

GDGLIGHT

深圳市光得光科技有限公司

Product Name: 0802 Side-view Red GDGLED

Part Number: GDG2106SURC

Customer: _____

Customer PN: _____

Version No.: A.2

Date: 2013.01.01

| Customer Approval | | |
|--------------------------|--|--|
| | | |

Instituted By:

Checked By:

Approved By:

TEL : 0755-82764141

FAX : 0755-82764141

GDGLIGHT Technical Data Sheet

Part No. : GDG2106SURC

Version

A.2

Issued date

2013.01.01

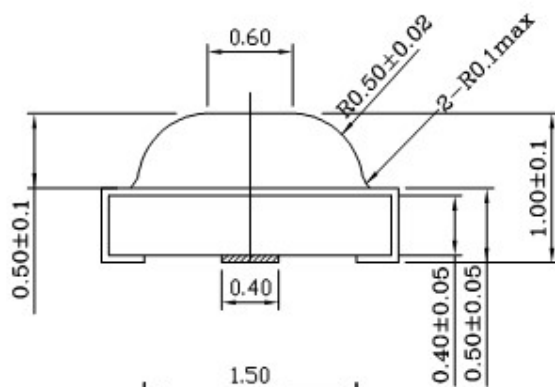
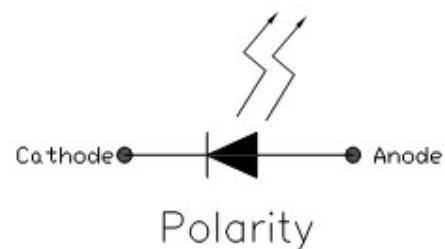
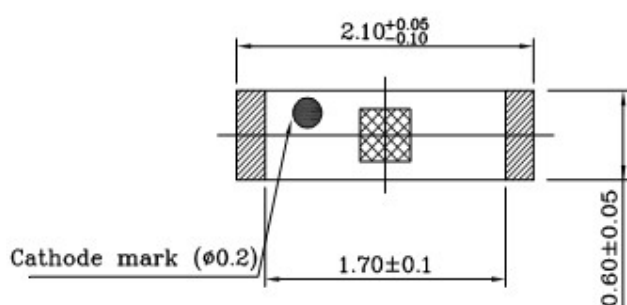
Page

1 of 10

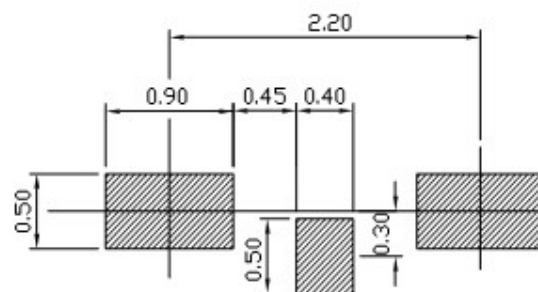
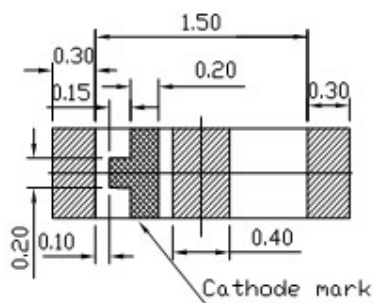
1. Features

- Package (L/W/H) : 2.1 × 0.6 × 1.0 mm
- Color : Ultra Bright Red
- Lens: Water Clear Flat Mold
- EIA STD Package
- Meet ROHS, Green Product
- Compatible With SMT Automatic Equipment
- Compatible With Infrared Reflow Solder And Wave Solder Process

2. Package Profile & Soldering PAD Suggested



For reflow soldening (prpo



- Notes:
1. All dimensions are in millimeters ;
 2. Tolerance is ± 0.10 mm unless otherwise noted.

GDGLIGHT Technical Data Sheet

Part No. : GDG2106SURC

Version

A.2

Issued date

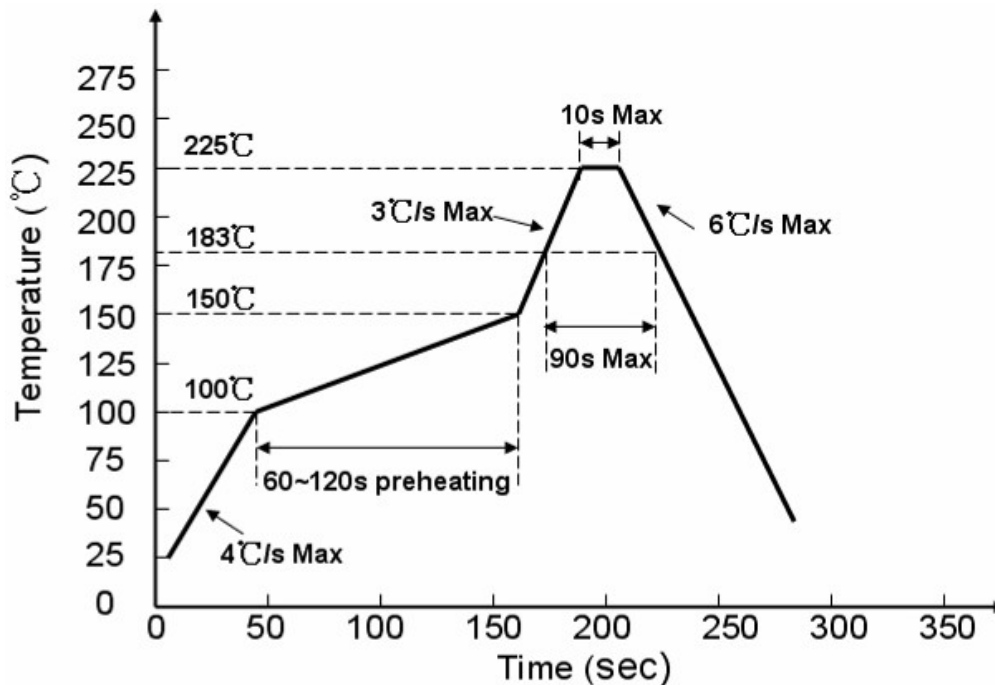
2013.01.01

Page

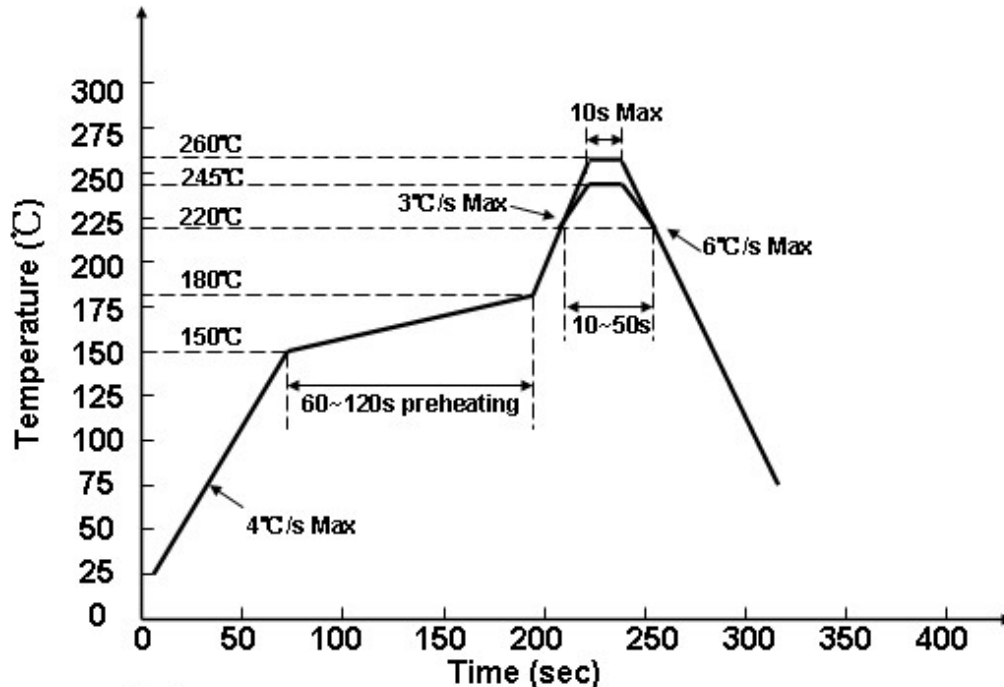
2 of 10

3. Soldering Profile Suggested

3.1、 For Lead Solder



3.2、 For Lead Free Solder



Notes:

We recommend the soldering temperature $245 \pm 5^{\circ}\text{C}$;

The maximum temperature should be limited to 260°C .

GDGLIGHT Technical Data Sheet**Part No. : GDG2106SURC**

Version

A.2

Issued date

2013.01.01

Page

3 of 10

4. Absolute Maximum Ratings At Ta=25°C

| Parameter | Symbol | Rating | Unit |
|--|---------------|---|-------------|
| Power Dissipation | Pd | 70 | mW |
| Peak Forward Current (1/10 Duty Cycle, 0.1ms Pulse Width) | IFP | 70 | mA |
| DC Forward Current | IF | 30 | mA |
| Reverse Voltage | VR | 5 | V |
| 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 | |

GDGLIGHT Technical Data Sheet**Part No. : GDG2106SURC**

Version

A.2

Issued date

2013.01.01

Page

4 of 10

5. Electrical Optical Characteristics At Ta=25°C

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Test Condition |
|--------------------------|-----------------|------|------|------|---------|----------------|
| Luminous Intensity | IV | --- | 120 | --- | mcd | IF = 20mA |
| Viewing Angle | 2 θ 1/2 | --- | 120 | --- | deg | IF = 20mA |
| Dominant Wavelength | λ_d | --- | 620 | --- | nm | IF=20mA |
| Peak Wavelength | λ_p | --- | 630 | --- | nm | IF=20mA |
| Spectral Line Half-Width | $\Delta\lambda$ | --- | 20 | --- | nm | IF=20mA |
| Forward Voltage | VF | 1.8 | --- | 2.2 | V | IF=20mA |
| Reverse Current | IR | --- | --- | 10 | μ A | VR=5V |

Notes: 1. Luminous intensity is measured with a light sensor and filter combination that approximates the CIE eye-response curve.

2. θ 1/2 is the off-axis angle at which the luminous intensity is half the axial luminous intensity.

3. The dominant wavelength, λ_d is derived from the CIE chromaticity diagram and represents the single wavelength which defines the color of the device.

GDGLIGHT Technical Data Sheet

Part No. : GDG2106SURC

| | | | | | |
|---------|-----|-------------|------------|------|---------|
| Version | A.2 | Issued date | 2013.01.01 | Page | 5 of 10 |
|---------|-----|-------------|------------|------|---------|

6. Typical Electrical-Optical Characteristics Curves

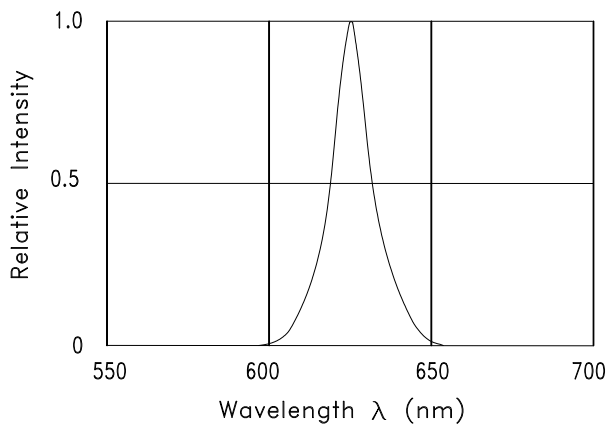


Fig.1 RELATIVE INTENSITY VS. WAVELENGTH

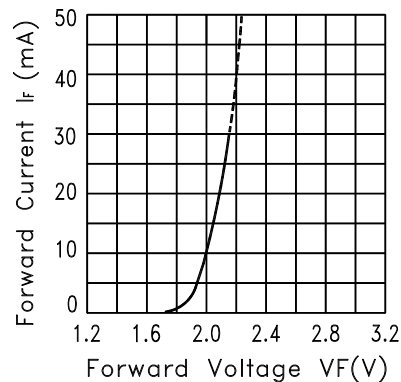


Fig.2 FORWARD CURRENT VS. FORWARD VOLTAGE

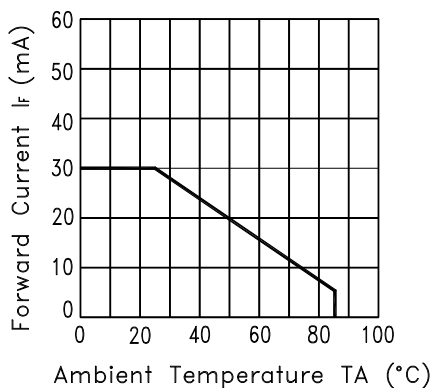


Fig.3 FORWARD CURRENT DERATING CURVE

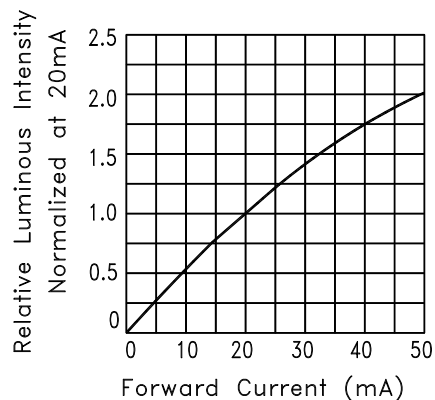


Fig.4 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

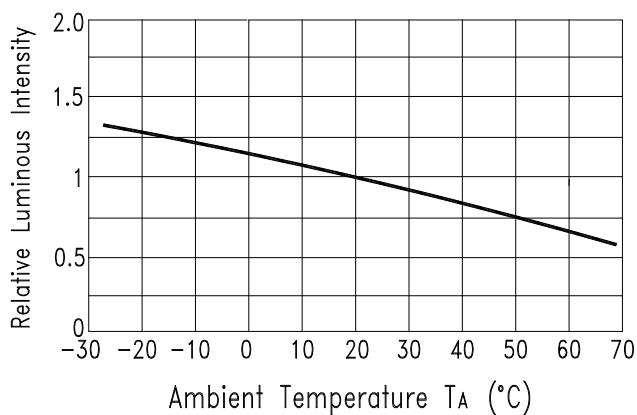


Fig.5 Luminous Intensity vs. Ambient Temperature

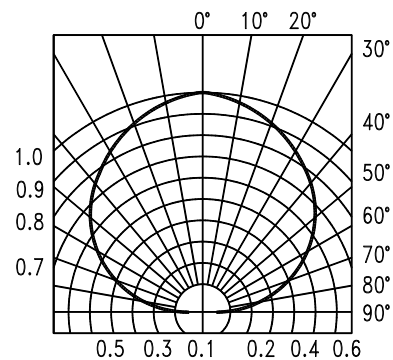


Fig.6 SPATIAL DISTRIBUTION

GDGLIGHT Technical Data Sheet

Part No. : GDG2106SURC

Version

A.2

Issued date

2013.01.01

Page

6 of 10

7. Label Explanation

CAT: Luminous Intensity Rank (unit : mcd)

HUE: Dominant Wavelength Rank (unit : nm)

REF: Forward Voltage Rank (unit : V)

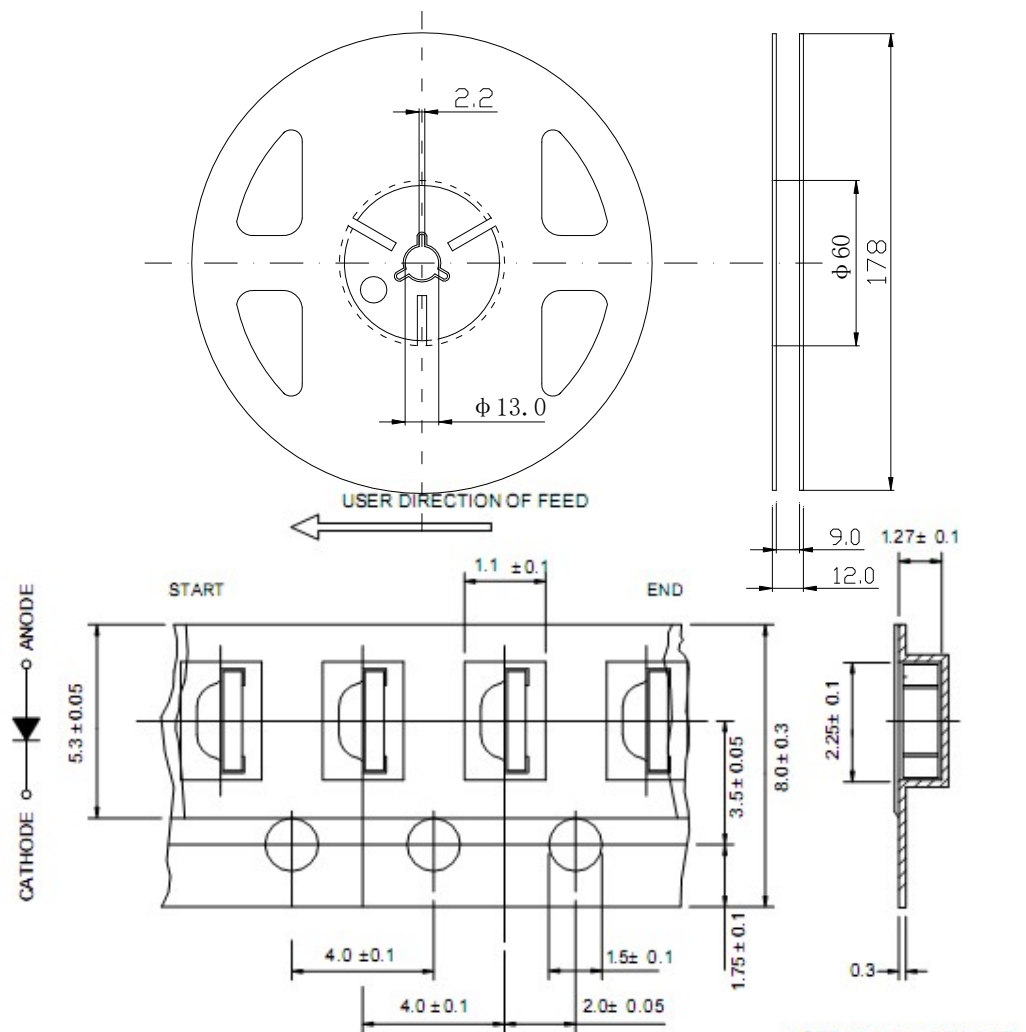
Rank Tolerance:

a. Luminous Intensity: $\pm 15\%$

b. HUE: $\pm 1\text{nm}$

c. Forward Voltage: $\pm 0.1\text{V}$

8.Reel And Tape Dimensions:



- Notes: 1. All dimensions are in millimeters ;
2. Tolerance is ± 0.1 mm unless otherwise noted.

GDGLIGHT Technical Data Sheet

Part No. : GDG2106SURC

Version

A.2

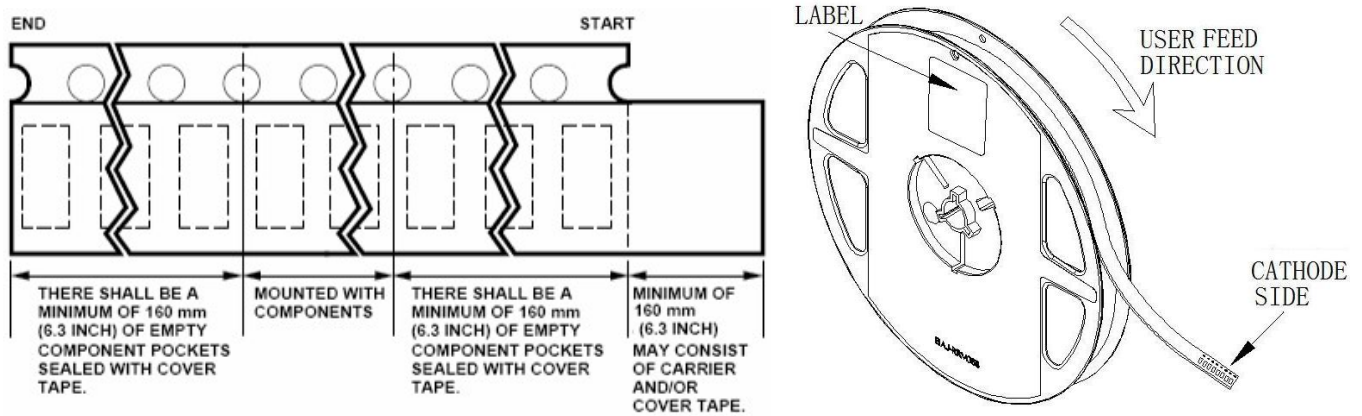
Issued date

2013.01.01

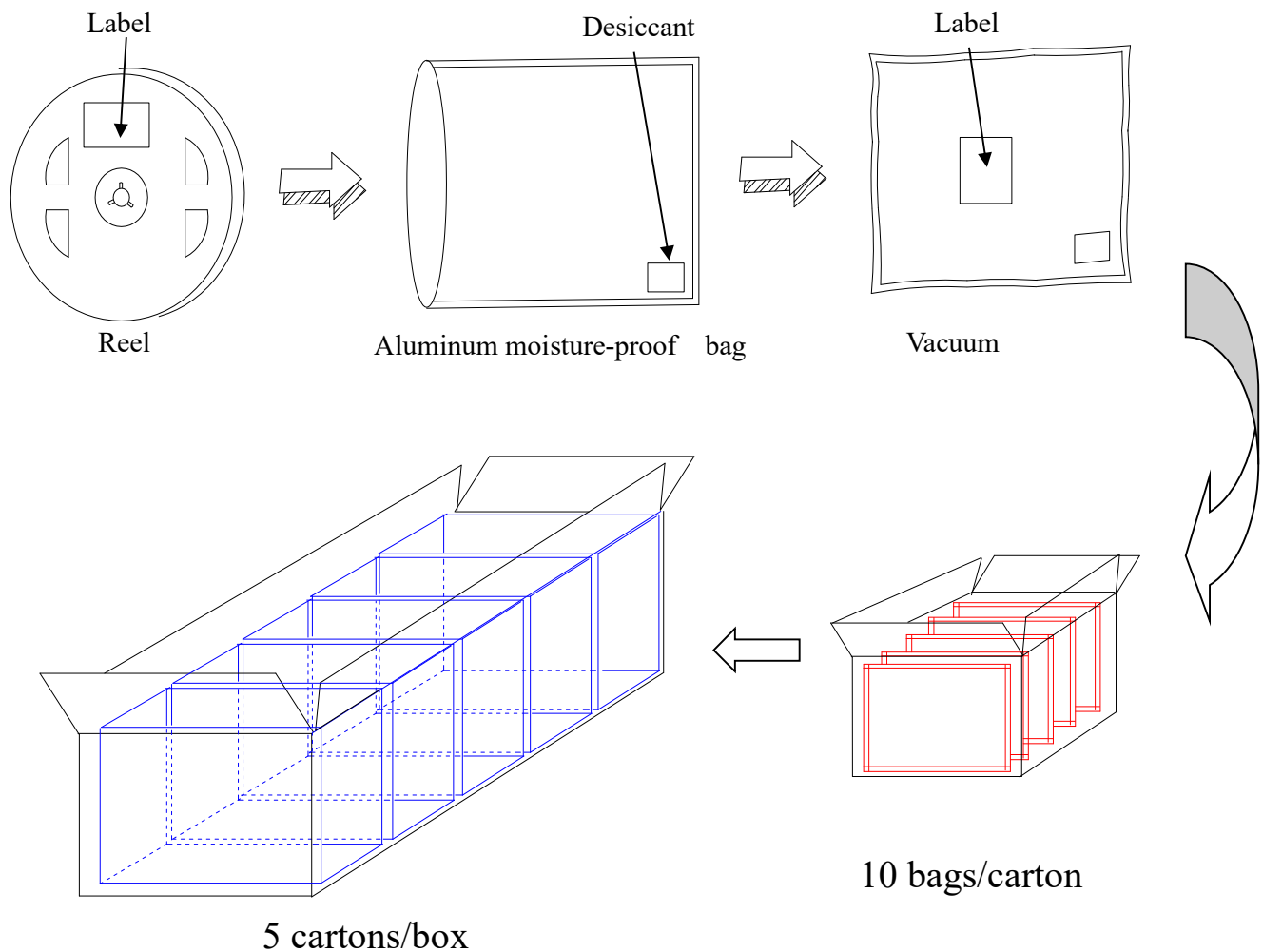
Page

7 of 10

9. Tape Leader & Trailer Dimensions And Reel



10. Packaging:



GDGLIGHT Technical Data Sheet

Part No. : GDG2106SURC

| | | | | | |
|---------|-----|-------------|------------|------|---------|
| Version | A.2 | Issued date | 2013.01.01 | Page | 8 of 10 |
|---------|-----|-------------|------------|------|---------|

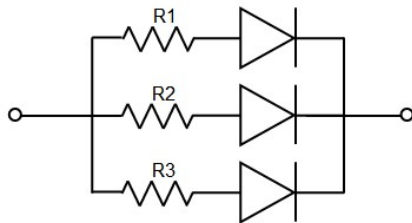
11. Reliability Test

| 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= 65±5°C,RH= 90~95% | 240HRS±2HRS | MIL-STD-202F:103B JIS C 7021:B-11 |
| | High Temperature Storage | Ta= 105±5°C | 1000HRS (-24HRS,+72HRS) | MIL-STD-883D:1008 JIS C 7021:B-10 |
| | Low Temperature Storage | Ta= -55±5°C | 1000HRS (-24HRS,+72HRS) | JIS C 7021:B-12 |
| Environmental Test | Temperature Cycling | 105°C ~ 25°C ~ -55°C ~ 25°C 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°C ~ -40°C ± 5°C 10mins 10mins | 10 Cycles | MIL-STD-202F:107D MIL-STD-750D:1051 MIL-STD-883D:1011 |
| | Solder Resistance | T.sol= 260 ± 5°C | 10 ± 1secs | MIL-STD-202F:210A MIL-STD-750D:2031 JIS C 7021:A-1 |
| | IR-Reflow Normal Process | Ramp-up rate(183°C to Peak) +3°C/ second max Temp. maintain at 125(±25)°C 120 seconds max Temp. maintain above 183°C 60-150 seconds Peak temperature range 235°C+5/-0°C Time within 5°C of actual Peak Temperature (tp) 10-30 seconds Ramp-down rate +6°C/second max | ----- | MIL-STD-750D:2031.2 J-STD-020C |
| | IR-Reflow Pb Free Process | Ramp-up rate(217°C to Peak) +3°C/ second max Temp. maintain at 175(±25)°C 180 seconds max Temp. maintain above 217°C 60-150 seconds Peak temperature range 260°C+0/-5°C Time within 5°C of actual Peak Temperature (tp) 20-40 seconds Ramp-down rate +6°C/second max | ----- | MIL-STD-750D:2031.2 J-STD-020C |
| Solderability | T.sol= 235 ± 5°C 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 | |

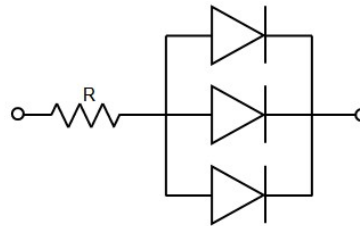
12. Cautions

Application

1. A LED is a current-operated device. The slight shift of voltage will cause big change of current, which will damage LEDs. Customer should use resistors in series for the Over-Current-Proof.
2. In order to ensure intensity uniformity on multiple LEDs connected in parallel in an application, it is recommended to use individual resistor separately, as shown in Circuit A below. The brightness of each LED shown in Circuit B might appear difference due to the differences in the I-V characteristics of those LEDs.



Circuit model A



Circuit model B

3. High temperature may reduce LEDs' intensity and other performances, so keeping it away from heat source to get good performance is necessary.

Storage

1. Before opening original package, it is recommended to store them in the following environment:
Temperature: 5°C~30°C Humidity: 85%RH max.
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°C 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.

GDGLIGHT Technical Data Sheet

Part No. : GDG2106SURC

Version

A.2

Issued date

2013.01.01

Page

10 of 10

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 Gtlight'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.