Technical Data Sheet

Product Name： 0805 2012 Red/P.Green Bi-Color SMD Chip LED

Part Number： RD2012-82URUGC

Customer：

Customer PN：

Version No.： A.4

Date： July 12th, 2015

Customer Approval		

Instituted By： **Checked By:** **Approved By：**

Shenzhen RigDoo Optoelectronics Co., Ltd.

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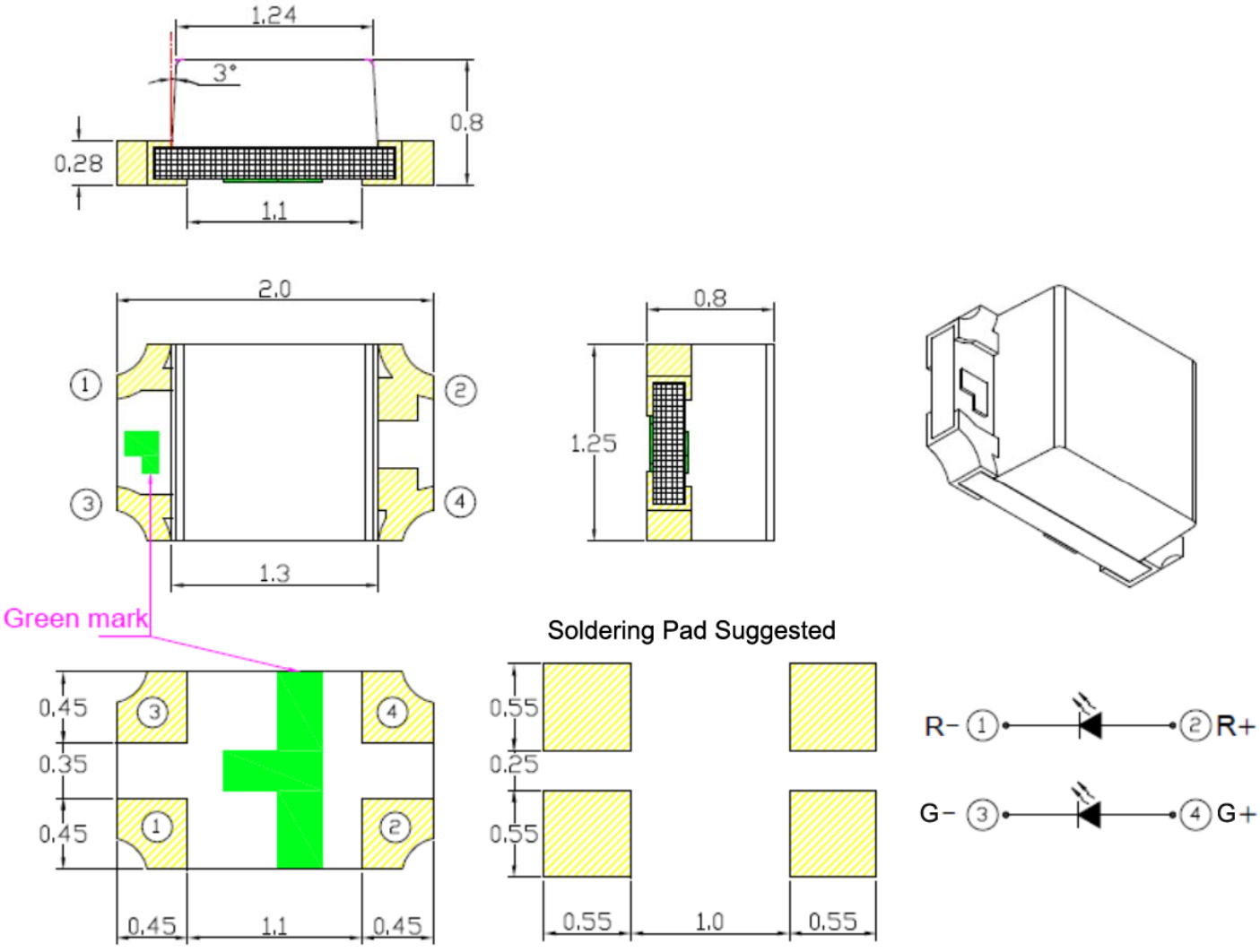
1. Features

- Package (L/W/H) : 2.0×1.25×0.8mm
- Color : Ultra Bright Red/P.Green Bi-color
- Lens: Water Clear Flat Mold
- EIA STD Package
- Meet ROHS, Green Product
- Compatible With SMT Automatic Equipment
- Compatible With Infrared Reflow Solder Process

2. Package Profile & Soldering PAD Suggested

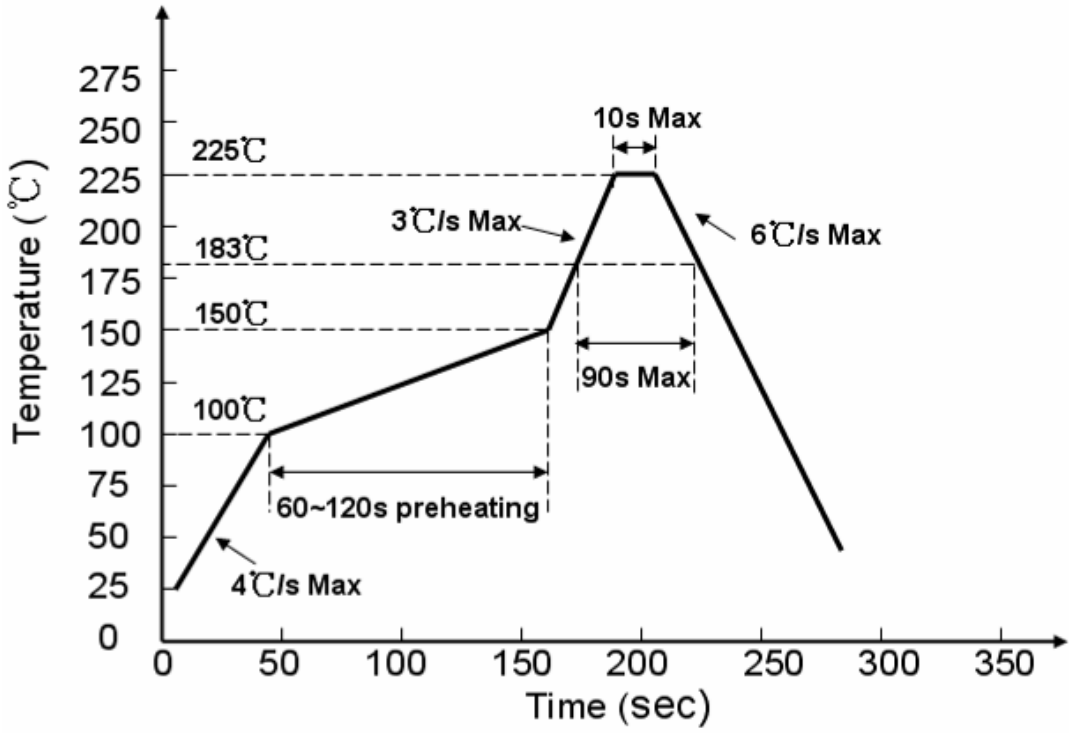


Notes: a. All dimensions are in millimeters ;

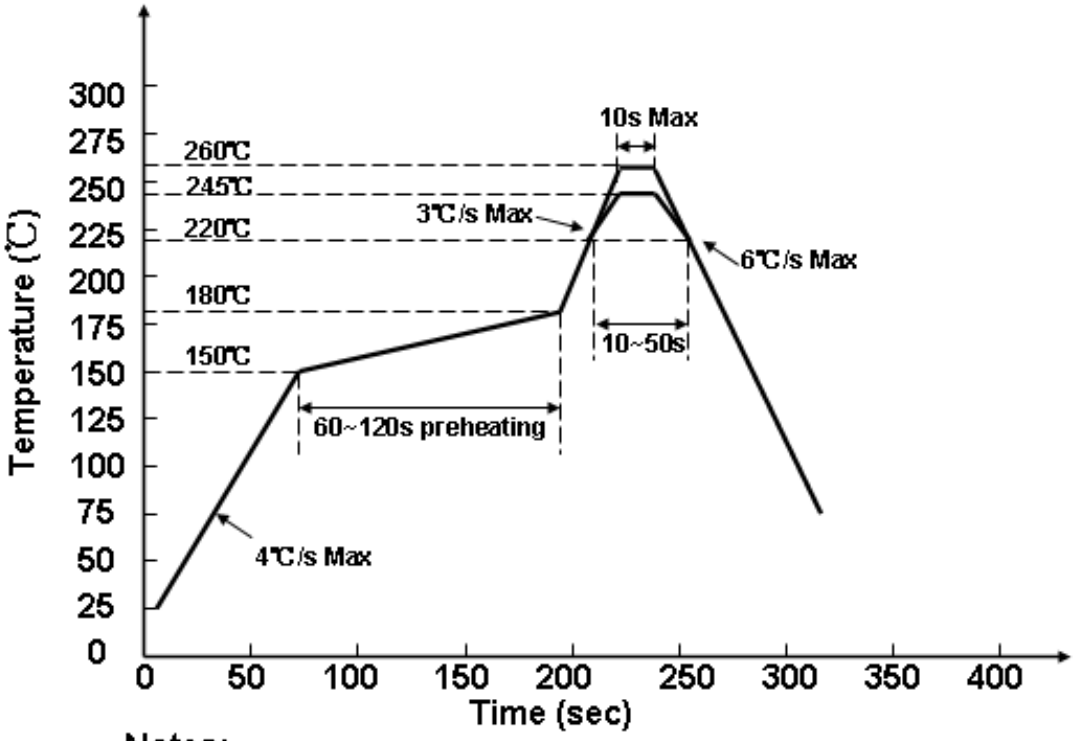
b. Tolerance is ± 0.10 mm unless otherwise noted.

3. Soldering Profile Suggested

For Lead Solder



For Lead Free Solder



Notes:

We recommend the soldering temperature 245± 5℃ ;

The maximum temperature should be limited to 260 ℃.

4. Absolute Maximum Ratings At Ta=25℃

Parameter	Symbol	Rating		Unit
Power Dissipation	Pd	UR	75	mW
		UG	75	
Peak Forward Current (1/10 Duty Cycle, 0.1ms Pulse Width)	I_{FP}	UR	70	mA
		UG	70	
DC Forward Current	I_F	UR	25	mA
		UG	25	
Reverse Voltage	V_R	UR	5	**V**
		UG	5	
Operating Temperature Range	Topr	-30°C ~ +85°C		
Storage Temperature Range	Tstg	-40°C ~ +90°C		
Soldering Condition	Tsol	Reflow soldering : 260°C For 5 Seconds Hand soldering: 300°C For 3 Seconds		
Electrostatic Discharge	ESD	2000		V

5. Electrical Optical Characteristics At Ta=25℃

Parameter	Symbol	Color	Min.	Typ.	Max.	Unit	Test Condition
Luminous Intensity	IV	UR	---	65	---	mcd	IF = 5mA
		UG	---	220	---		
Dominant Wavelength	λd	UR	--615-		--630-	nm	IF = 5mA
		UG	--520		--530-		
Peak Wavelength	λp	UR	---	630	---	nm	IF = 5mA
		UG	---	522	---		
Spectral Line Half-Width	Δλ	UR	---	20	---	nm	IF = 5mA
		UG	---	30	---		
Forward Voltage	VF	UR	1.8	---	2.2	V	IF = 5mA
		UG	2.6	---	3.2		
Reverse Current	IR	UR	---	---	5	uA	VR=5V
		UG	---	---	5		
Viewing Angle	2θ1/2	---	---	120	---	deg	IF = 5mA

Notes: 1. Luminous intensity is measured with a light sensor and filter combination that approximates the CIE eye-response curve.
2. θ1/2 is the off-axis angle at which the luminous intensity is half the axial luminous intensity.
3. The dominant wavelength, λd is derived from the CIE chromaticity diagram and represents the single wavelength which defines the color of the device.

IV-R

Bin	Min	Max	Unit	Condition
R1	45	56	MCD	IF=5mA
R2	56	72		
R3	72	90		

IV-UG

Bin	Min	Max	Unit	Condition
B1	140	180	MCD	IF=5mA
B2	180	230		
B3	230	285		

IF-UG

Bin	Min	Max	Unit	Condition
6	2.8	2.9	V	IF=5mA
7	2.9	3.0		
8	3.0	3.1		
9	3.1	3.2		

IF-R

Bin	Min	Max	Unit	Condition
1	1.8	1.9	V	IF=5mA
2	1.9	2.0		
3	2.0	2.1		
4	2.1	2.2		

WLD-R

Bin	Min	Max	Unit	Condition
A	615	620	nm	IF=5mA
B	620	625		
C	625	630		

WLD-UG

Bin	Min	Max	Unit	Condition
B	520	523	nm	IF=5mA
C	523	526		
D	526	529		
E				

6. Typical Electrical-Optical Characteristics Curves

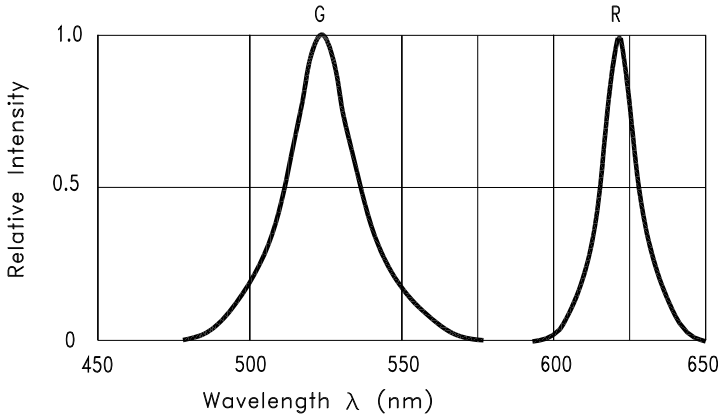


Fig.1 RELATIVE INTENSITY VS. WAVELENGTH

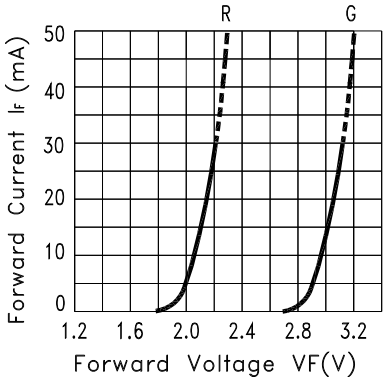


Fig.2 FORWARD CURRENT VS. FORWARD VOLTAGE

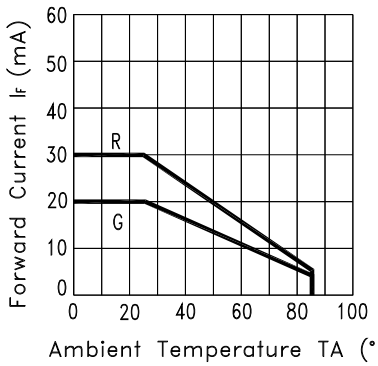


Fig.3 FORWARD CURRENT DERATING CURVE

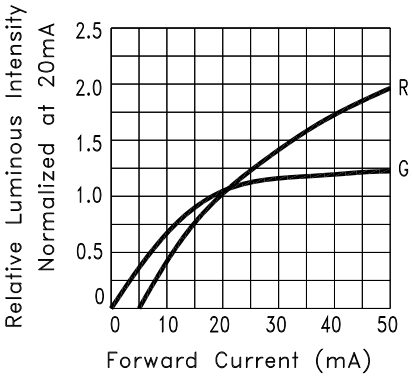


Fig.4 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

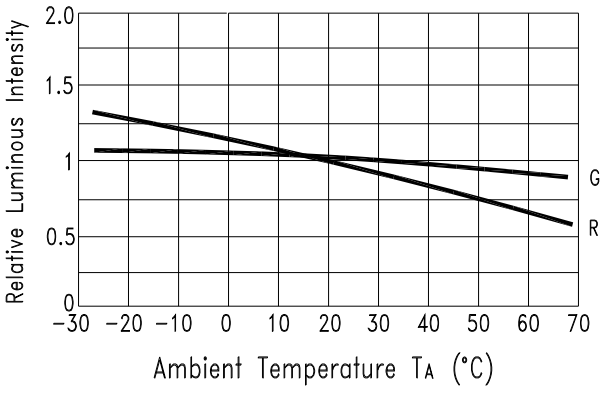


Fig.5 Luminous Intensity vs.Ambient Temperature

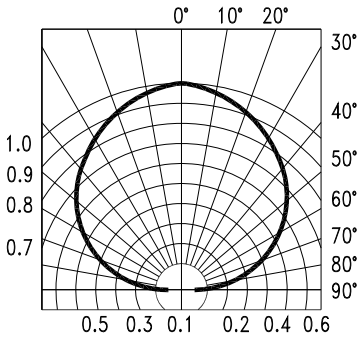
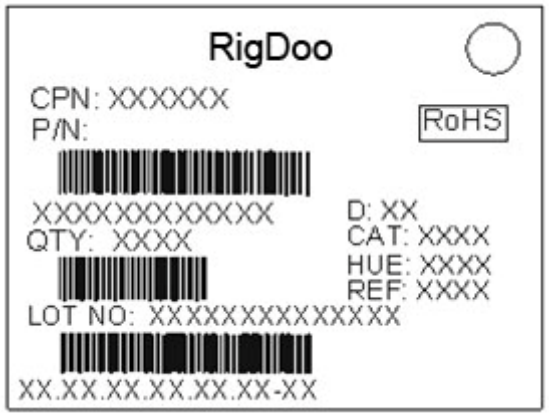


Fig.6 SPATIAL DISTRIBUTION

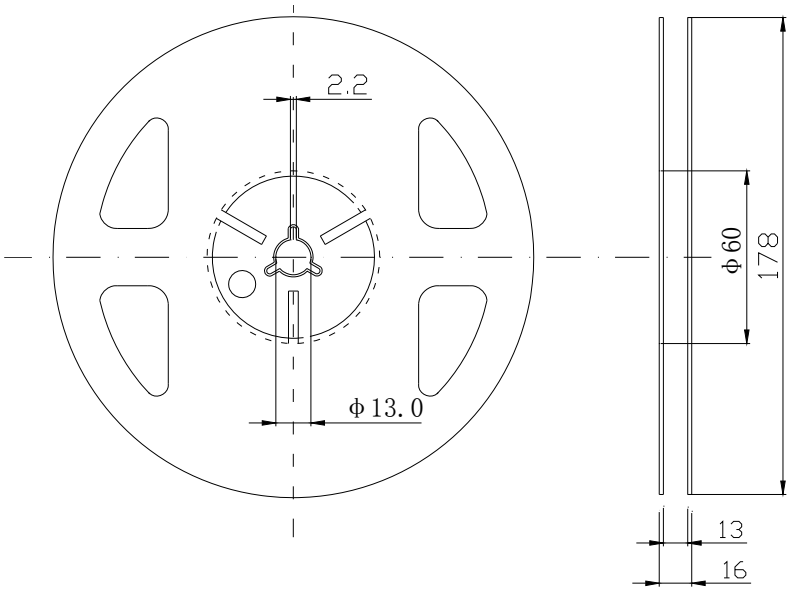
7. Label explanation

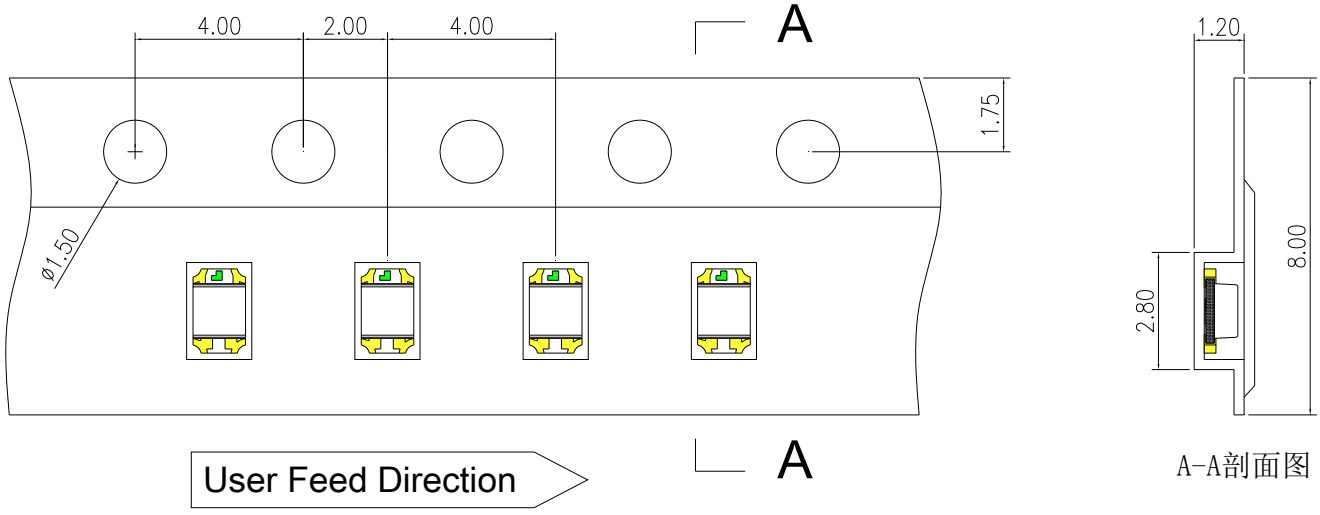
CAT：Luminous Intensity Rank（unit : mcd）
HUE：Dominant Wavelength Rank（unit : nm）
REF：Forward Voltage Rank（unit : V）

Rank Tolerance:
a. Luminous Intensity: ± 11%
b. HUE: ± 1nm
c. Forward Voltage: ± 0.02V



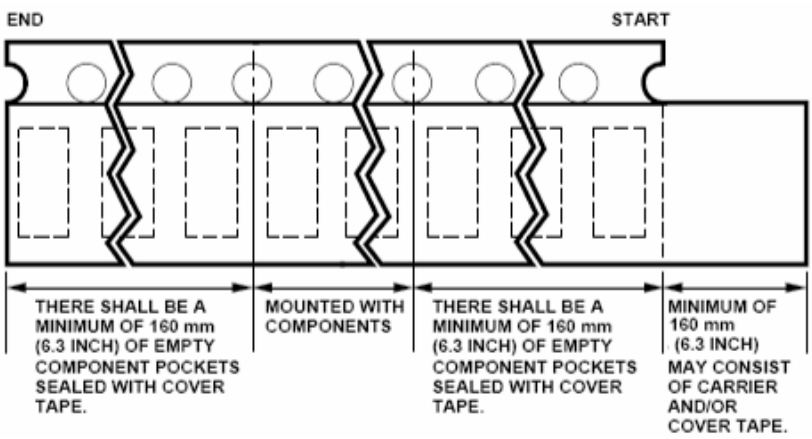
8. Reel Dimensions：

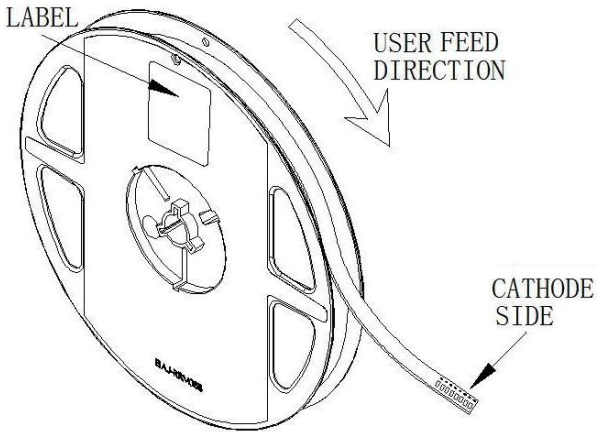




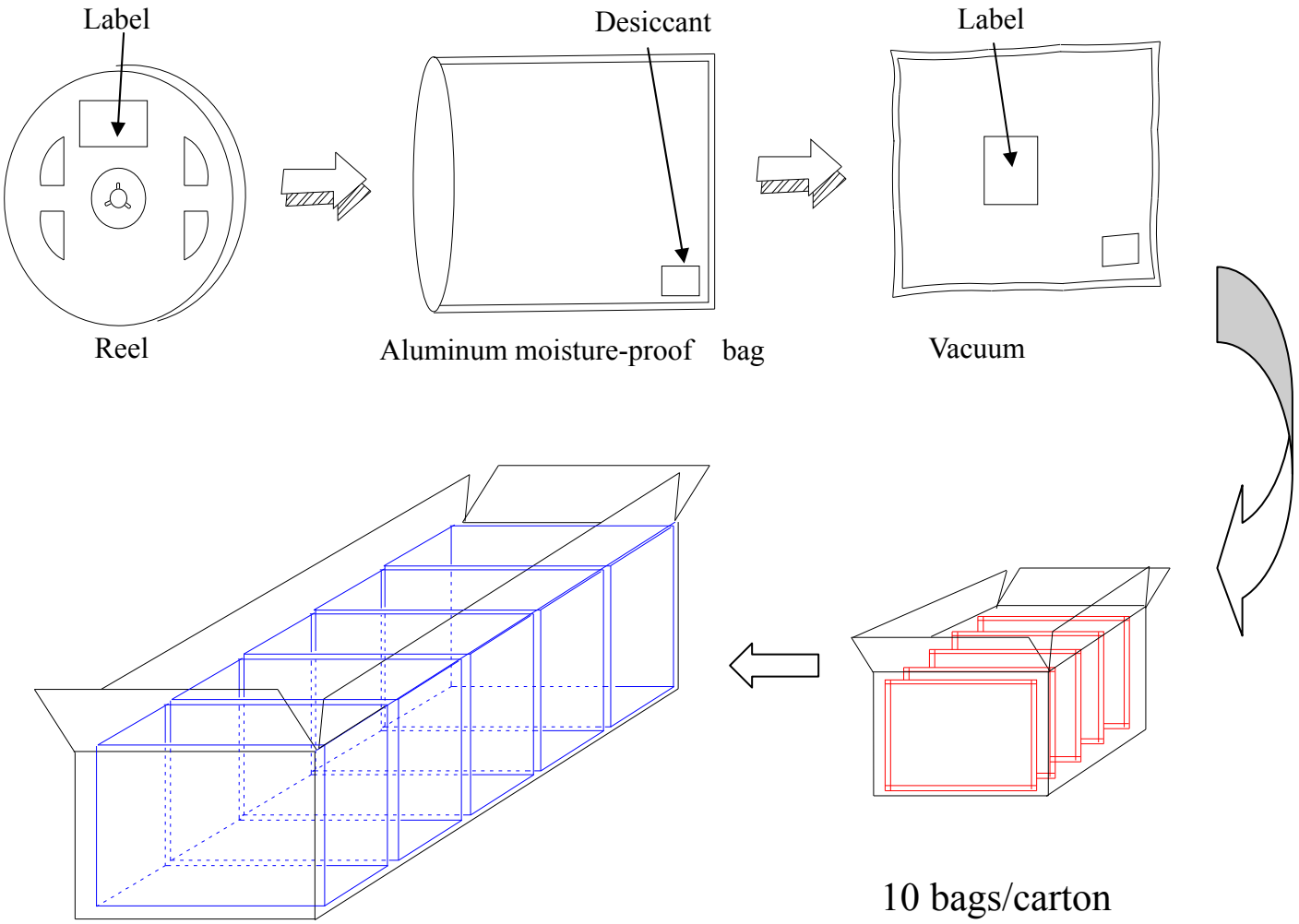
Notes: a. All dimensions are in millimeters ;
b. Tolerance is ± 0.10 mm unless otherwise noted.

9. Tape Leader & Trailer Dimensions And Reel





10. Moisture Resistant Packaging:



11. Reliability Test

Classification	Test Item	Test Condition	Reference Standard	Reference Standard
Endurance Test	Operation Life	Ta= Under Room Temperature As Per Data Sheet Maximum Rating	1000HRS (-24HRS,+72HRS)*@20mA	MIL-STD-750D:1026 MIL-STD-883D:1005 JIS C 7021:B-1
	High Temperature, High Humidity Storage	IR-Reflow In-Board, 2 Times Ta= 85±5℃,RH= 85%	1000HRS±2HRS	JESD22-A101
	High Temperature Storage	Ta= 105±5℃	1000HRS (-24HRS,+72HRS)	MIL-STD-883D:1008 JIS C 7021:B-10
	Low Temperature Storage	Ta= -55±5℃	1000HRS (-24HRS,+72H RS)	JIS C 7021:B-12
Environmental Test	Temperature Cycling	105℃ ～ 25℃ ～ -55℃ ～ 25℃ 30mins 5mins 30mins 5mins	10 Cycles	MIL-STD-202F:107D MIL-STD-750D:1051 MIL-STD-883D:1010 JIS C 7021:A-4
	Thermal Shock	IR-Reflow In-Board, 2 Times 85 ± 5℃ ～ -40℃ ± 5℃ 10mins 10mins	10 Cycles	MIL-STD-202F:107D MIL-STD-750D:1051 MIL-STD-883D:1011
	Solder Resistance	T.sol= 260 ± 5℃	10 ± 1secs	MIL-STD-202F:210A MIL-STD-750D:2031 JIS C 7021:A-1
	IR-Reflow Normal Process	Ramp-up rate(183℃ to Peak) +3℃/ second max Temp. maintain at 125(±25)℃ 120 seconds max Temp. maintain above 183℃ 60-150 seconds Peak temperature range 235℃+5/-0℃ Time within 5°C of actual Peak Temperature (tp) 10-30 seconds Ramp-down rate +6℃/second max	--------	MIL-STD-750D:2031.2 J-STD-020C
	IR-Reflow Pb Free Process	Ramp-up rate(217℃ to Peak) +3℃/ second max Temp. maintain at 175(±25)℃ 180 seconds max Temp. maintain above 217℃ 60-150 seconds Peak temperature range 260℃+0/-5℃ Time within 5°C of actual Peak Temperature (tp) 20-40 seconds Ramp-down rate +6℃/second max	--------	MIL-STD-750D:2031.2 J-STD-020C
	Solderability	T.sol= 235 ± 5℃ Immersion rate 25±2.5 mm/sec Coverage ≧95% of the dipped surface	Immersion time 2±0.5 sec	MIL-STD-202F:208D MIL-STD-750D:2026 MIL-STD-883D:2003 IEC 68 Part 2-20 JIS C 7021:A-2

12. Cautions

Storage

1.Before opening original package, it is recommended to store them in the following environment: Temperature: 5℃~30℃, Humidity: 85%RH max. When the inventory over 2 months, Should be done before treatment using dehumidification, Temperature: 60℃/8 hours.

2. After opening original package, the storage ambient for the LEDs should be in 5~30°C temperature and 60% or less relative humidity.
3. In order to avoid moisture absorption, it is recommended that the LEDs that out of the original package should be stored in a sealed container with appropriate desiccant, or in desiccators with nitrogen ambient.
4. The LEDs should be used within 168hrs (7 days) after opening the package. Once been mounted, soldering should be quick.
5. If the moisture absorbent material (silica gel) has faded away or the LEDs stored out of original package for more than 168hrs (7 days), baking treatment should be performed using the conditions: 60℃ at least 24 hours.

ESD (Electrostatic Discharge)-Protection

A LED (especially the Blue、White and Green product) is an ESD sensitive component, and static electricity or power surge will damage the LED. ESD-damaged LEDs will exhibit abnormal characteristics such as high reverse leakage current, low forward voltage, or “no light-up” at low currents, etc.

Some advice as below should be noticed:

1. A conductive wrist strap or anti-electrostatic glove should be worn when handling these LEDs.
2. All devices, equipment, machinery, work tables and storage racks, etc. must be properly grounded（Grounding impedance value within 10Ω）.
3. Use anti-static package or boxes to carry and storage LEDs. And ordinary plastic package or boxes is forbidden to use.
4. Use ionizer to neutralize the static charge during handling or operating.
5. All surfaces and objects within 1 ft close to LEDs measure less than 100V.

Cleaning

Use alcohol-based cleaning solvents such as IPA (isopropyl alcohol) to clean LEDs if necessary.

Soldering

1. Soldering condition refer to the draft “Soldering Profile Suggested” on page 1.
2. Reflow soldering should not be done more than 2 times.
3. Manual soldering is only suggested on repair and rework. The maximum soldering temperature should not exceed 300°C within 3 sec. And the maximum capacity of soldering iron is 30W in power.
4. During the soldering process, do not touch the lens at high temperature.
5. After soldering, any mechanical force on the lens or any excessive vibration shall not be accepted to apply, also the circuit board shall not be bent as well.

Others

1. The LEDs described here are intended to be used for ordinary electronic equipment (such as office equipment, communication equipment and household applications). Consult RigDoo's Sales in advance for the applications in which exceptional reliability is required, particularly when the failure or malfunction of the LEDs may directly jeopardize life or health. (such as in aviation, transportation, traffic control equipment, medical and life support systems and safety devices).
2. The light output from the high luminous intensity LEDs may cause injury to human eyes when viewed directly.
3. The appearance and specifications of the product may be modified for improvement without prior notice.