

3020 Series Datasheet



Features & Benefits

- Package: 3.0*2.0*1.3mm (Top view white LED)
- Emitted Color: White
- Soldering methods: All SMT assembly methods
- Built-in ESD Protection Device
- Compliance to AEC-Q101 Standard

Typical Application:

- LCD backlight
- Automotive Lighting Interior
- General use

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1. Absolute Maximum Ratings(Ta=25°C)

Parameter	Symbol	Rating	Unit
Power Dissipation	Pd	100	mW
Forward Current	I _F	30	mA
Peak Forward Current	I _{FP}	60	mA
Junction Temperature	T _j	120	°C
Electrostatic Discharge	ESD	6000V(HBM)	V
Soldering Temperature	Tsol	Reflow soldering (260°C for 10sec.)	°C
Operating Temperature	Topr	-40°C ~ +100°C	-
Storage Temperature	Tstg	-40°C ~ +100°C	-

* I_{FP} condition: pulse width ≤10msec, duty cycle ≤1/10

2. Electrical-optical characteristics(Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Forward Voltage	V _f	-	3.0	-	V	
Luminous Flux	Φ	-	2080	-	mcd	IF=20mA
Viewing Angle	2θ _{1/2}	-	120	-	deg	
Reverse Voltage	V _R	-	0.8	1.2	V	IR=10mA
Thermal Resistance	R _{thj-s}	-	65	70	°C/W	-

3. Product Binning
3.1 Luminous flux (IF =20mA,tolerance is ±3%)

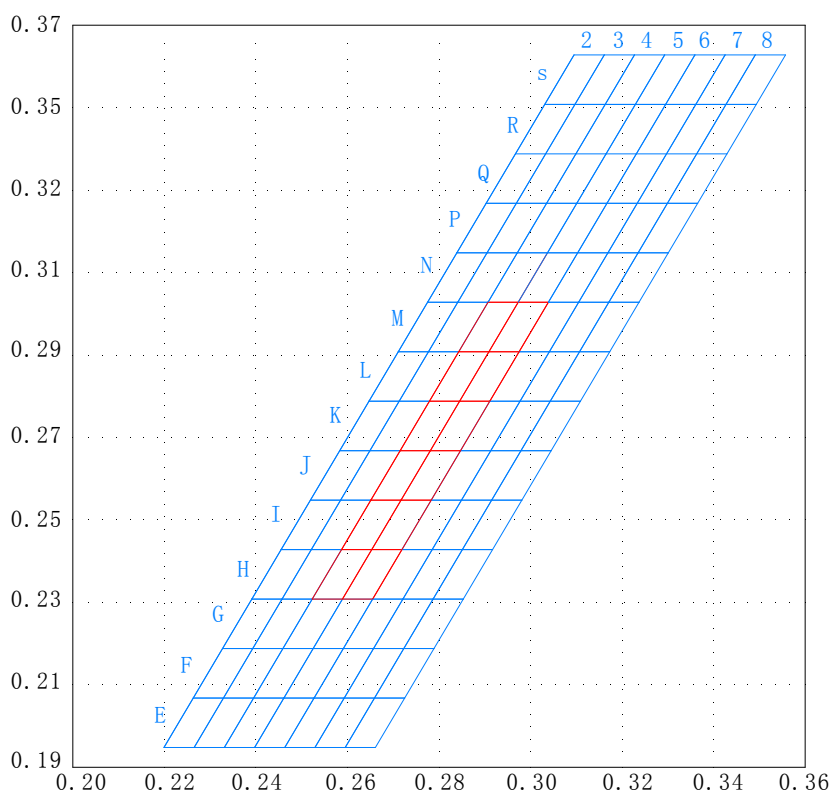
BIN code	Min (mcd)	Max (mcd)
27	1850	1920
28	1920	2000
29	2000	2080
30	2080	2160
31	2160	2260
32	2260	2360
33	2360	2460
34	2460	2560
35	2560	2660

3.2 Forward voltage (IF=20mA, tolerance is ±0.03V)

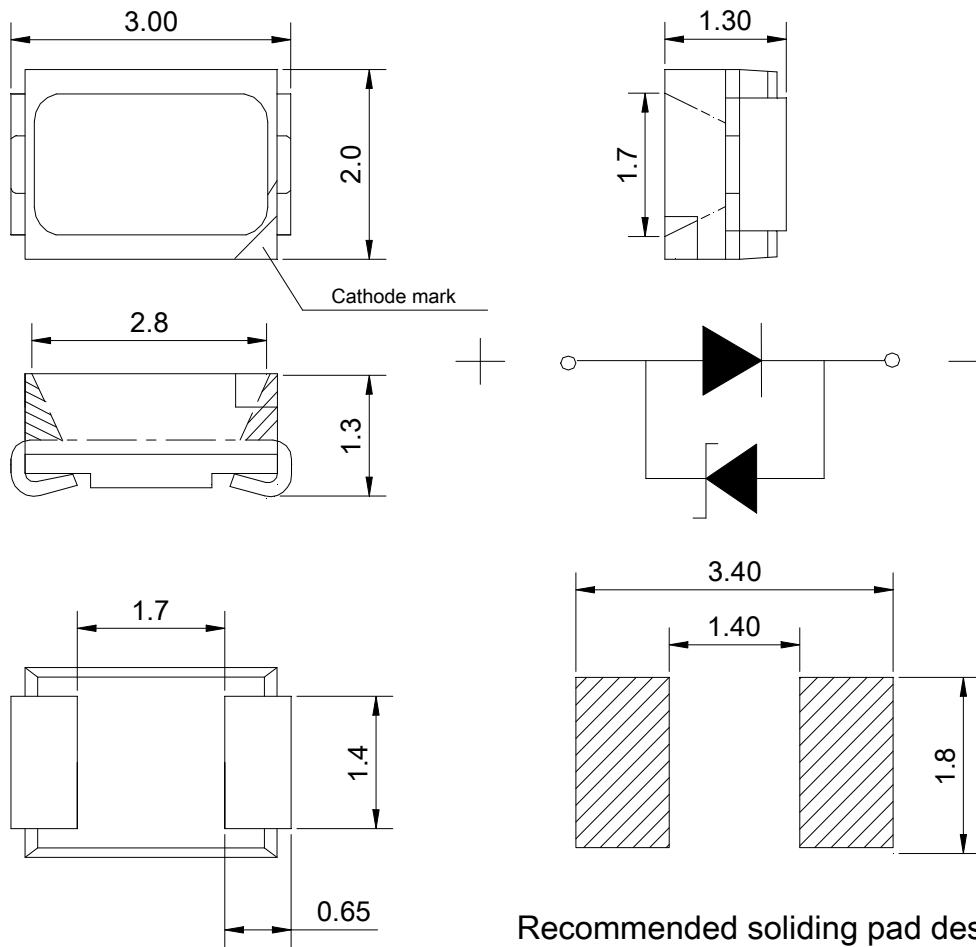
BIN Code	Min (V)	Max (V)
5-2	2.8	2.9
6-1	2.9	3.0
6-2	3.0	3.1
7-1	3.1	3.2
7-2	3.2	3.3

3.3 Chromaticity coordinates specifications (IF =20mA, tolerance is ±0.005)

NO.	x	y	NO.	x	y	NO.	x	y
H4	0.2587	0.2428	I4	0.2651	0.2548	J4	0.2715	0.2668
	0.2589	0.2308		0.2653	0.2428		0.2717	0.2548
	0.2523	0.2308		0.2587	0.2428		0.2651	0.2548
	0.2653	0.2428		0.2717	0.2548		0.2781	0.2668
K4	0.2779	0.2788	L4	0.2843	0.2908	M4	0.2907	0.3028
	0.2781	0.2668		0.2845	0.2788		0.2909	0.2908
	0.2715	0.2668		0.2779	0.2788		0.2843	0.2908
	0.2845	0.2788		0.2909	0.2908		0.2973	0.3028
H5	0.2653	0.2428	I5	0.2717	0.2548	J5	0.2781	0.2668
	0.2655	0.2308		0.2719	0.2428		0.2783	0.2548
	0.2589	0.2308		0.2653	0.2428		0.2717	0.2548
	0.2719	0.2428		0.2783	0.2548		0.2847	0.2668
K5	0.2845	0.2788	L5	0.2909	0.2908	M5	0.2973	0.3028
	0.2847	0.2668		0.2911	0.2788		0.2975	0.2908
	0.2781	0.2668		0.2845	0.2788		0.2909	0.2908
	0.2911	0.2788		0.2975	0.2908		0.3039	0.3028



4. Package Outline Dimension



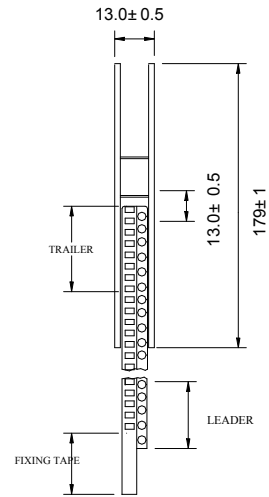
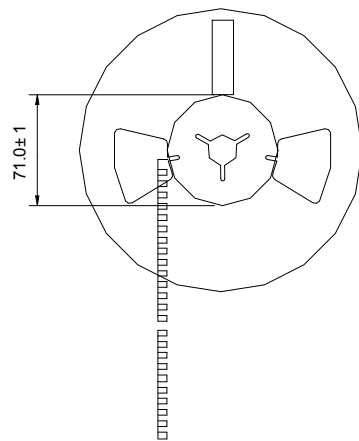
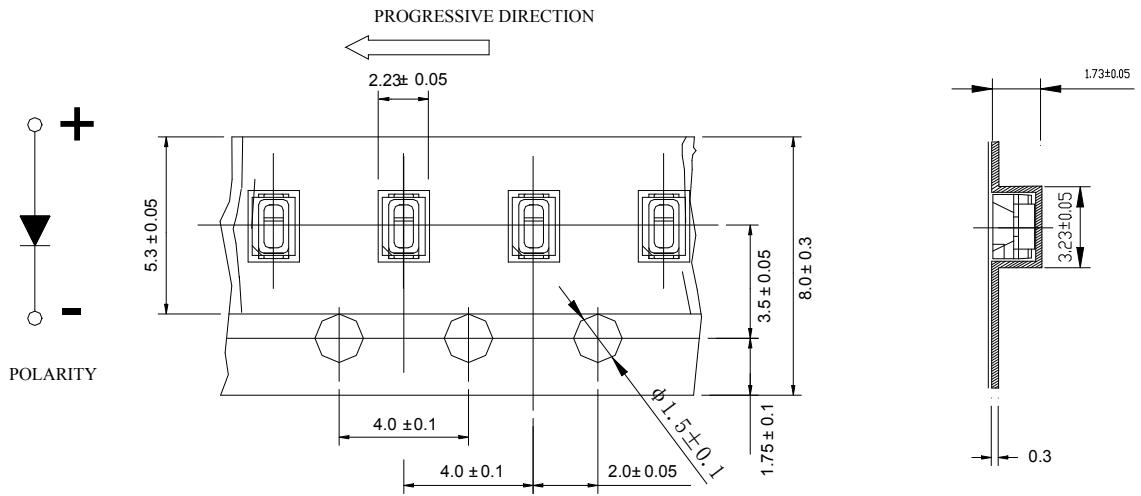
Recommended soldering pad design

Notes:

- ❶ All dimensions are in millimeters.
- ❷ Tolerance is ± 0.1 mm unless otherwise specified.
- ❸ Gewicht/Approx.weight: 9.0 ± 0.5 mg.

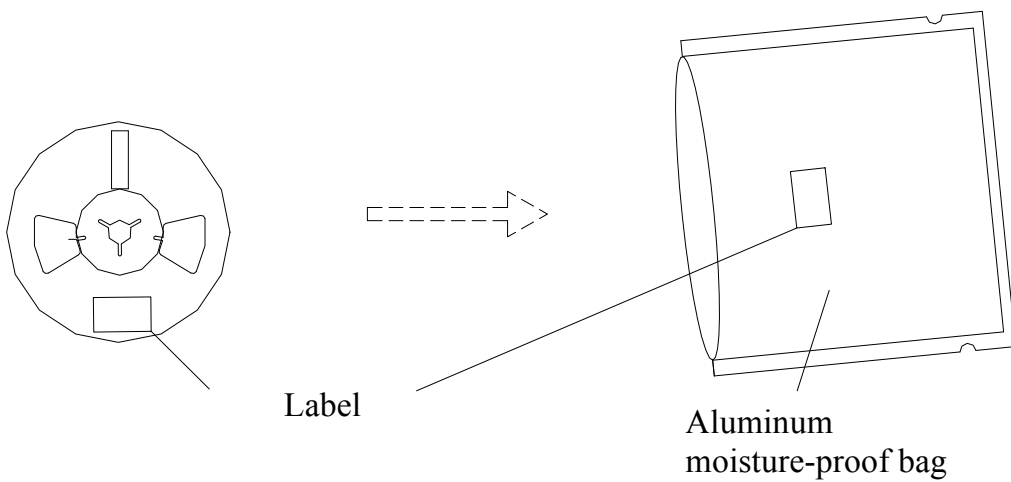
5. Taping specifications (unit: mm)

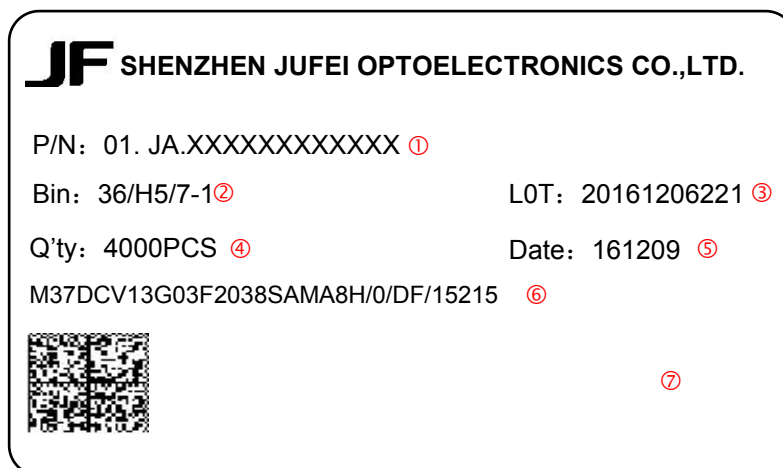
Loaded quantity: 1000 ~ 4000



pcs/reel

6. Package Method:(unit: mm)

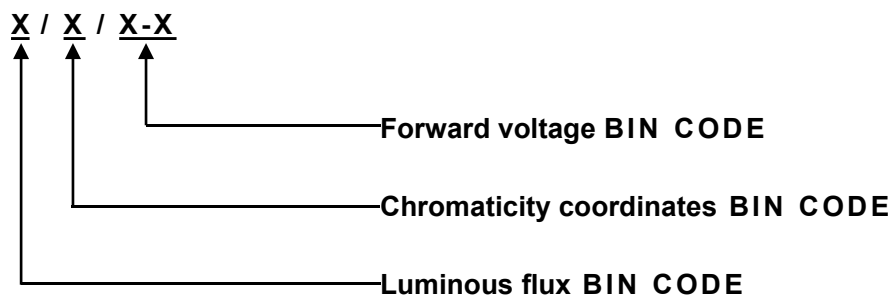


7. Label description

7.1 Label description

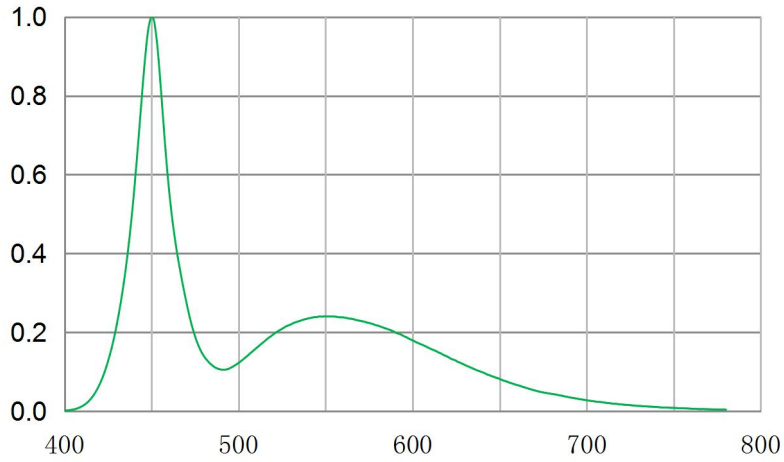
- ① Product Type
- ② Product Bin
- ③ Produce Batch
- ④ Quantity
- ⑤ Produce Date
- ⑥ Product Tracing Num
- ⑦ RoHS Sign

RoHS
7.2 Part Number System description
X₁X₂ · X₃X₄ · X₅X₆X₇X₈X₉X₁₀X₁₁ X₁₂X₁₃X₁₄ X₁₅X₁₆

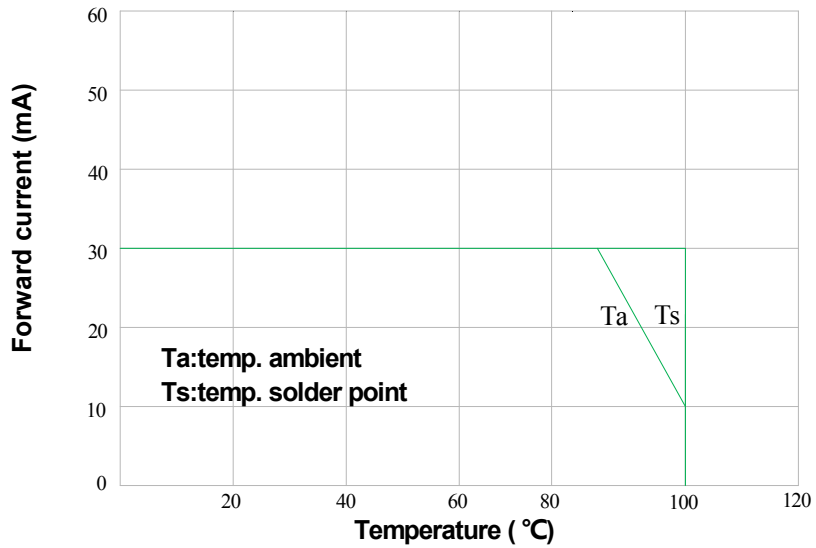
Part Number Code	Description	Part Number	Value
X1X2	Production Type	01	
X3	Company	J	JF
X4	Applications	A	Automotive
X5	ESD Protection Status	Z	Zener
X6	Forward Current	A	20mA
X7- X11	Product Serial number	3020	3020
X12	Emitting Color	W	White
X12X13	NTSC	65	65
X14	Patent status	P	Patent
X15X16	serial number	01	01

7.3 BIN description


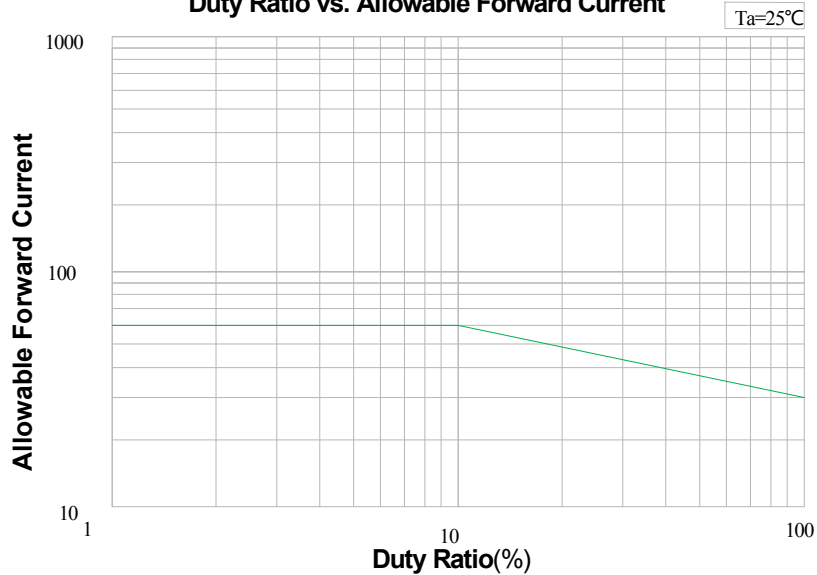
8. Typical Electro-Optical Characteristics Curves

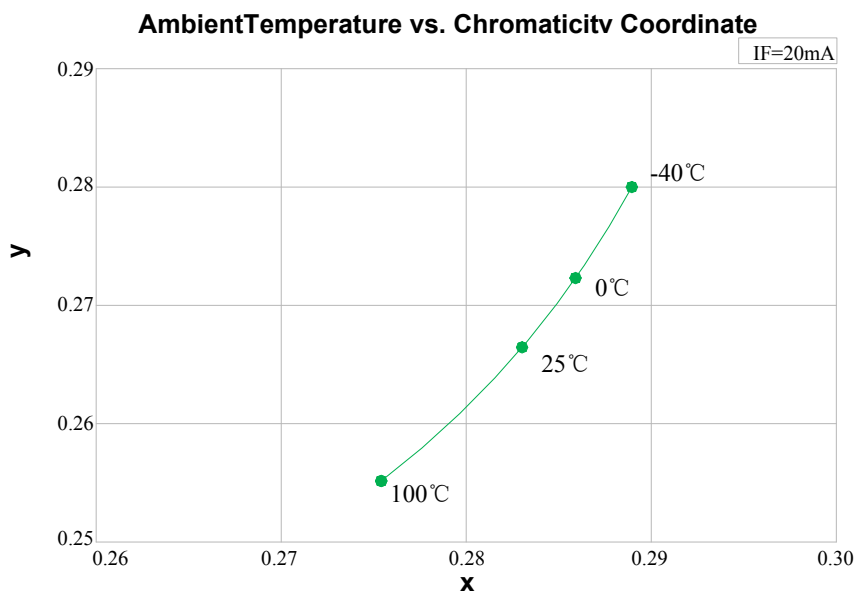
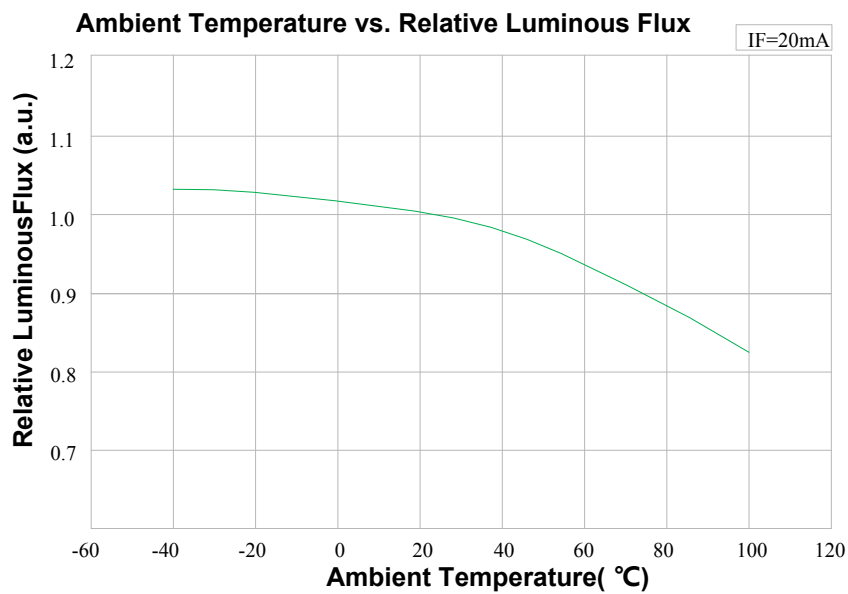
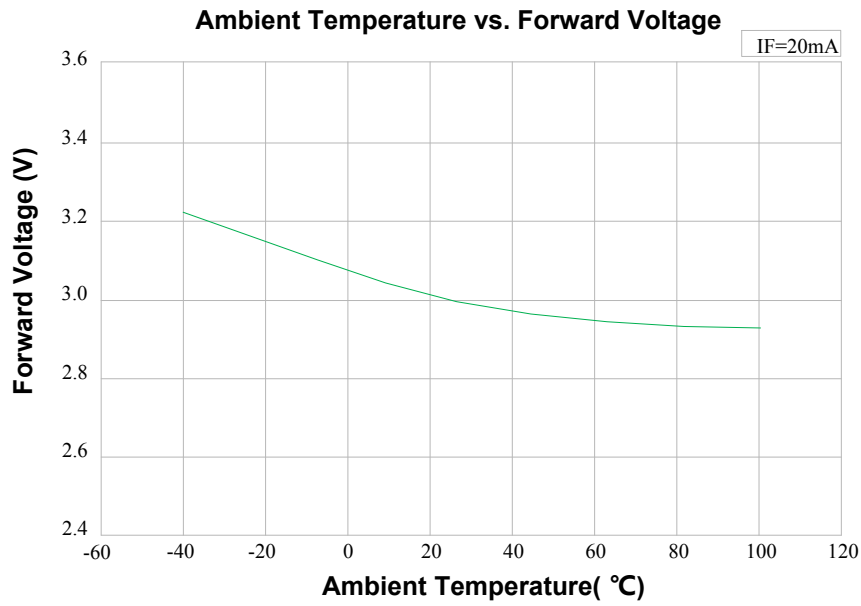


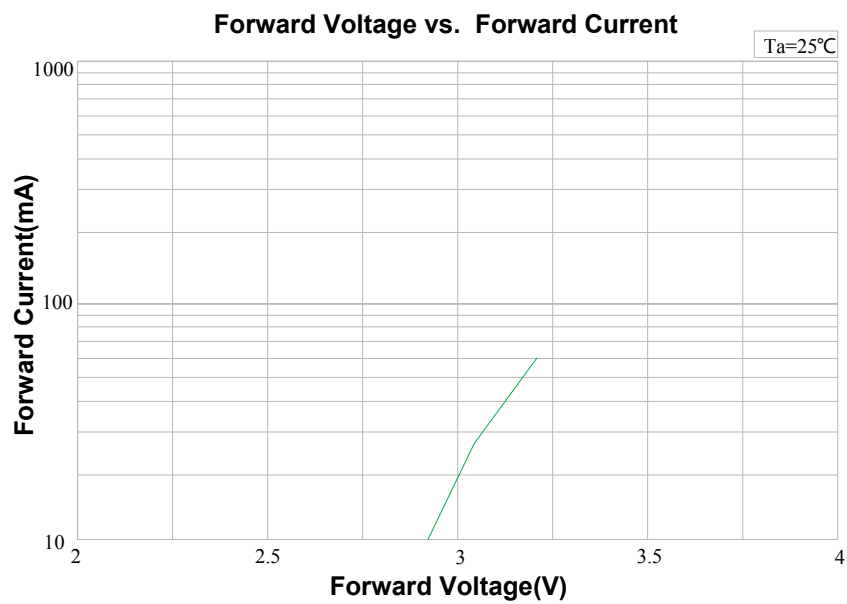
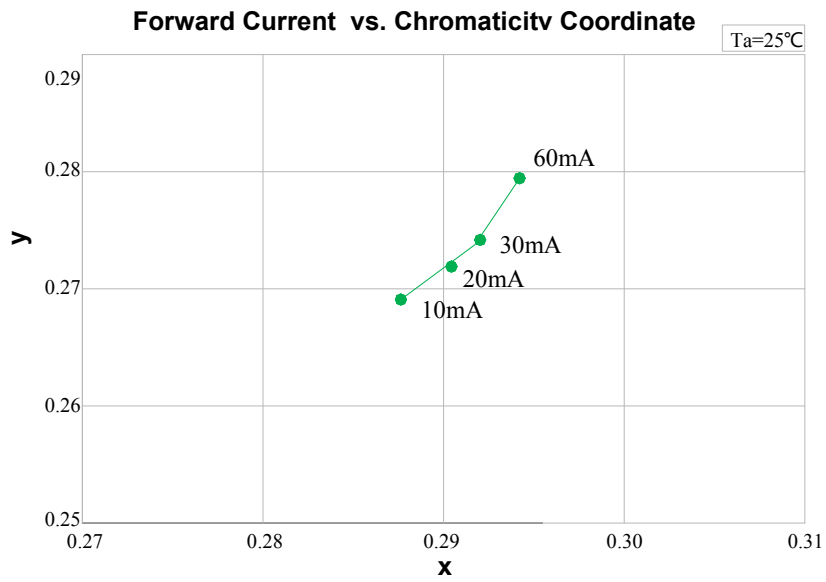
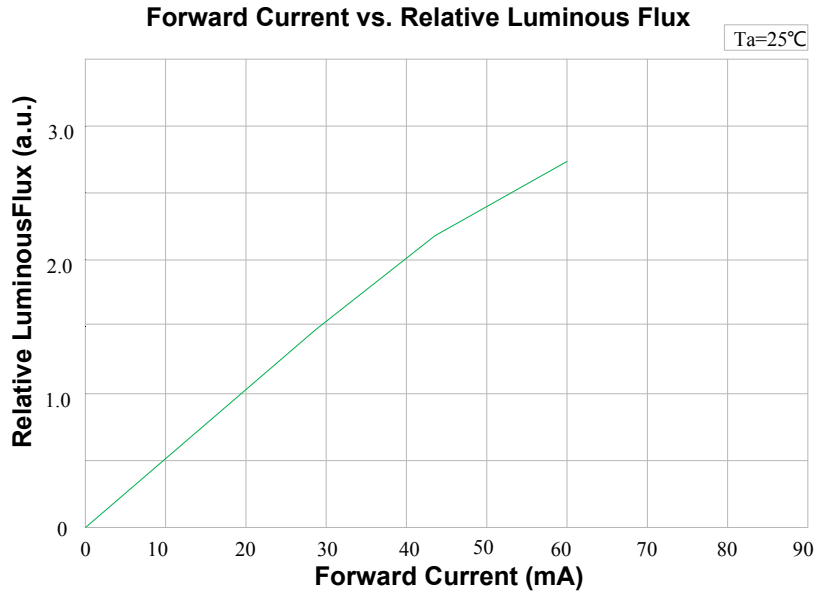
Temperature vs. Allowable Forward Current

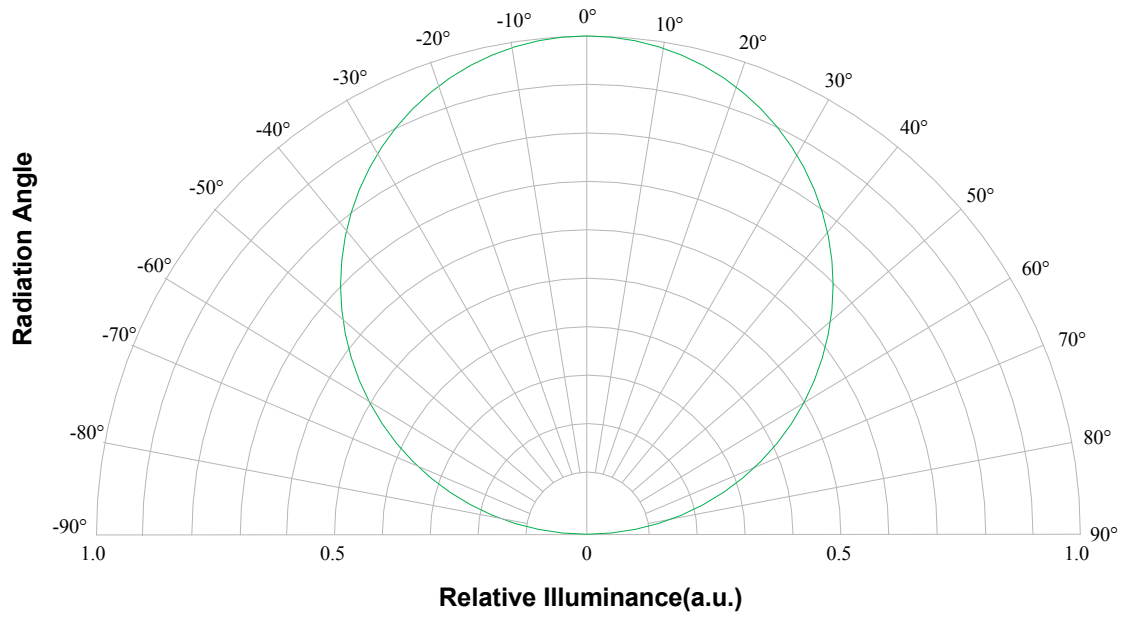


Duty Ratio vs. Allowable Forward Current









9. Reliability test items and conditions

No.	Test Item	Applicable	Test Conditions	Sample	Ac/Re
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		Standard		size	
1	Resistance to Soldering Heat	JEITA ED-4701 300 301	Tsld=260°C, 10sec, 2reflows, Precondition: 60°C, 60%RH, 40hr	22	0/1
2	Thermal Shock	JEITA ED-4701 300 307	-40°C to 100°C, 30min dwell, Precondition: 60°C, 60%RH, 40hr Test Time=1000 cycles	22	0/1
3	Temperature Cycle	JEITA ED-4701 100 105	-40°C(30min)~25(5min)~100°C (30min)~25°C(5min) Test Time=100 cycles	22	0/1
4	High Temperature Storage	JEITA ED-4701 200 201	TA=100°C Test time=1000hrs	22	0/1
5	Temperature Humidity Storage	JEITA ED-4701 100 103	TA=60°C,RH=90%; Test time =1000H	22	0/1
6	Low Temperature Storage	JEITA ED-4701 200 202	TA=-40°C Test time=1000hrs	22	0/1
7	Room Temperature Operating	JF Standard	TA=+25°C Test If=DC20mA Test time=1000hrs	22	0/1
8	High Temperature Operating Life	JF Standard	TA =+85°C Test If=DC20mA Test time=1000hrs	22	0/1
9	Temperature Humidity Operating Life	JF Standard	85°C, RH=85% Test If=DC20mA (30mins on/30mins off) Test time=1000hrs	22	0/1
10	Low Temperature Operating Life	JF Standard	TA=-40°C Test If=DC20mA Test time=1000hrs	22	0/1

※ Judgment criteria of failure for the reliability

- Flux: Below 80% of initial values
- Vf: Over 10% of upper limit value

Note:

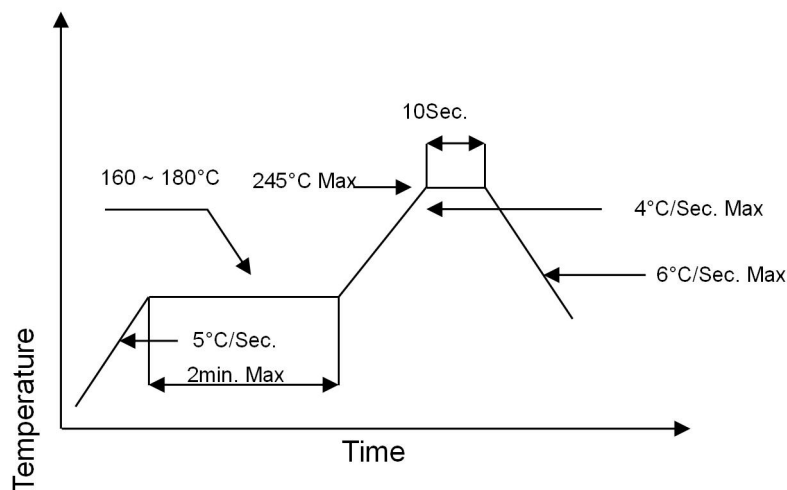
- ① The tested LED have been returned to normal ambient conditions before testing
- ② Measurement shall be taken within 2 hours

10. Precautions for use

10.1 Soldering

SMD LED encapsulation is very flexible, outside forces easily demolish radiant surface and plastic, As soldering, Please handle with care!

- a. With No-clean Flux, according to reflow soldering cure condition when soldering, Reflow soldering should not be done more than two times, simultaneity you must insure clean on the radiant surface. Otherwise, foreign objects can affect radiant color.
- b. Don't process manual soldering except repair. Recommended to be soldered with 25W Anti-static iron. The temperature of the iron should be lower than 300°C and soldering time should not be done more than three seconds, at the same time iron can't touch radiant surface and plastic.
- c. Don't twist LED in course of manual soldering and experiment. Otherwise, the lights will not work possibly.
- d. Please use the same BIN grade in one panel, and don't mix the difference BIN grade in one panel when soldering. Otherwise, it will cause a serious uneven color problem.
- e. Please control the sulfur content of solder paste and PCB.
- f. Pb-free solder temp.-time profile as below: 245°C Max.



10.2 Cleaning

- a. Don't be cleaned with ultrasonic. Recommended to be wiped with isopropyl alcohol or pure alcohol, wiping time should not be more than one minute. LED must be placed at room temperature for fifteen minutes before producing .you must insure clean on the radiant surface. Otherwise, foreign objects can affect radiant color.
- b. LED can't be in contact with acetate, trichloroethylene, acetone, sulfur, nitride, acid, alkali, salt. These matters can destroy LED.

10.3 Sealing

- a. Sealing glue can't contain sulfur, because these matters can affect fluorescence powder poisoning.
- b. When using normal sealing glue, recommended will be operated life for 168hrs under normal temperature.

10.4 Storage

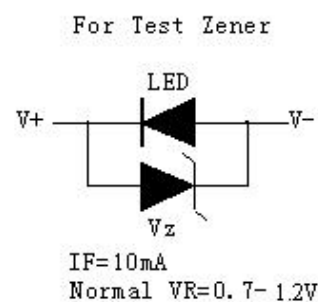
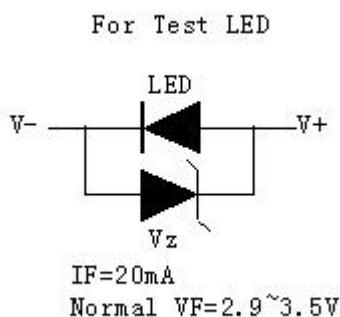
- a. Don't open the moisture proof bag before ready to use the LEDs.
- b. The LEDs should be kept at $<30^{\circ}\text{C}$ and $<90\%RH$ before opening the package. The max storage period before opening the package is 1 year.
- c. After opening the package:
When soldering, this could result in a decrease of the photoelectric effect or light intensity.
1) Soldering should be done right after mounting the product.
- d. After opening the package, the LEDs should be kept at $<30^{\circ}\text{C}/60\%RH$, and it should be used within 168hours.
- e. If the product has been exposed for more than 7 days after opening the package, baking is required before mounting. Baking condition as below: $70\pm 5^{\circ}\text{C}$ for 12hrs for roll goods, $105\pm 5^{\circ}\text{C}$ for 1hrs for bulk goods.
- f. The environment have no acid, alkali, corrosive gas, intensively shake and high magnetic field.

10.5 Static

- a. Static and Peak surge voltage can destroy LED, Avoiding Instantaneous voltage when turn on or turn off the lights.
- b. Please wear Anti-static wrist band, Anti-static glove, Anti-static shoes in the course of operation, and the equipment must be grounded.
- c. After LED is be destroyed, leakage current increase obviously, and it will be forward voltage falling or failure lamp in the case of low current.

10.6 Test

- a. Customer must apply the current limiting resistor in the circuit so as to drive the LEDs within the rated current. Otherwise slight voltage shift maybe will cause big current change and burn out will happen.
- b. Also, caution should be taken not to overload the LEDs with instantaneous high voltage at the turning ON and OFF of the circuit. Otherwise LED will be destroyed, testing methods as follow:



- c. The reverse voltage mustn't exceed 5v when lighting on or testing the LED, otherwise, LEDs will be damaged.

10.7 Else

Radiant color of LEDs will be a little change with the current, recommended that LED is be used in series and resistance, when lighting, please don't see directly radiant surface of LED, otherwise LED will burn eyes.

Revision History

Version: A0

Created by :

Version	Subjects(major change in previous version)	Date of change
A0	Initial Release	17 Dec. 2016

About Jufei@

The company production plant to the implementation of 10,000 purification, temperature and humidity, anti-static, the company introduced the most advanced SMD LED automatic production equipment, strict real integrated management system of ISO9001/TS16949, QC080000, ISO14001, OHSAS18001, and passed the CQC third-party certification; products by SGS, fully comply with the ROHS / REACH / halogen-free product environmental requirements. Jufei cost photoelectric LED products, widely recognized by the customers, has become the top ten brands of Chinese LED industry market customer satisfaction, and received the title of "Shenzhen Top Brand".

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