



**SMD RGB LED (Visible LED) - NO: S7.6- 8541401000SL19021
SPECIFICATION FOR APPROVALFOR APPROVAL**

S3227RGB4 &RGB-color LED

Guang Dong Queendom Electronics Co., Ltd.

TEL: 0769-81305858

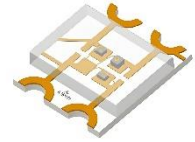
<https://www.queendomlamp.com/>

E-mial: queen@queendomlamp.com

ADD:No. 39, Wanjiang Section, Guansui Road, Wanjiang Street.Dongguan City, Guangdong

Features:

Encapsulated with 8mm tape on a 7" diameter reel.
Compatible with automatic placement equipment.
Compatible with infrared and vapor phase reflow soldering processes.
Color: red, green, blue
The product itself will remain within the RoHS compliant version.



Descriptions:

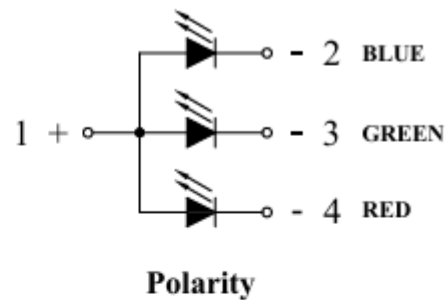
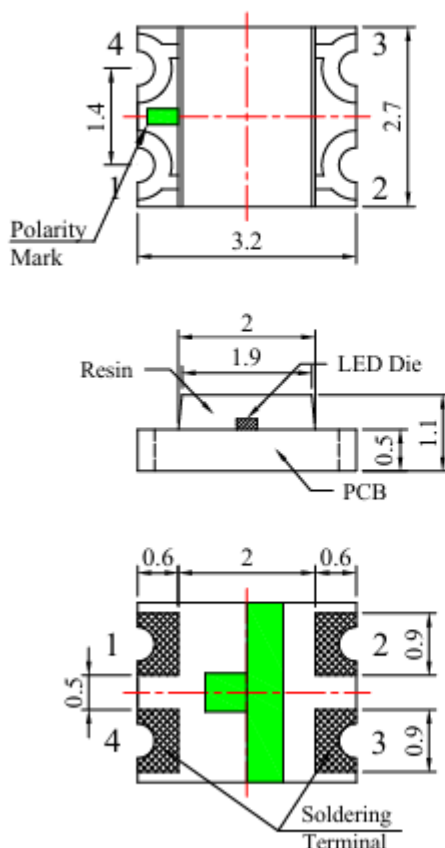
SMD LEDs are much smaller than leadframe type components, allowing for smaller board sizes,
Higher packaging density, reduced storage space, and ultimately smaller devices.
Additionally, the lightweight makes it ideal for micro applications and more.

Applications:

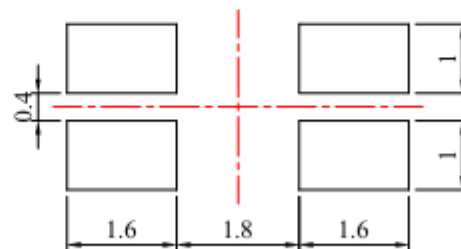
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Higher packaging density, reduced storage space, and ultimately smaller devices.
Additionally, the lightweight makes it ideal for micro applications and more.

Package SIZE:

Picture 1



Recommended Soldering Pad Dimensions



Notes:

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

Product Selection Guide

Table 1. Product performance of QUEENDOM RGB at 20mA, T_j=25°C.

PRODUCT	COLOR	DOMINANT WAVELENGTH ^[1] (nm)		INTENSITY ^[2] (mcd)		PART NUMBER
		MINIMUM	MAXIMUM	MINIMUM	TYPICAL	
S3227RGB4	Red	619	625	130	280	8541401000SLI19021
	Green	520	535	400	600	
	Blue	465	478	360	750	

Notes for Table 1:

- Queendom leds maintains a tolerance of ±1nm on dominant wavelength measurements.
- Queendom leds maintains a tolerance of ±10% on luminous intensity measurements.

Optical Characteristics

Table 2. Optical characteristics for QUEENDOM RGB at 20mA, T_j=25°C.

PRODUCT	COLOR	TYPICAL SPECTRAL HALF-WIDTH ^[1] (nm)	TYPICAL TEMPERATURE COEFFICIENT OF DOMINANT WAVELENGTH (nm/°C)	TYPICAL VIEWING ANGLE ^[2]	PART NUMBER
S3227RGB4	Red	15	0.04	120°	8541401000SLI19021
	Green	25	0.04	120°	
	Blue	18	0.04	120°	

Notes for Table 2:

- Spectral half-width is the spectral bandwidth at 50% of the peak intensity.
- 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

COLOR	PART NUMBER	FORWARD VOLTAGE ^[1] (V _f)			TYPICAL TEMPERATURE COEFFICIENT OF FORWARD VOLTAGE ^[2] (mV/°C)	TYPICAL THERMAL RESISTANCE—JUNCTION TO SOLDER PAD (°C/W)
		MINIMUM	TYPICAL	MAXIMUM		
Red	8541401000SLI19021	1.70	2.10	2.50	-1.6	75
Green		2.60	2.80	3.40	-2.4	120
Blue		2.60	3.00	3.40	-2.6	85

Table 3. Electrical and thermal characteristics for QUEENDOM RGB at 20mA, T_j=25°C.

Absolute Maximum Ratings

Table 4. Absolute maximum ratings for QUEENDOM 3227 RGB.

PARAMETER	RED	GREEN AND BLUE
DC Forward Current ^[1, 2]	25mA	25mA
Peak Pulsed Forward Current ^[1, 3]	100mA	100mA
LED Junction Temperature ^[1] (DC & Pulse)	115°C	115°C
ESD Sensitivity (ANSI/ESDA/JEDEC JS-001-2012)	Class 2	
LED Storage Temperature	-40°C to 80°C	
Soldering Temperature	JEDEC 020c 250°C	
Allowable Reflow Cycles	3	
Reverse Voltage (V _{reverse})	QUEENDOM3227 RGB LEDs are not designed to be driven in reverse bias	

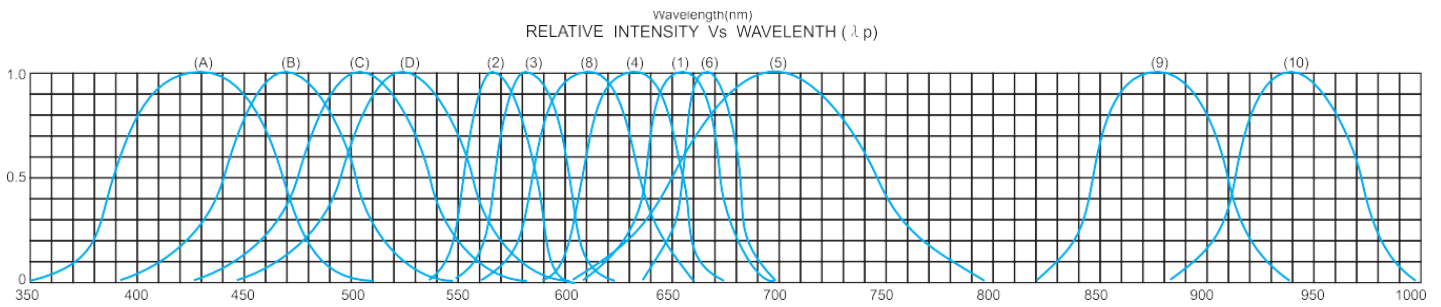
Notes for Table 4:

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

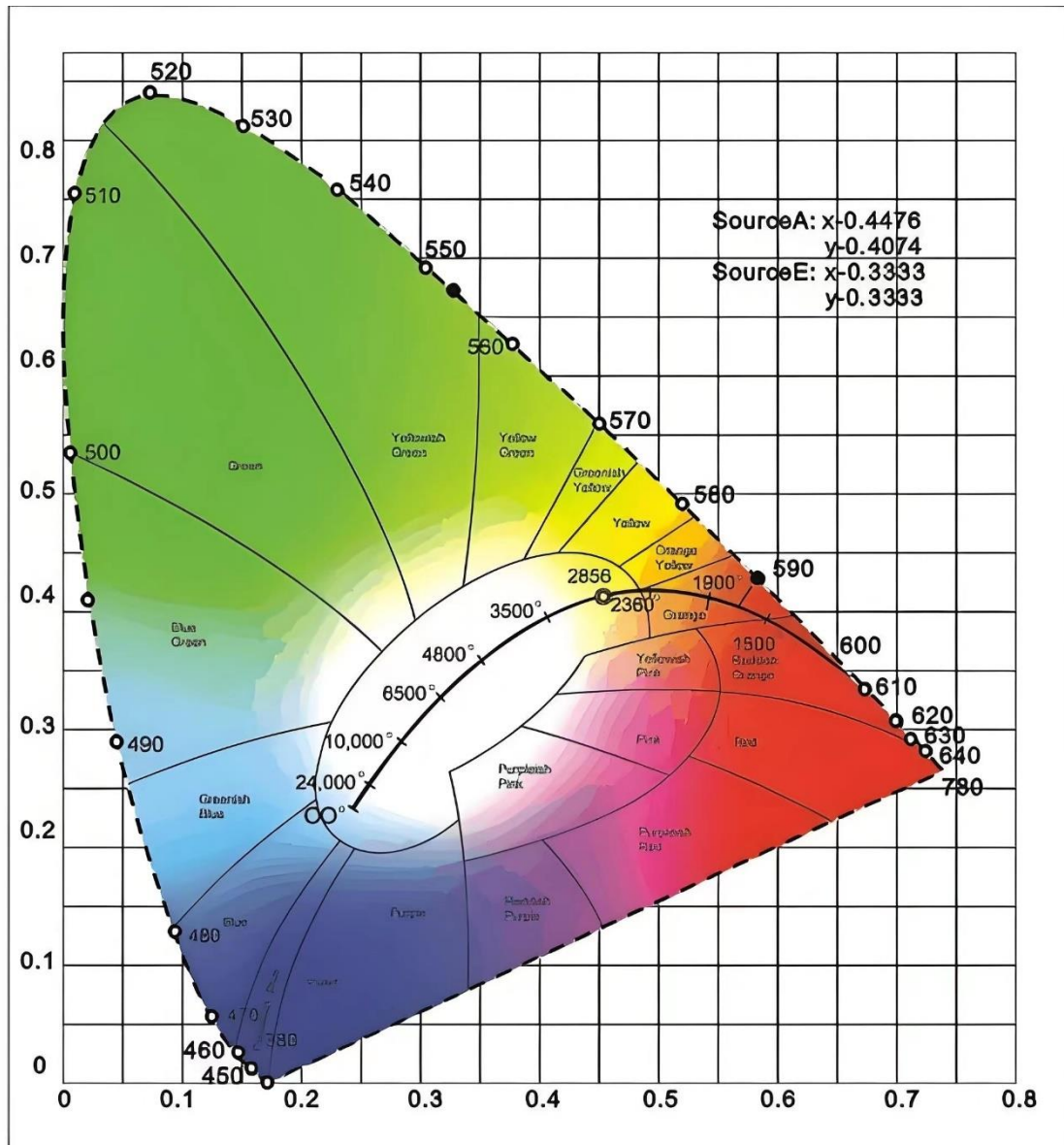
Characteristic Curves

Spectral Power Distribution Characteristics

Figure 1. Typical wavelength for QUEENDOM LEDs, $T_j=25^\circ\text{C}$.



- | | |
|--|-----------------------------------|
| (1) wGaAsP/GaAs 655nm/Red | (8) GaAlAs 880nm |
| (2) wGaP 568nm/Yellow Green | (9) GaAs/GaAs & GaAlAs/GaAs 940nm |
| (3) wGaAsP/GaP 585nm/Yellow | (A) GaN/SiC 430nm/Blue |
| (4) wGaAsP/GaP 635nm/Orange & Hi-Eff Red | (B) InGaN/SiC 470nm/Blue |
| (5) wGaP 700nm/Bright Red | (C) InGaN/SiC 502nm/Ultra Green |
| (6) wGaAlAs/GaAs 660nm/Super Red | (D) InGaAl/SiC 523nm/Ultra Green |
| (7) wGaAsP/GaP 610nm/Super Red | |



Characteristic Curves

Spectral Power Distribution Characteristics

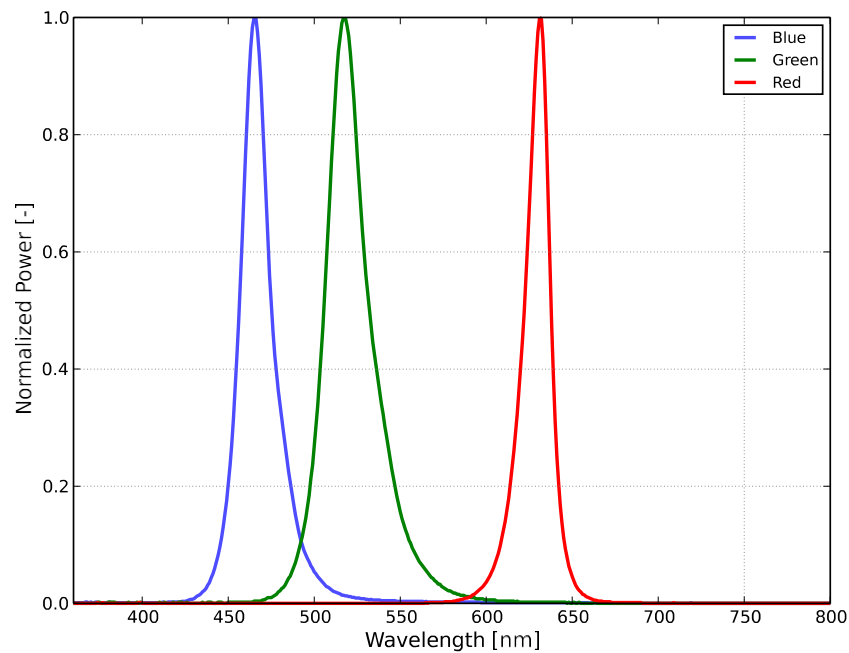


Figure 1. Typical normalized power vs. wavelength for Queendom RGB at 20mA, T_j=25°C.

Light Output Characteristics

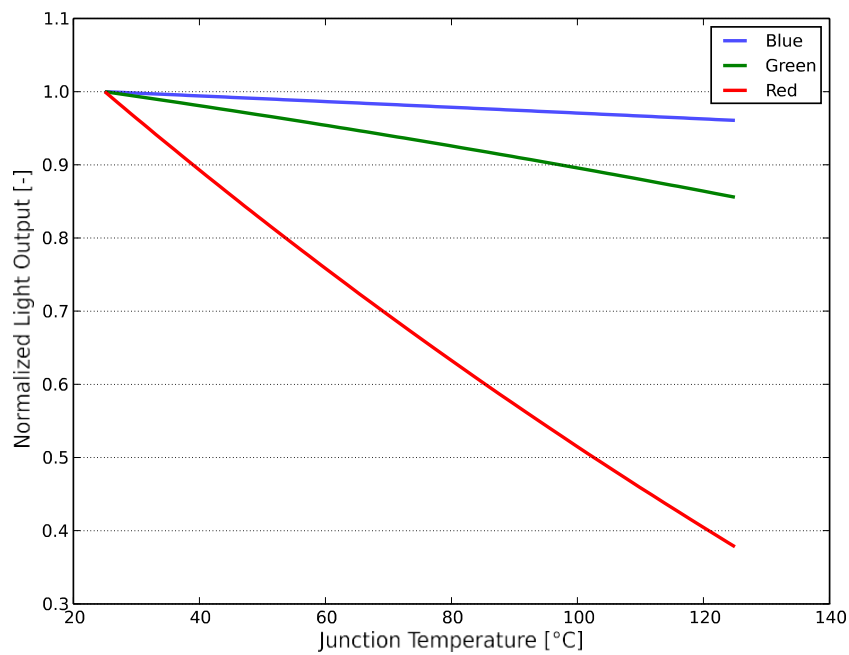
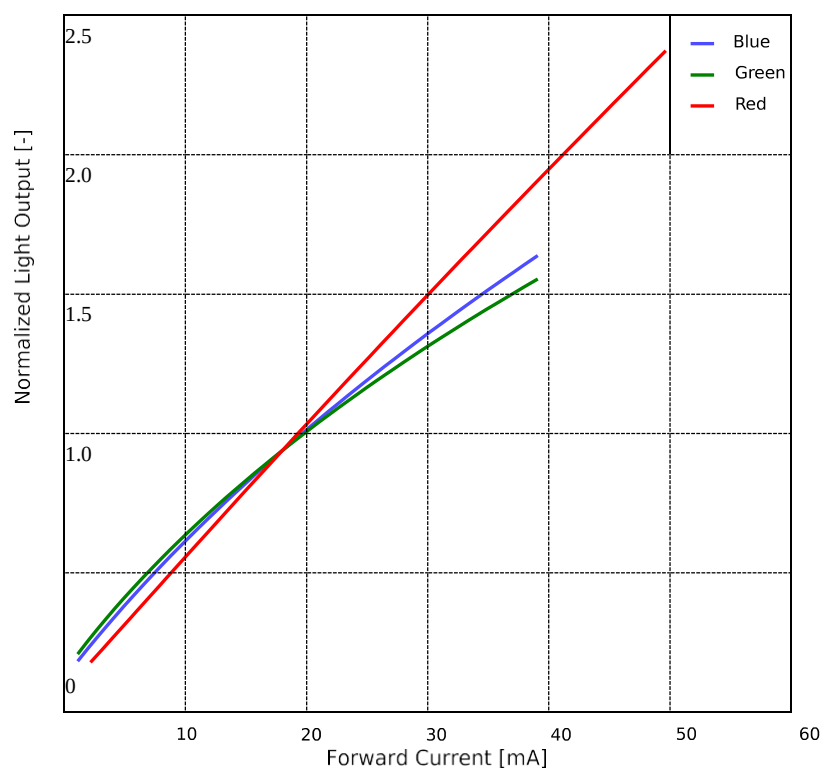


Figure 2. Typical normalized light output vs. junction temperature for Queendom RGB at 20mA.

Light Output Characteristics

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



Forward Current Characteristics

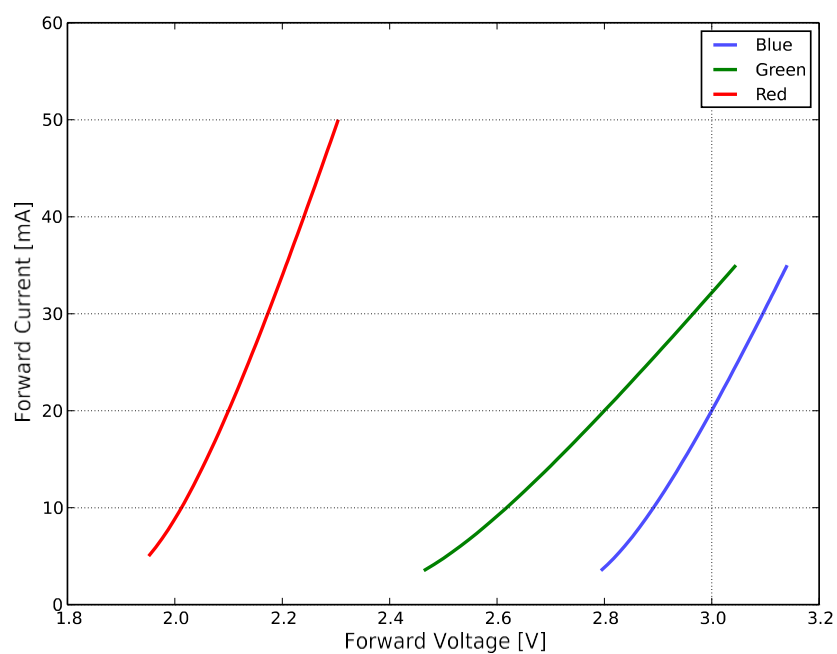


Figure 4. Typical forward current vs. forward voltage for Queendom RGB at $T_j=25^{\circ}\text{C}$.

Radiation Pattern Characteristics

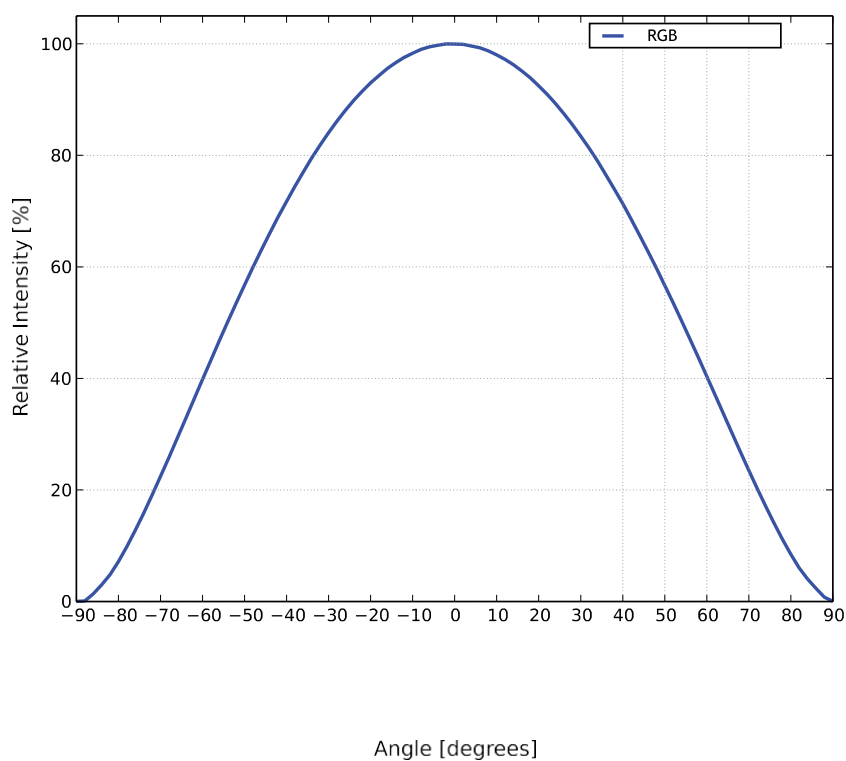


Figure 5. Typical radiation pattern for Queendom RGB at 20mA, $T_j=25^\circ\text{C}$.

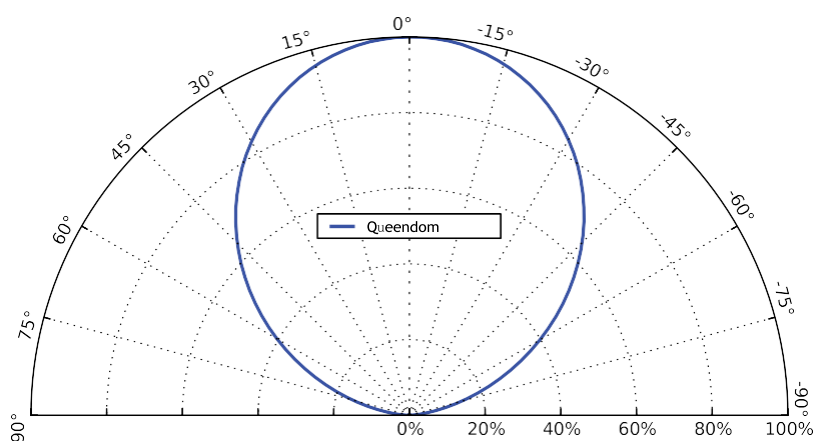


Figure 6. Typical polar radiation pattern for Queendom RGB at 20mA, $T_j=25^\circ\text{C}$.

Product Bin and Labeling Definitions

Decoding Product Bin Labeling

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)		PART NUMBER
			MINIMUM	MAXIMUM	
S3227RGB4	Red	R1A	619	624	8541401000SLI19021
		R2B	624	627	
		R1C	627	630	
	Green	G2C	520	525	
		G2D	525	530	
		G3E	530	535	
	Blue	B4D	459	465	
		B5E	465	470	
		B6F	470	475	
		B6G	475	478	

Notes for Table 1:

1. Queendom maintains a tolerance of $\pm 1\text{nm}$ on dominant wavelength measurements

Intensity Bins

RANK Table 2. Intensity bin definitions ,Electrical and thermal characteristics for Queendom at specified test current, $T_j=25^\circ\text{C}$.

BIN	QUEENDOM FLUX [1] (mcd)	
	MINIMUM	MAXIMUM
LH	190	300
LI	300	500
LJ	500	780
LK	780	1060
LL	1060	1560

Notes for Table 2:

1. Queendom maintains a tolerance of $\pm 10\%$ on intensity measurements.

Forward Voltage Bins

RANK Table 3.(Forward voltage bin definitions) Electrical and thermal characteristics for Queendom at specified test current, $T_j=25^\circ\text{C}$

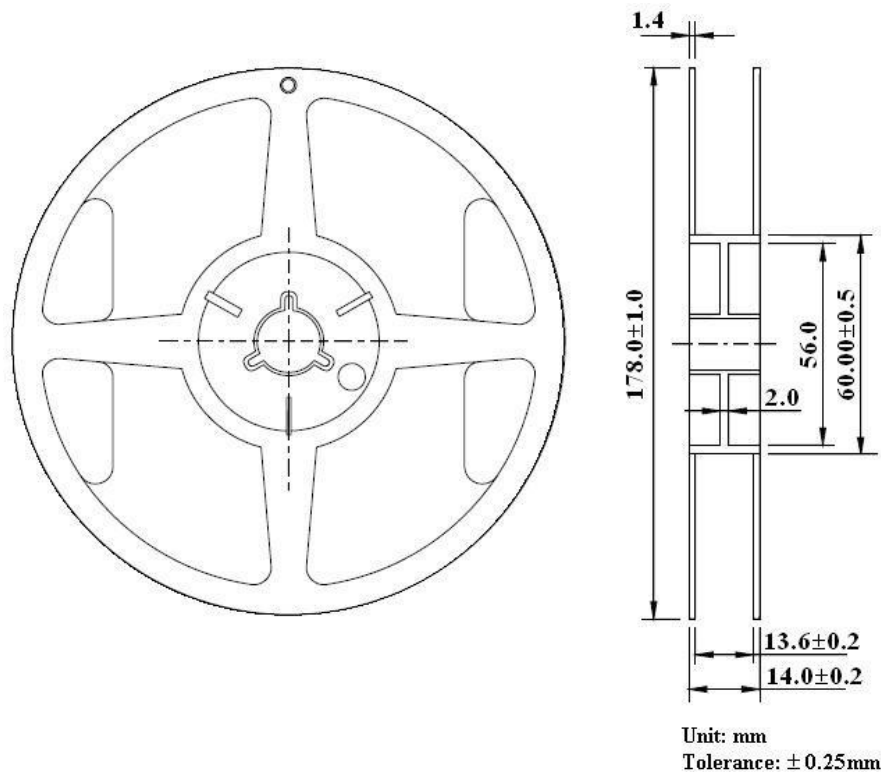
NUMBER	FORWARD VOLTAGE [1] (Vf)		
	MINIMUM	TYPICAL	MAXIMUM
V3	1.8	2	2.2
V4	2.2	2.4	2.6
V5	2.6	2.8	3
V6	3	3.2	3.4
V3	1.8	2	2.2
V4	2.2	2.4	2.6
V5	2.6	2.8	3
V6	3	3.2	3.4

Notes for Table 3:

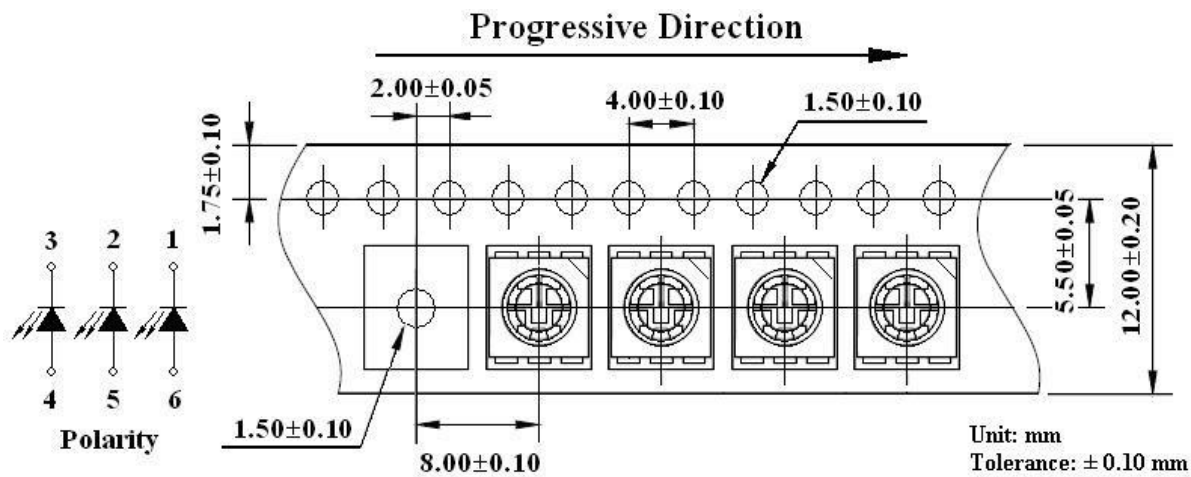
Queendom maintains a tolerance of $\pm 0.1\text{V}$ on forward voltage measurements.

Packaging Information

Reel Dimensions:

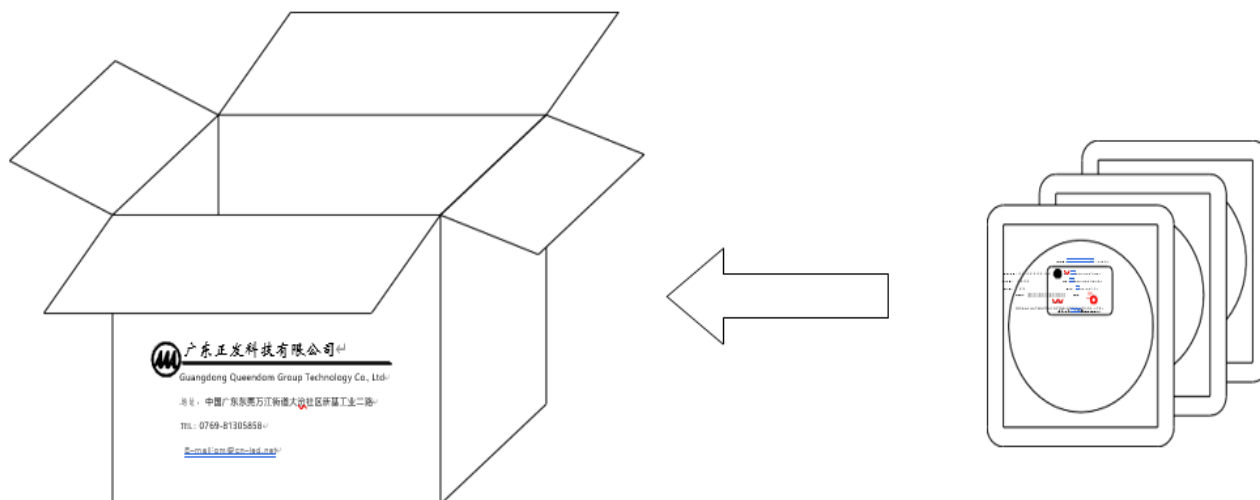


Carrier Tape Dimensions:



Loaded quantity 3000 pcs per reel.

Packaging cartons



Information

- With Stopper

CPN:		VF:XX-XX
P/N:XXXXXXXXXX		IV:XX-XX
		WLD:XX-XX
QTY:XXX		BIN:XX-XX
		DATE:XX-XX-XX
LOT NO:XXXXXXXXXX		
		

Without Stopper

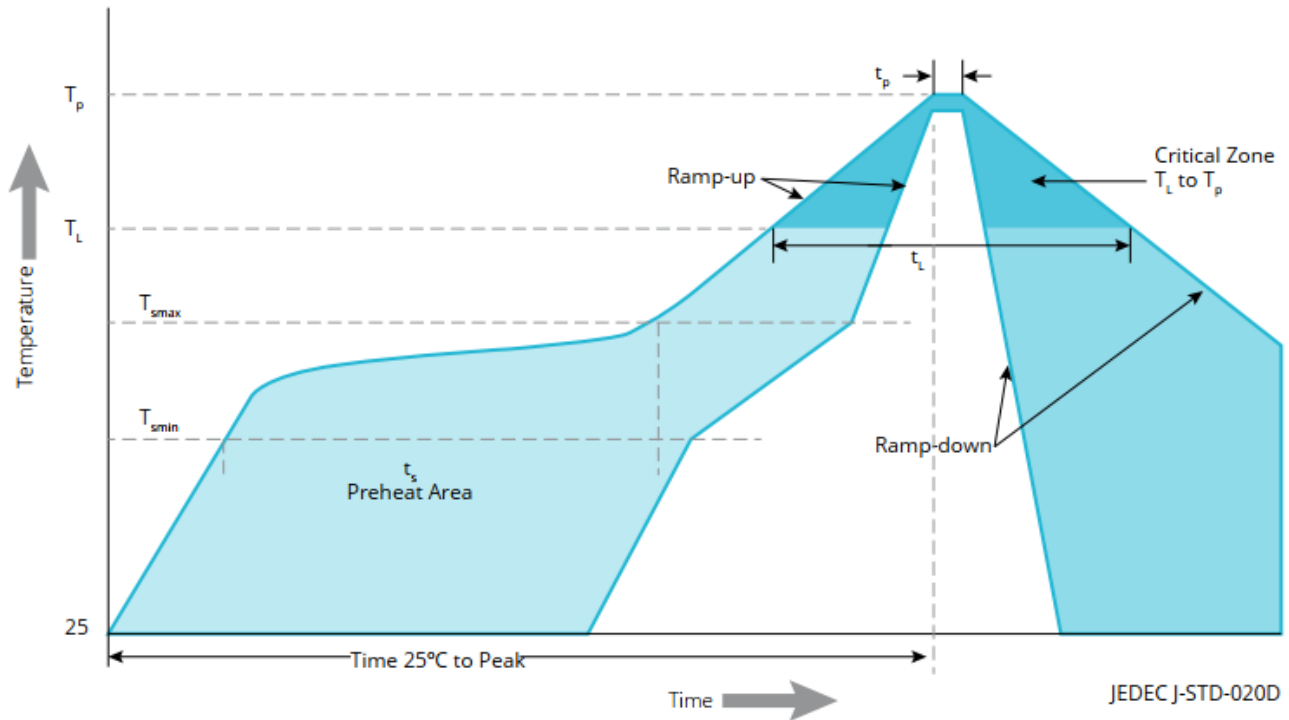
CPN:Customer's Product Number
P/N:Product Number
QTY:Packing Quantity
LOT NO:Lot Number
VF:Forward Voltage Rank
IV:Luminous Intensity Rank
WLD:Dom. Wavelength Rank
BIN:BIN Code
DATE:Date Of Dispatch

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

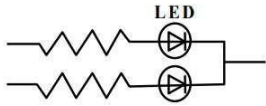
JEDEC Moisture Sensitivity

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	$30^\circ\text{C} / 60\% \text{ RH}$

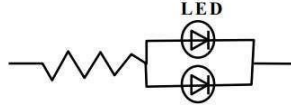
Drive Method

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 handling.

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.