

# 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, D=18V, E=36V)

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 Series is 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	Test conditions
2835R 54V	L128-2780RF35000G1	2700	80	145	155	25℃ IF=20mA
	L128-3080RF35000G1	3000	80	150	160	
	L128-3580RF35000G1	3500	80	155	165	
	L128-4080RF35000G1	4000	80	160	170	
	L128-5080RF35000G1	5000	80	160	170	
	L128-5780RF35000G1	5700	80	160	170	
	L128-6580RF35000G1	6500	80	160	170	

Notes:

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

Absolute maximum ratings(Ta=25℃)

Parameter	Symbol	Value	Unit
Power dissipation	Pd	1100	mW
Forward current	IF	20	mA
Operating temperature range	Top	-40~+105	℃
Storage temperature range	Tstg	-40~+105	℃
Heatresistance	Rth	18	℃/W
Junction temperature	Tj	125	℃
Electrostatic Discharge	ESD	2000	V

## Electro-optical characteristics(Ta=25°C)

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
<b>Forward voltage</b>	Vf	51	-	55	V	IF=20mA
<b>Luminous flux</b>	Φ	145	-	-	lm	IF=20mA
<b>Viewing Angle</b>	2 θ 1/2	-	120	-	Deg	IF=20mA
<b>Color Index</b>	Ra	80.5	-	-	-	IF=20mA
<b>Saturated red</b>	R9	-3	-	-	-	IF=20mA

### NOTES:

- \* The measurement of forward voltage maintains a tolerance of  $\pm 0.05V$ , flux maintains a tolerance of  $\pm 5\%$ .
- \* Ra measurement tolerance is  $\pm 2$ .
- \* 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.

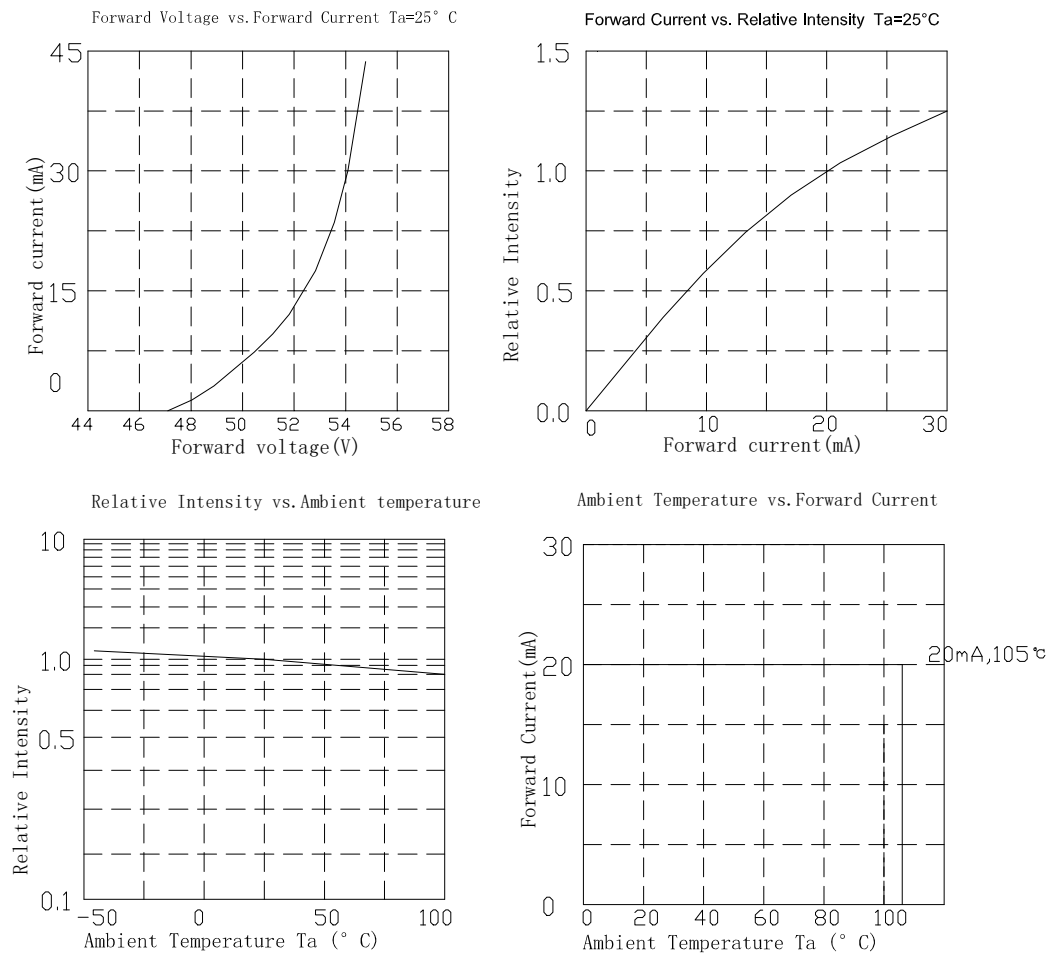
## Reliability Test Items And Conditions

Test Items	Test condition	Time	Quantity	Ac/Re
Reflow Soldering	Temp. :260°C/10sec.	6Min.	22pcs	0/22
Thermal Shock	-40~125C, 15min dwell, 10sec transfer	100Cycles	22pcs	0/22
High Temperature High Humidity life Test	85°C,85%RH, IF=20mA	1000Hrs.	10pcs	0/10
Low Temperature Storage	Ta=-40°C	1000Hrs.	10pcs	0/10
High Temperature Storage	Ta=105°C	1000Hrs.	10pcs	0/10
High Temperature Operation Life Test	Ta=85°C, IF =20mA.	1000Hrs.	10pcs	0/10

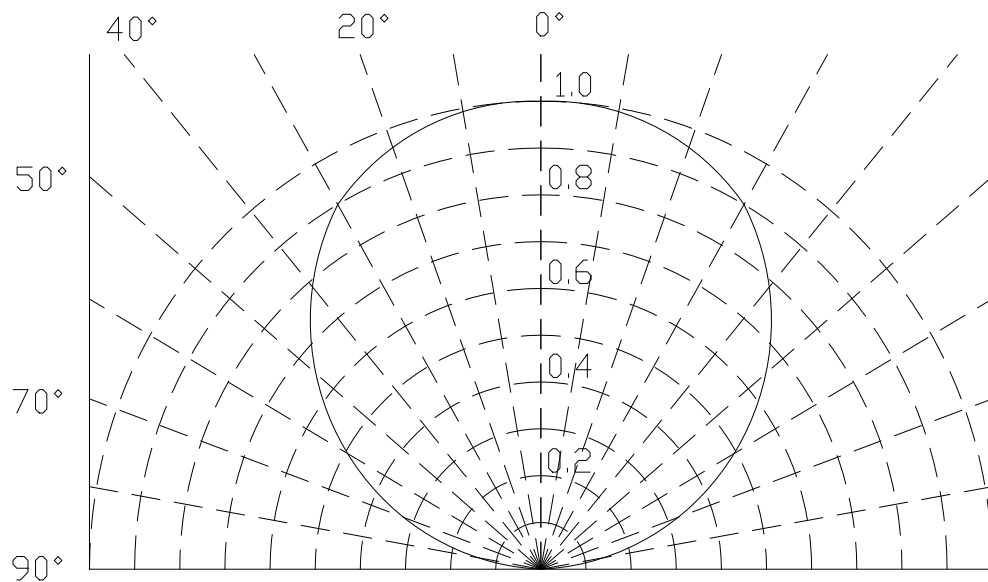
Failure Criteria

Item	Symbol	Failure Criteria
Luminous Flux	Lm	$\geq 80\%$
Forward voltage	VF	$\pm 10\%$
Colour	CIE_X CIE_y	$\pm 0.01$

## Typical optical characteristics curves

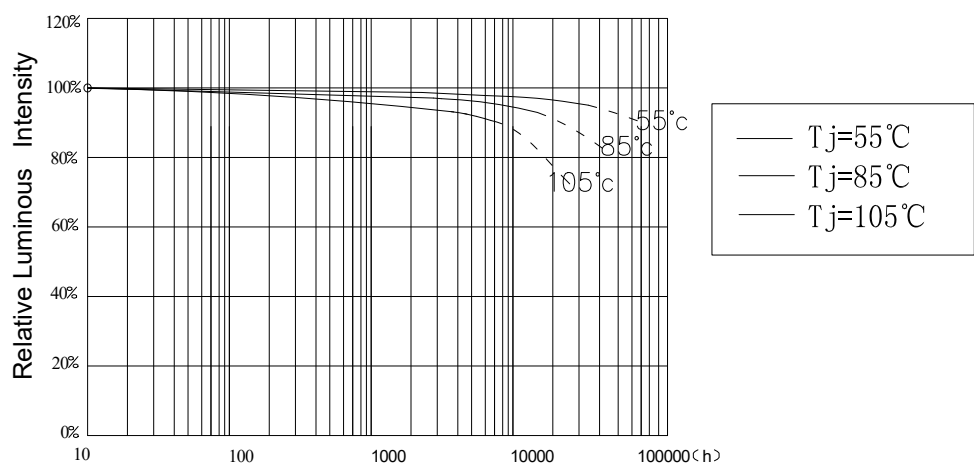


## Curves of beam angle and relative brightness

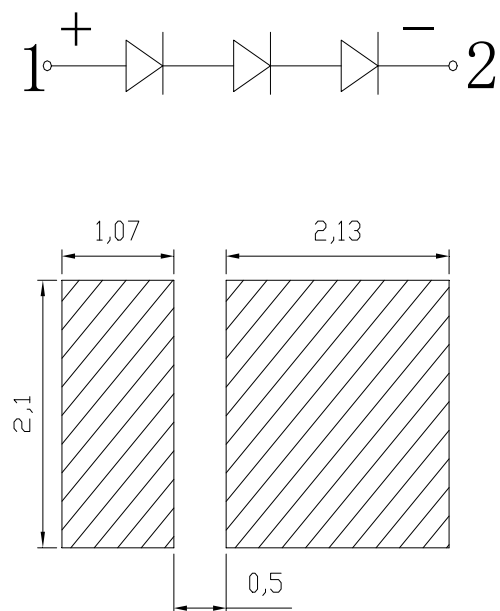
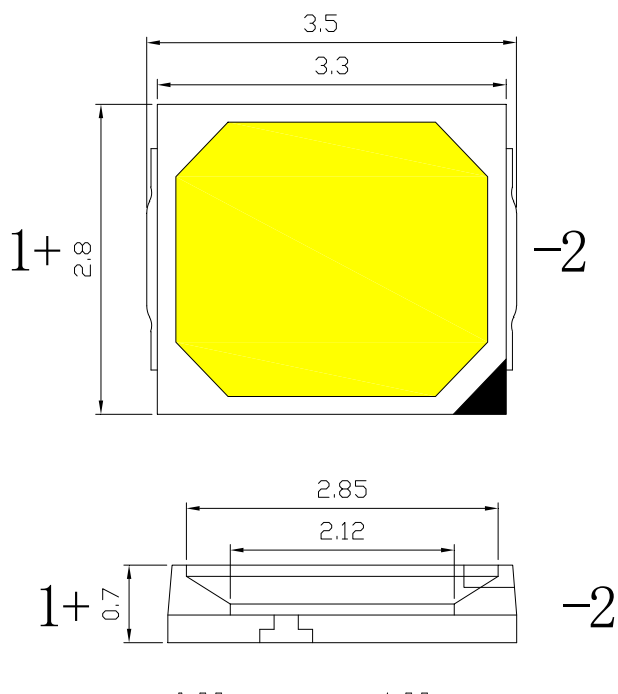


# life test:

Affect of Tj on Luminous Maintenance  
(If=20mA)  
(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-XX80RF35000G1	H	145	150
	I	150	155
	J	155	160
	K	160	165
	L	165	170
	M	170	175
	N	175	180

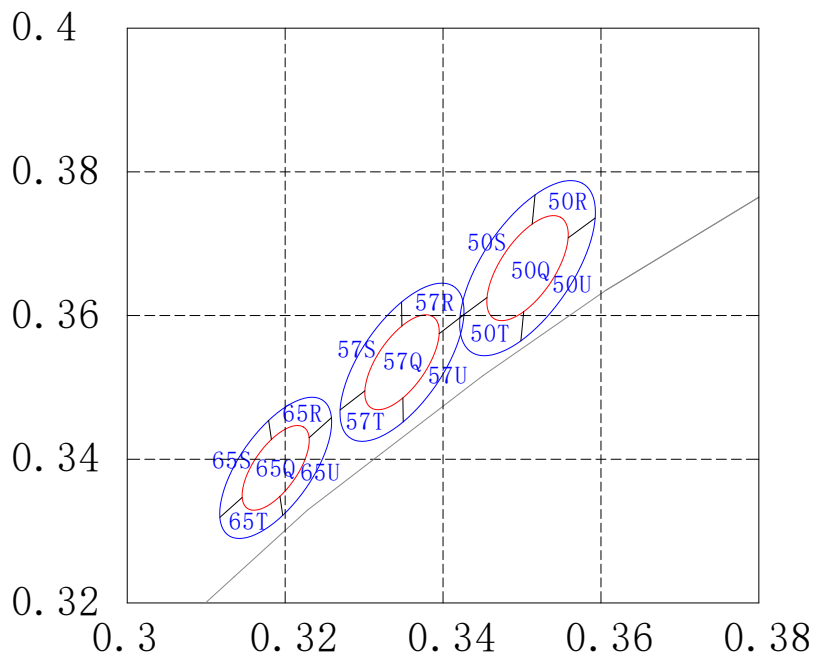
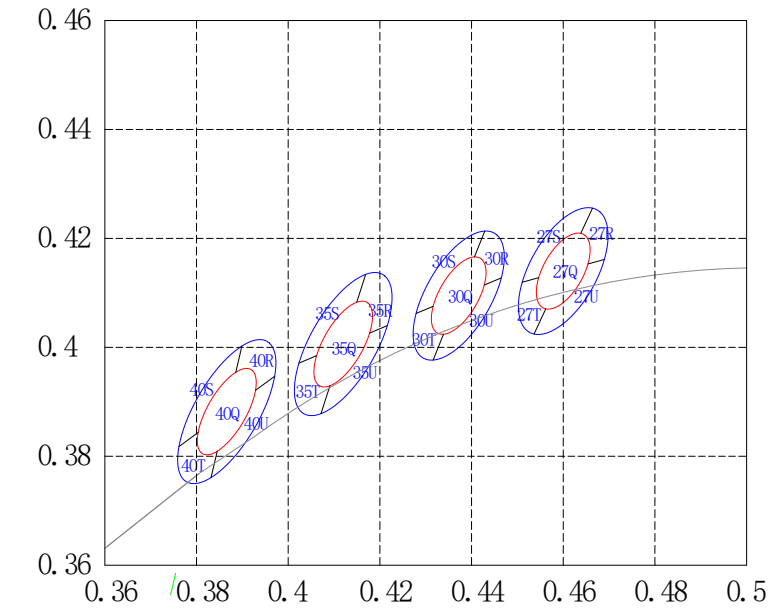
**Notes**  
Lumileds Maintains a tolerance of ±5% on lumionous flux measurements

# Forward Voltage Bins

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

Product Number	Bin	Min	Max
L128-XX80RF35000G1	D	51	52
	E	52	53
	F	53	54
	G	54	55

# Color Bin Definition



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

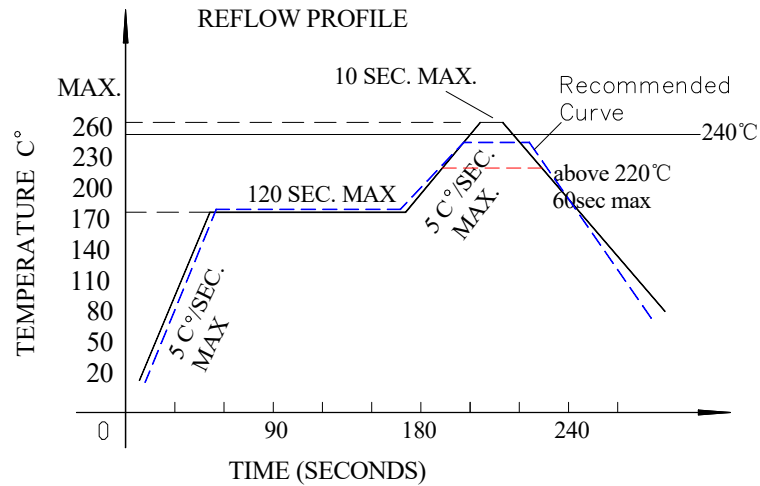
bin Code	27Q/S/R/T/U		30Q/S/R/T/U		35Q/S/R/T/U		40Q/S/R/T/U	
CCT	2700K		3000K		3500K		4000K	
1	0.4835	0.4358	0.4596	0.4325	0.4346	0.4254	0.4053	0.4129
2	0.471	0.4329	0.4465	0.4278	0.4195	0.4179	0.3914	0.404
3	0.4584	0.4299	0.4333	0.423	0.4043	0.4104	0.3774	0.3951
4	0.449	0.4116	0.4257	0.4055	0.399	0.3942	0.3741	0.3804
5	0.4395	0.3932	0.4181	0.3879	0.3936	0.3779	0.3708	0.3657
6	0.4505	0.3958	0.4294	0.3919	0.4065	0.3841	0.3827	0.3729
7	0.4615	0.3983	0.4407	0.3958	0.4194	0.3903	0.3945	0.3801
8	0.4725	0.4171	0.4502	0.4142	0.427	0.4079	0.3999	0.3965
bin Code	50Q/S/R/T/U		57Q/S/R/T/U		65Q/S/R/T/U			
CCT	5000K		5700K		6500K			
1	0.3647	0.3905	0.3438	0.3735	0.3271	0.3588		
2	0.352	0.38	0.3346	0.3651	0.3177	0.3494		
3	0.3393	0.3696	0.3255	0.3568	0.3083	0.34		
4	0.3391	0.3571	0.3262	0.3458	0.3103	0.3305		
5	0.3389	0.3446	0.3269	0.3349	0.3124	0.321		
6	0.3495	0.3529	0.3348	0.3418	0.3203	0.3287		
7	0.3601	0.3613	0.3428	0.3488	0.3286	0.3367		
8	0.3624	0.3763	0.3433	0.3611	0.3278	0.3477		

CCT	Color space	Center X	Center Y	a	b	Rotation Angle
2700K	3-Step	0.46	0.414	0.00810000	0.00420000	53.7
	5-Step	0.46	0.414	0.01350000	0.00700000	53.7
3000K	3-Step	0.4372	0.4095	0.00834000	0.00408000	53.22
	5-Step	0.4372	0.4095	0.01390000	0.00680000	53.22
3500K	3-Step	0.412	0.4006	0.00927000	0.00414000	54
	5-Step	0.412	0.4006	0.01545000	0.00690000	54
4000K	3-Step	0.3866	0.3882	0.00939000	0.00402000	53.72
	5-Step	0.3866	0.3882	0.01565000	0.00670000	53.72
5000K	3-Step	0.3507	0.3666	0.00822000	0.00354000	59.62
	5-Step	0.3507	0.3666	0.01370000	0.00590000	59.62
5700K	3-Step	0.3348	0.3535	0.00746000	0.00320000	59.09
	5-Step	0.3348	0.3535	0.01243000	0.00533000	59.09
6500K	3-Step	0.3188	0.3388	0.00669000	0.00285000	58.57
	5-Step	0.3188	0.3388	0.01115000	0.00475000	58.57

**Notes**

Tester tolerance: ±0.01 in x and y coordinates

## Requirements for application and reflow soldering :



Reflow soldering curve

(Product is highest resistant to 260°C reflow but suggested the highest temperature of 240°C 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°C 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.