

DATA SHEET

PART NO.: LC191WDT-5mA

REV: A / 2

CUSTOMER'S APPROVAL : _____

DCC : _____

DRAWING NO. : DS-74-17-0011G

DATE : 2021-11-11

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SURFACE MOUNT DEVICE LED

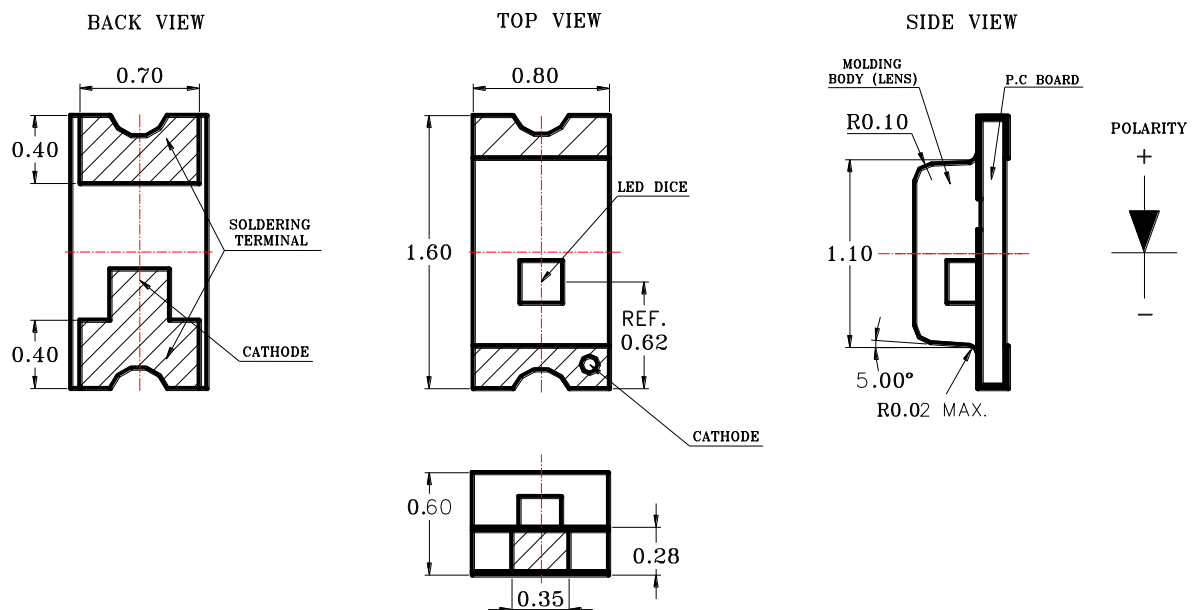
Part No. : LC191WDT-5mA

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● Features

- * Extra thin 0.6mm, Top view, Wide view angle, White color SMD chip LED .
- * Special for Cellular Phone keypad / LCD backlighting or thin touch button LED backlighting.
- * Packing in 8mm tape on 7" diameter reels.
- * Compatible with automatic Pick & Place equipment.
- * Compatible with Reflow soldering and Wave soldering processes.
- * EIA STD package.(ANSI/EIA-481-B-2001)
- * I.C. compatible, low current application
- * Pb free product and acceptable lead-free process!.
- * Meet RoHS Green Product.
- * MSL-3

● PACKAGE OUTLINE DIMENSIONS



Notes:

1. All dimensions are in millimeters.
2. Tolerance is $\pm 0.1\text{mm}$ (.004") unless otherwise noted.

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● CHIP MATERIALS

- * Dice Material : InGaN
- * Light Color : White
- * Lens Color : Light Green Diffused.

● Absolute Maximum Ratings(Ta=25°C)

Symbol	Parameter	Rating	Unit
PD	Power Dissipation	100	mW
IPF	Peak Forward Current (1/10 Duty Cycle, 0.1ms Pulse Width)	80	mA
IF	Continuous Forward Current	20	mA
-	De-rating Linear From 25°C	0.25	mA/°C
VR	Reverse Voltage	5	V
ESD	Electrostatic Discharge Threshold(HBM)Note A	1000	V
Topr	Operating Temperature Range	-40 ~ + 85	°C
Tstg	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	Min.	Typ.	Max.	Unit	Test Condition
Luminous Intensity	IV	180	280	710	mcd	IF=5mA
Viewing Angle	2 θ 1/2		130		Deg	Note 2
CIE Chromaticity	X		0.28			IF=5mA
CIE Chromaticity	Y		0.28			
Forward Voltage	VF	2.50	2.70	2.9	V	IF = 5mA
Reverse Current	IR			50	μ A	VR = 5V

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● Bin Code List

Luminous Intensity(IV), Unit:mcd@5mA		
Bin Code	Min	Max
S	180	280
T	280	450
U	450	710

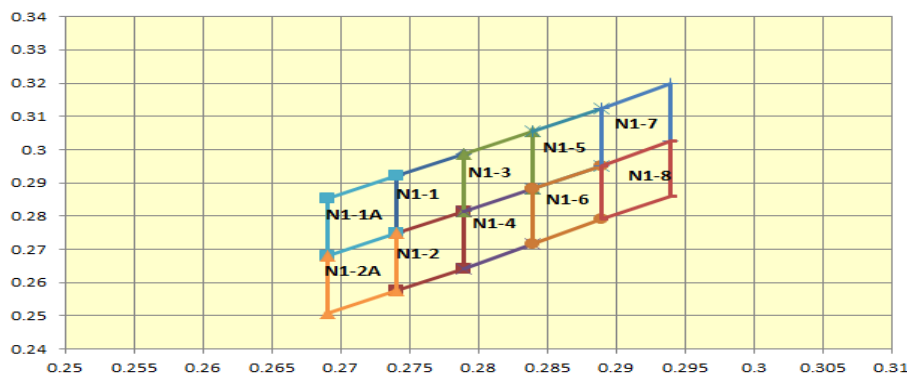
Forward Voltage(VF), Unit:V@5mA		
Bin Code	Min	Max
10	2.50	2.60
11	2.60	2.70
12	2.70	2.80
13	2.80	2.90

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

Tolerance of each bin are ± 0.1 Volt

Color Rank (CIE chromaticity X , Y) @ 5mA									
Rank N1-1A					Rank N1-2A				
X	0.274	0.269	0.269	0.274	X	0.269	0.269	0.274	0.274
Y	0.2921	0.2854	0.2681	0.2748	Y	0.2681	0.2508	0.2575	0.2748
Rank N1-1					Rank N1-2				
X	0.274	0.274	0.279	0.279	X	0.274	0.274	0.279	0.279
Y	0.2921	0.2748	0.2815	0.2988	Y	0.2748	0.2575	0.264	0.2815
Rank N1-3					Rank N1-4				
X	0.279	0.279	0.284	0.284	X	0.279	0.279	0.284	0.284
Y	0.2988	0.2815	0.2882	0.3055	Y	0.2815	0.264	0.2715	0.2882
Rank N1-5					Rank N1-6				
X	0.284	0.284	0.289	0.289	X	0.284	0.284	0.289	0.289
Y	0.3055	0.2882	0.295	0.3123	Y	0.2882	0.2715	0.279	0.295
Rank N1-7					Rank N1-8				
X	0.289	0.289	0.294	0.294	X	0.289	0.289	0.294	0.294
Y	0.3123	0.295	0.3025	0.3198	Y	0.295	0.279	0.286	0.3025

LC191WDT-5MA 白光案



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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.

● Typical Electro-Optical Characteristics Curves

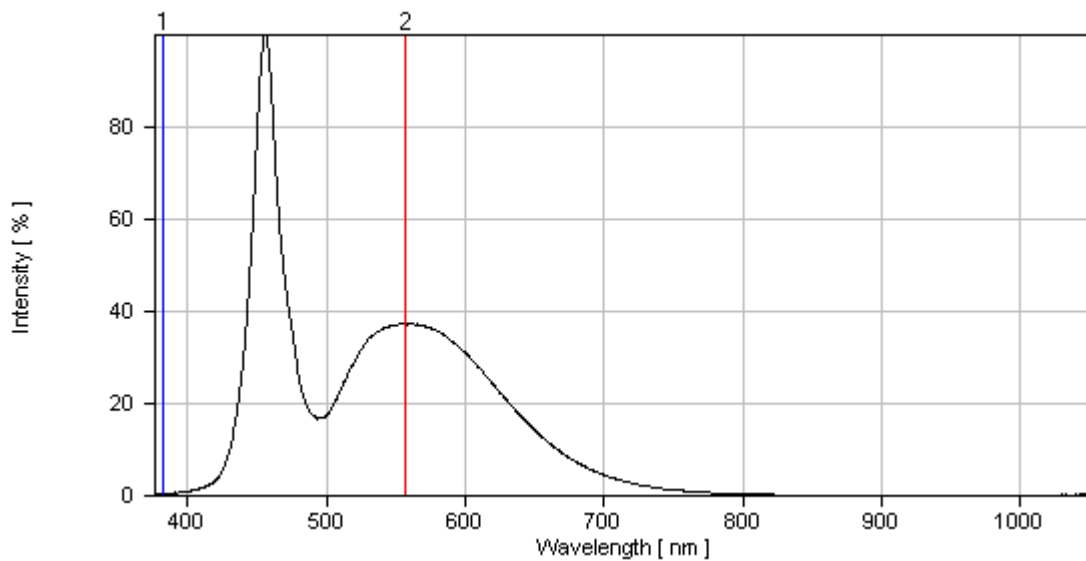


Fig.1 Relative Intensity vs. Wavelength

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● Typical Electro-Optical Characteristics Curves

(25°C Ambient Temperature Unless Otherwise Noted)

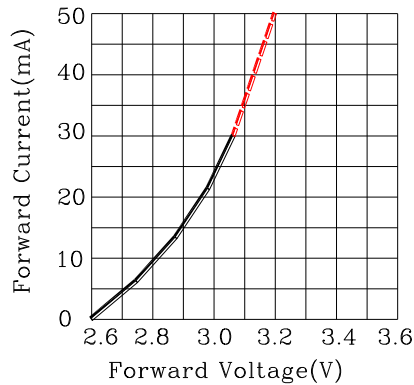


Fig.1 Forward Current vs. Forward Voltage

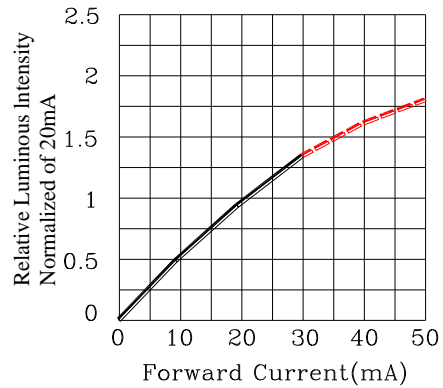


Fig.1 Relative Luminous Intensity vs. Forward Current

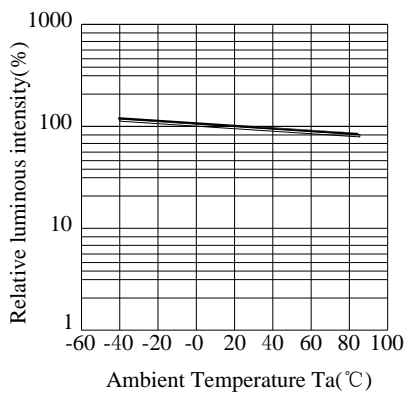


Fig.3 Luminous Intensity vs. Ambient Temperature

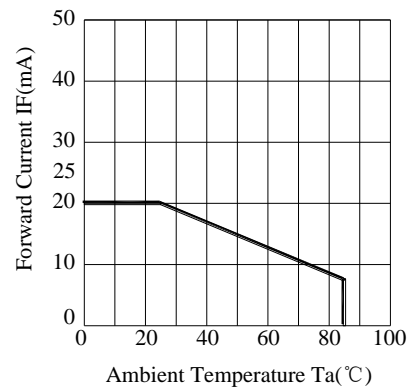


Fig.4 Forward Current Derating Curve

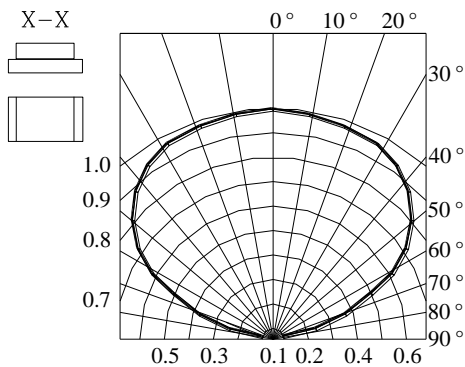


Fig.5 Relative Intensity vs. Angle

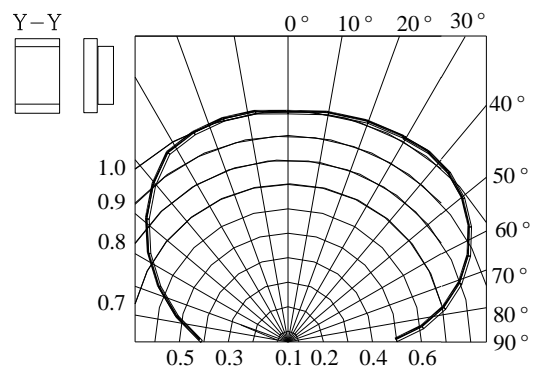


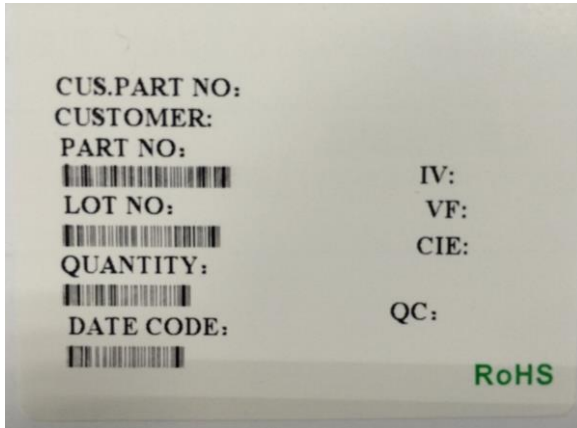
Fig.6 Relative Intensity vs. Angle

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● Label Explanation



ITEM CODE:PARA LIGHT

PART NO: LC191WDT-5mA

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

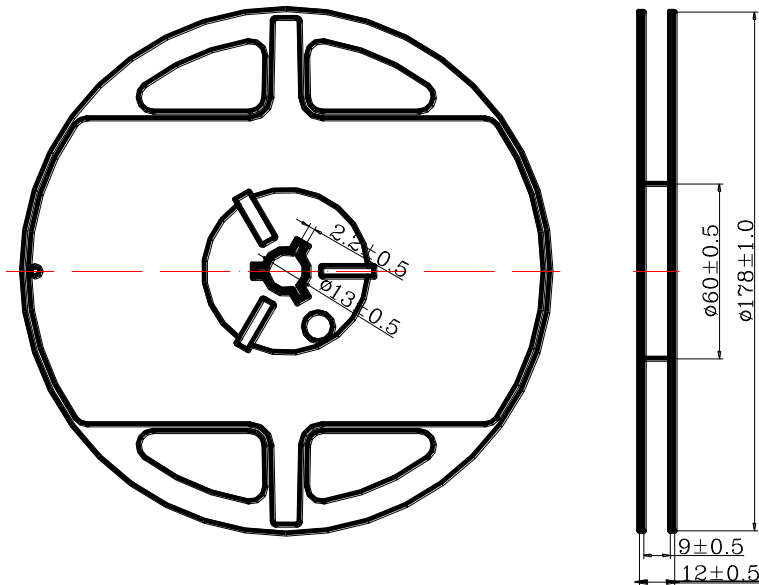
I --- Day

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● Reel Dimensions



Notes:

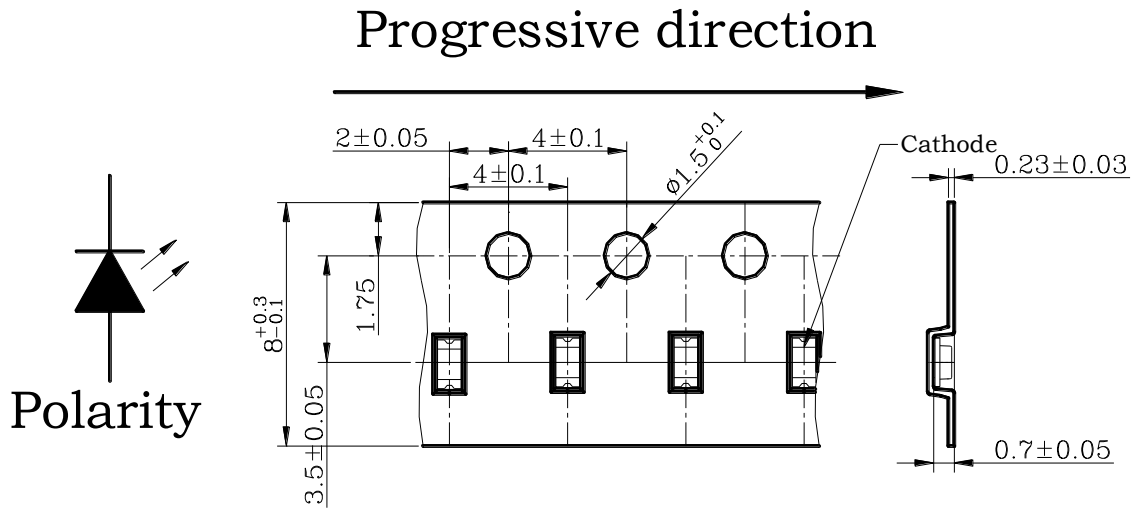
1. Taping Quantity : 3000pcs
2. The tolerances unless mentioned is $\pm 0.1\text{mm}$, Angle $\pm 0.5^\circ$, Unit : mm.

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● Package Dimensions Of Tape And Reel



Notes: All dimensions are in millimeters.

SURFACE MOUNT DEVICE LED

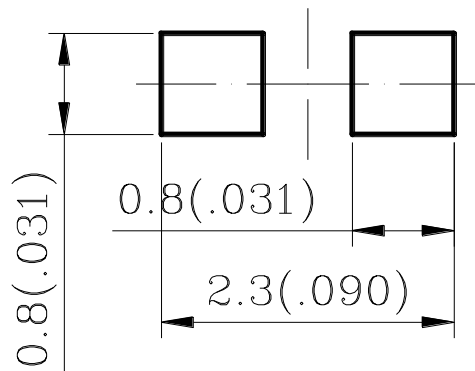
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● Cleaning

- * 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

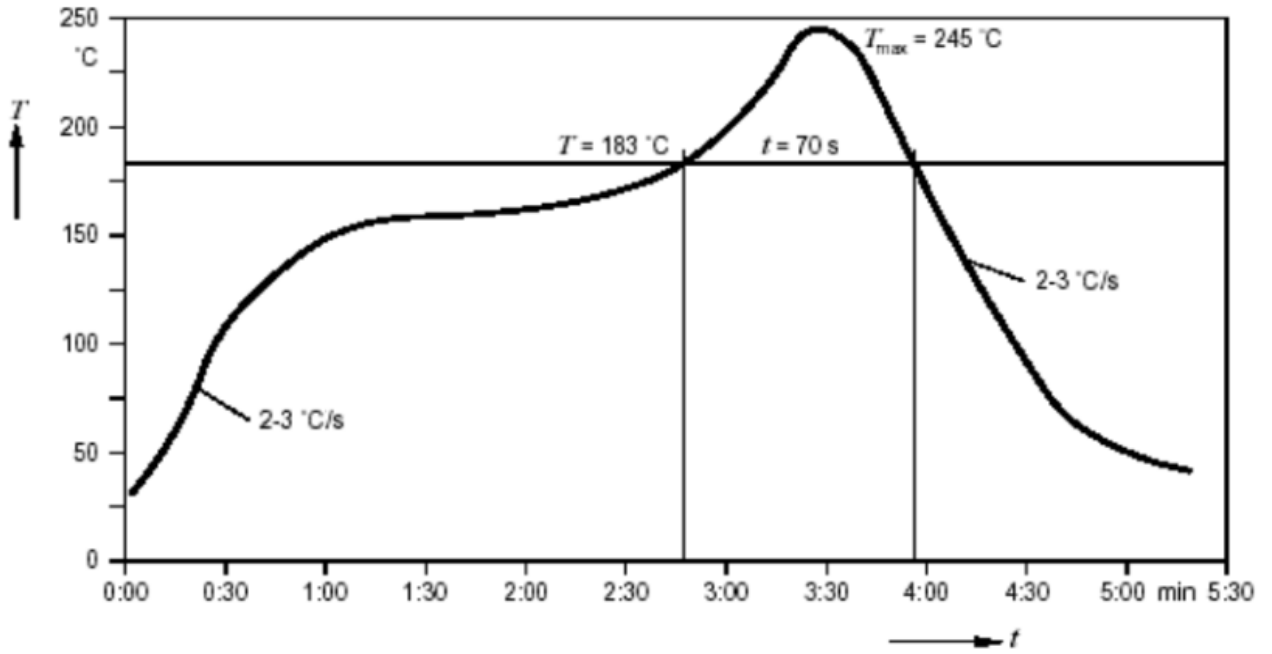
Notes : Suggest stencil print screen thickness are 0.10mm maximum.

SURFACE MOUNT DEVICE LED

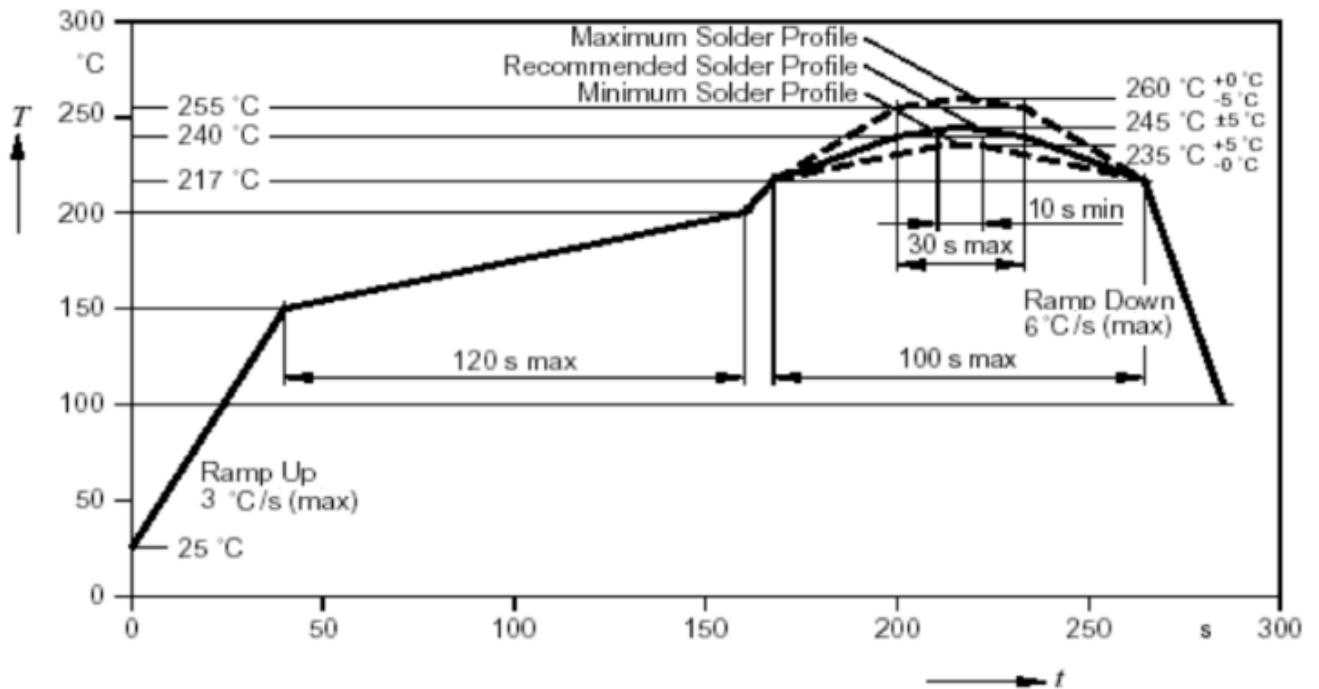
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● Suggest Sn/Pb IR Reflow Soldering Profile Condition:



● Suggest Pb-Free IR Reflow Soldering Profile Condition:



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● 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°C 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°C for 24 hours.

3.Soldering

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 60 sec. Max, Solder wave 260 °C Max, Soldering time 5 sec. Max. performed consecutively cooling process is required between 1st and 2nd soldering processes.

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4. Lead-Free Soldering

For Reflow Soldering :

- 1、 Pre-Heat Temp: 150-180°C,120sec.Max.
- 2、 Soldering Temp: Temperature Of Soldering Pot Over 230°C,40sec.Max.
- 3、 Peak Temperature: 260°C , 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) :

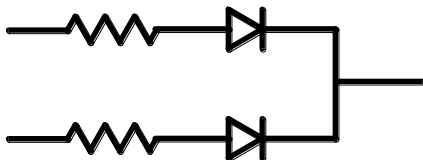
- 1、 Iron Tip Temp: 350°C Max.
- 2、 Soldering Iron: 30w Max.
- 3、 Soldering Time: 3 Sec. Max. One Time.

For Dip Soldering :

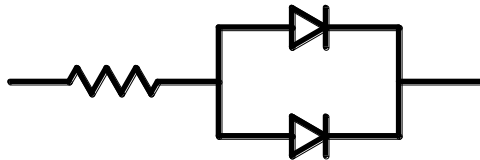
- 1、 Pre-Heat Temp: 150°C Max. 120 Sec. Max.
- 2、 Bath Temp: 265°C Max.
- 3、 Dip Time: 5 Sec. Max.

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.