



SMD BI Color LED (Visible LED) - NO: 8541401000SL19  
SPECIFICATION FOR APPROVALFOR APPROVAL

---

**S3227\*\*4 &BI-color LEDs**

Guangdong Queendom Group Technology Co., Ltd.

TEL: 076981305858 81305868

[www.cn-led.net](http://www.cn-led.net) [gm@cnled.net](mailto:gm@cnled.net)

No. 39, Wanjiang Section, Guansui Road, Wanjiang Street, Dongguan City, Guangdong ProvincePostcode  
523800

## Features:

SMD 3227 package.  
Emission color: BI-color type.  
Lens appearance: Water Clear  
Inter reflector  
Applicable to all SMT assembly methods.  
Compatible with infrared and vapor phase reflow soldering processes.  
Compatible with automatic placement equipment.  
Available on tape and reel (8mm Tape).  
The product itself will remain within RoHS compliant



## Descriptions:

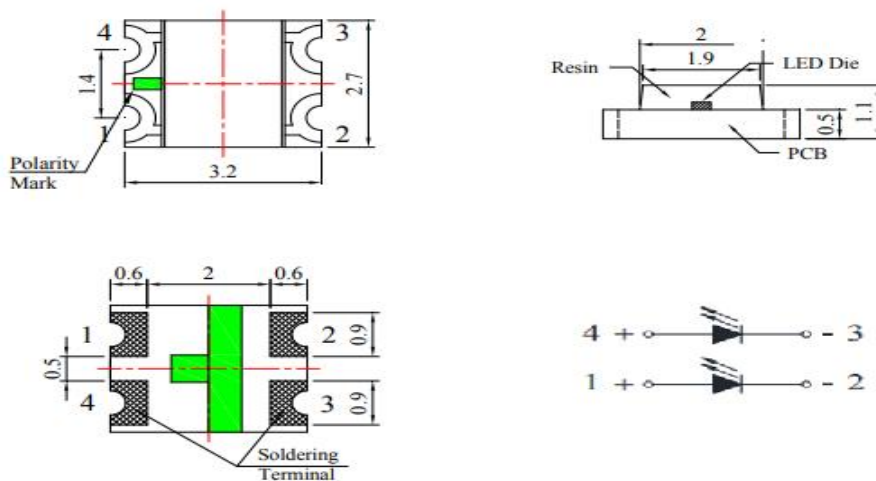
The S3227 series is available in soft Red green\red yellow\red blue\blue green\blue yellow\blue. Due to the package design, LED has wide viewing angle and optimized light coupling by inter reflector.  
This feature makes the SMT TOP LED ideal for light pipe application. The low current requirement makes this device ideal for portable equipment or any other application where power

## Applications:

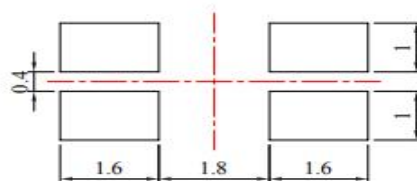
Automobile: dashboard, brake lights, turn signals.  
Biomedical optics, instrument and equipment testing  
Status indicator: consumer electronics and industrial electronics.  
Security, infrared monitoring, night vision  
The low current requirement makes this device ideal for portable equipment or any other application where power

## Package SIZE:

Picture 1



### Recommended Soldering Pad Dimensions



### Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is  $\pm 0.25$  mm (.010") unless otherwise noted.
3. Protruded resin under flange is 1.00mm (.039") max.

Absolute Maximum Ratings

Table 1. Absolute maximum ratings for Queendom LEDs.

| PARAMETER                                            | RED \ ORANGE \ YELLOW GENERAL GREEN | GREEN AND BLUE |
|------------------------------------------------------|-------------------------------------|----------------|
| Parameter PD (mW)                                    | 180                                 | 200            |
| DC Forward Current <sup>[1, 2]</sup>                 | 20mA                                | 20mA           |
| Peak Pulsed Forward Current <sup>[1, 3]</sup>        | 100mA                               | 100mA          |
| LED Junction Temperature <sup>[1]</sup> (DC & Pulse) | 115°C                               | 115°C          |
| Reverse Voltage (V <sub>reverse</sub> )              | 5                                   | 5              |
| ESD Sensitivity (ANSI/ESDA/JEDEC JS-001-2012)        | Class 1                             |                |
| LED Storage Temperature                              | -40°C to 80°C                       |                |
| Operating Temperature Range                          | Minus 40°C To plus 80°C             |                |
| Soldering Temperature                                | JEDEC 020c 260°C                    |                |
| Allowable Reflow Cycles                              | 3~5 Seconds                         |                |
| ESD Sensitivity                                      | 2000V HBM                           |                |

Notes for Table 1:  
1. Proper current derating must be observed to maintain the junction temperature below the maximum allowable junction temperature.  
2. Single-color light.  
3. At 0.01ms pulse on time test with a pulse period of 0.1ms.

Performance Characteristics  
Product model code corresponding SKU table

| RODUCT    | RANK NO. | PEAK  | PART NUMBER      |
|-----------|----------|-------|------------------|
|           |          | NM    |                  |
| S3227RG4  | SL1901   | Red   | 8541401000SL1901 |
|           |          | Green |                  |
| S3227RB4  | SL1902   | Red   | 8541401000SL1902 |
|           |          | Blue  |                  |
| S3227RG64 | SL1903   | Red   | 8541401000SL1903 |
|           |          | Y-G   |                  |
| S3227BG4  | SL1904   | Blue  | 8541401000SL1904 |
|           |          | Green |                  |
| S3227RY4  | SL1905   | Red   | 8541401000SL1905 |
|           |          | Y     |                  |
| S3227BY4  | SL1906   | Blue  | 8541401000SL1906 |
|           |          | Y     |                  |
| S3227RG4  | SL1901   | Red   | 8541401000SL1907 |
|           |          | Green |                  |

Product Selection Guide

Table 2. Product performance of QUEENDOM at 20mA, Tj=25°C.

| RODUCT    | RANK NO. | PEAK  | WAVELENGTH (nm) |     | FLUX (mcd) |     | VOLTAGE (V) |     | TYPICAL DEG | TEST |
|-----------|----------|-------|-----------------|-----|------------|-----|-------------|-----|-------------|------|
|           |          | NM    | MIN             | MAX | MIN        | MAX | MIN         | MAX | 2Θ 1/2      | (mA) |
| S3227RG4  | SL1901   | Red   | 619             | 630 | 120        | 300 | 1.8         | 2.4 | 120         | 20   |
|           |          | Green | 520             | 530 | 300        | 500 | 2.8         | 3.2 |             |      |
| S3227RB4  | SL1902   | Red   | 619             | 630 | 120        | 300 | 1.8         | 2.4 |             |      |
|           |          | Blue  | 460             | 470 | 120        | 500 | 2.8         | 3.2 |             |      |
| S3227RG64 | SL1903   | Red   | 619             | 630 | 120        | 300 | 1.8         | 2.4 |             |      |
|           |          | Y-G   | 565             | 575 | 40         | 120 | 2.8         | 3.2 |             |      |
| S3227BG4  | SL1904   | Blue  | 460             | 470 | 120        | 500 | 2.8         | 3.2 |             |      |
|           |          | Green | 520             | 530 | 300        | 500 | 2.8         | 3.2 |             |      |
| S3227RY4  | SL1905   | Red   | 619             | 630 | 120        | 300 | 1.8         | 2.4 |             |      |
|           |          | Y     | 585             | 595 | 120        | 300 | 1.8         | 2.4 |             |      |
| S3227BY4  | SL1906   | Blue  | 460             | 470 | 120        | 500 | 2.8         | 3.2 |             |      |
|           |          | Y     | 585             | 595 | 120        | 300 | 1.8         | 2.4 |             |      |
| S3227RG4  | SL1901   | Red   | 619             | 630 | 120        | 300 | 1.8         | 2.4 |             |      |
|           |          | Green | 520             | 530 | 300        | 500 | 2.8         | 3.2 |             |      |

Notes for Table 1:  
1. Queendom leds maintains a tolerance of ±1nm on dominant wavelength measurements.  
2. Queendom leds maintains a tolerance of ±10% on luminous intensity measurements.

Optical Characteristics

Table 3. Optical characteristics for QUEENDOM at 20mA, Tj=25°C.

| PRODUCT  | COLOR  | TYPICAL SPECTRAL HALF-WIDTH [1] (nm) | TYPICAL TEMPERATURE COEFFICIENT OF DOMINANT WAVELENGTH (nm/°C) | TYPICAL VIEWING ANGLE [2] | PART NUMBER    |
|----------|--------|--------------------------------------|----------------------------------------------------------------|---------------------------|----------------|
| S3227**4 | Red    | 6                                    | 0.04                                                           | 120°                      | 8541401000SL19 |
|          | orange | 6                                    | 0.04                                                           | 120°                      |                |
|          | Green  | 5                                    | 0.04                                                           | 120°                      |                |
|          | Yellow | 6                                    | 0.04                                                           | 120°                      |                |
|          | Blue   | 5                                    | 0.04                                                           | 120°                      |                |

Notes for Table 2:  
1. Spectral half-width is the spectral bandwidth at 50% of the peak intensity.  
2. Viewing angle is the off axis angle from the LED centerline where the luminous intensity is ½ of the peak value.

Electrical and Thermal Characteristics

Table4. Electrical and thermal characteristics for QUEENDOM at 20mA, Tj=25°C.

| COLOR  | PART NUMBER | FORWARD VOLTAGE [1] (V) |         |         | TYPICAL TEMPERATURE COEFFICIENT OF FORWARD VOLTAGE [2] (mV/°C) | TYPICAL THERMAL RESISTANCE—JUNCTION TO SOLDER PAD (°C/W) |
|--------|-------------|-------------------------|---------|---------|----------------------------------------------------------------|----------------------------------------------------------|
|        |             | MINIMUM                 | TYPICAL | MAXIMUM |                                                                |                                                          |
| Red    | S3227**4    | 1.80                    | 2.10    | 2.40    | -1.6                                                           | 75                                                       |
| orange |             | 1.80                    | 2.10    | 2.40    | -2.4                                                           | 120                                                      |
| Green  |             | 2.80                    | 3.00    | 3.20    | -2.6                                                           | 85                                                       |
| Blue   |             | 2.80                    | 3.00    | 3.20    | -2.6                                                           | 85                                                       |
| Yellow |             | 1.80                    | 2.10    | 2.40    | -1.6                                                           | 75                                                       |

## Characteristic Curves

### Characteristic Curves

### Spectral Power Distribution Characteristics

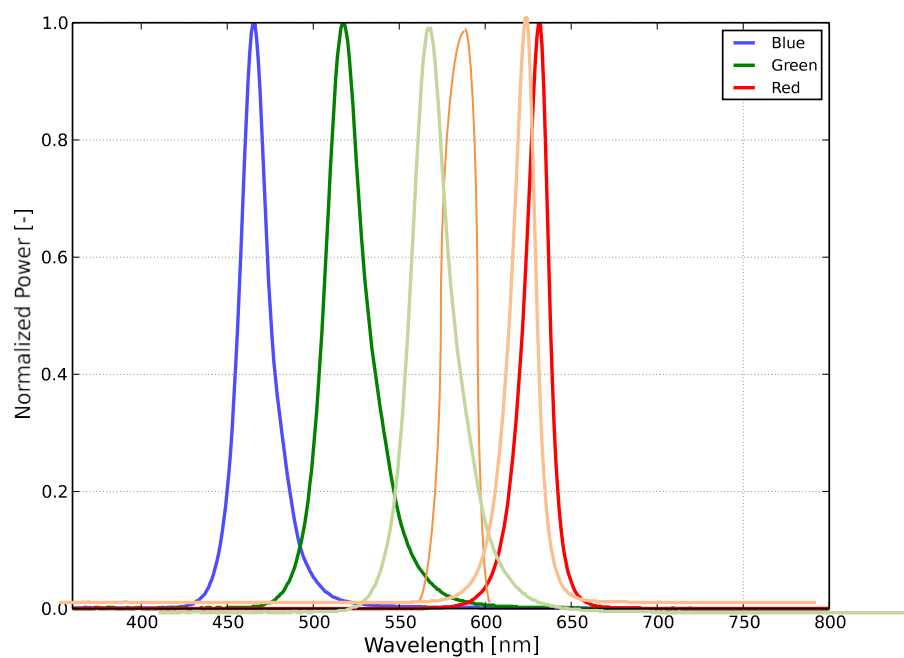


Figure 1. Typical normalized power vs. wavelength for Queendom led at 20mA,  $T_j=25^{\circ}\text{C}$ .

## Light Output Characteristics

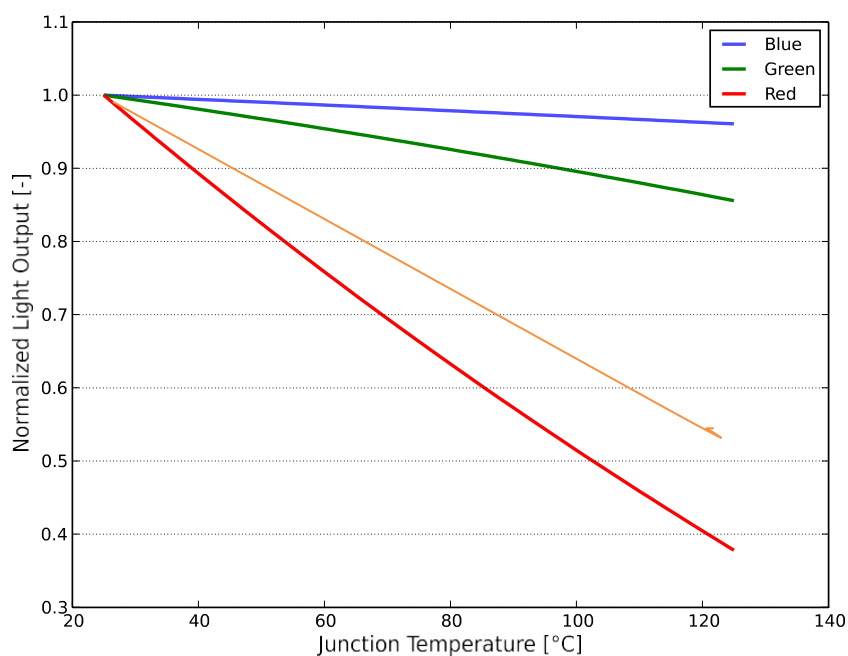
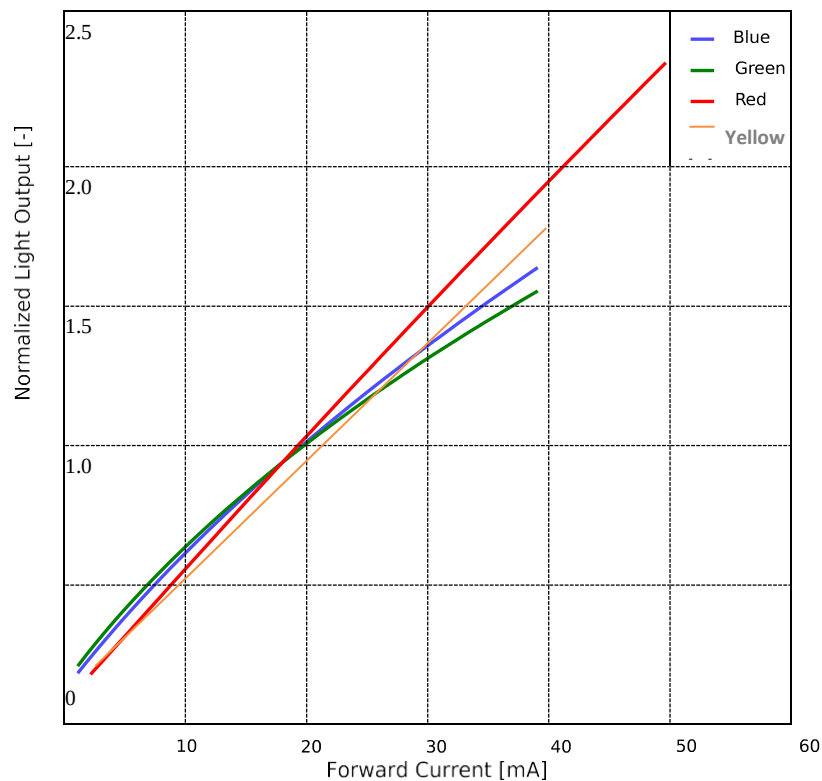


Figure 2. Typical normalized light output vs. junction temperature for Queendom LED at 20mA.

## Light Output Characteristics

Figure 3. Typical normalized light output vs. forward current for Queendom LED at  $T_j=25^{\circ}\text{C}$ .



## Forward Current Characteristics

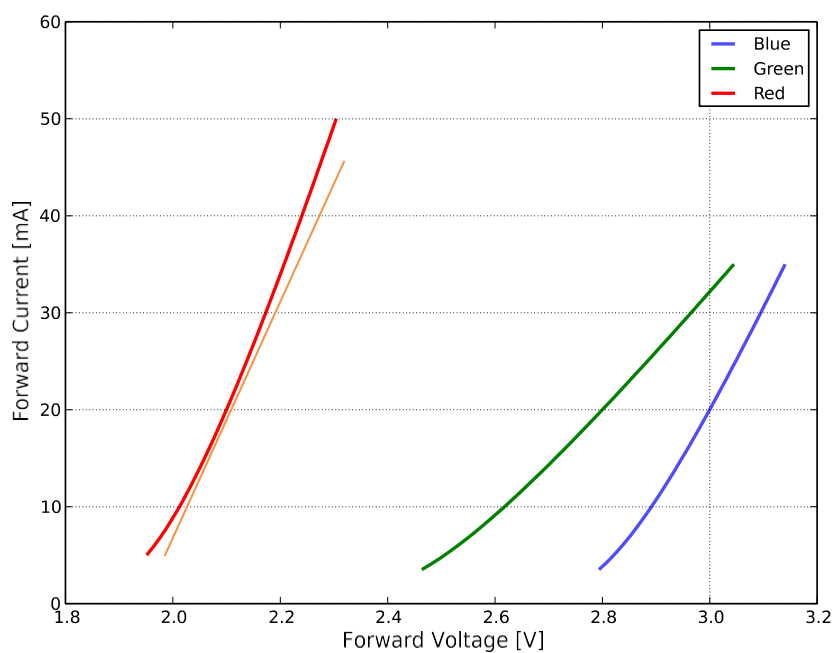


Figure 4. Typical forward current vs. forward voltage for Queendom LED at  $T_j=25^{\circ}\text{C}$ .

## Radiation Pattern Characteristics

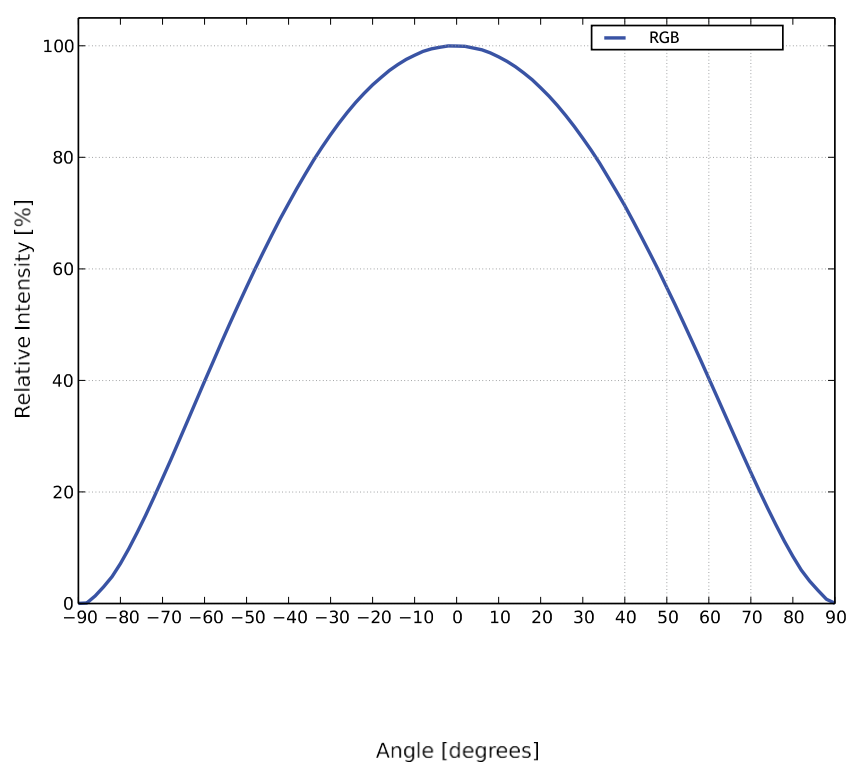


Figure 5. Typical radiation pattern for Queendom at 20mA,  $T_j=25^{\circ}\text{C}$ .

Product Bin and Labeling Definitions  
Decoding Product BinLabeling

In the manufacturing of semiconductor products, there are variations in performance around the average values given in the technical datasheet. For this reason, Queendom leds bins LED components for luminous flux, intensity, radiometric power, color point, peak wavelength, dominant wavelength and forward voltage.

Dominant Wavelength Bins

RANK Table 1. Dominant wavelength bins & Product performance of Queendom Commercial LEDs at specified test conditions.

| PRODUCT  | COLOR  | BIN | DOMINANT WAVELENGTH [1] (nm) |         | RANK WAVELENGTH [2] (nm) |         |
|----------|--------|-----|------------------------------|---------|--------------------------|---------|
|          |        |     | MINIMUM                      | MAXIMUM | MINIMUM                  | MAXIMUM |
| SMD LEDs | Blue   | B4D | 459                          | 465     | 2.5                      | 5       |
|          |        | B5E | 465                          | 470     | 2.5                      | 5       |
|          |        | B6F | 470                          | 475     | 2.5                      | 5       |
|          |        | B6G | 475                          | 478     | 2.5                      | 5       |
|          | Green  | G0A | 500                          | 505     | 2.5                      | 5       |
|          |        | G0B | 505                          | 510     | 2.5                      | 5       |
|          |        | G1A | 510                          | 515     | 2.5                      | 5       |
|          |        | G1B | 515                          | 520     | 2.5                      | 5       |
|          | Green  | G2C | 520                          | 525     | 2.5                      | 5       |
|          |        | G2D | 525                          | 530     | 2.5                      | 5       |
|          |        | G3E | 530                          | 535     | 2.5                      | 5       |
|          |        | G5A | 550                          | 555     | 2.5                      | 5       |
|          |        | G5B | 555                          | 560     | 2.5                      | 5       |
|          | Green  | G6A | 560                          | 565     | 2.5                      | 5       |
|          |        | G6B | 565                          | 570     | 2.5                      | 5       |
|          |        | Y1A | 570                          | 575     | 2.5                      | 5       |
|          | Yellow | Y1B | 575                          | 580     | 2.5                      | 5       |
|          |        | Y2A | 580                          | 585     | 2.5                      | 5       |
|          | Orange | A0A | 600                          | 605     | 2.5                      | 5       |
|          |        | A0B | 605                          | 610     | 2.5                      | 5       |
|          |        | R1A | 610                          | 615     | 2.5                      | 5       |
|          |        | R1V | 615                          | 619     | 2.5                      | 5       |
|          | Red    | R2A | 619                          | 624     | 2.5                      | 5       |
|          |        | R2B | 624                          | 627     | 2.5                      | 5       |
|          |        | R2C | 627                          | 630     | 2.5                      | 5       |
|          |        | R3A | 630                          | 635     | 2.5                      | 5       |
|          |        | R3B | 635                          | 640     | 2.5                      | 5       |
|          |        | R4A | 640                          | 645     | 2.5                      | 5       |
|          |        | R4B | 645                          | 650     | 2.5                      | 5       |

Notes for Table 1:  
1.Queendom maintains a tolerance of ±1nm on dominant wavelength measurements

LUMINOUS FLUX BINS

Table 2.Luminous flux bin definitions for QUEENDOM Color Line at Tj=25°C.

| RANK BIN | QUEENDOM FLUX [1] (mcd) |         | RANK FLUX [2] (mcd) |         | TYPICAL FLUX HALF WIDTH |
|----------|-------------------------|---------|---------------------|---------|-------------------------|
|          | MINIMUM                 | MAXIMUM | MINIMUM             | MAXIMUM | [3] (mcd)               |
| LB       | 15                      | 30      | 5                   | 15      | 15                      |
| LC       | 25                      | 40      | 7                   | 15      | 15                      |
| LD       | 40                      | 60      | 10                  | 20      | 20                      |
| LE       | 60                      | 80      | 13                  | 20      | 20                      |
| LF       | 90                      | 120     | 20                  | 30      | 30                      |
| LG       | 120                     | 190     | 32                  | 70      | 70                      |
| LH       | 190                     | 300     | 50                  | 110     | 110                     |
| LI       | 300                     | 500     | 83                  | 200     | 200                     |
| LJ       | 500                     | 780     | 130                 | 280     | 280                     |
| LK       | 780                     | 1060    | 177                 | 280     | 280                     |
| LL       | 1060                    | 1560    | 260                 | 500     | 500                     |
| LM       | 1560                    | 2460    | 351                 | 900     | 900                     |
| LN       | 2460                    | 3360    | 480                 | 900     | 900                     |
| LO       | 3360                    | 5760    | 823                 | 2400    | 2400                    |
| LP       | 5760                    | 8200    | 1171                | 2440    | 2440                    |
| LQ       | 8200                    | 11700   | 1671                | 3500    | 3500                    |
| LR       | 11700                   | 15700   | 1963                | 4000    | 4000                    |
| LS       | 15700                   | 19200   | 2400                | 3500    | 3500                    |
| LT       | 19200                   | 23700   | 2633                | 4500    | 4500                    |

TABLE Forward Voltage BINS

Table 3. Electrical and thermal characteristics for Queendom at specified test current, Tj=25°C

| NUMBER | FORWARD VOLTAGE [1] (Vf) |         |         | RANK WAVELENGTH [2] (Vf) |         | TYPICAL VOLTAGE HALF WIDTH |
|--------|--------------------------|---------|---------|--------------------------|---------|----------------------------|
|        | MINIMUM                  | TYPICAL | MAXIMUM | MINIMUM                  | MAXIMUM | [3] (Vf)                   |
| V1     | 1                        | 1.2     | 1.4     | 0.1                      | 0.2     | 0.2                        |
| V2     | 1.4                      | 1.6     | 1.8     | 0.1                      | 0.2     | 0.2                        |
| V3     | 1.8                      | 2       | 2.2     | 0.1                      | 0.2     | 0.2                        |
| V4     | 2.2                      | 2.4     | 2.6     | 0.1                      | 0.2     | 0.2                        |
| V5     | 2.6                      | 2.8     | 3       | 0.1                      | 0.2     | 0.2                        |
| V6     | 3                        | 3.2     | 3.4     | 0.1                      | 0.2     | 0.2                        |
| V7     | 3.4                      | 3.6     | 3.8     | 0.1                      | 0.2     | 0.2                        |

TABLE TYPICAL POWER BINS

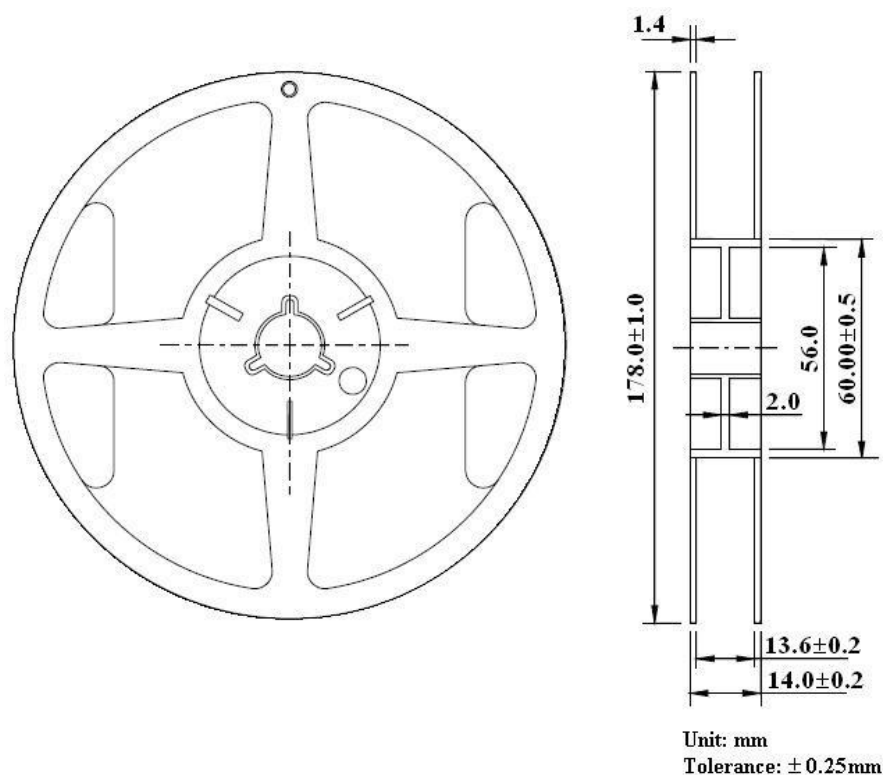
Table 4. Electrical and thermal characteristics for Queendom at specified test current, Tj=25°C

| RANK NO. | TYPICAL POWER RANK (W) [1] |     | RANK POWER [2] (W) |         | TYPICAL POWER HALF WIDTH |
|----------|----------------------------|-----|--------------------|---------|--------------------------|
|          | min                        | max | MINIMUM            | MAXIMUM | [3] (W)                  |
| WA       | 0.06                       | 0.1 | 0.02               | 0.1     | 0.1                      |
| WB       | 0.1                        | 0.2 | 0.1                | 0.2     | 0.2                      |
| WC       | 0.2                        | 0.5 | 0.2                | 0.5     | 0.5                      |
| WD       | 0.5                        | 1   | 0.2                | 0.5     | 0.5                      |
| WE       | 1                          | 3   | 1                  | 3       | 3                        |

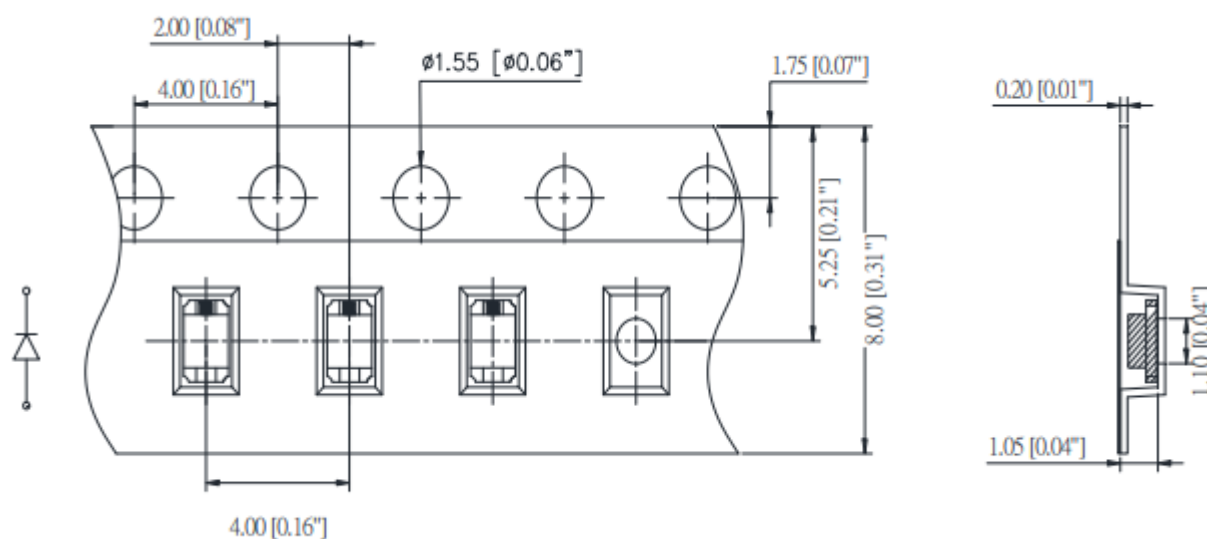
S.

## Packaging Information

### Reel Dimensions:

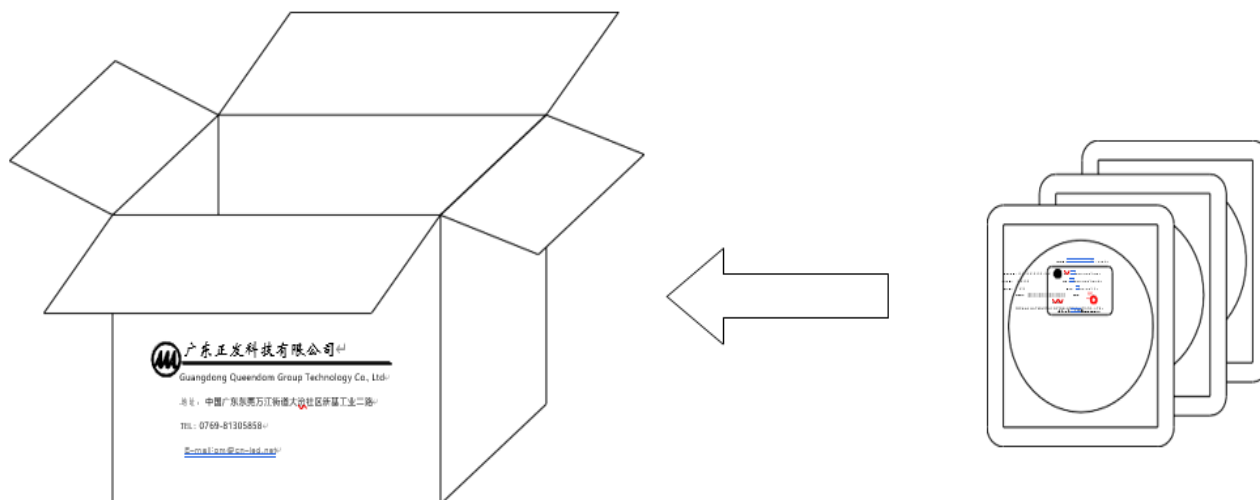


### Carrier Tape Dimensions:



Loaded quantity 4000 pcs per reel.

## Packaging cartons



## Information

### - With Stopper



RA:70/2300K



SMD LEDs 0402

B5W302D-A

BIN:2#

2200-2400K/2.8-3.2V

2024-4-10/ QTY:1000PCS

QUEENDOM正发科技WWW.CN-LED.NET



### Without Stopper

CPN:Customer's Product Number

P/N:Product Number

QTY:Packing Quantity

LOT NO:Lot Number

VF:Forward Voltage Rank

IV:Luminous Intensity Rank

WLD:Dom. Wavelength Rank

BIN:BIN Code

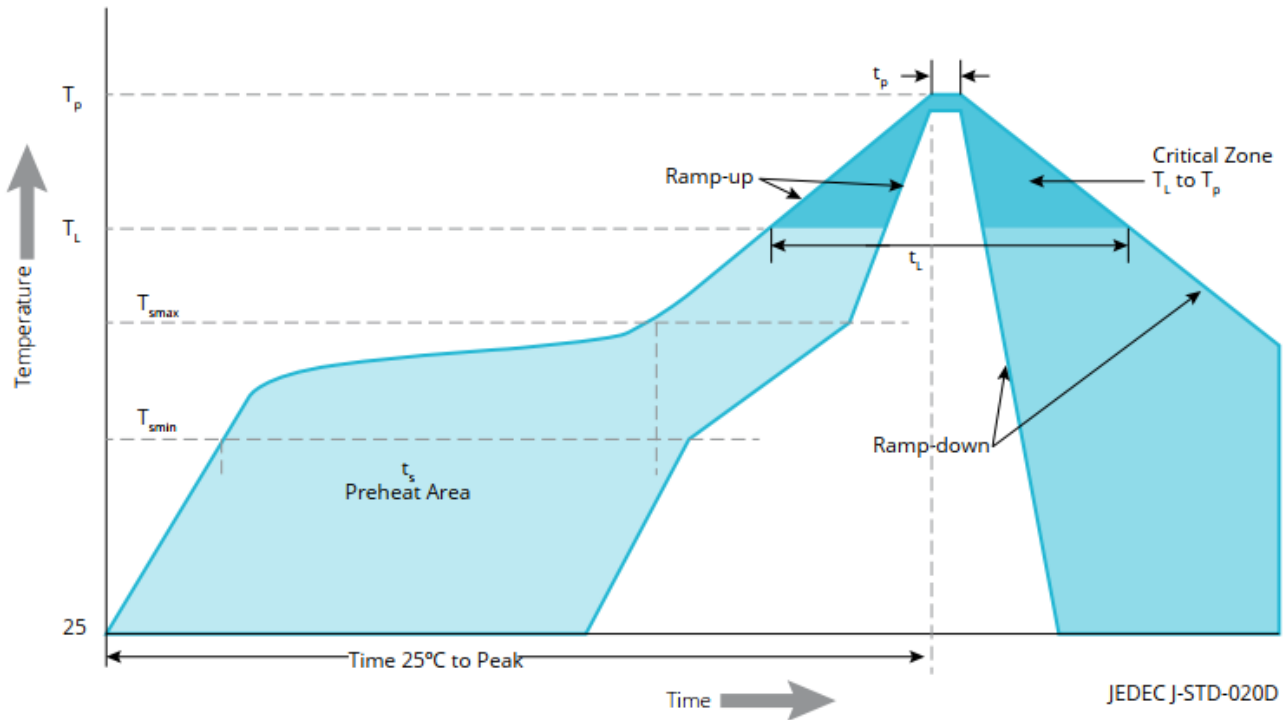
DATE:Date Of Dispatch

## Packing Quantity

1. 3000 PCS/1 Bag,
- 2.10 Inner Cartons/1 Outside Carton

## CAUTIONS

### Reflow Soldering Guidelines



Visualization of the acceptable reflow temperature profile as specified

Reflow profile characteristics for Queendom smd.

| PROFILE FEATURE                                      | LEAD-FREE ASSEMBLY           |
|------------------------------------------------------|------------------------------|
| Preheat Minimum Temperature ( $T_{smin}$ )           | 150°C                        |
| Preheat Maximum Temperature ( $T_{smax}$ )           | 200°C                        |
| Preheat Time ( $t_{smin}$ to $t_{smax}$ )            | 60 to 120 seconds            |
| Ramp-Up Rate ( $T_L$ to $T_p$ )                      | 4°C / second maximum         |
| Liquidous Temperature ( $T_L$ )                      | 217°C                        |
| Time Maintained Above Temperature $T_L$ ( $t_L$ )    | 60 to 150                    |
| seconds Peak / Classification Temperature ( $T_p$ )  | 250°C                        |
| Time Within 5°C of Actual Peak Temperature ( $t_p$ ) | 20 to 40 seconds             |
| Ramp-Down Rate ( $T_p$ to $T_L$ )                    | 6°C / second maximum maximum |
| Time 25°C to Peak Temperature                        | 8 minutes maximum            |

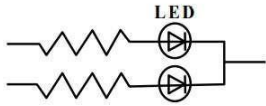
JEDEC Moisture Sensitivity

| LEVEL | FLOOR LIFE |                                           | SOAK REQUIREMENTS STANDARD |               |
|-------|------------|-------------------------------------------|----------------------------|---------------|
|       | TIME       | CONDITIONS                                | TIME                       | CONDITIONS    |
| 5a    | 24 hours   | $\leq 30^\circ\text{C} / 60\% \text{ RH}$ | 48 Hours +2/-0             | 30°C / 60% RH |

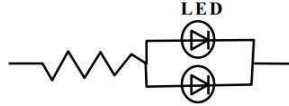
## Drive Method

An LED is a current-operated device. In order to ensure intensity uniformity on multiple LEDs connected in parallel in an application, it is recommended that a current limiting resistor be incorporated in the drive circuit, in series with each LED as shown in Circuit A below.

**Circuit model A**



**Circuit model B**



Recommended circuit

The brightness of each LED might appear different due to the differences in the I-V characteristics of those LEDs.

Repairing

Repair should not be done after the LEDs have been soldered. When repairing is unavoidable, a double-head soldering iron should be used. It should be confirmed beforehand whether the characteristics of the LEDs will or will not be damaged by repairing.

## ESD (Electrostatic Discharge)

Static Electricity or power surge will damage the LED. Suggestions to prevent ESD damage:

Use a conductive wrist band or anti- electrostatic glove when handling these LEDs.

All devices, equipment, and machinery must be properly grounded.

Work tables, storage racks, etc. should be properly grounded.

Use ion blower to neutralize the static charge which might have built up on surface of the LEDs plastic lens as a result of friction between LEDs during storage and handing.

## Others

The information included in this document reflects representative usage scenarios and is intended for technical reference only.

The part number, type, and specifications mentioned in this document are subject to future change and improvement without notice. Before production usage customer should refer to the latest datasheet for the updated specifications.

When using the products referenced in this document, please make sure the product is being operated within the environmental and electrical limits specified in the datasheet. If customer usage exceeds the specified limits, Queendom will not be responsible for any subsequent issues.

The LEDs described here are intended to be used for ordinary electronic equipment (such as office equipment, communication equipment and household applications). Consult Queendom's Sales in advance for information on 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.