

# Lumileds 2835R Series



Lumileds 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.

## CHARACTERISTICS

- 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

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## 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)

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	Φ(lm) Max	Test conditions
2835R 3V	L128-2280RA35002Q1	2200	80	21	22.5	-	25°C, IF=60mA
	L128-2580RA35002Q1	2500	80	23	24	-	
	L128-2780RA35002Q1	2700	80	26	27	-	
	L128-3080RA35002Q1	3000	80	27	28	-	
	L128-3580RA35002Q1	3500	80	28	29	-	
	L128-4080RA35002Q1	4000	80	28.5	29.5	-	
	L128-4580RA35002Q1	4500	80	28.5	29.5	-	
	L128-5080RA35002Q1	5000	80	29	30	-	
	L128-5780RA35002Q1	5700	80	29	30	-	
	L128-6080RA35002Q1	6000	80	29	30	-	
	L128-6580RA35002Q1	6500	80	28.5	29.5	-	

### Notes:

- 1.Tolerance of Color Rendering Index:  $\pm 2$ .
- 2.Tolerance of Luminous flux:  $\pm 5\%$ .

## Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Value	Unit	Test Condition
Power dissipation	Pd	310	mW	-
Forward current	IF	100	mA	-
Pulsed Forward Current	IPF	150	mA	Duty 1/10, pulse width 10ms
Operating temperature range	Top	-35~+85	°C	-
Storage temperature range	Tstg	-35~+85	°C	-
Heatresistance	Rth	23	°C/W	-
Junction temperature	Tj	125	°C	-
Electrostatic Discharge	ESD	2000	V	-

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

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Forward voltage	Vf	2.8	-	3.1	V	IF=150mA
Luminous flux	Φ	21	-	-	lm	IF=150mA
Viewing Angle	2 θ 1/2	-	120	-	Deg	IF=150mA
Reverse current	IR	-	-	10	μA	Vr=5V
Color Index	Ra	80	-	-	-	IF=150mA

### 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.

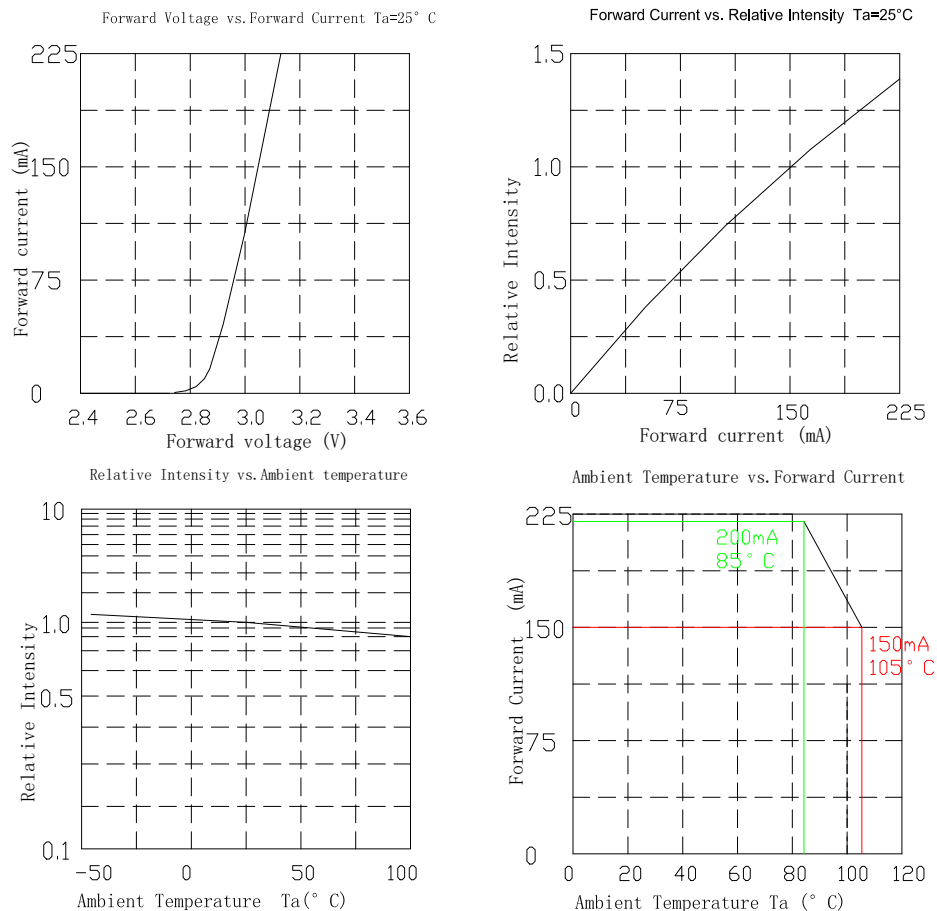
## Reliability Test Items And Conditions

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=60mA	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 =60mA.	1000Hrs.	10pcs	0/10

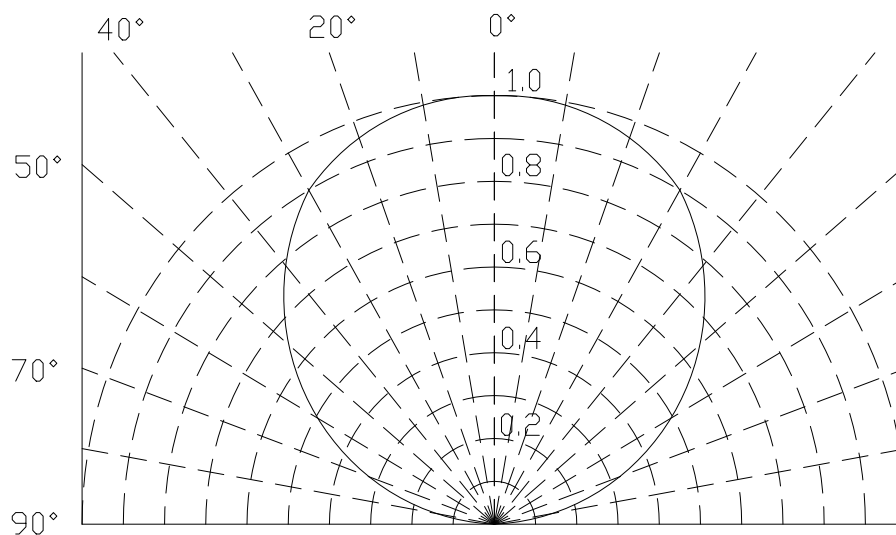
## Failure Criteria

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

## Typical Optical Characteristics Curves

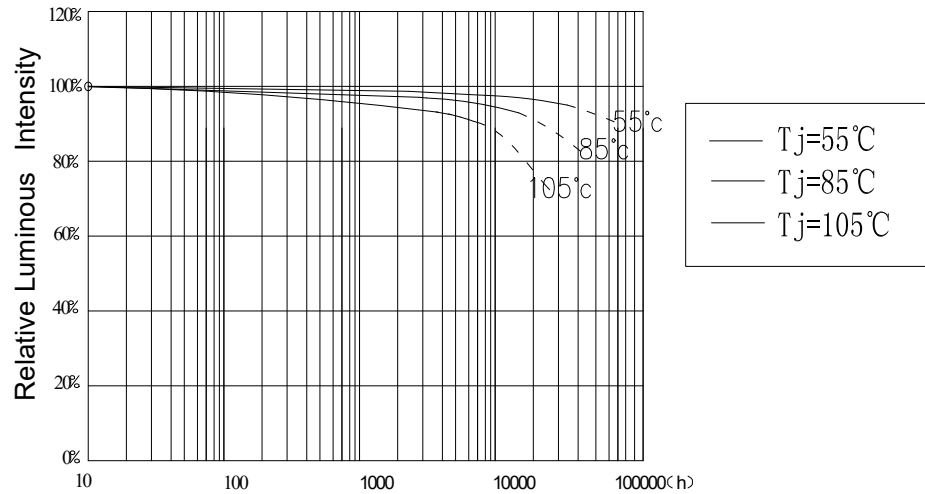


## Curves of beam angle and relative brightness

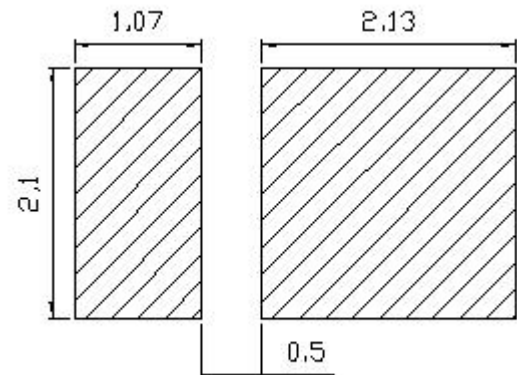
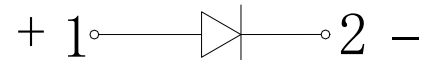
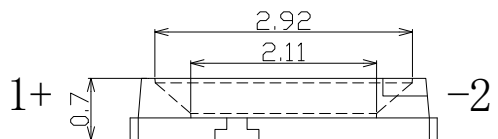
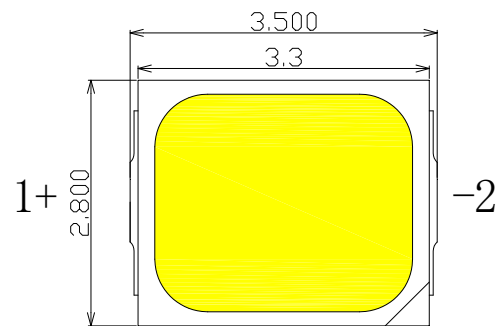


# life test

Affect of  $T_j$  on Luminous Maintenance  
( $I_f=60\text{mA}$ )  
(Dot line: Expected Life)



## Mechanical Dimensions



**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-XX80RA35002Q1	C	21	23
	D	23	25
	E	25	27
	F	27	29
	G	29	31

### **Notes**

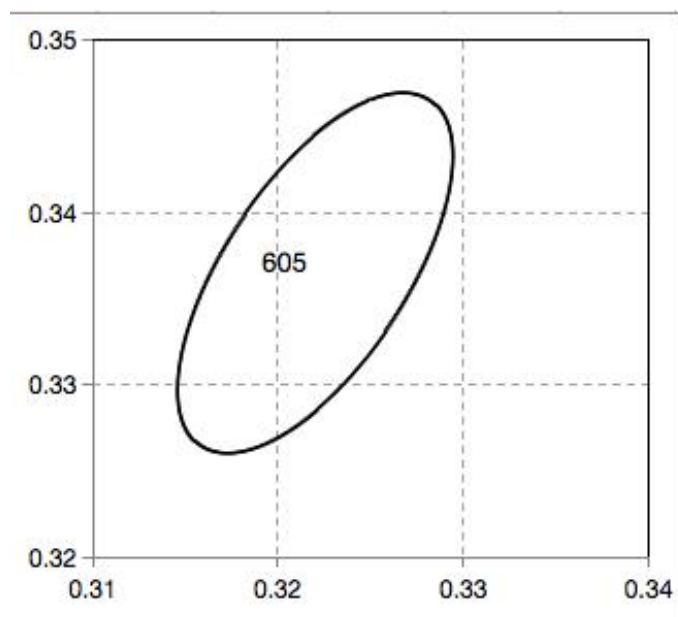
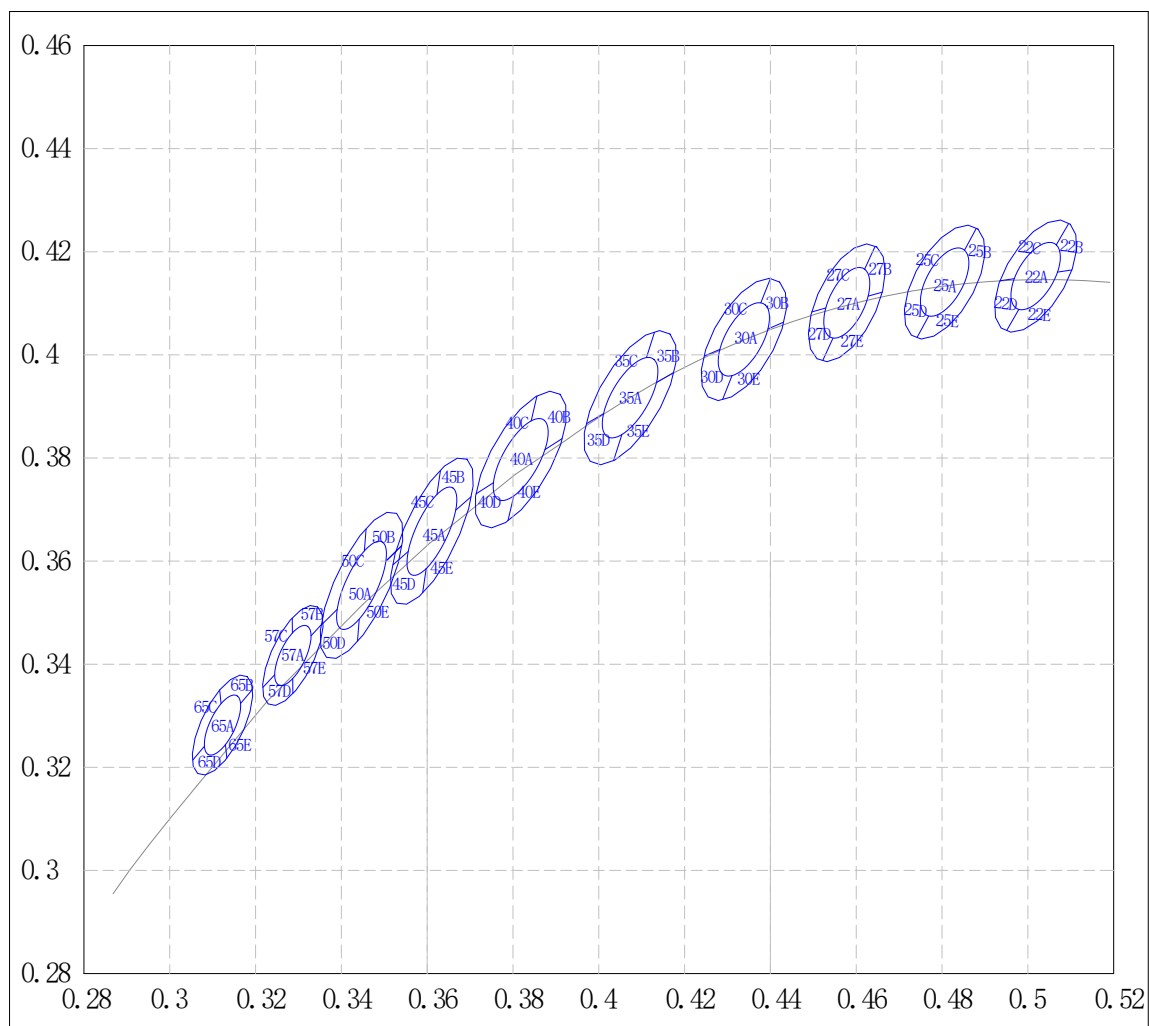
**Lumileds Maintains a tolerance of  $\pm 5\%$  on luminous flux measurements**

## Forward Voltage Bins

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

Product Number	Bin	Min	Max
L128-XX80RA35002Q1	C	2.8	2.9
	D	2.9	3.0
	E	3.0	3.1

## Color Bin Definition



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

bin Colde	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	0.4813	0.4319	0.4562	0.426	0.4299	0.4165	0.4005	0.4044
2	0.4688	0.429	0.4431	0.4213	0.4148	0.409	0.3866	0.3955
3	0.4562	0.426	0.4299	0.4165	0.3996	0.4015	0.3726	0.3866
4	0.4468	0.4077	0.4223	0.399	0.3943	0.3853	0.3693	0.3719
5	0.4373	0.3893	0.4147	0.3814	0.3889	0.369	0.366	0.3572
6	0.4483	0.3919	0.426	0.3854	0.4018	0.3752	0.3779	0.3644
7	0.4593	0.3944	0.4373	0.3893	0.4147	0.3814	0.3897	0.3716
8	0.4703	0.4132	0.4468	0.4077	0.4223	0.399	0.3943	0.3853
bin Colde	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	0.3757	0.3893	0.3587	0.3792	0.3377	0.3617	0.3206	0.3482
2	0.3636	0.3804	0.346	0.3687	0.3285	0.3533	0.3112	0.3388
3	0.3515	0.3715	0.3333	0.3583	0.3194	0.345	0.3018	0.3294
4	0.3499	0.3577	0.3331	0.3458	0.3201	0.334	0.3038	0.3199
5	0.3483	0.3439	0.3329	0.3333	0.3208	0.3231	0.3059	0.3104
6	0.3585	0.3512	0.3435	0.3416	0.3287	0.33	0.3138	0.3181
7	0.3687	0.3585	0.3541	0.35	0.3367	0.337	0.3221	0.3261
8	0.3722	0.3739	0.3564	0.365	0.3372	0.3493	0.3213	0.3371

bin Colde	22A/B/C/D/E		25A/B/C/D/E	
CCT	2200K		2500K	
#	x	y	x	y
1	0.5271	0.4337	0.5116	0.4375
2	0.5148	0.4337	0.4951	0.4348
3	0.5026	0.4337	0.4783	0.4323
4	0.4901	0.4155	0.4648	0.4116
5	0.4777	0.3973	0.4506	0.3897
6	0.49	0.3973	0.4671	0.3922
7	0.5022	0.3973	0.4838	0.3949
8	0.5146	0.4155	0.498	0.4169

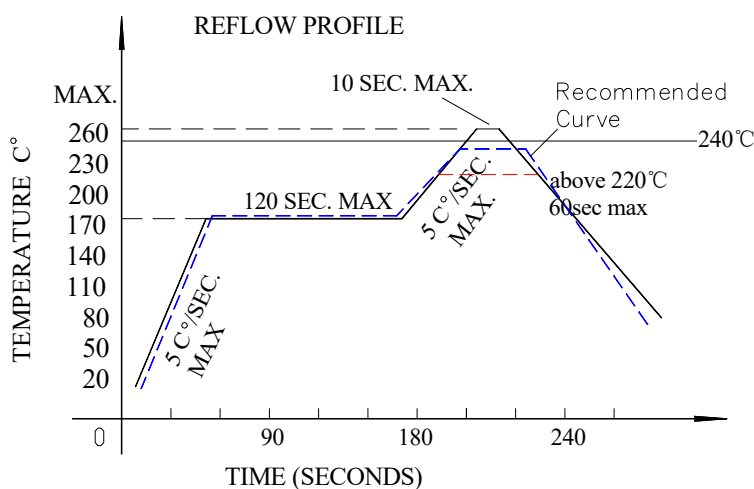
CCT	Color space	Center X	Center Y	a	b	Rotation Angle
2200K	3-Step	0.5018	0.4153	0.0087	0.0039	49.27
	5-Step	0.5018	0.4153	0.0174	0.0078	49.27
2500K	3-Step	0.4806	0.4141	0.0077	0.004	53
	5-Step	0.4806	0.4141	0.0129	0.0067	53
2700K	3-Step	0.4578	0.4101	0.0077	0.004	57.28
	5-Step	0.4578	0.4101	0.0129	0.0067	57.28
3000K	3-Step	0.4338	0.403	0.008346	0.004098	53.16
	5-Step	0.4338	0.403	0.01391	0.006831	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	Center X	Center Y	a	b	Rotation Angle
605	0.322	0.3365	0.01179	0.00505	59.21

**Notes**

Tester tolerance:  $\pm 0.01$  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.

## About Lumileds

Companies developing automotive, mobile, IoT and illumination lighting applications need a partner who can collaborate with them to push the boundaries of light. With over 100 years of inventions and industry firsts, Lumileds is a global lighting solutions company that helps customers around the world deliver differentiated solutions to gain and maintain a competitive edge. As the inventor of Xenon technology, a pioneer in halogen lighting and the leader in high performance LEDs, Lumileds builds innovation, quality and reliability into its technology, products and every customer engagement. Together with its customers, Lumileds is making the world better, safer, more beautiful—with light.

To learn more about our lighting solutions, visit [lumileds.com](https://lumileds.com)

Lumileds 2835R Product Datasheet

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