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DATA SHEET

PART NO.: LS193JRCT-5A-XG

REV: A/0

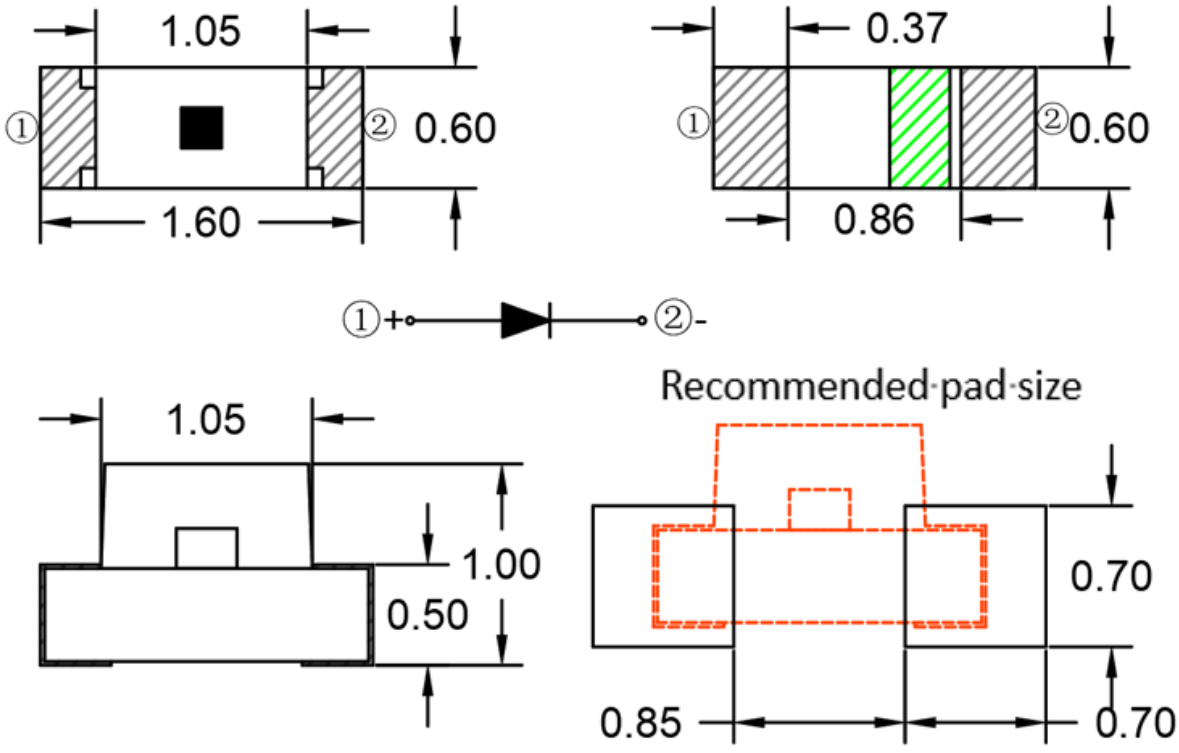
CUSTOMER'S APPROVAL:_____ DCC: _____

PARA light	1.6 x 0.6 x 1.0 mm SMD LED	
	LS193JRCT-5A-XG	REV:A / 0

FEATURES

Appearance size (L/W/H): 1.6 ×0.6×1.0mm
Luminous color/wafer material: Red/AIGaInp
Colloid: Transparent colloid
EIA specification 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 ±0.1mm unless otherwise specified.

Maximum absolute rating (@Ta=25°C)

parameter	symbol	Maximum rating	Unit	Notes
Power consumption	Pd	65	mW	
Maximum pulse current	IFP	80	mA	1/10 duty cycle, 0.1ms pulse width
Forward DC operating current	IF	25	mA	
Reverse voltage	VR	5	V	
Electrostatic discharge	ESD	2000	V	HBM mode
Operating ambient temperature	Topr	-40°C ~ + 85°C		
Storage ambient temperature	Tstg	-40°C ~ + 90°C		
Welding conditions	Tsol	Reflow soldering: 255°C, 10s， Manual welding: 300°C, 3s		

Photoelectric parameters (@Ta=25°C)

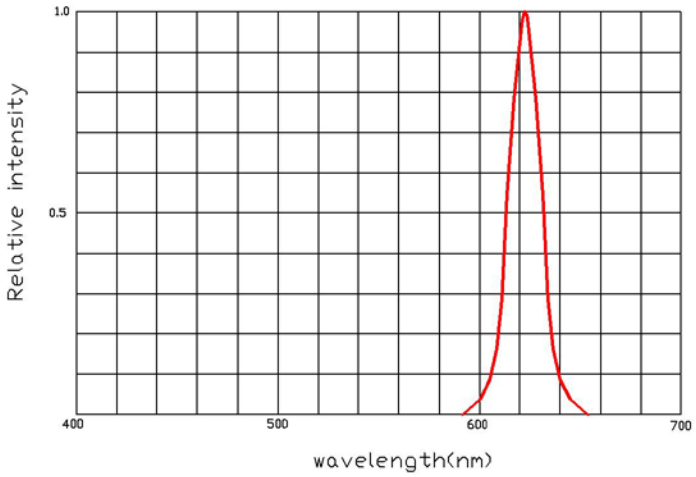
parameter	symbol	Min	Typ	Max	Unit	Test
Light intensity	IV	20	---	75	mcd	IF =5mA
Forward voltage	VF	1.7	---	2.3	V	IF =5mA
WD	λd	617	---	627	nm	IF =5mA
Reverse current	IR	---	---	5	uA	VR=5V
viewing angle	2θ1/2	---	120	---	deg	IF =5mA

Bin (@Ta=25°C)

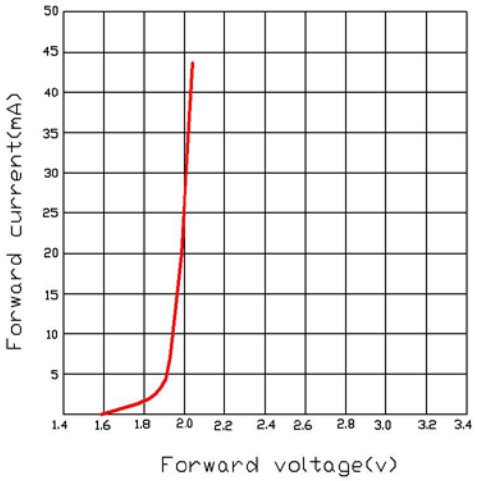
classify	symbol	Min	Max	Unit	Test
Brightness binning	IV	20	28	mcd	IF =5mA
		28	39		
		39	55		
		55	75		
Voltage binning	VF	1.7	1.9	V	IF =5mA
		1.9	2.1		
		2.1	2.3		
wavelength	WD	617	620	nm	IF =5mA
		620	623		
		623	626		
		626	629		

Characteristic curve of photoelectric(@Ta=25°C)

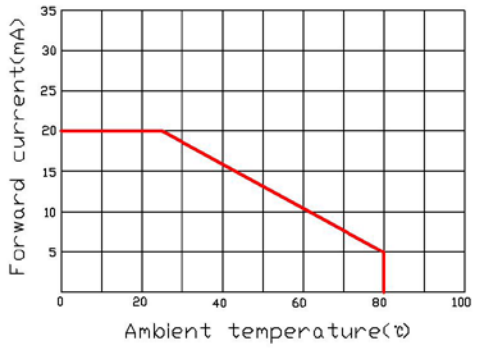
Relative intensity VS wavelength



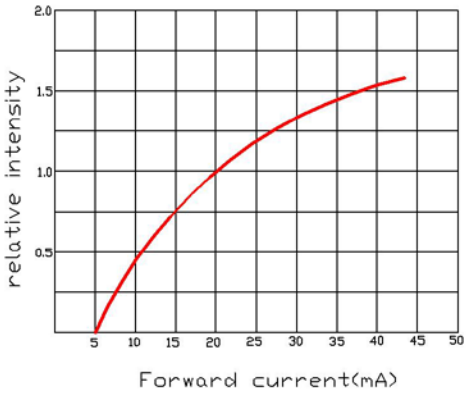
Voltage current relationship



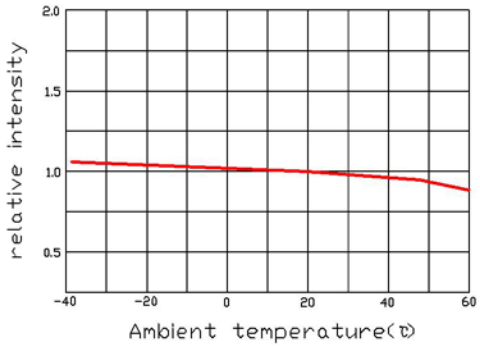
Current and a`mbient temperature



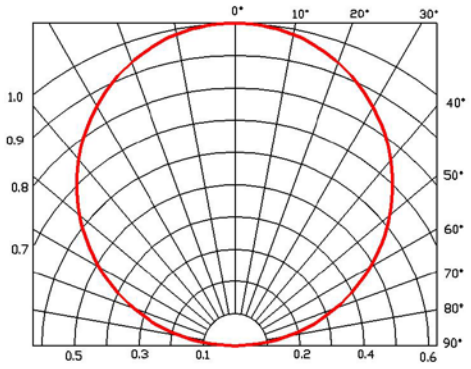
Relative light intensity vs current



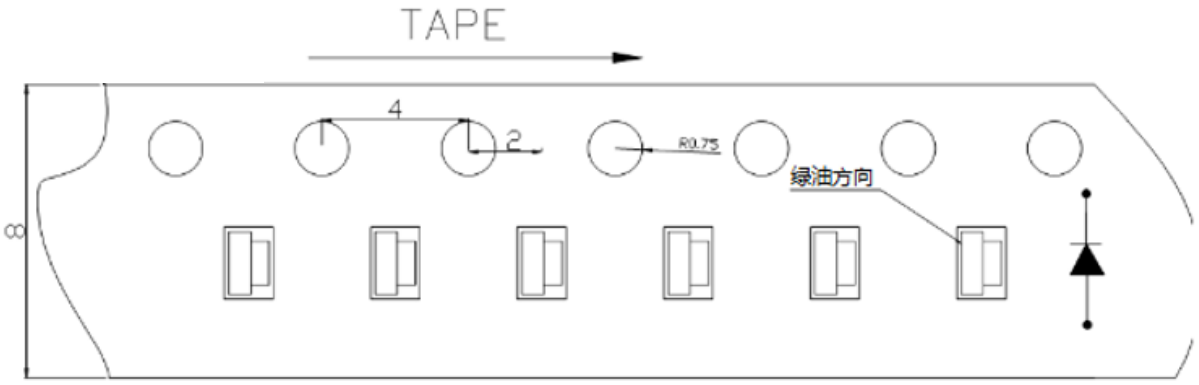
Relative light intensity vs ambient temperature



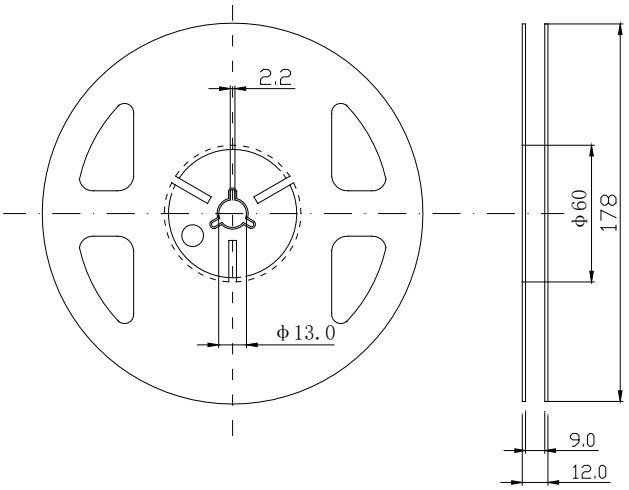
Radiation angle



Packaging size



Package:4000PCS/reel



unit：mm；
error：±0.15mm

symbol	unit	error
IV	mcd	± 15%
λd	nm	±2nm
VF	V	± 0.1V

Reliability experiments

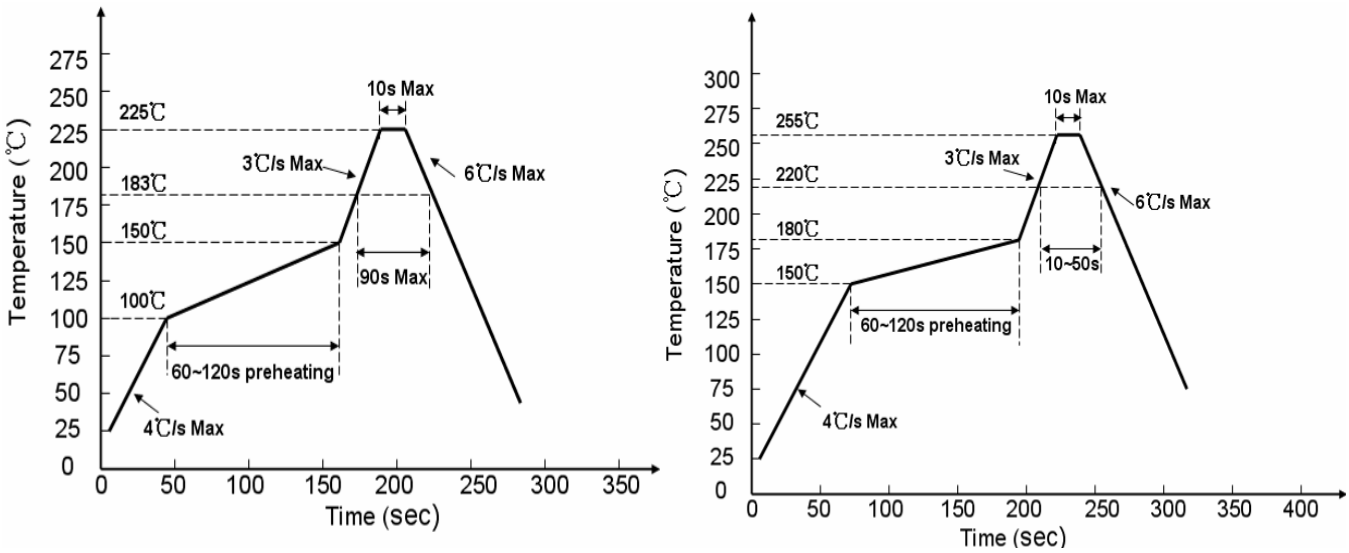
number	Test Item	Ref.Standard	Test Conditions	Note	Conclusion
1	Reflow Soldering	JESD22-B106	Tsld=260℃,10sec	3 times	0/20
2	Temperature Cycle	JESD22-A104	85℃(30Min)~25℃（5min）~-40℃(30Min)	300 cycle	0/20
3	Thermal Shock	JESD22-A106	-40℃（15Min）~115℃（15Min)/切换时间5Min	200 cycle	0/20
4	High Temperature Storage	JESD22-A103	Ta=100℃	1000 hrs	0/20
5	Low Temperature Storage	JESD22-A119	Ta=-40℃	1000 hrs	0/20
6	Life Test	JESD22-A108	Ta=25℃ IF=20mA	1000 hrs	0/20
7	Pulsed Operating Life	Enterprise standards	IFP = specification design, pulse width≤ 10ms, duty cycle ≤10%, high temperature energized pulse test (100±5°C-20mA-pulse 2.0HZ)	168hrs	0/20
8	Double 85 Aging attenuation experiment	Enterprise standards	85±5℃/85±5%RH；	1000hrs	0/20

Failure criteria

Standard#	project	Test	Failure criteria
# 1	Forward voltage (VF)	IF=5mA	＞U.S.L*1.1
	Light intensity (IV)	IF=5mA	＜L.S.L*0.7
	Reverse Current (IR)	VR=5V	＞U.S.L*2.0
# 2	Welding reliability	/	Less than 95% of solder paste covers pads

★ U.S.L : Specification cap
★ L.S.L: Specification floor

A reflow temperature profile is recommended

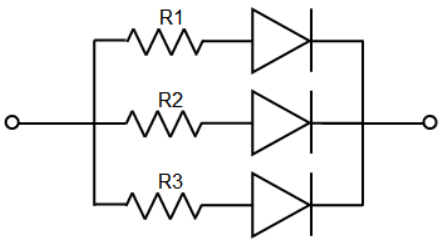
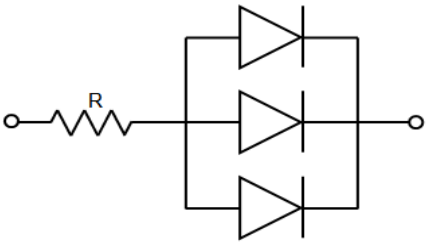


Precautions for use

◆ Use

● LED is a current driving element, and a small change in voltage will produce large current fluctuations, resulting in the destruction of the component.
Customers should use resistors in series for current limiting protection.

● In order to ensure that multiple LEDs are used in parallel with the same time color, it is recommended to use a separate resistor for each branch, as shown in Mode A in the figure below;
If the circuit shown in Mode B of the figure below is used, the light color of the LED may differ due to the different volt-ampere characteristics of each LED.

Circuit mode A	Circuit mode B
	

● Too high temperature will affect the brightness of LED and other performance, so in order to make LED have better performance, LED should be kept away from heat sources.

● Photoelectric parameter tolerance:

Forward voltage (REF / VF): ± 0.1V	(CAT / IV)： ± 15%	(HUE / XY): ± 0.003

◆ Storage

● If the original package is not opened, the recommended storage environment is: temperature 5 °C ~ 30 °C, humidity 85% RH below. When the inventory is more than two months,
Dehumidification should be done before use, under conditions of 60°C/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 of the component, it is recommended to open the package and store it in a closed container with desiccant, or store it in
Inside the nitrogen moisture-proof cabinet;
● After opening the package, the component should be used within 168 hours (7 days); And welding should be completed as soon as possible after patching;
● If the desiccant fails or the component is exposed to air for more than 168 hours (7 days), dehumidification treatment should be done;
Baking conditions: 60°C/24 hours.

◆ ESD ESD protection

LEDs (especially blue, emerald green, purple, white, and pink LEDs using InGaN structural chips) are electrostatic sensitive components that are electrostatic or current overloaded
Will destroy the LED structure. Electrostatic damage or current overload of the LED can cause performance anomalies, such as excessive leakage current, low VF, or non-existent
Light up and more. So please note the following:
● Wear anti-static wristbands or anti-static gloves when contacting LEDs;
● All machinery and equipment, tools, work desks, material racks, etc., should be properly grounded protection (ground impedance value within 10Ω);
● Anti-static bags, anti-static boxes and anti-static turnover boxes should be used for storing or handling LEDs, and ordinary plastic products are strictly prohibited;
● It is recommended to use an ion fan to suppress the generation of static electricity during operation.

◆ Cleaning

It is recommended to use an alcohol solution such as isopropanol to clean the LED, and it is strictly forbidden to use a corrosive solution for cleaning.

◆ Welding

● Reflow soldering welding conditions refer to the temperature curve on the first page;
● The number of reflow soldering welding shall not exceed twice;
● It is only recommended to use manual welding in the case of repair and rework, the maximum welding temperature should not exceed 300 degrees, and it must be completed within 3 seconds.
The maximum power of the soldering iron should not exceed 30W;
● During the welding process, it is strictly forbidden to touch the colloid at high temperature; After soldering, it is forbidden to apply external force to the colloid, and it is forbidden to bend the PCB to avoid the component from being affected
Strike.

◆ Others

● The definition of LED described in this specification is used in the scope 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 equipment, safety protection, etc.), please inform our business personnel in advance;
● High-brightness LED products may cause harm to the human eye when lit, so avoid looking directly from above;
● For the purpose of continuous improvement, product appearance and parameter specifications may be modified without prior notice.