

PLCC S 2835 Ra80 HE2.1

2T03X8xxA8003094

DATASHEET

PLCC S 2835 HE2.1 Series features ultra high luminous efficacy and compact package size which increase the flexibility in lamp design and expand the range of applications. With the outperforming efficiency, PLCC S 2835 HE2.1 Series is optimized to be used in high-end LED market such as boutique and luxury apparel store.



Features

- Package: white SMT package, colored diffused silicone resin
- Dimension: 3.48mmx2.77mm
- Chip technology: GaN
- View Angle: 120°
- Color temperature: 2700K-6500K
- Deliver 37.1lm @65mA, 4000K
- Voltage: 3V
- MSL: Level 3

Applications:

- Down Light
 - Commercial Lighting
 - General Lighting
-

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General Information

Ordering Code Format

<u>2</u>	<u>T</u>	<u>03</u>	<u>X8</u>	<u>xx</u>	<u>A</u>	<u>80</u>	<u>03</u>	<u>xxx</u>	
X1	X2	X3-X4	X5-X6	X7-X8	X9	X10-X11	X12-X13	X14-X16	
X1 Type		X2 Component		X3-X4 Series		X5-X6 Wattage		X7-X8 Color/CCT	
2	Emitter	T	PLCC	03	3528	X8	0.8W	27	2700K
								30	3000K
								35	3500K
								40	4000K
								50	5000K
								57	5700K
								65	6500K
X9 BIN		X10-X11 CRI		X12-X13 Voltage		X14-X16 Serial Number			
A	Anis	80	CRI(Ra)80	03	3V	-	-		

Absolute Maximum Ratings

Parameter		Symbol	Values
Operating Temperature	min. max.	T_{op}	-40 °C 85°C
Storage Temperature	min. max.	T_{stg}	-40 °C 125°C
Junction Temperature	max.	T_j	125 °C
Forward current $T_j = 25\text{ °C}$	min. max.	I_F	5 mA 300mA
Surge Current $t \leq 10\text{ }\mu\text{s}$; $D = 0.005$; $T_j = 25\text{ °C}$	max.	I_{FS}	350 mA
Reverse voltage $T_j = 25\text{ °C}$	max.	V_R	Not designed for reverse operation
ESD withstand voltage acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 2)		V_{ESD}	2 kV

NOTE:

- ※ Proper current derating must be observed to maintain junction temperature below the maximum at all time.
- ※ LEDs are not designed to be driven in reverse bias.

Characteristics($I_F = 65 \text{ mA}$; $T_j = 25^\circ \text{ C}$)

Parameter		Symbol	Values
Viewing angle	typ.	φ	120 °
Forward Voltage	min typ. max.	V_F	2.70V 2.76V 2.90V
Thermal resistance		$^\circ\text{C/W}$	20
CRI (Ra)		-	80
CCT	(Cool White) (Neutral White) (Warm White)	K	2,700 3,000 3,500 4,000 5,000 5,700 6,500
JEDEC Moisture Sensitivity		-	Level 3 Floor Life Conditions: $\leq 30^\circ\text{C}$ / 60% RH Soak Requirements(Standard) Time (hours): 40+1/-0 Conditions: 60°C / 60% RH

Electro - Optical Characteristics (Neutral White)

If (mA)	Vf (V)	Power (W)	Im	Im/W
25	2.64	0.066	14.6	221.6
40	2.71	0.108	23.2	214.0
60	2.76	0.166	34.3	207.3
65 (Typ)	2.77	0.180	37.1	205.8
90	2.83	0.255	50.0	196.3
120	2.96	0.355	65.4	184.0
150	3.02	0.453	80.1	176.9
200	3.03	0.606	103.4	170.7
280	3.17	0.888	138.0	155.5
300	3.21	0.963	146.8	152.5

NOTE:

※ LM Values are for representative reference only.

Luminous Flux Characteristics($I_F = 65 \text{ mA}$; $T_j = 25^\circ \text{ C}$)

Color	CRI(Ra)	Group	Min. Luminous Flux(lm)	Max. Luminous Flux(lm)	Order Code
Cool White	80	34	34	36	2T03X865A8003094 2T03X857A8003094 2T03X850A8003094
		36	36	38	
		38	38	40	
Neutral White		36	36	38	2T03X840A8003094
		38	38	40	
Warm White		32	32	34	2T03X835A8003094 2T03X830A8003094 2T03X827A8003094
		34	34	36	
		36	36	38	

NOTE:

※ The luminous flux performance is guaranteed within published operating conditions. Edison Opto maintains a tolerance of $\pm 10\%$ on flux measurements.

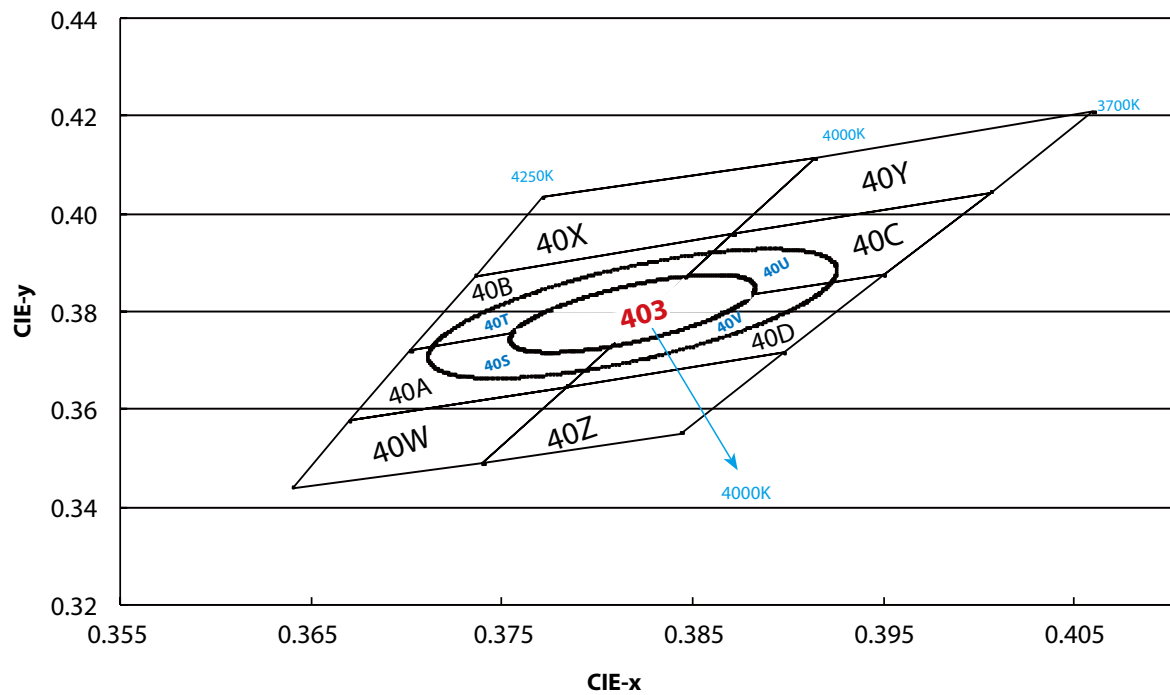
Voltage Bin Structure($I_F = 65 \text{ mA}$; $T_j = 25^\circ \text{ C}$)

Symbol	Group	Min. Voltage (V)	Max. Voltage (V)
VF	VC0	2.7	2.8
	VA1	2.8	2.9

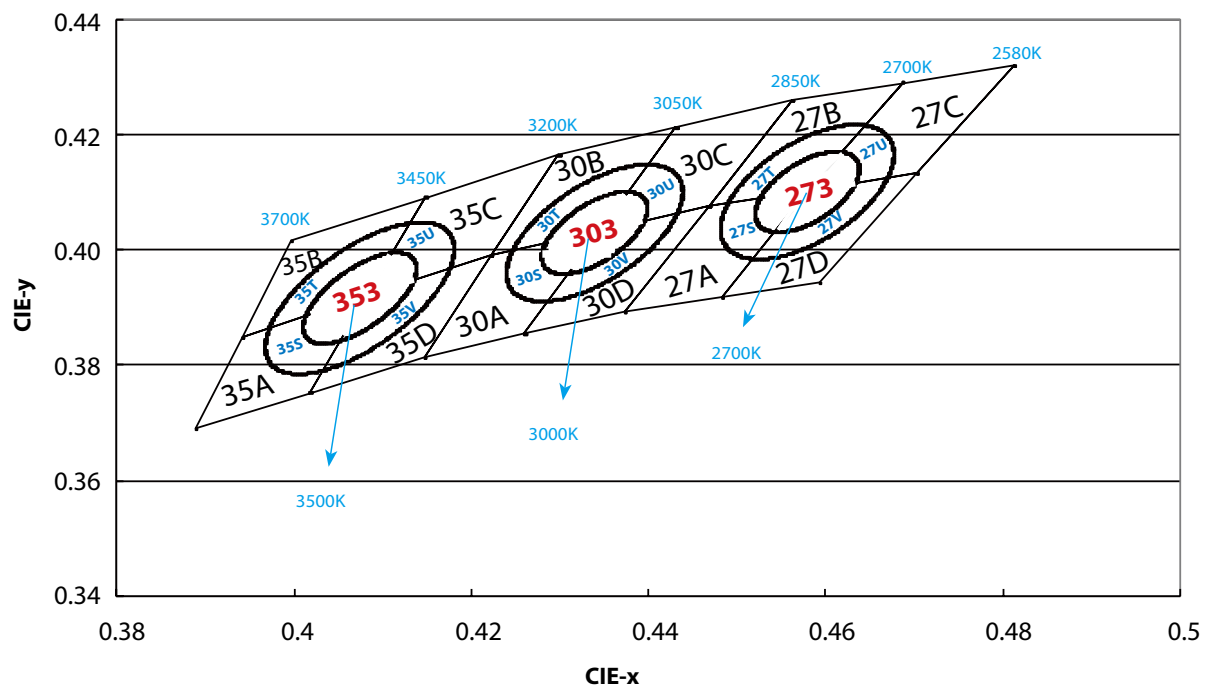
NOTE:

※ Forward voltage measurement allowance is $\pm 0.1\text{V}$.

Neutral White



Warm White



2700K

27A		27B		27C		27D	
X	Y	X	Y	X	Y	X	Y
0.4578	0.4101	0.4687	0.4289	0.4813	0.4319	0.4703	0.4132
0.4468	0.4077	0.4562	0.4260	0.4687	0.4289	0.4578	0.4101
0.4373	0.3893	0.4468	0.4077	0.4578	0.4101	0.4483	0.3919
0.4483	0.3919	0.4578	0.4101	0.4703	0.4132	0.4593	0.3944

3000K

30A		30B		30C		30D	
X	Y	X	Y	X	Y	X	Y
0.4345	0.4033	0.4431	0.4213	0.4562	0.4260	0.4468	0.4077
0.4223	0.3990	0.4299	0.4165	0.4431	0.4213	0.4345	0.4033
0.4147	0.3814	0.4223	0.3990	0.4345	0.4033	0.4260	0.3854
0.4260	0.3854	0.4345	0.4033	0.4468	0.4077	0.4373	0.3893

3500K

35A		35B		35C		35D	
X	Y	X	Y	X	Y	X	Y
0.4083	0.3921	0.4148	0.4090	0.4299	0.4165	0.4223	0.399
0.3941	0.3848	0.3996	0.4015	0.4148	0.4090	0.4083	0.3921
0.3889	0.3690	0.3941	0.3848	0.4083	0.3921	0.4018	0.3752
0.4018	0.3752	0.4083	0.3921	0.4223	0.399	0.4147	0.3814

4000K

40X		40B		40A		40W	
X	Y	X	Y	X	Y	X	Y
0.3771	0.4034	0.3871	0.3959	0.3828	0.3803	0.3670	0.3578
0.3736	0.3874	0.3736	0.3874	0.3702	0.3722	0.3640	0.3440
0.3871	0.3959	0.3702	0.3722	0.3670	0.3578	0.3740	0.3491
0.3914	0.4115	0.3828	0.3803	0.3784	0.3647	0.3784	0.3647

40Y		40C		40D		40Z	
X	Y	X	Y	X	Y	X	Y
0.3914	0.4115	0.4006	0.4044	0.3950	0.3875	0.3784	0.3647
0.3871	0.3959	0.3871	0.3959	0.3828	0.3803	0.3740	0.3491
0.4006	0.4044	0.3828	0.3803	0.3784	0.3647	0.3844	0.3552
0.4060	0.4208	0.3950	0.3875	0.3898	0.3716	0.3898	0.3716

5000K

50X		50B		50A		50W	
X	Y	X	Y	X	Y	X	Y
0.3381	0.3762	0.3463	0.3687	0.3451	0.3554	0.3366	0.3369
0.3480	0.3840	0.3376	0.3616	0.3371	0.3490	0.3440	0.3427
0.3463	0.3687	0.3371	0.3490	0.3366	0.3369	0.3429	0.3307
0.3376	0.3616	0.3451	0.3554	0.3440	0.3427	0.3361	0.3245

50Y		50C		50D		50Z	
X	Y	X	Y	X	Y	X	Y
0.3480	0.3840	0.3551	0.3760	0.3533	0.3620	0.3440	0.3427
0.3571	0.3907	0.3463	0.3687	0.3451	0.3554	0.3515	0.3487
0.3551	0.3760	0.3451	0.3554	0.3440	0.3427	0.3495	0.3339
0.3463	0.3687	0.3533	0.3620	0.3515	0.3487	0.3429	0.3307

5700K

57X		57B		57A		57W	
X	Y	X	Y	X	Y	X	Y
0.3196	0.3602	0.3290	0.3538	0.3290	0.3417	0.3222	0.3243
0.3290	0.3690	0.3207	0.3462	0.3215	0.3350	0.3290	0.3300
0.3290	0.3538	0.3215	0.3350	0.3222	0.3243	0.3290	0.3180
0.3207	0.3462	0.3290	0.3417	0.3290	0.3300	0.3231	0.3120

57Y		57C		57D		57Z	
X	Y	X	Y	X	Y	X	Y
0.3290	0.3690	0.3376	0.3616	0.3371	0.3490	0.3290	0.3300
0.3381	0.3762	0.3290	0.3538	0.3290	0.3417	0.3366	0.3369
0.3376	0.3616	0.3290	0.3417	0.3290	0.3300	0.3361	0.3245
0.3290	0.3538	0.3371	0.3490	0.3366	0.3369	0.3290	0.3180

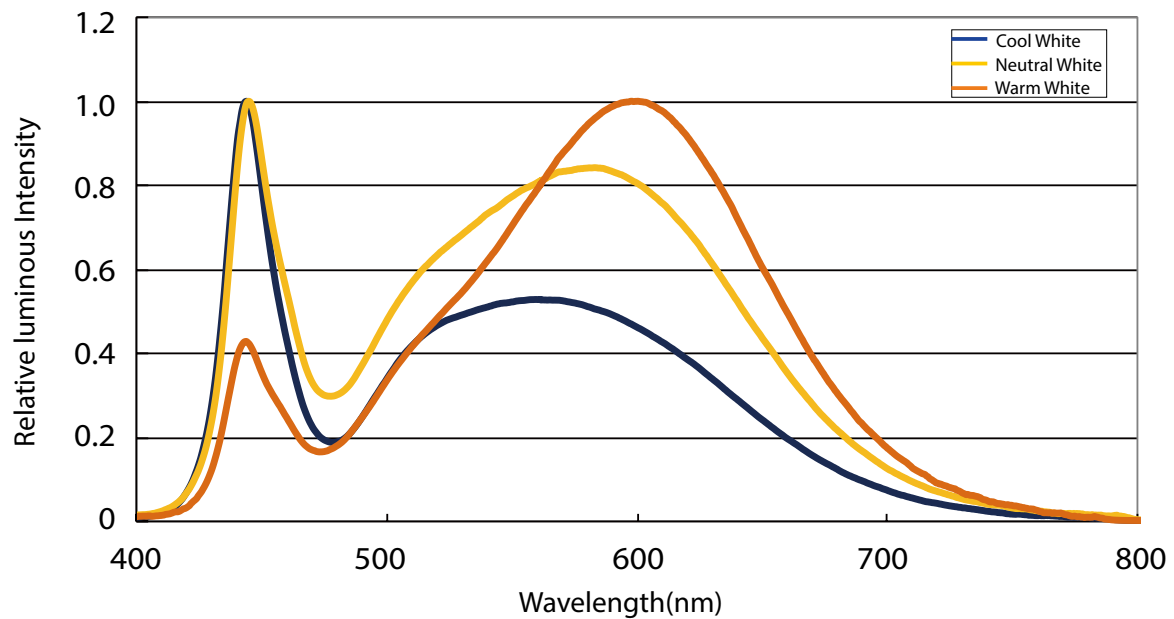
6500K

65X		65B		65A		65W	
X	Y	X	Y	X	Y	X	Y
0.3005	0.3415	0.3115	0.3391	0.3130	0.3290	0.3068	0.3113
0.3099	0.3509	0.3028	0.3304	0.3048	0.3207	0.3144	0.3186
0.3115	0.3391	0.3048	0.3207	0.3068	0.3113	0.3161	0.3059
0.3028	0.3304	0.3130	0.3290	0.3144	0.3186	0.3093	0.2993

65Y		65C		65D		65Z	
X	Y	X	Y	X	Y	X	Y
0.3099	0.3509	0.3205	0.3481	0.3213	0.3373	0.3144	0.3186
0.3196	0.3602	0.3115	0.3391	0.3130	0.3290	0.3221	0.3261
0.3205	0.3481	0.3130	0.3290	0.3144	0.3186	0.3231	0.3120
0.3115	0.3391	0.3213	0.3373	0.3221	0.3261	0.3161	0.3059

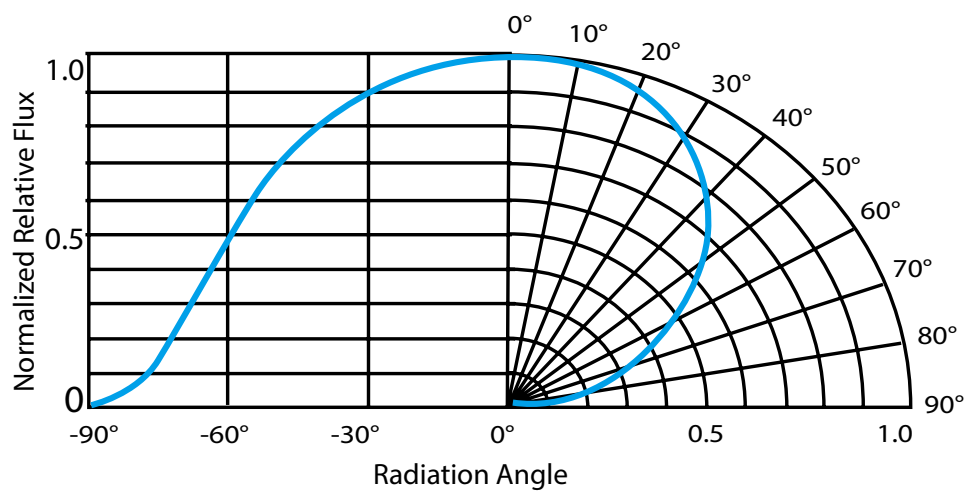
Characteristic Curves

Color Spectrum (CRI80)



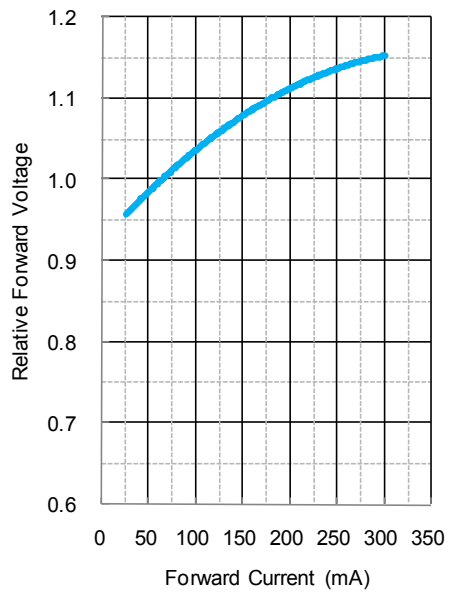
Beam Pattern

$I_f = 65 \text{ mA}$; $T_j = 25^\circ \text{ C}$



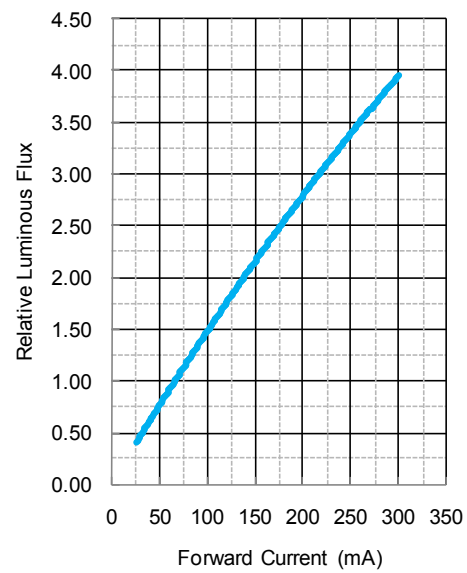
Relative Forward Voltage

$$V_F/V_F(65 \text{ mA}) = f(V_F); T_J = 25^\circ \text{C}$$



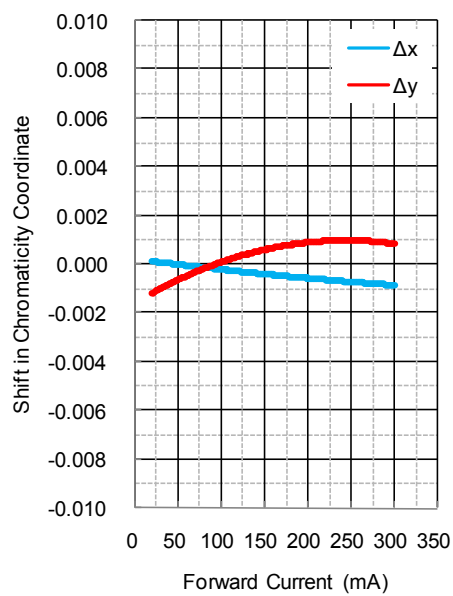
Relative Luminous Intensity

$$I_v/I_v(65 \text{ mA}) = f(I_v); T_J = 25^\circ \text{C}$$



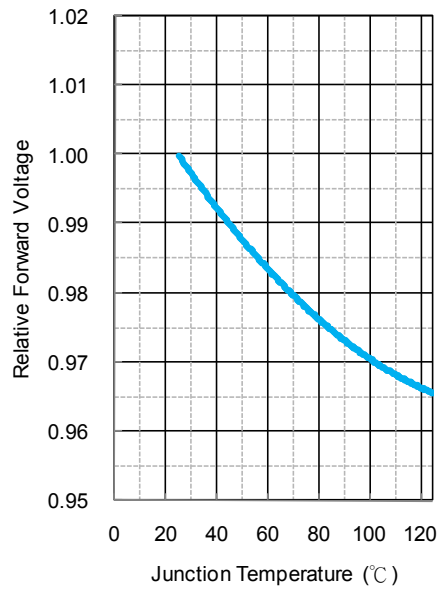
Chromaticity Coordinate Shift

$$\Delta C_x, \Delta C_y = f(I_F); T_J = 25^\circ \text{C}$$



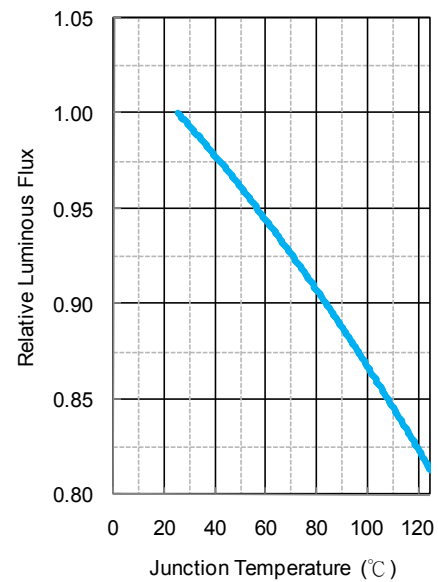
Relative Forward Voltage

$$V_F/V_F(25^\circ\text{C}) = f(V_F); I_F = 65 \text{ mA}$$



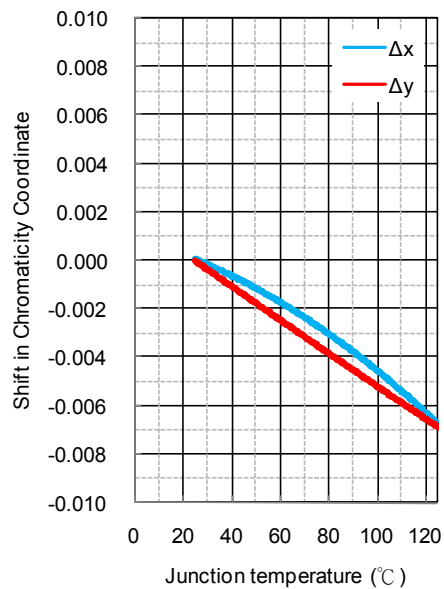
Relative Luminous Intensity

$$I_v/I_v(25^\circ\text{C}) = f(I_v); I_F = 65 \text{ mA}$$



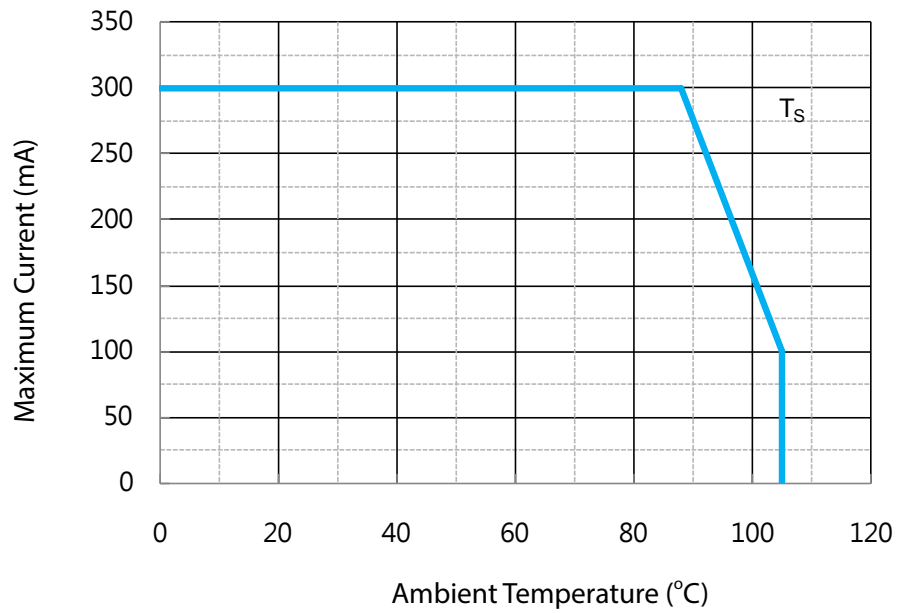
Chromaticity Coordinate Shift

$$\Delta C_x, \Delta C_y = f(T_j); I_F = 65 \text{ mA}$$

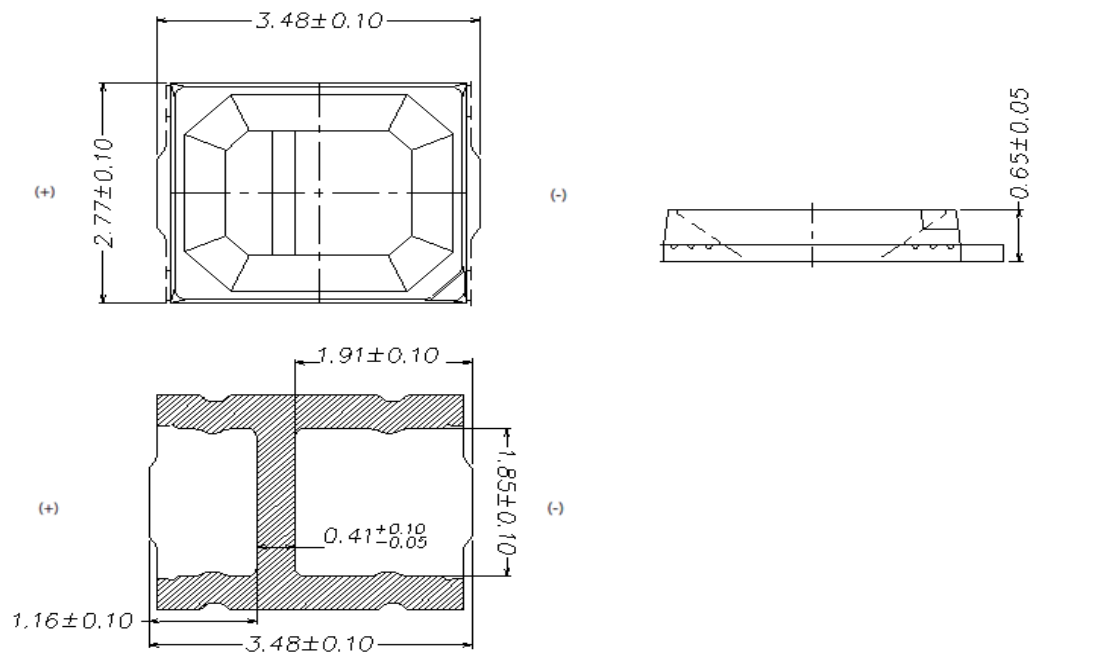


Max. Permissible Forward Current

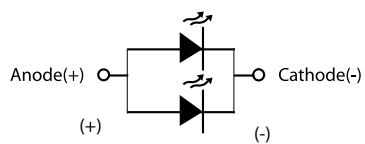
$$I_f = f(T)$$



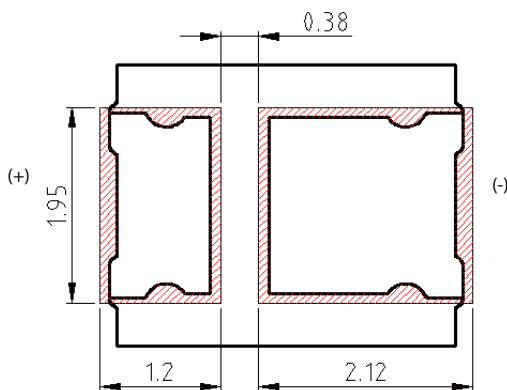
Mechanical Dimension



Circuit



Solder Pad

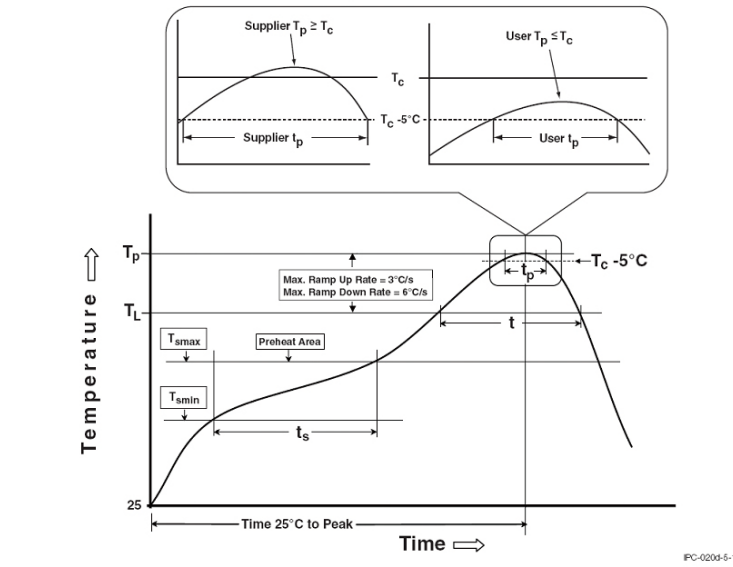


NOTE:

1. All dimensions are measured in mm.
2. Tolerance : ± 0.1 mm

Reflow Profile

The following reflow profile is from IPC/JEDEC J-STD-020D which provided here for reference.



Reflow Profiles

Classification Reflow

Profile Feature	Pb-Free Assembly
Preheat & Soak Temperature min (T _{sm}) Temperature max (T _{sm}) Time (T _{sm} to T _{sm}) (t _s)	150 °C 200 °C 60-120 seconds
Average ramp-up rate (T _{sm} to T _p)	3 °C/second max.
Liquidous temperature (T _l) Time at liquidous (t _l)	217 °C 60-150 seconds
Peak package body temperature (T _p)	255 °C ~260 °C
Classification temperature (T _c)	260 °C
Time (t _p) within 5 °C of the specified classification temperature (T _c)	30 seconds
Average ramp-down rate (T _p to T _{sm})	6°C/second max.
Time 25°C to peak temperature	8 minutes max.

Reliability

NO .	Test Item	Test Condition	Remark
1	Temperature Cycle	-40°C~100°C 30, 30, mins	100 Cycle
2	Thermal Shock	-40°C~100°C 15, 15 mins $\leq$ 10 sec	100 Cycle
3	Resistance to Soldering Heat	T _{SOL} =260°C, 30 sec	3 times
4	Moisture Resistance	25°C~65°C 90% RH 24 hrs / 1 cycle	10 Cycle
5	High-Temperature Storage	T _A =100°C	1,000 hrs
6	Humidity Heat Storage	T _A =85°C RH=85%	1,000 hrs
7	Low-Temperature Storage	T _A =-40°C	1,000 hrs
8	Operation Life test	25°C	1,000 hrs
9	High Temperature Operation Life test	85°C	1,000 hrs
10	High Humidity Heat Life Test	85°C, 85%RH	1,000 hrs
11	ON/OFF Test	30 sec ON, 30 sec OFF	1.5W times

Failure Criteria

Item	Criteria for Judgment	
	Min.	Max.
Lumen Maintenance	85%	-
$\Delta u'v'$	-	0.006
Forward Voltage	-	Initial Data x 1.1
Reverse Current	-	10 μ A
Resistance to Soldering Heat	No dead lamps or visual damage	

Lumen Maintenance

Edison Opto's LM-80 verification is conducted according to standardized IES LM-80-08 and TM-21-11 methods. Based on the different testing intervals data, Edison Opto can speculate LED lumen maintenance. For more details on lumen maintenance testing, chromaticity and LED case temperatures please refer to Edison Opto's LM-80 reports.

Cautions

LEDs should be stored or lighted in the environment of no sulfur.

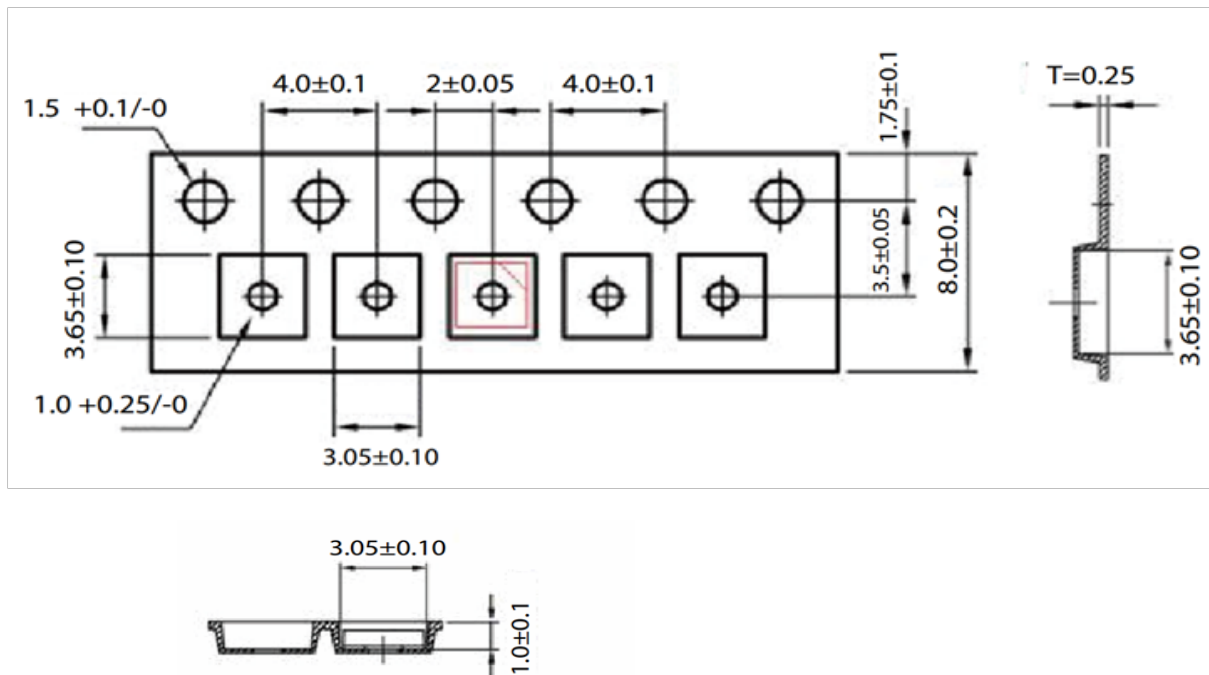
Some materials, such as plastic seals, printing ink, enclosures and adhesives, may contain sulfur.

LEDs also should not be exposed in the acid or halogen environment.

**LM
80**

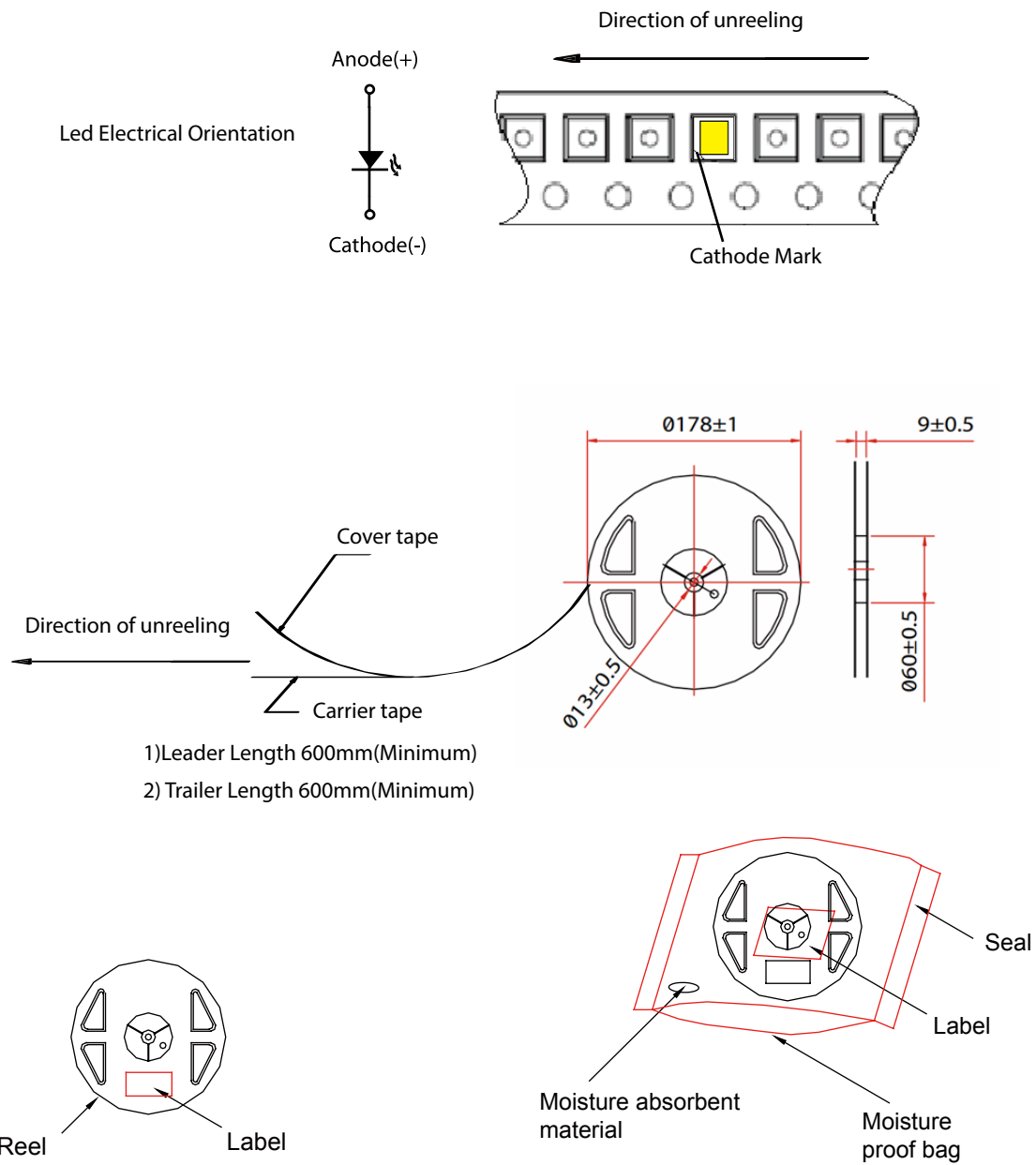
Product Packaging Information

Pocket Tape Dimensions



Product Packaging Information

Reel Specification



Item	Quantity	Total	Dimensions(mm)
Reel	4,000pcs	4,000pcs	D=178

Precaution for Use

- (1) Moisture monitoring is vital during the storage of LEDs for if too much moisture is absorbed, interface delamination and optical performance degradation will occur. Therefore, products should be packed in moisture-proof aluminum bags so as to reduce moisture absorption to the lowest degree during transportation and storage. Included moisture-proof aluminum bag are the key indicators that they will change from brown to azure if bags are invaded by moisture.
- (2) Soldering process in compliance with the range of the conditions stated above should be conducted after opening the moisture-proof aluminum bag. The rest LEDs should be stored in a hermetically sealed container, silica gel desiccants included. And the original moisture-proof aluminum bags are recommended.
- (3) If the "Period After Opening" storage time is too long or silica gel desiccants don't maintain blue any more, baking process should be done once.

Datasheet History

Versions	Description	Release Date
1	Establish a Datasheet	2024/03/15
2	Update the Version	2025/06/27
3	Update the Mechanical Dimension	2025/12/08

About EDISON OPTO

Edison Opto provides comprehensive LED and solid-state lighting products from LED Component, Light Module, UV / IR LED, LED sensing, Horticulture and Automotive Lighting. With a view to improve R&D process, Edison Opto develops the vertical platform on TEMOTM (Thermal . Electrical . Mechanical . Optical) to ensure the quality of products and services; Furthermore, Edison Opto creates LDMSTM (LED Design Manufacturing Service) from light source to luminaire manufacturing, to serve our customers a quality experience of customized solutions.

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