PARA LIGHT ELECTRONICS CO., LTD.
11F., No. 8, Jiankang Rd., Zhonghe Dist., New Taipei City 235, Taiwan
Tel: 886-2-2225-3733 Fax: 886-2-2225-4800
E-mail: para@para.com.tw www.paralighttaiwan.com

DATA SHEET

PART NO.: LC191WZDT-GN-D-5A

REV: A/0

CUSTOMER'S APPROVAL: _____ DCC: _____

1.6×0.8×0.6 mm SMD LED

LC191WZDT-GN-D-5A REV:A/0

• Features

.Appearance size(L/W/H)：1.6×0.8×0.6mm

.Colour：White light

.colloid：Yellow flat colloid

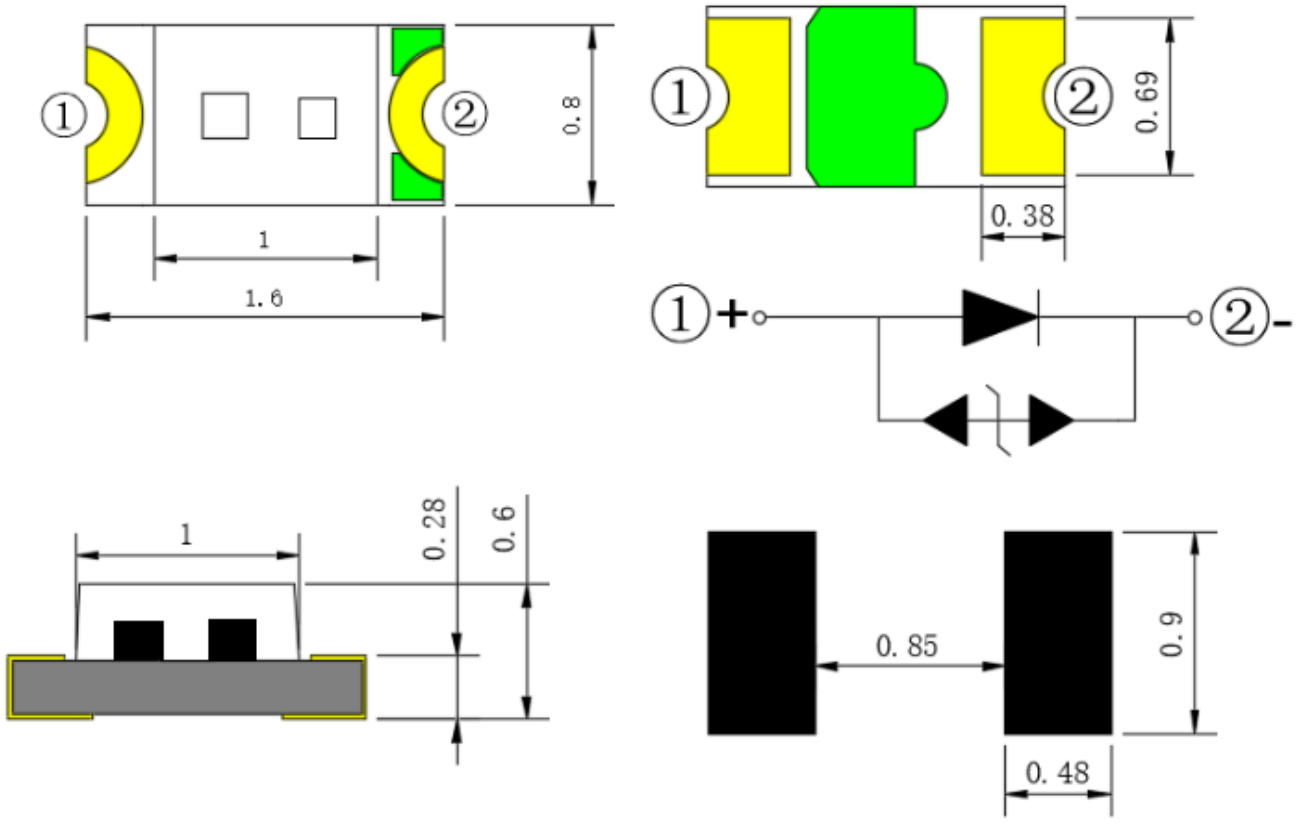
.EIA standard packaging

.Environmental protection products, in line with ROHS requirements

.Suitable for automatic placement machine

.Suitable for infrared reflow soldering process

• Package Dimensions



Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is ±0.15mm unless otherwise specified.
3. The colors of the lines are specified in the specification unless otherwise specified.

• Absolute Maximum Ratings At Ta=25℃

Parameter	Symbol	Rating	Unit
Power Dissipation	Pd	80	mW
Maximum pulse current	IFP	90	mA
DC Forward Current	IF	30	mA
Reverse Voltage	VR	5	V
Electrostatic Discharge(HBM)	ESD	10000	V
Operating Temperature Range	Topr	-30°C ~ + 85°C	
Storage Temperature Range	Tstg	-40°C ~ + 90°C	
Soldering Condition	Tsol	Reflow soldering：255°C for 10s Manual welding：300°C for 3s	

• Electrical and optical characteristics(Ta=25℃)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test
Luminous Flux	IV	120	190	230	mcd	IF =5mA
Forward Voltage	VF	2.6	2.8	2.9	V	IF =5mA
Relative Color Temperature	Tc	10000	--	30000	K	IF =5mA
Reverse Current	IR	---	---	10	uA	VR=5V
Viewing Angle	2θ1/2	120			deg	---

•Bin Code List

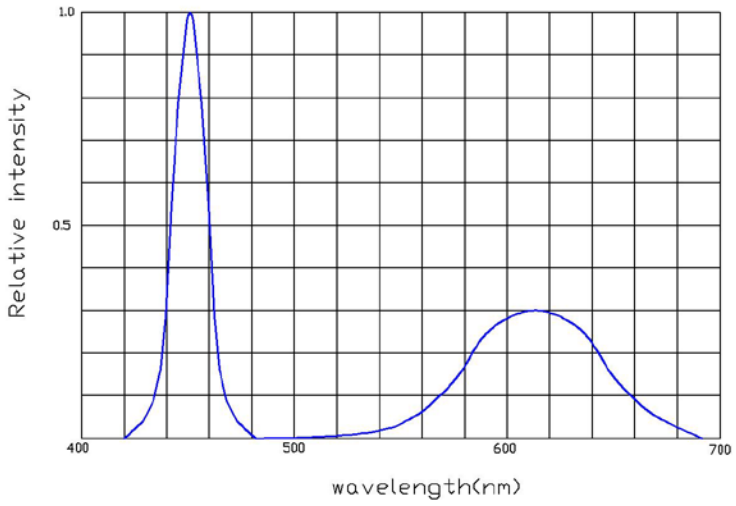
classification	Symbol	min	max	Company	Conditions
Luminous Flux	IV	120	160	mcd	IF =5mA
		160	190		
		190	230		
Voltage grading	VF	2.6	2.7	V	IF =5mA
		2.7	2.8		
		2.8	2.9		
Color temperature	Tc	10000	12000	K	IF =5mA
		12000	15000		
		15000	20000		
		20000	30000		

• Electrical tolerance

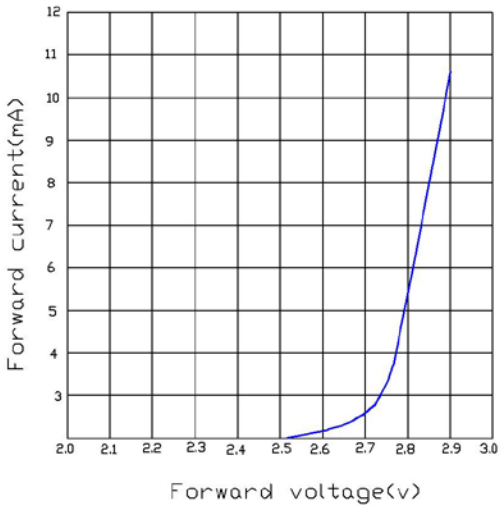
Parameter	Symbol	Company	Error
Radiant flux	IV	mcd	± 20%
Wavelength	Tc	K	±500K
Voltage	VF	V	± 0.1V
Chromatic coordinates	X/Y	/	±0.01

•Typical electro-optical characteristics curves

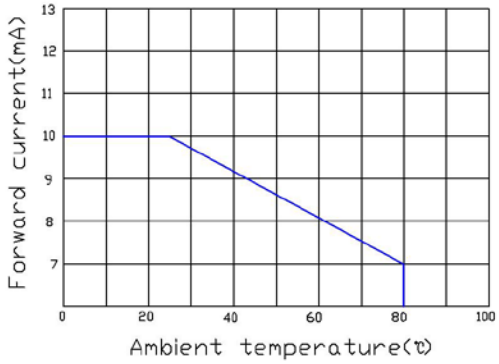
Relative intensity VS wavelength



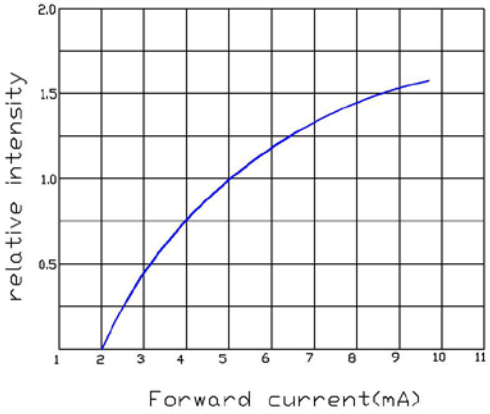
Voltage current relationship



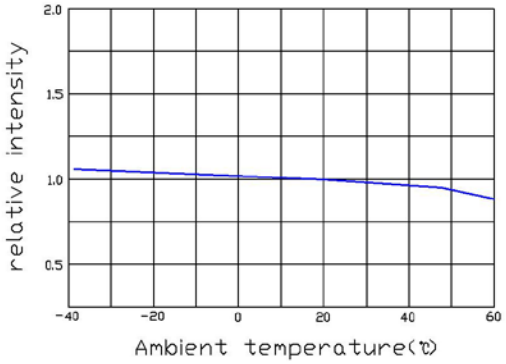
Current and a'mbient temperature



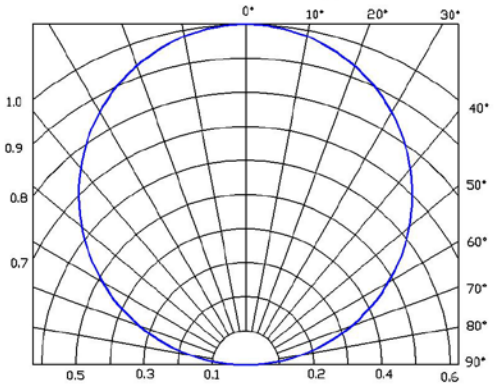
Relative light intensity vs current



Relative light intensity vs ambient temperature



Radiation angle



•Reliability experiment

Test items	Test conditions	Number	Standard	Failure criteria	Number（PCS）
Damp proof grade	1. Maximum reflow temperature = 260 ℃, 10 seconds, reflow twice 2. Storage conditions before reflow soldering: 30 ℃, relative humidity = 70%, 168h	-	JEITA ED-4701 300.301	**# 1**	0/22
Welding reliability	The maximum reflow temperature is 245 ± 5 ℃ for 5 seconds	-	JEITA ED-4701 303 303A	**# 2**	0/22
Thermal cycling	-40 ℃ for 30 m inutes ~ 25 ℃ for 5minutes~100 ℃ for 30 minutes ~ 25 ℃ for 5 minutes	300cycles	JESD22-A104	**# 1**	0/22
Thermal Shock	-35 ℃ 15 min conversion time 3 min 85 ℃ 15 min	300cycles	JESD22-A106	**# 1**	0/22
High temperature storage	Ta=100℃	1000H	JESD22-A103	**# 1**	0/22
Low temperature storage	Ta=-40℃	1000H	JESD22-A119	**# 1**	0/22
Room temperature aging	Ta=25℃ IF=5mA	1000H	JESD22-A108	**# 1**	0/22

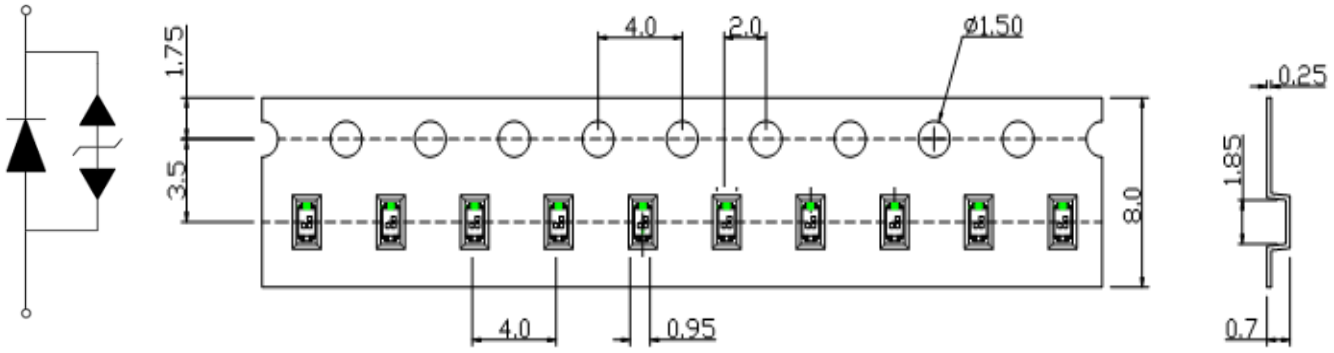
Failure Criteria

Standard #	project	Test conditions	Failure criteria
# 1	Forward voltage(VF)	IF=5mA	＞U.S.L*1.1
	Radiant flux	IF=5mA	＜L.S.L*0.7
	Reverse current	VR=5V	＞U.S.L*2.0
# 2	Welding reliability	/	Solder paste covering less than 95%

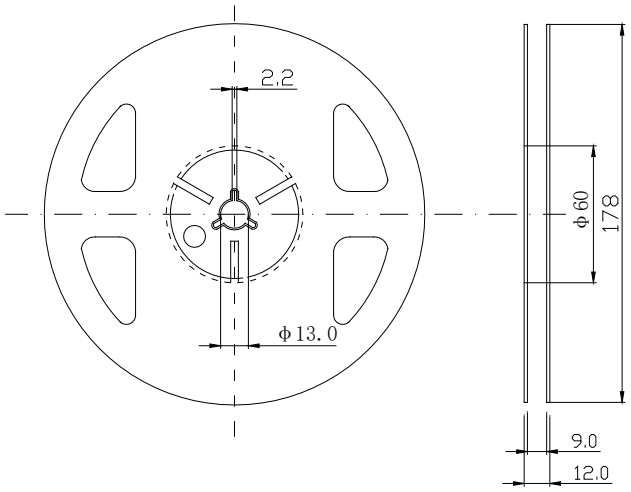
★ **U.S.L : Upper specification limit**

★ **L.S.L : Lower specification limit**

● Packaging

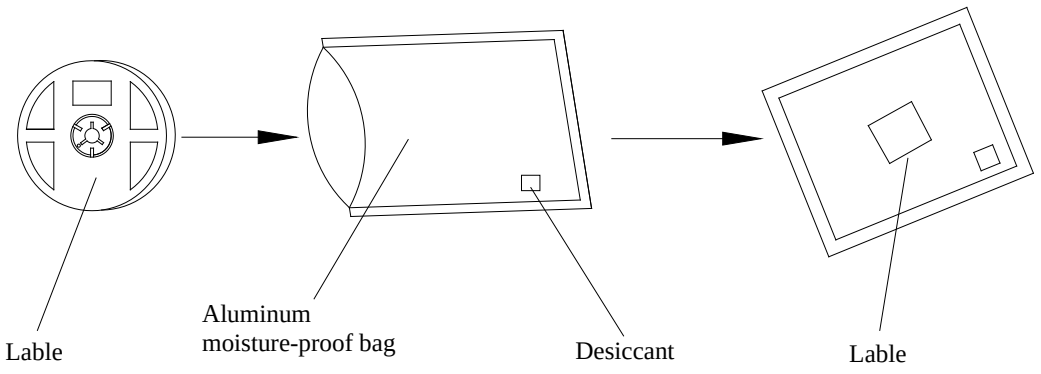


Note: Tolerance unless mentioned is ±0.1mm; Unit = mm



Carrier Tape Dimensions: Loaded Quantity 5000 pcs Per Reel.

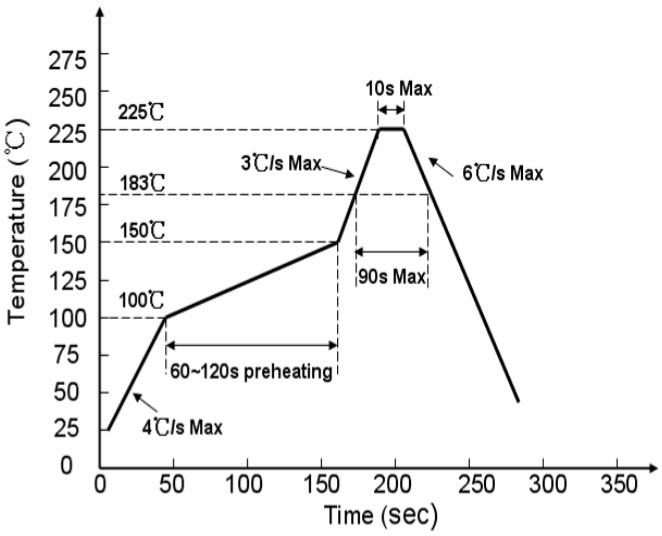
• Moisture Resistant Packaging



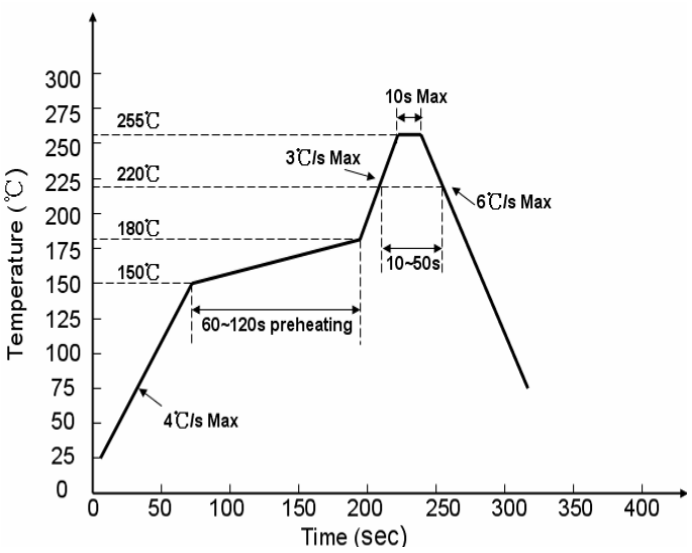
- **Precautions for Use**

- **SMT Reflow Soldering Instructions**

<Pb-free solder>



<Lead solder>



■Precautions for use

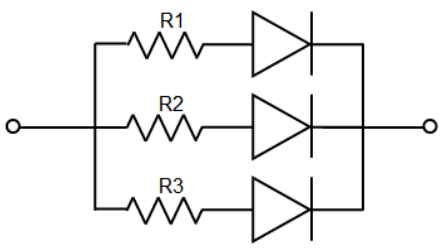
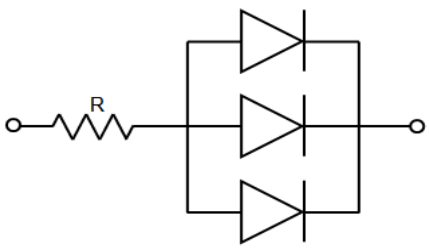
◆use

● LED is a current driven component, the slight change of voltage will produce large current fluctuation, which will lead to component damage.

The customer should use resistance series as current limiting protection.

● In order to ensure the color consistency of multiple LEDs in parallel, it is recommended to use a separate resistor for each branch, as shown in mode a below;

If the circuit shown in mode B below is used, the LED light color may be different due to the different volt ampere characteristics of each LED

Circuit mode A	Circuit mode B
	

●Too high temperature will affect the brightness and other performance of LED, so in order to make the LED have better performance, we should keep the led away from heat source

◆storage

● Without opening the original package, the recommended storage environment is: temperature 5 ℃ ~ 30 ℃, humidity below 85% RH. When inventory exceeds two months,Dehumidification should be carried out before use at 60 ℃ / 8 hours

●After opening the original package, the recommended storage environment is: temperature 5 ~ 30 ° C, humidity below 60%

● LED is a humidity sensitive element. In order to avoid moisture absorption, it is recommended to store the LED in a sealed container with desiccant or in a nitrogen moisture-proof cabinet after opening the package

●After unpacking, the components should be used within 168 hours (7 days); and the welding should be completed as soon as possible after placement

●If the desiccant fails or the element is exposed to air for more than 168 hours (7 days), dehumidification should be performed

◆Electrostatic protection

LED (especially the blue, turquoise, purple, white and pink LEDs with InGaN structure chip) are electrostatic sensitive components. Electrostatic or current overload will damage the LED structure. Led static damage or current overload may lead to abnormal performance, such as large leakage, low VF, or unable to light up, etc. So please pay attention to the following

● Wear anti-static wrist strap or anti-static gloves when touching led;

●All machines and equipment, tools, work table, material rack, etc. should be properly grounded (grounding impedance value less than 10 Ω);

●Storage or handling of LED should use anti-static bag, anti-static box and anti-static turnover box. It is strictly prohibited to use ordinary plastic products;

●It is suggested that ion fans should be used to suppress static electricity during operation.

◆clean

It is recommended to use alcohol solution such as isopropanol to clean led, and corrosive solution is strictly prohibited.

◆Welding

●Refer to the temperature curve on page 1 for reflow soldering conditions;

● The number of reflow soldering shall not exceed two times;

●Manual welding is only recommended in case of repair and rework. The maximum welding temperature should not exceed 300 degrees and should be completed within 3 seconds. The maximum power of soldering iron should not exceed 30W;

● During the welding process, it is strictly forbidden to touch the colloid at high temperature; after welding, it is forbidden to exert external force on the colloid and bend the PCB to avoid the components from being impacted.

◆Other

● The definition of LED described in this specification applies to the range of common electronic equipment (such as office equipment, communication equipment, etc.). If there are more stringent reliability requirements, especially when the failure or failure of components may directly endanger life and health (such as aerospace, transportation, transportation, medical devices, safety protection, etc.), please inform our business personnel in advance

●High brightness LED products may cause harm to human eyes when they are lit, so it is necessary to avoid looking directly from the top;

●For the purpose of continuous improvement, product appearance and specifications may be changed without prior notice