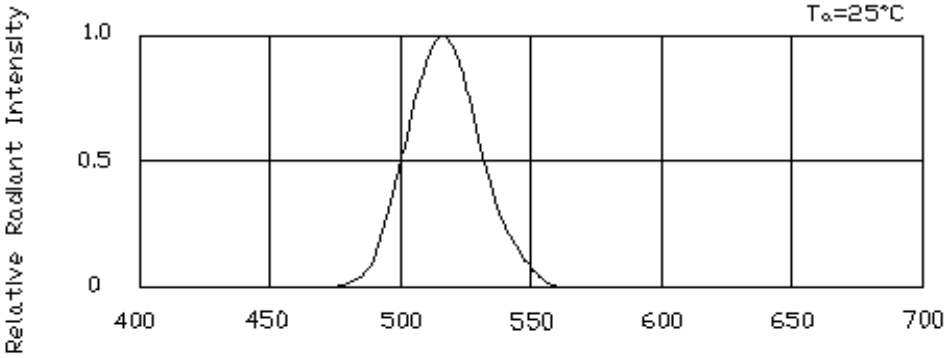


LUMINOUS INTENSITY Vs.
AMBIENT TEMPERATURE

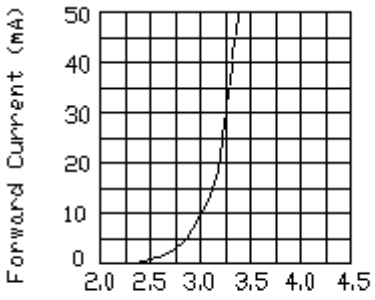


SPATIAL DISTRIBUTION

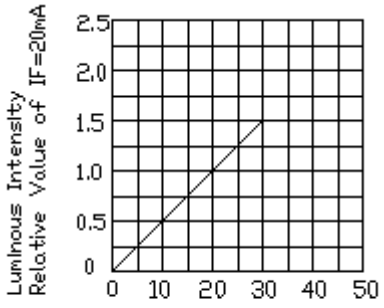
Optical Characteristic Curves (Green)



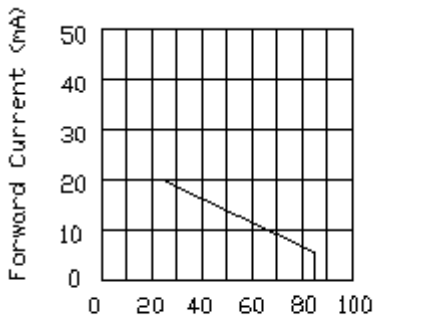
RELATIVE INTENSITY Vs.WAVELENGTH



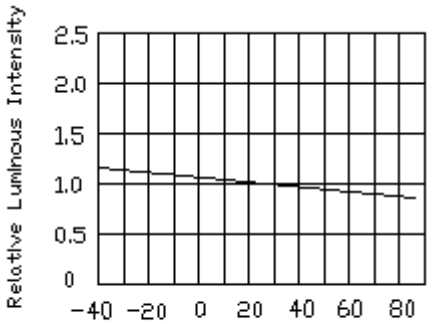
FORWARD CURRENT Vs.
FORWARD VOLTAGE



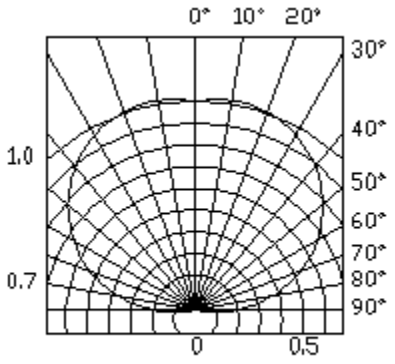
LUMINOUS INTENSITY Vs.
FORWARD CURRENT



FORWARD CURRENT
DERATING CURE

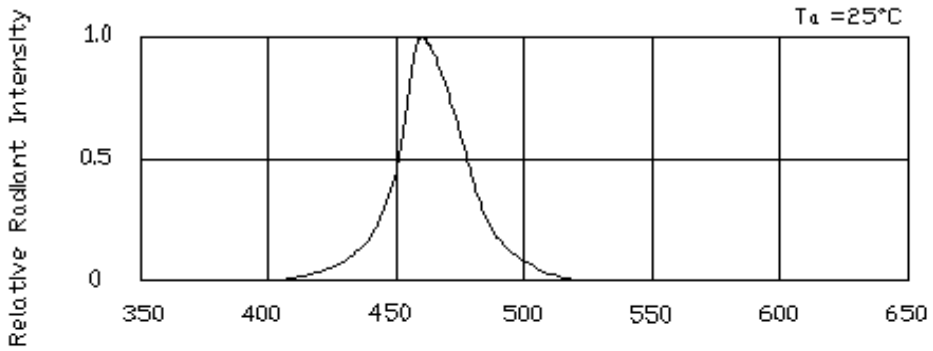


LUMINOUS INTENSITY Vs.
AMBIENT TEMPERATURE

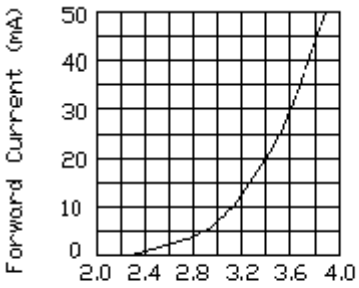


SPATIAL DISTRIBUTION

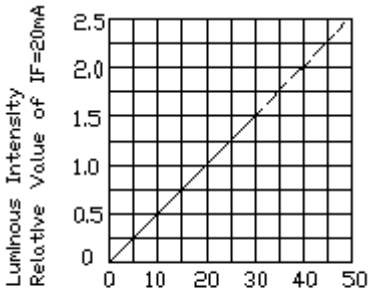
Optical Characteristic Curves (Blue)



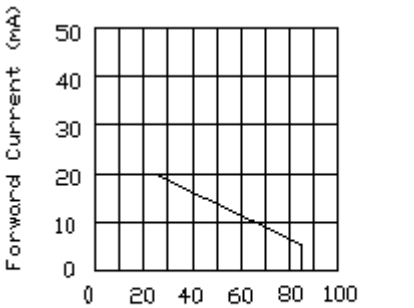
RELATIVE INTENSITY Vs.WAVELENGTH



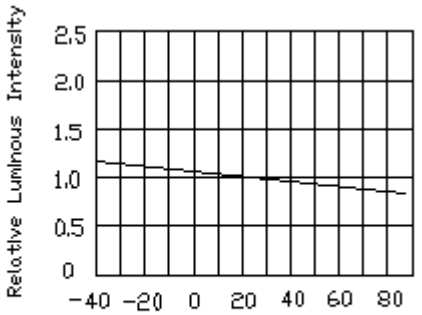
FORWARD CURRENT Vs.
FORWARD VOLTAGE



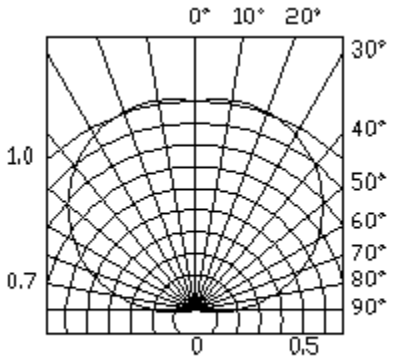
LUMINOUS INTENSITY Vs.
FORWARD CURRENT



FORWARD CURRENT
DERATING CURE



LUMINOUS INTENSITY Vs.
AMBIENT TEMPERATURE

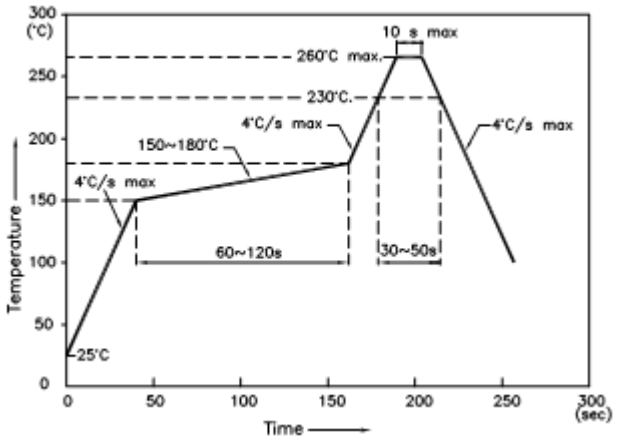


SPATIAL DISTRIBUTION

Precautions in Use

Reflow Profile

■ Reflow Temp/Time



Notes:

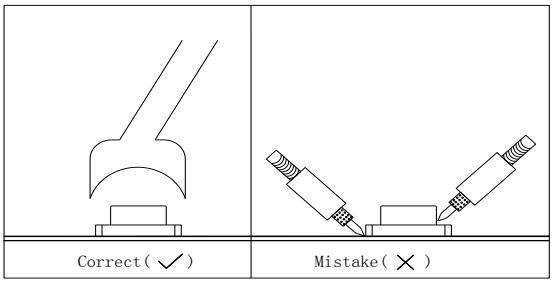
1. We recommend the reflow temperature 245℃(±5℃).the maximum soldering temperature should be limited to 260℃.
2. Don't cause stress to the epoxy resin while it is exposed to high temperature.
3. Number of reflow process shall be 2 times or less.

■Soldering iron

Basic spec is ≤ 5sec when 260℃. If temperature is higher, time should be shorter (+10℃→ -1sec).Power dissipation of iron should be smaller than 20W, and temperatures should be controllable .Surface temperature of the device should be under 230℃ .

■Rework

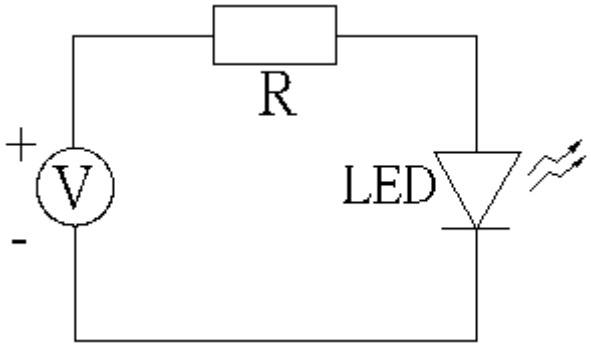
1. Customer must finish rework within 5 sec under 260℃.
2. The head of iron can not touch copper foil
3. Twin-head type is preferred.



■ Avoid rubbing or scraping the resin by any object, during high temperature, for example reflow solder etc.

Test circuit and handling precautions

■ Test circuit



1. Customer must finish rework within 5 sec under 260℃.
2. The head of iron can not touch copper foil
3. Twin-head type is preferred.

■ Handling precautions

1. Over-current-proof

Customer must apply resistors for protection; otherwise slight voltage shift will cause big current change (Burn out will happen).

2. Storage

2.1 It is recommended to store the products in the following conditions:

Humidity: 60% R.H. Max.

Temperature : 5℃~30℃

2.2 Shelf life in sealed bag: 12 month at ＜5℃~30℃ and ＜30% R.H. after the package is Opened, the products should be used within a week or they should be keeping to stored at≦20 R.H. with zip-lock sealed.

3. Baking

It is recommended to baking before soldering when the pack is unsealed after 72hrs.

The Conditions are as followings:

3.1 60±3℃ x(12~24hrs) and ＜5%RH, taped reel type

3.2 100±3℃ x(45min~1hr), bulk type

3.3 130±3℃ x(15~30min), bulk type