SPECIFICATION
产品规格书

REFONDLT P/N 产品型号

RF-TVY*EE33LBN

□R&D 研发

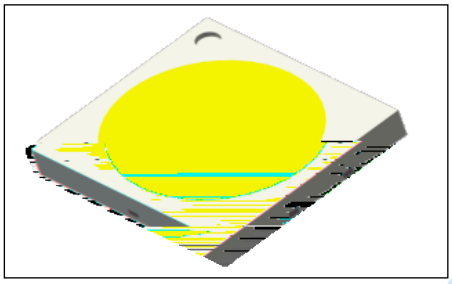
■Mass Product 量产供货

Contents/ 目 录

B.2.Rect(Echo)15(p)-3(tio)-6(n)-3(s)] TJET EMC /Span 4/MCID 35/Lang (en-US)>BDC q59.85 0 02T/1432.05 498.43

1. Description 产品介绍

1.1 Description 描述



The White LED which was fabricated using a blue chip and the phosphor, outline size3.0mm×3.0mm×0.55mm.

.该产品为白光LED，是由蓝光芯片激发荧光粉而形成，产品尺寸：3.0mm×3.0mm×0.55mm。

1.1.1 Features 特征

EMC Package. EMC封装

Extremely wide viewing angle.发光角度大

Suitable for all SMT assembly and solder process.适用于所有的SMT组装和焊接工艺

Available on tape and reel.适用于载带及卷轴

Moisture sensitivity level: Level 3.防潮等级 Level 3

RoHS compliant. 满足RoHS要求

1.1.2 Applications 应用

Backlight for LCD, TV or monitor. LCD背光、电视或显示器

Switch and symbol. 转换器、开关和标志等

Optical indicator.光学指示

Indoor display.室内显示

Tubular light application.用于日光灯管

General use.其他应用

1.2 Package Dimension 产品尺寸

Fig.1-1 Top view 正面视图

1.3 Product Parameters 产品参数

Table 1-1 Electrical / Optical Characteristics at Ts=25°C 电性与光学特性

Item 项目	Symbol 符号	Test condition 测试条件	Value			Unit 单位
			Min. （最小值）	Typ （典型值）	Max. （最大值）	
Forward Voltage （正向电压）	V_F	I_F=300mA	5.8	---	7.2	V
Reverse Current （漏电流）	I_R	V_R=10V	---	---	10	uA
Luminous Flux （光通量）	Φ	I_F=300mA	140	---	220	Lm
Viewing Angle （发光角度）	2 1/2	I_F=300mA	---	120	---	deg
Thermal Resistance. （热阻）	R_{THJ-S}	I_F=300mA	---	12	---	℃/W

Table 1-2 Absolute Maximum Ratings at Ts=25°C 绝对最大值

Parameter （参数）	Symbol [illegible]	Rating （值）	Units （单位）
Power Dissipation （功耗）	P_D	2160	mW
Forward Current （正向电流）	I_F	300	mA
Peak Forward Current （峰值电流）	I_{FP}	450	mA
Reverse Voltage （反向电压）	V_R	10	V
Electrostatic Discharge (HBM)（静电）	E_{SD}	2000	V
Operating Temperature （操作温度）	T_{OPR}	-40 ~ +85	℃
Storage Temperature （储存温度）	T_{stg}	-40 ~ +100	℃
Junction Temperature （结温）	T_J	115	℃

Notes 备注:

(1) 1/10 Duty cycle, 0.1ms pulse width. 脉宽0.1ms,占空比1/10.

(2) The above forward voltage measurement allowance tolerance is ±0.1V. 以上所示电压测量误差 ±0.1V.

(3) The above color coordinates measurement allowance tolerance is ±0.005. 以上所示坐标测量误差 ±0.005.

(4) The above luminous intensity measurement allowance tolerance ±5%. 上述发光强度的测试允许公差为 ±5%.

(5) Care is to be taken that power dissipation does not exceed the absolute maximum rating of the product. 使用功率不能超过规定的最大值。

(6) All measurements were made under the standardized environment of Refond. 所有测试都是基于瑞丰现有的标准测试平台。

(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 使用的最大电流需要根据散热条件确定，结温不能超过最大值。

(8) ESD yield is over 90% at 2000V ESD (HBM). ESD protection during products handing is needed. 90%的LED通过人体模式ESD2000V 测试，在操作时请注意静电防护。

1.4 Bin Range Of Forward Voltage and Luminous Flux (IF=300mA)电压与流明分 BIN 范围(IF=300mA)

Table 1-3 Bin Range Of Forward Voltage and Luminous Flux电压与流明分BIN范围(IF=300mA)

VF（V）	TB	TD	TF	TH	TJ	TL	TN	/
	5.8-6.0	6.0-6.2	6.2-6.4	6.4-6.6	6.6-6.8	6.8-7.0	7.0-7.2	/
Φ（lm）	T140	T145	T150	T155	T160	T165	…	T240
	140-145	145-150	150-155	155-160	160-165	165-170	…	240-245

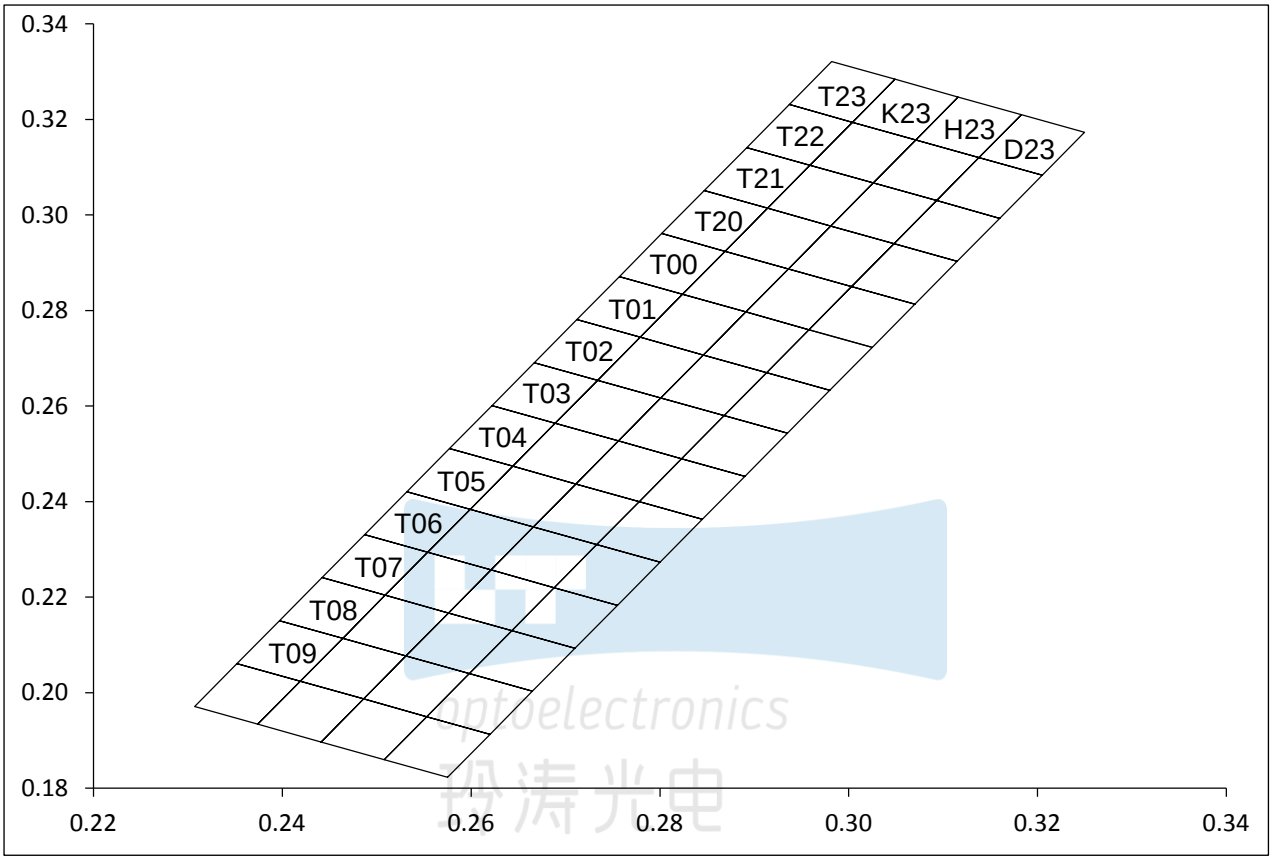


Fig 1-6 The C.I.E Chromaticity Diagram CIE色度图

Table 1-4 The C.I.E Chromaticity Diagram CIE色度图

BIN C0DE	CIE-X1	CIE-Y1	CIE-X2	CIE-Y2	CIE-X3	CIE-Y3	CIE-X4	CIE-Y4
D00	0.3025	0.2723	0.2958	0.2760	0.3003	0.2850	0.3070	0.2813
D01	0.2980	0.2633	0.2913	0.2670	0.2958	0.2760	0.3025	0.2723
D02	0.2935	0.2543	0.2868	0.2580	0.2913	0.2670	0.2980	0.2633
D03	0.2890	0.2453	0.2823	0.2490	0.2868	0.2580	0.2935	0.2543
D04	0.2845	0.2363	0.2778	0.2400	0.2823	0.2490	0.2890	0.2453
D05	0.2800	0.2273	0.2733	0.2310	0.2778	0.2400	0.2845	0.2363
D06	0.2755	0.2183	0.2688	0.2220	0.2733	0.2310	0.2800	0.2273
D07	0.2710	0.2093	0.2643	0.2130	0.2688	0.2220	0.2755	0.2183
D08	0.2665	0.2003	0.2598	0.2040	0.2643	0.2130	0.2710	0.2093
D09	0.2620	0.1913	0.2553	0.1950	0.2598	0.2040	0.2665	0.2003
D10	0.2575	0.1823	0.2508	0.1860	0.2553	0.1950	0.2620	0.1913
D20	0.3070	0.2813	0.3003	0.2850	0.3048	0.2940	0.3115	0.2903
D21	0.3115	0.2903	0.3048	0.2940	0.3093	0.3030	0.3160	0.2993
D22	0.3160	0.2993	0.3093	0.3030	0.3138	0.3120	0.3205	0.3083
D23	0.3205	0.3083	0.3138	0.312	0.3183	0.321	0.325	0.3173

H00	0.2958	0.2760	0.2891	0.2797	0.2936	0.2887	0.3003	0.2850
H01	0.2913	0.2670	0.2846	0.2707	0.2891	0.2797	0.2958	0.2760
H02	0.2868	0.2580	0.2801	0.2617	0.2846	0.2707	0.2913	0.2670
H03	0.2823	0.2490	0.2756	0.2527	0.2801	0.2617	0.2868	0.2580
H04	0.2778	0.2400	0.2711	0.2437	0.2756	0.2527	0.2823	0.2490
H05	0.2733	0.2310	0.2666	0.2347	0.2711	0.2437	0.2778	0.2400
H06	0.2688	0.2220	0.2621	0.2257	0.2666	0.2347	0.2733	0.2310
H07	0.2643	0.2130	0.2576	0.2167	0.2621	0.2257	0.2688	0.2220
H08	0.2598	0.2040	0.2531	0.2077	0.2576	0.2167	0.2643	0.2130
H09	0.2553	0.1950	0.2486	0.1987	0.2531	0.2077	0.2598	0.2040
H10	0.2508	0.1860	0.2441	0.1897	0.2486	0.1987	0.2553	0.1950
H20	0.3003	0.2850	0.2936	0.2887	0.2981	0.2977	0.3048	0.2940
H21	0.3048	0.2940	0.2981	0.2977	0.3026	0.3067	0.3093	0.3030
H22	0.3071	0.3157	0.3026	0.3067	0.3093	0.3030	0.3138	0.3120
H23	0.3138	0.3120	0.3071	0.3157	0.3116	0.3247	0.3183	0.3210
K00	0.2891	0.2797	0.2824	0.2834	0.2869	0.2924	0.2936	0.2887
K01	0.2846	0.2707	0.2779	0.2744	0.2824	0.2834	0.2891	0.2797
K02	0.2801	0.2617	0.2734	0.2654	0.2779	0.2744	0.2846	0.2707
K03	0.2756	0.2527	0.2689	0.2564	0.2734	0.2654	0.2801	0.2617
K04	0.2711	0.2437	0.2644	0.2474	0.2689	0.2564	0.2756	0.2527
K05	0.2666	0.2347	0.2599	0.2384	0.2644	0.2474	0.2711	0.2437
K06	0.2621	0.2257	0.2554	0.2294	0.2599	0.2384	0.2666	0.2347
K07	0.2576	0.2167	0.2509	0.2204	0.2554	0.2294	0.2621	0.2257
K08	0.2531	0.2077	0.2464	0.2114	0.2509	0.2204	0.2576	0.2167
K09	0.2486	0.1987	0.2419	0.2 BDC (				

1.5 Typical optical characteristics curves 典型光学特性曲线

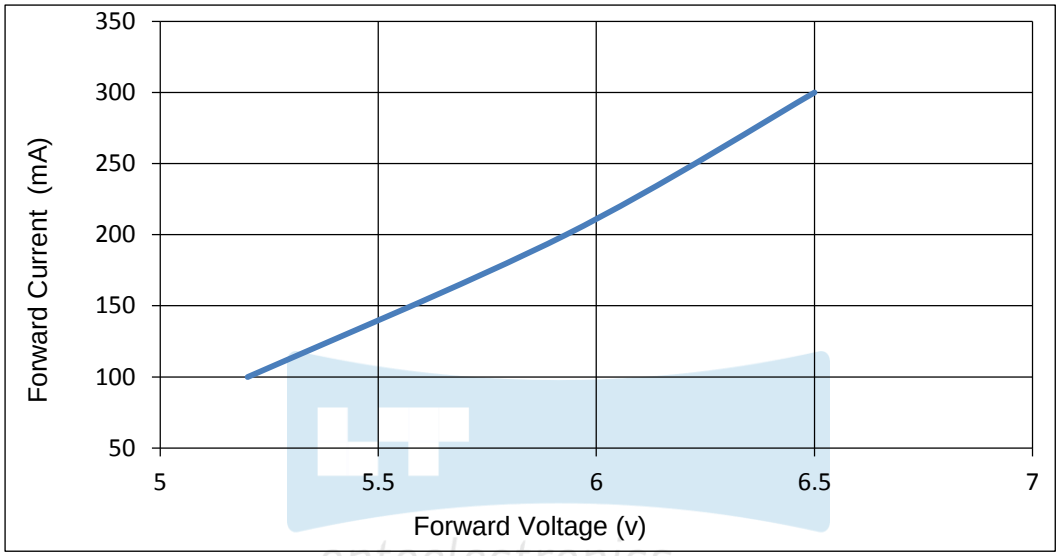


Fig 1-7 Forward Voltage Vs. Forward Current 伏安特性曲线

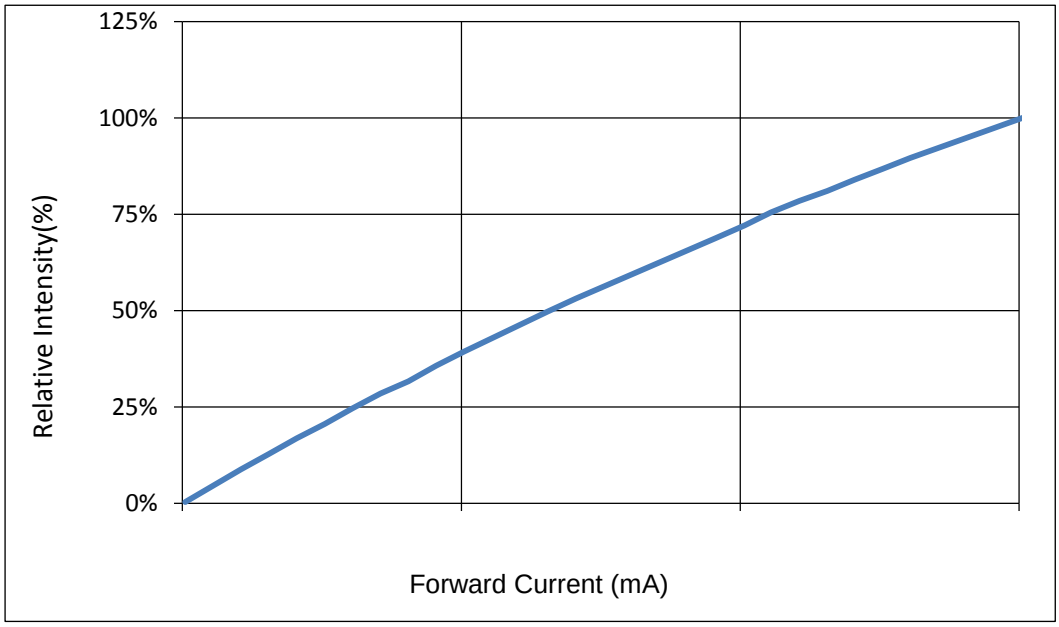


Fig 1-8 Forward Current Vs. Relative Intensity 正向电流与相对光强特性曲线

Fig 1-11 Forward Voltage Vs Solder Temperature电压与管脚温度特性曲线

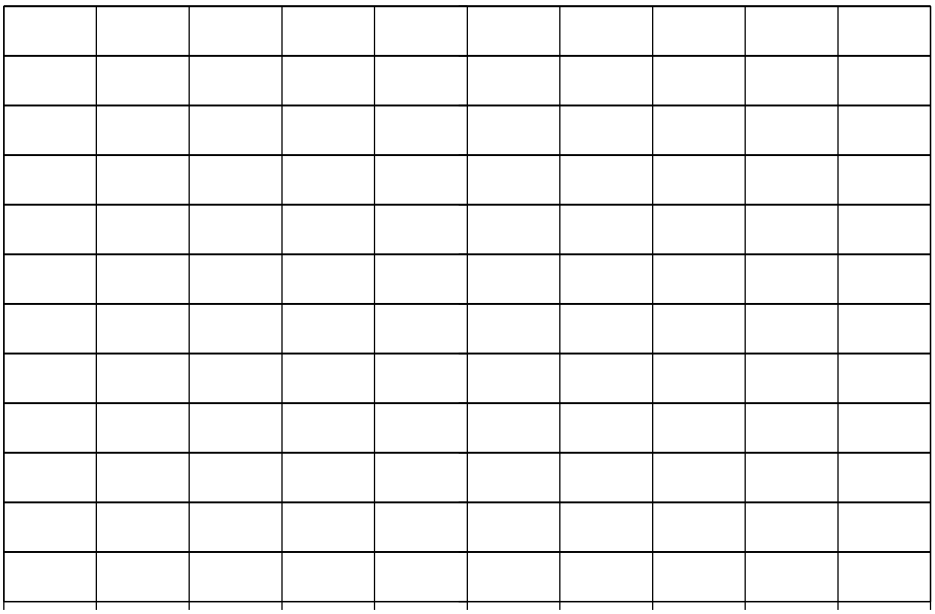


Fig 1-12 Radiation diagram 辐射特性曲线

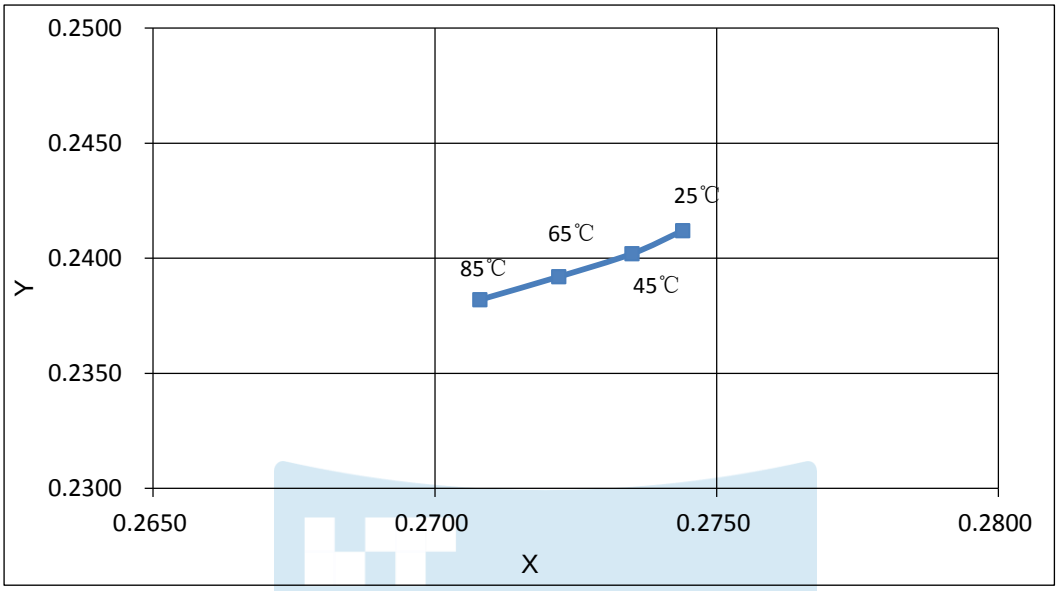


Fig 1-13 Chromaticity Coordinate Vs Solder Temperature 色坐标与管脚温度特性曲线

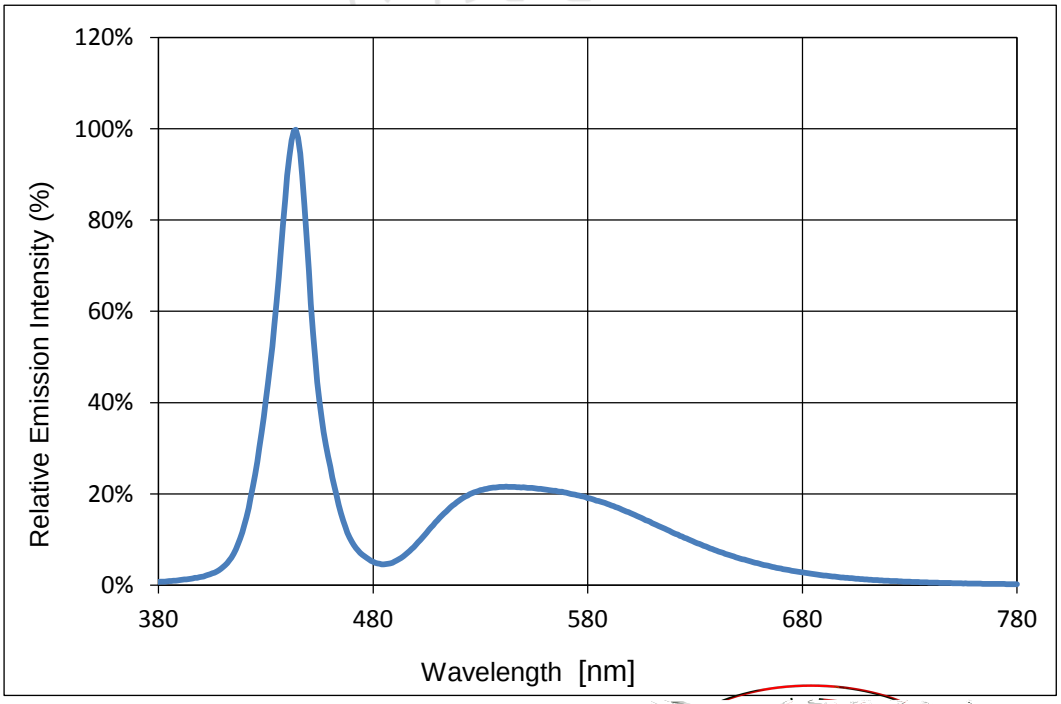


Fig.8- Spectrum Distribution 光谱分布特性曲线

2. Packaging 产品包装

2.1 Packaging Specifications 包装规格

Package:5000pcs/reel.包装每卷5000pcs。

2.1.1 Carrier Tape Dimensions 载带尺寸

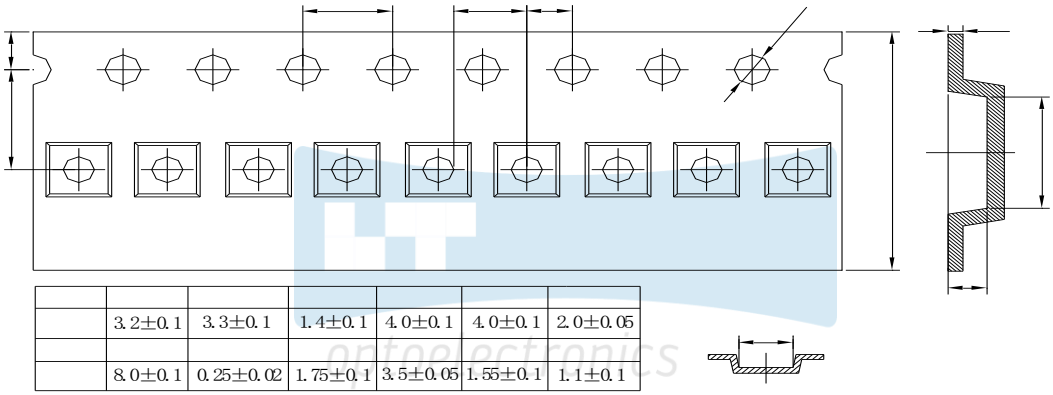


Fig 2-1 Carrier Tape Dimensions 载带尺寸

2.1.2 Reel Dimension 卷盘尺寸

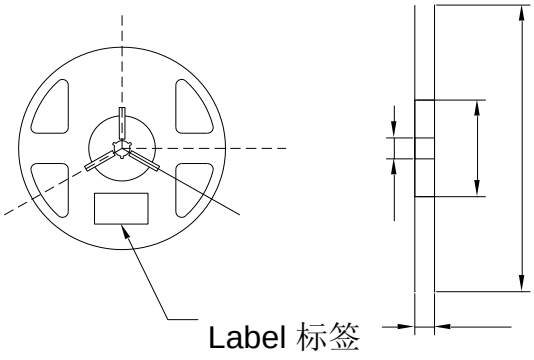


Fig 2-2 Reel Dimension 卷盘尺寸

Table 2-1 Reel Dimension 卷盘尺寸

A	16.9±0.1mm
B	178±1mm
C	59±1mm
D	13.3±0.5mm

NOTES 备注:

The tolerances unless mentioned ±0.1mm. Unit : mm 注：未注公差为±0.1毫米，尺寸单位：毫米

2.1.3 Label Form Specification 标签规格

Table 2-2 Label Form Specification 标签规格

PART NO.	Part Number 品名
SPEC NO.	Spec Number 规格
LOT NO.	Lot Number 批次号
BIN CODE	Bin Code 参数代码
Φ	Luminous flux 光通量
XY	

Fig 2-3 Label Form Specification 标签规格

2.1.4 Moisture Resistant Packing Process 防潮包装过程

Fig 2-4 Moisture Resistant Packing Process 防潮包装过程

2.1.5 Cardboard Box 纸箱

Fig 2-5 Cardboard Box 包装纸箱

2.1.6 Reliability Test Items And Conditions

Table 2-3 Reliability Test Items And Conditions 信赖性测试项目及条件

Test Items 项目	Ref.Standard 参考标准	Test Condition 测试条件	Time 时间	Quantity 数量	Ac/Re 接收/拒收
Reflow 回流焊	JESD22-B106	Temp:260℃max T=10 sec	2times	20Pcs	0/1
Thermal Shock 冷热冲击	JEITAED-4701 300 307	-40℃ 15min ↑↓10s 100℃ 15min	100 cycle	20Pcs	0/1
High Temperature Storage 高温保存	JEITAED-4701 200 201	Temp:100℃	1000Hrs	20Pcs	0/1
Low Temperature Storage 低温保存	JEITA ED-4701 200 202	Temp:-40℃	1000Hrs	20Pcs	0/1
Life Test 常温通电	JESD22-A108	T_A=25℃ I_F=300mA	1000Hrs	10Pcs	0/1
High Temperature High Humidity Life Test 高温高湿通电	JESD22-A101	60℃/ 90%R_H I_F=300mA	500Hrs	10Pcs	0/1

2.1.7 Criteria For Judging Damage 失效判定标准

Table 2-4 Criteria For Judging Damage 失效判定标准

Test Items 项目	Symbol 符号	Test Condition 测试条件	Criteria For Judgement 判定标准	
			Min. 最小	Max. 最大
Forward Voltage 正向电压	V_F	I_F=300mA	-	U.S.L*)x1.1
Reverse Current 反向电流	I_R	V_R = 10V	-	U.S.L*)x2.0
Luminous Flux 光通量	Φ	I_F=300mA	L.S.L*)x0.7	-

NOTES 备注:

(1) U.S.L: Upper standard level 规格上限 L.S.L: Lower standard level 规格下限

(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 appliesthe LED to the series and parallel circuit, should take consideration of all the factors such as the current, voltage distribution, heat dissipation and others. 以上可靠性测试是基于瑞丰现有实验平台单颗/条LED在良好散热条件验证下的结果。客户端将LED应用于串、并联线路时，需自行评估电流、电压分配、散热等问题。

(3) The technical information shown in the data sheets are 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. 以上技术数据仅为产品的典型值，只作为参考，不作为任何应用条件及应用方式的保证。

3. SMT Reflow Soldering Instructions　SMT回流焊说明

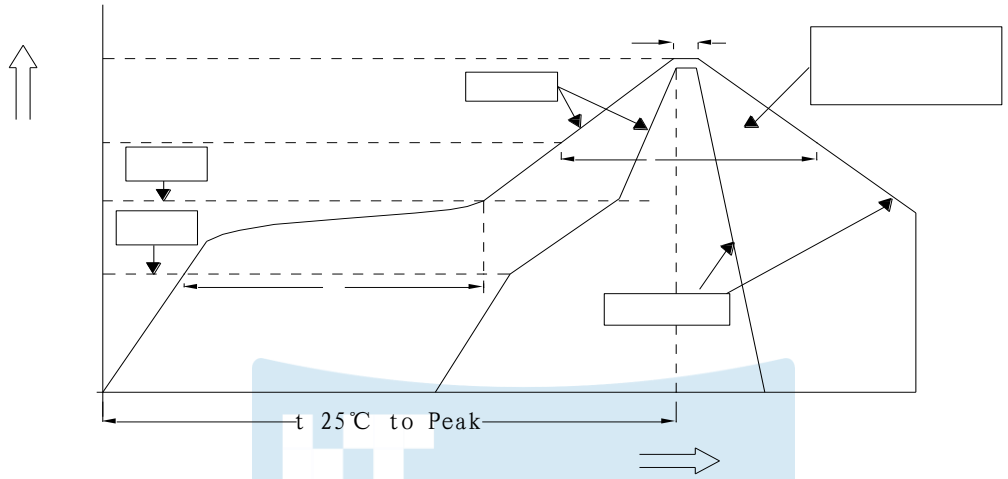


Fig 3-1 3.　　SMT Reflow Soldering Instructions SMT 回流焊说明

Table 3-1 SMT Reflow Soldering Instructions SMT 回流焊说明

Average temperature rise speed平均升温速度（Tsmax　至T_P）	最高3 °C/秒 Max 3 °C/ s
Preheating: minimum temperature预热：最低温度 (Tsmin)	150 °C
Preheating: Max temperature预热：最高温度 (Tsmax)	200 °C
Preheating: Time预热：时间（Tsmin　至Tsmax）	60 - 120秒　60s-120s
Time limited to maintain high temperature: the temperature限时维持高温：温度 (T_L)	217 °C
Time limited to maintain high temperature: The Time　限时维持高温：时间 (t_L)	最多60秒　Max 60s
Peak /Classification of temperature:峰值 / 分类温度 (T_P)	260 °C
Time limit classification of peak temperature time限时峰值分类温度：时间（t_p）	最多10秒　Max 10s
Hold time within 5 °C with the actual peak temperature (TP) 与实际峰值温度 (T_P)　相差 5 °C 以内的保持时间	最多30秒　Max 30s
Cooling speed　降温速度	最高6 °C/秒　Max 6 °C/ s
Needed time from 25 °C to Tp　25 °C 升至峰值温度所需时间	最多8分钟 Max 8 minutes

4. Handling Precautions 使用注意事项

(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 工作环境及与 LED 适配的材料中硫元素及化合物成份不可超过 100PPM

Fig 4-1

(5) In designing a circuit,the current through each LED can not be exceed the absolute maximum rating specified for each LED.In the meanwhile,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

Version History/ 修订历史

Date 日期	Revisor 修订者	Version 版本	Verifier 审核	Remarks 备注
2019-3-21	李电伟	E3	刘娟	版本更新

Declare 申明

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

产品规格书以中英文方式书写，若有冲突以中文版本为准。