

Features:

Emission color: InGaN AlGaInP

Lens appearance: Red, orange, yellow, common green, emerald green, blue

Multi-color type.

Applicable to all SMT assembly methods.

Compatible with infrared and vapor phase reflow soldering processes.

Compatible with automatic placement equipment.



Descriptions:

5050 is a high power package that provides high luminance

from a super robust package to enable cost effective and reliable fixture, 5050 uses an industry standard 5050 surface mount package with a fairly small Light Emitting Surface (LES).

Queendom 5050 Red, orange, yellow, common green, emerald green, blue and offers hot-color targeting to ensure that the LEDs are within color target at application conditions of 85°C. Furthermore, with the latest NightScape Technology,

Applications:

Automobile: dashboard, brake lights, turn signals.

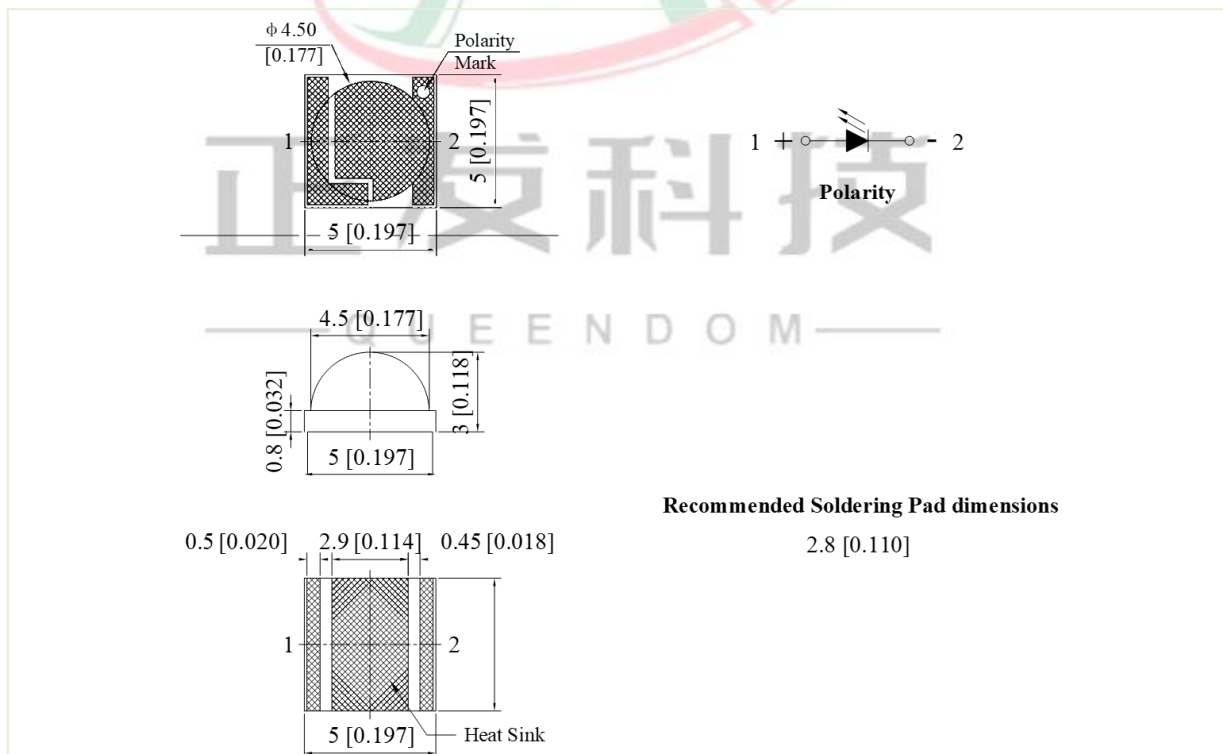
Biomedical optics, instrument and equipment testing

Status indicator: consumer electronics and industrial electronics.

Security, infrared monitoring, night vision

Package SIZE:

Picture



Notes:

All dimensions are in millimeters (inches).

Tolerance is ± 0.25 mm (.010") unless otherwise noted.

Protruded resin under flange is 1.00mm (.039") max.

Absolute Maximum Ratings

Table 1. Absolute maximum ratings for Queendom LEDs.

PARAMETER	MAXIMUM PERFORMANCE
Parameter PD (mW)	≤12W (3W/CHIP)
DC Forward Current [1, 2]	350mA HP5050**WE
	700mA HP5050 *WF
	1000mA HP5050 *WG
	1400mA HP5050 *WH
Peak Pulsed Forward Current [1, 3]	500mA HP5050**WE
	1000mA HP5050 *WF
	1200mA HP5050 *WG
	1800mA HP5050 *WH
LED Junction Temperature [1] (DC & Pulse)	125°C
Reverse Voltage (Vreverse)	5
ESD Sensitivity (ANSI/ESDA/JEDEC JS-001-2012)	Class 2
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: 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.

Product model code corresponding SKU table

Table 2. Product performance of Queendom Commercial LEDs at specified test conditions, Continued., T_j=25°C .

RODUCT	RANK	TEST	PART NUMBER
		(mA)	
HP5050B52WF	HP0225	700	8541401000HP0225
HP5050B62WF	HP0226	700	8541401000HP0226
HP5050G02WF	HP0227	700	8541401000HP0227
HP5050G12WF	HP0228	700	8541401000HP0228
HP5050G22WF	HP0229	700	8541401000HP0229
HP5050G32WF	HP0230	700	8541401000HP0230
HP5050Y22WF	HP0231	700	8541401000HP0231
HP5050AO2WF	HP0232	700	8541401000HP0232
HP5050R22WF	HP0233	700	8541401000HP0233
HP5050R32WF	HP0234	700	8541401000HP0234
HP5050R42WF	HP0235	700	8541401000HP0235
HP5050R62WG	HP0236	700	8541401000HP0236
HP5050B52WG	HP0237	1200	8541401000HP0237
HP5050B62WG	HP0238	1200	8541401000HP0238
HP5050G02WG	HP0239	1200	8541401000HP0239
HP5050G12WG	HP0240	1200	8541401000HP0240
HP5050G22WG	HP0241	1200	8541401000HP0241
HP5050G32WG	HP0242	1200	8541401000HP0242
HP5050Y22WG	HP0243	1200	8541401000HP0243
HP5050AO2WG	HP0244	1200	8541401000HP0244
HP5050R22WG	HP0245	1200	8541401000HP0245
HP5050R32WG	HP0246	1200	8541401000HP0246
HP5050R42WG	HP0247	1200	8541401000HP0247
HP5050R62WG	HP0248	1200	8541401000HP0248

Product Electrical Index & TYPICALWAVELENGTH

Table3 Optical characteristics of Queendom Commercial LEDs at specified test conditions, Continued., Tj=25°C.

RODUCT	RANK	NOMINAL	PEAK (nm)		TEST	PART NUMBER
		NM	MIN	MAX	(mA)	
HP5050B52WF	HP0225	460	460	470	700	8541401000HP0225
HP5050B62WF	HP0226	470	470	480	700	8541401000HP0226
HP5050G02WF	HP0227	500	500	510	700	8541401000HP0227
HP5050G12WF	HP0228	510	510	520	700	8541401000HP0228
HP5050G22WF	HP0229	520	520	530	700	8541401000HP0229
HP5050G32WF	HP0230	530	530	540	700	8541401000HP0230
HP5050Y22WF	HP0231	585	585	595	700	8541401000HP0231
HP5050AO2WF	HP0232	605	600	610	700	8541401000HP0232
HP5050R22WF	HP0233	620	610	630	700	8541401000HP0233
HP5050R32WF	HP0234	630	620	640	700	8541401000HP0234
HP5050R42WF	HP0235	640	640	660	700	8541401000HP0235
HP5050R62WG	HP0236	660	660	680	700	8541401000HP0236
HP5050B52WG	HP0237	460	460	470	1200	8541401000HP0237
HP5050B62WG	HP0238	470	470	480	1200	8541401000HP0238
HP5050G02WG	HP0239	500	500	510	1200	8541401000HP0239
HP5050G12WG	HP0240	510	510	520	1200	8541401000HP0240
HP5050G22WG	HP0241	520	520	530	1200	8541401000HP0241
HP5050G32WG	HP0242	530	530	540	1200	8541401000HP0242
HP5050Y22WG	HP0243	585	585	595	1200	8541401000HP0243
HP5050AO2WG	HP0244	605	600	610	1200	8541401000HP0244
HP5050R22WG	HP0245	620	610	630	1200	8541401000HP0245
HP5050R32WG	HP0246	630	620	640	1200	8541401000HP0246
HP5050R42WG	HP0247	640	640	660	1200	8541401000HP0247
HP5050R62WG	HP0248	660	660	680	1200	8541401000HP0248

Product Electrical Index & QUEENDOM TYPICAL RADIANT

Table 4. Optical characteristics of Queendom Commercial LEDs at specified test conditions, Continued., Tj=25°C.

RODUCT	RANK	NOMINAL	TYPICAL FLUX		TEST	PART NUMBER
		NM	MIN	MAX	(mA)	
HP5050B52WF	HP0225	460	150	180	700	8541401000HP0225
HP5050B62WF	HP0226	470	150	180	700	8541401000HP0226
HP5050G02WF	HP0227	500	320	360	700	8541401000HP0227
HP5050G12WF	HP0228	510	320	360	700	8541401000HP0228
HP5050G22WF	HP0229	520	390	440	700	8541401000HP0229
HP5050G32WF	HP0230	530	390	440	700	8541401000HP0230
HP5050Y22WF	HP0231	585	150	190	700	8541401000HP0231
HP5050AO2WF	HP0232	605	190	240	700	8541401000HP0232
HP5050R22WF	HP0233	620	170	190	700	8541401000HP0233
HP5050R32WF	HP0234	630	170	190	700	8541401000HP0234
HP5050R42WF	HP0235	640	65	90	700	8541401000HP0235
HP5050R62WG	HP0236	660	10	30	700	8541401000HP0236
HP5050B52WG	HP0237	460	200	240	1200	8541401000HP0237
HP5050B62WG	HP0238	470	200	240	1200	8541401000HP0238
HP5050G02WG	HP0239	500	560	640	1200	8541401000HP0239
HP5050G12WG	HP0240	510	560	640	1200	8541401000HP0240
HP5050G22WG	HP0241	520	560	720	1200	8541401000HP0241
HP5050G32WG	HP0242	530	560	720	1200	8541401000HP0242
HP5050Y22WG	HP0243	585	200	240	1200	8541401000HP0243
HP5050AO2WG	HP0244	605	240	280	1200	8541401000HP0244
HP5050R22WG	HP0245	620	240	280	1200	8541401000HP0245
HP5050R32WG	HP0246	630	240	280	1200	8541401000HP0246
HP5050R42WG	HP0247	640	100	180	1200	8541401000HP0247
HP5050R62WG	HP0248	660	20	40	1200	8541401000HP0248

Electrical and Thermal Characteristics

Table 5 Product performance of Queendom Commercial LEDs at specified test conditions, Continued., 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
HP5050***WG	Blue	20	0.03	135°	8541401000HP02
	Green	30	0.01	135°	
	Green	30	0.01	135°	
	Green	30	0.01	135°	
	Yellow	40	0.02	135°	
	Red	20	0.06	135°	
	Red	20	0.06	135°	
	Red	20	0.06	135°	

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.

特性曲线 Characteristic Curves

光谱功率分布特性 Spectral Power Distribution Characteristic

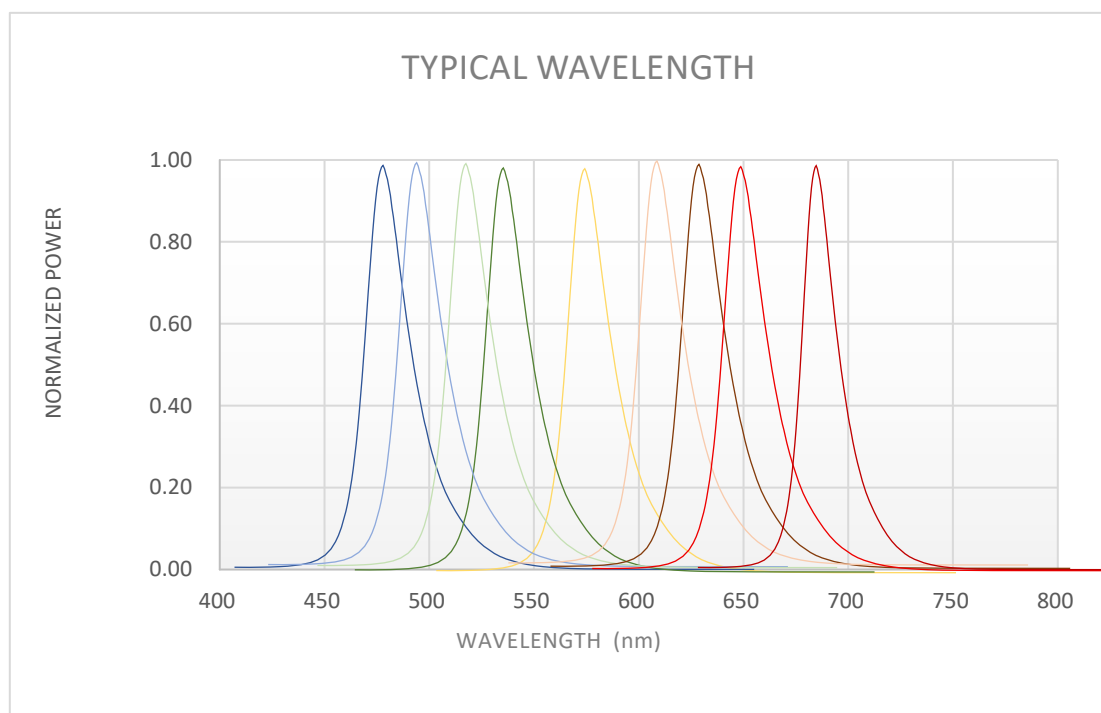


Figure 1. Typical normalized light output vs. junction temperature for at specified test current. $T_j = 25^\circ\text{C}$

Light Output Characteristics

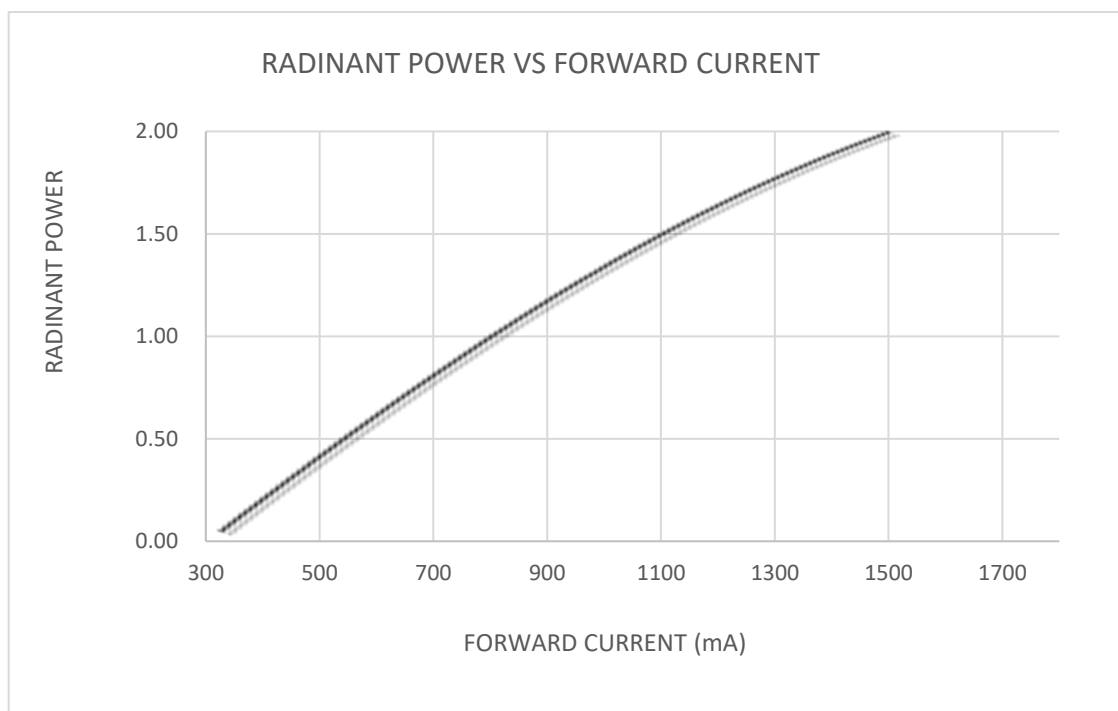


Figure 2 Typical normalized radiant power vs. junction temperature for QUEENDOM UV at $T_j = 25^\circ\text{C}$.

光输出特性 Light Output Characteristics

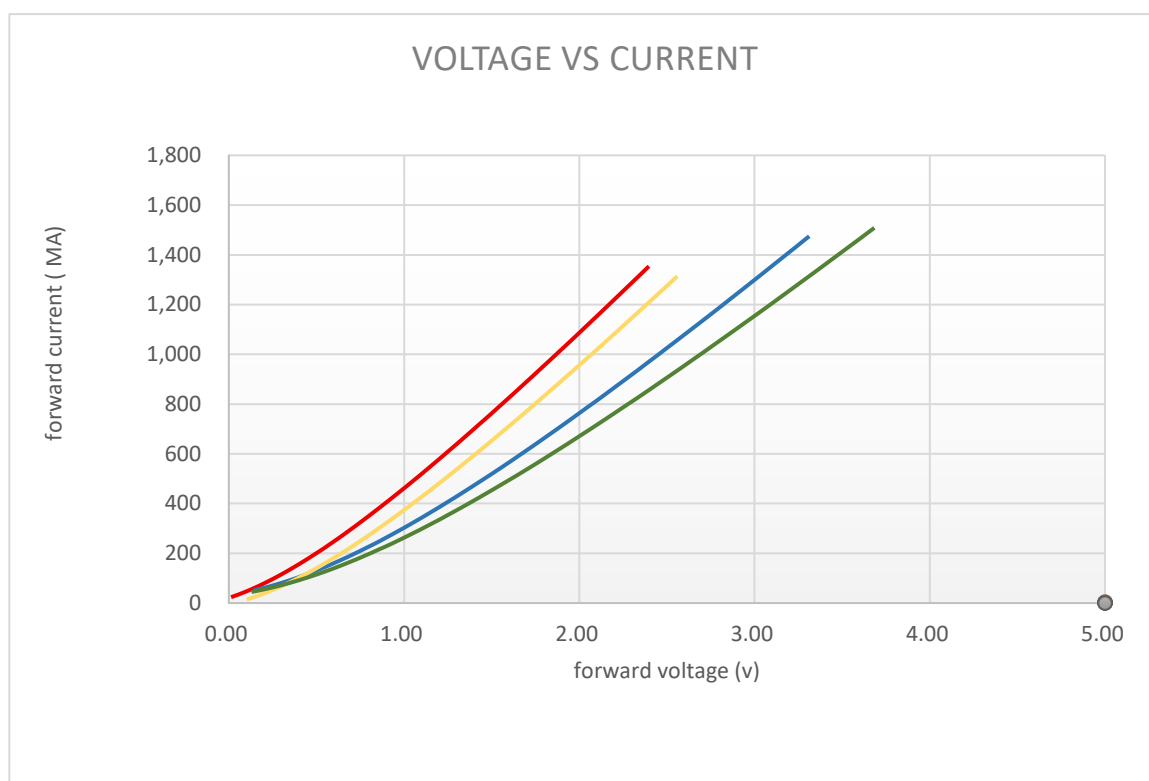


Figure 3. Typical forward current vs. forward voltage for R Tj=25°C.

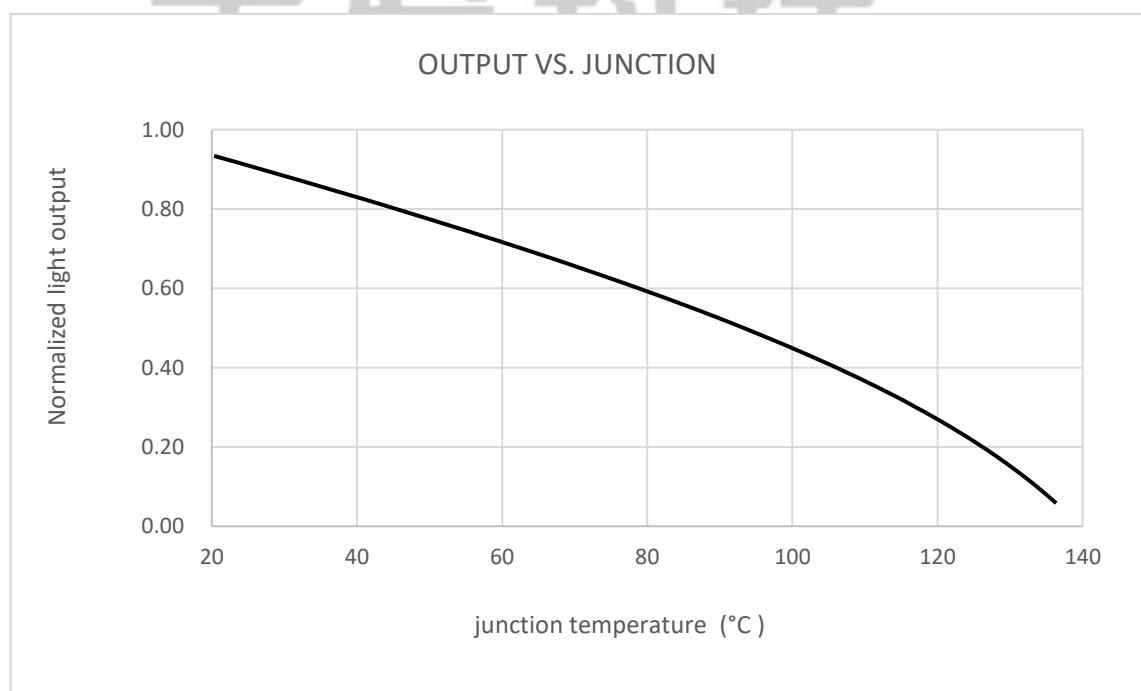


Figure 4. Typical normalized light output vs. junction temperature for at test current.

Radiation Pattern Characteristics

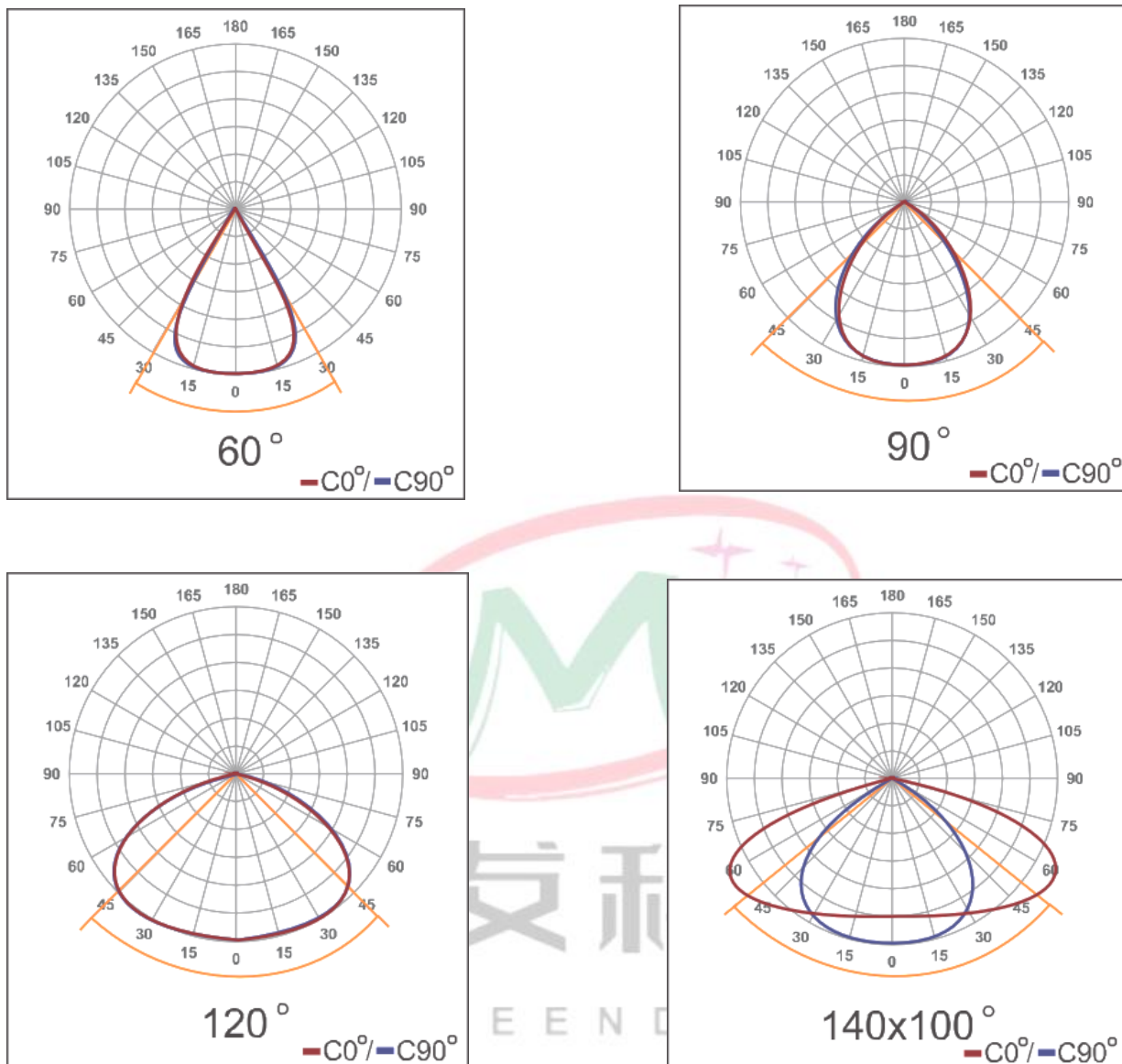


Figure 5. Typical radiation pattern for Queendom LED, $T_j = 25^\circ\text{C}$.

Angle description:

1. Typical angle: 120 degrees,
2. please note other matching angles

Electrical data level description

Table 1. Peak Emission Wavelength Rank Combination

Wavelength Bins

RANK Table 1c. 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
	Green	G5B	555	560	2.5	5
		G6A	560	565	2.5	5
		G6B	565	570	2.5	5
	Yellow	Y1A	570	575	2.5	5
		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
	Red	R3B	635	640	2.5	5
		R4A	640	645	2.5	5
		R4B	645	650	2.5	5

Notes for Table 1:

The tolerance of luminous intensity (Iv) is $\pm 15\%$.

The tolerance of dominant wavelength is $\pm 1\text{nm}$.

This specification is preliminary.

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.

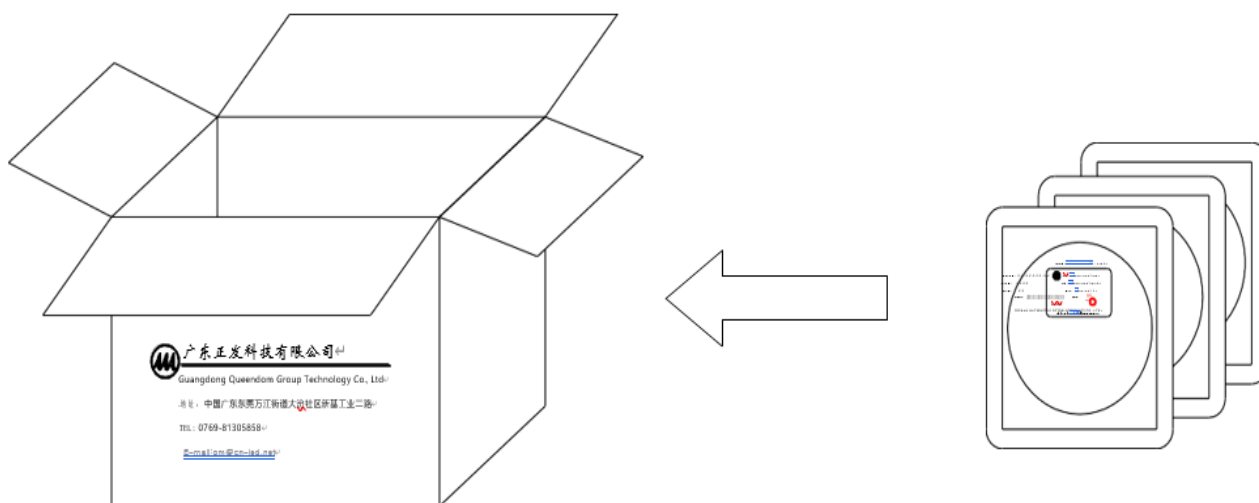
BIN	QUEENDOM FLUX [1] (lm)		RANK FLUX [2] (lm)		TYPICAL FLUX HALF WIDTH
	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM	[3] (lm)
LI	22	24	2	4	4
LJ	24	26	2	4	4
LK	26	28	2	4	4
LL	28	30	2	4	4
LM	30	32	2	4	4
LN	32	34	2	4	4
LO	34	36	2	4	4
LP	36	38	2	4	4
LQ	38	40	2	4	4
LR	45	50	3	5	5
LS	55	60	3	5	5
LT	65	70	3	5	5
LU	75	80	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				

Packaging cartons



Information

- With Stopper



Without Stopper

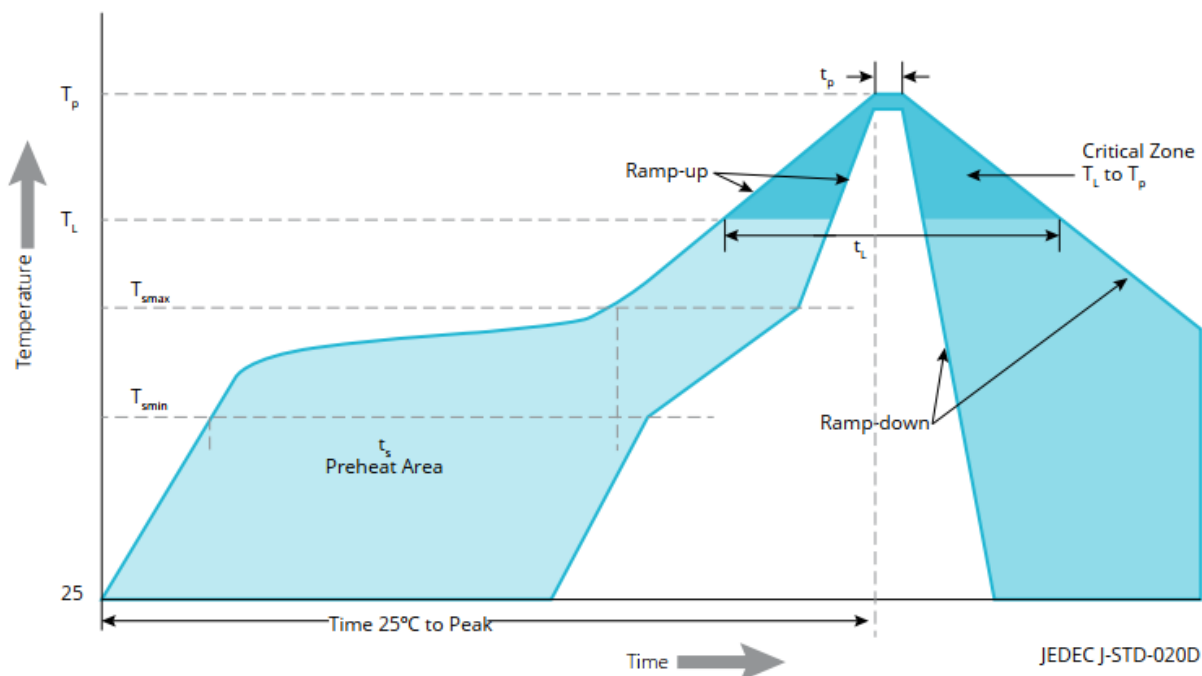
CPN:Customer's Product Number
P/N:Product Number
QTY:Packing Quantity
LOT NO:Lot Number
VF:Forward Voltage Rank
IV:Luminous Intensity Rank
WLD:Dom. Wavelength Rank
BIN:BIN Code
DATE: Date Of Dispatch

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
Reheat 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)	3°C / second maximum
Liquidus Temperature (T_L)	217°C
Time Maintained Above Temperature T_L (t_L)	60 to 150 seconds
Peak / Classification Temperature (T_p)	260°C
Time Within 5°C of Actual Temperature (t_p)	20 to 40 seconds
Ramp-Down Rate (T_p to T_L)	6°C / second maximum
Time 25°C to P	8 minutes maximum

JEDEC Moisture Sensitivity

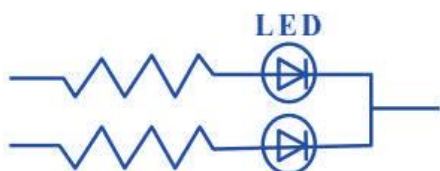
Moisture sensitivity levels for LEDs Line

level	Floor life		soak requirements standard	
	time	conditions	time	conditions
1	Unlimited	$\leq 30^\circ\text{C} / 85\% \text{ RH}$	168 Hours +5 / -0	85°C / 85% RH

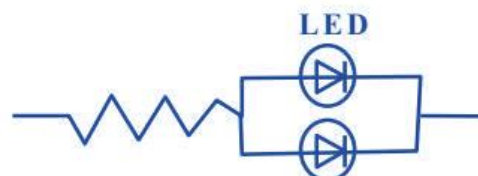
Drive Method

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.