SMD LED Datasheet

WR-3528C05-XXBR-HW

Features

- High reliability
- High luminous intensity
- Peak wavelength λ p=660nm
- Surface light emitting
- Low forward voltage
- Pb-free
- This product itself will remain within RoHS compliant wersion

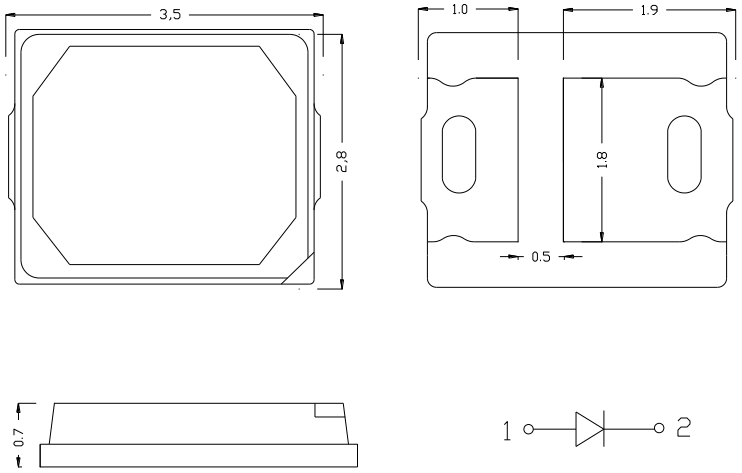
Description

The package features high brightness, low voltage, low power consumption, wide viewing Angle and compact form factor. These characteristics make this package the ideal LED for all plant lighting applications.

Applications

- Photosynthetic supplementation is carried out when the amount of sunlight is low or the time of sunlight is short
- Plant factories are the main lighting and provide the plants with periodic, light-morphogenetic induced lighting
- Widely used in aqueous solution culture, circular forest, sowing, breeding, seedlings, farms, flowers and other cultivation

Package outline

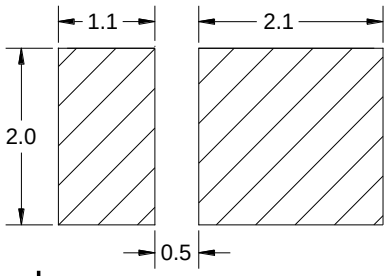


Notes:

1.All dimensions are in millimeters.

2.Tolerances are ±0.1;

Recommend Printed Circuit Board Attachment Pad



Absolute maximum ratings at Ta=25℃

Parameter	Symbol	Absolute Maximum Rating	Unit
Continuous Forward current	If	180	mA
Power Dissipation	PD	500	mW
Pulse Forward Current[1]	Ifp	250	mA
Operating temperature range	Top	-40 ~+100	℃
Storage temperature range	Tstg	-40 ~+100	℃
Electrostatic Discharge(HBM)	ESD	2000	V

Notes:

[1]1/10 Duty cycle,0.1ms pulse width.

Electro-optical characteristics at Ta=25℃

Parameter	Symbol	MIN.	TYP.	MAX.	Unit	Test Condition
Forward Voltage	V_F	3.0	---	3.4	V	IF=150mA
Luminous Flux	Φ_V	22	---	26	lm	IF=150mA
Dominant wavelength	λd	650	---	660	nm	IF=150mA
View Angle	$2\theta_{1/2}$	120	---	140	°	IF=150mA
Reverse Current	IR	---	---	10	uA	V_R =5V

Notes:

1. Tolerance of Radiation Power: ±10%.
2. Tolerance of Forward Voltage: ±0.1V.
3. Dominant Wavelength±2.0nm

Bin Range of LuminousFlux

Bin Code	Min.	Max.	Unit	Condition
DCA	22	24	lm	IF=150mA
DDA	24	26		

Note:

Tolerance of Luminous flux: ±10%.

Bin Range of ForwardVoltage

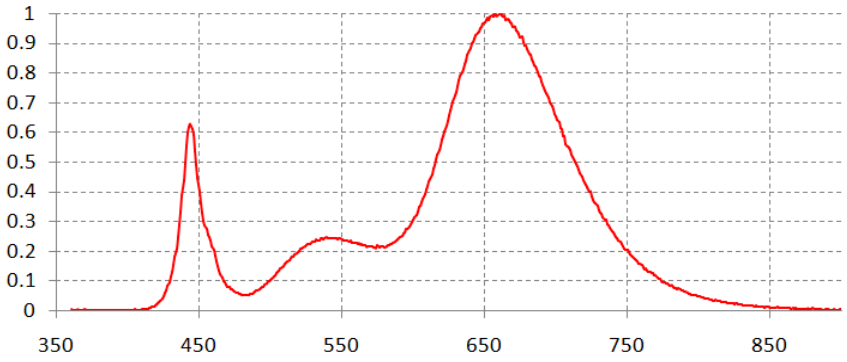
Bin Code	Min.	Max.	Unit	Condition
VAC	3.0	3.2	V	IF=150mA
VAD	3.2	3.4		

Note:

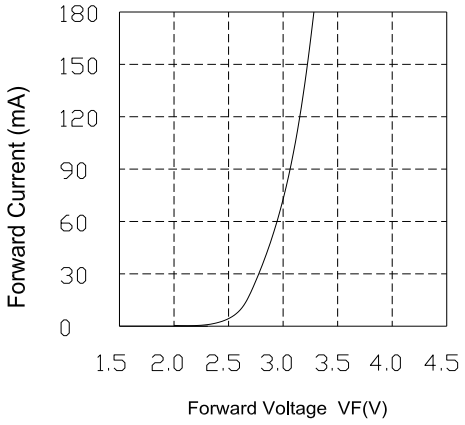
Tolerance of Forward Voltage:±0.1V.

Typical optical characteristics curves（Ta=25℃ unless specified）

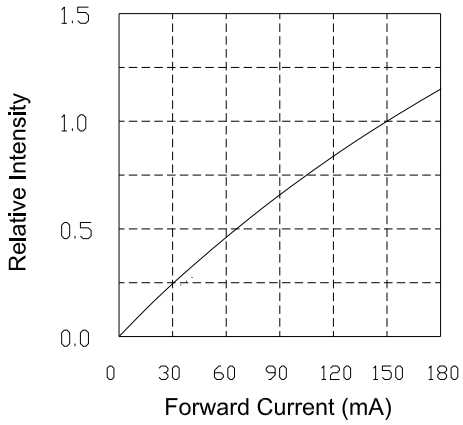
Spectral Distribution
Relative Intensity vs. Wavelength (Ta=25°C)



Forward Current vs. Forward Voltage(Ta=25°C)



Relative Intensity vs. Forward Current (Ta=25°C)



Relative Intensity vs. Ambient Temperature

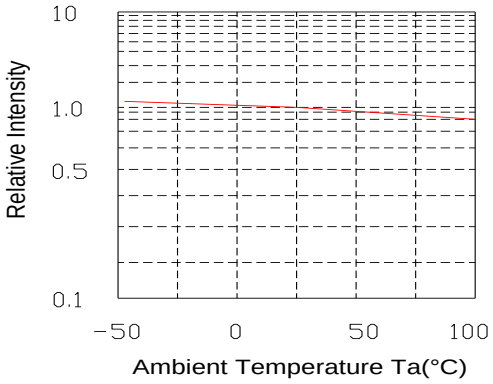
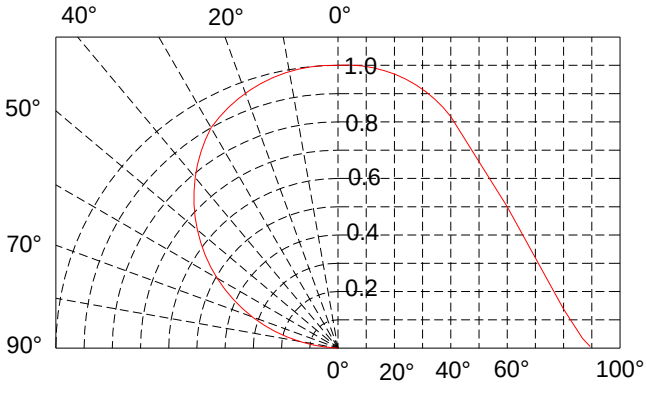


Diagram characteristics of radiation



Relative Intensity vs. Forward Current (Ts=25°C)

Reflow profile

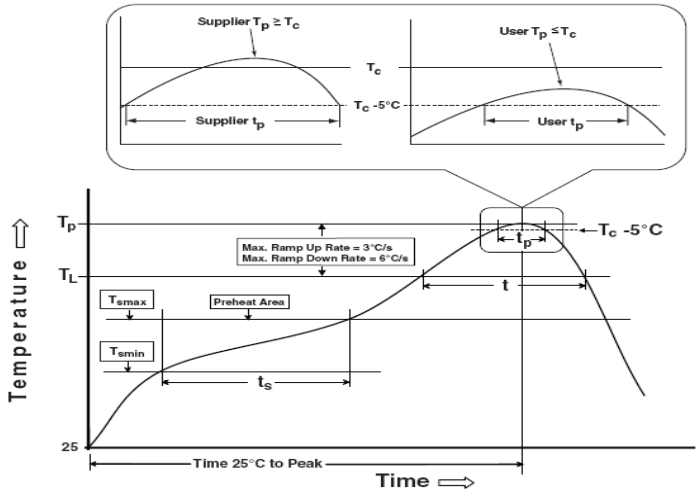
■ Soldering condition(JEDEC-020D)

Suggestion IR Reflow Profile For Pb Free Process

Prefile Feature	Pb-Free Assembly
Preheat & Soak Temperature min (Ts min) Temperature max(Ts max) Time (Ts min to Ts max)(ts)	 150℃ 200℃ 60-120seconds
Average ramp –up rate (Ts max to Tp)	3℃/second max
Liquidous temperature (TL) Time at liquidous (TL)	217℃ 60-150 seconds
Peak package boby temperature (Tp)*	See classification temp in the table below
Time (tp)**within 5℃ of thespecified Classification temperature (Tc)	30** seconds
Average ramp-down rate (Tp to Ts max)	6℃/second max
Time 25℃ to peak temperature	8 minutes max
*Tolerance for peak profile temperature (Tp) is defined as a supplier minimum and a user maximum . **Tolerance for time at peak profile temperature (tp) is defined as a supplier minimum and a user maximum .	

Pb-Free Process-Classlflcatlon Temperatures（Tc）

Package Thickness	Volume mm³ <350	Volume mm³ 350-2000	Volume mm³ >2000
<1.6mm	260℃	260℃	260℃
1.6mm-2.5mm	260℃	250℃	245℃
>2.5mm	250℃	245℃	245℃



1.Reflow soldering should not be done more than two times.

2.When soldering ,do not put stress on the LEDs during heating.

Reliability

Test items and results

Type	Test Item	Ref. Standard	Test Conditions	Note	Number of Damaged
Environmental Sequence	Resistance to Soldering Heat(Reflow Soldering)	JESD22-B106	Tsld=260℃,10sec	3 times	0/22
	Temperature Cycle	JESD22-A104	-40℃ 30min ↑↓5min 100℃ 30min	300 cycle	0/22
	Thermal Shock	JESD22-A106	-40℃ 15min ↑↓ 100℃ 15min	300 cycle	0/22
	High Temperature Storage	JESD22-A103	T_a=100℃	1000 hrs	0/22
	Low Temperature Storage	JESD22-A119	T_a=-40℃	1000 hrs	0/22
Operation Sequence	Life Test	JESD22-A108	T_a=25℃ I_F=150mA	1000 hrs	0/22
	High Humidity Heat Life Test	JESD22-A101	60℃ RH=90% I_F=150mA	1000 hrs	0/22

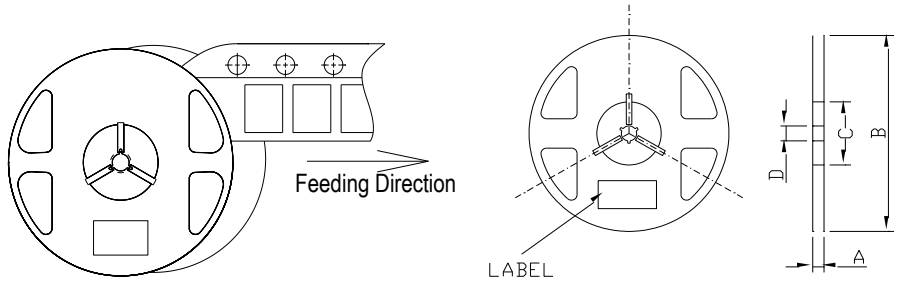
Criteria for judging the damage

Item	Symbol	Test Conditions	Criteria for Judgement	
			Min.	Max.
Forward Voltage	VF	IF=150mA	_	U.S.L*)×1.1
Radiation Power	Φe	IF=150mA	L.S.L**)×0.7	_

U.S.L.: Upper Standard Level **L.S.L.: Lower Standard Level**

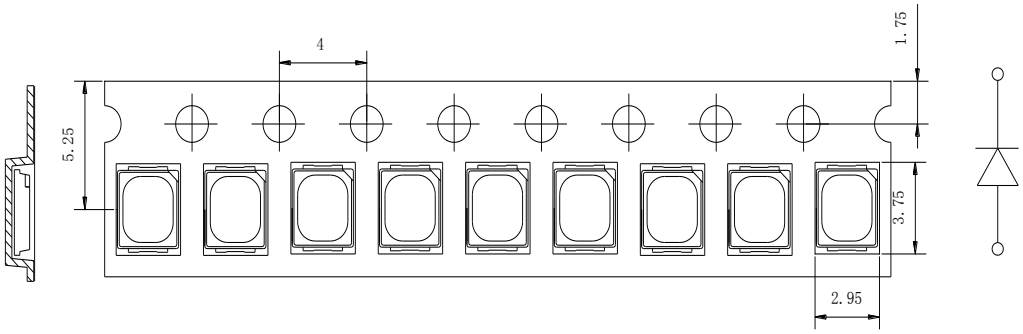
Packaging specifications

- Feeding direction

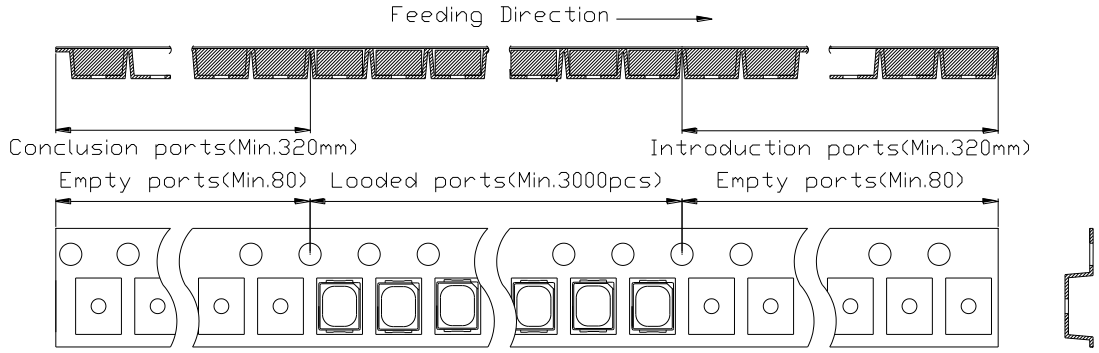


A	8.0±0.1mm
B	178±1mm
C	60±1mm
D	13.0±0.5mm

- Dimensions of tape (unit: mm)



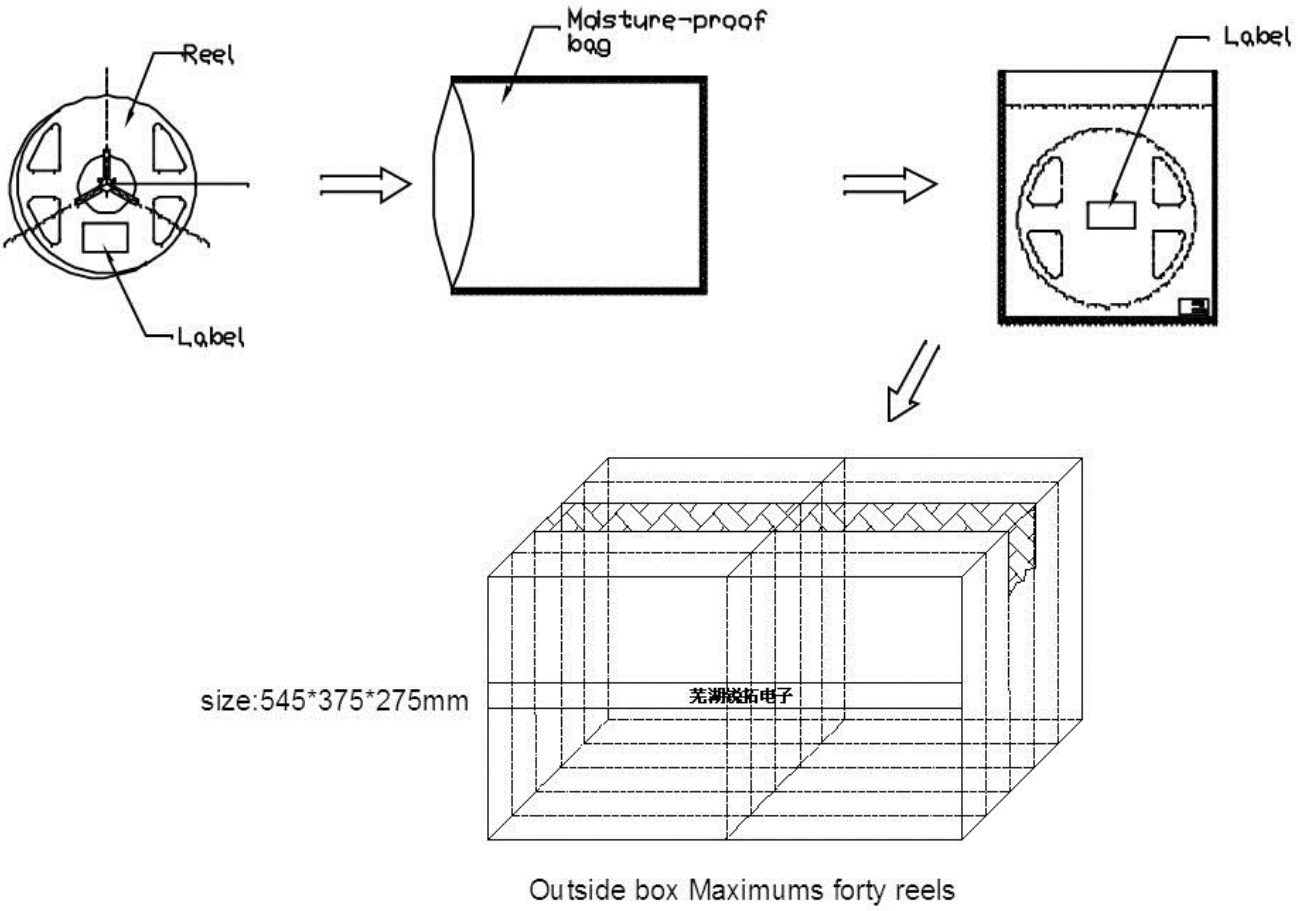
- Arrangement of tape



Notes:

1.Empty component pockets are sealed with top cover tape.
2.The maximum number of missing lamps is two.
3.The cathode is oriented towards the tape sprocket hole in accordance with ANSI/EIA RS-481 specifications.
4.4,000 pcs/ Reel.

Packaging specifications



Outside box Maximums forty reels

■ Label

芜湖锐拓电子有限公司 RoHS

规格型号：WR-3528XXX-XXXX

物料编码：13528XXXXXXXXX

VF:		IF:	
Φv:		BIN:	
CCT:		QTY:	
CIE:		DATE:	

- VF: Forward Voltage Rank
- IF: Forward Current
- ϕv: Luminous Intensity Rank
- CIE: XYRank
- BIN: Retop Rank
- QTY: Packing Quantity
- DATE: Date of shipment

Cautions

Package specifications

Reeled products (numbers of products are 4,000pcs) packed in a seal off moisture-proof bag along with a desiccant one by one, Eighty moisture-proof bag of maximums are put the outside box (size: about 545mm x about 375mm x about 275mm) Together with buffer material, and it is packed. (Pare No., Lot No., quantity should appear on the label on the moisture-proof bag, part No. And quantity should appear on the label on the cardboard box.) The number of the loading steps of outside box (cardboard box) has two steps.

Storage conditions

Before opening the package:

The LEDs should be kept at 30℃ or less and 70%RH or less. The LEDs should be used within a year. When storing the LEDs, moisture proof packaging with absorbent material (silica gel) is recommended.

After opening the package:

The LEDs should be kept at 30℃ or less and 50%RH or less. If unused LEDs remain, they should be stored in moisture proof packages, such as sealed containers with packages of moisture absorbent material (silica gel). It is also recommended to return the LEDs to the original moisture proof bag and to reseal the moisture proof bag again.

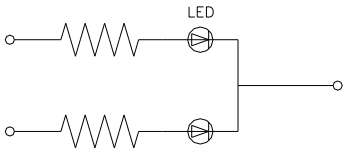
Cleaning

Use alcohol-based cleaning solvents such as isopropyl alcohol to clean the LED if necessary.

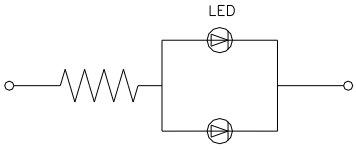
Drive method

An LED is a current-operated device. In order to ensure intensity uniformity on multiple LEDs connected in parallel in an application, it is recommended that a current limiting resistor be incorporated in the drive circuit, in series with each LED as shown in Circuit A below.

Circuit model A



Circuit model B



(A) Recommended circuit.

(B) The brightness of each LED might appear different due to the differences in the I-V characteristics of those LEDs.

Reflow profile

The encapsulated material of the LEDs is silicone. Therefore the LEDs have a soft surface on the top of package. The pressure to the top surface will be influence to the reliability of the LEDs. Precautions should be taken to avoid the strong pressure on the encapsulated part. So when using the picking up nozzle, the pressure on the silicone resin should be proper.