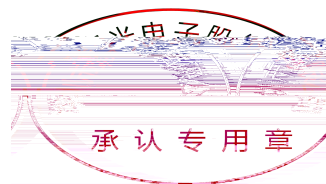
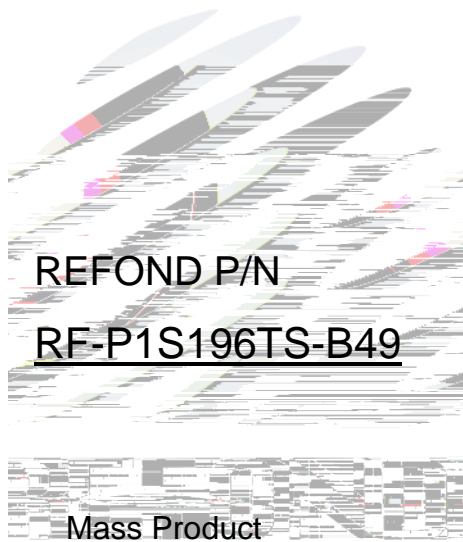
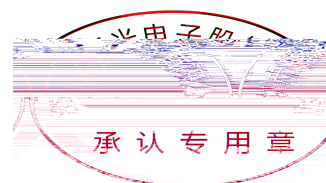
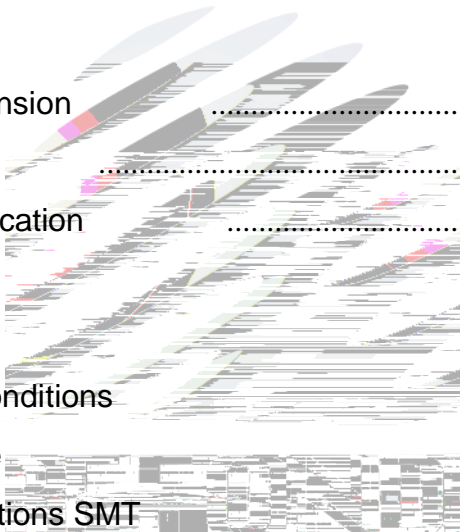


SPECIFICATION



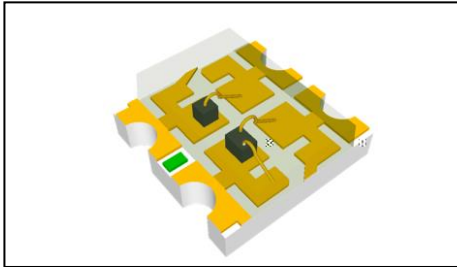
Contents

1. Description	
1.1 General Description	
1.2 Features	
1.3 Application	
1.4 Package Dimension	
1.5 Product Parameters	
1.6 Typical Optical Characteristics Curves	
2. Packaging	
2.1 Packaging Specification	
2.1.1 Carrier Tape Dimension	11
2.1.2 Reel Dimension	11
2.1.3 Label Form Specification	12
2.2 Moisture Resistant Packing	
2.3 Cardboard Box	
2.4 Reliability Test Items And Conditions	
2.5 Criteria For Judging Damage	
3. SMT Reflow Soldering Instructions SMT	
3.1 SMT Reflow Soldering Instructions SMT	
4. Handling Precautions	
4.1 Handling Precautions	

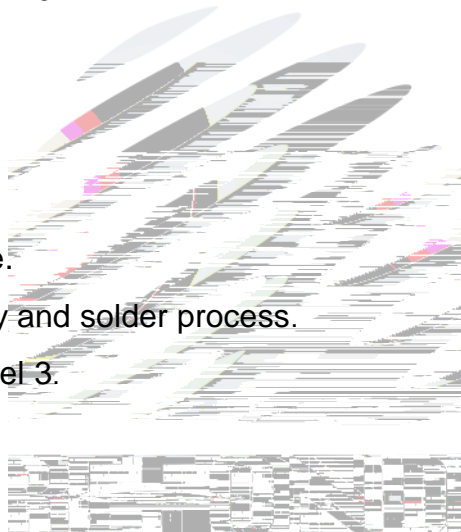


1. Description

1.1 General Description



The Colour LED which was fabricated using a yellow chip and green chip Package
 Dimension : 1.6mmX1.6mmX0.7mm.



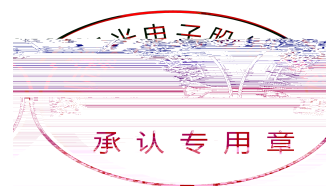
1.6mmX1.6mmX0.7mm

1.2 Features

- Extremely wide viewing angle.
- Suitable for all SMT assembly and solder process.
- Moisture sensitivity level: Level 3.
- RoHS compliant.

1.3 Application

- Optical indicator.
- Switch and symbol, display.
- General use.



1.4 Package Dimension

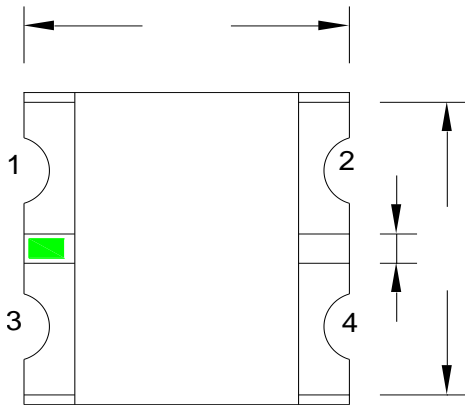


Fig.1-1 Top view

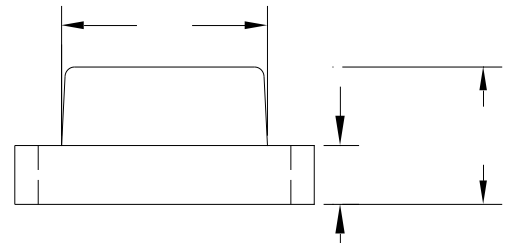


Fig.1-2 Side view

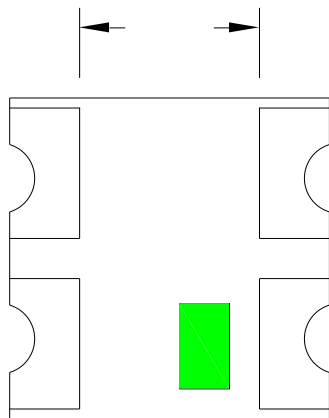


Fig.1-3 Bottom view

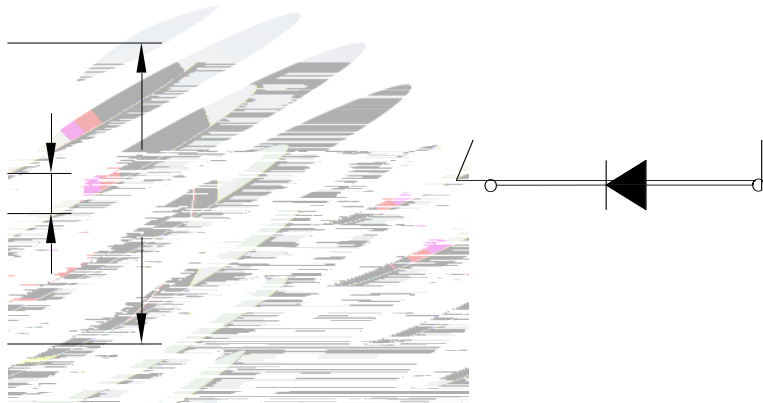


Fig.1-4 Polarity

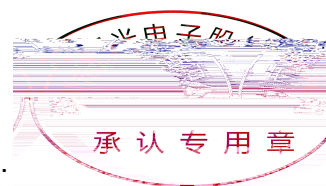


Fig.1-5 Soldering patterns

Notes

All dimensions units are millimeters.

All dimensions tolerances are 0.2mm unless otherwise noted.



1.5 Product Parameters

Table 1-1 Electrical / Optical Characteristics at Ts=25°C

Item	Test Condition	Symbol		Code	Value			Unit
					Min. ()	Typ.	Max.	
Spectral Half Bandwidth	I _F =20mA	Δ	Y	/	--	15	--	nm
			G		--	30	--	
Forward Voltage	I _F =20mA	V _F	Y	1L	1.8	--	2.4	V
			G	1L	2.7	--	3.4	
Dominant wavelength	I _F =20mA	d	Y	D00	585.0	--	590.0	nm
				E00	590.0	--	595.0	
			G	D10	515.0	--	517.5	
				D20	517.5	--	520.0	
				E10	520.0	--	522.5	
				E20	522.5	--	525.0	
				F10	525.0	--	527.5	
				F20	527.5	--	530.0	
Luminous Intensity	I _F =20mA	I _v	Y	1DW	70	--	90	mcd
				1AP	90	--	120	
				G20	120	--	150	
			G	1AW	150	--	200	
				1AT	200	--	260	
				1AU	260	--	330	
				1AV	330	--	430	
				1CG	430	--	560	
				1CL	560	--	700	
				1CM	700	--	900	
Viewing Angle	I _F =20mA				--	140	--	deg
Reverse Current	V _R =5V	I _R			--	--	10	A
Thermal Resistance.	I _F =20mA	R _{THJ-S}			--	--	450	/W

Notes : V_R=5V For test conditions. V_R=5V

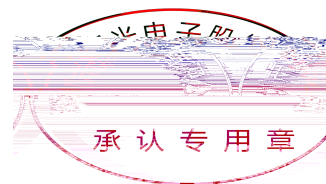
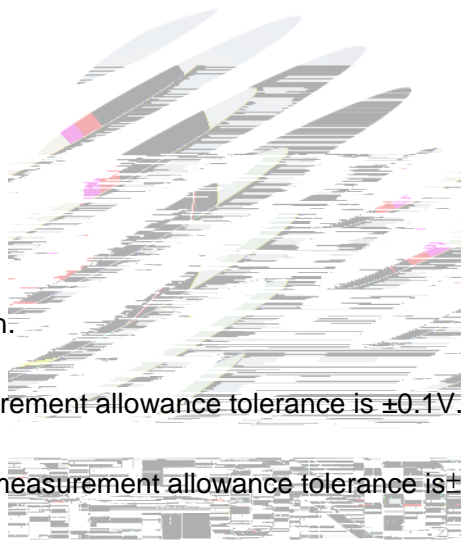


Table 1-2 Absolute Maximum Ratings at Ts=25°C

Notes

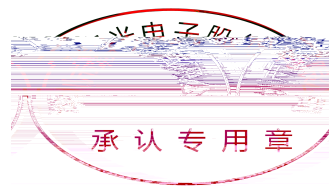
1. 1/10 Duty cycle, 0.1ms pulse width.
2. The above forward voltage measurement allowance tolerance is $\pm 0.1V$.
3. The above dominant wavelength measurement allowance tolerance is $\pm 2nm$.
4. The above luminous intensity measurement allowance tolerance $\pm 10\%$.





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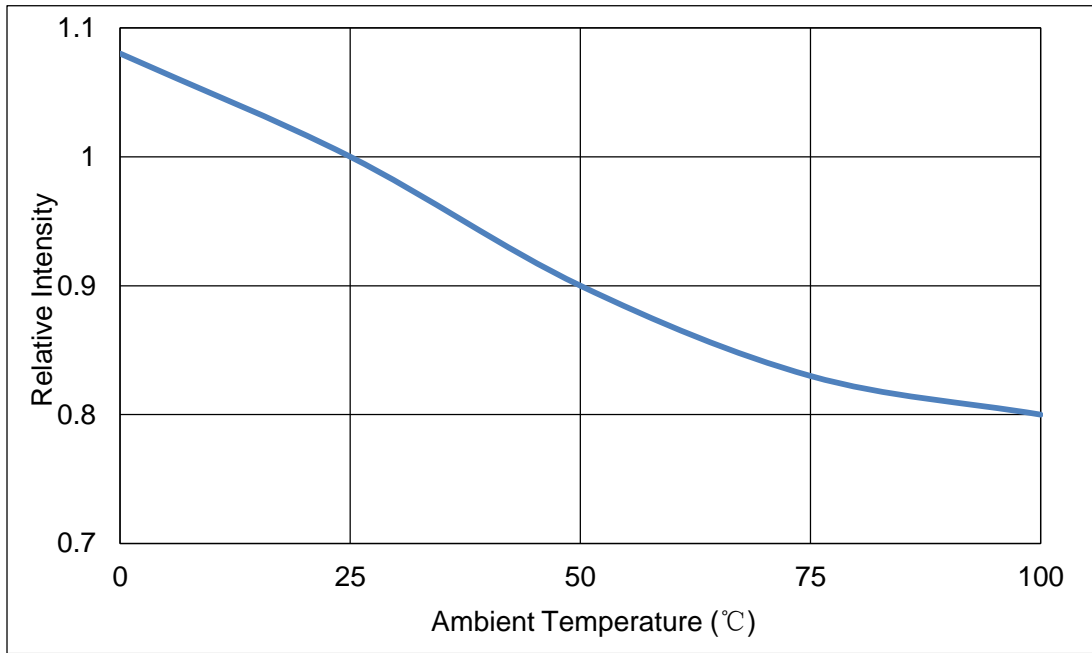


Fig.1-8 Pin Temperature Vs Relative Intensity

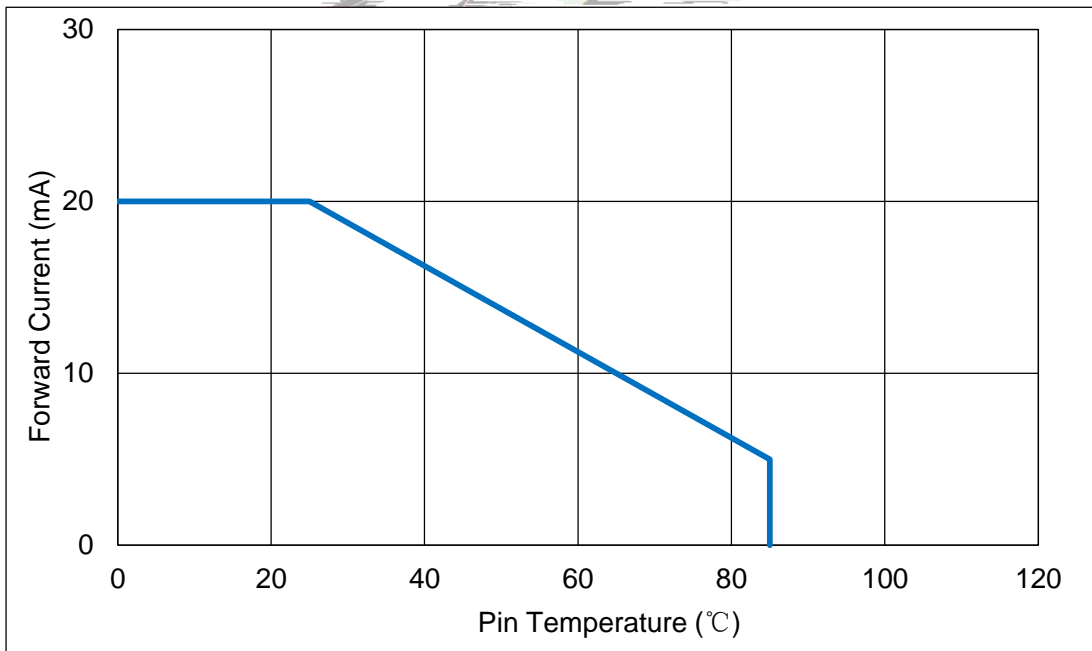
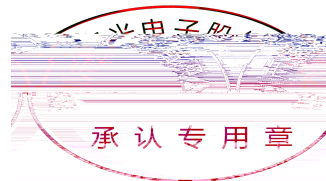


Fig.1-9 Pin Temperature Vs Forward Current



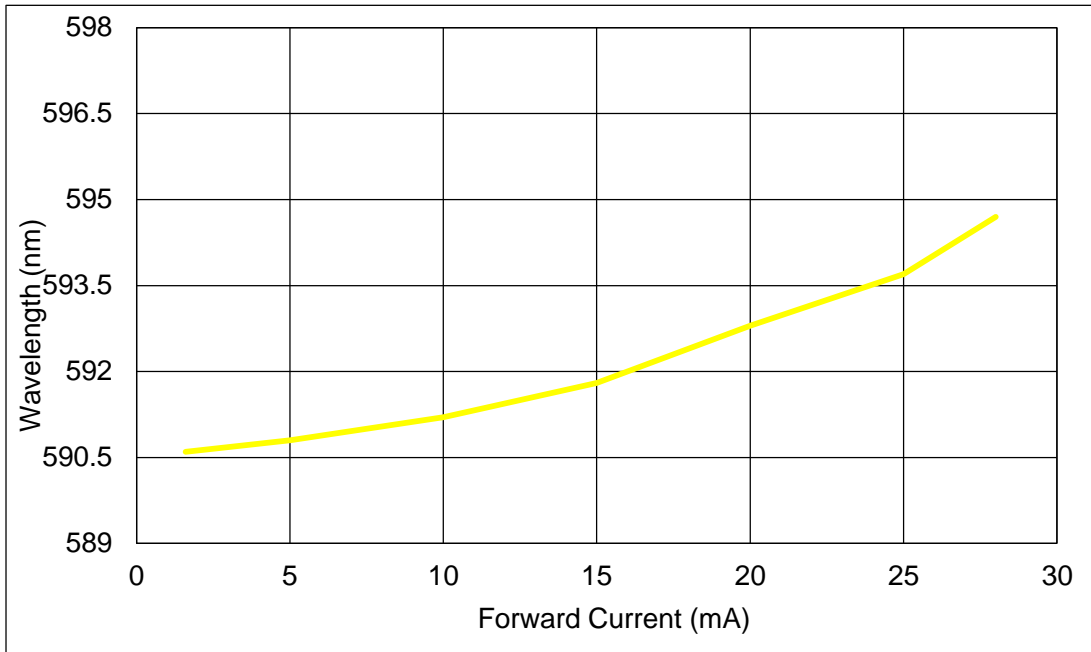


Fig.1-10 Forward Current Vs Dominate Wavelength (Ta=25)

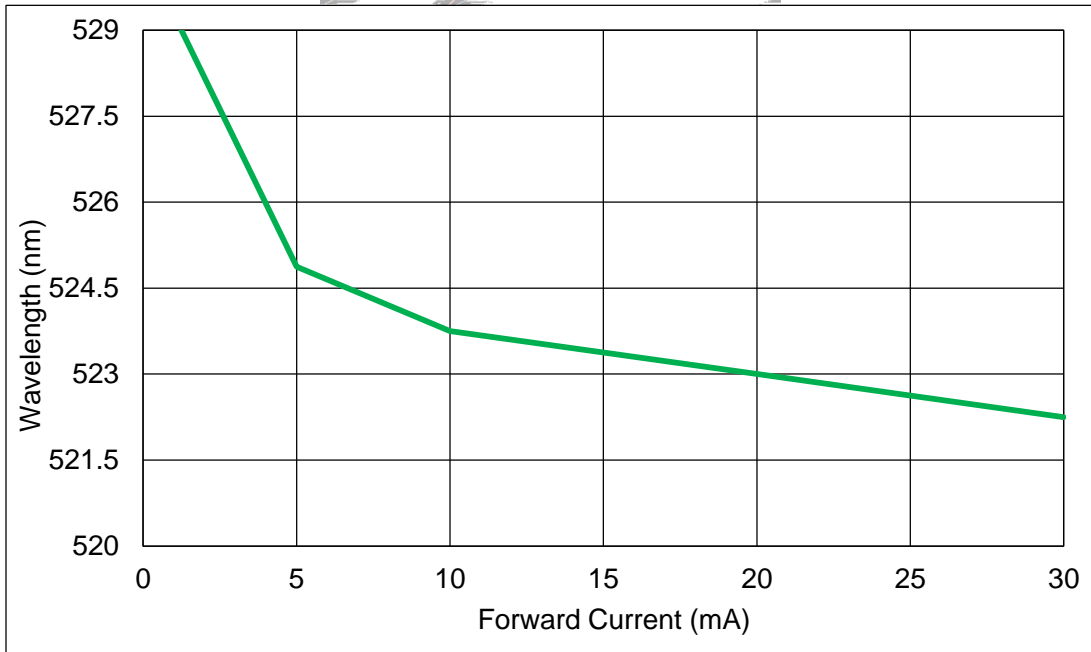
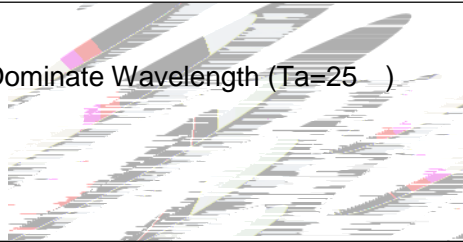


Fig.1-11 Forward Current Vs Dominate Wavelength (Ta=25°C)

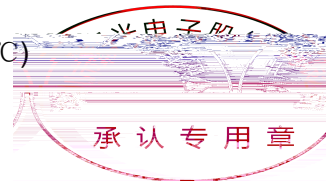
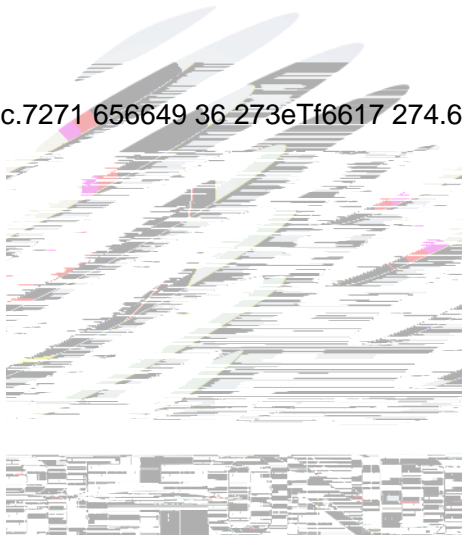




Fig. 10271081 6 T(68c.7271 656649 36 273eTf6617 274.696700 gc.727.65 681 06 27.222 703.Q(e)- BD



2. Packaging

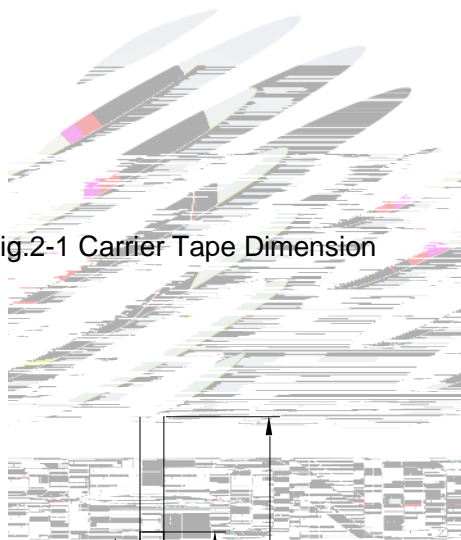
2.1 Packaging Specification

Package: 4000pcs/reel. 4000pcs

2.1.1 Carrier Tape Dimension



Fig.2-1 Carrier Tape Dimension



2.1.2 Reel Dimension

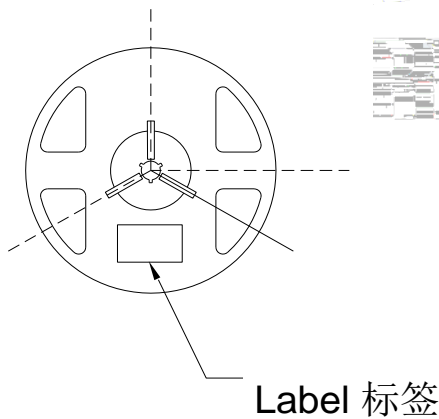


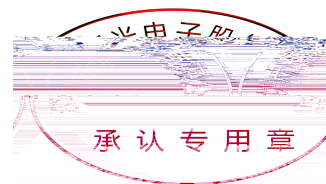
Fig.2-2 Reel Dimension

Table 2-1 Dimension

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

Notes

The tolerances unless mentioned $\pm 0.1\text{mm}$. Unit : mm



2.1.3 Label Form Specification

Table 2-2 Parameter

PART NO.	Part Number
SPEC NO.	Spec Number
LOT NO.	Lot Number
BIN CODE	Bin Code
	Luminous flux
XY	Chromaticity Bin
V _F	Forward Voltage
WLD	Wavelength
QTY	Packing Quantity
DATE	Made Date

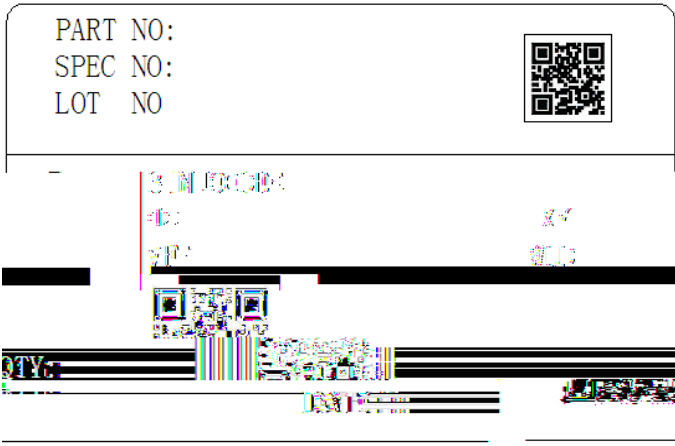


Fig. 2-3 Label Form Specification

2.2 Moisture Resistant Packing

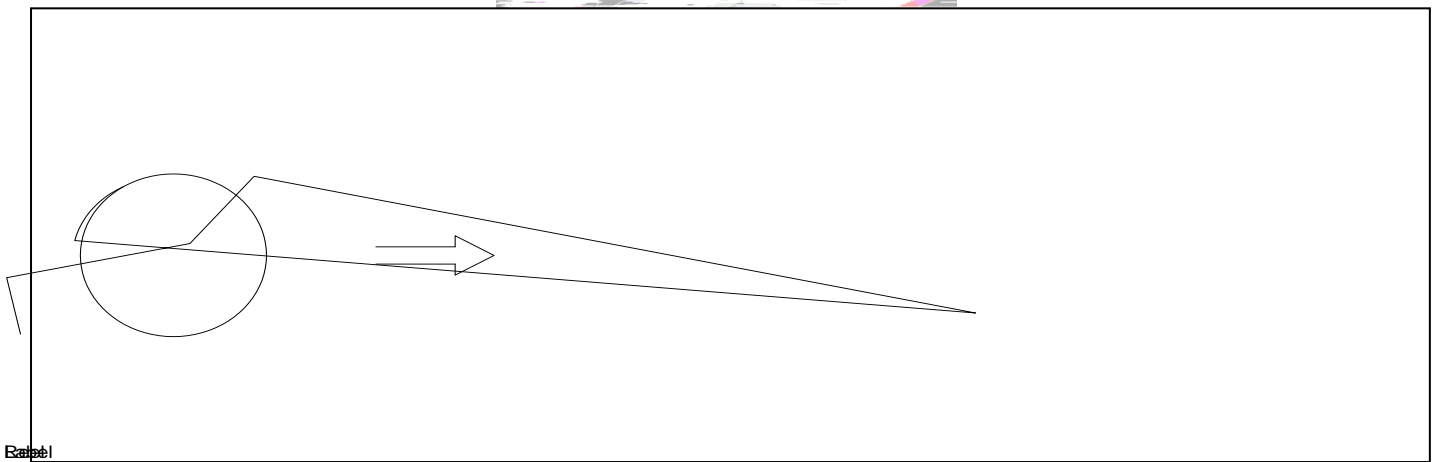
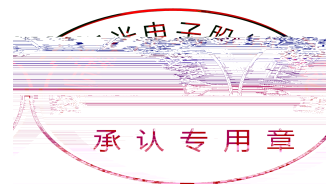


Fig.2-4 Moisture Resistant Packing



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	2 times	22Pcs.	0/1
Temperature Cycle	JESD22-A104	100 30 min 5 min -40 30 min	100 cycles	22Pcs.	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	$I_F=20mA$	-	U.S.L*)x1.1
Reverse Current	I_R	$V_R= 5V$	-	U.S.L*)x2.0
Luminous Flux		$I_F=20mA$	L.S.L*)x0.7	-

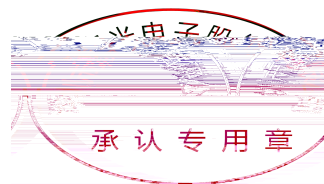
Notes

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.

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

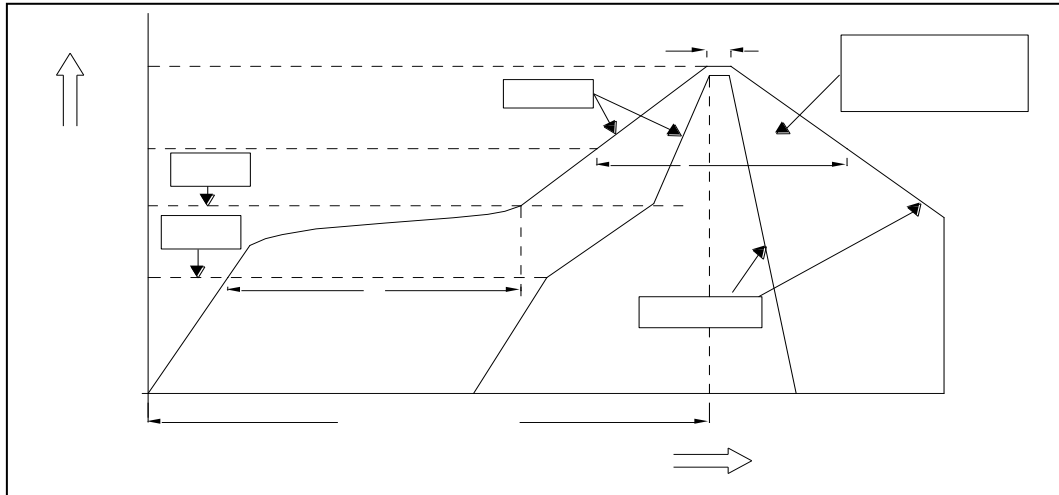


Fig.3-1 SMT Reflow Soldering Instructions SMT

Table 3-1 Parameter

Average temperature rise speed	T_{smax} T_P	3 °C/ Max 3 °C/ s
Preheating: minimum temperature	(T_{smin})	150 °C
Preheating: Max temperature	(T_{smax})	200 °C
Preheating: Time	T_{smin} T_{smax}	60 - 120 60s-120s
Time limited to maintain high temperature: the temperature	(T_L)	217 °C
Time limited to maintain high temperature: The Time	(t_L)	60 Max 60s
Peak /Classification of temperature:	/ (T_P)	260 °C
Time limit classification of peak temperature time	t_p	10 Max 10s
Hold time within 5 °C with the actual peak temperature (T_P)	(T_P)	30 Max 30s
Cooling speed		6 °C/ Max 6 °C/ s
Needed time from 25 °C to T_p	25 °C	8 Max 8 minutes

Notes

(1)Reflow soldering should not be done more than twice. If more than 24 hours between the two solderings , LED will be damaged.

(2)Whensoldering , do not put stress on the LEDs during heating.

3.1.1 Soldering Iron

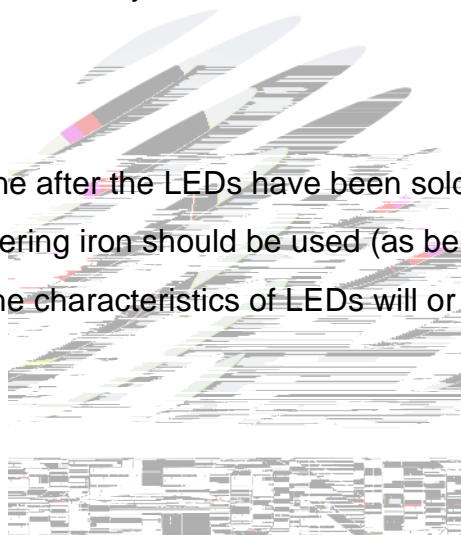
(1) When do soldering by hand, keep the temperature of iron below less 300°C less than 3 seconds.

(2) Soldering by hand should be done only one time.

3.1.2 Repairing

Repairing should not be done after the LEDs have been soldered. When repairing is unavoidable,a double-head soldering iron should be used (as below figure). It should be confirmed in advance whether the characteristics of LEDs will or not be damaged by repairing.

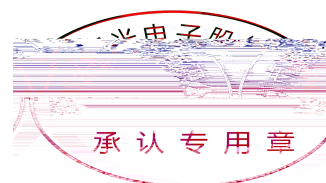
LED



3.1.3 Cautions

(1) Components should not be mounted on warped (non coplanar) portion of PCB. After soldering, do not warp the circuit board.LED

(2) Do not apply mechanical force or excess vibration during the cooling process to normal temperature after soldering. Do not rapidly cool device after soldering.



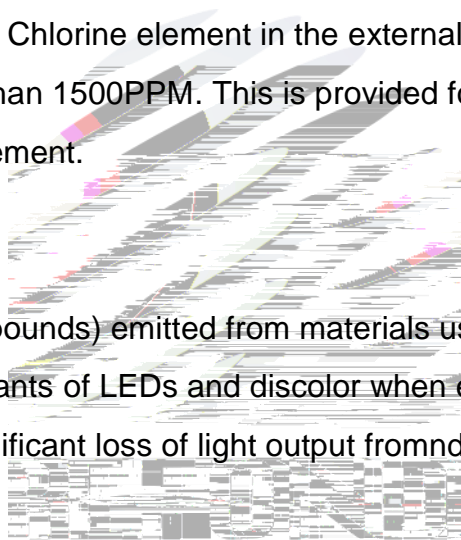
4. Handling Precautions

4.1 Handling Precautions

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

(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.

(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 photonic



(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.

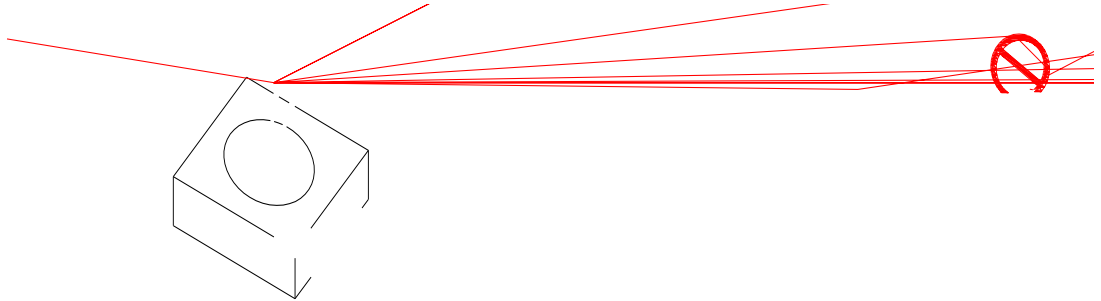
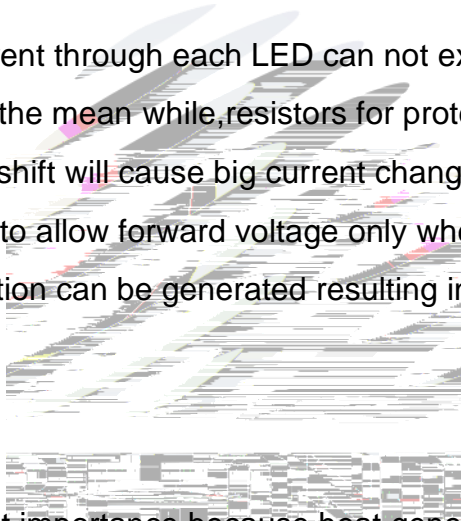


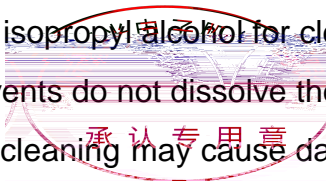
Fig 4-1 产品使用注意事项

(5) In designing a circuit, the current through each LED can not exceed the absolute maximum rating specified for each LED. In the mean while, resistors for protection should be applied, otherwise slight voltage shift will cause big current change, burn out may happen. The driving circuit must be designed to allow forward voltage only when it is ON or OFF. If the reverse voltage is applied to LED, migration can be generated resulting in LED damage.



(6) Thermal Design is paramount importance because heat generation may result in the Characteristics decline, such as brightness decreased, Color change and so on. Please consider the heat generation of the LEDs when making the system design. LED

(7) Compared to standard encapsulants, silicone is generally softer, and the surface is more likely to attract dust, requiring special care during processing. In cases where a minimal level of dirt and dust particles cannot be guaranteed, a suitable cleaning solution must be applied to the surface after the soldering of components. Refond suggests using isopropyl alcohol for cleaning. In case other solvents are used, it must be assured that these solvents do not dissolve the package or resin. Ultrasonic cleaning is not recommended. Ultrasonic cleaning may cause damage to the

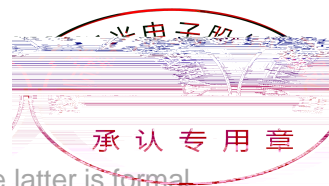


LED.

Table 4-1 Storage

Conditions		Temperature	Humidity	Time
Storage	Before Opening Aluminum Bag	30	75%	Within 1 Year From Date





Declare

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