



SPECIFICATION

REFOND P/N

RF-RSRL30TS-CG-G

R&D

Mass Production





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1. Description

1.1 General Description



The Red source color devices are made with AlGaInp on Substrate Light Emitting Diode .
Product Package:3.50mmX2.80mmX3.50mm.

LED AlGaInp

3.50mmX2.80mmX3.50mm.

1.2 Features

- ▶ PLCC4 Package. PLCC4
- ▶ extremely narrow angle.
- ▶ Suitable for all SMT assembly and solder process. SMT
- ▶ Available on tape and reel.
- ▶ Moisture sensitivity level: Level 2. Level2
- ▶ RoHS compliant. RoHS
- ▶ Qualifications: The product qualification test plan is based on the guidelines of AEC-Q102 Stress Test Qualification for Automotive Grade Discrete Semiconductors
AEC-Q102

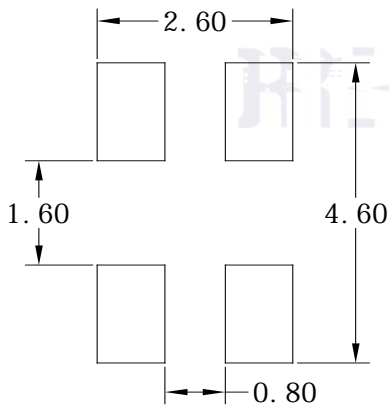
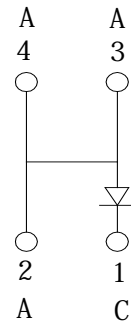
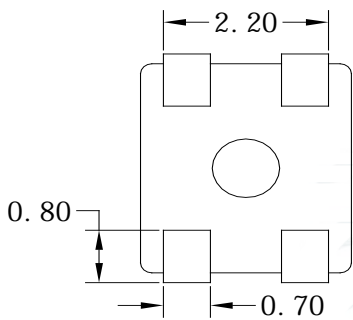
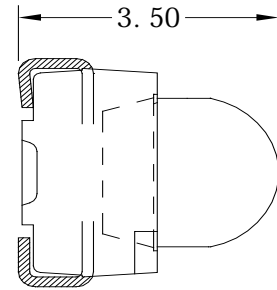
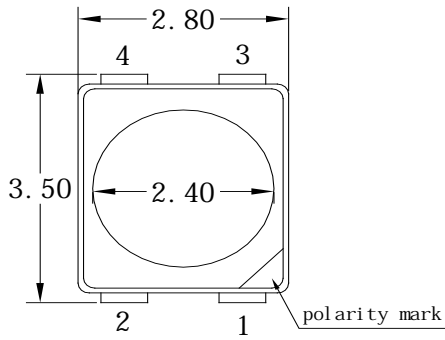
1.3 Application

- ▶ Automotive Lighting Interior and Exterior.





1.4 Package Dimension



Notes

1. All dimensions units are millimeters.
2. All dimensions tolerances are $\pm 0.2\text{mm}$ unless otherwise noted.



	Unit
max.	
6	V
0	uA
00	mcd
5	nm
-	deg
0	W

Units
mW
mA
mA
V



Notes

1. 1/10 Duty cycle, 10ms pulse width. 10ms, 1/10.
2. The above forward voltage measurement allowance tolerance is $\pm 0.1V$. $\pm 0.1V$.
3. The above color coordinates measurement allowance tolerance is ± 0.005 . ± 0.005 .
4. The above luminous intensity measurement allowance tolerance $\pm 10\%$. $\pm 10\%$.
5. Care is to be taken that power dissipation does not exceed the absolute maximum rating of the product.
6. All measurements were made under the standardized environment of Refond.
7. When the LEDs are in operation the maximum current should be decided after measuring the package temperature, junction temperature should not exceed the maximum rate. LED
8. ESD yield is over 90% at 8000V ESD (HBM). ESD protection during products handling is needed. 90% LED
ESD8000V

1.6Bin Range Of Forward Voltage and Luminous Intensity and Dominant wavelength (IF=50mA) BIN (IF=50mA)



1.7 Typical Optical Characteristics Curves

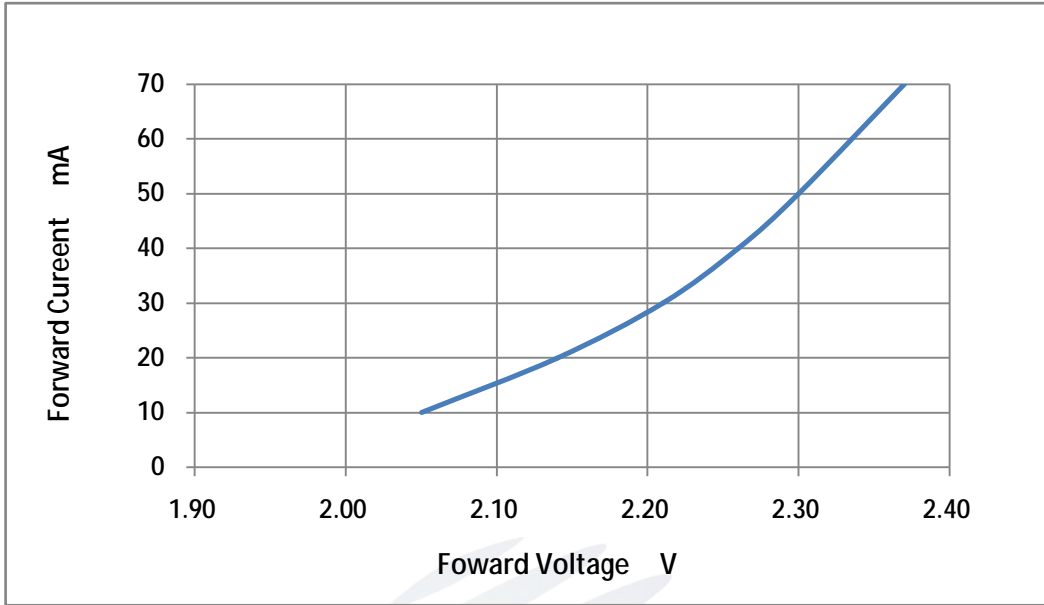


Fig. 1-7 Forward Voltage Vs Forward Current

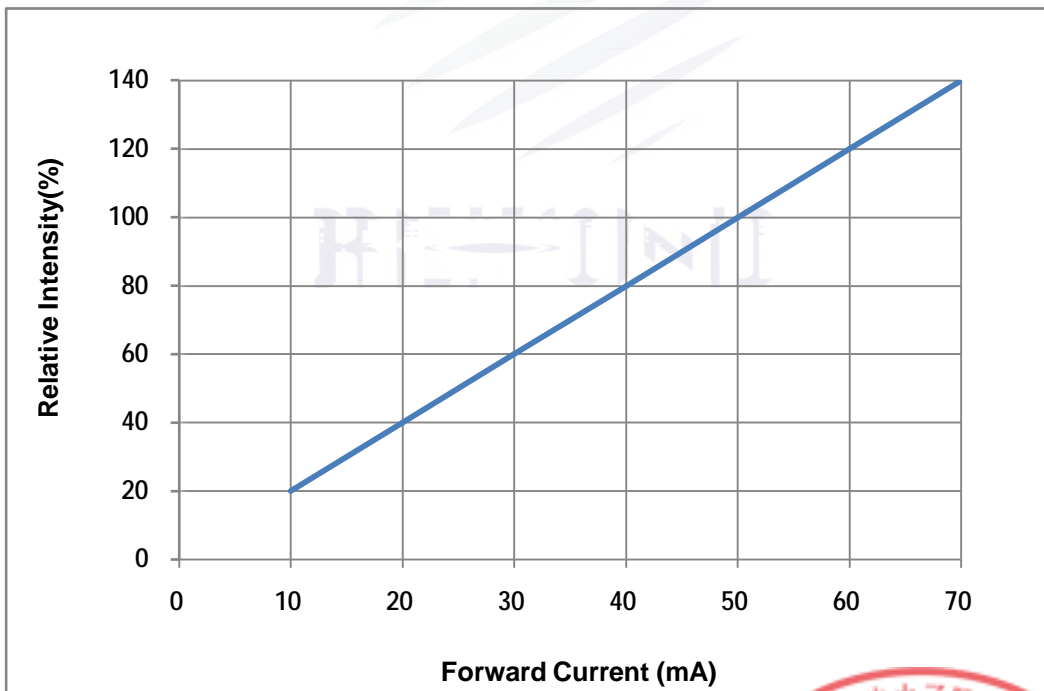


Fig. 1-8 Forward Current Vs Relative Intensity



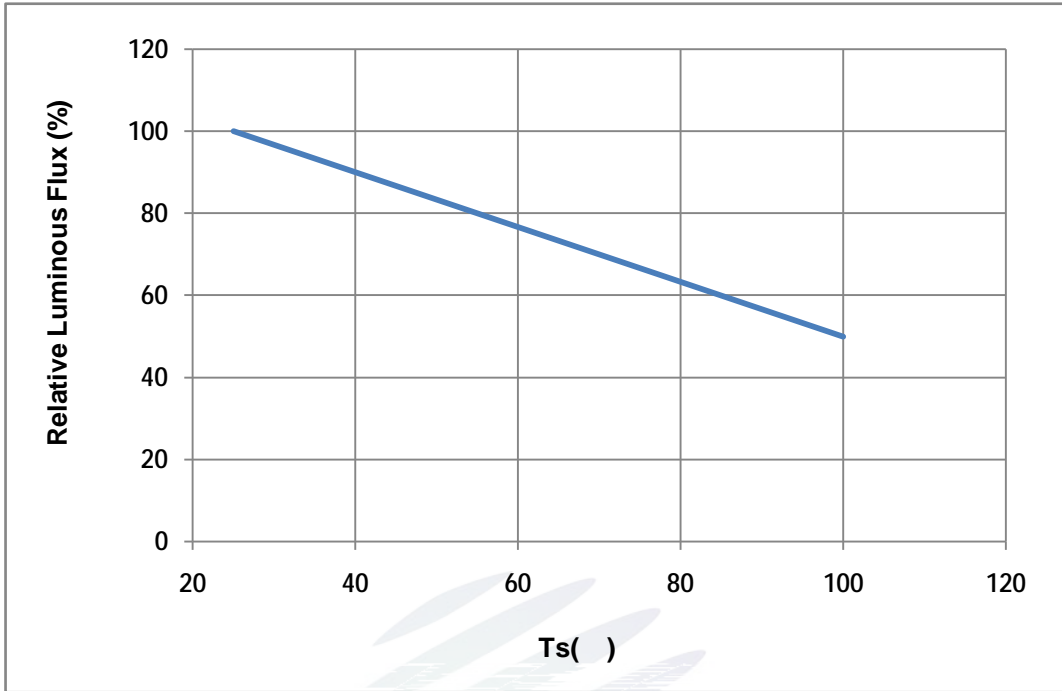


Fig. 1-9 Solder Temperature Vs Relative Intensity

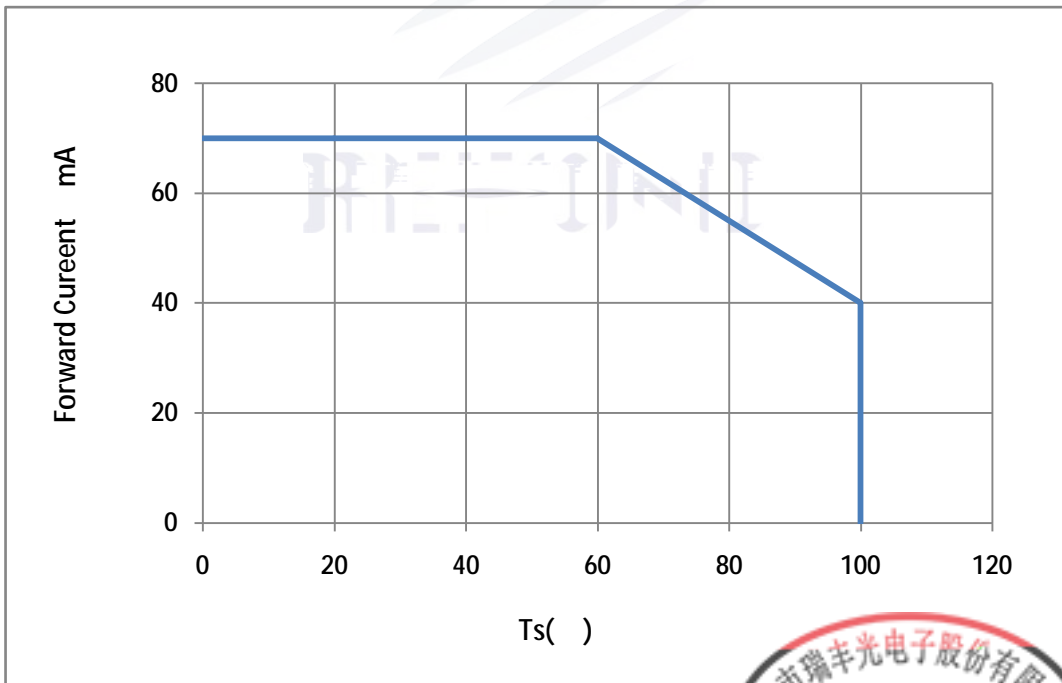


Fig. 1-10 Solder Temperature Vs Forward Current



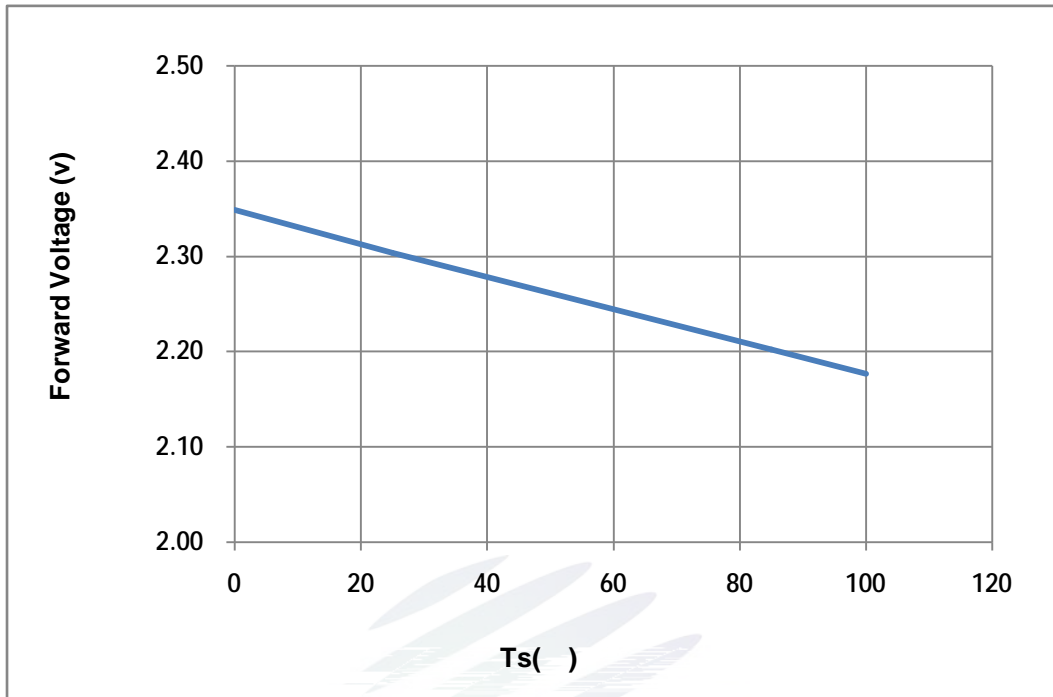


Fig. 1-11 Forward Voltage Vs Solder Temperature

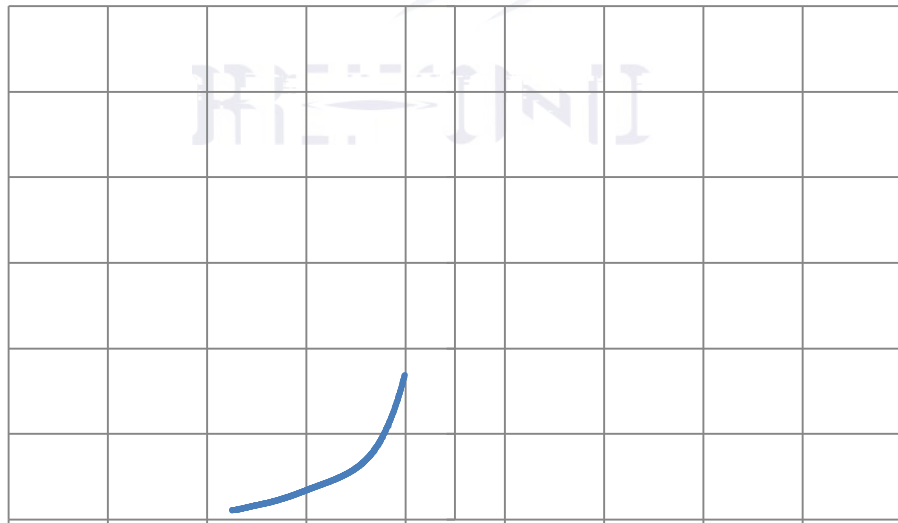


Fig. 1-12 Radiation diagram



Fig. 1-13 Forward current vs. Dominate wavelength

(Ts=25°C)

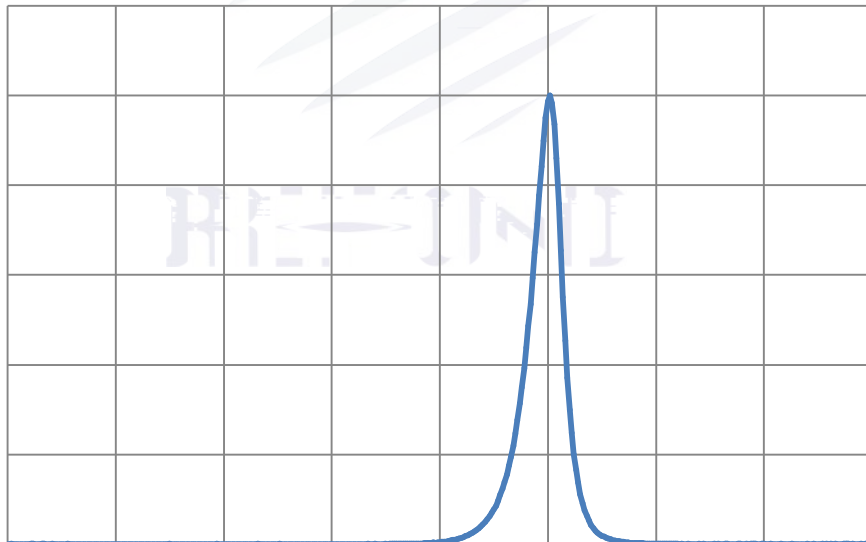


Fig. 1-14 Spectrum Distribution



2. Packaging

2.1 Packaging Specification

Package:2000pcs/reel.

2.1.1 Carrier Tape Dimension

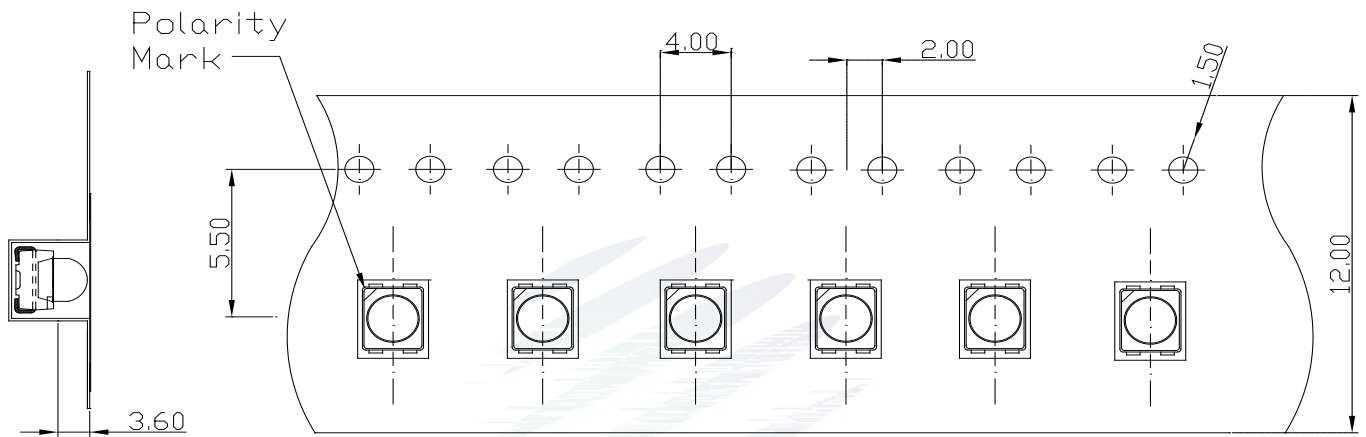


Fig.2-1 Carrier Tape Dimension

2.1.2 Reel Dimension



Table 2-1 Reel Dimension



2.1.3 Label Form Specification

Table 2-2 Specification

PART NO.	Part Number
SPEC NO.	Spec Number
LOT NO.	Lot Number
BIN CODE	Bin Code
Φ	Luminous flux

Fig. 2-3 Label

2.2 Moisture Resistant Packing

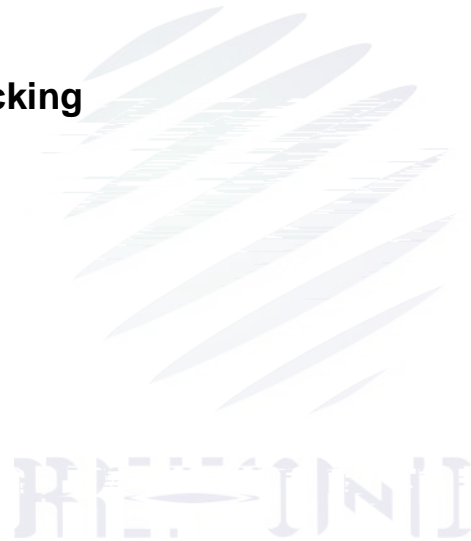


Fig.2-4 Moisture Resistant Packing

2.3 Cardboard Box

Fig.2-5 Cardboard Box



2.4 Reliability Test Items And Conditions

Table 2-3 Reliability Test Items And Conditions

Test Items	Ref.Standard	Test Condition	Time	Quantity	Ac/Re /
Reflow	JESD22-B106	Temp:260 max T=10 sec	2times	20pcs.	0/1
MSL2 2	JESD22-A113	85 / 60%RH	168 hrs.	20pcs.	0/1
Thermal Shock	JEITAED-4701 300307	-40 15min ↑↓10s 125 15min	1000 cycle	20pcs.	0/1
Life Test	JESD22-A108	Ta=100 If=50mA	1000hrs.	20pcs.	0/1
High Temperature High Humidity Life Test	JESD22-A101	85 / 85%RH If=50mA	1000hrs.	20pcs.	0/1





2.5 Criteria For Judging Damage

Table 2-4 Criteria For Judging Damage

Test Items	Symbol	Test Condition	Criteria For Judgement	
			Min.	Max.
Forward Voltage	V_F	$I_F=50mA$	-	U.S.L*)x1.1
Reverse Current	I_R	$V_R = 5V$	-	U.S.L*)x2.0
Luminous Flux	Φ	$I_F=50mA$	L.S.L*)x0.7	-

Notes

- 1.U.S.L: Upper standard level L.S.L: Lower standard level
- 2.The above reliability tests is based on the verification of a single/strip LED of Refond's existing experimental platform,the reliability experiment was taken under good heat dissipation conditions. when customers applies the LED to the series and parallel circuit, should take consideration of all the factors such as the current, voltage distribution, heat dissipation and others. / LED
LED
- 3.The technical information shown in the data sheets is limited to the typical characteristics and circuit examples of the referenced products. It does not constitute the warranting of industrial property nor the granting of any license.





3. SMT Reflow Soldering Instructions SMT

3.1 SMT Reflow Soldering Instructions SMT

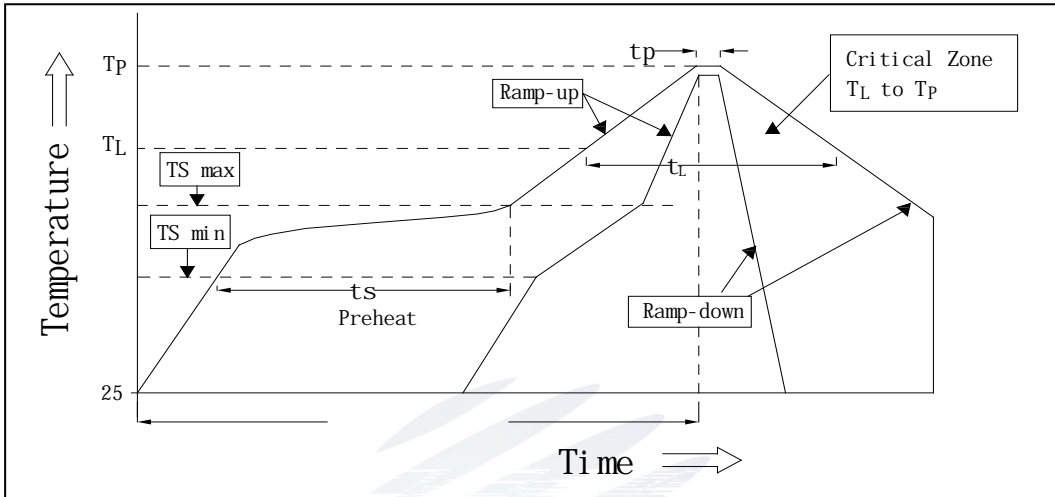


Fig.3-1SMT Reflow Soldering Instructions SMT

Table 3-1Reflow parameters

Average temperature rise speed	Tsmax TP	3 °C/ Max 3 °C/ s
Preheating: minimum temperature	(Tsmin)	150 °C
Preheating: Max temperature	(Tsmax)	200 °C
Preheating: Time	Tsmin Tsmax	60 - 120 60s-120s
Time limited to maintain high temperature: the temperature	(TL)	217 °C
Time limited to maintain high temperature: The Time	(tL)	60 Max 60s
Peak /Classification of temperature:	/ (TP)	260 °C
Time limit classification of peak temperature time	tp	10 Max 10s
(TP) 5 °C	Hold time within 5 °C with the	30 Max 30s
actual peak temperature (TP)		
Cooling speed		6 °C/ Max 6 °C/ s
25 °C	Needed time from 25 °C to Tp	8 Max 8 minutes







4. Handling Precautions

4.1 Handling Precautions

(1) LED operating environment and sulfur element composition cannot be over 100PPM in the LED mating usage material. This is provided for informational purposes only and is not a warranty or endorsement.

LED 100PPM.

(2) In order to prevent external material from getting into the inside of LED, which may cause the malfunction of LED, the single content of Bromine element is required to be less than 900PPM, the single content of Chlorine element is required to be less than 900PPM, the total content of Bromine element and Chlorine element in the external materials of the application products is required to be less than 1500PPM. This is provided for informational purposes only and is not a warranty or endorsement.

	LED	LED
	900PPM	900PPM
1500PPM.		

(3) VOCs (Volatile organic compounds) emitted from materials used in the construction of fixtures can penetrate silicone encapsulants of LEDs and discolor when exposed to heat and photonic energy. The result can be a significant loss of light output from the fixture. Knowledge of the properties of the materials selected to be used in the construction of fixtures can help prevent these issues. Refond advises against the use of any chemicals or materials that have been found or are suspected to have an adverse affect on device performance or reliability. To verify compatibility, Refond recommends that all chemicals and materials be tested in the specific application and environment for which they are intended to be used. Attaching LEDs, do not use adhesives that outgas organic vapor.

LED LED

LED LED

(4) Handle the component along the side surface by using forceps or appropriate tools; Do not directly touch or Handle the silicone lens surface, it may damage the internal circuitry.





Fig

(5) In designing a circuit, the current through each LED must be controlled. In the meanwhile, resistors should be used to limit the current. A large current change may cause the LED to burn out, not only when it is ON or OFF. If the reverse voltage is applied, it will cause damage.

LED

LED

(6) Thermal Design is of paramount importance because of the thermal decline, such as brightness decreased, color change, etc. Thermal design of LEDs must be taken into account when making the system design.

LED

(7) Compared to standard encapsulants, silicone is generally more sensitive to dust, requiring special care during processing. In cases where dust cannot be guaranteed, a suitable cleaning solution must be applied. Refond suggests using isopropyl alcohol for cleaning. In case of other solvents, these solvents do not dissolve the package or resin. Ultrasonic cleaning may cause damage to the LED.

LED



Table 4-1 Storage

Conditions		Temperature	Humidity	Time
Storage	Before Opening Aluminum Bag	30	75%	Within 1 Year From Date
	After Opening Aluminum Bag	30	60%	Recommended for use within 24 hours 24
Baking		60±5	-	24hours 24

(8) If the moisture absorbent material silica gel has faded away or the LEDs have exceeded the storage time, baking treatment should be performed after unpacking and based on the following condition 60 5 for above 24 hours.

60 5 24

If the package is flatulence or damaged, please notify the sales staff to assist.

(9) Similar to most Solid state devices; LEDs are sensitive to Electro-Static Discharge (ESD) and Electrical Over Stress (EOS). LED

(10) Other points for attention, please refer to our relevant information.







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Declare

This specification is written both in English and in Chinese and the latter is formal.