



**QUEENDOM**

**SMD High Power LED (high power white LEDs) - NO: H2- 8541401000HP04  
SPECIFICATION FOR APPROVALFOR APPROVAL**

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**HPW\*\*\*LEDs & high power white LEDs**



**QUEENDOM**

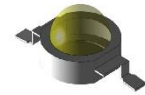
**Guangdong Queendom Group Technology Co., Ltd.**

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**Features:**

- Emission color: InGaN AlGaInP
- Lens appearance: yellow diffuse
- Multi-color type.
- Applicable to all SMT assembly methods.
- Compatible with infrared and vapor phase reflow soldering processes.
- Compatible with automatic placement equipment.



**Descriptions:**

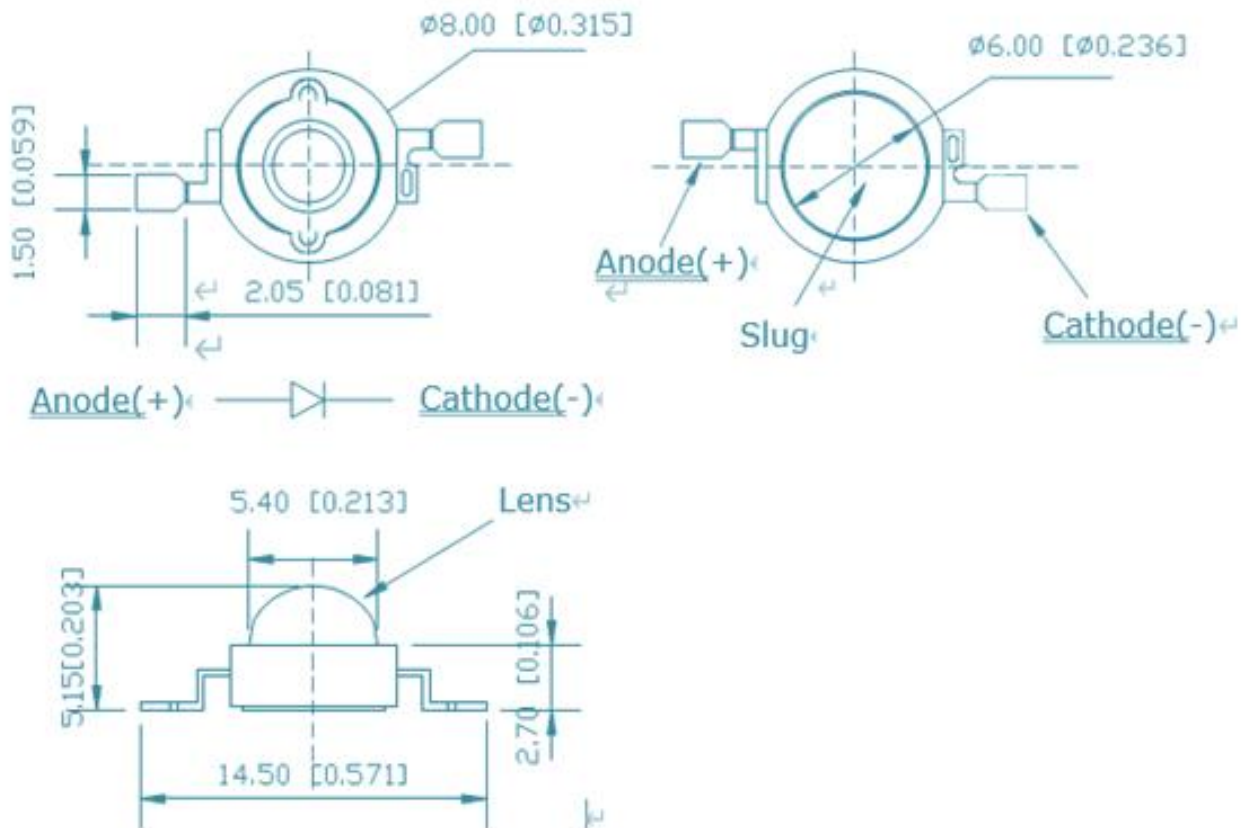
high power package that provides high luminance from a super robust package to enable cost effective and reliable fixture, high power white uses an industry standard high power white surface mount package with a fairly small Light Emitting Surface (LES). Queendom high power white comes in 70CRI, 80CRI and 90CRI with a wide range of CCTs, 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 1



**Notes:**

- All dimensions are in millimeters (inches).
- Tolerance is  $\pm 0.25$  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)	≤3W (3W/CHIP)
DC Forward Current [1, 2]	350mA PW**WE
	700mA PW *WF
Peak Pulsed Forward Current [1, 3]	400mA PW**WE
	850mA PW *WF
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:

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.
- 4.

## Performance Characteristics & Product Selection Guide

Table 2 . Product performance of Queendom high power white at rated current, T<sub>j</sub>=25°C .

PRODUCT	RANK NO.	TYPICAL NOMINAL [1] CCT/K	MINIMUM CRI [2] Ra	FORWARD VOLTAGE		TYPICAL FLUX		MINIMUM EFFICACY (lm/W)	TYPICAL	TEST CURRENT (mA)
				[ 3] (VF/V)		[4] (lm)			DEG	
				MINIMUM	MAXIMUM	MINIMUM	MAXIMUM		2Θ 1/2	
PWY2WE	HP0401	2700K	80	2.8	3.2	100	160	130	120	300
PWV2WE	HP0402	3000K	80	2.8	3.2	100	160	130	120	300
PWU2WE	HP0403	3500K	80	2.8	3.2	100	160	130	120	300
PWT2WE	HP0404	4000K	80	2.8	3.2	100	160	130	120	300
PWR2WE	HP0405	5000K	80	2.8	3.2	100	160	130	120	300
PWQ2WE	HP0406	5700K	80	2.8	3.2	100	160	130	120	300
PWP2WE	HP0407	6500K	80	2.8	3.2	100	160	130	120	300
PWD2WE	HP0408	7600K	80	2.8	3.2	100	160	130	120	300
PWY2WF	HP0409	2700K	80	2.8	3.2	190	240	130	120	700
PWV2WF	HP0410	3000K	80	2.8	3.2	190	240	130	120	700
PWU2WF	HP0411	3500K	80	2.8	3.2	190	240	130	120	700
PWT2WF	HP0412	4000K	80	2.8	3.2	190	240	130	120	700
PWR2WF	HP0413	5000K	80	2.8	3.2	190	240	130	120	700
PWQ2WF	HP0414	5700K	80	2.8	3.2	190	240	130	120	700
PWP2WF	HP0415	6500K	80	2.8	3.2	190	240	130	120	700
PWD2WF	HP0416	7600K	80	2.8	3.2	190	240	130	120	700

### Product model code corresponding SKU table

Table 3 . Product performance of Queendom high power white at rated current,  $T_j=25^{\circ}\text{C}$  .

PRODUCT	RANK NO.	TYPICAL NOMINAL	PART NUMBER
		[1] CCT/K	
PWY2WE	HP0401	2700K	8541401000HP0401
PWV2WE	HP0402	3000K	8541401000HP0402
PWU2WE	HP0403	3500K	8541401000HP0403
PWT2WE	HP0404	4000K	8541401000HP0404
PWR2WE	HP0405	5000K	8541401000HP0405
PWQ2WE	HP0406	5700K	8541401000HP0406
PWP2WE	HP0407	6500K	8541401000HP0407
PWD2WE	HP0408	7600K	8541401000HP0408
PWY2WF	HP0409	2700K	8541401000HP0409
PWV2WF	HP0410	3000K	8541401000HP0410
PWU2WF	HP0411	3500K	8541401000HP0411
PWT2WF	HP0412	4000K	8541401000HP0412
PWR2WF	HP0413	5000K	8541401000HP0413
PWQ2WF	HP0414	5700K	8541401000HP0414
PWP2WF	HP0415	6500K	8541401000HP0415
PWD2WF	HP0416	7600K	8541401000HP0416

### Electrical and Thermal Characteristics

Table 4 Product performance of Queendom high power white at rated current,  $T_j=25^{\circ}\text{C}$  .

PRODUCT	COLOR	TYPICAL SPECTRAL HALF-WIDTH [1] (K)	TYPICAL TEMPERATURE COEFFICIENT OF DOMINANT WAVELENGTH (nm/°C)	TYPICAL VIEWING ANGLE [2]	PART NUMBER
HPW***LEDs	2700K	50	-2	120°	8541401000HP04
	3000K	100	-2	120°	
	3500K	100	-2	120°	
	4000K	120	-2	120°	
	5000K	120	-2	120°	
	5700K	150	-2	120°	
	6500K	249	-2	120°	
	7600K	300	-2	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 1/2 of the peak value.

### Electrical and Thermal Characteristics

Table 5. Product performance of Queendom high power white at rated current,  $T_j=25^{\circ}\text{C}$  .

Product	COLOR	FORWARD VOLTAGE [1] (Vf)			TYPICAL TEMPERATURE COEFFICIENT OF FORWARD VOLTAGE [2] (mV/°C)	TYPICAL THERMAL RESISTANCE— JUNCTION TO SOLDER PAD (°C/W)
		MINIMUM	TYPICAL	MAXIMUM		
HPW*****WE	white	2.80	3.00	3.20	-2.4	120
HPW*****WF	white	2.80	3.00	3.20	-2.4	120

## Electrical and Thermal Characteristics

Table 6 . Product performance of Queendom high power white at rated current,  $T_j=25^{\circ}\text{C}$  .

PRODUCT	TYPICAL NOMINAL	TYPICAL FLUX		MINIMUM EFFICACY	TEST CURRENT
		[4] (lm)			
	[1] CCT/K	MINIMUM	MAXIMUM	(lm/W)	(mA)
PWY2WE	2700K	100	160	130	300
PWV2WE	3000K	100	160	130	300
PWU2WE	3500K	100	160	130	300
PWT2WE	4000K	100	160	130	300
PWR2WE	5000K	100	160	130	300
PWQ2WE	5700K	100	160	130	300
PWP2WE	6500K	100	160	130	300
PWD2WE	7600K	100	160	130	300
PWY2WF	2700K	190	240	130	700
PWV2WF	3000K	190	240	130	700
PWU2WF	3500K	190	240	130	700
PWT2WF	4000K	190	240	130	700
PWR2WF	5000K	190	240	130	700
PWQ2WF	5700K	190	240	130	700
PWP2WF	6500K	190	240	130	700
PWD2WF	7600K	190	240	130	700

Notes for Table 1: continued on next page

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.

Correlated color temperature is hot targeted at  $T_j=85^{\circ}\text{C}$ .

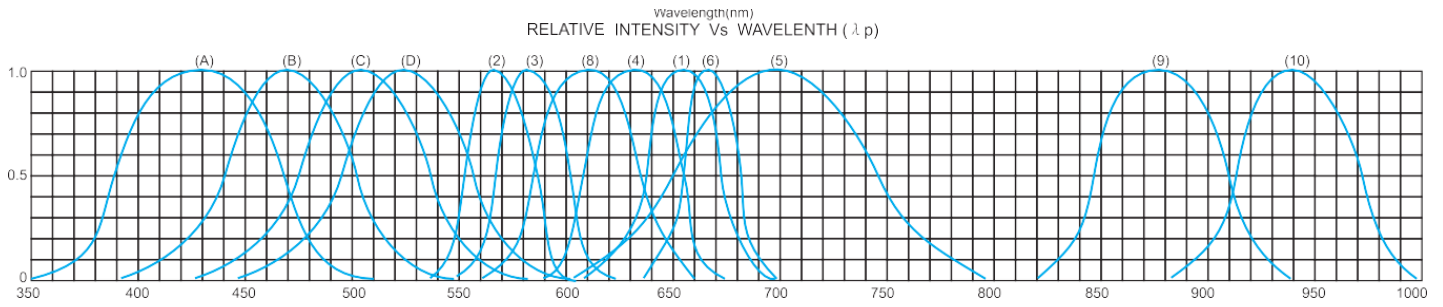
Queendom flux and CRI are based upon mounted package on highly reflective surface at  $T_j=25^{\circ}\text{C}$ . Typical CRI is approximately 2 points higher than the minimum CRI specified, but this is not guaranteed.

Queendom maintains a tolerance of  $\pm 2$  on CRI and  $\pm 7\%$  on luminous flux measurements.

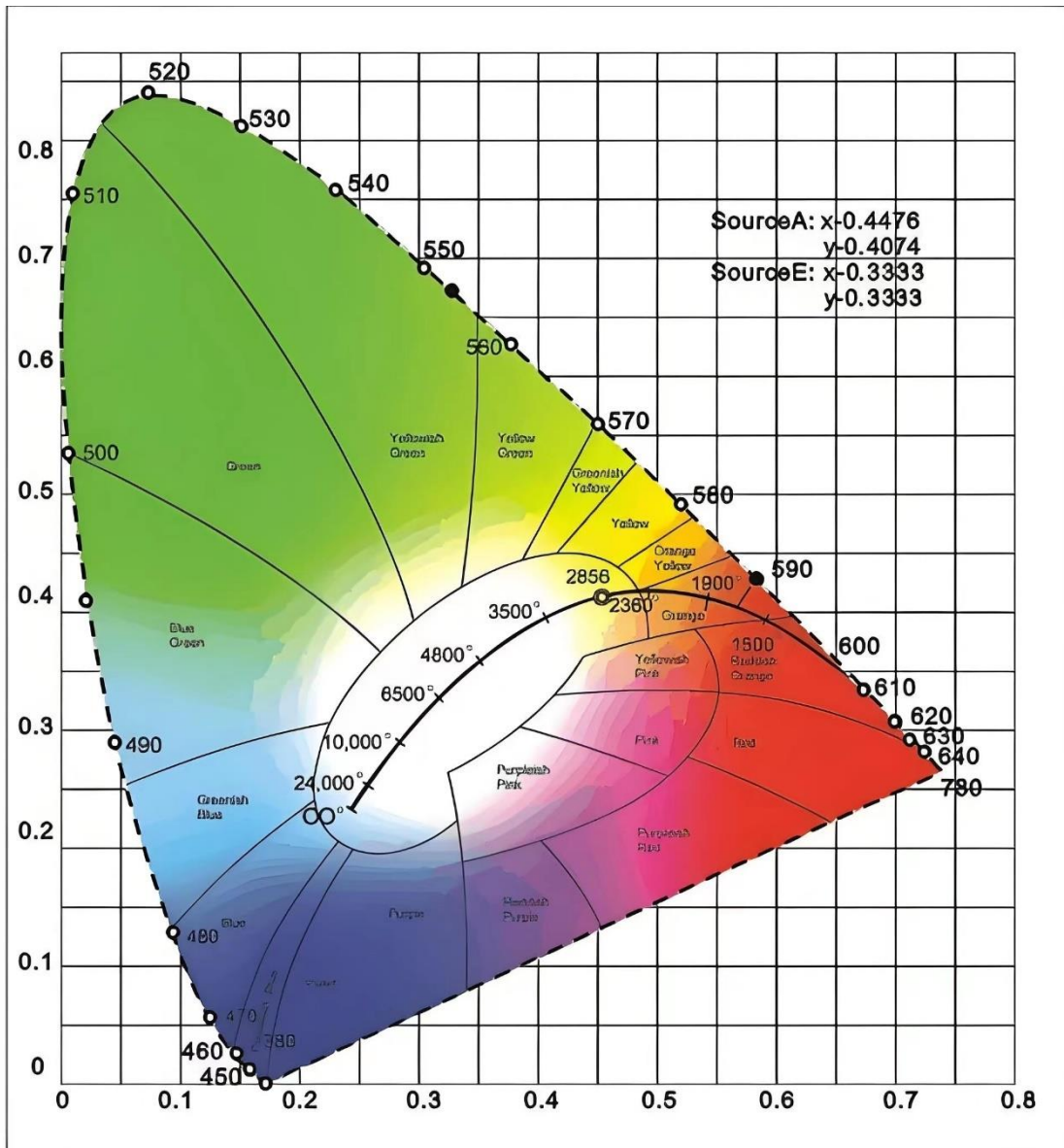
# Characteristic Curves

## Spectral Power Distribution Characteristics

Figure 1. Typical wavelength for QUEENDOM LEDs, T<sub>j</sub>=25 °C.

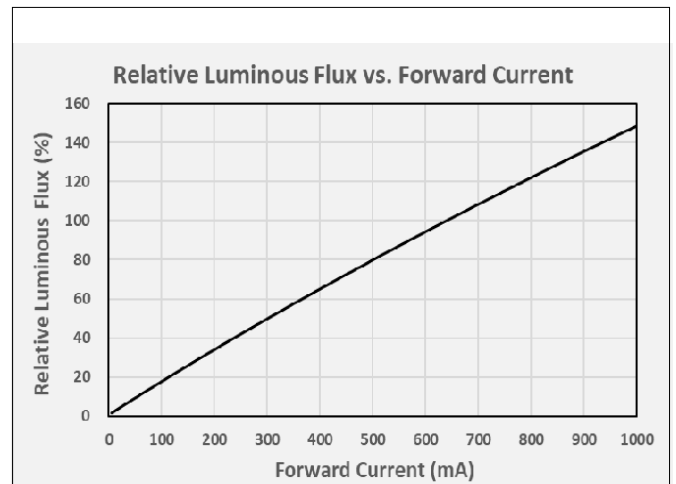
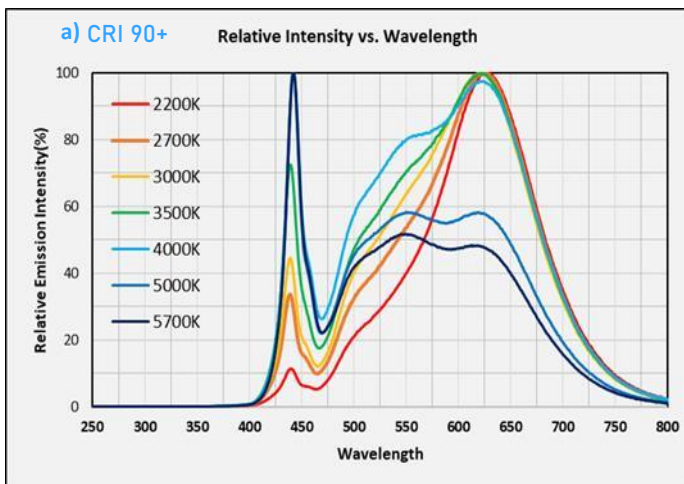
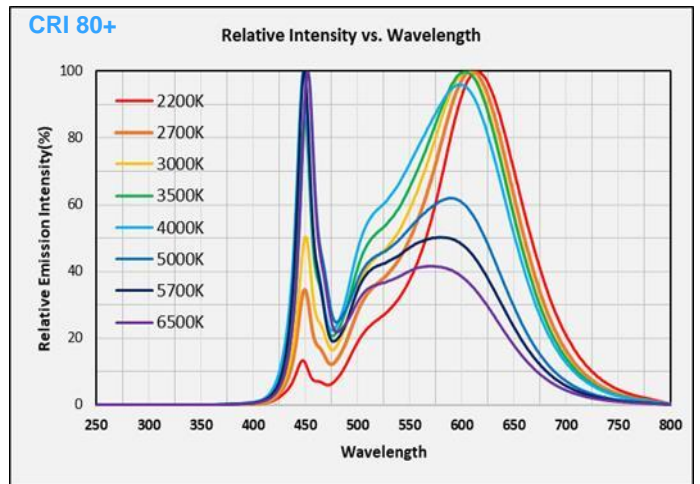
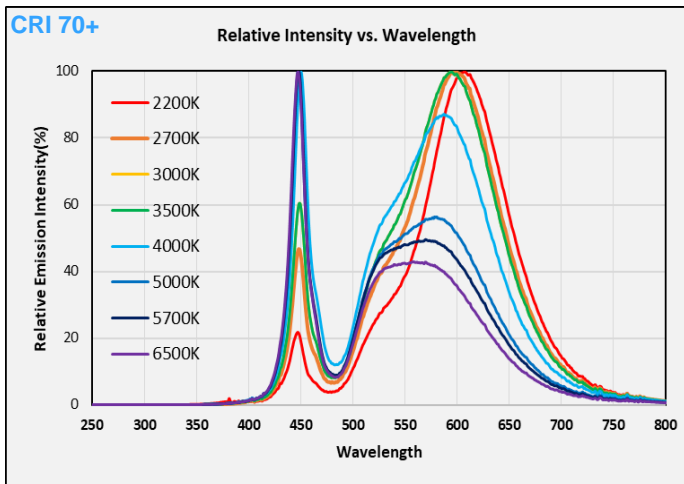
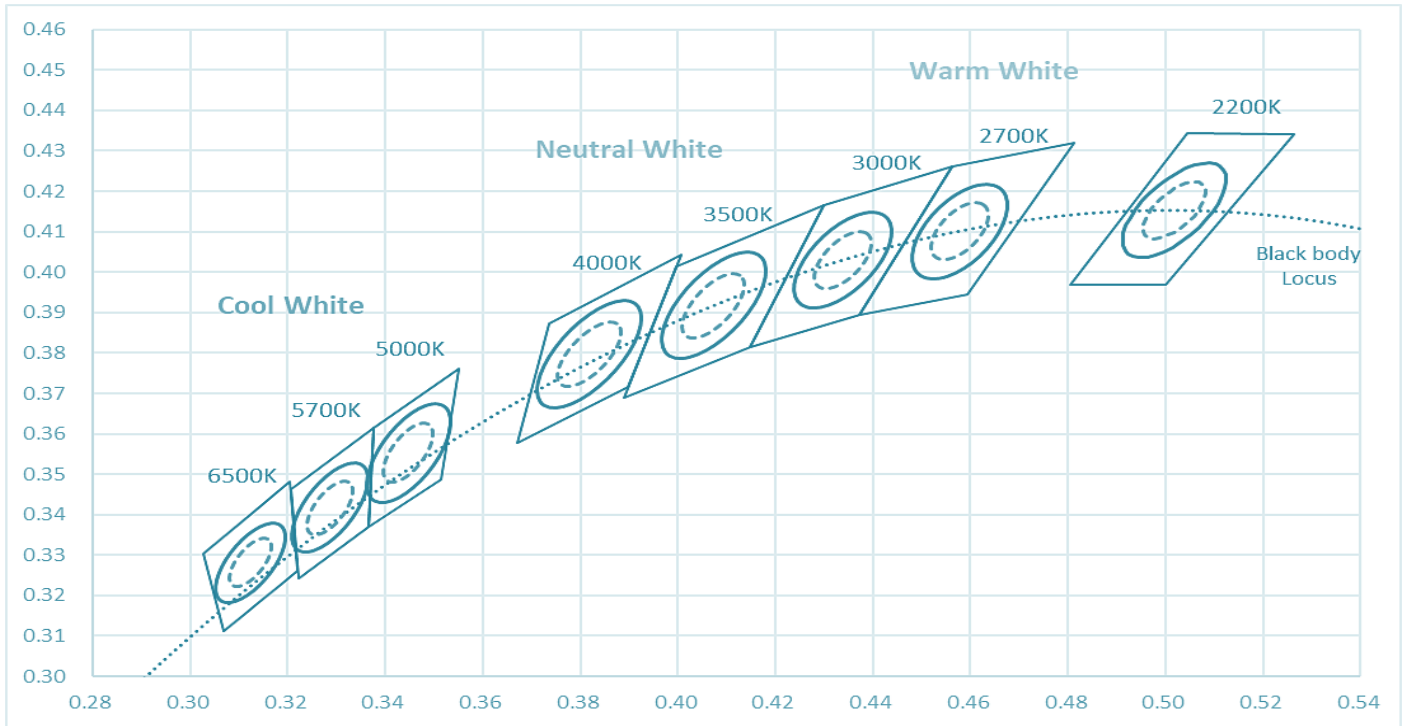


- |  |                                   |
|--|-----------------------------------|
| (1) wGaAsP/GaAs 655nm/Red                | (8) GaAlAs 880nm                  |
| (2) wGaP 568nm/Yellow Green              | (9) GaAs/GaAs & GaAlAs/GaAs 940nm |
| (3) wGaAsP/GaP 585nm/Yellow              | (A) GaN/SiC 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           |                                   |

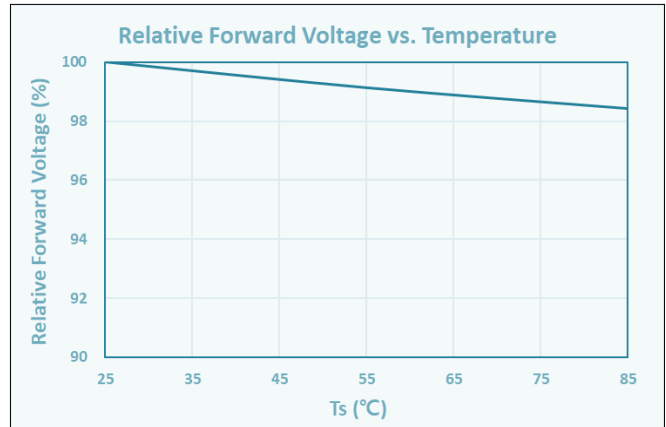
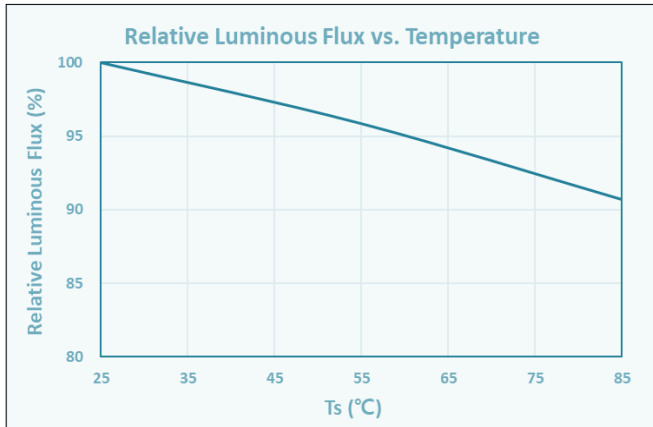


Characteristic Curves & Spectral Power Distribution Characteristics

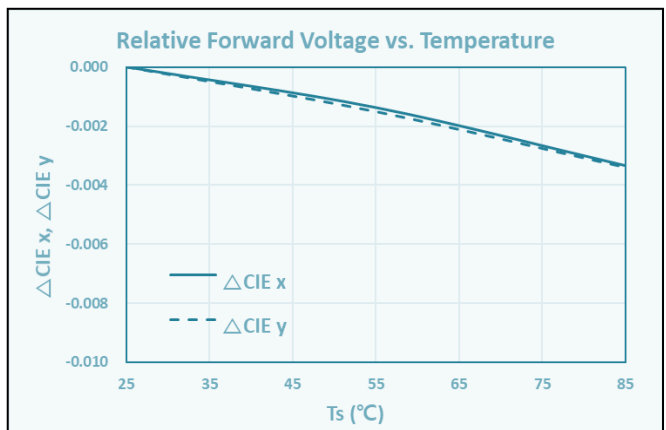
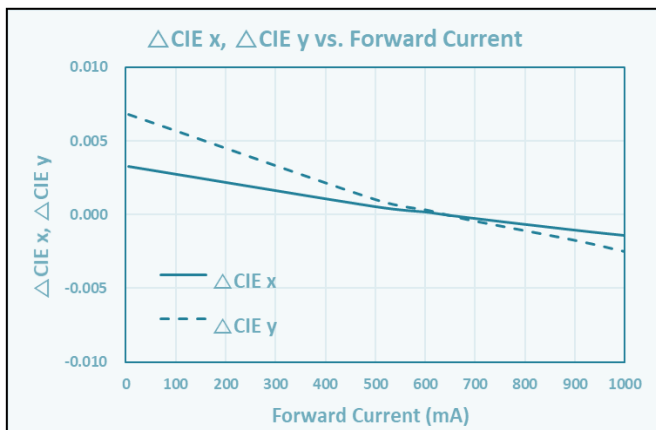
Typical Electrical / Optical Characteristics Curves (25°C Ambient Temperature Unless Otherwise Noted)



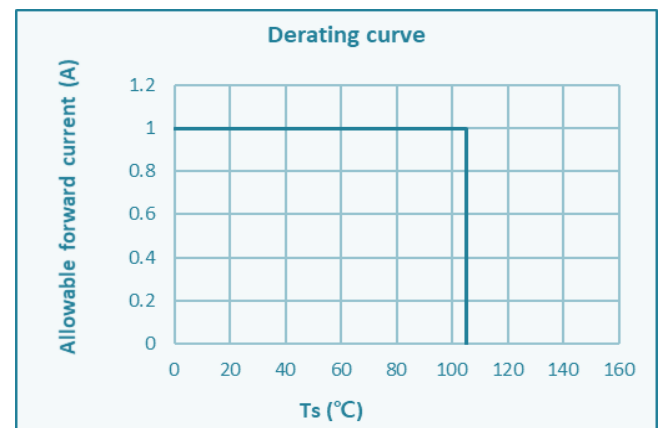
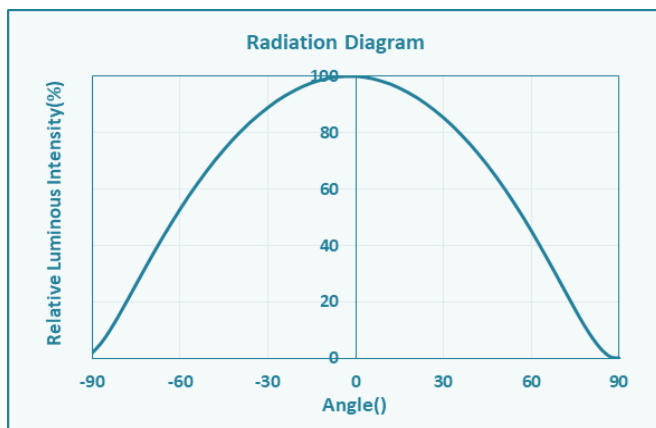
C) Temperature Characteristics (25°C Ambient Temperature Unless Otherwise Noted)



D) Color Shift Characteristics (25°C Ambient Temperature Unless Otherwise Noted)



E) Beam Angle Characteristics (IF = 350 mA, Tj = 25°C)



## Light Output Characteristics

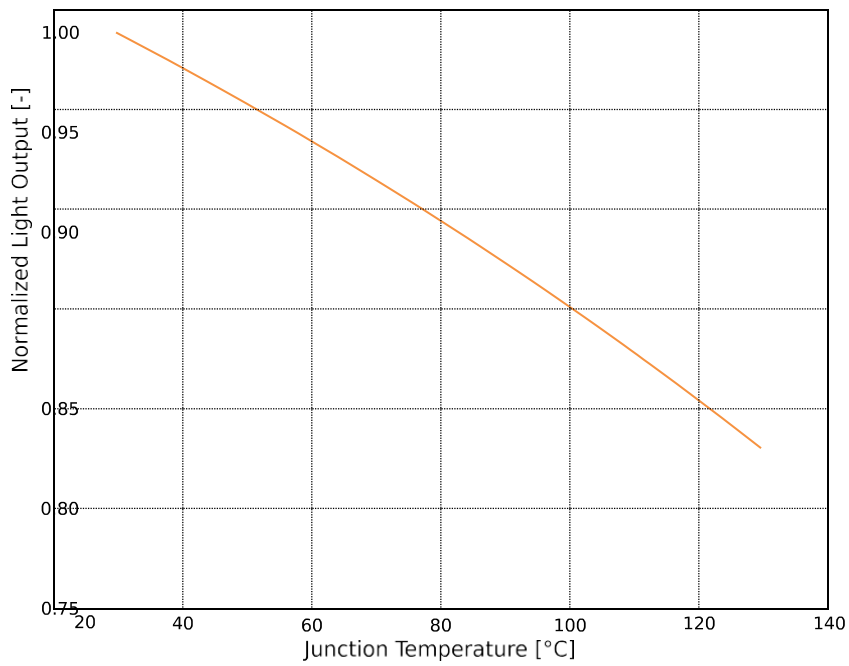


Figure 1. Typical normalized light output vs. junction temperature for at specified test current.  $T_j=25^{\circ}\text{C}$  .

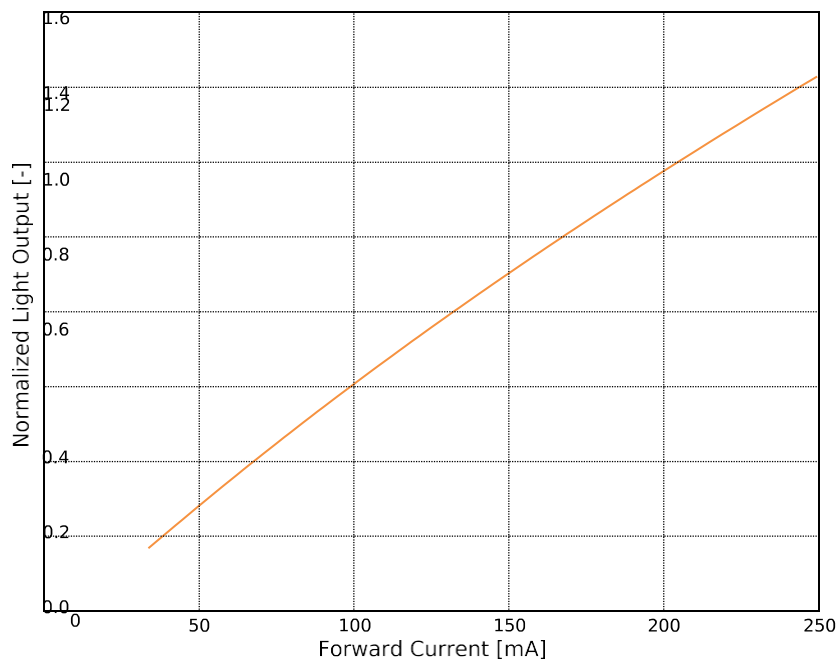


Figure 2. Typical normalized light output vs. junction temperature for at specified test current.  $T_j=25^{\circ}\text{C}$  .

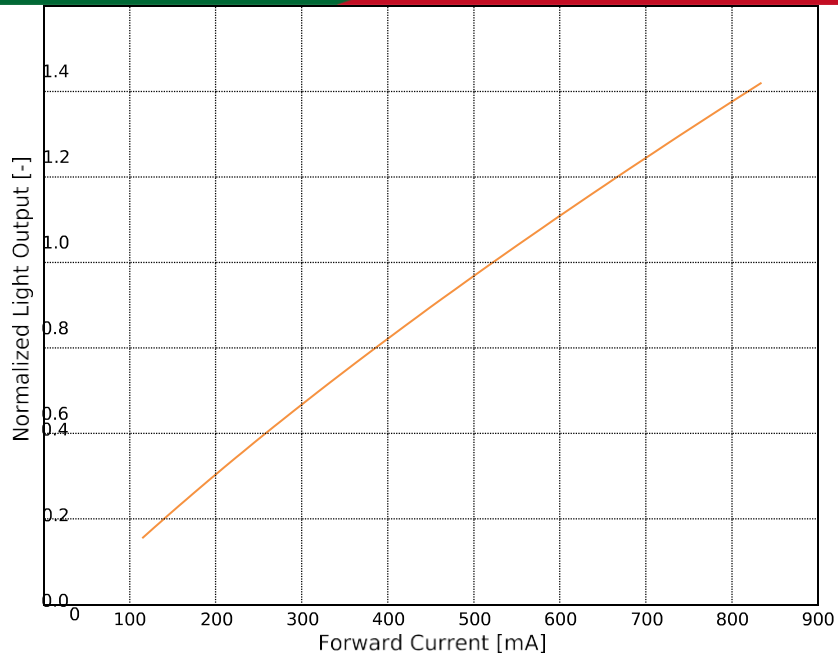


Figure 3. Typical normalized light output vs. junction temperature for at specified test current.  $T_j=25^{\circ}\text{C}$ .

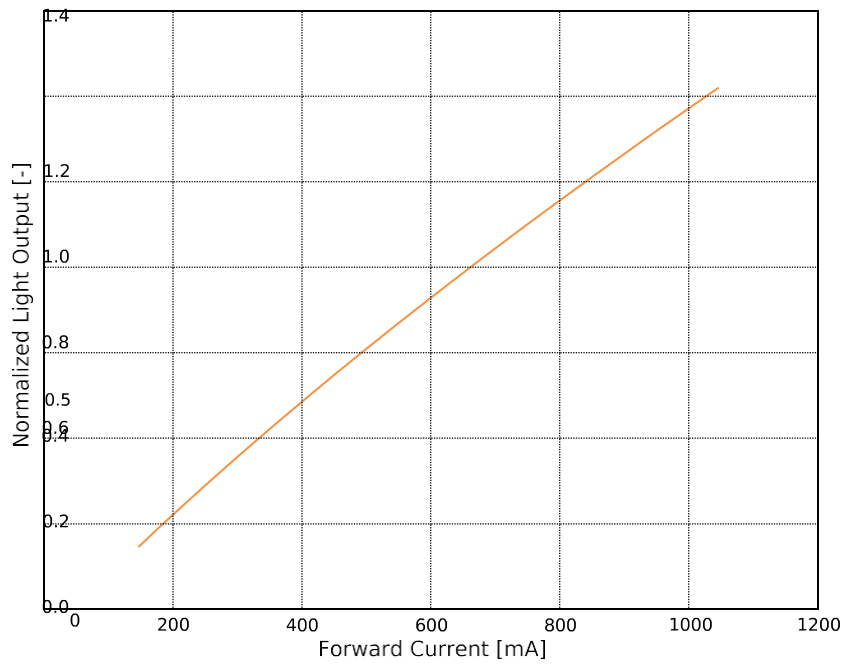


Figure 4. Typical normalized light output vs. junction temperature for at specified test current.  $T_j=25^{\circ}\text{C}$ .

## Radiation Pattern Characteristics

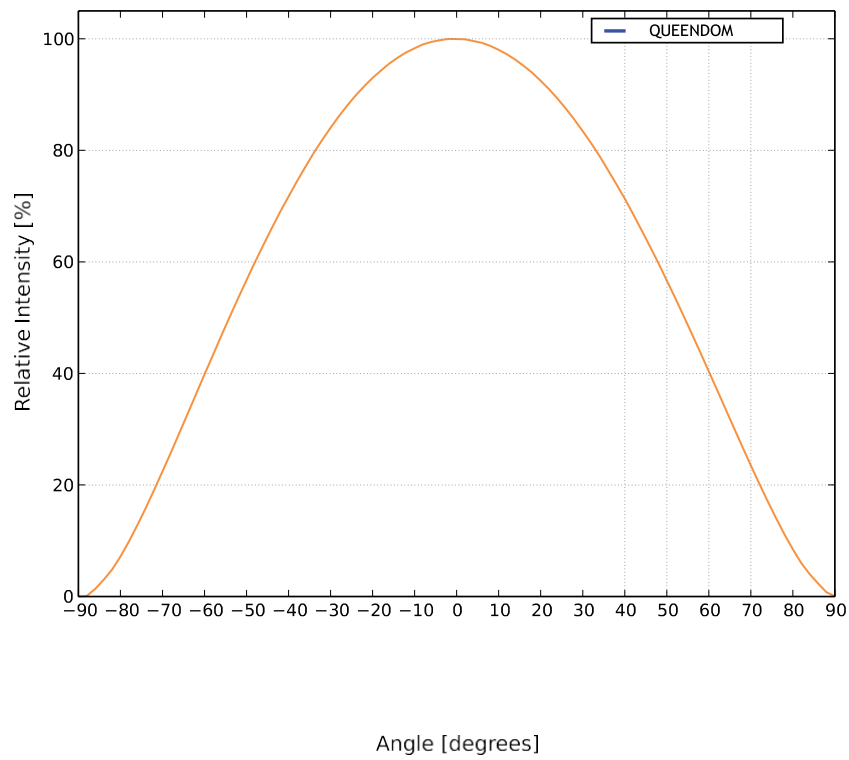
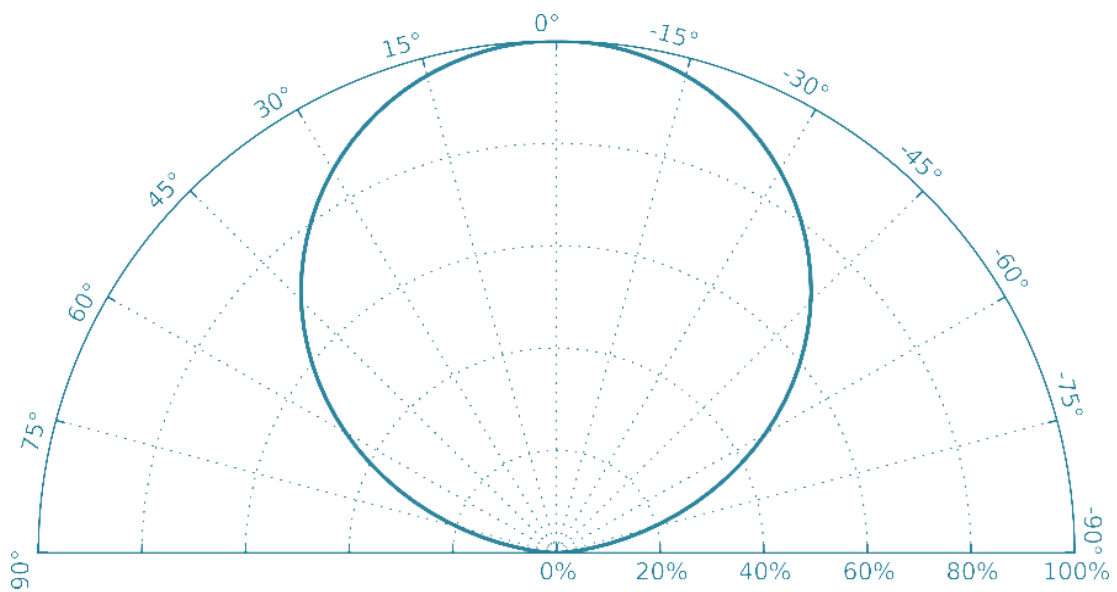


Figure 5. Typical radiation pattern for Queendom 5050 LED,  $T_j=25^{\circ}\text{C}$ .



## Chromaticity Region & Coordinates

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

Region	CIE x	CIE y	Region	CIE x	CIE y	Region	CIE x	CIE y	Region	CIE x	CIE y
<b>Y rank (2200 K)</b>						<b>W rank (2700 K)</b>					
Y1	0.4854	0.4022	Y9	0.4974	0.421	W1	0.4417	0.394	W9	0.4515	0.4128
	0.4914	0.4116		0.5033	0.4304		0.4472	0.3953		0.4573	0.4141
	0.4964	0.4116		0.5087	0.4304		0.4522	0.4047		0.4623	0.4235
	0.4903	0.4022		0.5025	0.421		0.4466	0.4034		0.4563	0.4222
Y2	0.4903	0.4022	YA	0.5025	0.421	W2	0.4472	0.3953	WA	0.4573	0.4141
	0.4964	0.4116		0.5087	0.4304		0.4527	0.3966		0.4631	0.4153
	0.5014	0.4116		0.514	0.4303		0.4579	0.4059		0.4683	0.4247
	0.4952	0.4023		0.5077	0.421		0.4522	0.4047		0.4623	0.4235
Y3	0.4952	0.4023	YB	0.5077	0.421	W3	0.4527	0.3966	WB	0.4631	0.4153
	0.5014	0.4116		0.514	0.4303		0.4582	0.3978		0.4689	0.4166
	0.5065	0.4116		0.5194	0.4303		0.4635	0.4072		0.4742	0.426
	0.5	0.4023		0.5129	0.421		0.4579	0.4059		0.4683	0.4247
Y4	0.5	0.4023	YC	0.5129	0.421	W4	0.4582	0.3978	WC	0.4689	0.4166
	0.5065	0.4116		0.5194	0.4303		0.4637	0.3991		0.4747	0.4179
	0.5115	0.4116		0.5247	0.4303		0.4692	0.4085		0.4802	0.4272
	0.5049	0.4023		0.5181	0.421		0.4635	0.4072		0.4742	0.426
Y5	0.4914	0.4116	YD	0.5033	0.4304	W5	0.4466	0.4034	WD	0.4563	0.4222
	0.4974	0.421		0.5093	0.4398		0.4522	0.4047		0.4623	0.4235
	0.5025	0.421		0.5148	0.4398		0.4573	0.4141		0.4673	0.4329
	0.4964	0.4116		0.5087	0.4304		0.4515	0.4128		0.4612	0.4316
Y6	0.4964	0.4116	YE	0.5087	0.4304	W6	0.4522	0.4047	WE	0.4623	0.4235
	0.5025	0.421		0.5148	0.4398		0.4579	0.4059		0.4683	0.4247
	0.5077	0.421		0.5203	0.4397		0.4631	0.4153		0.4735	0.4341
	0.5014	0.4116		0.514	0.4303		0.4573	0.4141		0.4673	0.4329
Y7	0.5014	0.4116	YF	0.514	0.4303	W7	0.4579	0.4059	WF	0.4683	0.4247
	0.5077	0.421		0.5203	0.4397		0.4635	0.4072		0.4742	0.426
	0.5129	0.421		0.5258	0.4397		0.4689	0.4166		0.4796	0.4354
	0.5065	0.4116		0.5194	0.4303		0.4631	0.4153		0.4735	0.4341
Y8	0.5065	0.4116	YG	0.5194	0.4303	W8	0.4635	0.4072	WG	0.4742	0.426
	0.5129	0.421		0.5258	0.4397		0.4692	0.4085		0.4802	0.4272
	0.5181	0.421		0.5313	0.4396		0.4747	0.4179		0.4857	0.4366
	0.5115	0.4116		0.5247	0.4303		0.4689	0.4166		0.4796	0.4354

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

Region	CIE x	CIE y	Region	CIE x	CIE y	Region	CIE x	CIE y	Region	CIE x	CIE y
<b>U rank (3500 K)</b>						<b>T rank (4000 K)</b>					
U1	0.3889	0.369	U9	0.3941	0.3848	T1	0.367	0.3578	T9	0.3702	0.3722
	0.3915	0.3768		0.3968	0.393		0.3726	0.3612		0.3763	0.376
	0.3981	0.38		0.404	0.3966		0.3744	0.3685		0.3782	0.3837
	0.3953	0.372		0.401	0.3882		0.3686	0.3649		0.3719	0.3797
U2	0.3953	0.372	UA	0.401	0.3882	T2	0.3726	0.3612	TA	0.3763	0.376
	0.3981	0.38		0.404	0.3966		0.3783	0.3646		0.3825	0.3798
	0.4048	0.3832		0.4113	0.4001		0.3804	0.3721		0.3847	0.3877
	0.4017	0.3751		0.408	0.3916		0.3744	0.3685		0.3782	0.3837
U3	0.4017	0.3751	UB	0.408	0.3916	T3	0.3783	0.3646	TB	0.3825	0.3798
	0.4048	0.3832		0.4113	0.4001		0.384	0.3681		0.3887	0.3836
	0.4116	0.3865		0.4186	0.4037		0.3863	0.3758		0.3912	0.3917
	0.4082	0.3782		0.415	0.395		0.3804	0.3721		0.3847	0.3877
U4	0.4082	0.3782	UC	0.415	0.395	T4	0.384	0.3681	TC	0.3887	0.3837
	0.4116	0.3865		0.4186	0.4037		0.3898	0.3716		0.395	0.3875
	0.4183	0.3898		0.4259	0.4073		0.3924	0.3794		0.3978	0.3958
	0.4147	0.3814		0.4221	0.3984		0.3863	0.3758		0.3912	0.3917
U5	0.3915	0.3768	UD	0.3968	0.393	T5	0.3686	0.3649	TD	0.3719	0.3797
	0.3941	0.3848		0.3996	0.4015		0.3744	0.3685		0.3782	0.3837
	0.401	0.3882		0.4071	0.4052		0.3763	0.376		0.3802	0.3916
	0.3981	0.38		0.404	0.3966		0.3702	0.3722		0.3736	0.3874
U6	0.3981	0.38	UE	0.404	0.3966	T6	0.3744	0.3685	TE	0.3782	0.3837
	0.401	0.3882		0.4071	0.4052		0.3804	0.3721		0.3847	0.3877
	0.408	0.3916		0.4146	0.4089		0.3825	0.3798		0.3869	0.3958
	0.4048	0.3832		0.4113	0.4001		0.3763	0.376		0.3802	0.3916
U7	0.4048	0.3832	UF	0.4113	0.4001	T7	0.3804	0.3721	TF	0.3847	0.3877
	0.408	0.3916		0.4146	0.4089		0.3863	0.3758		0.3912	0.3917
	0.415	0.395		0.4222	0.4127		0.3887	0.3836		0.3937	0.4001
	0.4116	0.3865		0.4186	0.4037		0.3825	0.3798		0.3869	0.3958
U8	0.4116	0.3865	UG	0.4186	0.4037	T8	0.3863	0.3758	TG	0.3912	0.3917
	0.415	0.395		0.4222	0.4127		0.3924	0.3794		0.3978	0.3958
	0.4221	0.3984		0.4299	0.4165		0.395	0.3875		0.4006	0.4044
	0.4183	0.3898		0.4259	0.4073		0.3887	0.3836		0.3937	0.4001

Figure 1c. Typical normalized power vs. wavelength for QUEENDOM LEDs, T<sub>j</sub>=25 °C.

Region	CIE x	CIE y	Region	CIE x	CIE y
<b>R rank (5000 K)</b>					
R1	0.3366	0.3369	R9	0.3374	0.3554
	0.3369	0.3431		0.3371	0.3493
	0.3407	0.346		0.3411	0.3522
	0.3403	0.3398		0.3415	0.3587
R2	0.3403	0.3398	RA	0.3415	0.3587
	0.3407	0.346		0.3411	0.3522
	0.3446	0.3491		0.3451	0.3554
	0.344	0.3427		0.3457	0.3621
R3	0.3446	0.3491	RB	0.3451	0.3554
	0.344	0.3427		0.3457	0.3621
	0.3477	0.3458		0.35	0.3655
	0.3485	0.3522		0.3492	0.3587
R4	0.3485	0.3522	RC	0.3492	0.3587
	0.3477	0.3458		0.35	0.3655
	0.3514	0.3487		0.3542	0.369
	0.3524	0.3554		0.3533	0.362
R5	0.3371	0.3493	RD	0.3376	0.3616
	0.3369	0.3431		0.3374	0.3554
	0.3407	0.346		0.3415	0.3587
	0.3411	0.3522		0.342	0.3652
R6	0.3407	0.346	RE	0.3415	0.3587
	0.3411	0.3522		0.342	0.3652
	0.3451	0.3554		0.3463	0.3687
	0.3446	0.3491		0.3457	0.3621
R7	0.3446	0.3491	RF	0.3457	0.3621
	0.3451	0.3554		0.3463	0.3687
	0.3492	0.3587		0.3507	0.3724
	0.3485	0.3522		0.35	0.3655
R8	0.3485	0.3522	RG	0.35	0.3655
	0.3492	0.3587		0.3507	0.3724
	0.3533	0.362		0.3551	0.376
	0.3524	0.3554		0.3542	0.369

Region	CIE x	CIE y	Region	CIE x	CIE y
<b>Q rank (5700 K)</b>					
Q1	0.3218	0.3298	Q9	0.3211	0.3407
	0.3222	0.3243		0.3215	0.3353
	0.3258	0.3275		0.3254	0.3388
	0.3256	0.3331		0.3252	0.3444
Q2	0.3256	0.3331	QA	0.3252	0.3444
	0.3258	0.3275		0.3254	0.3388
	0.3294	0.3306		0.3293	0.3423
	0.3294	0.3364		0.3293	0.3481
Q3	0.3294	0.3364	QB	0.3293	0.3481
	0.3294	0.3306		0.3293	0.3423
	0.333	0.3338		0.3332	0.3458
	0.3331	0.3398		0.3333	0.3518
Q4	0.3331	0.3398	QC	0.3333	0.3518
	0.333	0.3338		0.3332	0.3458
	0.3366	0.3369		0.3371	0.3493
	0.3369	0.3431		0.3374	0.3554
Q1	0.3215	0.3353	QD	0.3207	0.3462
	0.3218	0.3298		0.3211	0.3407
	0.3256	0.3331		0.3252	0.3444
	0.3254	0.3388		0.325	0.3501
Q2	0.3254	0.3388	QE	0.325	0.3501
	0.3256	0.3331		0.3252	0.3444
	0.3294	0.3364		0.3293	0.3481
	0.3293	0.3423		0.3292	0.3539
Q3	0.3293	0.3423	QF	0.3292	0.3539
	0.3294	0.3364		0.3293	0.3481
	0.3331	0.3398		0.3333	0.3518
	0.3332	0.3458		0.3334	0.3578
Q4	0.3332	0.3458	QG	0.3334	0.3578
	0.3331	0.3398		0.3333	0.3518
	0.3369	0.3431		0.3374	0.3554
	0.3371	0.3493		0.3376	0.3616

**Figure 1d. Typical normalized power vs. wavelength for QUEENDOM LEDs, T<sub>j</sub>=25 °C.**

Region	CIE x	CIE y	Region	CIE x	CIE y
<b>P rank (6500 K)</b>					
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

## Product Bin and Labeling Definitions

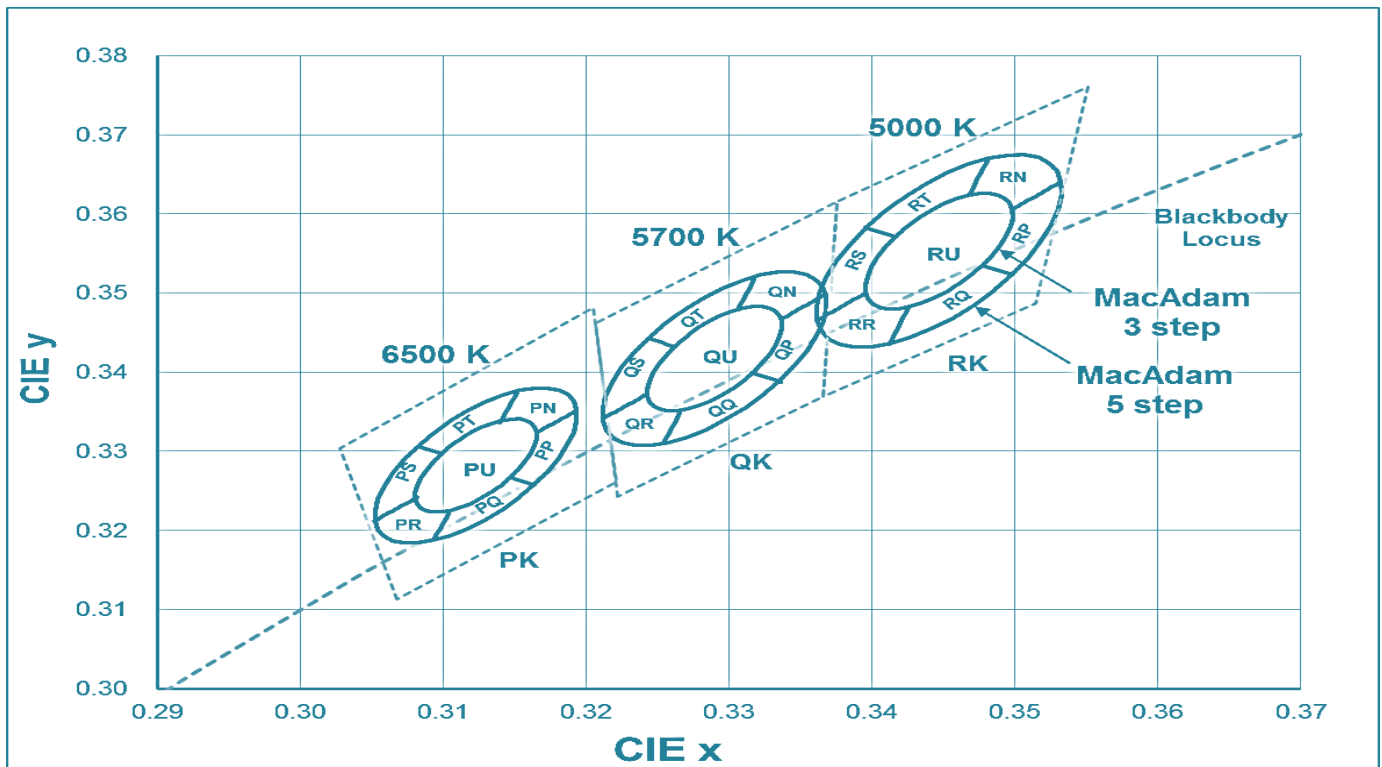
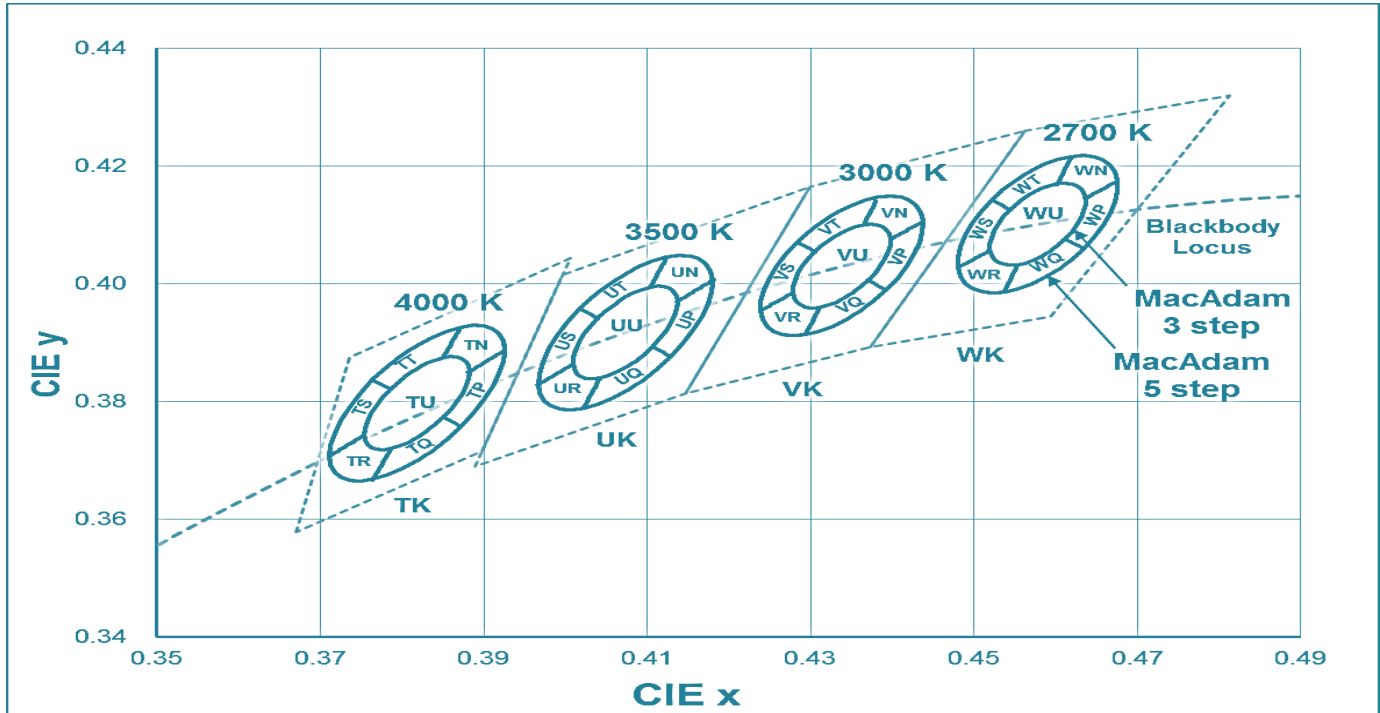
## Decoding Product Bin Labeling

In the manufacturing of semiconductor products, there are variations in performance around the average values given in the technical datasheet. For this reason, Queendom 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 (lv )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.

## LUMINOUS FLUX BINS

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

BIN	QUEENDOM FLUX [1] (lm)		RANK FLUX [2] (lm)		TYPICAL FLUX HALF WIDTH
	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM	[3] (lm)
H1	170	180	5	10	10
H2	190	200	5	10	10
H3	200	240	5	10	10
H4	240	280	20	40	40
H5	280	320	20	40	40
H6	320	360	20	40	40
H7	360	400	20	40	40
H8	400	440	20	40	40
H9	480	560	20	80	80
H10	560	640	20	80	80
H11	640	720	20	80	80
H12	720	800	20	80	80
H13	800	880	20	80	80
H14	880	960	20	80	80
H15	960	1040	20	80	80
H16	1060	1160	20	100	100
H17	1160	1260	20	100	100
H18	1260	1360	20	100	100
H19	1360	1460	20	100	100
H20	1460	1560	20	100	100
H21	1560	1660	20	100	100

## 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
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				
VE	6	7	8	1	2	2
VF	8	9	10	1	2	2
VG	10	11	12	1	2	2
VH	12	13	14	1	2	2
VI	14	15	16	1	2	2
VJ	16	17	18	1	2	2
VK	18	19	20	1	2	2
VL	20	21	22	1	2	2
VM	22	23	24	1	2	2
VN	24	25	26	1	2	2
VO	26	27	28	1	2	2

## TABLE TYPICAL POWER BINS

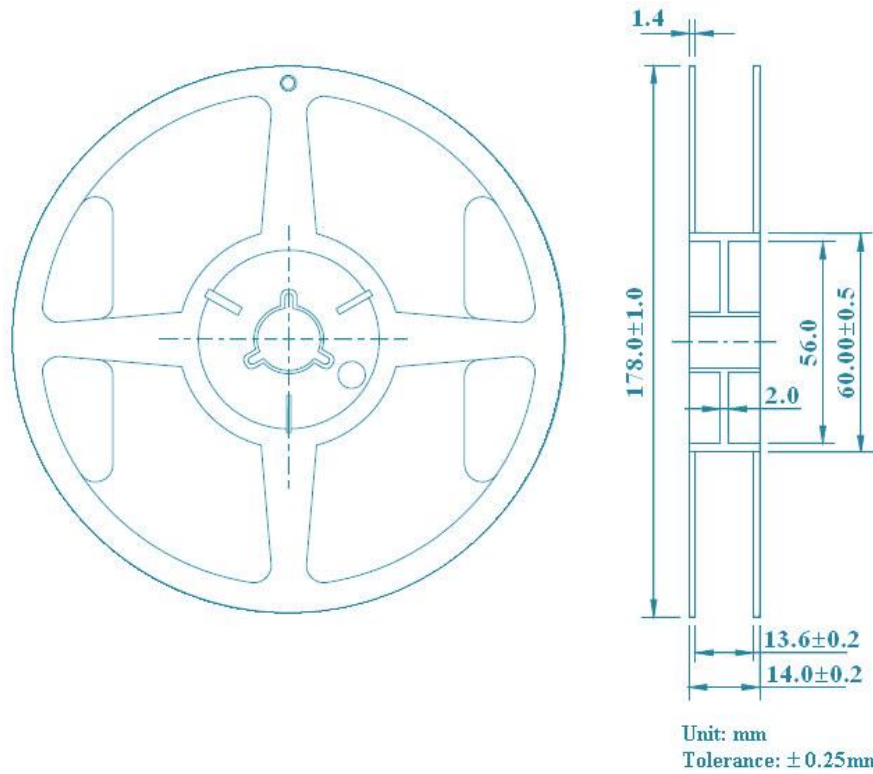
Table 4. Electrical and thermal characteristics for Queendom at specified test current, Tj=25°C

RANK NO.	TYPICAL POWER RANK (W) [1]		RANK POWER [2] (W)		TYPICAL POWER HALF WIDTH
	min	max	MINIMUM	MAXIMUM	[3] (W)
WE	1	3	1	3	3
WF	3	6	1	3	3
WG	6	9	1	3	3
WH	9	12	1	3	3
WI	12	15	1	3	3
WJ	15	18	1	3	3
WK	18	21	1	3	3
WL	21	24	1	3	3
WM	24	27	1	3	3
WN	27	30	2	3	3
WO	30	34	2	4	4
WP	34	38	2	4	4
WQ	38	42	2	4	4

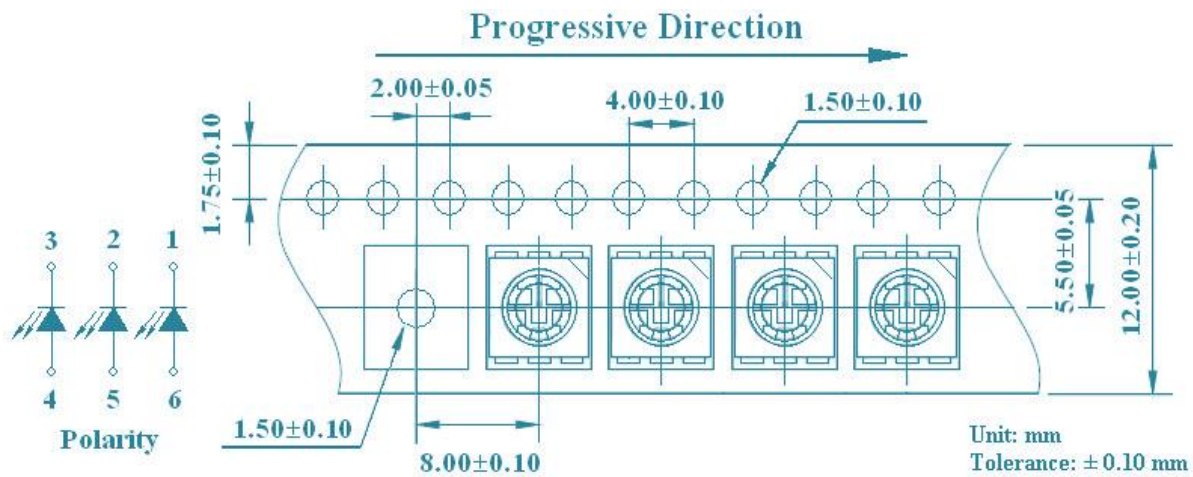
s.

## Packaging Information

### Reel Dimensions:



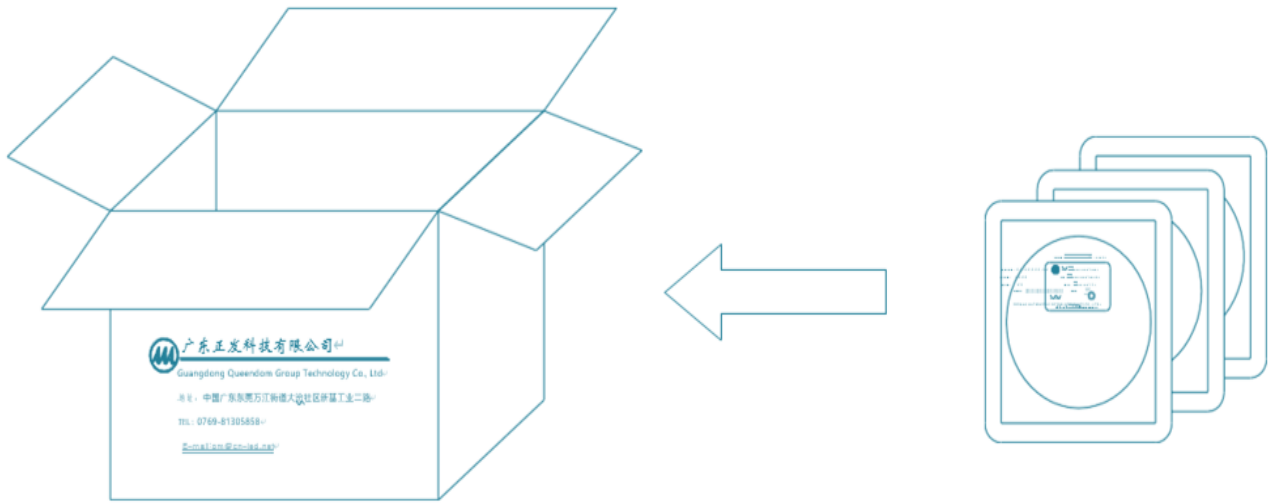
### Carrier Tape Dimensions:



### Packing Quantity

1. 1000 PCS/1 Bag.
2. 10 Inner Cartons/1 Outside Carton

## Packaging cartons



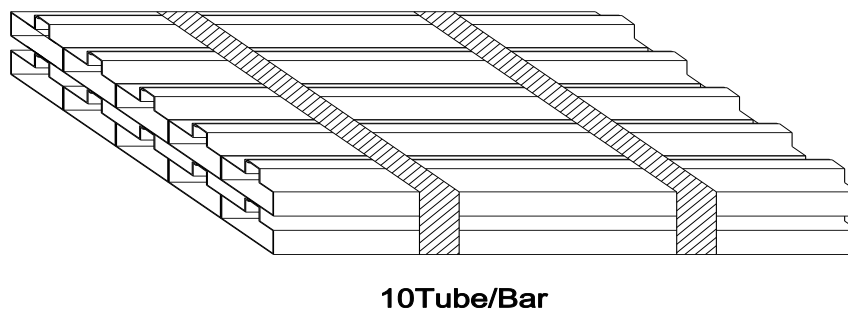
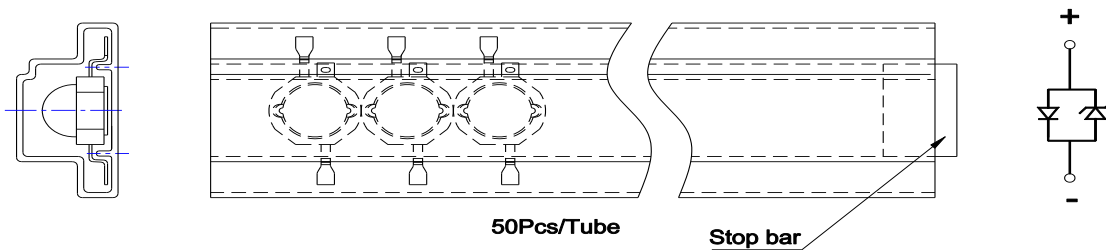
## Information

### - 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

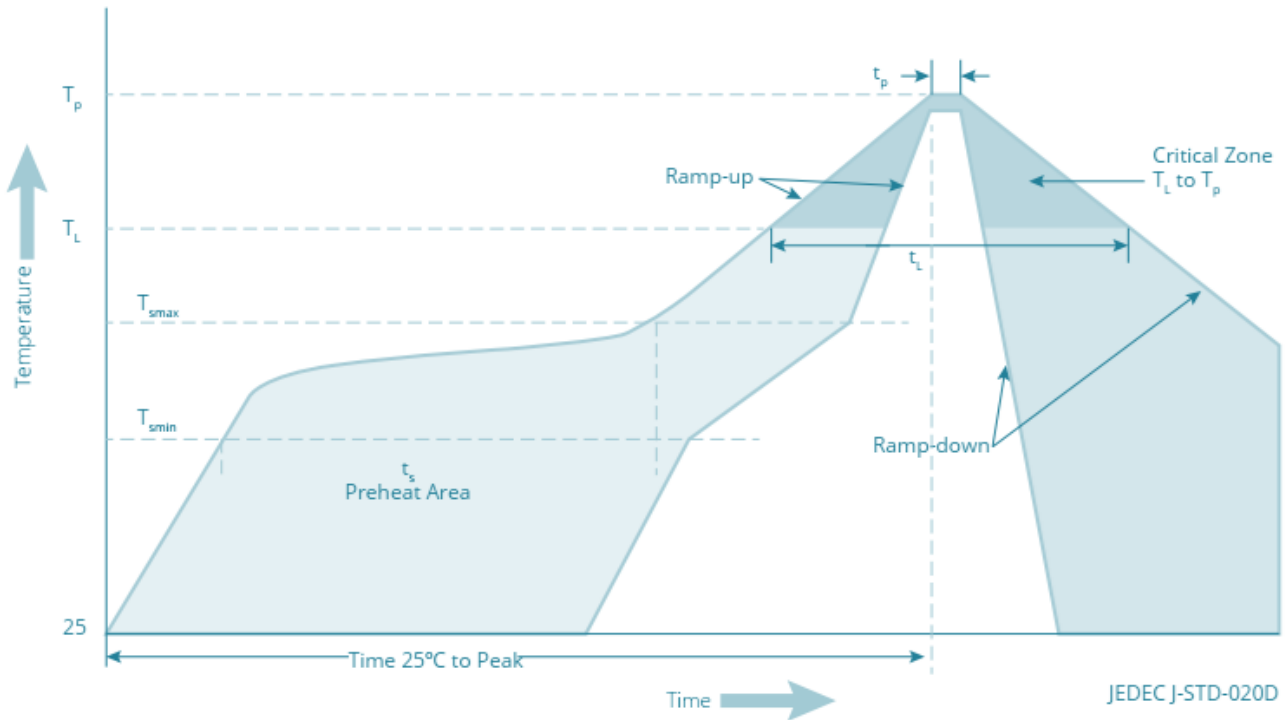


## Packing Quantity

1. 100 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

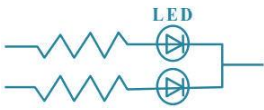
JEDEC Moisture Sensitivity

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

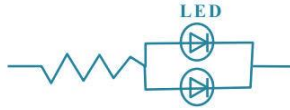
## Drive Method

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.



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