

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, 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 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 6V	L128-2780RB35000L1	2700	80	125	130	135	25°C, IF=150mA
	L128-3080RB35000L1	3000	80	130	135	140	
	L128-3580RB35000L1	3500	80	135	140	145	
	L128-4080RB35000L1	4000	80	140	145	150	
	L128-5080RB35000L1	5000	80	140	145	150	
	L128-5780RB35000L1	5700	80	140	145	150	
	L128-6580RB35000L1	6500	80	140	145	150	

Notes:

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

Absolute maximum ratings($T_a=25^{\circ}\text{C}$)

Parameter	Symbol	Value	Unit
Power dissipation	P_d	1320	mW
Forward current	I_F	200	mA
Reverse voltage	V_R	10	V
Operating temperature range	T_{op}	$-40^{\circ}\sim+100^{\circ}$	$^{\circ}\text{C}$
Storage temperature range	T_{stg}	$-40^{\circ}\sim+100^{\circ}$	$^{\circ}\text{C}$
Heatresistance	R_{th}	15	$^{\circ}\text{C}$
Junction temperature	T_j	125	$^{\circ}\text{C}$
Electrostatic Discharge	ESD	2000	V

Electro-optical characteristics($T_a=25^{\circ}\text{C}$)

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Forward voltage	V_f	5.8	-	6.6	V	$I_F=150\text{mA}$
Viewing Angle	2θ 1/2	-	120	-	Deg	$I_F=150\text{mA}$
Luminous flux	Φ	125	-	-	lm	$I_F=150\text{mA}$
Reverse current	I_R	-	-	10	μA	$V_R=10\text{V}$
Color Index	R_a	80	-	-	-	$I_F=150\text{mA}$

NOTES:

- * The measurement of forward voltage maintains a tolerance of $\pm 0.05\text{V}$, flux maintains a tolerance of $\pm 5\%$.
- * R_a measurement tolerance is ± 2 .
- * $R_{th\ j-sp}$ is the thermal resistance from LED junction to solder point on MCPCB with electrical power.

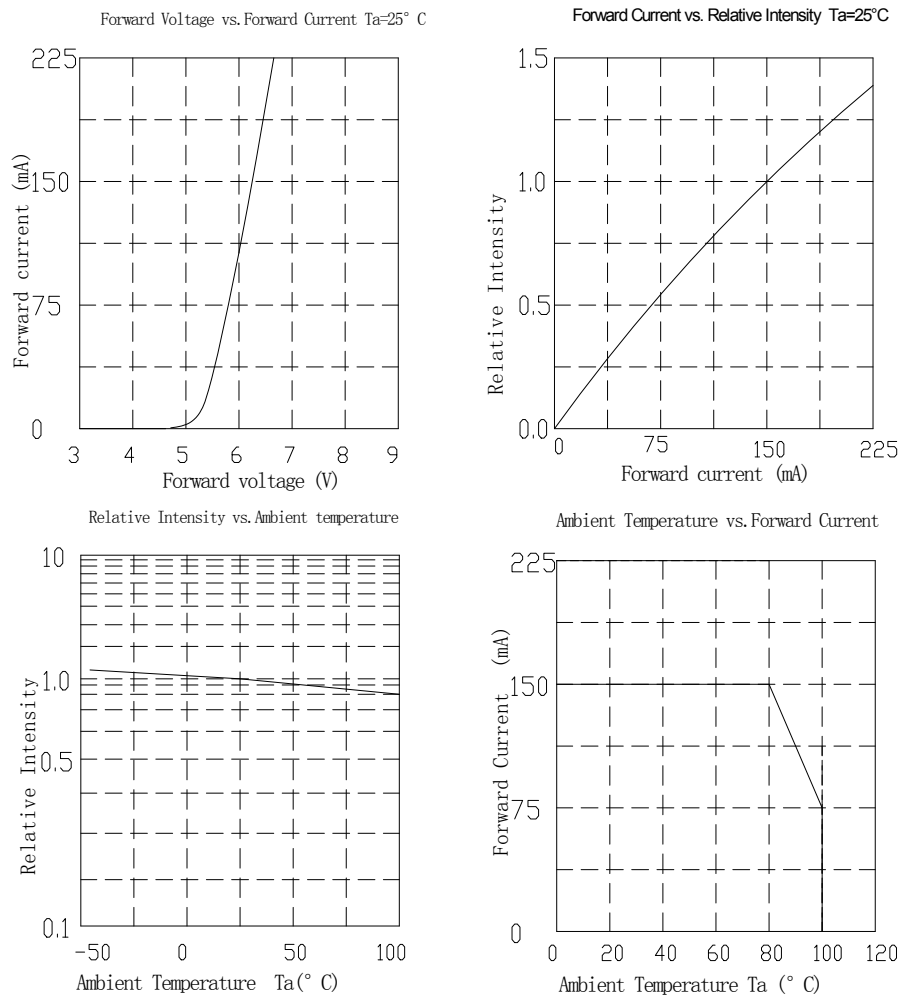
Reliability Test Items And Conditions

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=150mA	1000Hrs.	10pcs	0/10
Low Temperature Storage	Ta=-40°C	1000Hrs.	10pcs	0/10
High Temperature Storage	Ta=100°C	1000Hrs.	10pcs	0/10
High Temperature Operation Life Test	Ta=105°C, IF =150mA.	1000Hrs.	10pcs	0/10

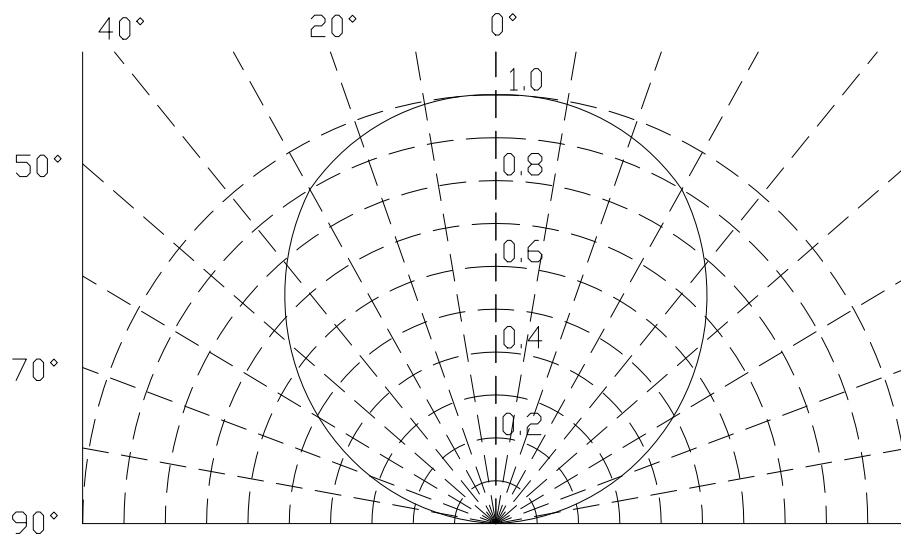
Failure Criteria

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

Typical optical characteristics curves



Curves of beam angle and relative brightness

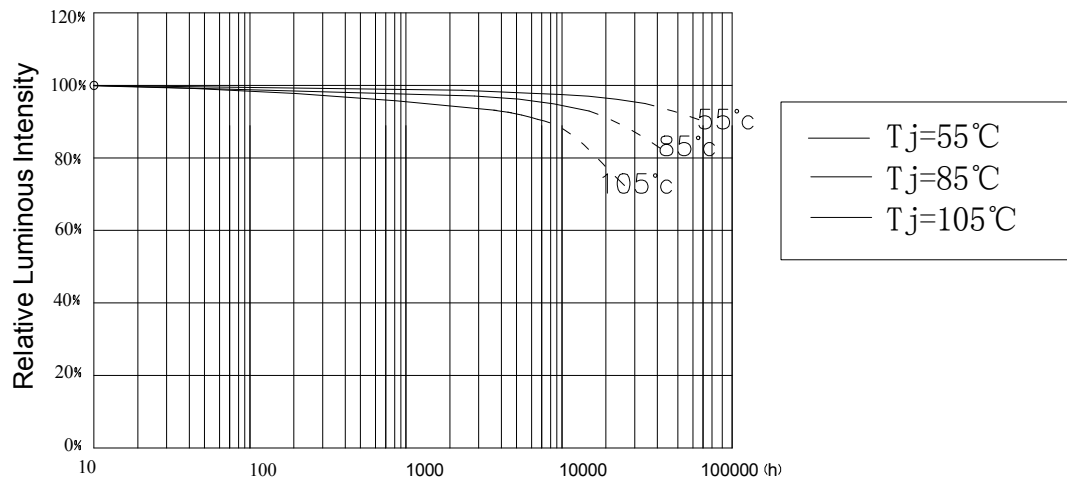


life test:

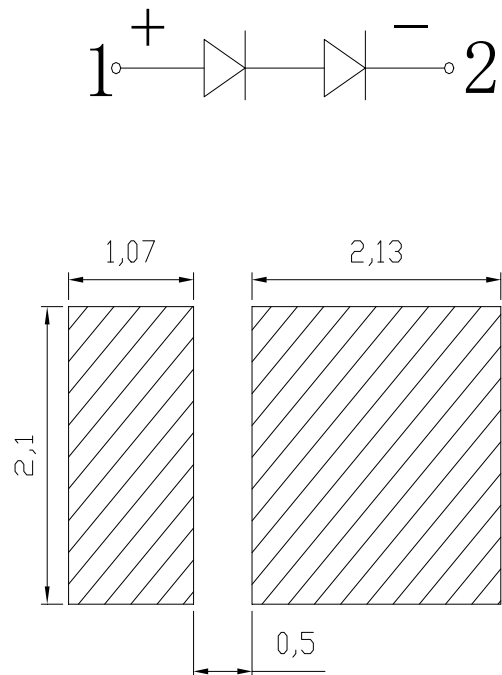
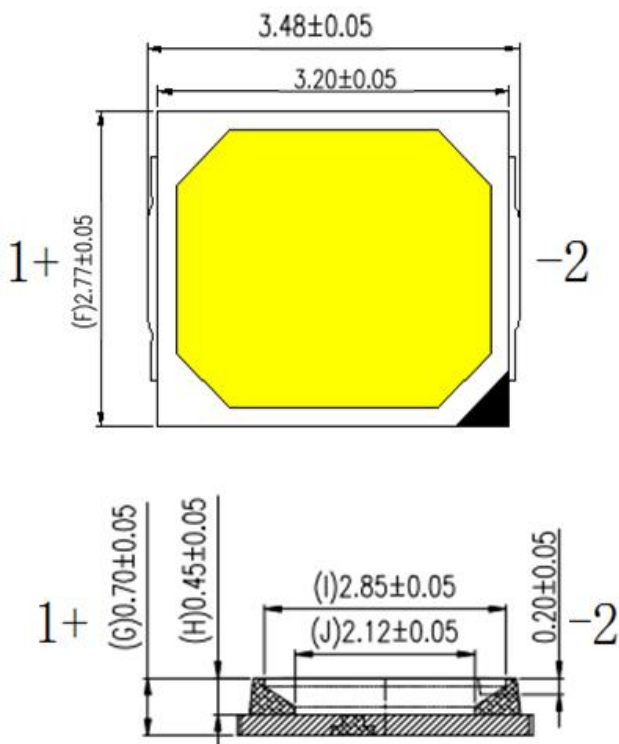
Affect of T_j on Luminous Maintenance

($I_f=150\text{mA}$)

(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

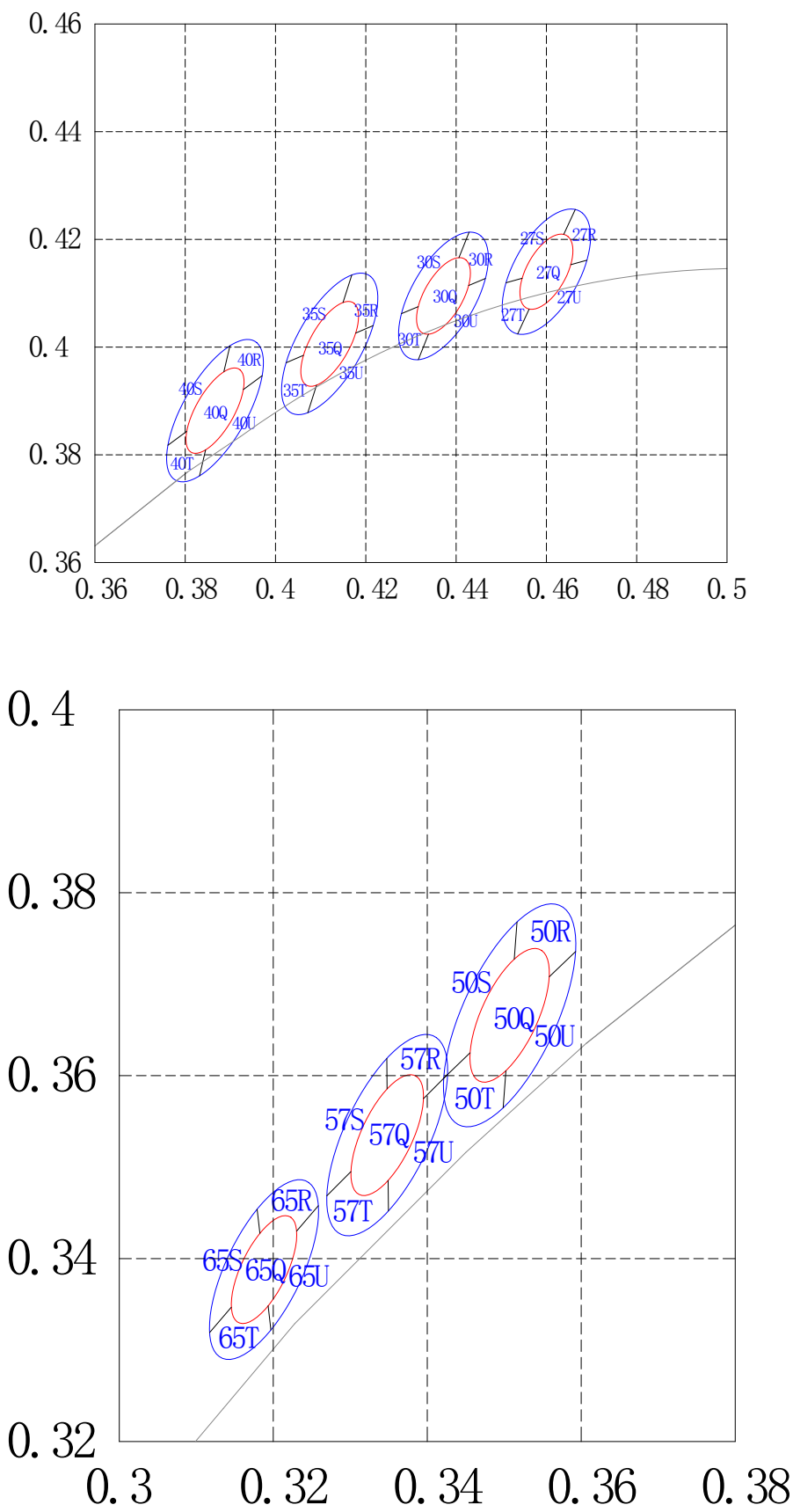
Luminous flux bin definitions for 2835R Series at rated current, Ta=25°C .

Product Number	Bin	Min	Max
L128-XX80RB35000L1	D	110	120
	E	120	130
	F	130	140
	G	140	150

Notes

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

Color Bin Definition



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

2700K

Color space	Center X	Center Y	a	b	Rotation Angle
3-Step	0.46	0.414	0.0081	0.0042	53.7
5-Step	0.46	0.414	0.0135	0.007	53.7
Point	x	y	Point	x	y
1	0.469	0.4161	5	0.4654	0.4153
2	0.4664	0.4256	6	0.4638	0.4209
3	0.451	0.4119	7	0.4546	0.4128
4	0.4536	0.4024	8	0.4562	0.4071

3000K

Color space	Center X	Center Y	a	b	Rotation Angle
3-Step	0.4372	0.4095	0.00834	0.00408	53.22
5-Step	0.4372	0.4095	0.0139	0.0068	53.22
Point	x	y	Point	x	y
1	0.4465	0.4127	5	0.4428	0.4114
2	0.4429	0.4213	6	0.4406	0.4166
3	0.4279	0.4062	7	0.4316	0.4075
4	0.4316	0.3977	8	0.4339	0.4024

3500K

Color space	Center X	Center Y	a	b	Rotation Angle
3-Step	0.412	0.4006	0.00927	0.00414	54
5-Step	0.412	0.4006	0.01545	0.0069	54
Point	x	y	Point	x	y
1	0.4216	0.404	5	0.4178	0.4026
2	0.4169	0.4134	6	0.4149	0.4083
3	0.4023	0.3971	7	0.4062	0.3985
4	0.4071	0.3878	8	0.4091	0.3929

4000K

Color space	Center X	Center Y	a	b	Rotation Angle
3-Step	0.3866	0.3882	0.00939	0.00402	53.72
5-Step	0.3866	0.3882	0.01565	0.0067	53.72
Point	x	y	Point	x	y
1	0.3971	0.3947	5	0.3929	0.3921
2	0.3899	0.4003	6	0.3886	0.3954
3	0.3762	0.3818	7	0.3803	0.3844
4	0.3832	0.3761	8	0.3845	0.3809

5000K

Color space	Center X	Center Y	a	b	Rotation Angle
3-Step	0.3507	0.3666	0.00822	0.00354	59.62
5-Step	0.3507	0.3666	0.0137	0.0059	59.62
Point	x	y	Point	x	y
1	0.3593	0.3736	5	0.3558	0.3708
2	0.3517	0.3768	6	0.3513	0.3727
3	0.3421	0.3597	7	0.3456	0.3625
4	0.3499	0.3565	8	0.3502	0.3605

5700K

Color space	Center X	Center Y	a	b	Rotation Angle
3-Step	0.3348	0.3535	0.00746	0.0032	59.09
5-Step	0.3348	0.3535	0.01243	0.00533	59.09
Point	x	y	Point	x	y
1	0.3426	0.3601	5	0.3395	0.3575
2	0.3347	0.3619	6	0.3348	0.3586
3	0.327	0.3469	7	0.3301	0.3495
4	0.335	0.3452	8	0.3349	0.3485

6500K

Color space	Center X	Center Y	a	b	Rotation Angle
3-Step	0.3188	0.3388	0.00669	0.00285	58.57
5-Step	0.3188	0.3388	0.01115	0.00475	58.57
Point	x	y	Point	x	y
1	0.3259	0.3458	5	0.323	0.343
2	0.3179	0.3454	6	0.3183	0.3428
3	0.3117	0.3319	7	0.3146	0.3347
4	0.3197	0.3322	8	0.3193	0.3348

Notes

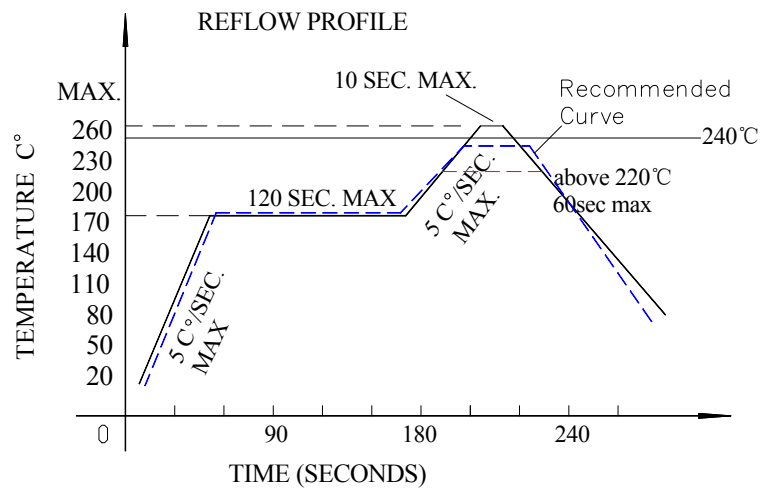
Tester tolerance: ± 0.01 in x and y coordinates

Forward Voltage Bins

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

Product Number	Bin	Min	Max
L128-XX80RB35000L1	A	5.6	5.8
	B	5.8	6.0
	C	6.0	6.2
	D	6.2	6.4
	E	6.4	6.6

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.