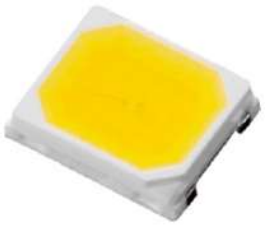
2835B03-XXH02-1S-D5-EC-LX Series Datasheet RD vison

This 2835 LED Light Source is a high performance energy efficient device which can handle high thermal and high driving current. The small package outline and high intensity make it an ideal choice for LED panel light, LED bulb light, LED tube light, backlighting and etc.

The White Power LED is available in the range of color temperature from 2100K to 7000K.

This part has a foot print that is compatible to most of the same size LED in the market today.



FEATURES

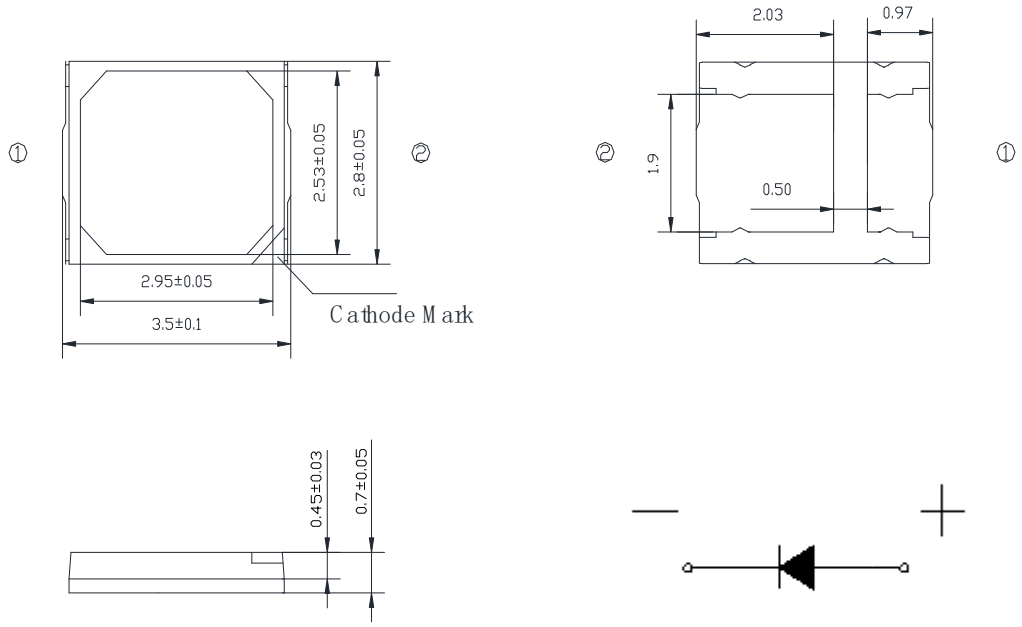
- Available in Cool White, Neutral White and Warm White color
- ANSI-compatible chromaticity bins
- High luminous Intensity and high efficiency
- Compatible with reflow soldering process
- Low thermal resistance
- Long operation life
- Wide viewing angle at 120°
- Silicone encapsulation
- Environmental friendly, RoHS compliance

APPLICATIONS

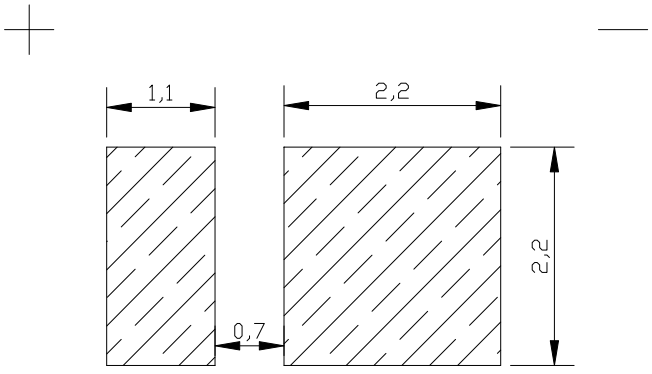
- Flat panel light
- LED tube light
- LED bulb light
- Decorative and landscape lighting
- Signage and channel letter
- Reading lamp
- Architectural lighting

Note: The information in this document is subject to change without notice.

PACKAGE DIMENSIONS



Recommended Solder Pad Design



Notes:
1. All dimensions in millimeters.
2. Thickness tolerance of copper plate is ±0.02mm.
3. Thickness tolerance of product is ±0.05mm.
4. Tolerance is ±0.1mm unless otherwise noted.

ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Absolute Maximum Rating	Unit
Forward current	I_F	180	mA
Peak Forward Current[1]	I_{FP}	240	mA
Reverse Voltage	V_R	5	V
Power Dissipation	Pd	0.7	W
Operating Temperature	T_{opr}	-40~+85	℃
Storage Temperature	T_{stg}	-40~+100	℃
Soldering Temperature	T_{sld}	Reflow Soldering: 260℃ for 10 seconds	
LED Junction Temperature	T_j	110	℃

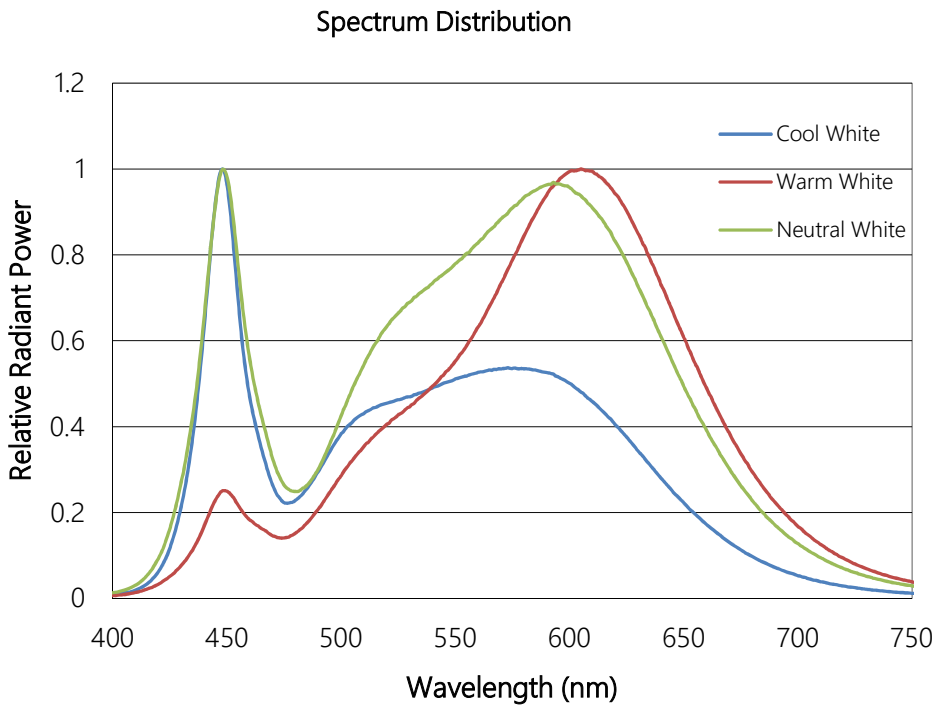
Note:
[1] I_{FP} Conditions: Pulse Width≦10msec. and Duty ≦1/10.

CHARACTERISTICS (Tj=25℃)

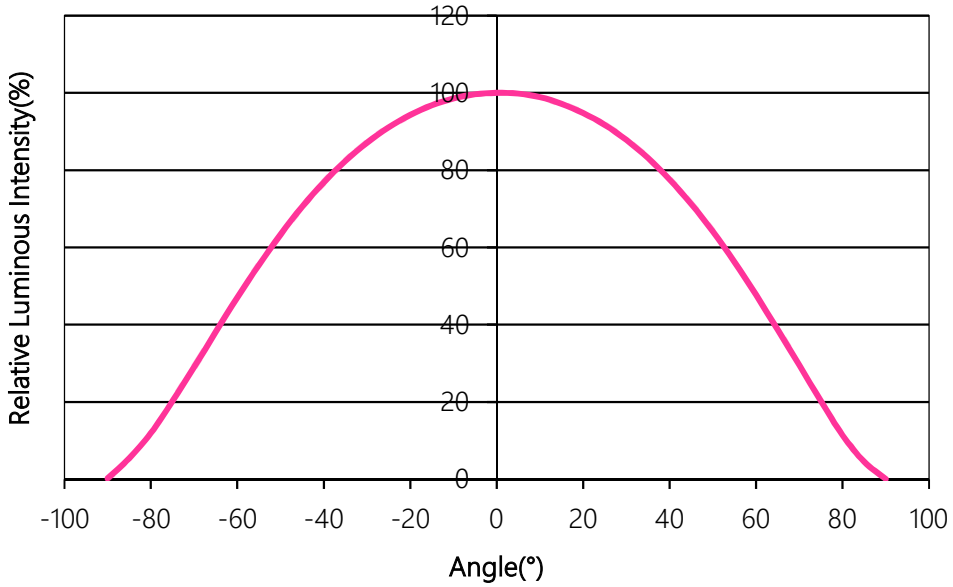
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Forward Voltage[1]	V_F	I_F=65mA	2.7	--	2.9	V
Viewing Angle	$2\theta_{1/2}$	I_F=65mA	--	120	--	deg.
Luminous Flux	Φv	I_F=65mA	31	--	37	lm
Color Rendering Index	CRI	I_F=65mA	80	--	--	--
Color Temperature	CCT	I_F=65mA	2600	--	7000	K
Thermal Resistance (Junction to Solder Point)	R_{th-js}	I_F=65mA	--	15	--	℃/W

Notes:
1. Luminous flux is measured with an accuracy of ± 5%.
2. Chromaticity coordinate bins are measured with an accuracy of ± 0.01.
3. CRI is measured with an accuracy of ± 2.
4. All measurements were made under the standardized environment of Shineon

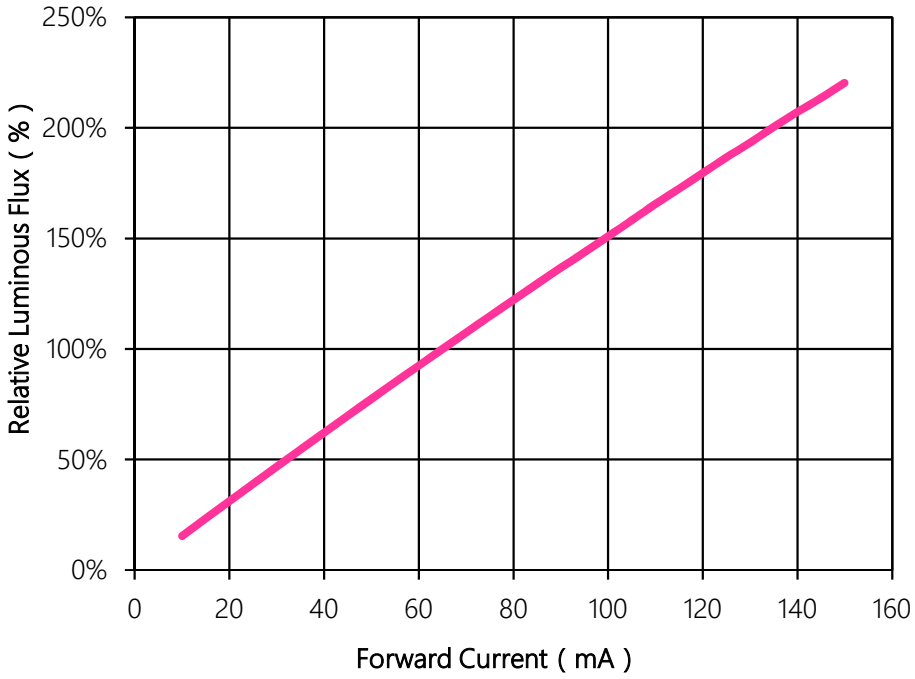
RELATIVE SPECTRAL POWER DISTRIBUTION (T_j=25℃)



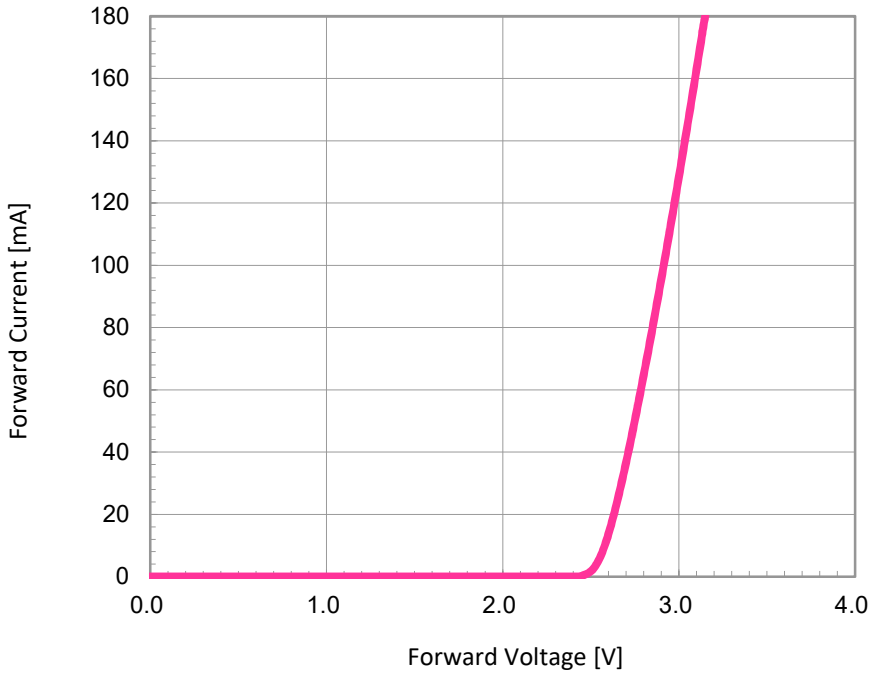
TYPICAL SPATIAL DISTRIBUTION



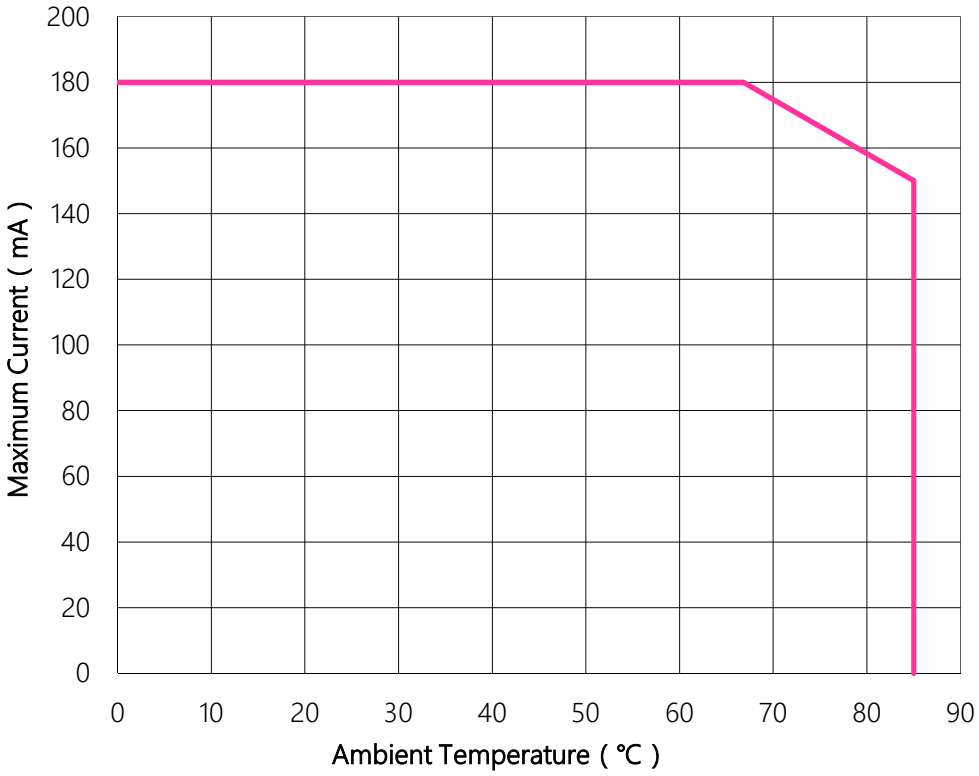
RELATIVE LUMINOUS FLUX VS. CURRENT (T_j=25℃)



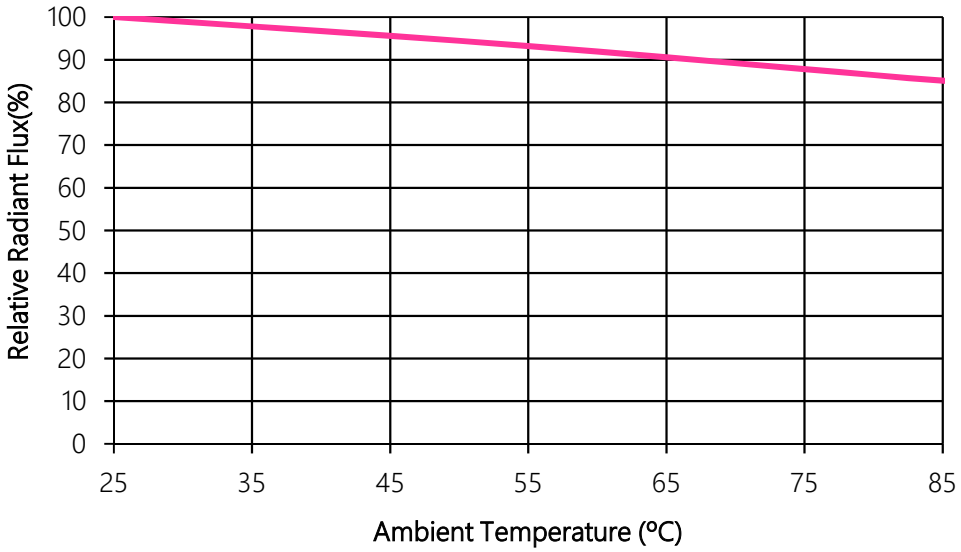
ELECTRICAL CHARACTERISTICS (Tj=25℃)



MAXIUM CURRENT VS. AMBIENT TEMPERATURE



RELATIVE RADIANT FLUX VS. JUNCTION TEMPERATURE



SORTING RANKS

(1) Luminous Flux (Tj=25℃)

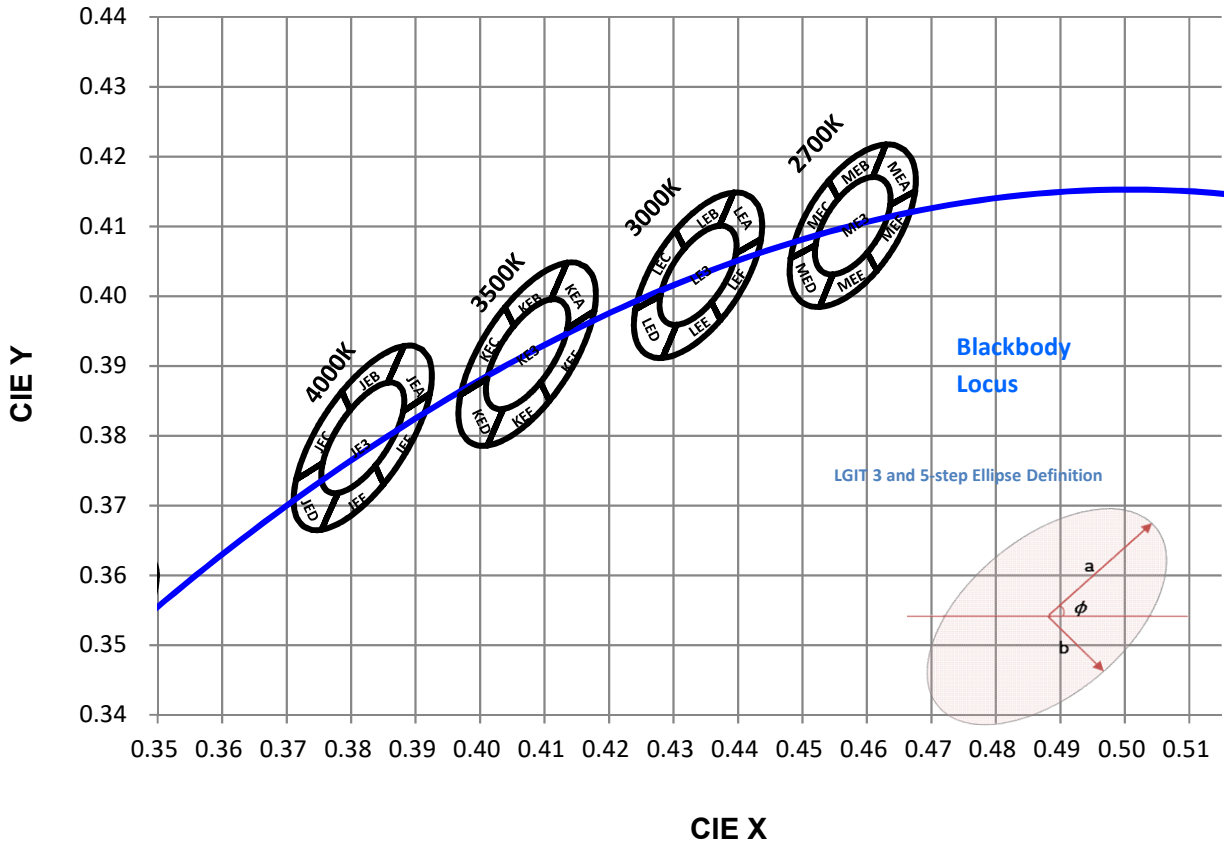
Part Number	Condition	Rank		Unit
2835B03-27H02-1S-D5-EC-LX	65mA	O03	31-33	lm
2835B03-30H02-1S-D5-EC-LX		O13	33-35	
2835B03-35H02-1S-D5-EC-LX		O20	34-36	
2835B03-40H02-1S-D5-EC-LX		O23	35-37	
2835B03-50H02-1S-D5-EC-LX		O23	35-37	
2835B03-57H02-1S-D5-EC-LX		O23	35-37	
2835B03-65H02-1S-D5-EC-LX		O20	34-36	

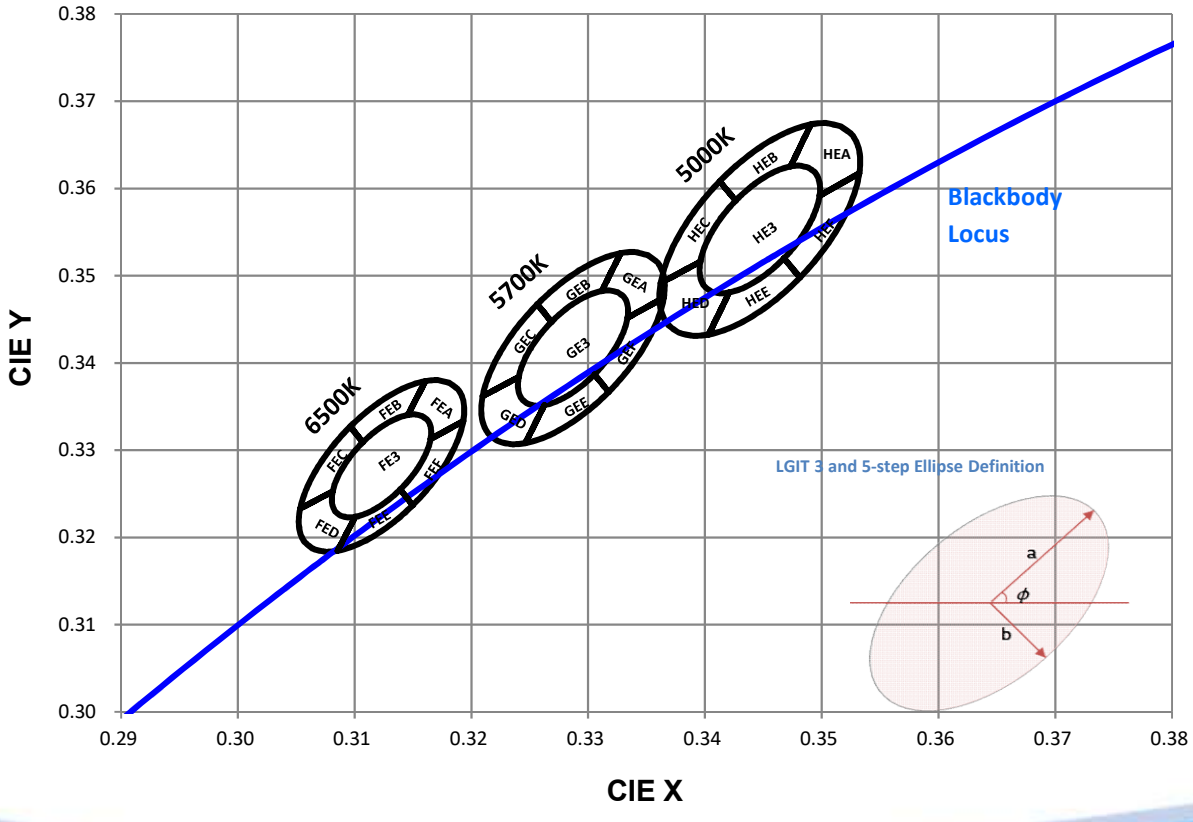
(2) Forward Voltage (Tj=25℃)

Rank	Condition	Min.	Max.	Unit
A7	65mA	2.7	2.8	V
A8		2.8	2.9	

Notes:
1. 10% tolerance for luminous intensity may be caused by measurement inaccuracy.
2. Measurement Uncertainty of the Forward Voltage : ± 0.1V

(3) Chromaticity Bins





(3) Chromaticity Bins

Nominal CCT (Rank)	Steps	Center Point		Major Axis	Minor Axis	Rotation Angle
		Cx	Cy	a	b	Φ
2700K (ME3)	3	0.4578	0.4101	0.00810	0.00420	53.70
2700K (MEA~MEF)	5			0.01350	0.00700	
3000K (LE3)	3	0.4338	0.4030	0.00834	0.00408	53.22
3000K (LEA~LEF)	5			0.01390	0.00680	
3500K (KE3)	3	0.4073	0.3917	0.00927	0.00414	54.00
3500K (KEA~KEF)	5			0.01545	0.00690	
4000K (JE3)	3	0.3818	0.3797	0.00939	0.00402	53.72
4000K (JEA~JEF)	5			0.01565	0.00670	

MEA		MEB		MEC		MED		MEE		MEF	
Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy
0.4675	0.4151	0.4629	0.4217	0.4541	0.4165	0.4482	0.4054	0.4527	0.3985	0.4615	0.4037
0.4636	0.4131	0.4609	0.4171	0.4556	0.4140	0.4520	0.4073	0.4547	0.4031	0.4600	0.4062
0.4629	0.4217	0.4541	0.4165	0.4482	0.4054	0.4527	0.3985	0.4615	0.4037	0.4675	0.4151
0.4609	0.4171	0.4556	0.4140	0.4520	0.4073	0.4547	0.4031	0.4600	0.4062	0.4636	0.4131

LEA		LEB		LEC		LED		LEE		LEF	
Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy
0.4436	0.4082	0.4393	0.4148	0.4303	0.4094	0.4241	0.3981	0.4283	0.3912	0.4373	0.3966
0.4397	0.4061	0.4371	0.4101	0.4317	0.4069	0.4280	0.4001	0.4305	0.3959	0.4359	0.3991
0.4393	0.4148	0.4303	0.4094	0.4241	0.3981	0.4283	0.3912	0.4373	0.3966	0.4436	0.4082
0.4371	0.4101	0.4317	0.4069	0.4280	0.4001	0.4305	0.3959	0.4359	0.3991	0.4397	0.4061

KEA		KEB		KEC		KED		KEE		KEF	
Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy
0.4177	0.3979	0.4135	0.4048	0.4039	0.3984	0.3970	0.3858	0.4011	0.3786	0.4107	0.3850
0.4135	0.3954	0.4110	0.3996	0.4052	0.3957	0.4011	0.3882	0.4036	0.3838	0.4094	0.3877
0.4135	0.4048	0.4039	0.3984	0.3970	0.3858	0.4011	0.3786	0.4107	0.3850	0.4177	0.3979
0.4110	0.3996	0.4052	0.3957	0.4011	0.3882	0.4036	0.3838	0.4094	0.3877	0.4135	0.3954

(3) Chromaticity Bins

JEA		JEB		JEC		JED		JEE		JEF	
Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy
0.3922	0.3860	0.3882	0.3929	0.3786	0.3863	0.3715	0.3737	0.3754	0.3665	0.3850	0.3731
0.3880	0.3835	0.3856	0.3876	0.3799	0.3837	0.3756	0.3761	0.3780	0.3718	0.3837	0.3757
0.3882	0.3929	0.3786	0.3863	0.3715	0.3737	0.3754	0.3665	0.3850	0.3731	0.3922	0.3860
0.3856	0.3876	0.3799	0.3837	0.3756	0.3761	0.3780	0.3718	0.3837	0.3757	0.3880	0.3835

Nominal CCT (Rank)	Steps	Center Point		Major Axis	Minor Axis	Rotation Angle
		Cx	Cy	a	b	Φ
5000K (HE3)	3	0.3447	0.3553	0.00822	0.00354	59.62
5000K (HEA~HEF)	5			0.01370	0.00590	
5700K (GE3)	3	0.3287	0.3417	0.00746	0.00320	59.09
5700K (GEA~GEF)	5			0.01243	0.00533	
6500K (FE3)	3	0.3123	0.3282	0.00669	0.00285	58.57
6500K (FEA~FEF)	5			0.01115	0.00475	

HEA		HEB		HEC		HED		HEE		HEF	
Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy
0.3532	0.3617	0.3491	0.3673	0.3413	0.3608	0.3362	0.3492	0.3403	0.3433	0.3481	0.3498
0.3498	0.3592	0.3473	0.3625	0.3426	0.3586	0.3396	0.3516	0.3421	0.3481	0.3468	0.3520
0.3491	0.3673	0.3413	0.3608	0.3362	0.3492	0.3403	0.3433	0.3481	0.3498	0.3532	0.3617
0.3473	0.3625	0.3426	0.3586	0.3396	0.3516	0.3421	0.3481	0.3468	0.3520	0.3498	0.3592

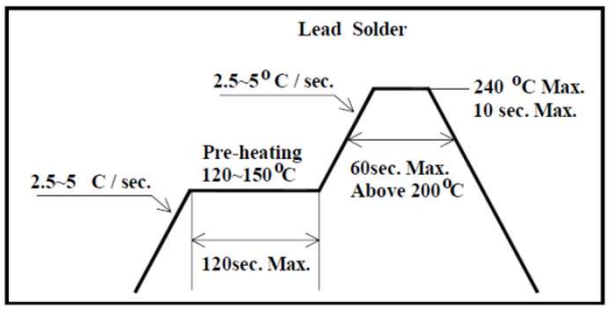
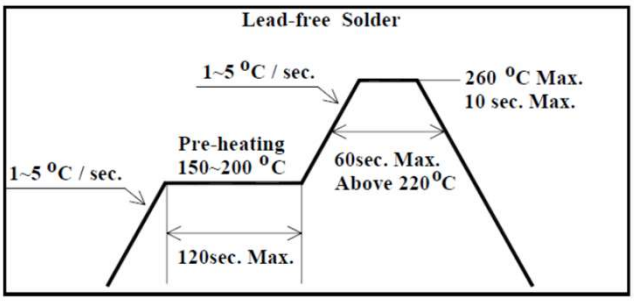
GEA		GEB		GEC		GED		GEE		GEF	
Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy
0.3365	0.3475	0.3328	0.3526	0.3256	0.3467	0.3210	0.3362	0.3246	0.3308	0.3318	0.3367
0.3334	0.3452	0.3311	0.3482	0.3269	0.3447	0.3241	0.3384	0.3263	0.3352	0.3305	0.3387
0.3328	0.3526	0.3256	0.3467	0.3210	0.3362	0.3246	0.3308	0.3318	0.3367	0.3365	0.3475
0.3311	0.3482	0.3269	0.3447	0.3241	0.3384	0.3263	0.3352	0.3305	0.3387	0.3334	0.3452

FEA		FEB		FEC		FED		FEE		FEF	
Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy	Cx	Cy
0.3193	0.3333	0.3161	0.3379	0.3096	0.3327	0.3053	0.3233	0.3085	0.3185	0.3150	0.3237
0.3165	0.3313	0.3146	0.3340	0.3107	0.3309	0.3081	0.3253	0.3100	0.3224	0.3139	0.3255
0.3161	0.3379	0.3096	0.3327	0.3053	0.3233	0.3085	0.3185	0.3150	0.3237	0.3193	0.3333
0.3146	0.3340	0.3107	0.3309	0.3081	0.3253	0.3100	0.3224	0.3139	0.3255	0.3165	0.3313

REFLOW SOLDERING CHARACTERISTICS

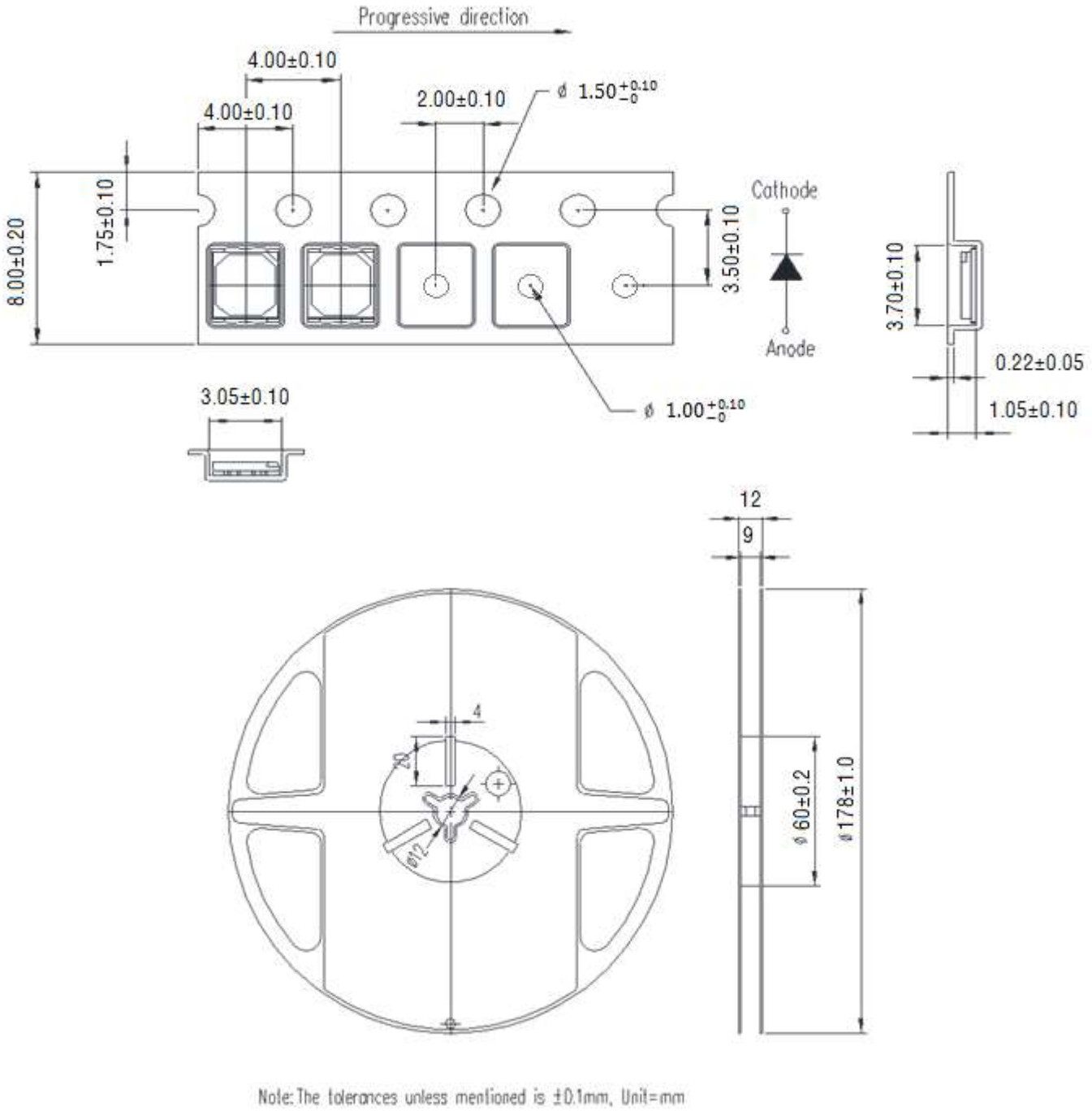
For Reflow Process:

Preheating : 140℃~160℃±5℃,within 2 minutes.
Operation heating : 260℃(Max.) within 10 seconds.(Max)
Gradual Cooling (Avoid quenching).

Lead solder		Lead-free solder	
Pre-heat	120-150℃	Pre-heat	150-200℃
Pre-heat time	120 sec.Max.	Pre-heat time	120 sec.Max.
Peak Temperature	240℃ Max.	Peak Temperature	260℃ Max.
Soldering time condition	10 sec.Max.	Soldering time condition	10 sec.Max.
			

Notes:
The encapsulated material of the LEDs is silicone . Therefore the LEDs have a soft surface on the top of package. The pressure to the top surface will be influence to the reliability of the LEDs. Precautions should be taken to avoid the strong pressure on the encapsulated part. So when using the picking up nozzle, the pressure on the silicone resin should be proper.

TAPE AND REEL



Notes:
(1) Quantity : 4,000pcs/Reel
(2) Cumulative Tolerance : Cumulative Tolerance/10 pitches to be ±0.2mm
(3) Adhesion Strength of Cover Tape : Adhesion strength to be 0.1-0.7N when the cover tape is turned off from the carrier tape at the angle of 10º to the carrier tape
(4) Package : P/N, Manufacturing data Code No. and quantity to be indicated on a damp proof Package.

RELIABILITY TEST ITEMS

Test Items	Test Conditions	Test Duration	Number of Damaged
Steady State Operating Life of High Temperature (HTOL)	Ts=55℃, IF=65mA	1000hrs	0/20
Steady State Operating Life of High Temperature (HTOL)	Ts=85℃, IF=65mA	1000hrs	0/20
Steady State Operating Life of Low Temperature (LTOL)	Ta=-40℃, IF=65mA	1000hrs	0/20
Wet Operating Life of High Temperature (WHTOL)	Ta=60℃, RH=90%, IF=65mA	1000hrs	0/20
High Temperature Storage (HTS)	Ta=100℃	1000hrs	0/20
Low Temperature Storage (LTS)	Ta=-40℃	1000hrs	0/20
Wet High Temperature Storage Life (WHTSL)	Ta=60℃,RH=90%	1000hrs	0/20
Thermal Shock (TS)	-45℃~125℃ 15 min dwell 20sec transfer	300 cycles	0/20
Moisture Sensitivity Level(MSL)	Tsld = 260℃ (Pre treatment 60℃,60% 168hrs)	3 Times	0/20
Random Vibration (RV)	6G RMS, 10-2000Hz, 10min	Per axis	0/6
Variable Vibration Frequency (VVF)	10-2000-10Hz, log or linear sweep rate, 20G for 1 min, 1.5mm each apply 3x per axis over	6hrs	0/6

Failure Criteria

Item	Symbol	Test Condition	Criteria for Judgment	
			Min.	Max.
Forward	Vf	IF=Typical Current	--	Initial Value×1.1
Luminous Flux	Im	IF=Typical Current	Initial Value×0.7	--

PRECAUTION FOR USE

(1) This device should not be used in any type of fluid such as water, oil, organic solvent, etc.
When washing is required, IPA should be used.

(2) When the LEDs are illuminating, operating current should be decided after considering the ambient maximum temperature.

(3) LEDs must be stored to maintain a clean atmosphere. If the LEDs are stored for 3months or more after being shipped from ShineOn, a sealed container with a nitrogen atmosphere should be used for storage.

(4) The LEDs must be used within four weeks after opening the moisture proof packing.
Repack unused Products with anti-moisture packing, fold to close any opening and then store in a dry place.

(5) The appearance and specifications of the product may be modified for improvement without notice.

(6) This LED is sensitive to the static electricity and surge. It is recommended to use a wrist Band or anti-electrostatic glove when handling the LEDs.

(7) On manual soldering, a solder tip must be needed as grounded for usage. If over voltage which exceeds the absolute maximum rating is applied to LEDs, it will cause damage LEDs and result in destruction. Damaged LEDs will show SO We unusual characteristics such as leak current remarkably increase ,turn-on voltage becomes lower and the LEDs get unlighted at low current.

DISCLAIMERS

(1) Shineon is not responsible for any damages or accidents caused if the operating or storage conditions exceed the absolute maximum ratings recommended in this document.

(2) The LEDs described in this document are intended to be operated by ordinary electronic equipment.

(3) It is recommended to consult with Shineon when the environment or the LED operation is non-standard in order to avoid any possible malfunctions or damage to product or risk of life or health.

(4) Disassembly of the LED products for the purpose of reverse engineering is prohibited without prior written consent from Shineon. All defected LEDs must be reported to Shineon and are not to be disassembled or analyzed.

(5) The product information can be modified and upgraded without prior notice.