



**SMD CHIP LEDS (Visible LED) - NO: S5.3- 8541401000SL03
SPECIFICATION FOR APPROVALFOR APPROVAL**

S1608W*LEDsVVV**



Guangdong Queendom Group Technology Co., Ltd.

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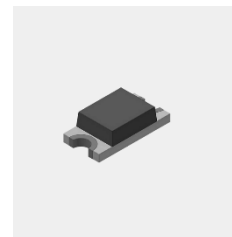
<https://www.queendomlamp.com>

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

Postcode 52380

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: White LEDs
The product itself will remain within the RoHS compliant version.



Descriptions:

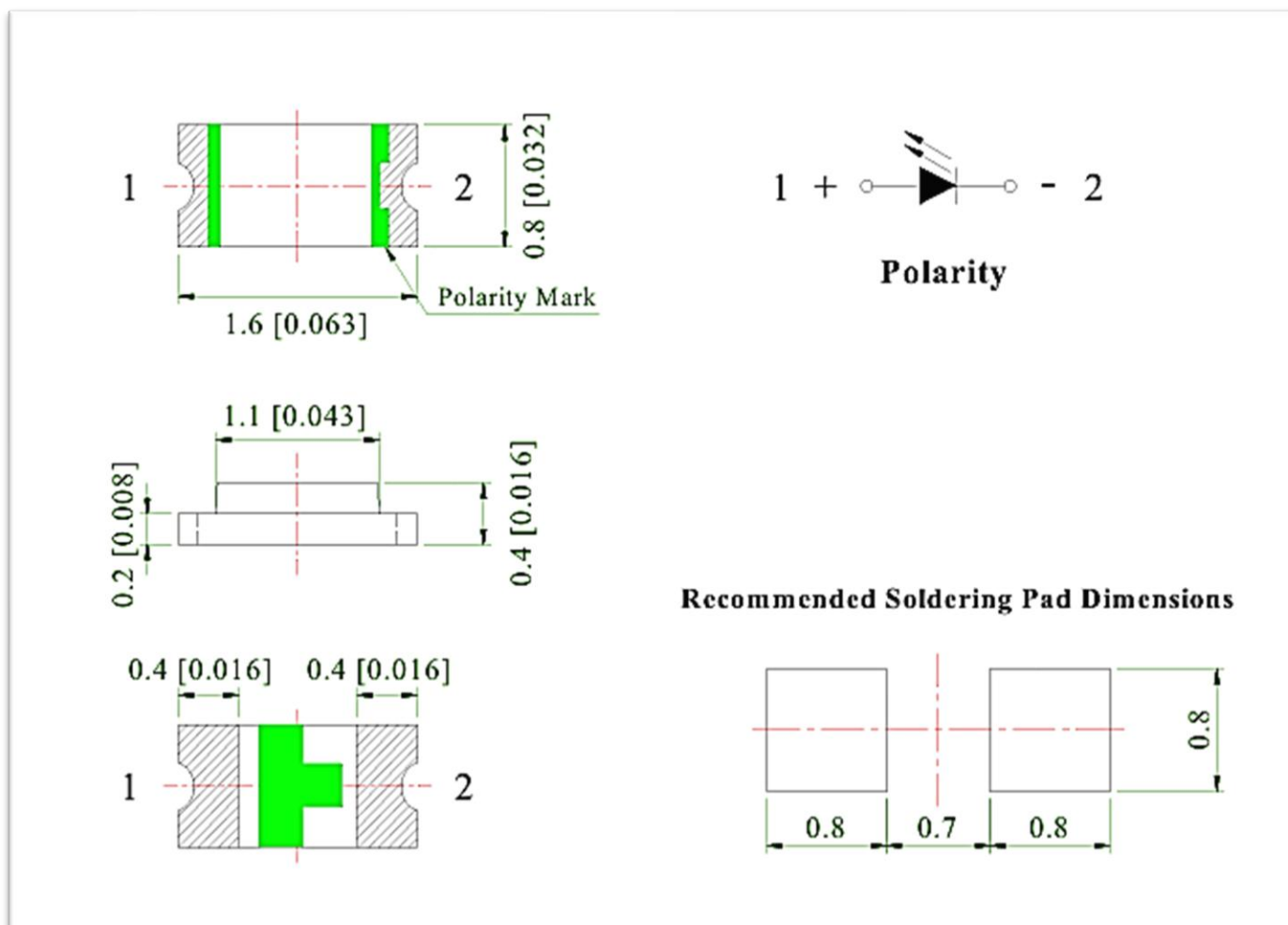
SMD LEDs are much smaller than leadframe type components, allowing for smaller board sizes,
Higher packaging density, reduced storage space, and ultimately smaller devices.
Additionally, the lightweight makes it ideal for micro applications and more.

Applications:

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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.

Product model code corresponding SKU table

Table1. Product performance of QUEENDOM LED at 20mA, Tj=25°C.

RODUCT	RANK NO.	NOMINAL [1]	PART NUMBER
		NM	
S1608YW2WA	SL0314	2200K	8541401000SL0314
S1608WW2WA	SL0315	2700K	8541401000SL0315
S1608WV2WA	SL0316	3000K	8541401000SL0316
S1608WU2WA	SL0317	3500K	8541401000SL0317
S1608WT2WA	SL0318	4000K	8541401000SL0318
S1608WR2WA	SL0319	5000K	8541401000SL0319
S1608WQ2WA	SL0320	5700K	8541401000SL0320
S1608WP2WA	SL0321	6500K	8541401000SL0321
S1608WD2WA	SL0322	7600K	8541401000SL0322
S1608WD2WA	SL0323	10500K	8541401000SL0323

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.

Product Selection Guide

Table 2 Optical characteristics for QUEENDOM LED at 20mA, Tj=25°C

PRODUCT	RANK NO.	NOMINAL	CRI	FORWARD VOLTAGE [3] (Vf)		TYPICAL FLUX [4] (mcd)		EFFICACY	TYPICAL	TEST CURRENT
		[1] CCT/K	[2] Ra	MIN	MAX	MIN	MAX	(lm/W)	2Θ 1/2	(mA)
S1608YW2WA	SL0414	2200K	80	300	780	2.7	3.2	N/A	120	20
S1608WW2WA	SL0415	2700K	80	300	780	2.7	3.2	N/A	120	20
S1608WV2WA	SL0416	3000K	80	300	780	2.7	3.2	N/A	120	20
S1608WU2WA	SL0417	3500K	80	300	780	2.7	3.2	N/A	120	20
S1608WT2WA	SL0418	4000K	80	300	780	2.7	3.2	N/A	120	20
S1608WR2WA	SL0419	5000K	80	300	780	2.7	3.2	N/A	120	20
S1608WQ2WA	SL0420	5700K	80	300	780	2.7	3.2	N/A	120	20
S1608WP2WA	SL0421	6500K	80	300	780	2.7	3.2	N/A	120	20
S1608WD2WA	SL0422	7600K	80	300	780	2.7	3.2	N/A	120	20
S1608WD2WA	SL0423	10500K	80	300	780	2.7	3.2	N/A	120	20

Notes:
a.Luminousfluxmeasurementtolerance:±10%.
b.Wavelengthmeasurementtolerance:±1nm
c.Forwardvoltageameasurementtolerance:±0.1V

Optical Characteristics

Table 3. Optical characteristics for QUEENDOM SMD CHIP at 20mA, Tj=25°C.

PRODUCT	COLOR	TYPICAL SPECTRAL HALF-WIDTH [1] (K)	TYPICAL TEMPERATURE COEFFICIENT OF DOMINANT WAVELENGTH (nm/°C)	TYPICAL VIEWING ANGLE [2]	PART NUMBER
S1608**2WA	2200K	45	-2	120°	8541401000SL03
	2700K	50	-2	120°	
	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:

- 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

Table 4. Electrical and thermal characteristics for QUEENDOM SMD CHIP at 20mA, Tj=25°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		
S1608**2WA	white	2.6	2.8	3.20	-2.4	105

Absolute Maximum Ratings

Table 4. Absolute maximum ratings for QUEENDOM 3227 RGB.

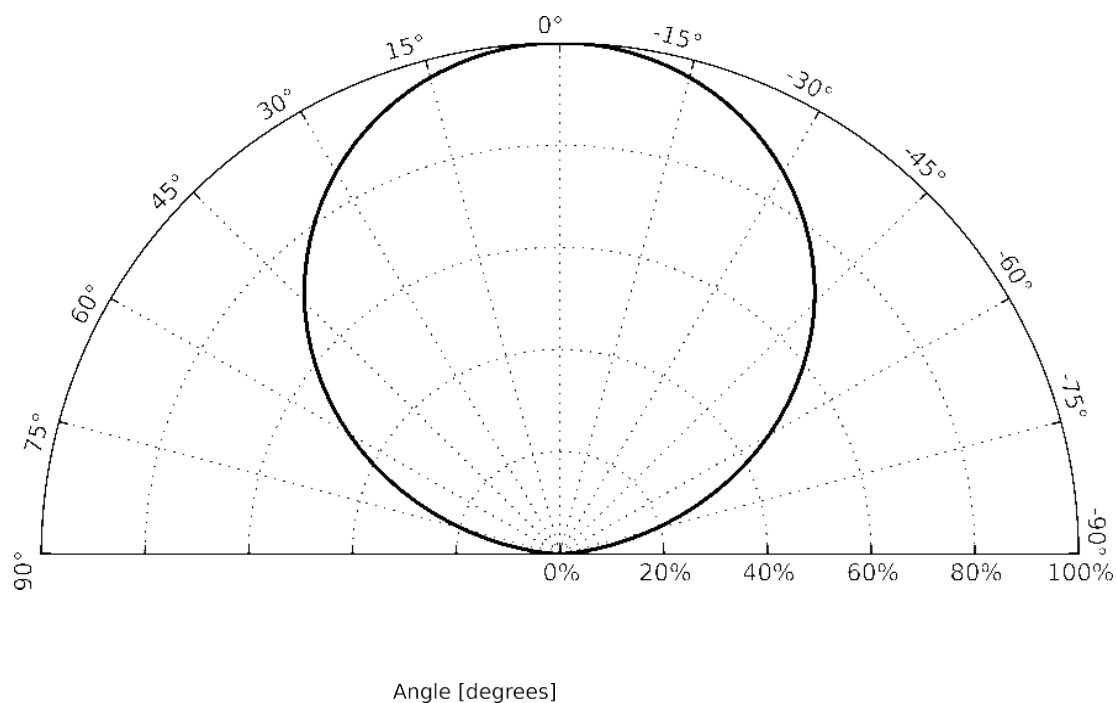
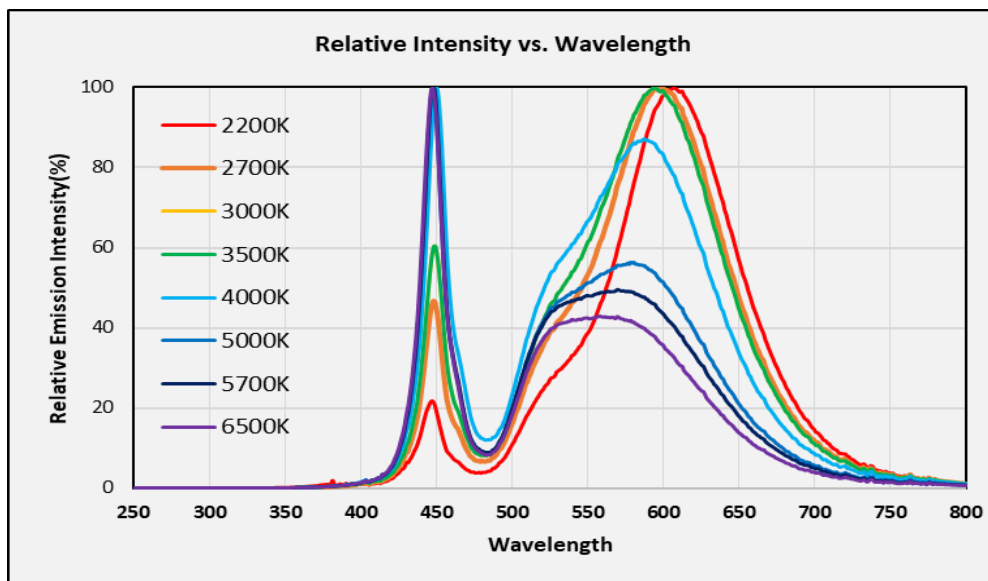
PARAMETER	Maximum performance value
DC Forward Current [1, 2]	18mA
Peak Pulsed Forward Current [1, 3]	30mA
LED Junction Temperature [1] (DC & Pulse)	115°C
ESD Sensitivity (ANSI/ESDA/JEDEC JS-001-2012)	Class 2
LED Storage Temperature	-40°C to 80°C
Soldering Temperature	JEDEC 020c 250°C
Allowable Reflow Cycles	3
Reverse Voltage (V _{reverse})	QUEENDOM 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



Light Output Characteristics

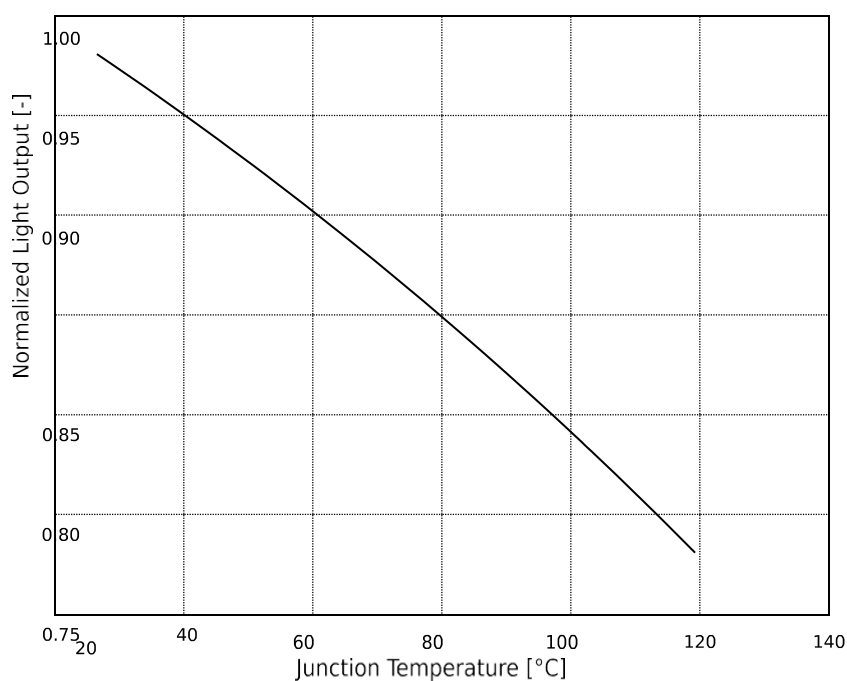


Figure 1. Typical normalized light output vs. junction temperature for at specified test current. $T_j=25^{\circ}\text{C}$.

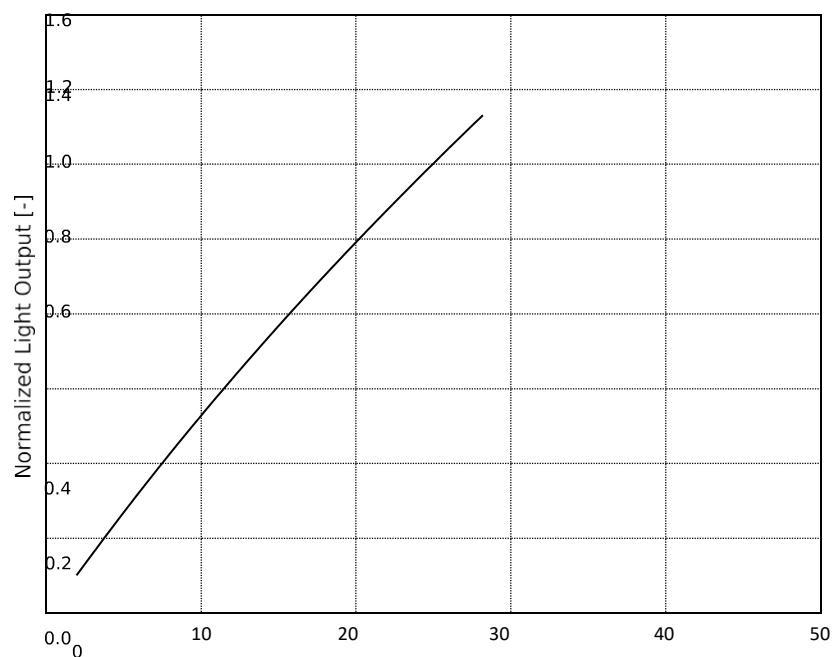


Figure 2. T Ambient temperature ($^{\circ}\text{C}$) for at specified test current. $T_j=25^{\circ}\text{C}$.

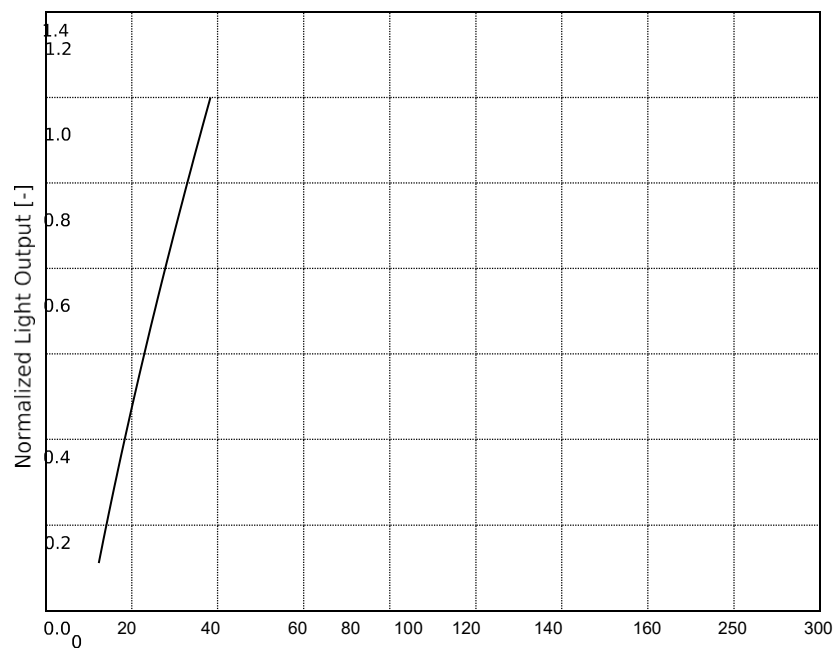
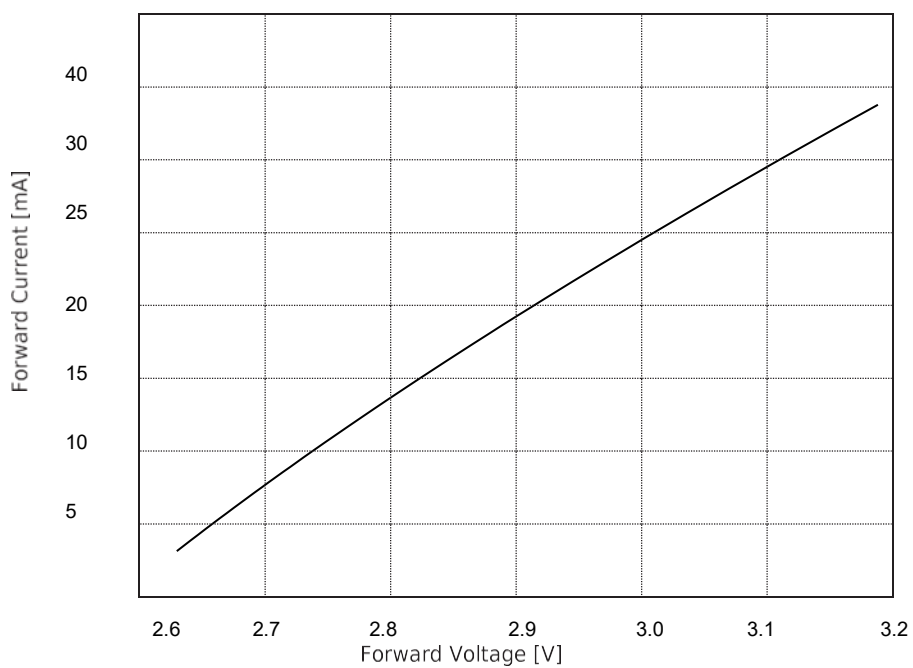


Figure 3. Typical normalized light output vs. junction temperature for at specified test current. $T_j=25^{\circ}\text{C}$.



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

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
Y rank (2200 K)						W rank (2700 K)					
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

Chromaticity Region & Coordinates

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
U rank (3500 K)						T rank (4000 K)					
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

Chromaticity Region & Coordinates

Figure 1c. 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
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

Chromaticity Region & Coordinates

Figure 1d. Typical normalized power vs. wavelength for QUEENDOM LEDs, Tj=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

RANK NOMINAL CCT & COLOR COORDINATES

Chromaticity Region & Coordinates

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

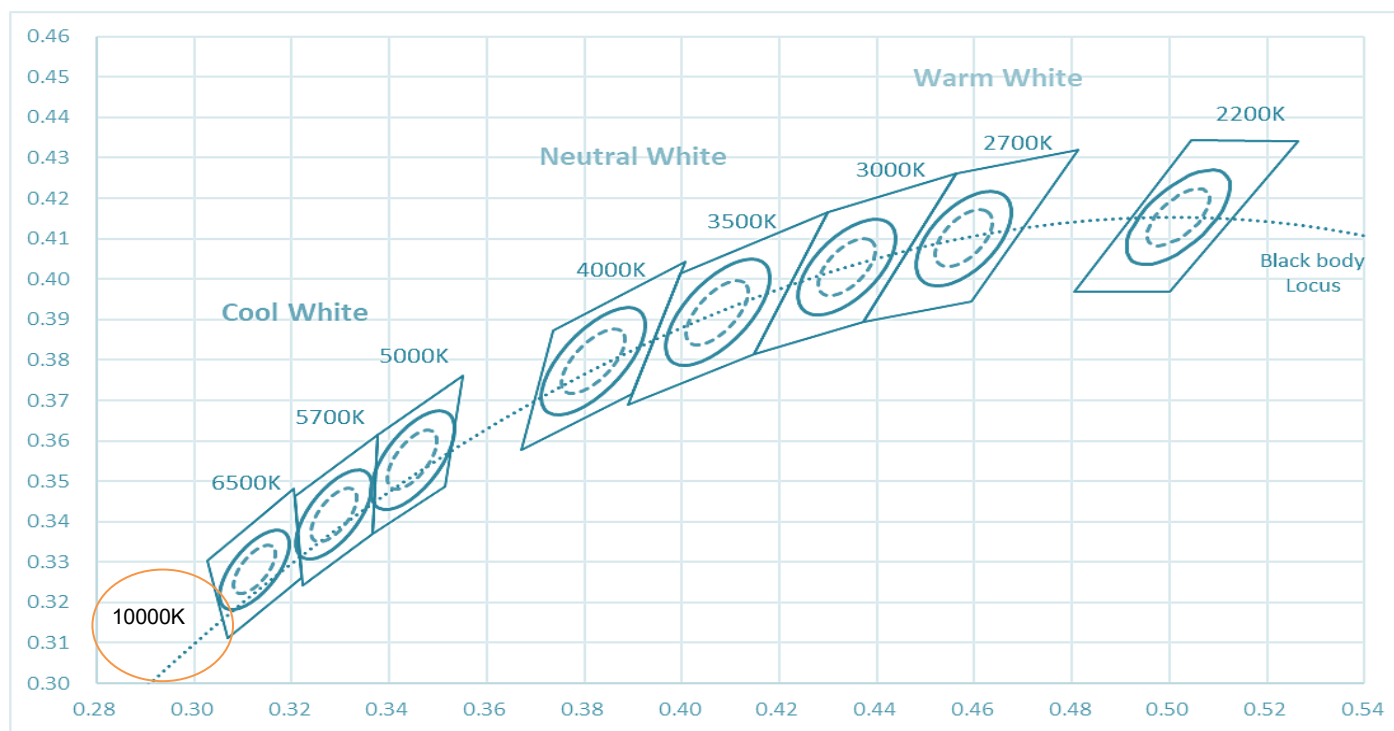


Table 1b. Electrical and thermal characteristics for Queendom at specified test current, Tj=25°C

	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 intensity (Iv) 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 1. .Luminous flux bin definitions for QUEENDOM Color Line at Tj=25°C.

BIN	QUEENDOM FLUX [1] (mcd)	
	MINIMUM	MAXIMUM
LF	90	120
LG	120	190
LH	190	300
LI	300	500
LJ	500	780
LK	780	1060
LL	1060	1560

TABLE Forward Voltage BINS

Table 2. Electrical and thermal characteristics for Queendom at specified test current, Tj=25°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

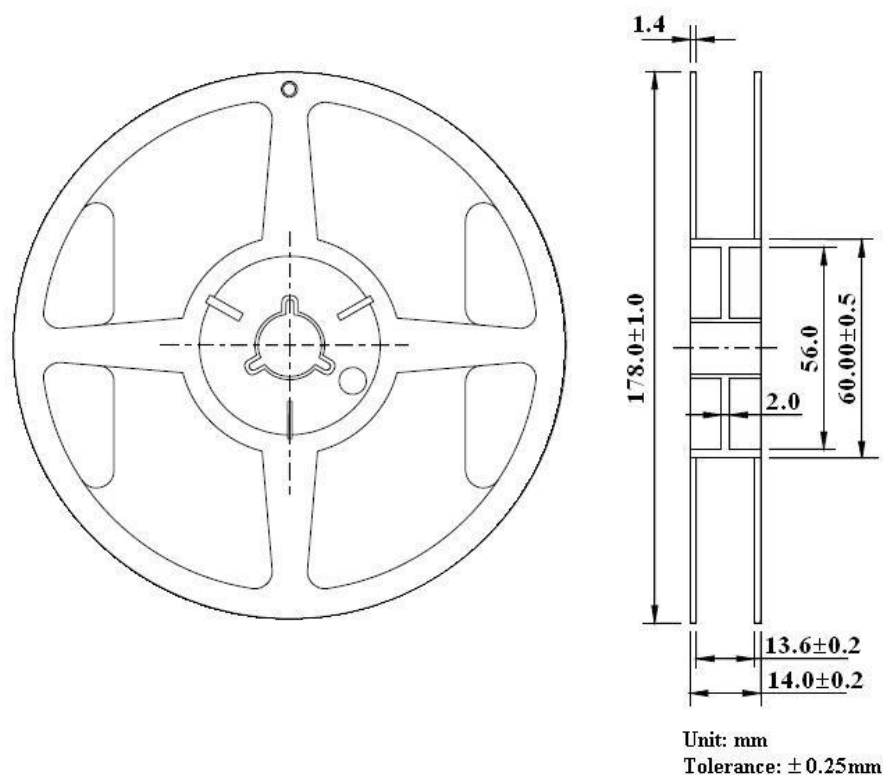
TABLE TYPICAL POWER BINS

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

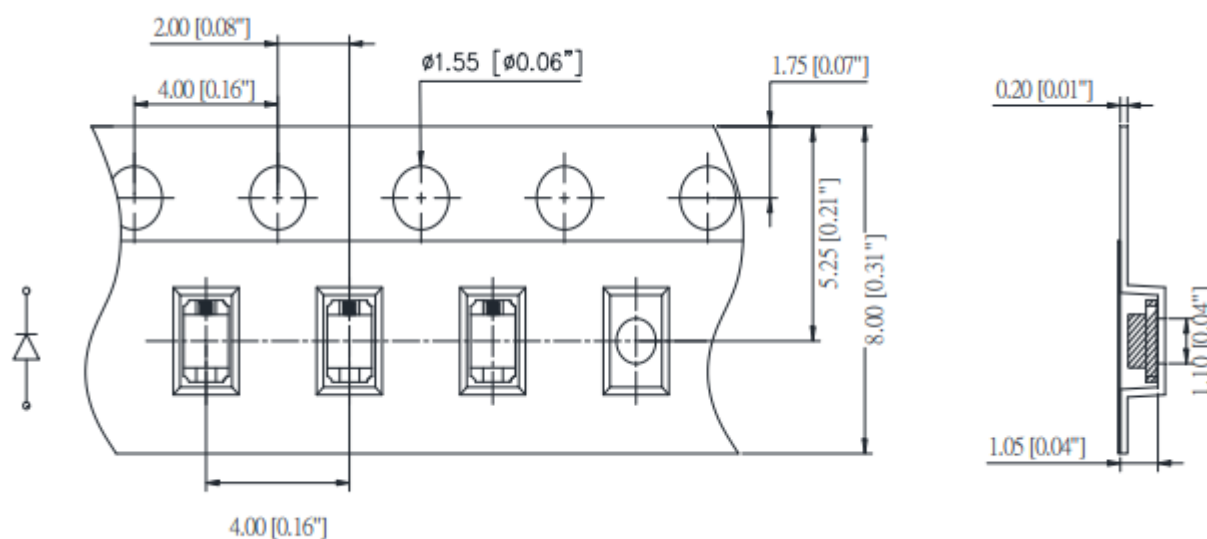
RANK NO.	TYPICAL POWER RANK (W) [1]		RANK POWER [2] (W)		TYPICAL POWER HALF WIDTH
	min	max	MINIMUM	MAXIMUM	[3] (W)
WA	0.06	0.1	0.02	0.1	0.1
WB	0.1	0.2	0.1	0.2	0.2
WC	0.2	0.5	0.2	0.5	0.5
WD	0.5	1	0.2	0.5	0.5
WE	1	3	1	3	3

Packaging Information

Reel Dimensions:

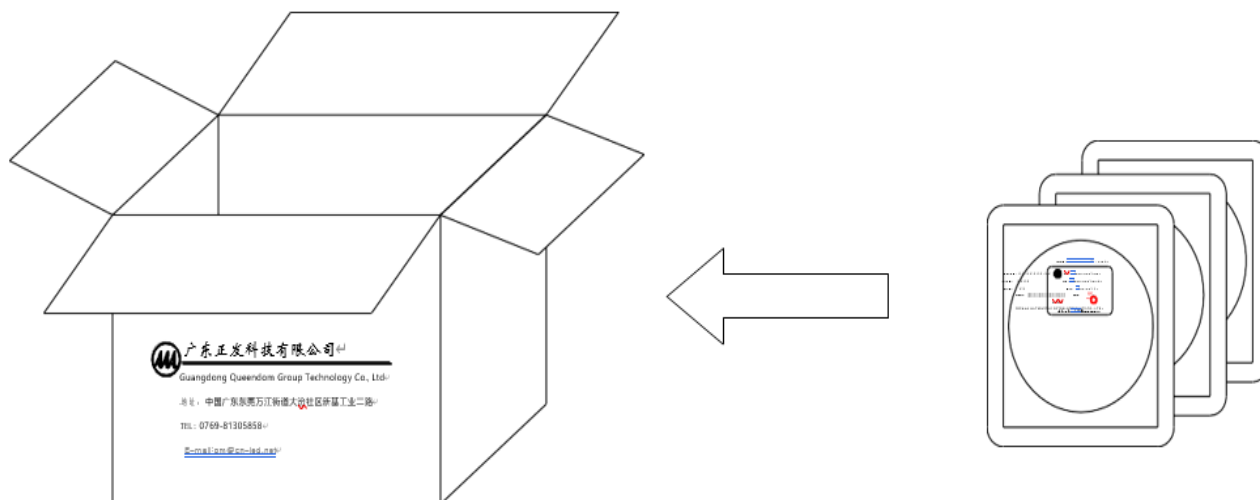


Carrier Tape Dimensions:



Loaded quantity 3000 pcs per reel.

Packaging cartons



Information

- With Stopper



RA:70/2300K



SMD LEDs 0402

B5W302D-A

BIN:2#

2200-2400K/2.8-3.2V

2024-4-10/ QTY:1000PCS

QUEENDOM正发科技WWW.CN-LED.NET



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

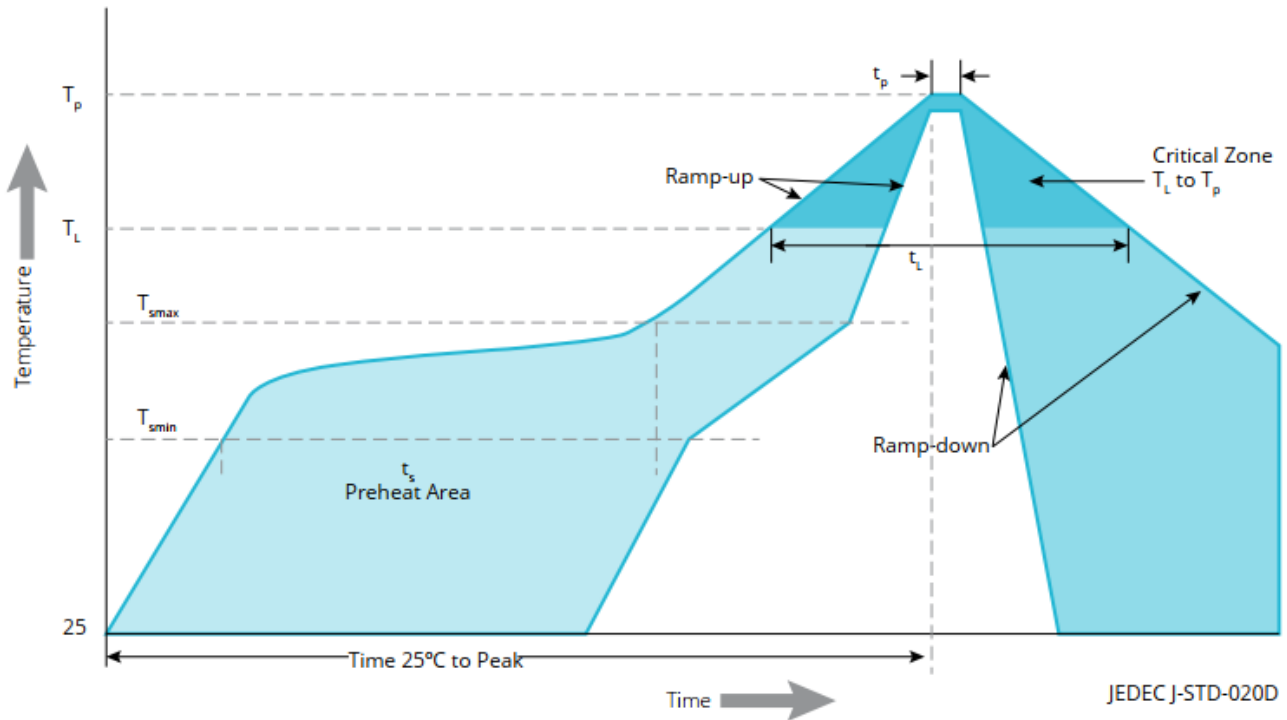
DATE:Date Of Dispatch

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-DownRate (T_p to T_L)	6°C / second maximum maximum
Time 25°C to Peak Temperature	8 minutes maximum

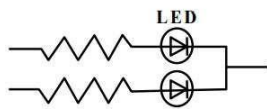
JEDEC Moisture Sensitivity

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

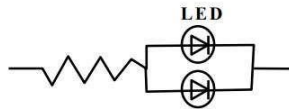
Drive Method

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 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.