

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

Compliance with EU REACH.within RoHS



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 SMTTOP 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

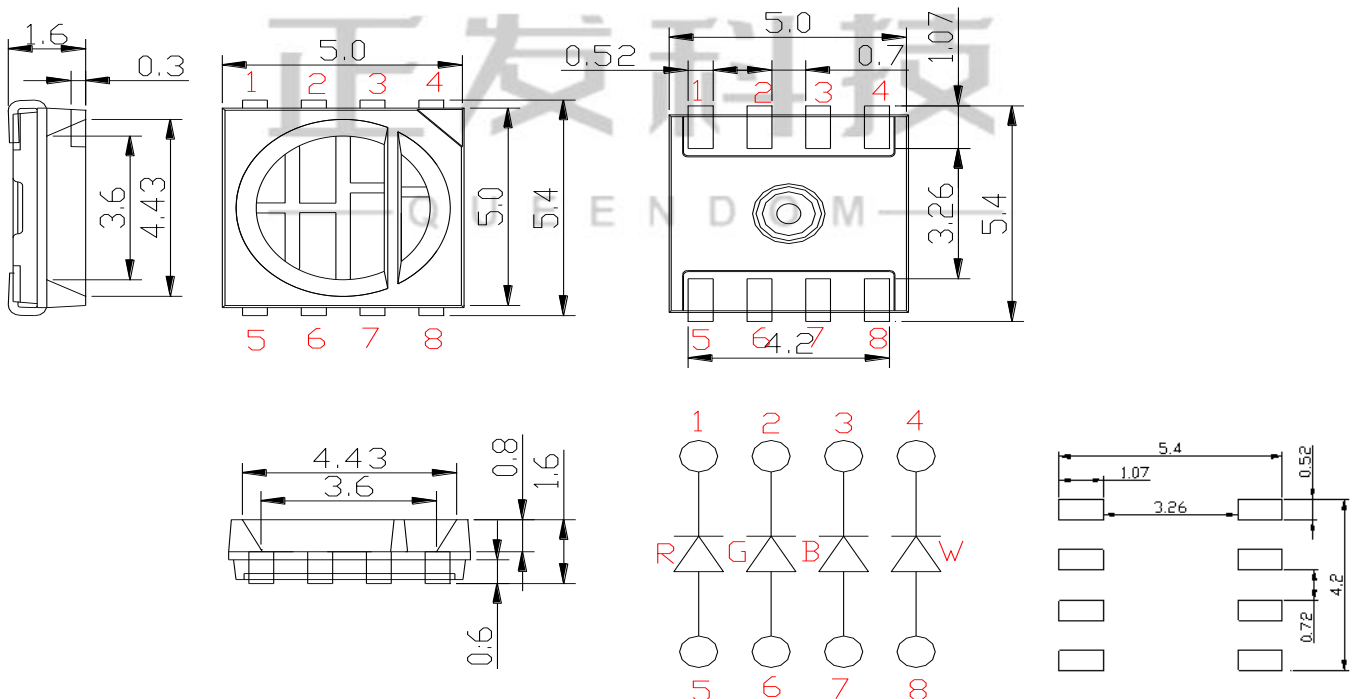
Indoor/outdoor lighting

Industrial equipment.

Consumer Electronics.

Biomedical optics, instrument and equipment testing

Package SIZE: Picture 1



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 & RED	WHITE GREEN BLUE
Parameter PD (mW)	200 mW	200 mW
DC Forward Current [1, 2]	60mA	60mA
Peak Pulsed Forward Current [1, 3]	80mA	100mA
LED Junction Temperature [1] (DC & Pulse)	115°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.

Performance Characteristics & Product Selection Guide

Product Electrical Index & TYPICALWAVELENGTHH

Table 2. Product performance of Queendom Commercial LEDs at specified test conditions, Continued., $T_j=25^{\circ}\text{C}$.

PRODUCT	RANK NO.	DOMINANT WAVELENGTH [1] (nm)		INTENSITY [2] FLUX (lm)		FORWARD VOLTAGE	
		[1] (nm/K)		[2] (LM)		[3] (VF/V)	
		MINIMUM	MAXIMUM	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM
S5050RGBW8	Red	620	630	8	10	1.8	2.4
	Green	520	525	18	20	2.8	3.2
	Blue	460	470	4	6	2.8	3.2
	white	3000	5700	24	30	2.8	3.2

Notes for Table 1:

- Queendom leds maintains a tolerance of $\pm 1\text{nm}$ on dominant wavelength measurements.
- Queendom leds maintains a tolerance of $\pm 10\%$ on luminous intensity measurements.

Optical Characteristics

Table 3 Optical characteristics for QUEENDOM RBW at $T_j=25^{\circ}\text{C}$, 60mA

PRODUCT	COLOR	TYPICAL SPECTRAL HALF-WIDTH [1] (nm)	TYPICAL TEMPERATURE COEFFICIENT OF DOMINANT WAVELENGTH (nm/ $^{\circ}\text{C}$)	TYPICAL VIEWING ANGLE [2]	PART NUMBER
S5050RGBW8	Red	6	0.04	120°	8541401000SL28
	Green	5	0.04	120°	
	Blue	5	0.04	120°	
	white	5	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 $\frac{1}{2}$ of the peak value.

Electrical and Thermal Characteristics

Table 4. Electrical and thermal characteristics for QUEENDOM RGBW at 20mA, $T_j=25^{\circ}\text{C}$.

COLOR	PART NUMBER	FORWARD VOLTAGE [1] (Vf)			TYPICAL TEMPERATURE COEFFICIENT OF FORWARD VOLTAGE [2] (mV/ $^{\circ}\text{C}$)	TYPICAL THERMAL RESISTANCE—JUNCTION TO SOLDER PAD ($^{\circ}\text{C}/\text{W}$)
		MINIMUM	TYPICAL	MAXIMUM		
Red	8541401000SL28	1.8	2	2.4	-1.6	110
Green		2.8	3	3.2	-2.4	150
Blue		2.8	3	3.2	-2.6	130
WHIE		2.8	3	3.2	-2.6	130

- Ratio between temperature difference (junction « case) and electrical input power .
- Ratio between temperature difference (junction « case) and dissipated heat, i.e. emitted light taken into account
- Measured between 25°C and 85°C .
- Typical performance represents the average long term performance and may not be reflected in individual batches

特性曲线 Characteristic Curves

光谱功率分布特性 Spectral Power Distribution Characteristic

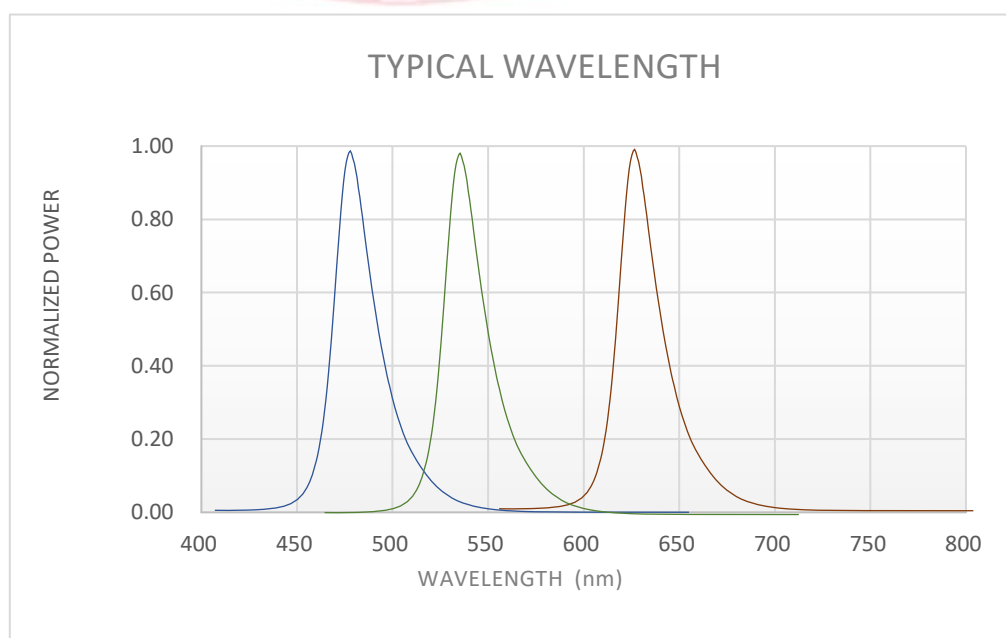
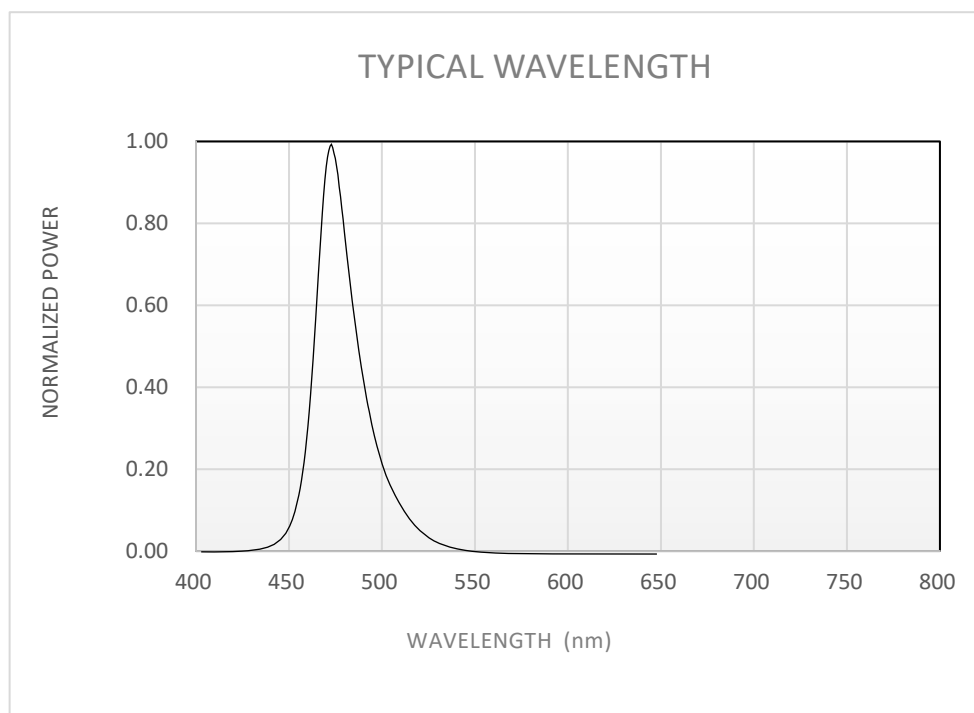


Figure 1. Typical normalized light output vs. junction temperature for at specified test current. $T_j=25^{\circ}\text{C}$

Light Output Characteristics

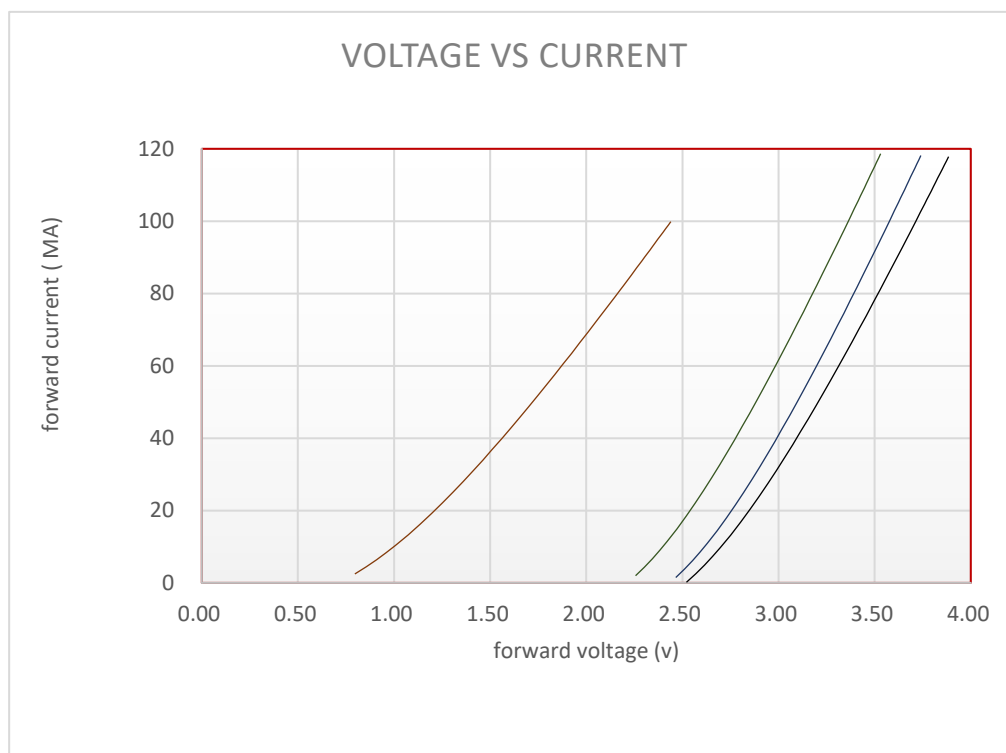


Figure 2. Typical forward current vs. forward voltage for R Tj=25°C.

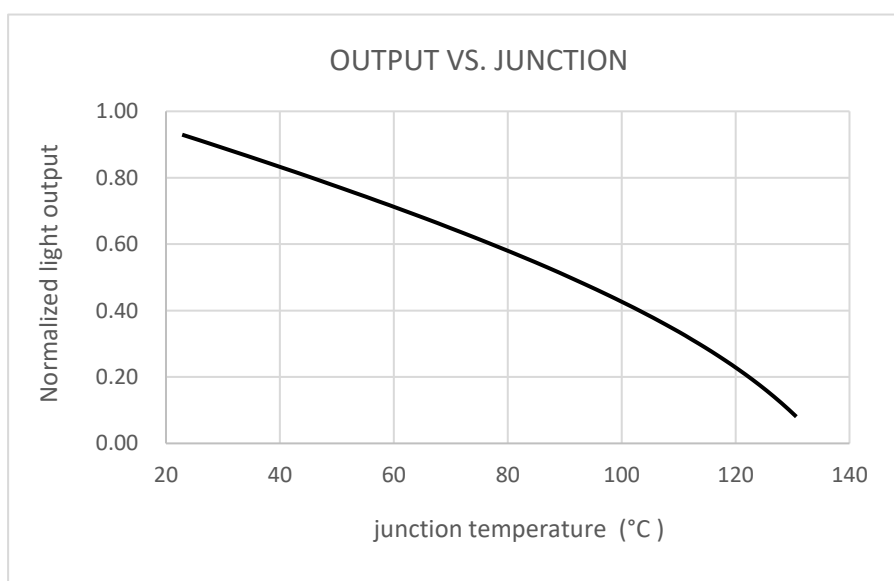


Figure 3. Typical normalized light output vs. junction temperature for at test current.

Radiation Pattern Characteristics

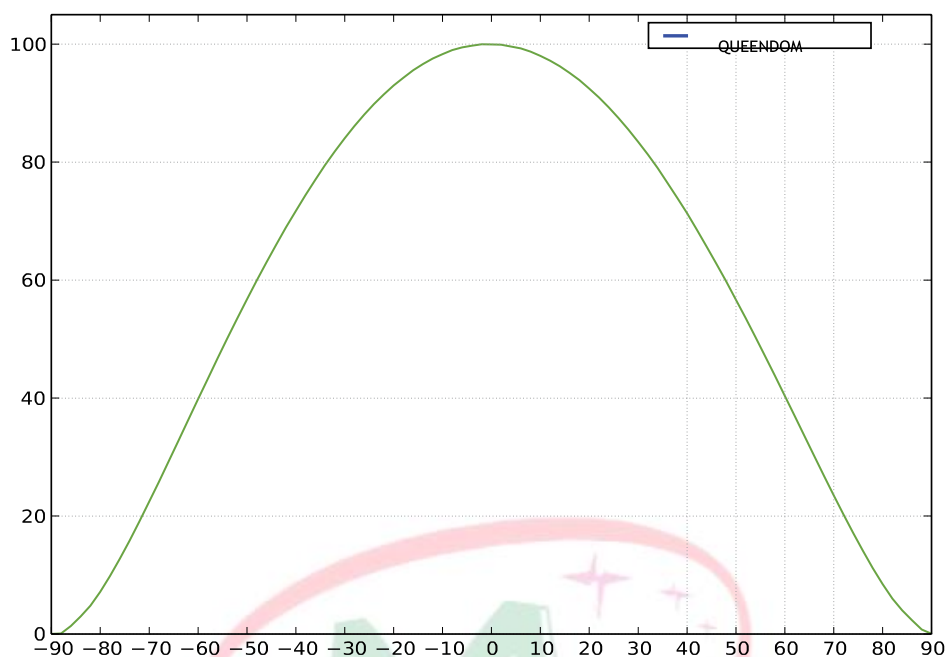


Figure 4. Typical radiation pattern for Queendom LED, $T_j=25^{\circ}\text{C}$.

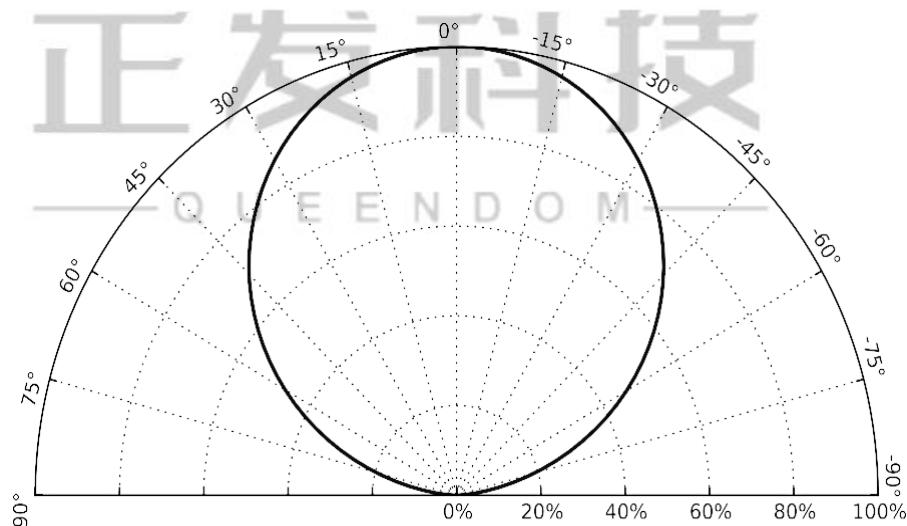


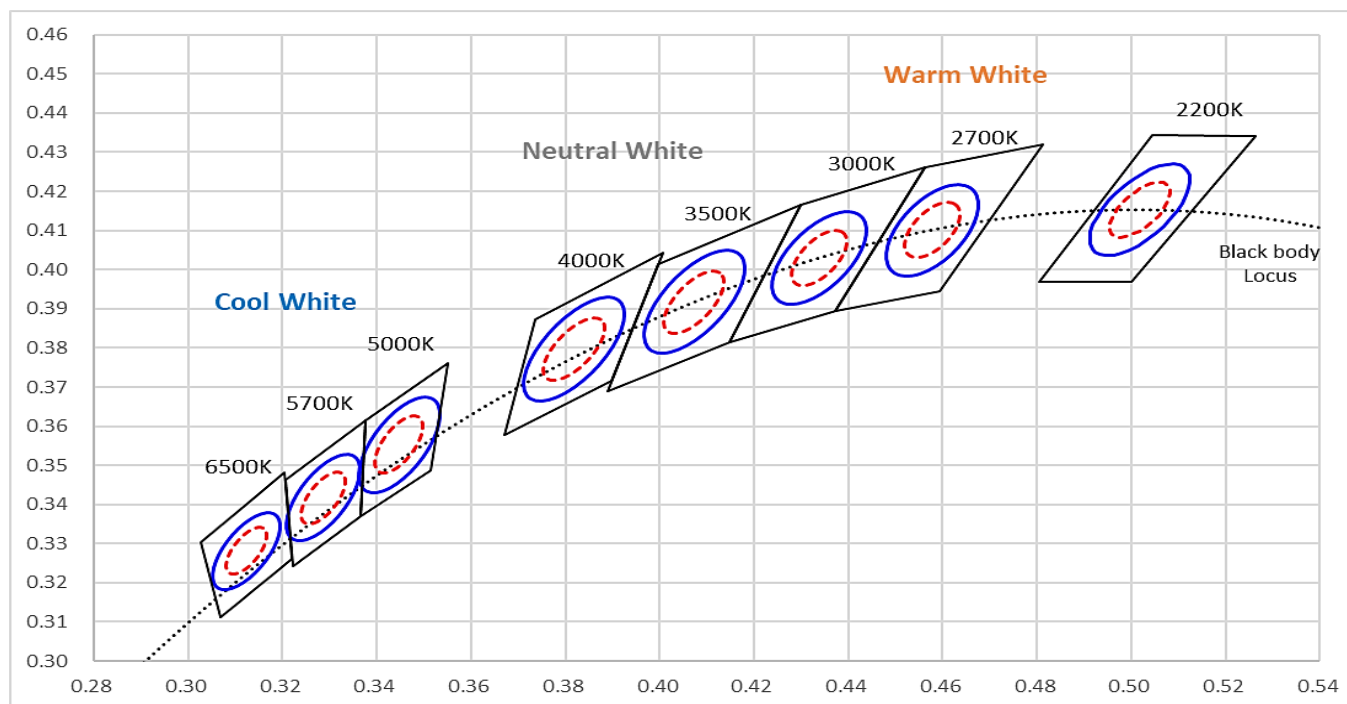
Figure 5. Typical polar radiation pattern for all at test current, $T_j T_j=25^{\circ}\text{C}$.

Chromaticity Region & Coordinates

Figure 1a. Typical normalized power vs. wavelength for QUEENDOM LEDs, T_j=25 °C.

Region	CIE x	CIE y	Region	CIE x	CIE y
P rank (6500 K)					
P1	0.3068	0.3113	P9	0.3048	0.3207
	0.3106	0.315		0.3089	0.3249
	0.3098	0.3199		0.308	0.3298
	0.3058	0.316		0.3038	0.3256
P2	0.3106	0.315	PA	0.3089	0.3249
	0.3144	0.3186		0.313	0.329
	0.3137	0.3238		0.3123	0.3341
	0.3098	0.3199		0.308	0.3298
P3	0.3144	0.3186	PB	0.313	0.329
	0.3183	0.3224		0.3172	0.3332
	0.3177	0.3278		0.3166	0.3384
	0.3137	0.3238		0.3123	0.3341
P4	0.3183	0.3224	PC	0.3172	0.3332
	0.3221	0.3261		0.3214	0.3373
	0.3218	0.3317		0.321	0.3427
	0.3177	0.3278		0.3166	0.3384
P5	0.3058	0.316	PD	0.3038	0.3256
	0.3098	0.3199		0.308	0.3298
	0.3089	0.3249		0.3072	0.3348
	0.3048	0.3207		0.3028	0.3304
P6	0.3098	0.3199	PE	0.308	0.3298
	0.3137	0.3238		0.3123	0.3341
	0.313	0.329		0.3115	0.3391
	0.3089	0.3249		0.3072	0.3348
P7	0.3137	0.3238	PF	0.3123	0.3341
	0.3177	0.3278		0.3166	0.3384
	0.3172	0.3332		0.316	0.3436
	0.313	0.329		0.3115	0.3391
P8	0.3177	0.3278	PG	0.3166	0.3384
	0.3218	0.3317		0.321	0.3427
	0.3214	0.3373		0.3206	0.3481
	0.3172	0.3332		0.316	0.3436

Dominant Wavelength Bins



RANK Table 1b. 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 (I_v) is $\pm 15\%$.
2. The tolerance of dominant wavelength is $\pm 1\text{nm}$.
3. This specification is preliminary.
4. This specification is a standard specification of our factory, can make in accordance with customer's special requirement

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
		Y1A	570	575	2.5	5
	Yellow	Y1B	575	580	2.5	5
		Y2A	580	585	2.5	5
		A0A	600	605	2.5	5
		A0B	605	610	2.5	5
	Orange	R1A	610	615	2.5	5
		R1V	615	619	2.5	5
		R2A	619	624	2.5	5
		R2B	624	627	2.5	5
	Red	R2C	627	630	2.5	5
		R3A	630	635	2.5	5
		R3B	635	640	2.5	5
		R4A	640	645	2.5	5
	Red	R4B	645	650	2.5	5

Notes for Table 1:

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

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

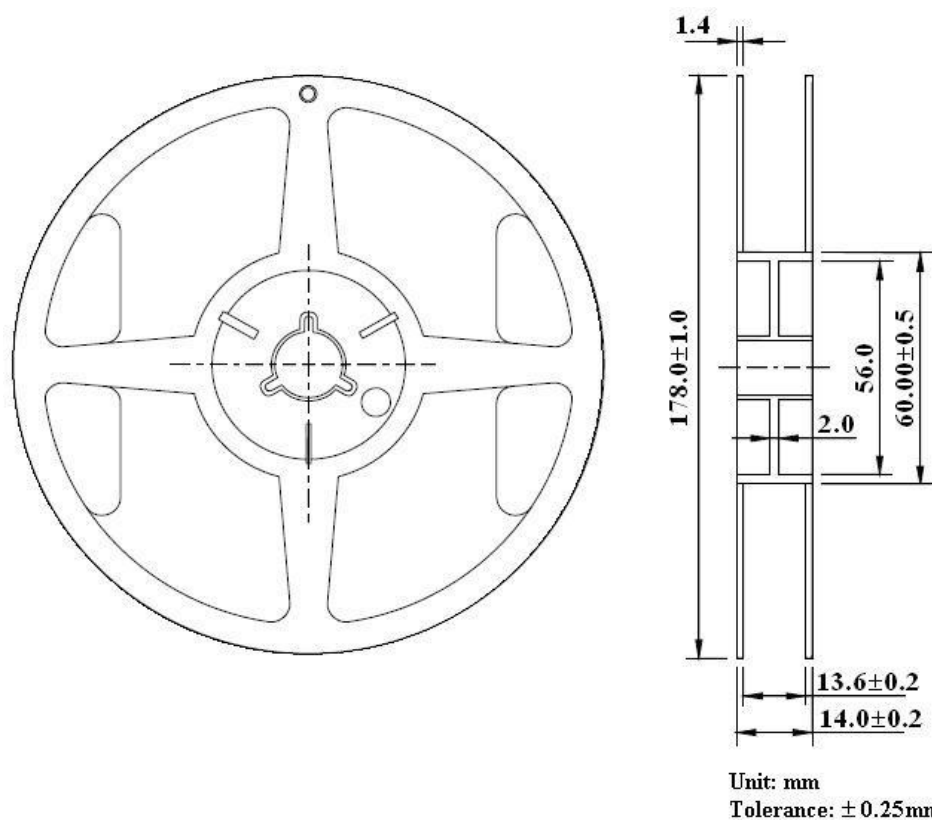
TABLE Forward Voltage BINS

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

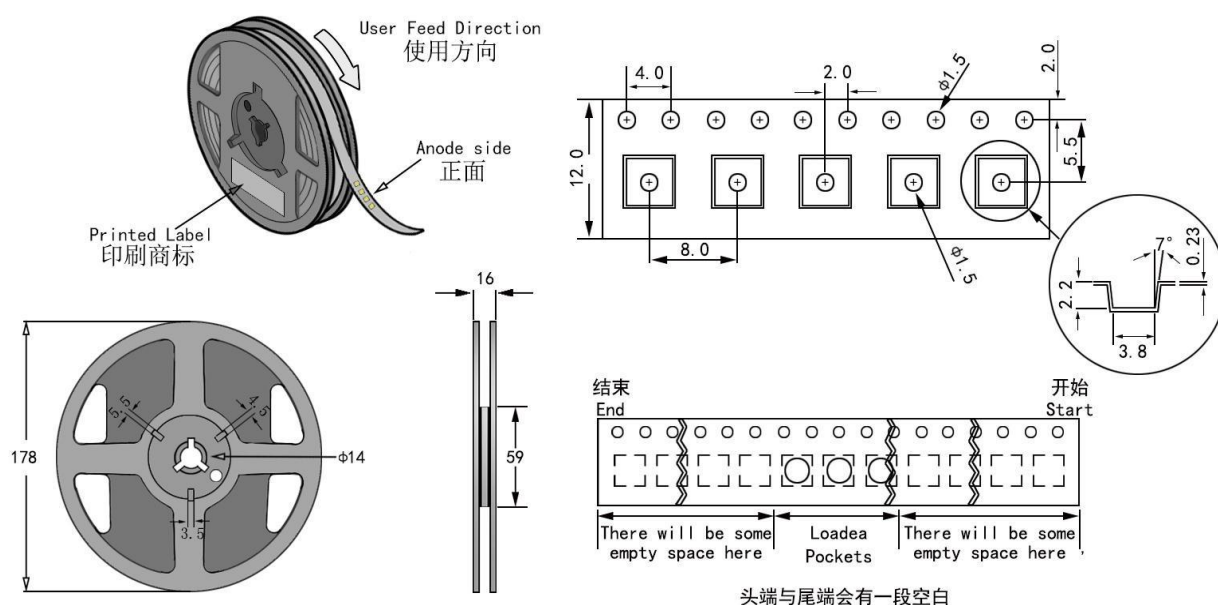
NUMBER	FORWARD VOLTAGE [1] (Vf)			RANK WAVELENGTH [2] (Vf)		TYPICAL VOLTAGE HALF WIDTH
	MINIMUM	TYPICAL	MAXIMUM	MINIMUM	MAXIMUM	[3] (Vf)
V5	2.6	2.8	3	0.1	0.2	0.2
V6	3	3.2	3.4	0.1	0.2	0.2
V7	3.4	3.6	3.8	0.1	0.2	0.2
V8	3.8	4	4.2	0.1	0.2	0.2
V9	4.2	4.4	4.6	0.1	0.2	0.2
VA	4.6	4.8	5	0.1	0.2	0.2
VB	5	5.2	5.4	0.1	0.2	0.2
VC	5.4	5.6	5.8	0.1	0.2	0.2
VD	5.8	6				

Packaging Information

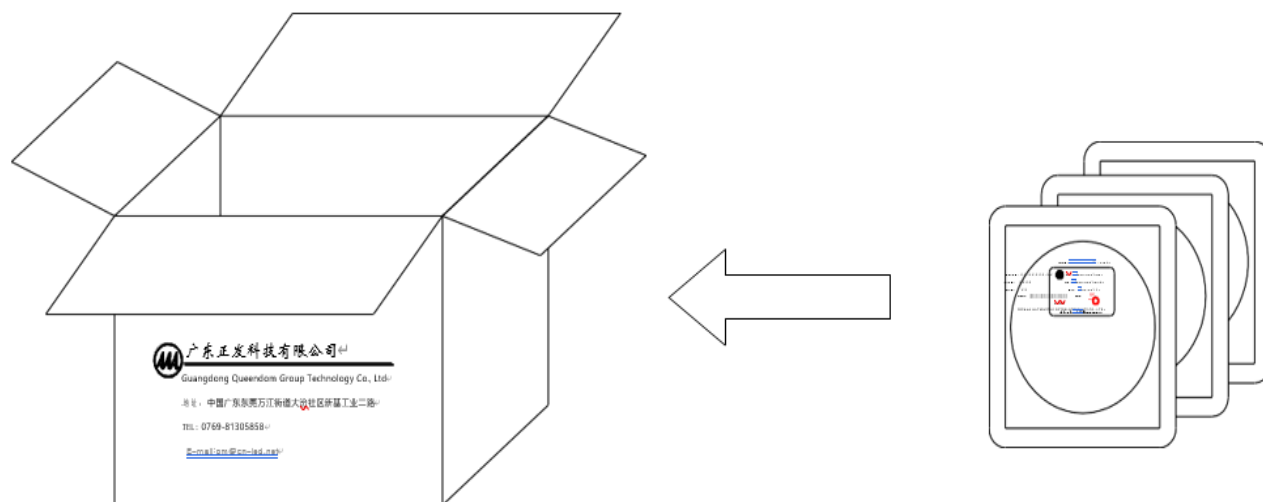
Reel Dimensions:



Carrier Tape Dimensions:



Packaging cartons



Information

- With Stopper



Without Stopper

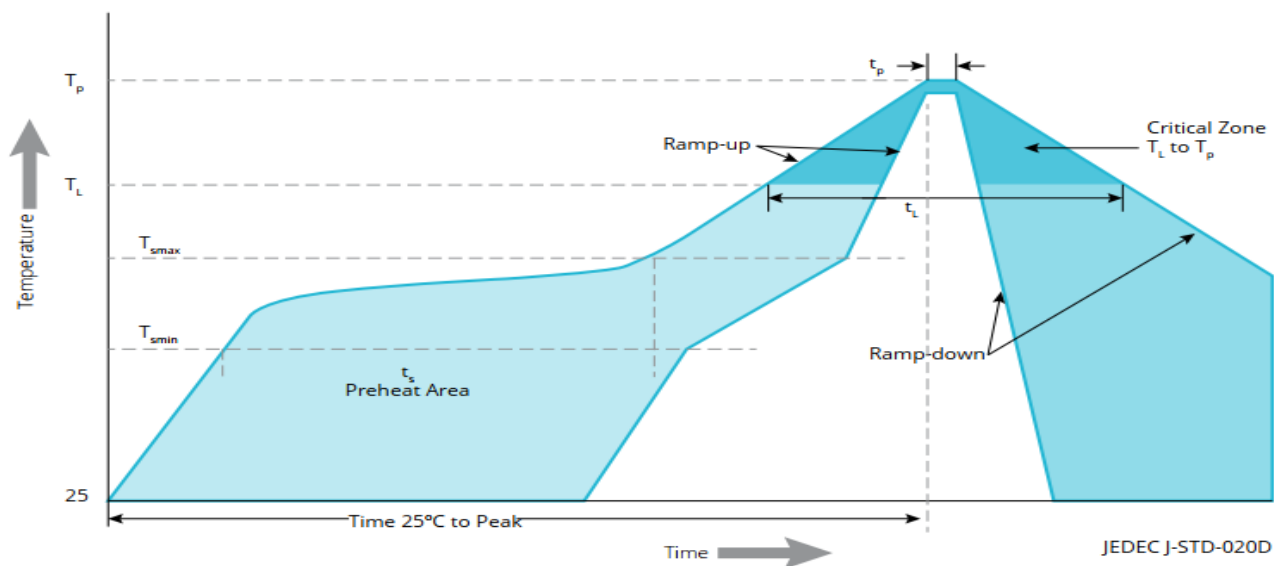
CPN:Customer's Product Number
P/N:Product Number
QTY:Packing Quantity
LOT NO:Lot Number
VF:Forward Voltage Rank
IV:Luminous Intensity Rank
WLD:Dom. Wavelength Rank
BIN:BIN Code
DATE: Date Of Dispatch

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

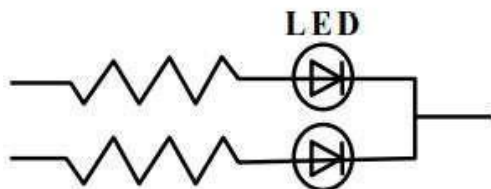
Moisture sensitivity levels for LEDs Line

level	Floor life		soak requirements standard	
	time	conditions	time	conditions
1	Unlimited	≤30°C / 85% RH	168 Hours +5 / -0	85°C / 85% RH

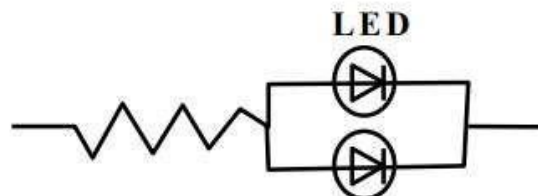
Drive Method

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.