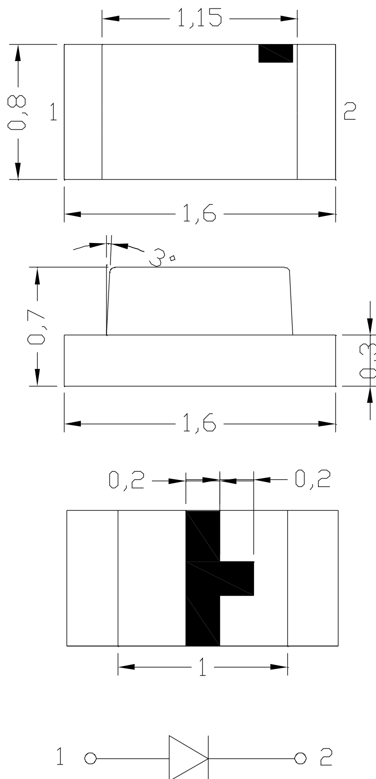
Feature

P/N: RF-WUB191DS

- Viewing angle:140 deg
- The materials of the chip is InGaN
- 1.60mm×0.80mm×0.70mm SMT-LED
- RoHS compliant lead-free soldering compatible

Package Outline



NOTES:

1. All dimensions are in millimeters (inches);
2. Tolerances are ±0.1mm (0.004inch) unless otherwise noted.

Absolute maximum ratings at Ta=25℃

Parameter	Symbol	Value	Unit
Power dissipation	Pd	70	mW
Forward current	If	20	mA
Reverse voltage	Vr	5	V
Operating temperature range	Top	-35 ~+85	℃
Storage temperature range	Tstg	-35 ~+85	℃
Peak pulsing current	Ifp	100	mA
Electrostatic Discharge	ESD	1000(HBM)	V

Electro-optical characteristics at Ta=25℃

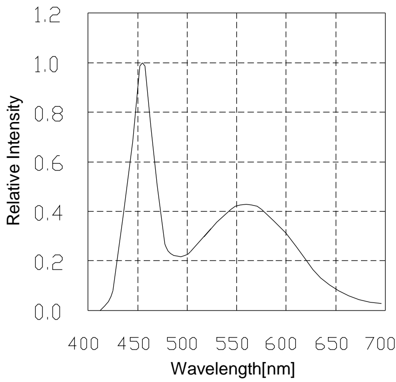
Parameter	Test Condition	Symbol	Value			Unit
			Min.	Typ.	Max.	
Forward voltage	If=20mA	Vf	2.8	--	3.5	V
Luminous intensity	If=20mA	Iv	400	--	500	mcd
	If=20mA	Iv	500	--	600	mcd
	If=20mA	Iv	600	--	750	mcd
Viewing angle at 50% Iv	If=20mA	2θ1/2	--	140	--	Deg
Reverse current	Vr=5V	Ir	--	--	10	μA
Chromaticity	If=20mA	A	(0.2613, 0.2292) (0.2468, 0.2361) (0.2663, 0.2746) (0.2779, 0.2618)			
		B	(0.2779, 0.2618) (0.2663, 0.2746) (0.2874, 0.3114) (0.2947, 0.2942)			
		K	(0.2947, 0.2942) (0.2874, 0.3114) (0.3148, 0.3498) (0.3173, 0.3258)			
		L	(0.3173, 0.3258) (0.3148, 0.3498) (0.3331, 0.3756) (0.3352, 0.3509)			

NOTE: (Tolerance: Iv ±10%, λ_d ±2nm, Vf ±0.05V)
IFP Conditions: Pulse Width≦10msec. and Duty ≦1/10.

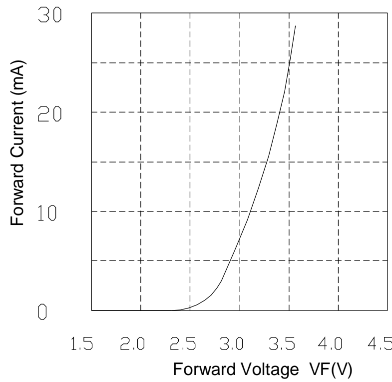
Typical optical characteristics curves

Spectral Distribution

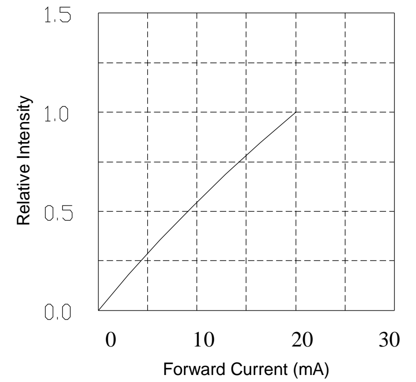
Relative Intensity vs. Wavelength (Ta=25℃)



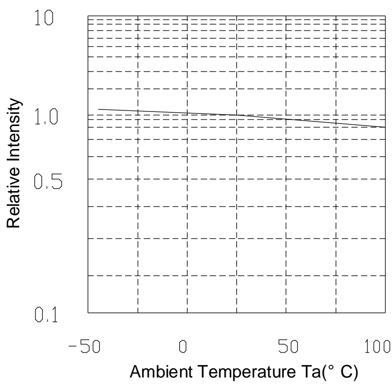
Forward Voltage vs. Forward Current (Ta=25℃)



Relative Intensity vs. Forward Current (Ta=25℃)

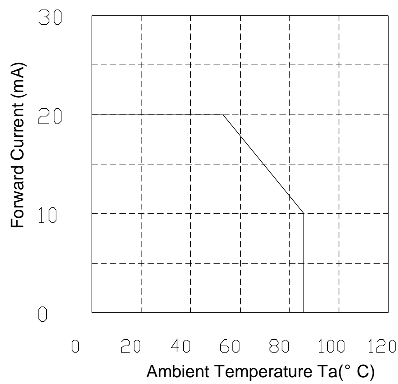


Relative Intensity vs. Ambient Temperature



Derating

Ambient Temperature vs. Maximum Forward Current



Forward Current vs. Chromaticity (Ta=25℃)

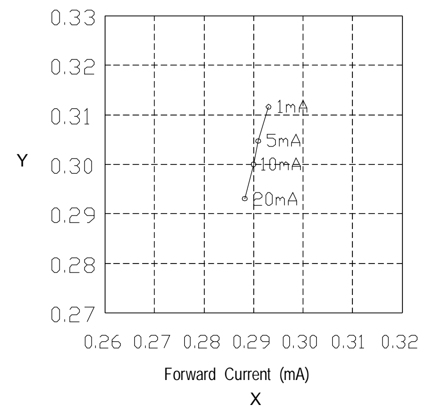
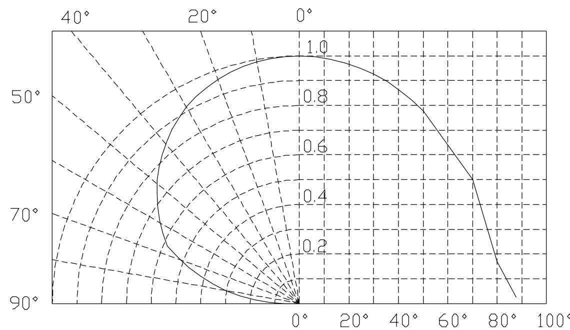


Diagram characteristics of radiation



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Reflow profile

Soldering condition

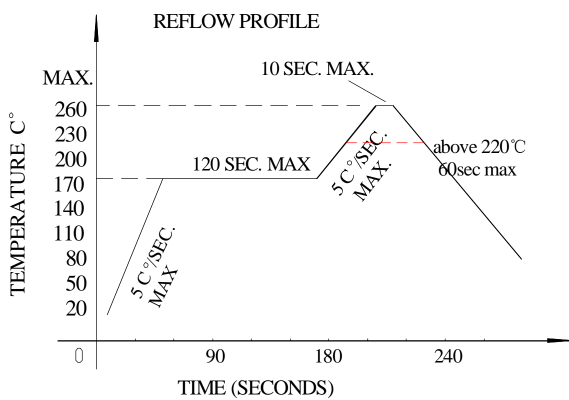
• Recommended soldering conditions

Reflow Soldering		Hand Soldering	
Pre-heat Pre-heat time Peak temperature Soldering time Condition	160～180℃ 120 seconds Max. 260℃ Max. 10 seconds Max. Refer to Temperature-profile	Temperature Soldering time	300℃ Max. 3 second Max. (one time only)

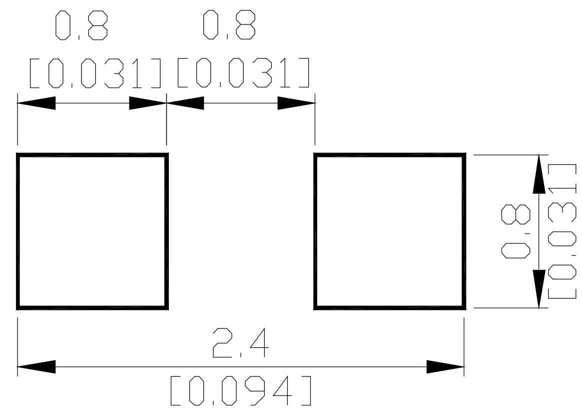
• After reflow soldering rapid cooling should be avoided

Temperature-profile (Surface of circuit board)

Use the following conditions shown in the figure.



RECOMMEND PAD DESIGN (Units: mm)



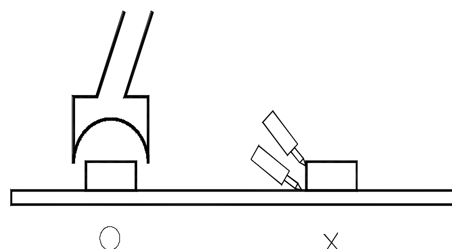
1. Reflow soldering should not be done more than two times
2. When soldering ,do not put stress on the LEDs during heating

Soldering iron

1. When hand soldering, keep the temperature of the iron under 300℃, and at that temperature keep the time under 3 sec.
2. The hand soldering should be done only a time
3. The basic spec is ≤5 sec. when the temperature of 260℃, do not contact the resin when hand soldering

Rework

1. Customer must finish rework within 5 sec under 260℃
2. The head of iron can not touch the resin
3. Twin-head type is preferred.



Reliability

(1)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	2 times	0/22
	Temperature Cycle	JESD22-A104	-40℃ 30min ↑↓5min 100℃ 30min	1000 cycle	0/100
	Thermal Shock	JESD22-A106	-40℃ 15min ↑↓ 100℃ 15min	1000 cycle	0/100
	High Temperature Storage	JESD22-A103	T_a=100℃	1000 hrs	0/100
	Low Temperature Storage	JESD22-A119	T_a=-40℃	1000 hrs	0/100
Operation Sequence	Life Test	JESD22-A108	T_a=25℃ I_F=20mA	1000 hrs	0/100
	High Humidity Heat Life Test	JESD22-A101	60℃ RH=90% I_F=20mA	1000 hrs	0/100

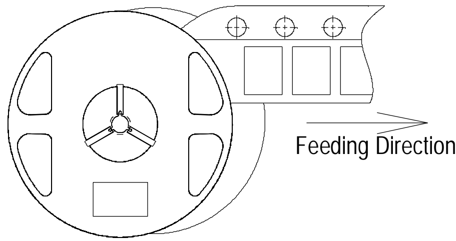
(2)CRITERIA FOR JUDGING THE DAMAGE

Item	Symbol	Test Conditions	Criteria for Judgement	
			Min.	Max.
Forward Voltage	VF	IF=20mA	_	U.S.L*)×1.1
Reverse Current	IR	VR=5V	_	U.S.L*)×2.0
Luminous Intensity	IV	IF=20mA	L.S.L**)×0.7	_

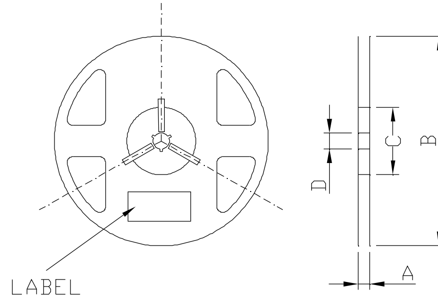
U.S.L.: Upper Standard Level L.S.L.: Lower Standard Level

Packaging Specifications

● Feeding Direction

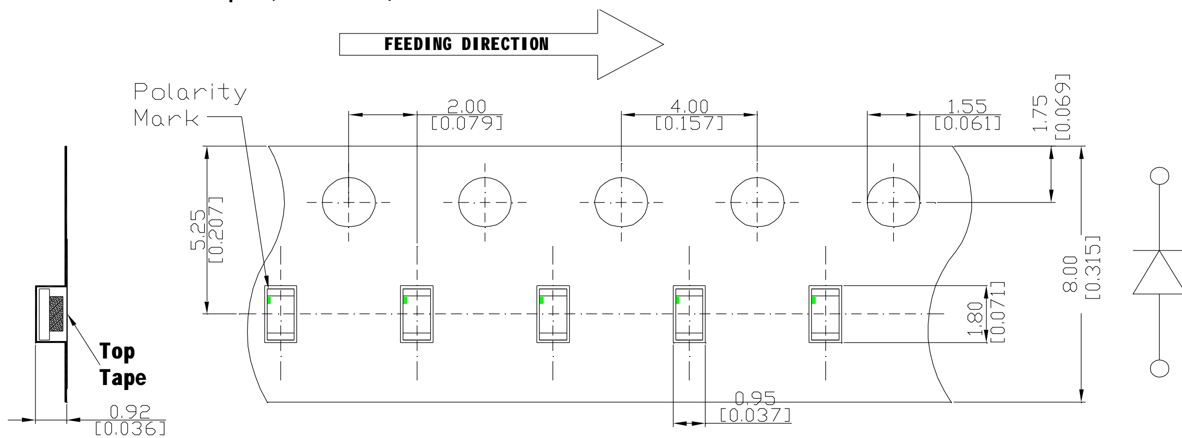


● Dimensions of Reel (Unit: mm)

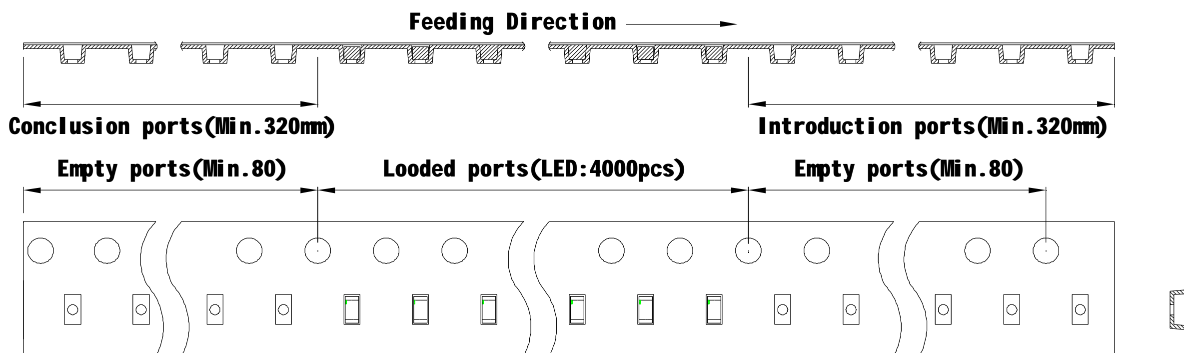


A	8.0±0.1mm
B	178±1mm
C	60±1mm
D	13.0±0.5mm

● Dimensions of Tape (Unit: mm)



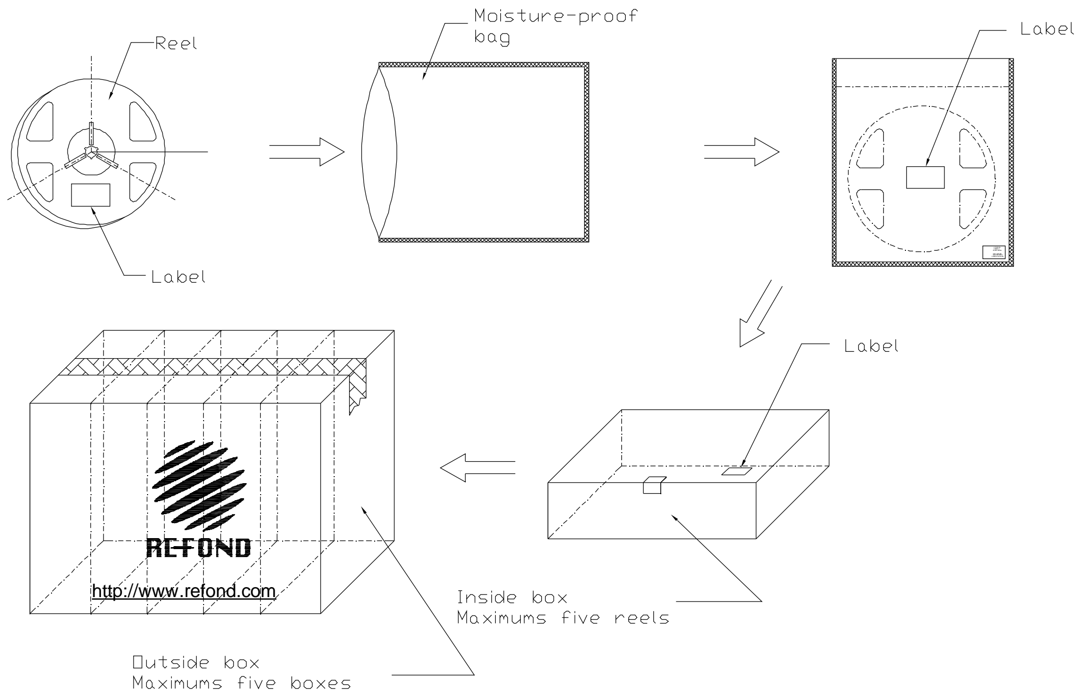
● Arrangement of Tape



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



■ Label

PART NO.
LOT NO.
BIN CODE:
QTY: PCS
DATE:

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, Five moisture-proof bag of maximums (total maximum number of products are 20,000pcs) packed in an inside box (size: about 250mm x about 250 x about 68mm) and Five inside boxes of maximums are put the outside box (size: about 360mm x about 265mm x about 255mm) 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 three 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. The LEDs should be soldered within168 hours (7days) after opening the package. 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.