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**DATA SHEET**

**PART NO.: L-S115GECT**

**REV: A / 0**

CUSTOMER'S APPROVAL : \_\_\_\_\_

DCC : \_\_\_\_\_

DRAWING NO. : DS-78-08-0003

DATE : 2008-02-21

PAGE

1 of 15

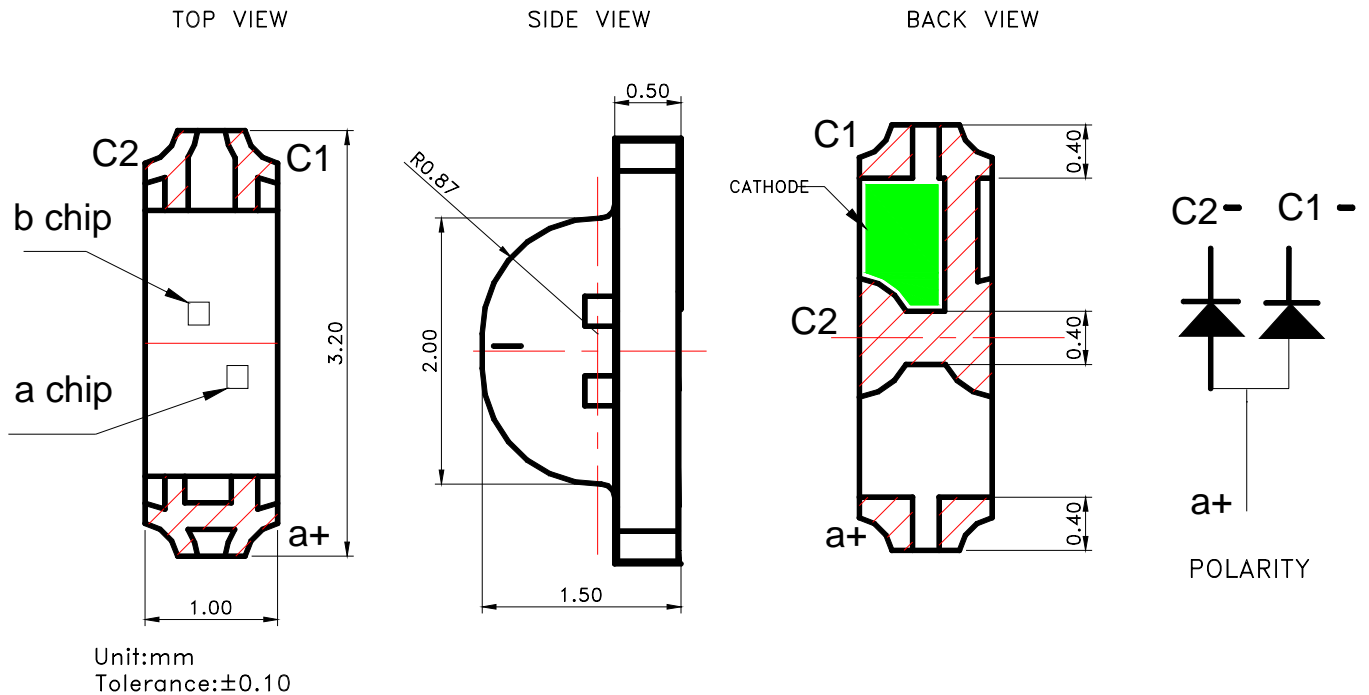


# SURFACE MOUNT DEVICE LED

Part No. : L-S115GECT

REV:A / 0

## ● PACKAGE OUTLINE DIMENSIONS



### Notes:

1. a chip: Green; b chip: Orange .
2. All dimensions are in millimeters.
3. Tolerance is  $\pm 0.1\text{mm}$  (.004") unless otherwise noted.

## ● Features

- \* Dual color, common anode, side view Chip LED.
- \* Package in 8mm tape on 7" diameter reels.
- \* Compatible with automatic Pick & Place equipment.
- \* Compatible with Reflow soldering and Wave soldering processes.
- \* EIA STD package.
- \* I.C. compatible.
- \* Pb free product.
- \* Meet RoHS Green Product.



## SURFACE MOUNT DEVICE LED

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● **Chip Materials**

chip	Light Color	Dice Material	Lens Color
a	G: Green	GaP	Water Clear
b	E: Orange	GaAsP	

● **Absolute Maximum Ratings(Ta=25 )**

Symbol	Parameter	Rating		Unit
		Green	Orange	
P <sub>D</sub>	Power Dissipation	100	100	mW
I <sub>PF</sub>	Peak Forward Current (1/10 Duty Cycle, 0.1ms Pulse Width)	120	120	mA
I <sub>F</sub>	Continuous Forward Current	25	25	mA
-	De-rating Linear From 25	0.25	0.25	mA/
V <sub>R</sub>	Reverse Voltage	5	5	V
ESD	Electrostatic Discharge Threshold(HBM) <sup>Note A</sup>	2000		V
Topr	Operating Temperature Range	-40 ~ +85		
Tstg	Storage Temperature Range	-40 ~ +85		
-	Wave Soldering Condition (Two times Max.)	260 (for 5 seconds)		
-	Infrared Soldering Condition (Two times MAX.)	240 (for 5 seconds)		

Note A:

HBM: Human Body Model. Seller gives no other assurances regarding the ability of to withstand ESD

● **Electro-Optical Characteristics(Ta=25 )**

Parameter	Symbol	Green	Orange	Unit	Test Condition
Luminous Intensity	Min.	4.0	2.5	mcd	IF=20mA
	Typ.	12.5	8.3		
Viewing Angle	Typ.	2 1/2 130		deg	Note 2
Peak Wavelength	Typ.	p 568	630	nm	Measurement @Peak
Dominant Wavelength	Typ.	d 570	620	nm	IF=20mA
Spectral Line Half-Width	Typ.	30	24	nm	
Forward Voltage	Typ.	2.1	2.1	V	IF =20mA
	Max.	2.6	2.6		
Reverse Current	Max.	IR 100		μ A	VR = 5V



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## ● Bin Code List

Luminous Intensity(IV), Unit:mcd@20mA					
Green(a chip)			Orange(b chip)		
Bin Code	Min	Max	Bin Code	Min	Max
J	4.5	7.1	H	2.8	4.5
K	7.1	11.2	J	4.5	7.1
L	11.2	18.0	K	7.1	11.2
M	18.0	28.0	L	11.2	18.0

Tolerance of each bin are  $\pm 15\%$

### Notes:

1. Luminous intensity is measured with a light sensor and filter combination that proximities the CIE eye-response curve.
2.  $1/2$  is the off-axis angle at which the luminous intensity is half the axial luminous intensity.
3. The dominant wavelength  $\lambda_d$  is derived from the CIE chromaticity diagram and represents the single wavelength which defines the color of the device.
4. Caution in ESD :  
Static Electricity and surge damages the LED. It is recommended use a wrist band or anti-electrostatic glove when handling the LED. All devices, equipment and machinery must be properly grounded.
5. Major standard testing equipment by "Instrument System" Model : CAS140B Compact Array Spectrometer and "KEITHLEY" Source Meter Model : 2400.



# SURFACE MOUNT DEVICE LED

Part No. : L-S115GECT

REV:A / 0

## ● Green Typical Electro-Optical Characteristics Curves

(25 Ambient Temperature Unless Otherwise Noted)

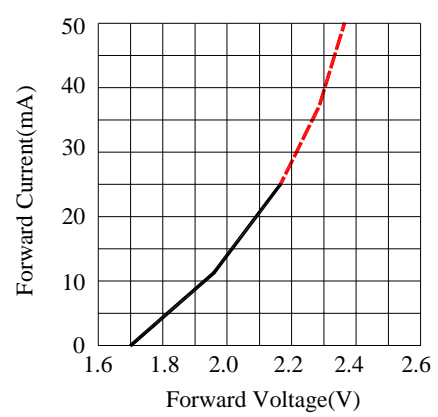


Fig.2 Forward Current vs. Forward Voltage

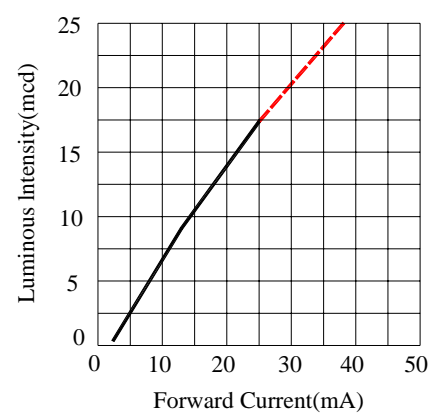


Fig.3 Luminous Intensity vs. Forward Current

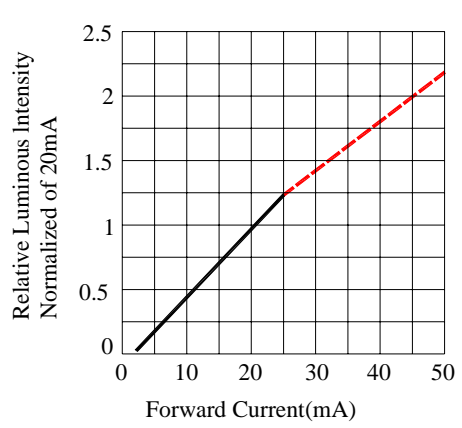


Fig.4 Relative Luminous Intensity vs. Forward Current

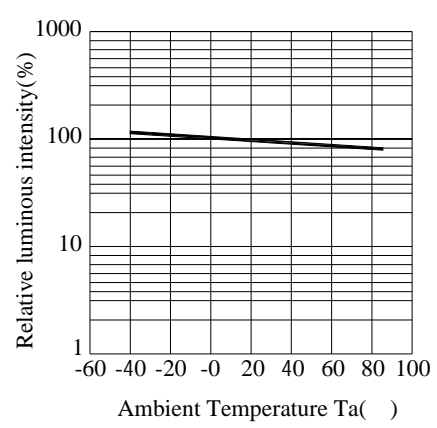


Fig.5 Luminous Intensity vs. Ambient Temperature

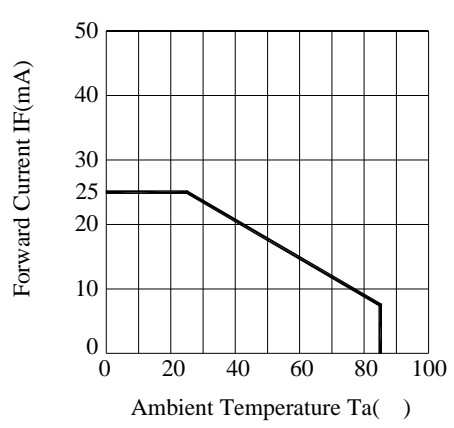


Fig.6 Forward Current Derating Curve

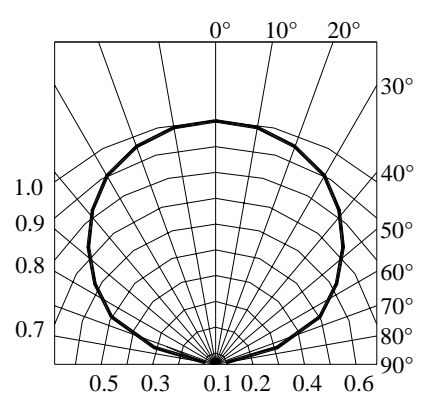


Fig.7 Relative Intensity vs. Angle



# SURFACE MOUNT DEVICE LED

Part No. : L-S115GECT

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## ● Orange Typical Electro-Optical Characteristics Curves

(25 Ambient Temperature Unless Otherwise Noted)

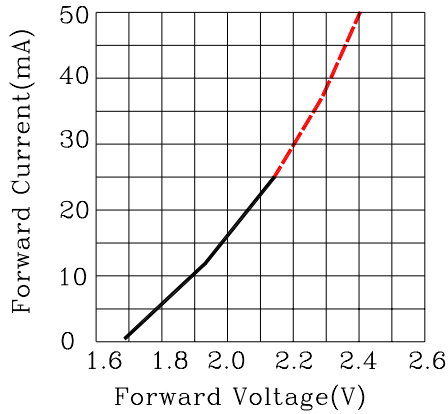


Fig.2 Forward Current vs. Forward Voltage

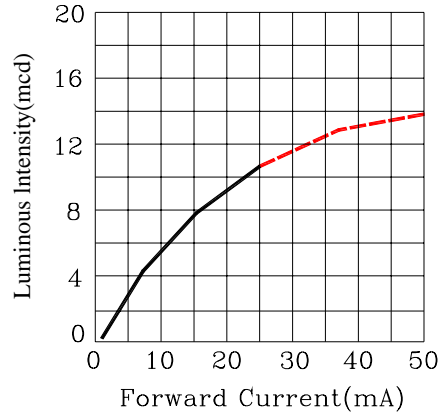


Fig.3 Luminous Intensity vs. Forward Current

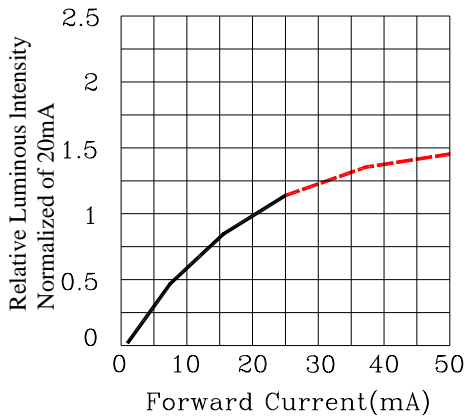


Fig.4 Relative Luminous Intensity vs. Forward Current

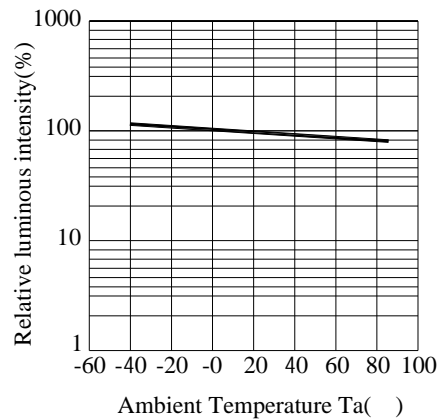


Fig.5 Luminous Intensity vs. Ambient Temperature

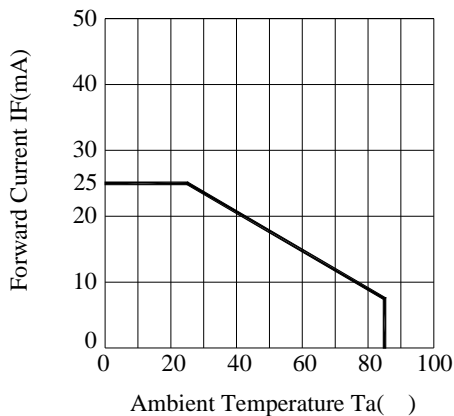


Fig.6 Forward Current Derating Curve

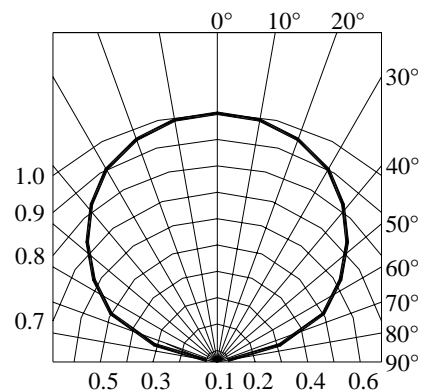


Fig.7 Relative Intensity vs. Angle

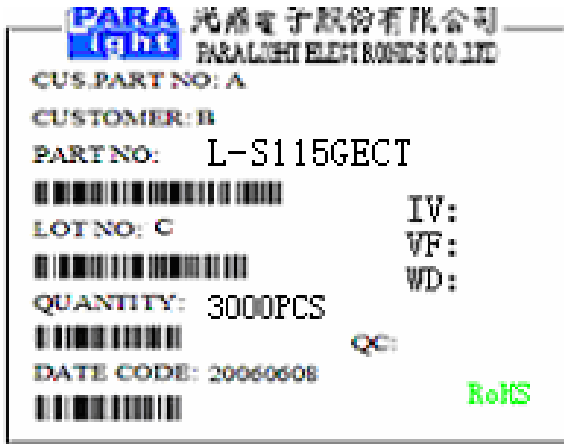


SURFACE MOUNT DEVICE LED

Part No. : L-S115GECT

REV:A/0

● Label Explanation



CUS. PART NO: To be denominated.

CUSTOMER: To be denominated.

PART NO: Refer to P15

IV --- Luminous Intensity Code

VF --- Forward Voltage Code

WD --- Dominant Wavelength Code

LOT NO:   E     L     S     6     8   0001  
          A  B  C  D  E  F

A---E: For series number

B---L: Local    F: Foreign

C---S:SMD

D---Year

E---Month

F---SPEC.

PACKING QUANTITY OF BAG :

3000pcs for 150、170、110、155、115 series

4000pcs for 191 series

5000pcs for 192 series

DATE CODE : 2006 06 08  
                  G  H  I

G--- Year

H--- Month

I --- Day



# SURFACE MOUNT DEVICE LED

Part No. : L-S115GECT

REV:A / 0

## ● Typical Electro-Optical Characteristics Curves

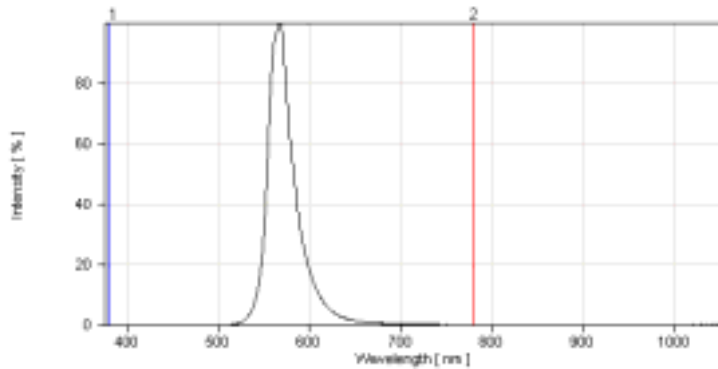


Fig.1 Green Relative Intensity vs. Wavelength

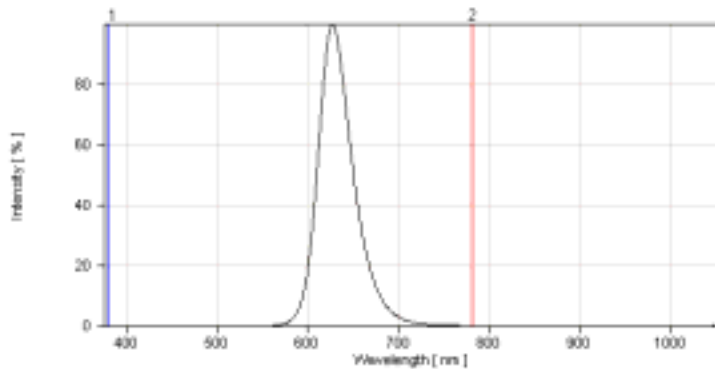
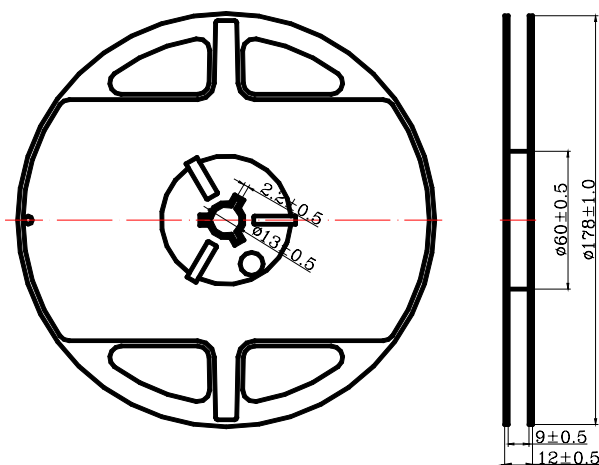


Fig.1 Orange Relative Intensity vs. Wavelength

## ● Reel Dimensions



Notes:

1. Taping Quantity : 3000pcs.
2. The tolerances unless mentioned is  $\pm 0.1$ mm, Angle  $\pm 0.5^\circ$  , Unit : mm.

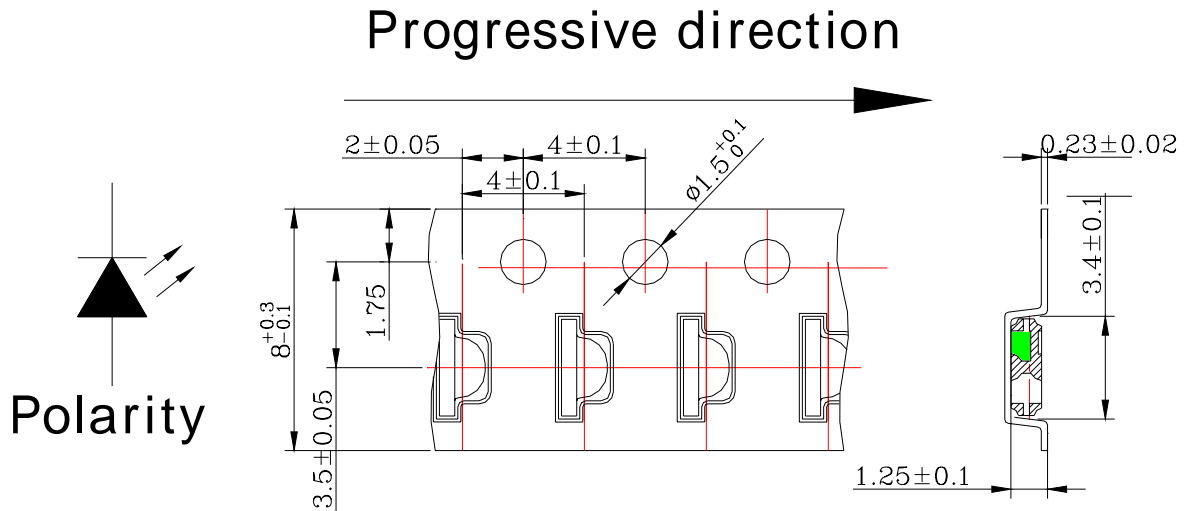


SURFACE MOUNT DEVICE LED

Part No. : L-S115GECT

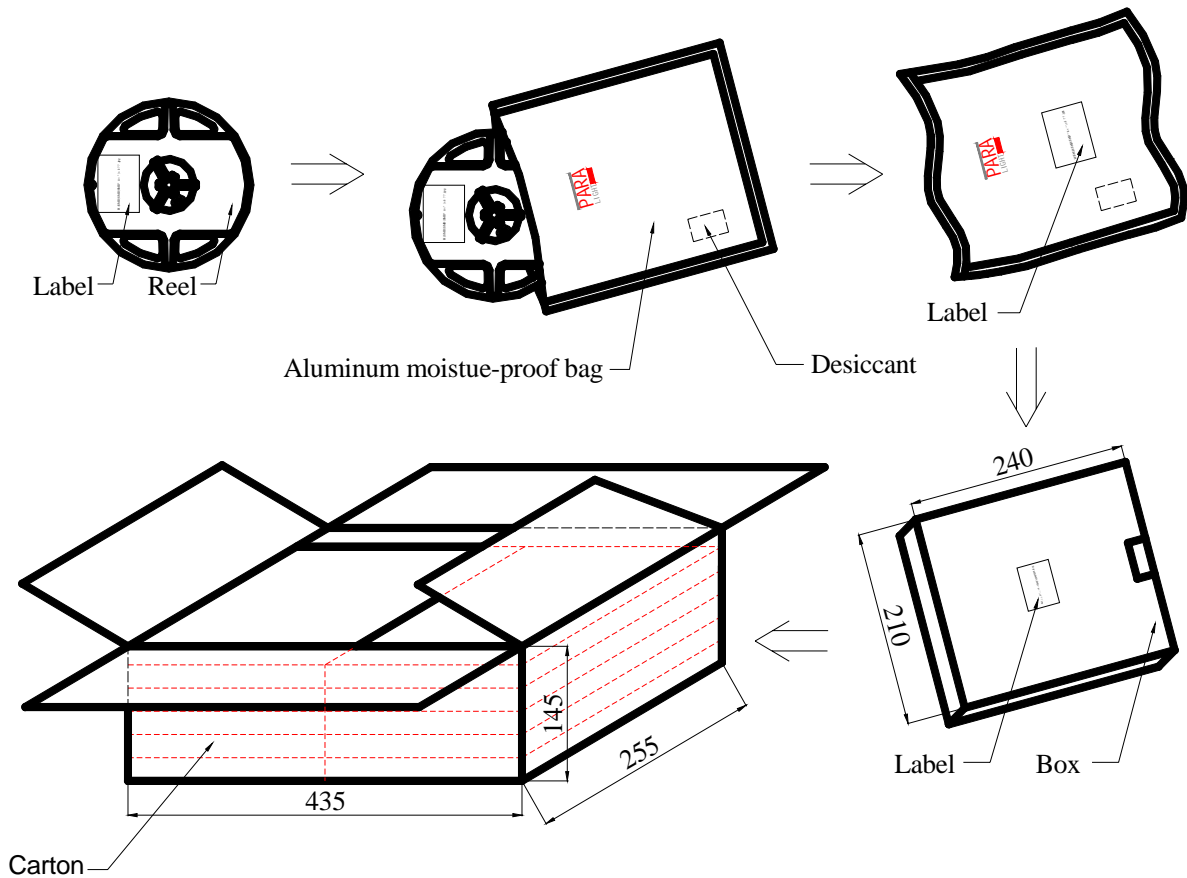
REV:A / 0

● Package Dimensions Of Tape And Reel



Notes : All dimensions are in millimeters.

Moisture Resistant Packaging



Notes : One reel in a bag, one bag in a inner box, ten inner boxes in a carton. Unit : mm.



## SURFACE MOUNT DEVICE LED

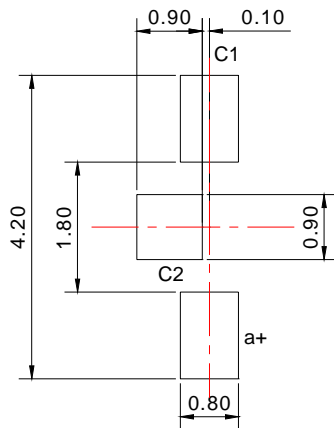
Part No. : L-S115GECT

REV:A / 0

### ● Cleaning

- \* If cleaning is required , use the following solutions for less than 1 minute and less than 40 .
- \* Appropriate chemicals: Ethyl alcohol and isopropyl alcohol.
- \* Effect of ultrasonic cleaning on the LED resin body differs depending on such factors as the oscillator output, size of PCB and LED mounting method. The use of ultrasonic cleaning should be enforced at proper output after confirming there is no problem.

### ● Suggest Soldering Pad Dimensions



Direction of PWB camber  
and go to reflow furnace

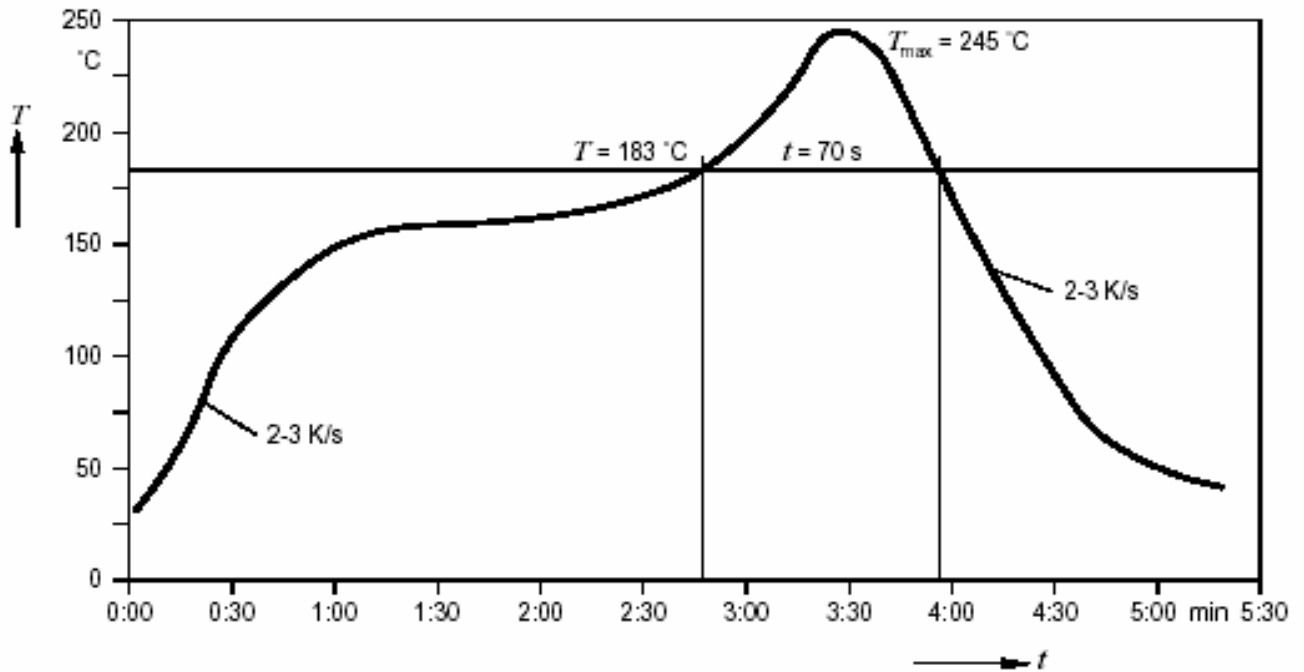


# SURFACE MOUNT DEVICE LED

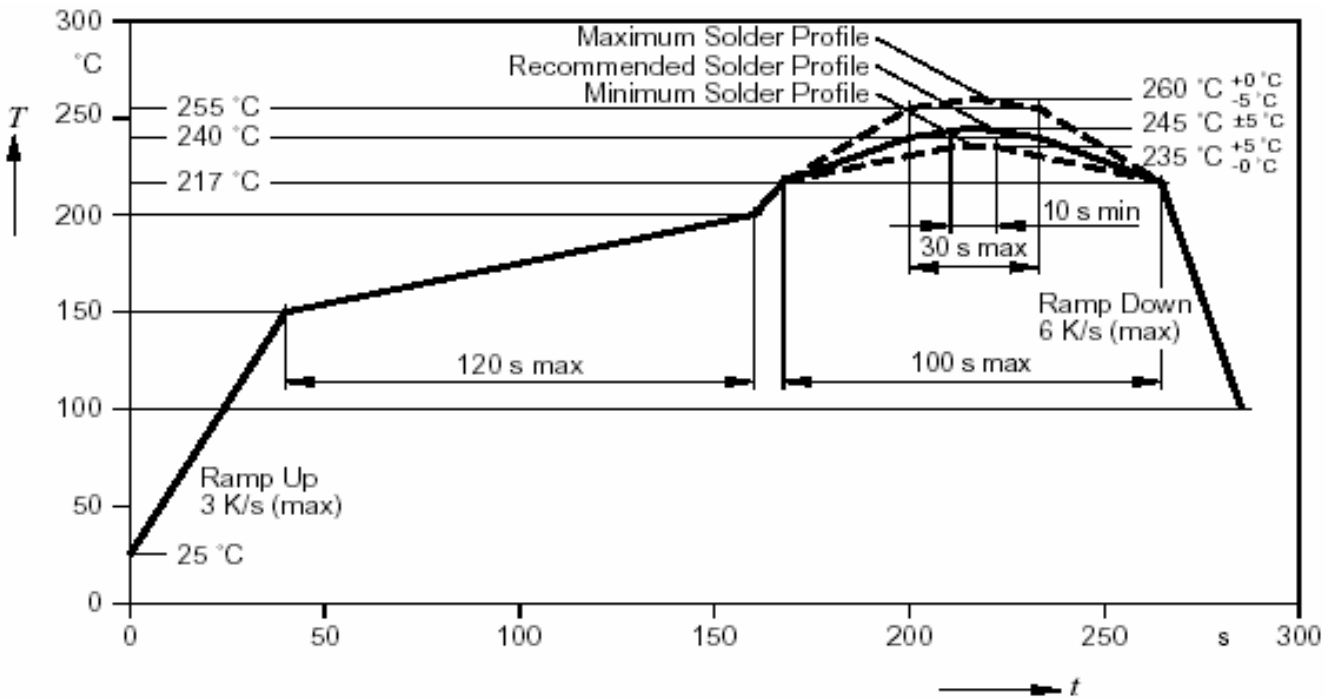
Part No. : L-S115GECT

REV:A / 0

Suggest Sn/Pb IR Reflow Soldering Profile Condition:



Suggest Pb-Free IR Reflow Soldering Profile Condition:





# SURFACE MOUNT DEVICE LED

Part No. : L-S115GECT

REV:A / 0

## ● CAUTIONS

### 1.Application Limitation :

The LED's described here are intended to be used for ordinary electronic equipment (such as office equipment, communication equipment and household application).Consult PARA's sales in advance for information on application in which exceptional quality and reliability are required, particularly when the failure or malfunction of the LED's may directly jeopardize life or health (such as airplanes, automobiles, traffic control equipment, life support system and safety devices).

### 2.Storage :

Before opening the package :

The LEDs should be kept at 5°C to 30°C or less and 85%RH or less. The LEDs should be used within a year.

After opening the package :

The LEDs should be kept at 5°C to 30°C or less and 70%RH or less. The LEDs should be soldered within 168 hours(7 days) after opening the package.

Please avoid rapid transitions in ambient temperature in high humidity environments where condensation may occur.

### 3.Soldering(Standard Process) :

Do not apply any stress to the lead frame during soldering while the LED is at high temperature.

Recommended soldering condition.

Reflow Soldering :

Pre-heat 120~150°C, 120sec. MAX., Peak temperature : 240°C Max. Soldering time : 10 sec Max.

Soldering Iron : (Not recommended)

Temperature 300°C Max., Soldering time : 3 sec. Max.(one time only), power dissipation of iron : 20W Max. use SN60 solder of solder with silver content and don't to touch LED lens when soldering.

Wave soldering :

Pre-heat 100°C Max, Pre-heat time 60s Max, Solder wave 260°C Max, Soldering time 5 sec. Max.

performed consecutively cooling process is required between 1st and 2nd soldering processes.



# SURFACE MOUNT DEVICE LED

Part No. : L-S115GECT

REV:A / 0

## 4. Lead-Free Soldering

For Reflow Soldering :

- 1、 Pre-Heat Temp : 150-180 ,120sec.Max.
- 2、 Soldering Temp : Temperature Of Soldering Pot Over 230 ,40sec.Max.
- 3、 Peak Temperature : 260 , 5sec.
- 4、 Reflow Repetition : 2 Times Max.
- 5、 Suggest Solder Paste Formula 93.3 Sn/3.1 Ag/3.1 Bi /0.5 Cu

For Soldering Iron (Not Recommended) :

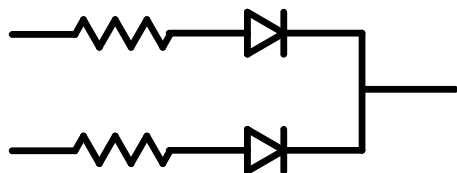
- 1、 Iron Tip Temp : 350 Max.
- 2、 Soldering Iron : 30w Max.
- 3、 Soldering Time : 3 Sec. Max. One Time.

For Dip Soldering :

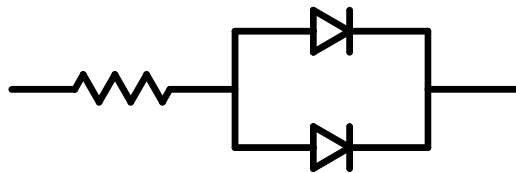
- 1、 Pre-Heat Temp : 150 Max. 120 Sec. Max.
- 2、 Bath Temp : 265 Max.
- 3、 Dip Time : 5 Sec. Max.

## 5. Drive Method

Circuit model A



Circuit model B



(A)Recommended circuit.

(B)The difference of brightness between LED`s could be found due to the Vf-If characteristics of LED.

	<h1 style="margin: 0;">SURFACE MOUNT DEVICE LED</h1>
	<div style="display: flex; justify-content: space-between;"> <span>Part No. : L-S115GECT</span> <span>REV:A / 0</span> </div>

**6. Reliability Test**

Classification	Test Item	Test Condition	Reference Standard								
Endurance Test	Operation Life	Ta= Under Room Temperature As Per Data Sheet Maximum Rating *Test Time= 1000HRS (-24HRS,+72HRS)*@20mA.	MIL-STD-750D:1026 (1995) MIL-STD-883D:1005 (1991) JIS C 7021:B-1 (1982)								
	High Temperature High Humidity Storage	IR-Reflow In-Board, 2 Times Ta= 65±5 ,RH= 90 ~ 95% *Test Time= 1000HRS±2HRS	MIL-STD-202F:103B(1980) JIS C 7021:B-11(1982)								
	High Temperature Storage	Ta= 105±5 Test Time= 1000HRS (-24HRS,72HRS)	MIL-STD-883D:1008 (1991) JIS C 7021:B-10 (1982)								
	Low Temperature Storage	Ta= -55±5 *Test Time=1000HRS (-24HRS,72H RS)	JIS C 7021:B-12 (1982)								
Environmental Test	Temperature Cycling	<table style="width: 100%; border: none;"> <tr> <td style="width: 33%;">105±5</td> <td style="width: 33%;">-55±5</td> <td style="width: 33%;"></td> </tr> <tr> <td>10mins</td> <td>10mins</td> <td>100 Cycles</td> </tr> </table>	105±5	-55±5		10mins	10mins	100 Cycles	MIL-STD-202F:107D (1980) MIL-STD-750D:1051(1995) MIL-STD-883D:1010 (1991) JIS C 7021:A-4(1982)		
	105±5	-55±5									
	10mins	10mins	100 Cycles								
	Thermal Shock	<table style="width: 100%; border: none;"> <tr> <td style="width: 33%;">IR-Reflow In-Board, 2 Times</td> <td style="width: 33%;"></td> <td style="width: 33%;"></td> </tr> <tr> <td>105±5</td> <td>-55 ±5</td> <td></td> </tr> <tr> <td>10mins</td> <td>10mins</td> <td>100 Cycles</td> </tr> </table>	IR-Reflow In-Board, 2 Times			105±5	-55 ±5		10mins	10mins	100 Cycles
IR-Reflow In-Board, 2 Times											
105±5	-55 ±5										
10mins	10mins	100 Cycles									
Solder Resistance	Tsol= 260 ± 5 Dwell Time= 10 ± 1sec	MIL-STD-202F:210A(1980) MIL-STD-750D:2031(1995) JIS C 7021:A-1(1982)									
Solder ability	Tsol= 235 ± 5 Immersion time 2±0.5 sec Immersion rate 25±2.5 mm/sec Coverage 95% of the dipped surface	MIL-STD-202F:208D(1980) MIL-STD-750D:2026(1995) MIL-STD-883D:2003(1991) IEC 68 Part 2-20 JIS C 7021:A-2(1982)									

**7. Others:**

The appearance and specifications of the product may be modified for improvement without notice.



**SURFACE MOUNT DEVICE LED**

Part No. : L-S115GECT

REV:A / 0

● PART NO. SYSTEM :

L - S 115X1X2 X X - X X X X

XXXX : Special specification for customer

T : Taping for 7 inch reel  
TC : Taping for 13 inch reel  
TH : IV half binning  
TP : Wavelength binning

Lens color  
C : Water Clear  
W : White Diffused  
T : Color Transparent  
D : Color Diffused

G : Gap 570nm Green  
Y : GaAsp 585 nm Yellow  
E : GaAsp 620 nm Orange  
SR : GaAlAs 634 nm Red  
KG : AlInGap 570nm Super Green  
KY : AlInGap 590nm Super Yellow  
KF : AlInGap 605nm Super Amber  
KR : AlInGap 630 nm Super Red  
KD : AlInGap 639 nm Deep Red  
LB : InGaN 470nm Blue  
LG: InGaN 525nm Green

0 : Single chip  
1 / 2 : Super thin single chip  
5 / 6 : Dual chip  
F : Three chip(Full color)

150 : 1206 1.1T Type  
155 : 1210 1.1T Type  
170 : 0805 0.8T Type  
191 : 0603 0.6T Type  
192 : 0603 0.4T Type  
195 : 0603 0.6T Type  
110 : 1206 1.0T Type  
115 : 1206 1.0T Type

C : Top View Type  
S : Side View Type