



SMD Multicolor LED (Visible LED) - NO: 8541401000 SL22A
SPECIFICATION FOR APPROVALFOR APPROVAL

S5050R6B8WQD & Multicolor LEDs



Guangdong Queendom Group Technology Co., Ltd.

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Features:

PLCC 5054 package.

Emission color: **Multicolor LEDs** 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 5054 series is Due to the package design, LED has wide viewing angle and optimized light coupling by inter reflector.

This feature makes the SMTOP 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.

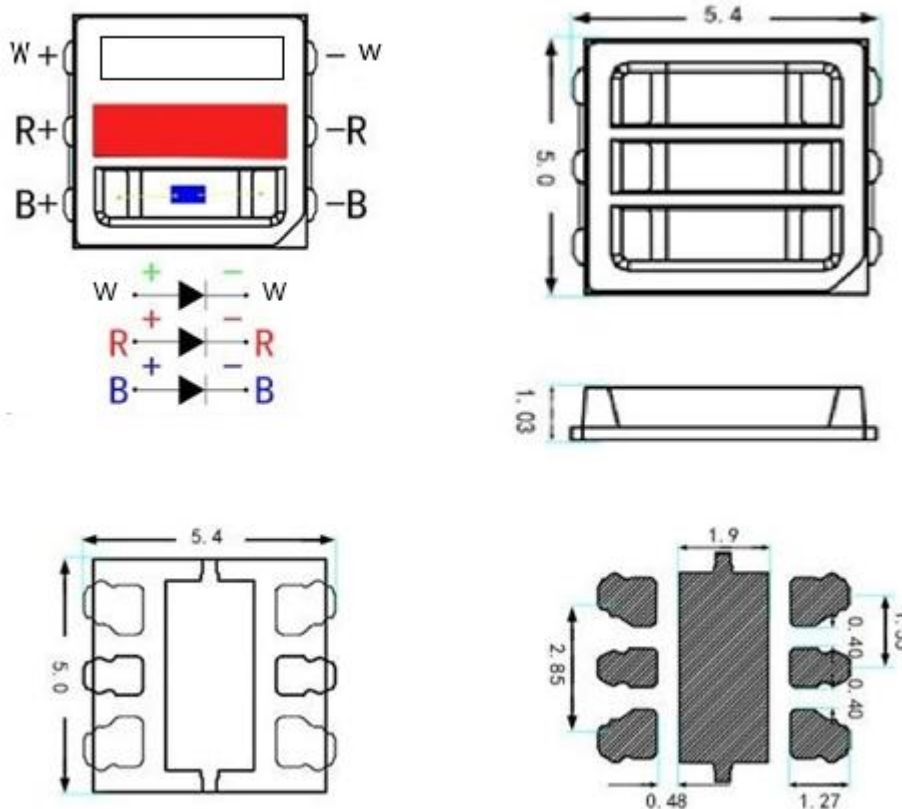
Status indicator: consumer electronics and industrial electronics

Indoor/outdoor lighting

General use.

Package SIZE:

Picture 1



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.

Performance Characteristics

Product Selection Guide

Table 1. Product performance of QUEENDOM RBW at Tj=25°C.

PRODUCT	RANK NO.	DOMINANT WAVELENGTH ^[1] (nm)		INTENSITY ^[2] FLUX (lm)		FORWARD VOLTAGE	
		[1] (nm/K)		[2] (lm)		[3] (V/F)	
		MINIMUM	MAXIMUM	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM
S5050R6B8WQD	Red	650	670	2	5	2.7	3.2
	5700K	5400	6000	58	62	2.8	3.2
	Blue	490	500	2	6	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 2. Optical characteristics for QUEENDOM RBW at 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
S5050R6B8WQD	Red	6	0.04	120°	8541401000SL22A
	5700K	5	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

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

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	S5050R6B8QD	2.70	2.90	3.20	-1.6	75
WHIE		2.80	3.00	3.20	-2.4	120
Blue		2.80	3.00	3.20	-2.6	85

Absolute Maximum Ratings

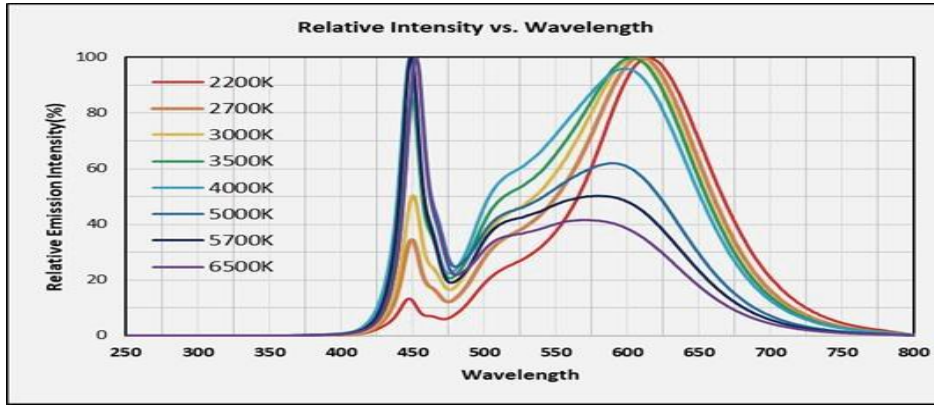
Table 4. Absolute maximum ratings for QUEENDOM RRW.

PARAMETER	WHIE	RED AND BLUE
DC Forward Current ^[1, 2]	150mA	25mA
Peak Pulsed Forward Current ^[1, 3]	180mA	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})	QUEENDOM RGW LEDs are not designed to be driven in reverse bias	

Notes for Table 4:

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.

Characteristic Curves



Region	CIE x	CIE y	Region	CIE x	CIE y	Region	CIE x	CIE y	Region	CIE x	CIE y
R rank (5000 K)						Q rank (5700 K)					
R1	0.3366	0.3369	R9	0.3374	0.3554	Q1	0.3218	0.3298	Q9	0.3211	0.3407
	0.3369	0.3431		0.3371	0.3493		0.3222	0.3243		0.3215	0.3353
	0.3407	0.346		0.3411	0.3522		0.3258	0.3275		0.3254	0.3388
	0.3403	0.3398		0.3415	0.3587		0.3256	0.3331		0.3252	0.3444
R2	0.3403	0.3398	RA	0.3415	0.3587	Q2	0.3256	0.3331	QA	0.3252	0.3444
	0.3407	0.346		0.3411	0.3522		0.3258	0.3275		0.3254	0.3388
	0.3446	0.3491		0.3451	0.3554		0.3294	0.3306		0.3293	0.3423
	0.344	0.3427		0.3457	0.3621		0.3294	0.3364		0.3293	0.3481
R3	0.3446	0.3491	RB	0.3451	0.3554	Q3	0.3294	0.3364	QB	0.3293	0.3481
	0.344	0.3427		0.3457	0.3621		0.3294	0.3306		0.3293	0.3423
	0.3477	0.3458		0.35	0.3655		0.333	0.3338		0.3332	0.3458
	0.3485	0.3522		0.3492	0.3587		0.3331	0.3398		0.3333	0.3518
R4	0.3485	0.3522	RC	0.3492	0.3587	Q4	0.3331	0.3398	QC	0.3333	0.3518
	0.3477	0.3458		0.35	0.3655		0.333	0.3338		0.3332	0.3458
	0.3514	0.3487		0.3542	0.369		0.3366	0.3369		0.3371	0.3493
	0.3524	0.3554		0.3533	0.362		0.3369	0.3431		0.3374	0.3554
R5	0.3371	0.3493	RD	0.3376	0.3616	Q1	0.3215	0.3353	QD	0.3207	0.3462
	0.3369	0.3431		0.3374	0.3554		0.3218	0.3298		0.3211	0.3407
	0.3407	0.346		0.3415	0.3587		0.3256	0.3331		0.3252	0.3444
	0.3411	0.3522		0.342	0.3652		0.3254	0.3388		0.325	0.3501
R6	0.3407	0.346	RE	0.3415	0.3587	Q2	0.3254	0.3388	QE	0.325	0.3501
	0.3411	0.3522		0.342	0.3652		0.3256	0.3331		0.3252	0.3444
	0.3451	0.3554		0.3463	0.3687		0.3294	0.3364		0.3293	0.3481
	0.3446	0.3491		0.3457	0.3621		0.3293	0.3423		0.3292	0.3539
R7	0.3446	0.3491	RF	0.3457	0.3621	Q3	0.3293	0.3423	QF	0.3292	0.3539
	0.3451	0.3554		0.3463	0.3687		0.3294	0.3364		0.3293	0.3481
	0.3492	0.3587		0.3507	0.3724		0.3331	0.3398		0.3333	0.3518
	0.3485	0.3522		0.35	0.3655		0.3332	0.3458		0.3334	0.3578
R8	0.3485	0.3522	RG	0.35	0.3655	Q4	0.3332	0.3458	QG	0.3334	0.3578
	0.3492	0.3587		0.3507	0.3724		0.3331	0.3398		0.3333	0.3518
	0.3533	0.362		0.3551	0.376		0.3369	0.3431		0.3374	0.3554
	0.3524	0.3554		0.3542	0.369		0.3371	0.3493		0.3376	0.3616

Spectral Power Distribution Characteristics

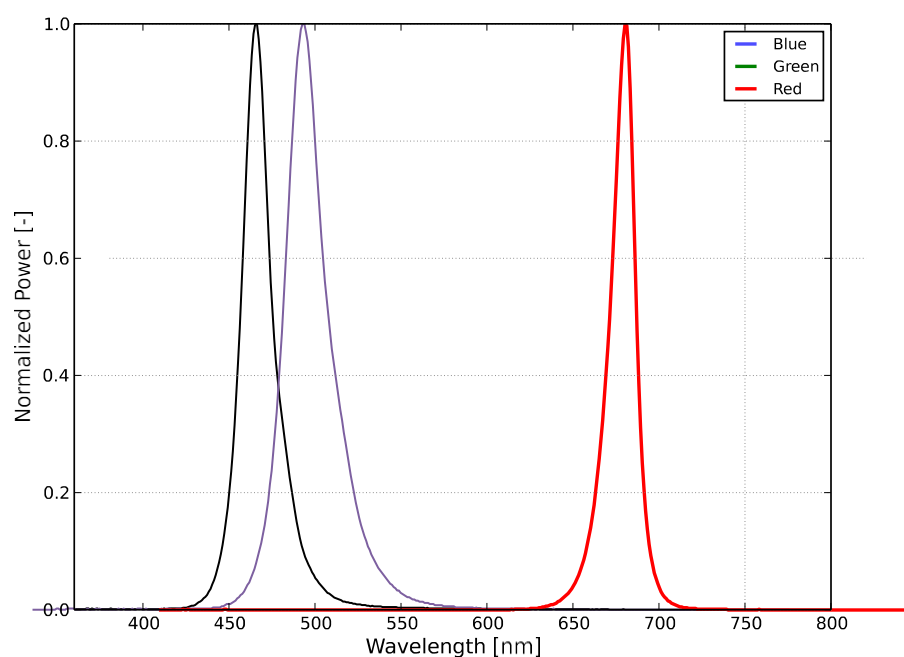


Figure 1. Typical normalized power vs. wavelength for Queendom 5050 $T_j=25^{\circ}\text{C}$.

Light Output Characteristics

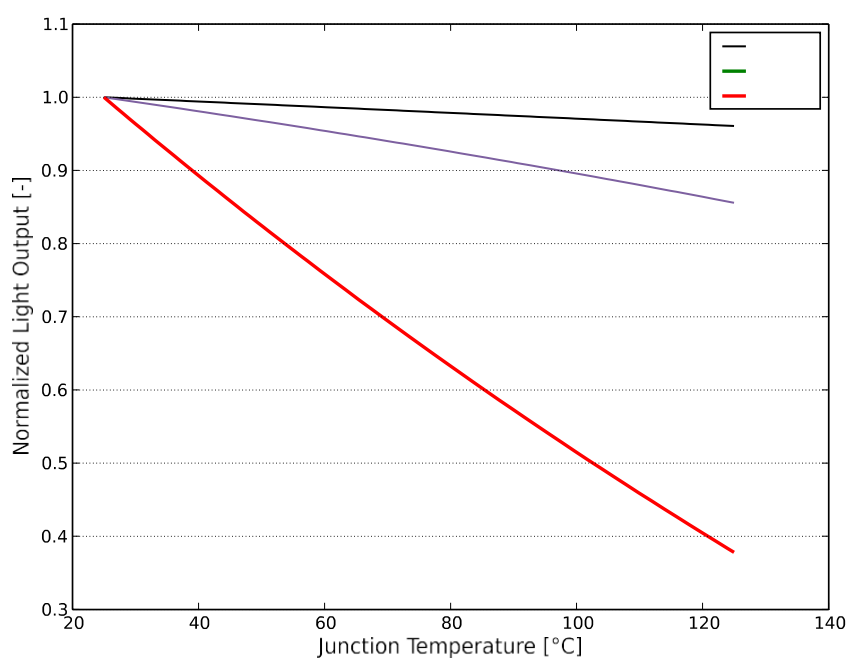


Figure 2. Typical normalized light output vs. junction temperature for Queendom 5050 $T_j=25^{\circ}\text{C}$.

Light Output Characteristics

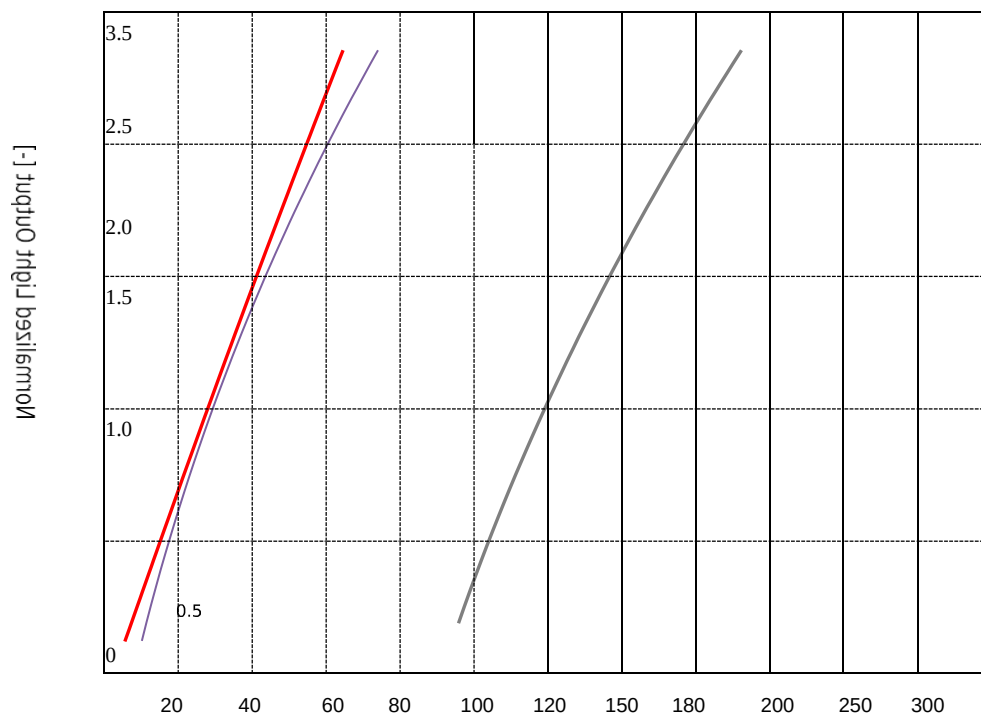


Figure 3. Typical normalized light output vs. forward current for Queendom 5050 at $T_j=25^{\circ}\text{C}$.

Forward Current Characteristics

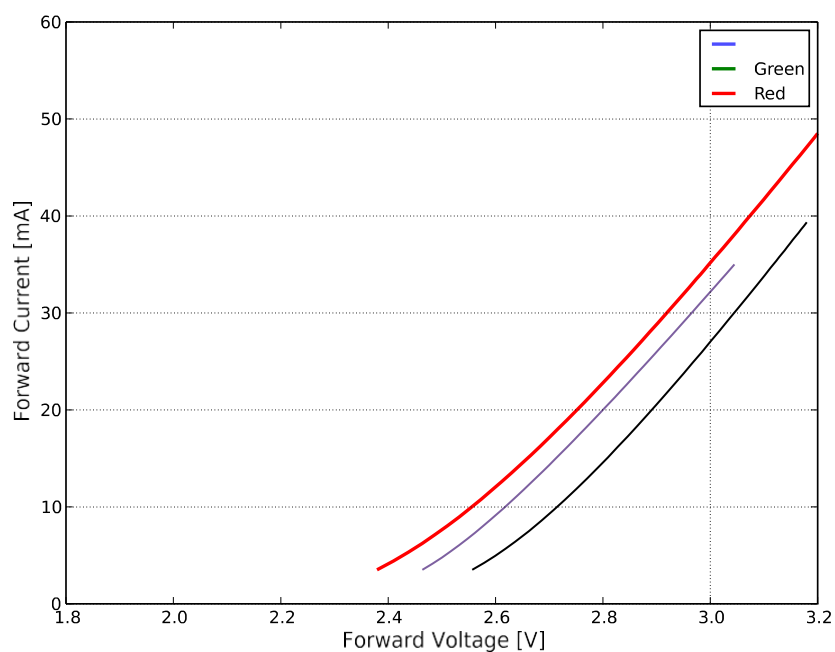


Figure 4. Typical forward current vs. forward voltage for Queendom 5050 $T_j=25^{\circ}\text{C}$.

Radiation Pattern Characteristics

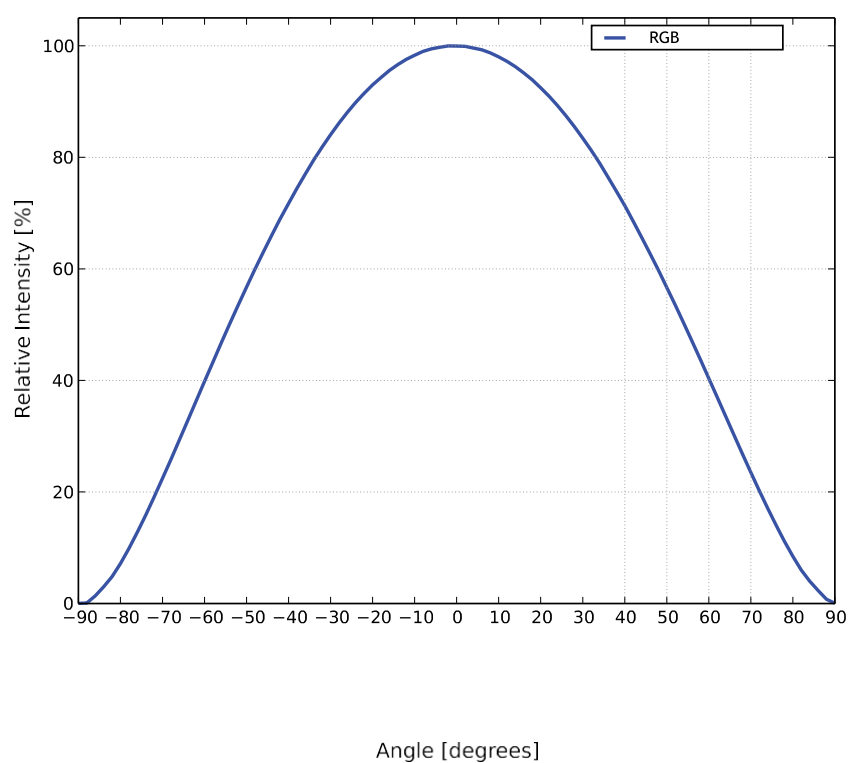


Figure 5. Typical radiation pattern for Queendom 5050 $T_j = 25^\circ\text{C}$.

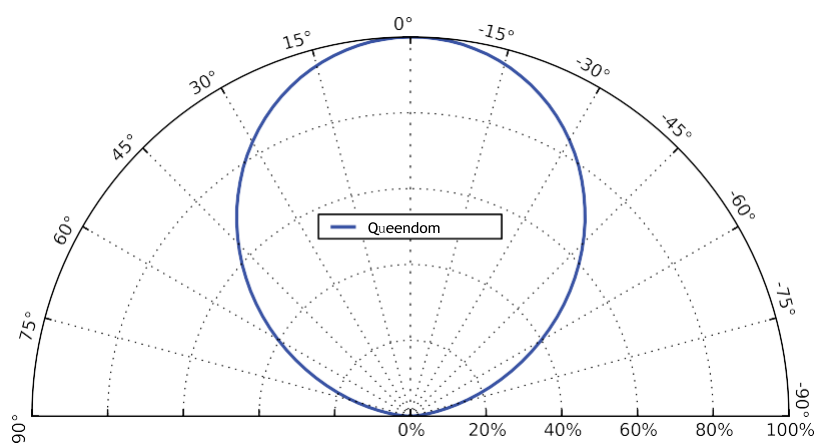


Figure 6. Typical polar radiation pattern for Queendom 5050 $T_j = 25^\circ\text{C}$.

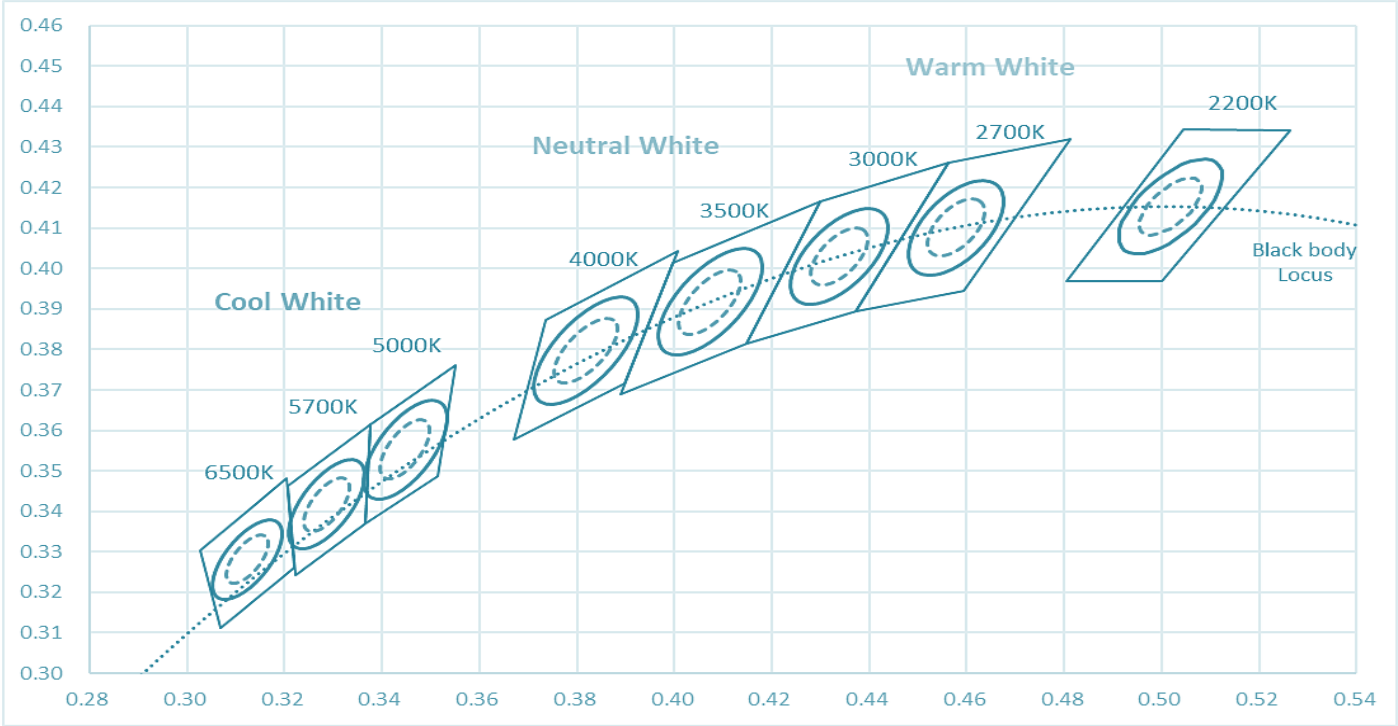
Decoding Product BinLabeling

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.

RANK NOMINAL CCT & COLOR COORDINATES

Chromaticity Region & Coordinates

Table 1a. Electrical and thermal characteristics for Queendom at specified test current, Tj=25°C



Dominant Wavelength Bins

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

	Region	CIE x	CIE y	Major-axis	Minor-axis	Rotation
3 step	2700	0.4578	0.4101	0.0081	0.0042	53.7
	3000	0.4338	0.403	0.0083	0.0041	53.22
	3500	0.4073	0.3917	0.0093	0.0041	54
	4000	0.3818	0.3797	0.0094	0.004	53.72
	5000	0.3447	0.3553	0.0082	0.0035	59.62
	5700	0.3287	0.3417	0.0075	0.0032	59.1
	6500	0.3123	0.3282	0.0067	0.0029	58.57
5 step	2700	0.4578	0.4101	0.0135	0.007	53.7
	3000	0.4338	0.403	0.0138	0.0068	53.22
	3500	0.4073	0.3917	0.0155	0.0068	54
	4000	0.3818	0.3797	0.0157	0.0067	53.72
	5000	0.3447	0.3553	0.0137	0.0058	59.62
	5700	0.3287	0.3417	0.0125	0.0053	59.1
	6500	0.3123	0.3282	0.0112	0.0048	58.57

Notes:

1. The tolerance of luminous intensity (Iv)is ±15 % .

2. The tolerance of dominant wavelength is ±1nm.

3. This specification is preliminary.

4.This specification is a standard specification of our factory, can make in accordance with customer's special requirement.

LUMINOUS FLUX BINS

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

BIN	QUEENDOM FLUX [1] (lm)		RANK FLUX [2] (lm)		TYPICAL FLUX HALF WIDTH
	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM	[3] (lm)
LI	22	24	2	4	4
LJ	24	26	2	4	4
LK	26	28	2	4	4
LL	28	30	2	4	4
LM	30	32	2	4	4
LN	32	34	2	4	4
LO	34	36	2	4	4
LP	36	38	2	4	4
LQ	38	40	2	4	4
LR	45	50	3	5	5
LS	55	60	3	5	5
LT	65	70	3	5	5
LU	75	80	3	5	5
LV	85	90	3	5	5
LW	95	100	3	5	5
LX	110	120	5	10	10
LY	130	140	5	10	10
LZ	150	160	5	10	10
H1	170	180	5	10	10
H2	190	200	5	10	10

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)
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
V8	3.8	4	4.2	0.1	0.2	0.2
V9	4.2	4.4	4.6	0.1	0.2	0.2
VA	4.6	4.8	5	0.1	0.2	0.2
VB	5	5.2	5.4	0.1	0.2	0.2
VC	5.4	5.6	5.8	0.1	0.2	0.2
VD	5.8	6				

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

Dominant Wavelength Bins

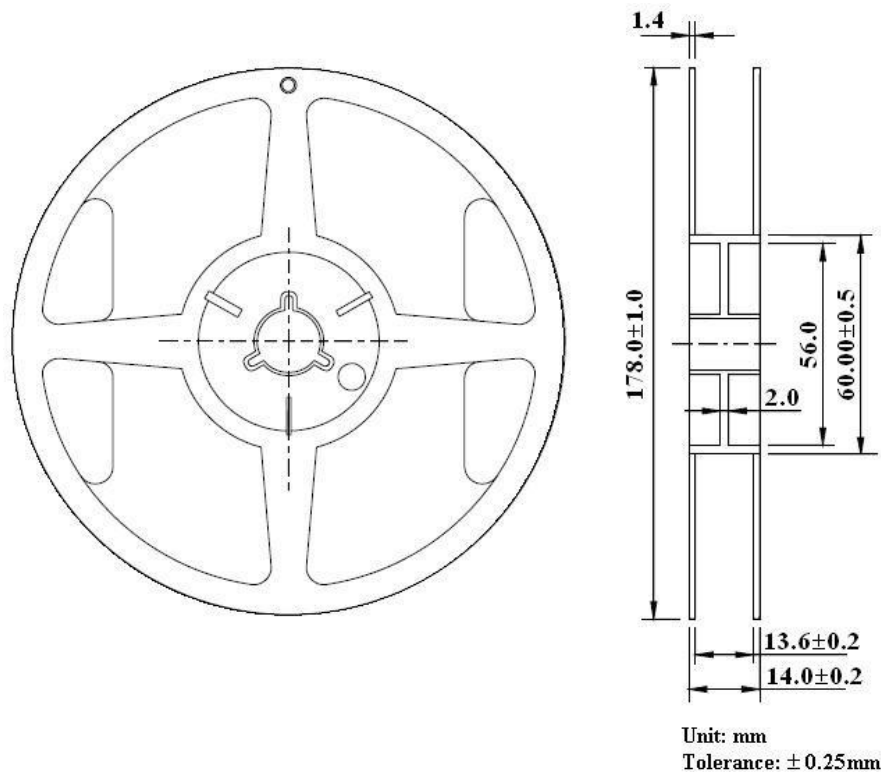
RANK Table 1. Dominant wavelength bins & Product performance of Queendom Commercial LEDs at specified test conditions.

PRODUCT	COLOR	BIN	DOMINANT WAVELENGTH [1] (nm)		RANK WAVELENGTH [2] (nm)	
			MINIMUM	MAXIMUM	MINIMUM	MAXIMUM
SMD LEDs	Blue	B3	440	450	2.5	5
		B4	450	460	2.5	5
		B5	460	470	2.5	5
		B6	470	480	2.5	5
		B7	480	490	2.5	5
		B8	490	500	2.5	5
	Green	G0	500	505	2.5	5
		G0	505	510	2.5	5
		G1	510	520	2.5	5
		G2	520	530	2.5	5
	Green	G3	530	540	2.5	5
		G4	540	550	2.5	5
		G5	550	560	2.5	5
		G6	560	570	2.5	5
		G1	555	560	2.5	5
	Yellow	G2	560	565	2.5	5
		Y1	570	580	2.5	5
		Y2	580	590	2.5	5
		Y3	590	600	2.5	5
	Orange	A0	600	610	2.5	5
		R1	610	620	2.5	5
		R2	620	630	2.5	5
		R3	630	640	2.5	5
	Red	R4	640	650	2.5	5
		R5	650	660	2.5	5
		R6	660	670	2.5	5
		R7	670	680	2.5	5
		R8	680	690	2.5	5

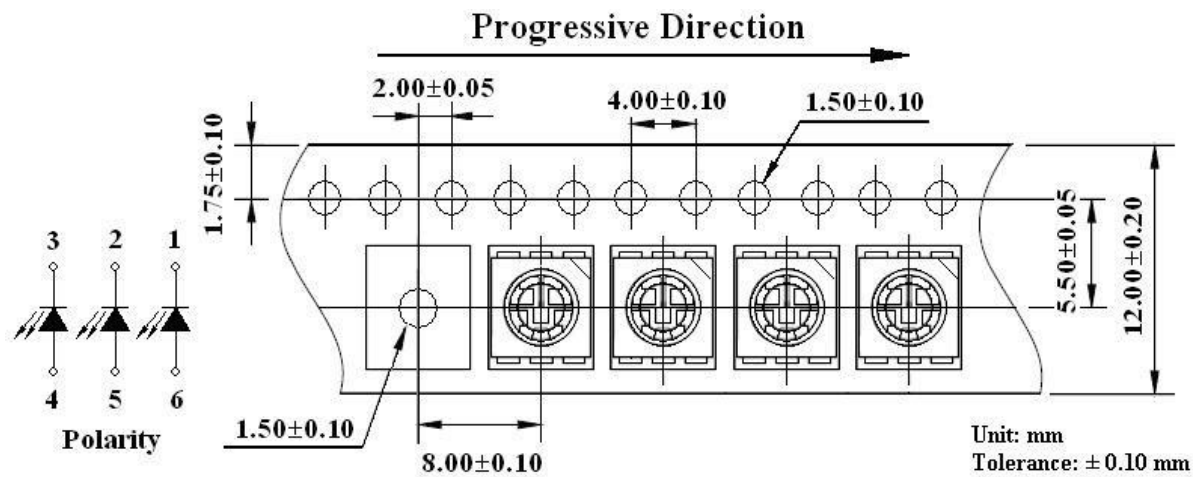
Notes for Table 1:
1.Queendom maintains a tolerance of ±1nm on dominant wavelength measurements

Packaging Information

Reel Dimensions:

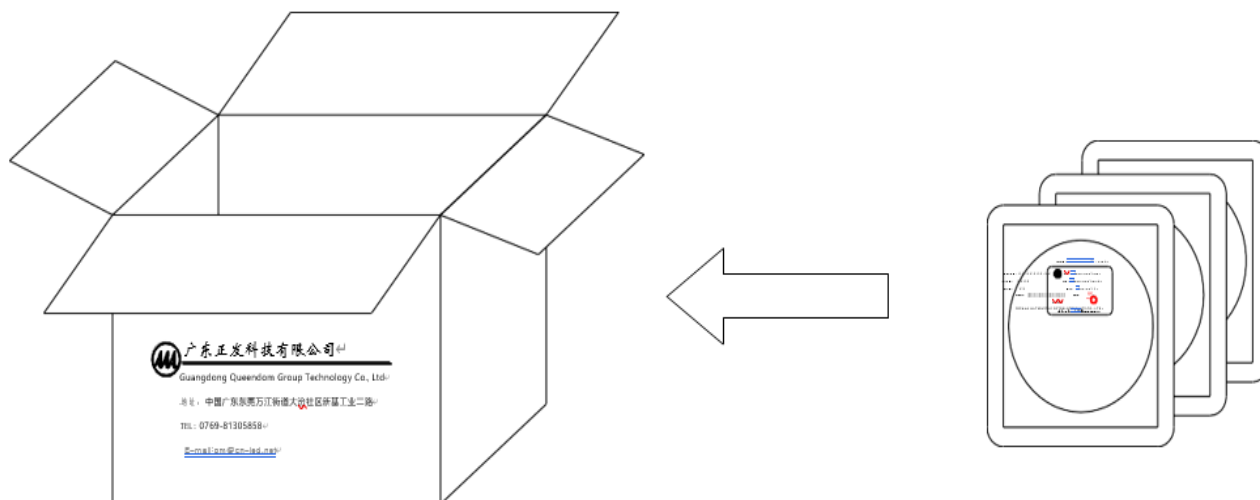


Carrier Tape Dimensions:



Loaded quantity 3000 pcs per reel.

Packaging cartons



Information

- With Stopper

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

Without Stopper

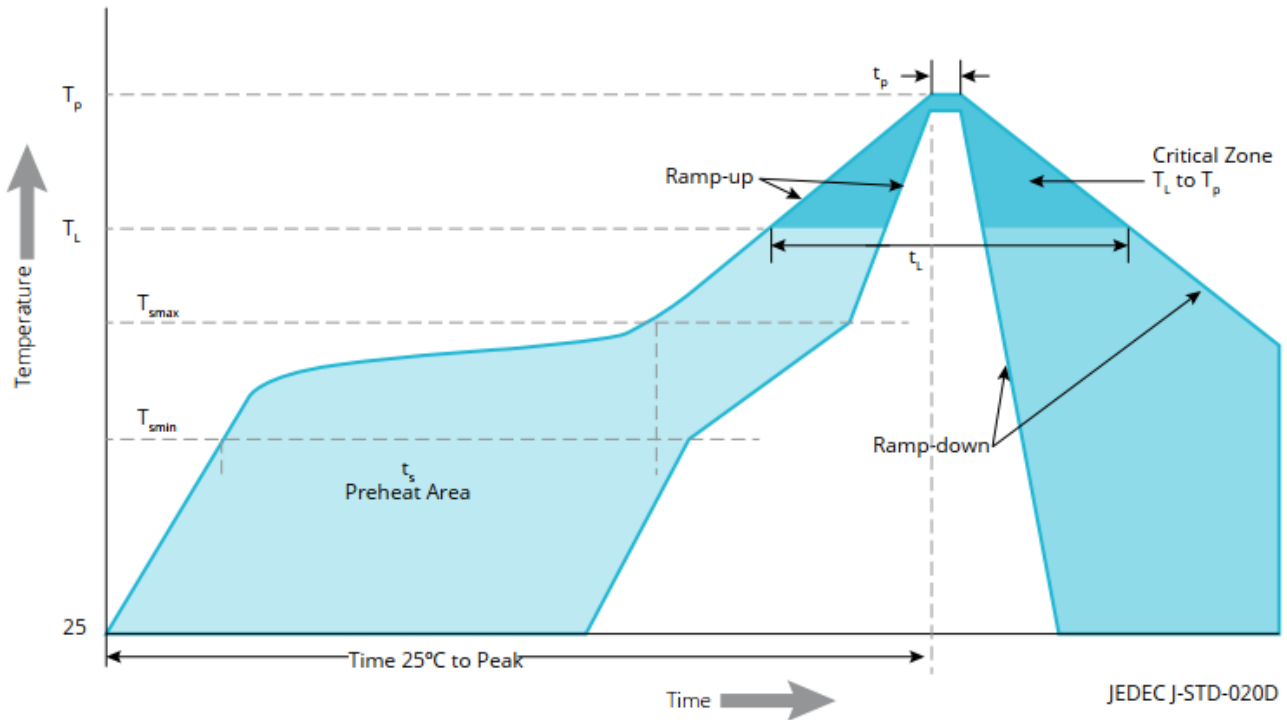
CPN:Customer's Product Number
P/N:Product Number
QTY:Packing Quantity
LOT NO:Lot Number
VF:Forward Voltage Rank
IV:Luminous Intensity Rank
WLD:Dom. Wavelength Rank
BIN:BIN Code
DATE:Date Of Dispatch

Packing Quantity

1. 1000 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

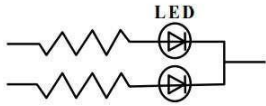
JEDEC Moisture Sensitivity

LEVEL	FLOOR LIFE		SOAK REQUIREMENTS STANDARD	
	TIME	CONDITIONS	TIME	CONDITIONS
5a	24 hours	≤30°C / 60% RH	48 Hours +2 / -0	30°C / 60% RH

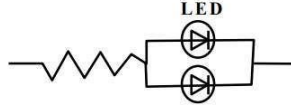
Drive Method

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.