

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 3V	L128-2790RA35002E1	2700	90	52	54	57	25°C, IF=150mA
	L128-3090RA35002E1	3000	90	54	56	59	
	L128-3590RA35002E1	3500	90	55	57	60	
	L128-4090RA35002E1	4000	90	58	60	63	
	L128-5090RA35002E1	5000	90	58	60	63	
	L128-5790RA35002E1	5700	90	58	60	63	
	L128-6590RA35002E1	6500	90	58	60	63	

Product	Product Number	CCT	Ra Min	Φ(lm) Min	Φ(lm) Typ	Φ(lm) Max	Test conditions
2835R 3V	L128-2790RA35002F1	2700	90	55	58	60	25°C, IF=150mA
	L128-3090RA35002F1	3000	90	58	61	63	
	L128-3590RA35002F1	3500	90	60	62	65	
	L128-4090RA35002F1	4000	90	62	65	67	
	L128-5090RA35002F1	5000	90	62	65	67	
	L128-5790RA35002F1	5700	90	62	65	67	
	L128-6590RA35002F1	6500	90	62	65	67	

Product	Product Number	CCT	Ra Min	Φ(lm) Min	Φ(lm) Typ	Φ(lm) Max	Test conditions
2835R 3V	L128-2790RA35002G1	2700	90	60	62	65	25°C, IF=150mA
	L128-3090RA35002G1	3000	90	62	65	67	
	L128-3590RA35002G1	3500	90	63	66	68	
	L128-4090RA35002G1	4000	90	65	68	70	
	L128-5090RA35002G1	5000	90	65	68	70	
	L128-5790RA35002G1	5700	90	65	68	70	
	L128-6590RA35002G1	6500	90	65	68	70	

Product	Product Number	CCT	Ra Min	Φ(lm) Min	Φ(lm) Typ	Φ(lm) Max	Test conditions
2835R 3V	L128-2790RA35002H1	2700	90	62	65	67	25°C, IF=150mA
	L128-3090RA35002H1	3000	90	65	67	70	
	L128-3590RA35002H1	3500	90	67	69	72	
	L128-4090RA35002H1	4000	90	68	71	73	
	L128-5090RA35002H1	5000	90	68	71	73	
	L128-5790RA35002H1	5700	90	68	71	73	
	L128-6590RA35002H1	6500	90	68	71	73	

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	960	mW
Forward current	I_F	300	mA
Reverse voltage	V_R	5	V
Operating temperature range	T_{op}	$-35^{\circ}\sim+100^{\circ}$	$^{\circ}\text{C}$
Storage temperature range	T_{stg}	$-35^{\circ}\sim+85^{\circ}$	$^{\circ}\text{C}$
Heatresistance	R_{th}	25	$^{\circ}\text{C}$
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	2.8	-	3.2	V	$I_F=150\text{mA}$
Viewing Angle	$2\theta_{1/2}$	-	120	-	Deg	$I_F=150\text{mA}$
Reverse current	I_R	-	-	10	μA	$V_r=5\text{V}$
Color Index	R_a	90	-	-	-	$I_F=150\text{mA}$

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.

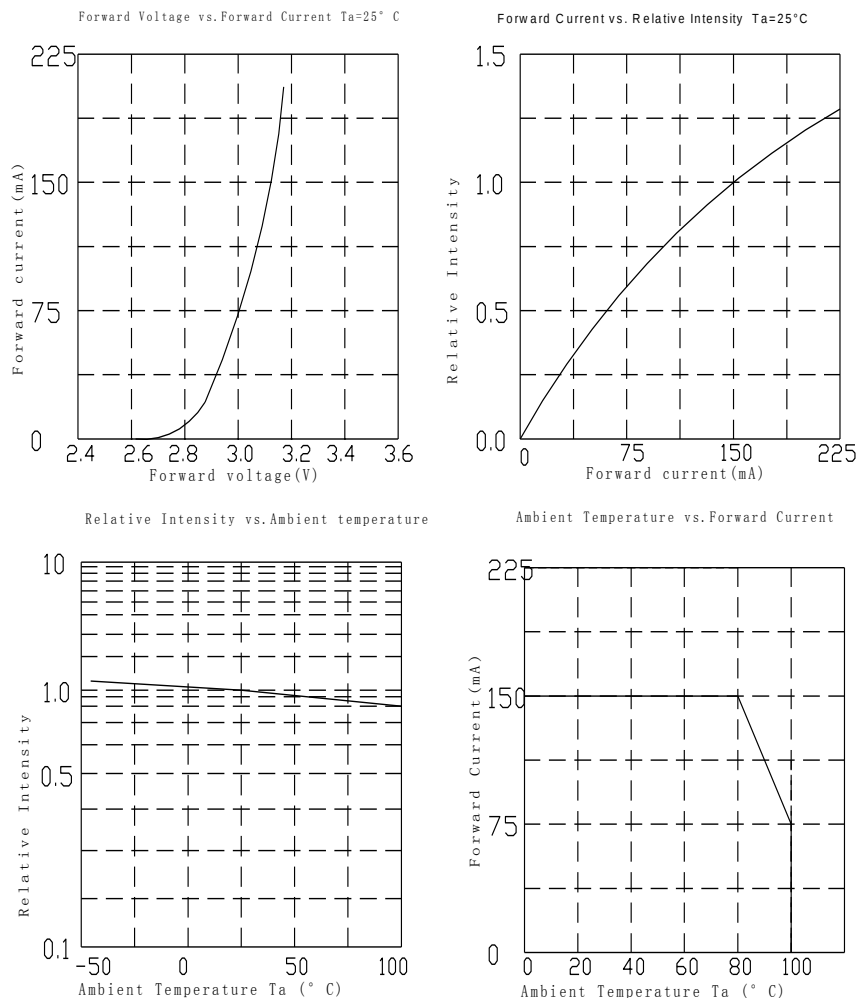
Reliability Test Items And Conditions

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=85°C, IF =150mA.	1000Hrs.	10pcs	0/10

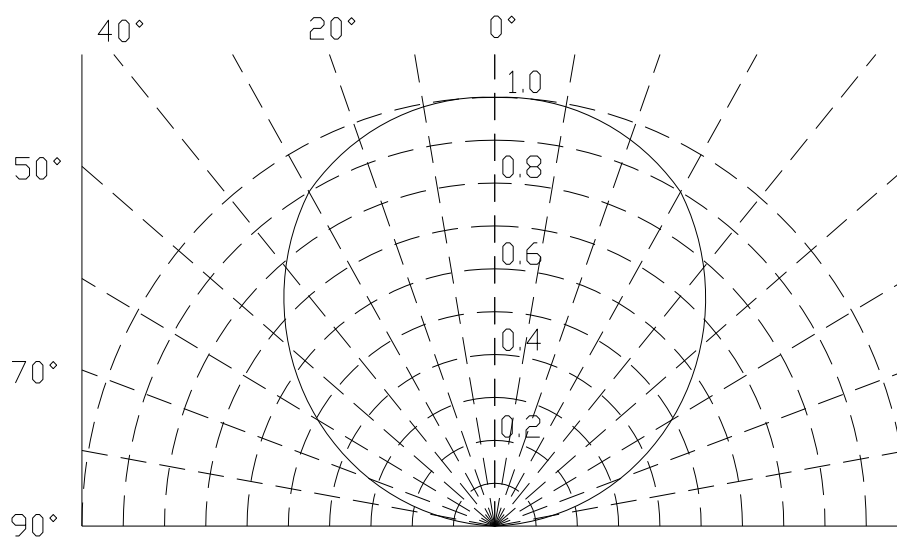
Failure Criteria

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

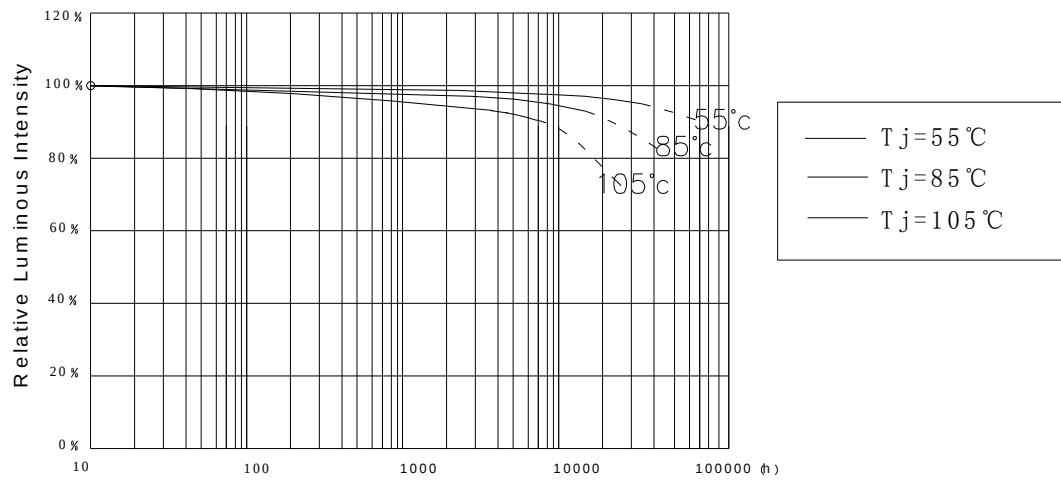


life test:

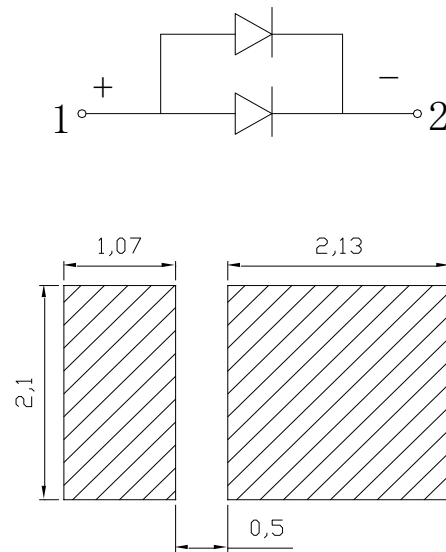
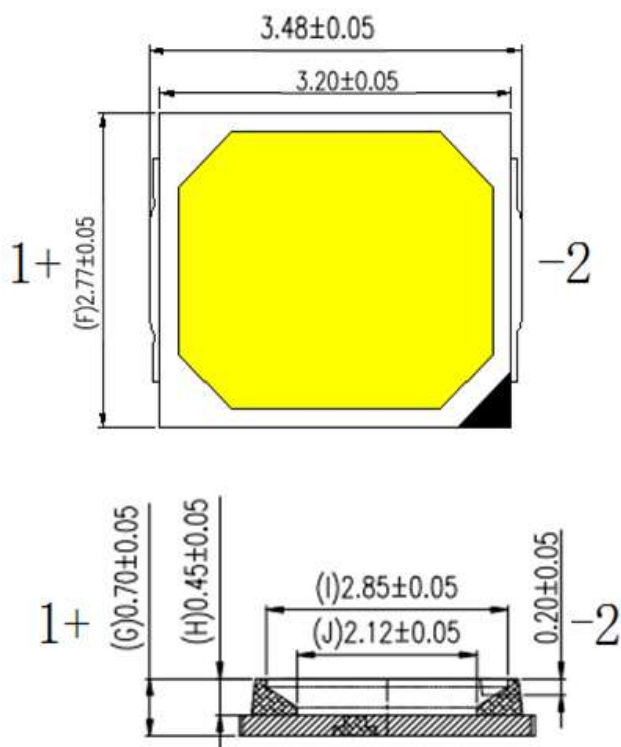
Affect of Tj on Luminous Maintenance

(If=150mA)

(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

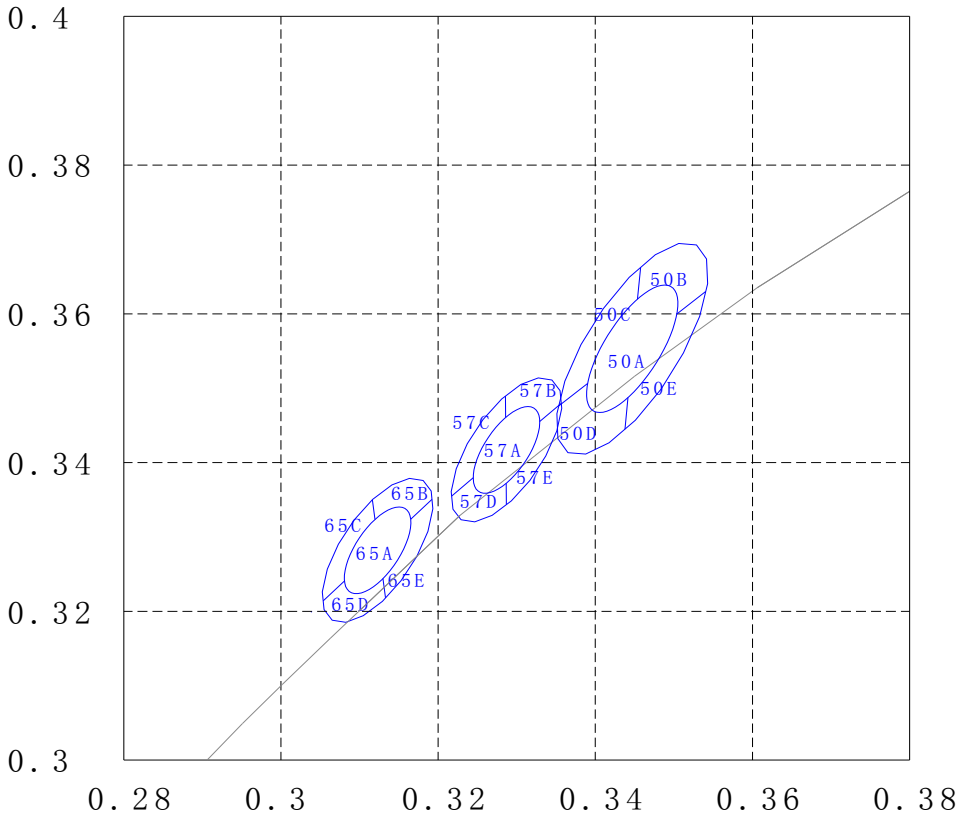
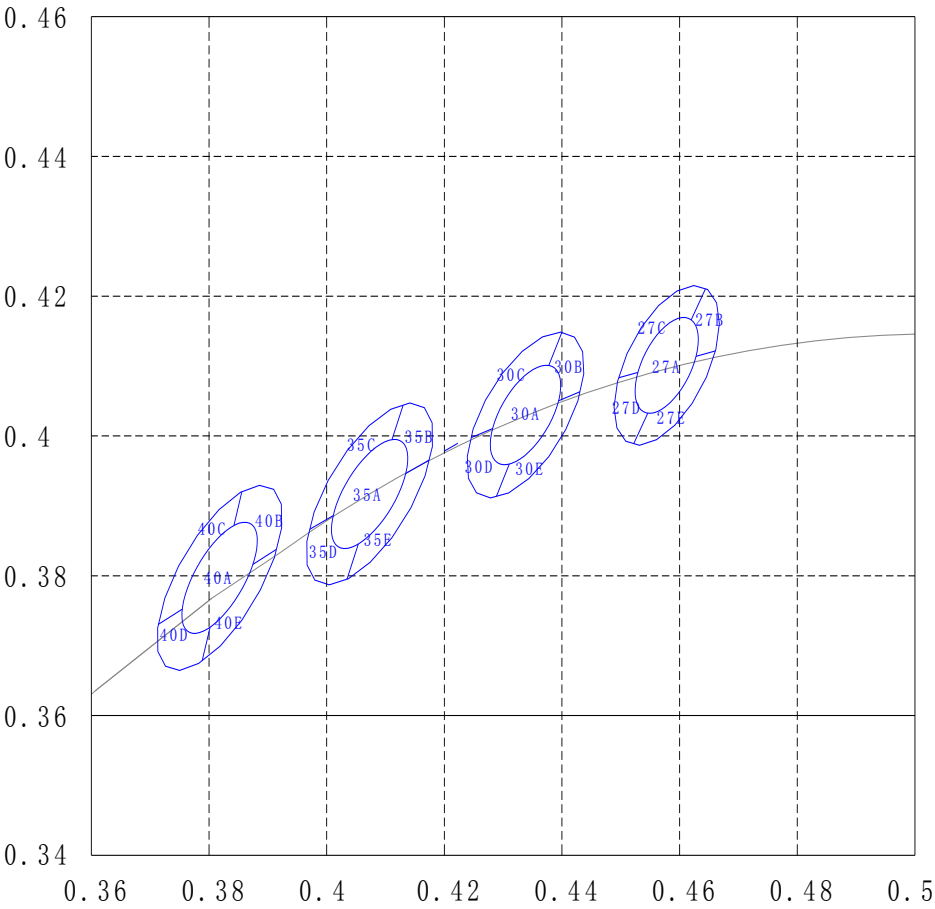
Luminous flux bin definitions for 2835R Series at rated current, Ta=25°C .

Product Number	Bin	Min	Max
L128-XX90RA35002E1 L128-XX90RA35002F1 L128-XX90RA35002G1 L128-XX90RA35002H1	C	50	55
	D	55	60
	E	60	65
	F	65	70
	G	70	75

Notes

Lumileds Maintains a tolerance of ±5% on luminous 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	0.4578	0.4101	0.0040	0.0077	57.2800
5-Step	0.4578	0.4101	0.0067	0.0129	57.2800
Point	x	y	Point	x	y
1	0.4661	0.4122	5	0.4628	0.4114
2	0.4644	0.4210	6	0.4620	0.4166
3	0.4497	0.4083	7	0.4529	0.4091
4	0.4522	0.3989	8	0.4546	0.4033

3000k

Color space	Center X	Center Y	a	b	Rotation Angle
3-Step	0.4338	0.4030	0.0041	0.0083	53.1600
5-Step	0.4338	0.4030	0.0068	0.0139	53.1600
Point	x	y	Point	x	y
1	0.4430	0.4063	5	0.4394	0.4050
2	0.4400	0.4148	6	0.4378	0.4101
3	0.4246	0.3998	7	0.4282	0.4010
4	0.4289	0.3914	8	0.4310	0.3960

3500k

Color space	Center X	Center Y	a	b	Rotation Angle
3-Step	0.4073	0.3917	0.0041	0.0093	52.9600
5-Step	0.4073	0.3917	0.0069	0.0155	52.9600
Point	x	y	Point	x	y
1	0.4174	0.3966	5	0.4134	0.3946
2	0.4130	0.4044	6	0.4111	0.3995
3	0.3971	0.3867	7	0.4011	0.3886
4	0.4035	0.3795	8	0.4054	0.3845

4000k

Color space	Center X	Center Y	a	b	Rotation Angle
3-Step	0.3818	0.3797	0.0040	0.0094	54.0000
5-Step	0.3818	0.3797	0.0067	0.0156	54.0000
Point	x	y	Point	x	y
1	0.3914	0.3838	5	0.3875	0.3816
2	0.3856	0.3920	6	0.3842	0.3872
3	0.3714	0.3731	7	0.3754	0.3752
4	0.3788	0.3679	8	0.3802	0.3726

5000k

Color space	Center X	Center Y	a	b	Rotation Angle
3-Step	0.3447	0.3553	0.0036	0.0097	59.6200
5-Step	0.3447	0.3553	0.0060	0.0162	59.6200
Point	x	y	Point	x	y
1	0.3541	0.3630	5	0.3504	0.3600
2	0.3458	0.3662	6	0.3454	0.3620
3	0.3354	0.3476	7	0.3390	0.3506
4	0.3438	0.3445	8	0.3442	0.3487

5700k

Color space	Center X	Center Y	a	b	Rotation Angle
3-Step	0.3287	0.3417	0.0029	0.0066	58.3800
5-Step	0.3287	0.3417	0.0048	0.0110	58.3800
Point	x	y	Point	x	y
1	0.3357	0.3480	5	0.3329	0.3455
2	0.3286	0.3489	6	0.3286	0.3461
3	0.3217	0.3355	7	0.3245	0.3379
4	0.3287	0.3343	8	0.3287	0.3372

6500K

Color space	Center X	Center Y	a	b	Rotation Angle
3-Step	0.3123	0.3282	0.0029	0.0066	58.3800
5-Step	0.3123	0.3282	0.0048	0.0110	58.3800
Point	x	y	Point	x	y
1	0.3192	0.3351	5	0.3165	0.3324
2	0.3116	0.3350	6	0.3120	0.3324
3	0.3054	0.3214	7	0.3081	0.3241
4	0.3133	0.3218	8	0.3130	0.3244

Notes

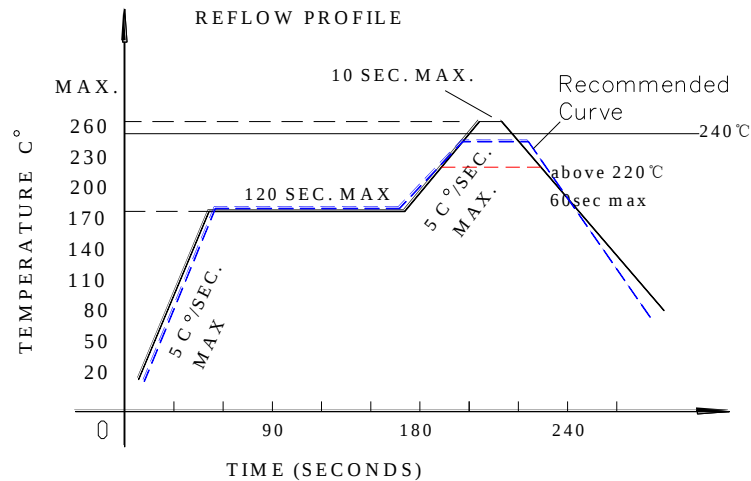
Tester tolerance: ± 0.01 in x and y coordinates

Forward Voltage Bins

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

Product Number	Bin	Min	Max
L128-XX90RA35002E1 L128-XX90RA35002F1 L128-XX90RA35002G1 L128-XX90RA35002H1	B	2.7	2.8
	C	2.8	2.9
	D	2.9	3.0
	E	3.0	3.1
	F	3.1	3.2

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.