



PARA LIGHT ELECTRONICS CO., LTD.

11F, No.8, Jiankang Rd,Zhonghe Dist,New Taipei City 253, Taiwan

Tel: 886-2-2225-3733

Fax: 886-2-2225-4800

E-mail: para@para.com.tw

<http://www.para.com.tw>

DATA SHEET

PART NO.:L-S115JFWDT-LCFC

REV: A / 2

CUSTOMER'S APPROVAL : _____

DCC : _____

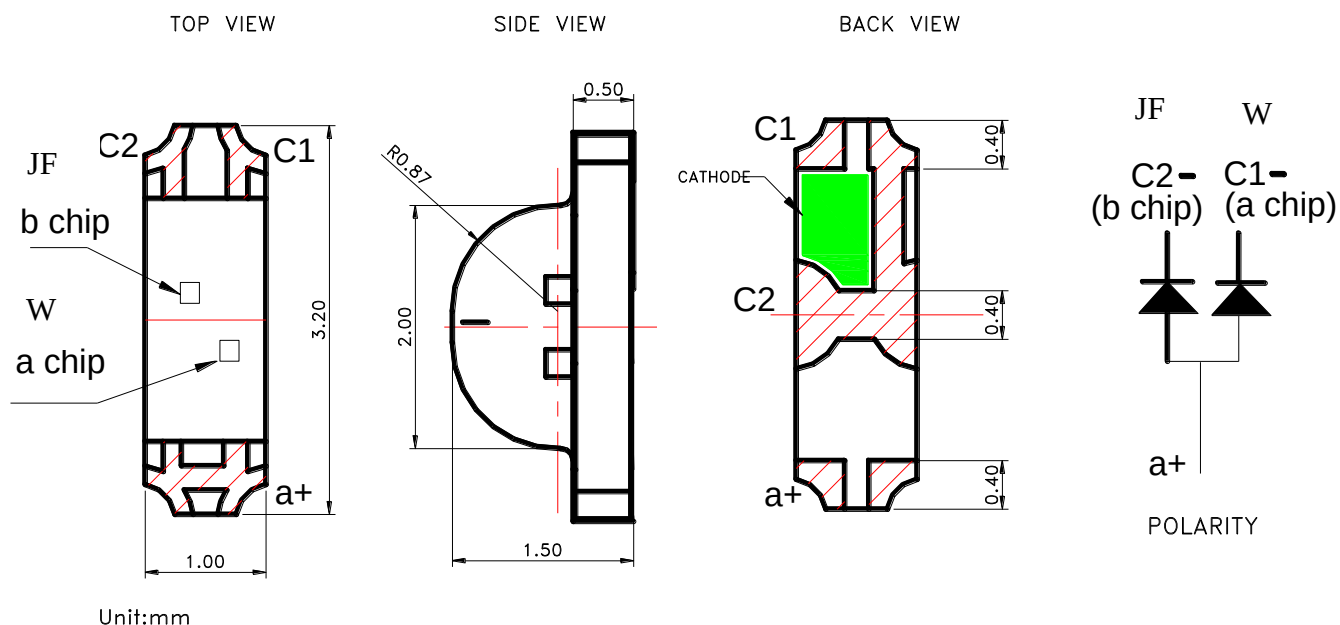
DRAWING NO. :DS-78-16-006

DATE : 2016-11-2

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● PACKAGE OUTLINE DIMENSIONS



Notes:

1. a chip : White; b chip: Super Amber
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.

● Chip Materials

chip	Light Color	Dice Material	Lens Color
a	W: White	InGaN	Yellow Diffused.
b	JF: Super Amber.	AlInGaP	

● Absolute Maximum Ratings(Ta=25°C)

Symbol	Parameter	Rating		Unit
		Super Amber	White	
P _D	Power Dissipation	48	16.25	mW
I _{PF}	Peak Forward Current (1/10 Duty Cycle, 0.1ms Pulse Width)	30	60	mA
I _F	Continuous Forward Current	20	20	mA
V _R	Reverse Voltage	30	5	V
ESD	Electrostatic Discharge Threshold(HBM) ^{Note A}	2000	1000	V
T _{opr}	Operating Temperature Range	-40 ~ +85		°C
T _{stg}	Storage Temperature Range	-40 ~ +85		°C

Note A:

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

● Electro-Optical Characteristics(Ta=25°C)

Parameter		Symbol	Super Amber	Unit	Test Condition
Luminous Intensity	Min.	IV	11.2	mcd	IF=5mA
	Typ.		18		
Viewing Angle	, Typ.	2θ1/2	130	deg	Note 2
Peak Wavelength	Typ.	λ _p	611	nm	Measurement @Peak
Dominant Wavelength	Typ.	λ _d	605	nm	IF=5mA
Spectral Line Half-Width	Typ.	Δλ	17	nm	
Forward Voltage	Typ.	V _F	2.0	V	IF =5mA
	Max.		2.4		
Reverse Current	Max.	I _R	10	μA	V _R = 5V

White Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Luminous Intensity	IV	45	71.5	180	mcd	IF=5mA
Viewing Angle	2 θ 1/2		130		Deg	Note 2
CIE Chromaticity	X		0.270			IF=5mA
CIE Chromaticity	Y		0.255			
Forward Voltage	VF	2.6	2.8	3.1	V	IF = 5mA
Reverse Current	IR			50	μ A	VR = 5V

Bin Code List

Luminous Intensity(IV), Unit:mcd@5mA					
White (a chip)			Super Amber(b chip)		
Bin Code	Min	Max	Bin Code	Min	Max
P	45	71	L	11.2	18
Q	71	112	M	18	28
R	112	180	N	28	45

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

Forward Voltage(VF), Unit:V@5mA White			Dominant Wavelength (Hue), Unit:nm @5mA Super Amber		
Bin Code	Min	Max	Bin Code	Min	Max
11	2.6	2.7	OA	600	605
12	2.7	2.8	OB	605	610
13	2.8	2.9			
14	2.9	3.0			
15	3.0	3.1			

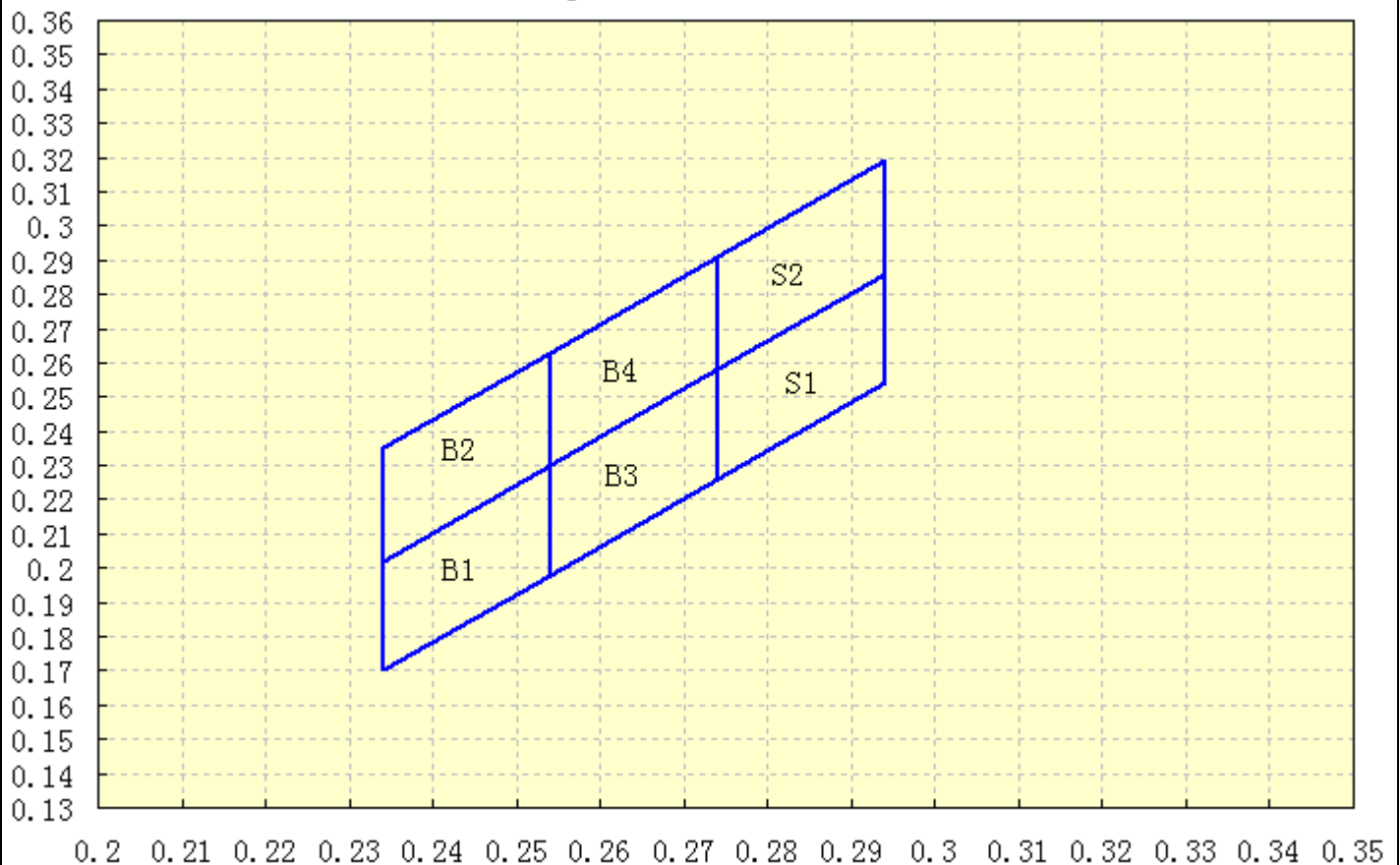
Tolerance of each bin are ± 0.1 Volt

Tolerance of each bin are ± 1 nm

Color Rank (CIE chromaticity X , Y) @ 5mA									
Rank B1					Rank B2				
X	0.234	0.234	0.254	0.254	X	0.234	0.234	0.254	0.254
Y	0.17	0.202	0.23	0.198	Y	0.202	0.235	0.263	0.23
Rank B3					Rank B4				
X	0.254	0.254	0.274	0.274	X	0.254	0.254	0.274	0.274
Y	0.23	0.198	0.226	0.258	Y	0.23	0.263	0.291	0.258
Rank S1					Rank S2				
X	0.274	0.274	0.294	0.294	X	0.274	0.274	0.294	0.294
Y	0.226	0.258	0.286	0.254	Y	0.258	0.291	0.319	0.286

* Measurement of Color coordinates : ± 0.02

L-S115JFWDT-LCFC白光案



Notes:

1. Luminous intensity is measured with a light sensor and filter combination that proximates the CIE eye-response curve.
2. $\theta_{1/2}$ is the off-axis angle at which the luminous intensity is half the axial luminous intensity.
3. 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.
4. Major standard testing equipment by “Instrument System” Model : CAS140B Compact Array Spectrometer and “KEITHLEY” Source Meter Model : 2400.

● White Typical Electro-Optical Characteristics Curves

(25°C Ambient Temperature Unless Otherwise Noted)

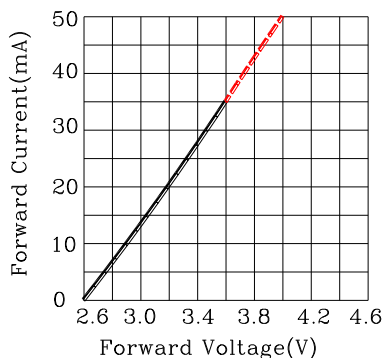


Fig.2 Forward Current vs. Forward Voltage

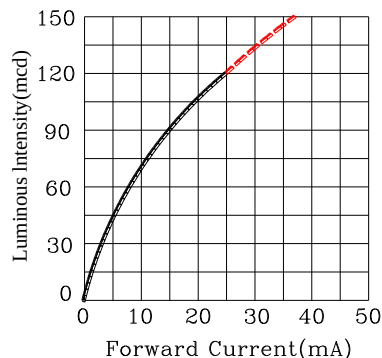


Fig.3 Luminous Intensity vs. Forward Current

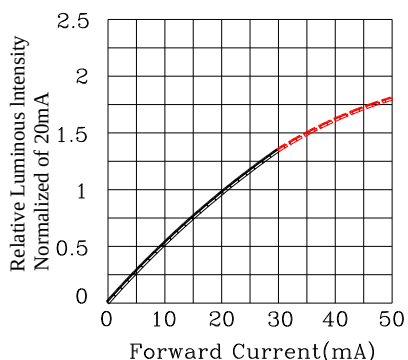


Fig.4 Relative Luminous Intensity vs. Forward Current

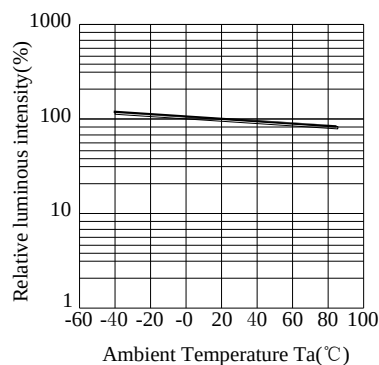


Fig.5 Luminous Intensity vs. Ambient Temperature

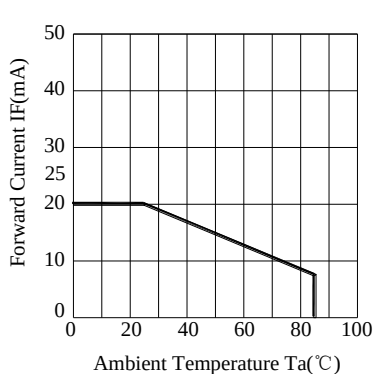


Fig.6 Forward Current Derating Curve

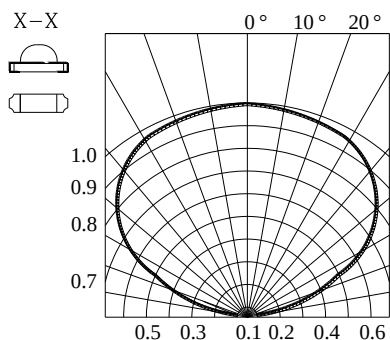


Fig.7 Relative Intensity vs. Angle

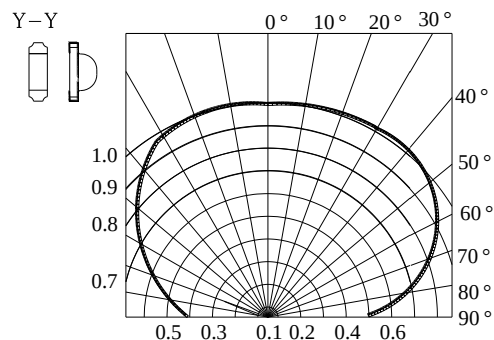


Fig.7 Relative Intensity vs. Angle

● Super Amber Typical Electro-Optical Characteristics Curves

(25°C Ambient Temperature Unless Otherwise Noted)

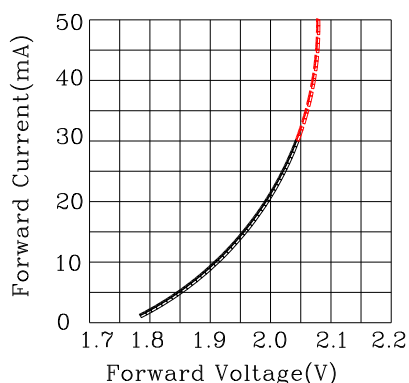


Fig.2 Forward Current vs. Forward Voltage

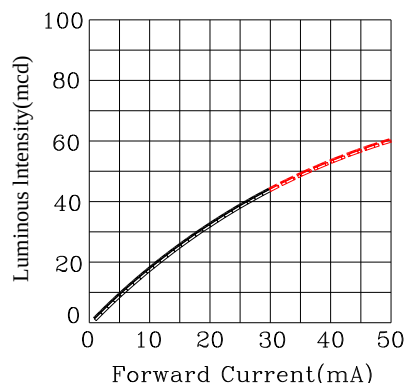


Fig.3 Luminous Intensity vs. Forward Current

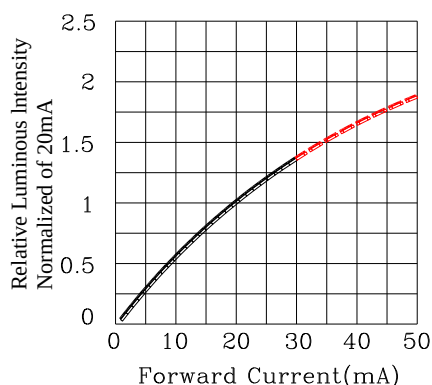


Fig.4 Relative Luminous Intensity vs. Forward Current

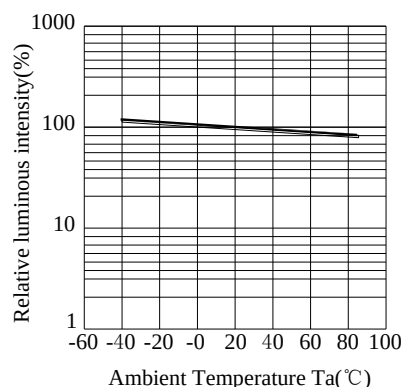


Fig.5 Luminous Intensity vs. Ambient Temperature

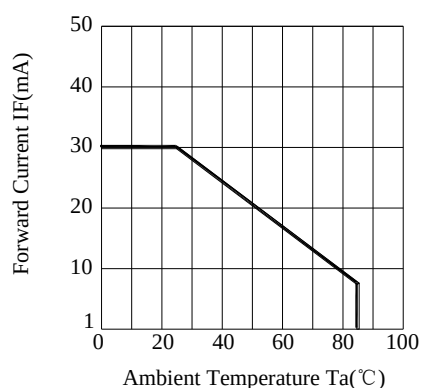


Fig.6 Forward Current Derating Curve

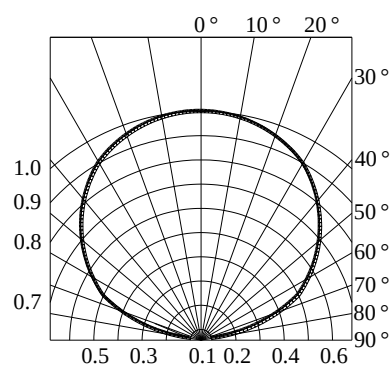


Fig.7 Relative Intensity vs. Angle

● Label Explanation



ITEM CODE:PARA LIGHT

PART NO: L-S115JFWDT-LCFC

IV --- Luminous Intensity Code

LOT NO: EM S L 12 09 0110
A B C D E F

A---EM: Emos Code

B---S:SMD

L---Local

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: 2012 09 10
G H I

G--- Year

H--- Month

I --- Day

● Typical Electro-Optical Characteristics Curves

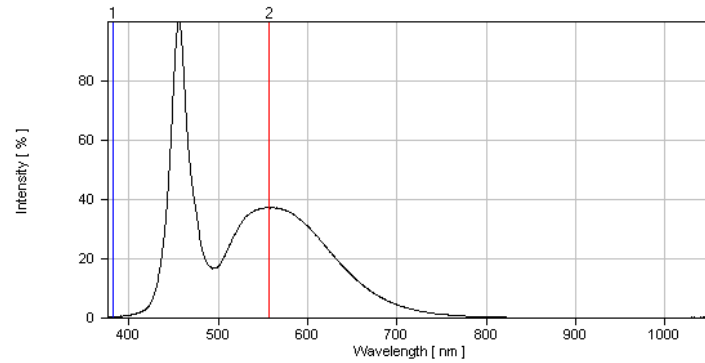


Fig.2 White Relative Intensity vs. Wavelength

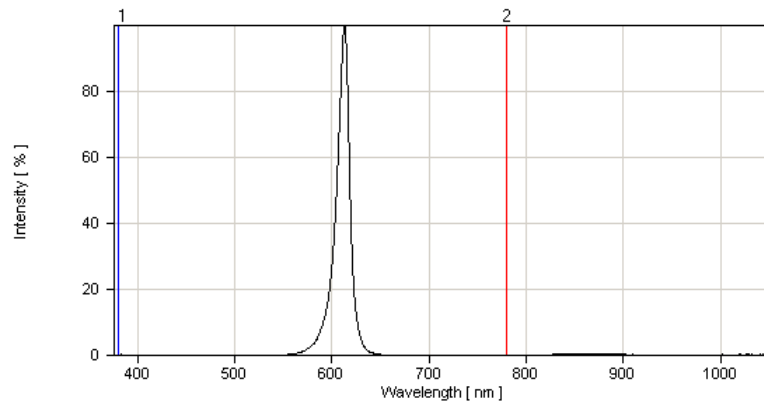
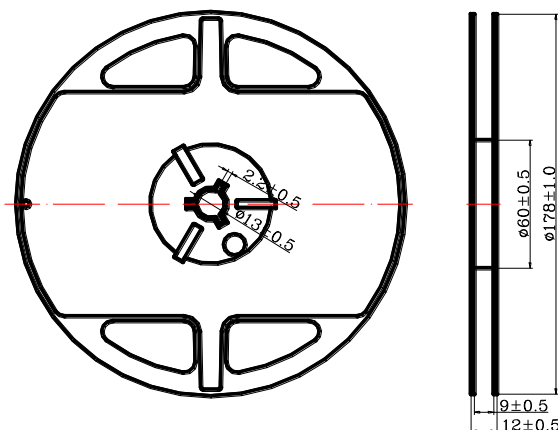


Fig.2 Bright Amber Relative Intensity vs. Wavelength

● Reel Dimensions

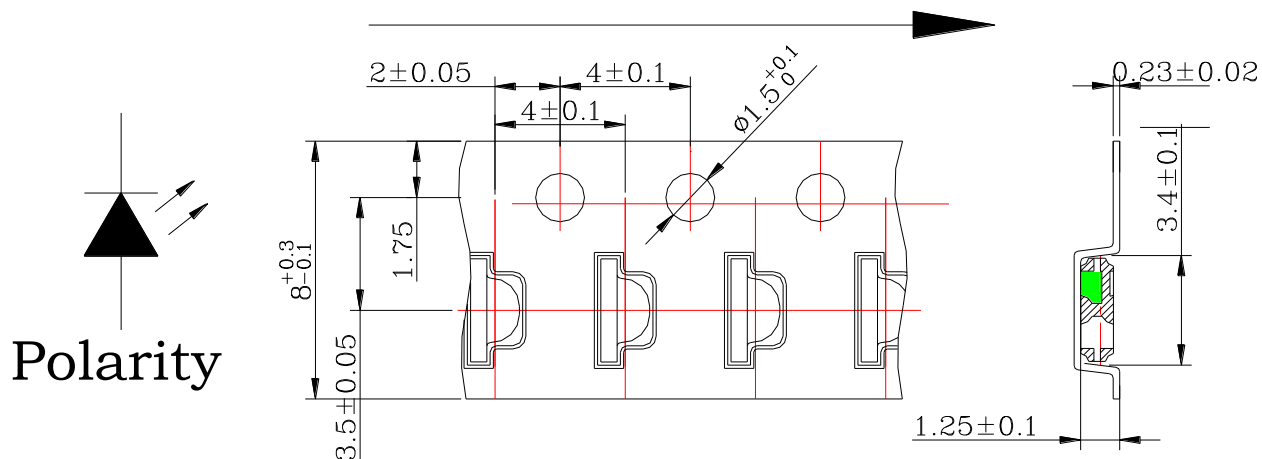


Notes:

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

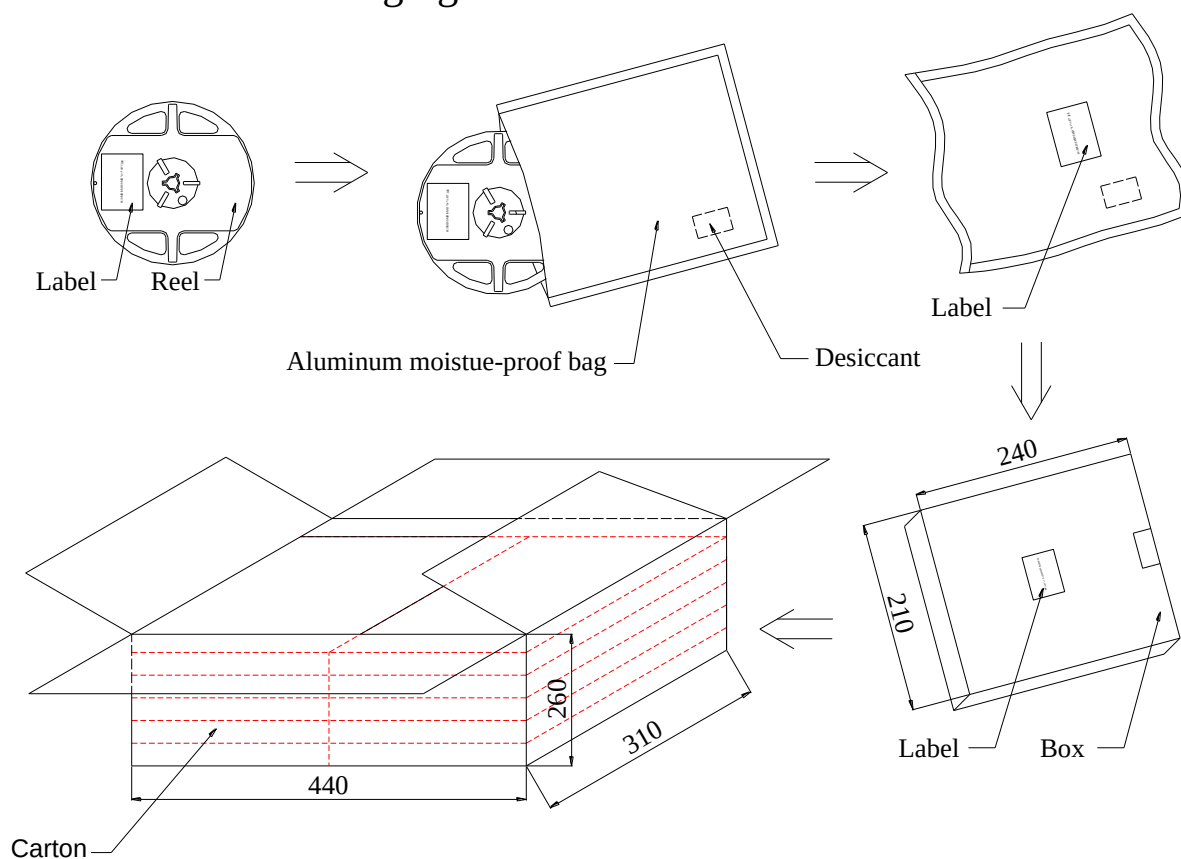
● Package Dimensions Of Tape And Reel

Progressive direction



Notes : All dimensions are in millimeters.

Moisture Resistant Packaging

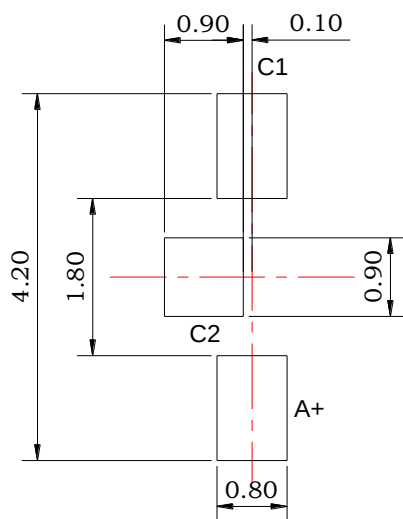


Notes : One reel in a bag, six bag in a inner box, six inner boxes in a carton. Unit : mm.

● Cleaning

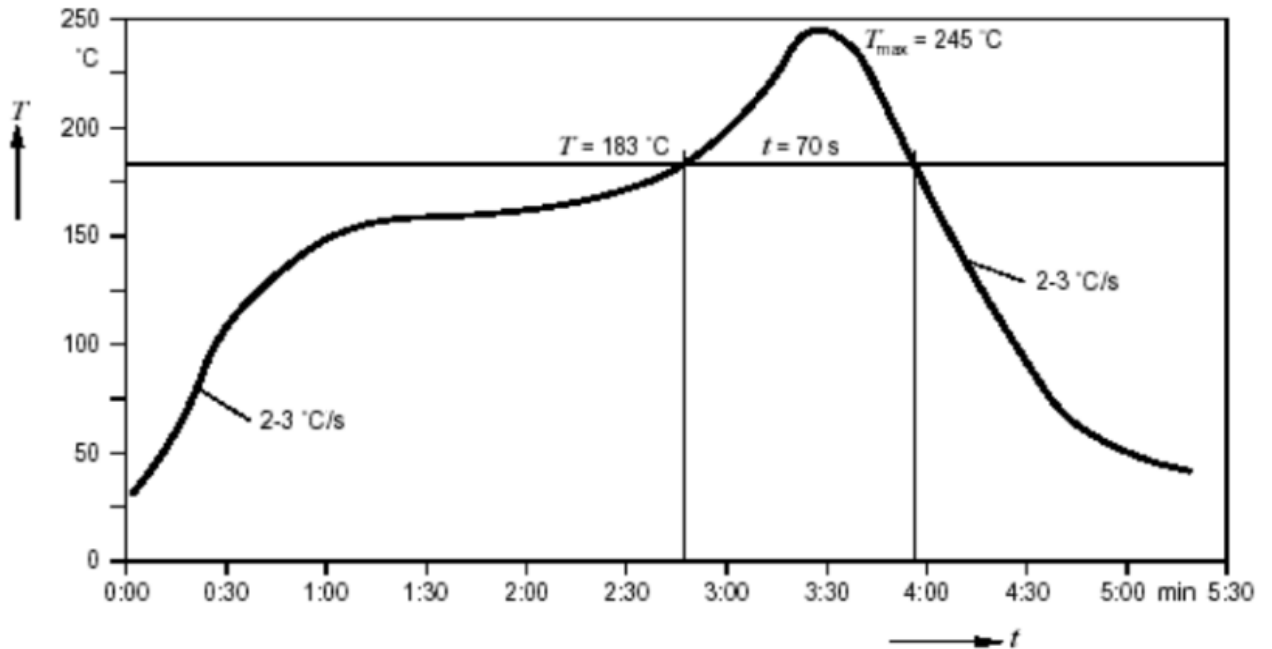
- * If cleaning is required , use the following solutions for less than 1 minute and less than 40°C.
- * Appropriate chemicals: Ethyl alcohol and isopropyl alcohol.
- * Effect of ultrasonic cleaning on the LED resin body differs depending on such factors as the oscillator output, size of PCB and LED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

● Suggest Soldering Pad Dimensions

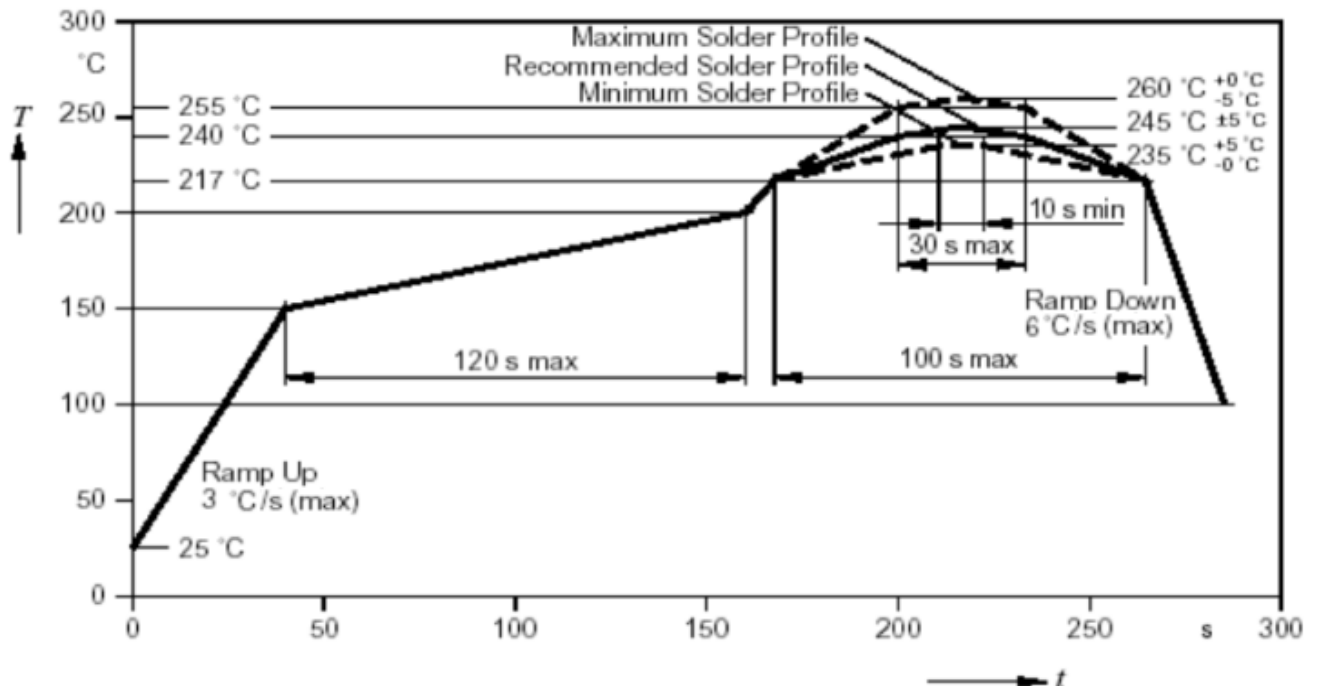


Direction of PWB camber
and go to reflow furnace

● Suggest Sn/Pb IR Reflow Soldering Profile Condition:



● Suggest Pb-Free IR Reflow Soldering Profile Condition:



● 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 :

Do not open moisture proof bag before the products are ready to use.

Before opening the package: The LEDs should be kept at 30℃ or less and 90%RH or less.

If the moisture absorbent material (silica gel) has faded away or the LEDs have exceeded the storage time, baking treatment should be performed using the following conditions.

Baking treatment: 60±5℃ for 24 hours.

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 ℃, 120sec. MAX., Peak temperature : 240 ℃ Max. Soldering time : 10 sec Max.

Soldering Iron : (Not recommended)

Temperature 300 ℃ 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 ℃ Max, Pre-heat time 60s Max, Solder wave 260 ℃ Max, Soldering time 5 sec. Max. preformed consecutively cooling process is required between 1st and 2nd soldering processes.

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) :

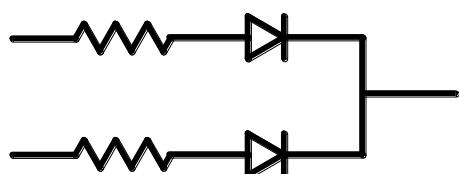
- 1、 Iron Tip Temp : 350℃ Max.
- 2、 Soldering Iron : 30w Max.
- 3、 Soldering Time : 3 Sec. Max. One Time.

For Dip Soldering :

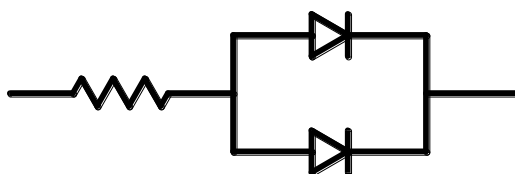
- 1、 Pre-Heat Temp : 150℃ Max. 120 Sec. Max.
- 2、 Bath Temp : 265℃ Max.
- 3、 Dip Time : 5 Sec. Max.

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.

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	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)
	Thermal Shock	IR-Reflow In-Board, 2 Times 105±5℃ -55℃ ±5℃ 10mins 10mins 100 Cycles	MIL-STD-202F:107D(1980) MIL-STD-750D:1051(1995) MIL-STD-883D:1011 (1991)
	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.