2835R Series

Standard 2835 package to address retrofit applications

2835R Series is a complementary portfolio with optimized performance and bin construction for the retrofit space. With an industry standard footprint, it provides the perfect balance between performance and cost efficiency for a variety of applications.

FEATURES AND BENEFITS

Flexible voltage configurations to comply with various different system solutions

Industry standard footprint for drop-in replacement designs

High maximum drive current to allow for reduction of LED count

Part Number Nomenclature

Part numbers for the 2835R Series follow the convention below:

L 1 2 8 – **A A B B** R **C** 3 5 0 0 **D D D**

Where:

      A A   -   designates nominal CCT (27=2700K, 30=3000K, 35=3500K, 40=4000K, 50=5000K, 57=5700K, 65=6500K)

      B B   -   designates nominal CRI (70=70CRI, 75=75CRI, 80=80CRI and 90=90CRI)

      C   -   designates voltage (A=3V, B=6V, C=9V, G=12V, D=18V, E=36V,F=54V)

      D D D   -   designates Lumileds internal code (0A1, 0B1, 0C1, etc.=shares the same base part)

Therefore, the following part number is used for a 2835R 3000K, 80CRI, 36V LED:

L 1 2 8 – **3 0 8 0** R **E** 3 5 0 0 **0 A 1**

Lumen Maintenance

Please contact your local Sales Representative or Lumileds Technical Solutions Manager for more information about the long- term performance of this product.

Environmental Compliance

Lumileds LLC is committed to providing environmentally friendly products to the solid-state lighting market. The 2835R Seriesis compliant to the European Union directives on the restriction of hazardous substances in electronic equipment, namely the RoHS Directive 2011/65/EU and REACH Regulation (EC) 1907/2006. Lumileds LLC will not intentionally add the following restricted materials to its products: lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) or polybrominated diphenyl ethers (PBDE).

Mass Production List of 2835R Series

Product	Product Number	CCT	Ra Min	Φ(lm) Min	Φ(lm) Typ	Φ(lm) Max	Test conditions
2835R 3V	L128-2780RA35003V2	2700	80	25.5	26.5	-	25℃, IF=60mA
	L128-3080RA35003V2	3000	80	26	26.8	-	
	L128-3580RA35003V2	3500	80	26.7	27.5	-	
	L128-4080RA35003V2	4000	80	27.5	28.5	-	
	L128-5080RA35003V2	5000	80	27.5	28.5	-	
	L128-5780RA35003V2	5700	80	27.5	28.5	-	
	L128-6580RA35003V2	6500	80	27.5	28.5	-	

Notes:

1. Tolerance of Color Rendering Inder: ±2.
2. 2.Tolerance of Luminous flux: ±5%.

Absolute maximum ratings(Ta=25℃)

Parameter	Symbol	Value	Unit
Power dissipation	Pd	384	mW
Forward current	IF	120	mA
Operating temperature range	Top	-40~+105	℃
Storage temperature range	Tstg	-40~+105	℃
Heatresistance	Rth	25	℃/W
Junction temperature	Tj	130	℃
Electrostatic Discharge	ESD	2000	V

Electro-optical characteristics(Ta=25℃)

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Forward voltage	Vf	2.8	-	3.2	V	IF=60mA
Luminous flux	Φ	25.5	-	-	lm	IF=60mA
Viewing Angle	2θ1/2	-	120	-	Deg	IF=60mA
Reverse current	IR	-	-	10	μA	Vr=5V
Color Index	Ra	80	-	-	-	IF=60mA
Saturated red	R9	0	-	-	-	IF=60mA

NOTES：

* The measurement of forward voltage maintains a tolerance of ± 0.05V, flux maintains a tolerance of ± 5%.
* Ra measurement tolerance is ±2.
* Rth j-sp is the thermal resistance from LED junction to solder point on MCPCB with electrical power.
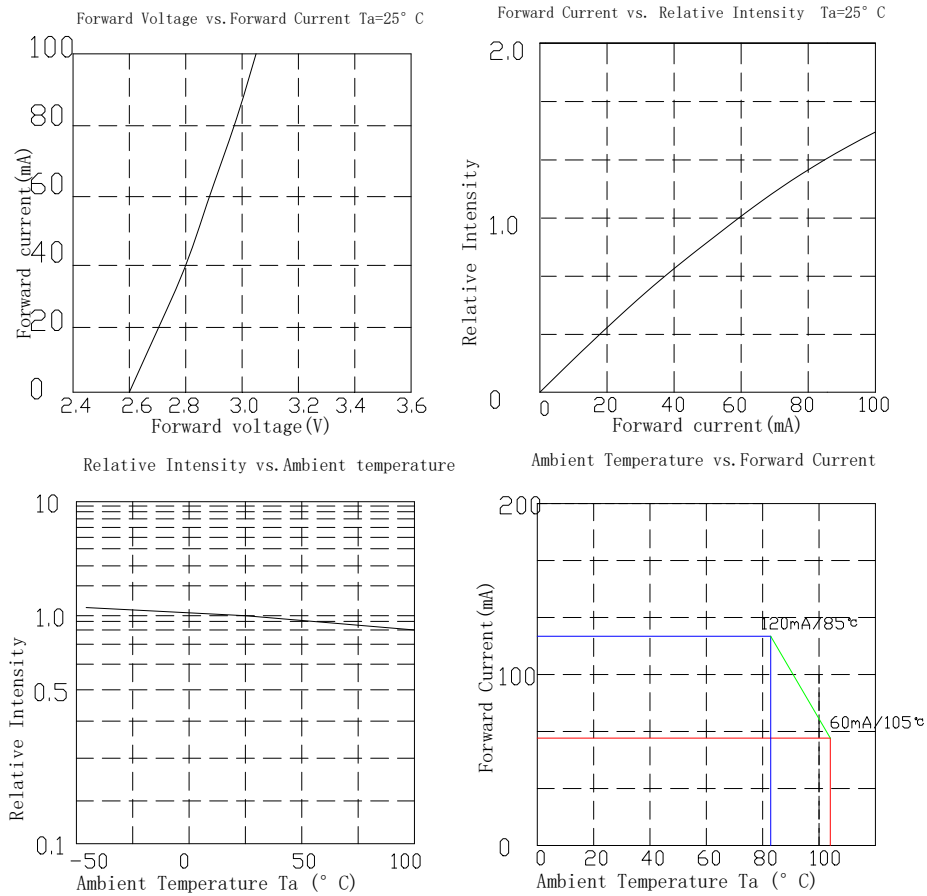* the product is not designed to be used under reverse voltage.

Reliability Test Items And Conditions

Test Items	Test condition	Time	Quantity	Ac/Re
Reflow Soldering	Temp. :260℃/10sec.	6Min.	22pcs	0/22
Thermal Shock	-40~125C, 15min dwell, 10sec transfer	100Cycles	22pcs	0/22
High Temperature High Humidity life Test	85℃,85%RH, IF=60mA	1000Hrs.	10pcs	0/10
Low Temperature Storage	Ta=-40℃	1000Hrs.	10pcs	0/10
High Temperature Storage	Ta=105℃	1000Hrs.	10pcs	0/10
High Temperature Operation Life Test	Ta=85℃, IF =60mA.	1000Hrs.	10pcs	0/10

Failure Criteria

Item	Symbol	Failure Criteria
Luminous Flux	Lm	$\geqq$70%
Forward voltage	VF	±10%
Colour	CIE_X CIE_y	±0.01

Typical optical characteristics curves

Forward Voltage vs. Forward Current Ta=25° C

Forward Current vs. Relative Intensity Ta=25° C

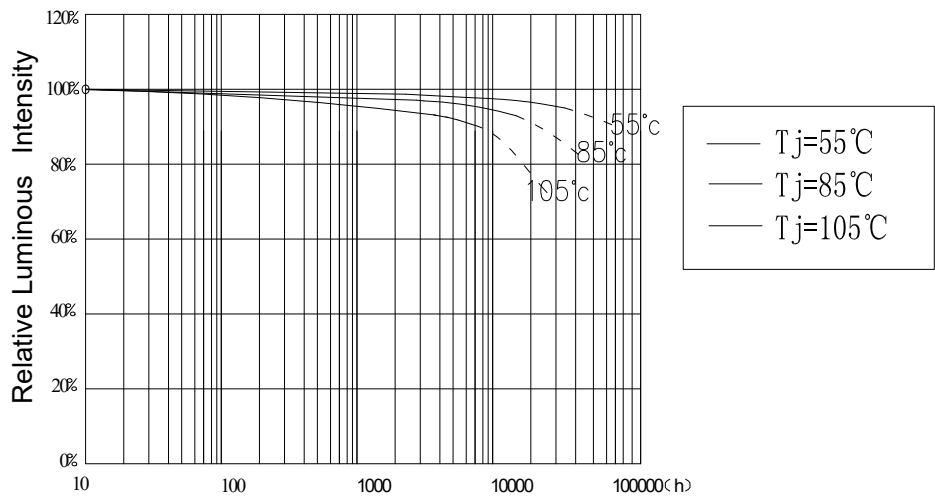### Relative Intensity vs. Ambient temperature

Ambient Temperature vs. Forward Current

120mA/85℃

60mA/105℃

Curves of beam angle and relative brightness

40°   20°   0°
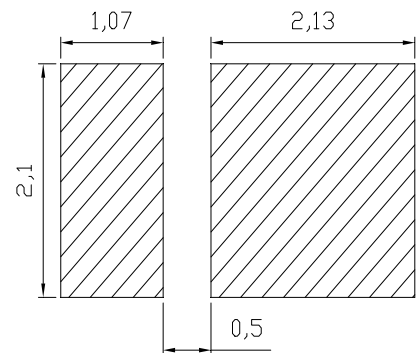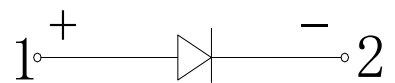
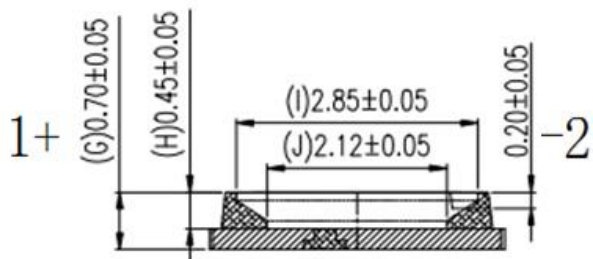1.0
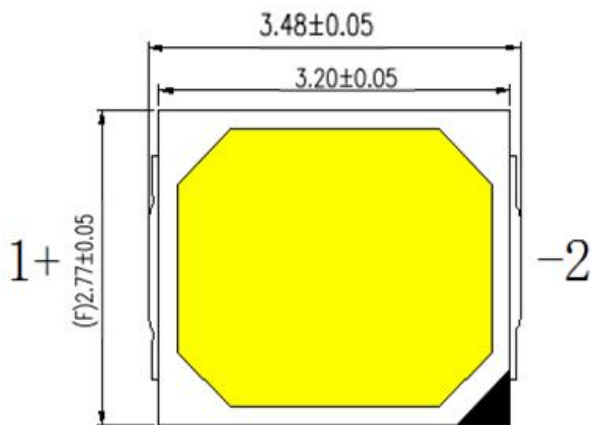
50°

0.8

0.6

70°

0.4

0.2

90°
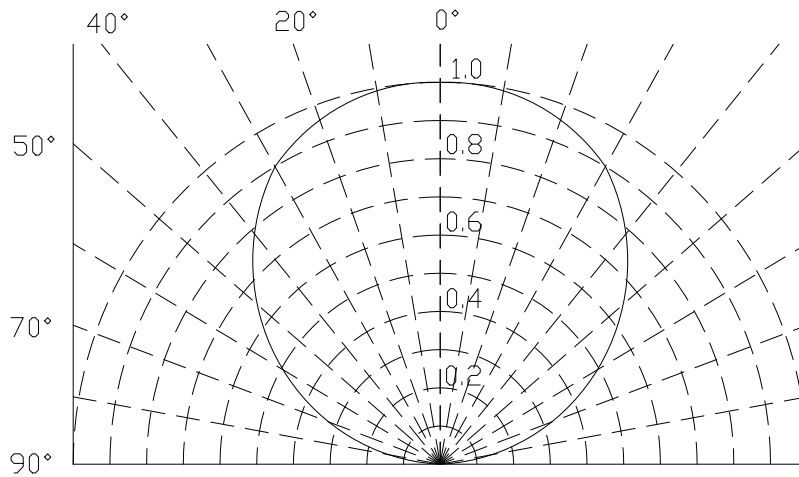
life test:

Affect of Tj on Luminous Maintenance
(If=60mA)
(Dot line: Expected Life)

Mechanical Dimensions：Unit（mm）

For reflow soldering

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, Lumileds bins LED components for luminous flux or radiometric power, color point, peak or dominant wavelength and forward voltage.

2835R Series LEDs are labeled using a 5-digit alphanumeric CAT code following the format below

Where:

A B C D E

A - designates luminous flux bin (example: B=95 to 100 lumens, G=140 to 150 lumens)

B C D - designates correlated color bin (example: A27, A30, A35, A40, A50, A57, A65)

E - designates forward voltage bin (example: B=34.5 to 35.0V, J=38.0 to 38.5V)

Therefore, a 2835R LED with a lumen range of 95 to 100, color bin of A35 and a forward voltage range of 38.0 to 38.5V has the following CAT code:

B A 3 5 J

Luminous Flux Bins

Luminous flux bin definitions for 2835R Series at rated current, Ta=25°C .

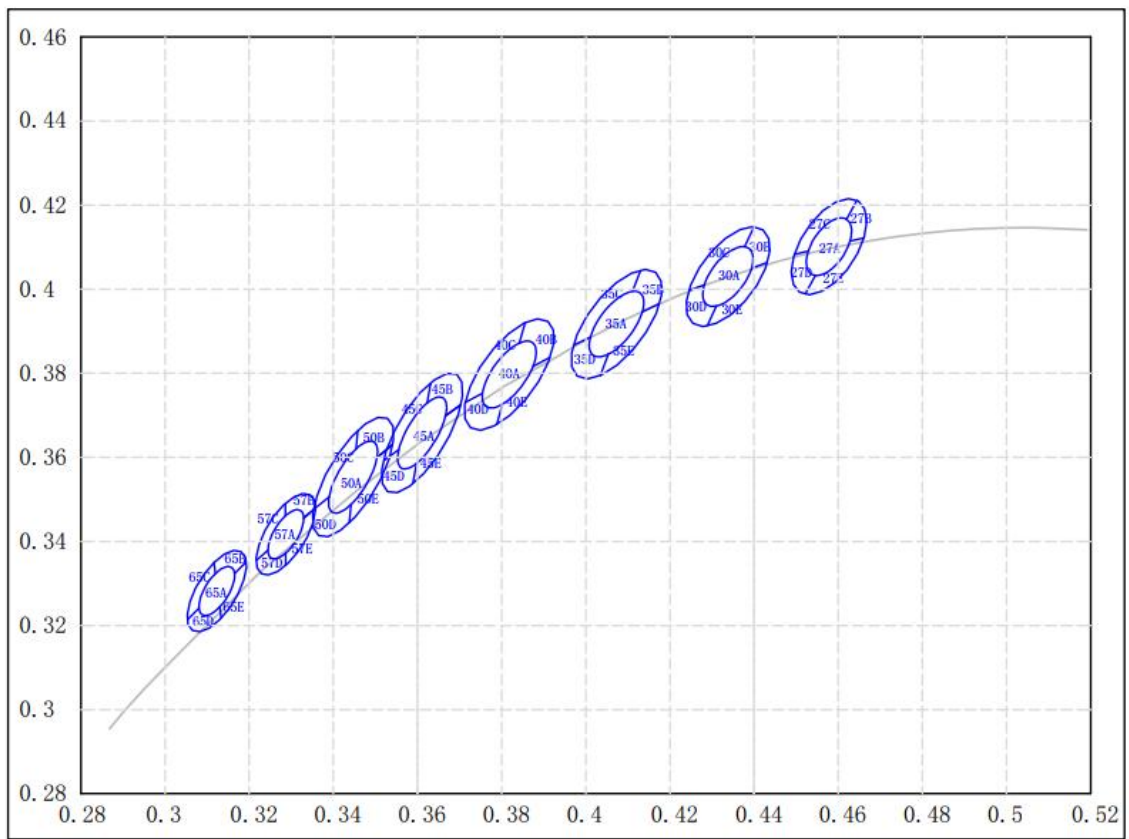| Product Number	Bin	Min	Max
L128-XX80RA35003V2	D	24	26
	E	26	28
	F	28	30
	G	30	32

Notes
Lumileds Maintains a tolerance of ±5% on lumionous flux measurements

Forward Voltage Bins

Forward voltage bin definitions for 2835R Series at rated current, Ta=25°C .

Product Number	Bin	Min	Max
L128-XX80RA35003V2	C	2.8	2.9
	D	2.9	3.0
	E	3.0	3.1
	F	3.1	3.2

Color Bin Definition

**Correlated color temperature bin definitions for 2835R Series at rated current, Ta=25°C**

CCT	Color space	Center X	Center Y	a	b	Rotation Angle
2700K	3-Step	0.4578	0.4101	0.0077	0.004	57.28
	5-Step	0.4578	0.4101	0.0129	0.0067	57.28
3000K	3-Step	0.4338	0.403	0.008346	0.0040985	53.16
	5-Step	0.4338	0.403	0.01391	0.0068308	53.16
3500K	3-Step	0.4073	0.3917	0.009271	0.004139	52.96
	5-Step	0.4073	0.3917	0.015452	0.006899	52.96
4000K	3-Step	0.3818	0.3797	0.009386	0.004035	54
	5-Step	0.3818	0.3797	0.015644	0.006725	54
4500K	3-Step	0.3611	0.3658	0.00971	0.0036	59.62
	5-Step	0.3611	0.3658	0.016183	0.006	59.62
5000K	3-Step	0.3447	0.3553	0.00971	0.0036	59.62
	5-Step	0.3447	0.3553	0.016183	0.006	59.62
5700K	3-Step	0.3287	0.3417	0.006617	0.002855	58.38
	5-Step	0.3287	0.3417	0.011029	0.004758	58.38
6500K	3-Step	0.3123	0.3282	0.006617	0.002855	58.38
	5-Step	0.3123	0.3282	0.011029	0.004758	58.38

bin Code	27A/B/C/D/E		30A/B/C/D/E		35A/B/C/D/E		40A/B/C/D/E	
CCT	2700K		3000K		3500K		4000K	
#	x	y	x	y	x	y	x	y
1	0.4644	0.421	0.44	0.4148	0.413	0.4044	0.3856	0.392
2	0.4661	0.4122	0.443	0.4063	0.4174	0.3966	0.3914	0.3838
3	0.4522	0.3989	0.4289	0.3914	0.4035	0.3795	0.3788	0.3679
4	0.4497	0.4083	0.4246	0.3998	0.3971	0.3867	0.3714	0.3731
5	0.462	0.4166	0.4378	0.4101	0.4111	0.3995	0.3842	0.3872
6	0.4628	0.4114	0.4394	0.405	0.4134	0.3946	0.3875	0.3816
7	0.4546	0.4033	0.431	0.396	0.4054	0.3845	0.3802	0.3726
8	0.4529	0.4091	0.4282	0.401	0.4011	0.3886	0.3754	0.3752
bin Code	45A/B/C/D/E		50A/B/C/D/E		57A/B/C/D/E		65A/B/C/D/E	
CCT	4500K		5000K		5700K		6500K	
#	x	y	x	y	x	y	x	y
1	0.3631	0.3776	0.3458	0.3662	0.3286	0.3489	0.3116	0.335
2	0.3702	0.3725	0.3541	0.363	0.3357	0.348	0.3192	0.3351
3	0.3589	0.3539	0.3438	0.3445	0.3287	0.3343	0.3133	0.3218
4	0.352	0.3593	0.3354	0.3476	0.3217	0.3355	0.3054	0.3214
5	0.3623	0.3729	0.3454	0.362	0.3286	0.3461	0.312	0.3324
6	0.3667	0.3699	0.3504	0.36	0.3329	0.3455	0.3165	0.3324
7	0.3598	0.3585	0.3442	0.3487	0.3287	0.3372	0.313	0.3244
8	0.3556	0.3618	0.339	0.3506	0.3245	0.3379	0.3081	0.3241

Notes
Tester tolerance: ±0.01 in x and y coordinates

Requirements for application and reflow soldering ：

REFLOW PROFILE
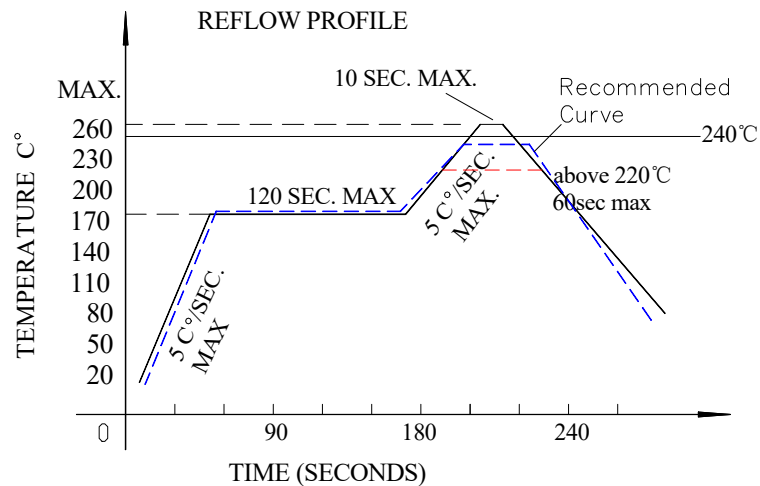
Reflow soldering curve

(Product is highest resistant to 260℃ reflow but suggested the highest temperature of 240℃ within)

■ **Notes for reflow soldering ：**

1. No more than twice for reflow soldering.
2. To ensure the quality of our LEDs, we encapsulate them with silica gels. So please do not put pressure on the LEDs.
3. Please choose the right nozzle(try to learn from the plastic products parts) to avoid the damage to products due to the pressure.
4. Please put on the antistatic hand loop during the use. The worktable should be with antistatic finish. The equipments must be contacted with ground.

■ **Handwork soldering：**

1. During the soldering, the electronic soldering iron must be kept under the temperature of 300℃ and the soldering time must not be beyond 3 seconds. No touch between the electronic soldering iron and colloid.
2. Handwork soldering is only allowed once. We won't take responsibility for more than that.
3. Avoid using sharp objects to compress products Colloidal Part directly.
4. Please put on the antistatic hand loop during the use. The worktable should be with antistatic finish. The equipments must be contacted with ground.