

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

Table of Contents

Table of Contents.....	2
Part Number Nomenclature.....	3
Lumen Maintenance.....	3
Environmental Compliance.....	3
Mass Production List of 2835R Series.....	4
Absolute Maximum Ratings (Ta=25°C).....	5
Electro-optical Characteristics (Ta=25°C).....	5
Reliability Test Items And Conditions.....	6
Failure Criteria.....	6
Typical Optical Characteristics Curves.....	7
Mechanical Dimensions.....	8
Product Bin and Labeling Definitions.....	9
Decoding Product Bin Labeling.....	9
Luminous Flux Bins.....	10
Forward Voltage Bins.....	10
Color Bin Definition.....	11
Requirements for Application and Reflow Soldering.....	14
About Lumileds.....	15

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 36V	L128-2780RE35000U1	2700	80	145	150	-	25°C, IF=30mA
	L128-3080RE35000U1	3000	80	150	155	-	
	L128-3580RE35000U1	3500	80	155	160	-	
	L128-4080RE35000U1	4000	80	160	165	-	
	L128-4580RE35000U1	4500	80	160	165	-	
	L128-5080RE35000U1	5000	80	160	165	-	
	L128-5780RE35000U1	5700	80	160	165	-	
	L128-6580RE35000U1	6500	80	160	165	-	

Notes:

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

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Value	Unit	Test Condition
Power dissipation	Pd	1140	mW	-
Forward current	IF	30	mA	-
Pulsed Forward Current	IPF	45	mA	Duty 1/10,pulse width 10ms
Operating temperature range	Top	-40~+105	°C	-
Storage temperature range	Tstg	-40~+105	°C	-
Heat resistance	Rth	15	°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	35	-	38	V	IF=30mA
Luminous flux	Φ	145	-	-	lm	IF=30mA
Viewing Angle	2 θ 1/2	-	120	-	Deg	IF=30mA
Reverse current	IR	-	-	10	μA	Vr=10V
Color Index	Ra	80	-	-	-	IF=30mA

NOTES:

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

* 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.

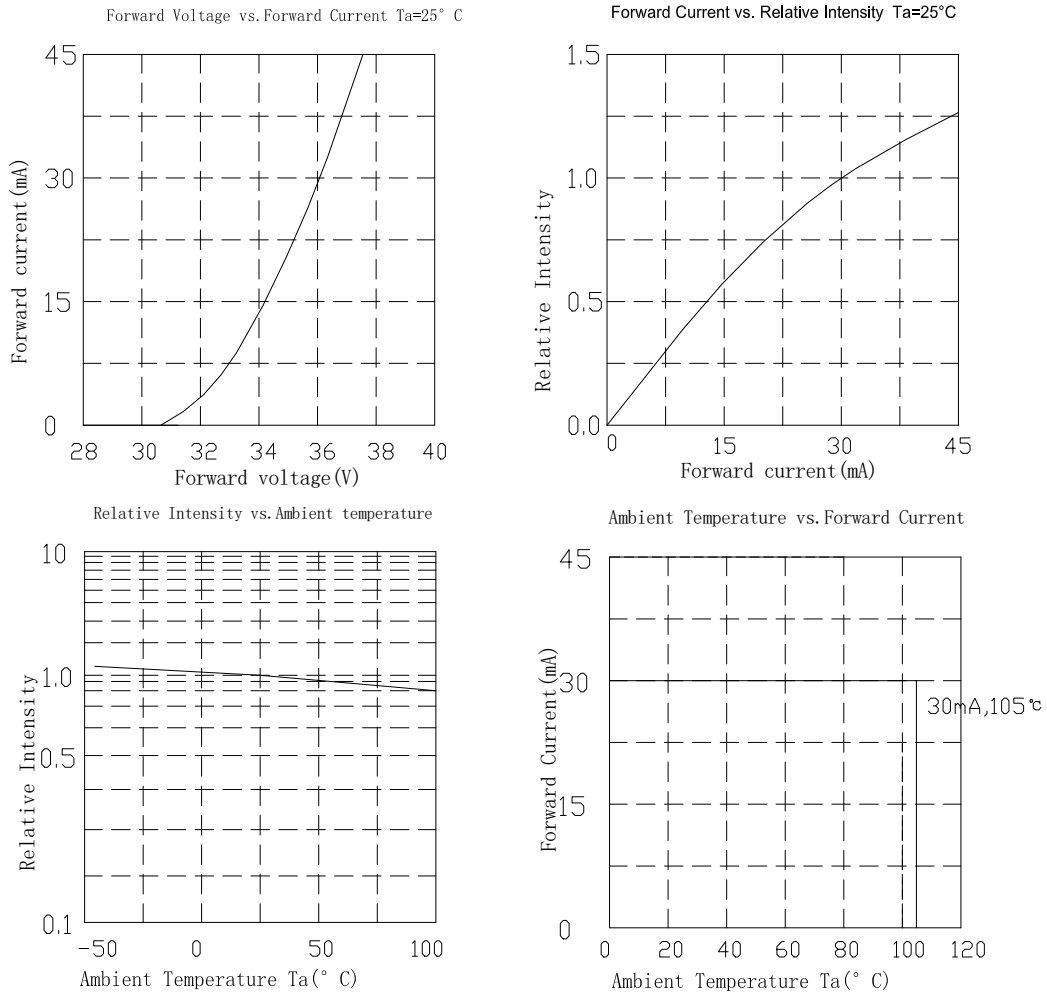
Reliability Test Items And Conditions

Test Items	Test condition	Time	Quantity	Ac/Re
Reflow Soldering	Temp. :260°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=30mA	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=30mA.	1000Hrs.	10pcs	0/10

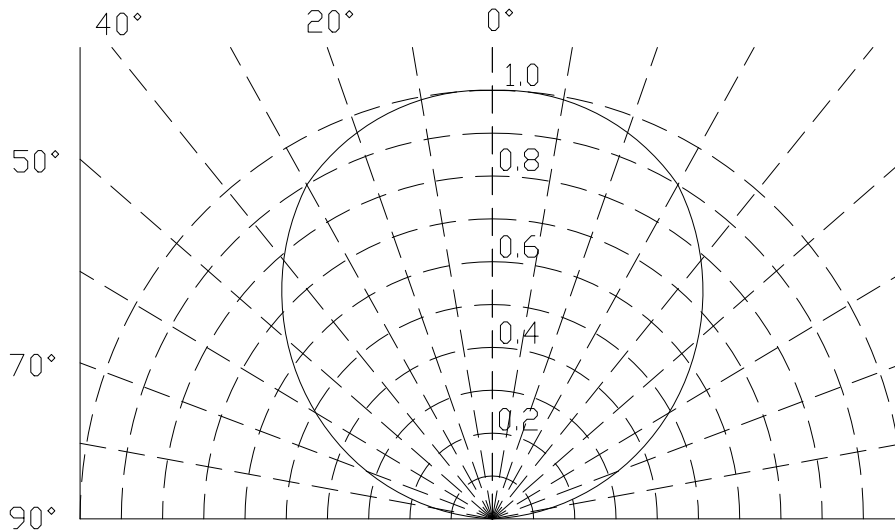
Failure Criteria

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

Typical Optical Characteristics Curves

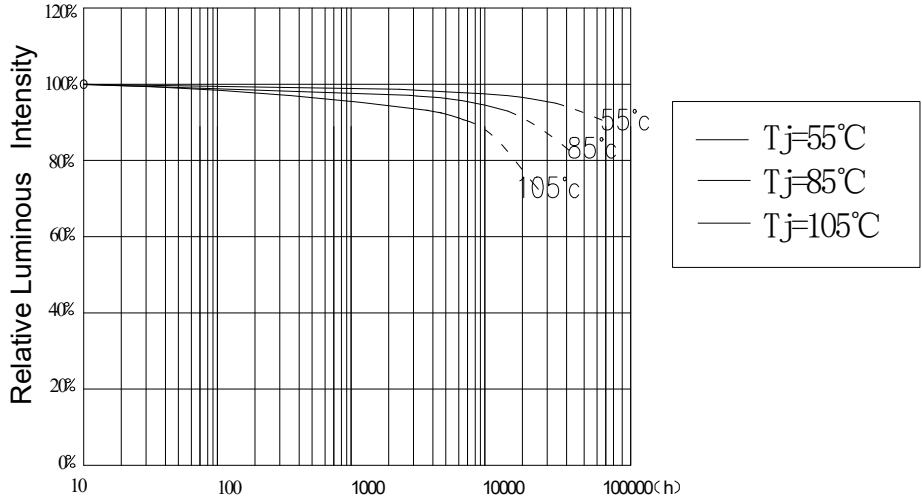


Curves of beam angle and relative brightness

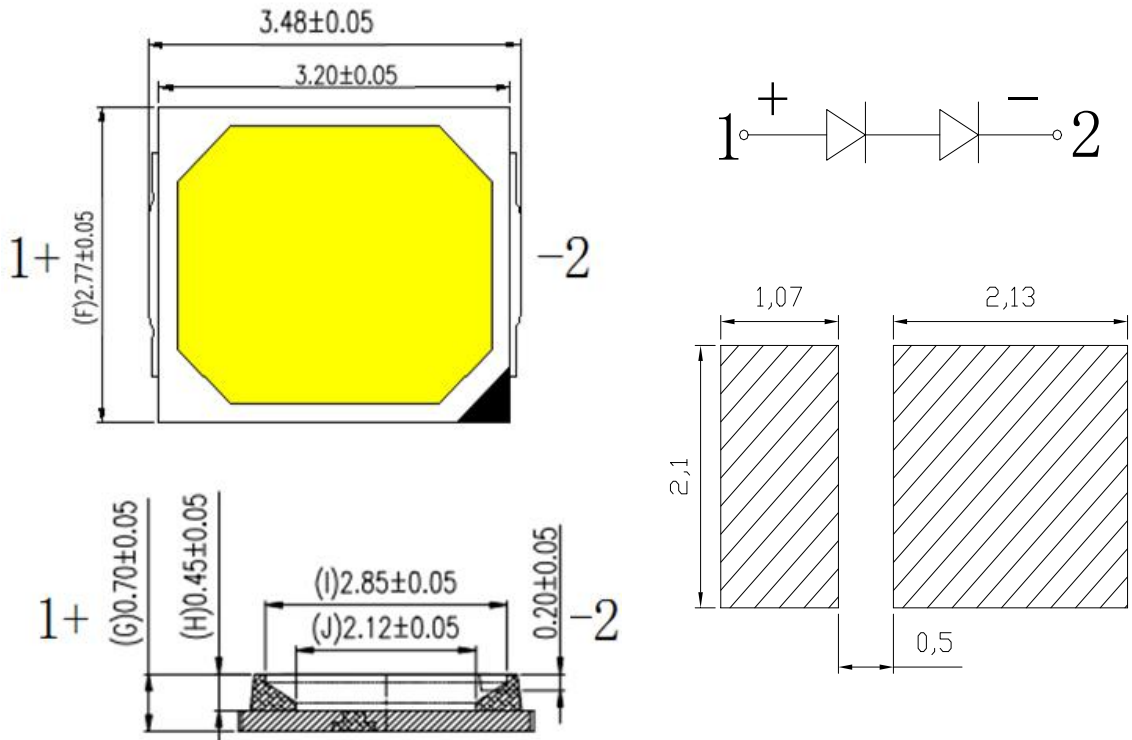


life test

Affect of T_j on Luminous Maintenance
 ($I_f=30mA$)
 (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-XX80RE35000U1	T	140	150
	S	150	160
	R	160	170
	Q	170	180

Notes

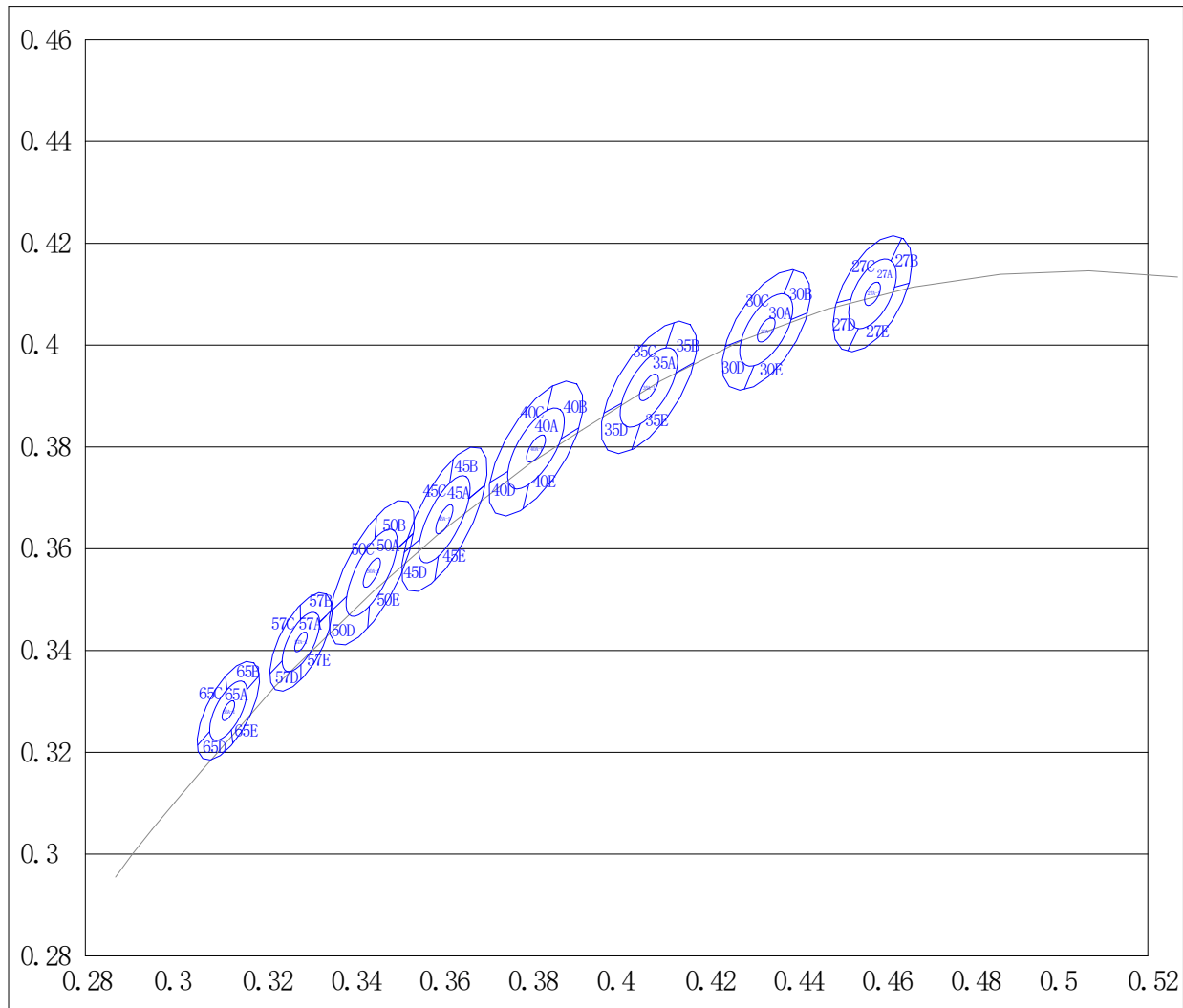
Lumileds Maintains a tolerance of $\pm 5\%$ on lumionous flux measurements

Forward Voltage Bins

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

Product Number	Bin	Min	Max
L128-XX80RE35000U1	T	35.0	35.5
	S	35.5	36.0
	R	36.0	36.5
	Q	36.5	37.0
	P	37.0	37.5
	O	37.5	38.0

Color Bin Definition



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

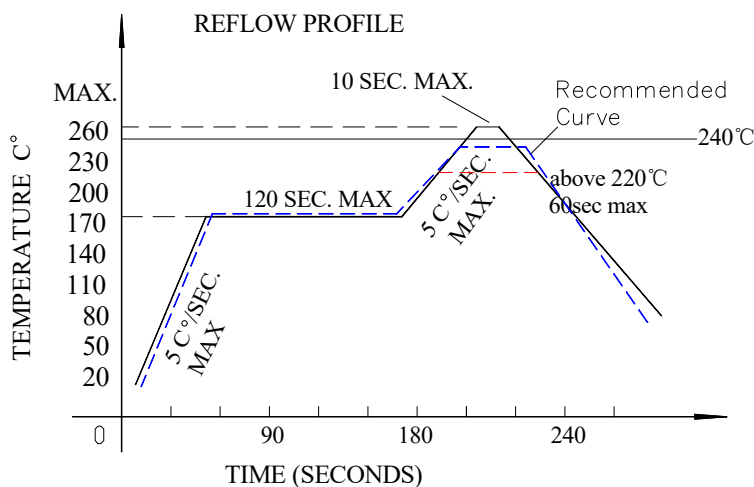
CCT	Color space	Center X	Center Y	a	b	Rotation Angle
2700K	1-Step	0.4578	0.4101	0.002580	0.001340	57.28
	3-Step	0.4578	0.4101	0.007700	0.004000	57.28
	5-Step	0.4578	0.4101	0.012900	0.006700	57.28
3000K	1-Step	0.4338	0.403	0.002782	0.001366	53.16
	3-Step	0.4338	0.403	0.008346	0.004098	53.16
	5-Step	0.4338	0.403	0.013910	0.006831	53.16
3500K	1-Step	0.4073	0.3917	0.003090	0.001380	52.96
	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	1-Step	0.3818	0.3797	0.003129	0.001345	54
	3-Step	0.3818	0.3797	0.009386	0.004035	54
	5-Step	0.3818	0.3797	0.015644	0.006725	54
4500K	1-Step	0.3611	0.3658	0.003237	0.001200	59.62
	3-Step	0.3611	0.3658	0.009710	0.003600	59.62
	5-Step	0.3611	0.3658	0.016183	0.006000	59.62
5000K	1-Step	0.3447	0.3553	0.003237	0.001200	59.62
	3-Step	0.3447	0.3553	0.009710	0.003600	59.62
	5-Step	0.3447	0.3553	0.016183	0.006000	59.62
5700K	1-Step	0.3287	0.3417	0.002206	0.000952	58.38
	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	1-Step	0.3123	0.3282	0.002206	0.000952	58.38
	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 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

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.

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

Lumileds 2835R Product Datasheet

©2022 Lumileds Holding B.V. All rights reserved.

Neither Lumileds Holding B.V. nor its affiliates shall be liable for any kind of loss of data or any other damages, direct, indirect or consequential, resulting from the use of the provided information and data. Although Lumileds Holding B.V. and/or its affiliates have attempted to provide the most accurate information and data, the materials and services information and data are provided “as is,” and neither Lumileds Holding B.V. nor its affiliates warrants or guarantees the contents and correctness of the provided information and data. Lumileds Holding B.V. and its affiliates reserve the right to make changes without notice. You as user agree to this disclaimer and user agreement with the download or use of the provided materials, information and data. A listing of Lumileds product/patent coverage may be accessed at lumileds.com/patents.