LUMILEDS

ILLUMINATION

LUXEON 2835 Commercial

Superior lm/W/$ choice in LUXEON 2835 portfolio

LUXEON 2835 Commercial mid-power LEDs are the price/performance leader for commercial indoor lighting solutions when lumens per Watt and lumens per dollar are the driving metrics for development. They are available in CCTs from 2700K to 6500K and CRIs of 80 and 90. LUXEON 2835 Commercial has a max current rating of 200mA and features a 1/5th color bin structure making it a perfect choice for indoor applications where you want the quality and reliability of LUXEON in a commercial application. LUXEON 2835 Commercial leads its class in flux, color consistency, robustness, and reliability making it the right choice for commercial indoor luminaires.

FEATURES AND BENEFITS

- Complete CCT/CRI offering for various application
- Industry standard footprint for drop-in replacement
- Reliable package design for commercial applications
- 5 sdcm MacAdam ellipse enable precise color control

PRIMARY APPLICATIONS

- Panel / Soft Lights
- Linear
- Troffers

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c UL us No. E507562 RoHS COMPLIANT

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General Product Information

Product Test Conditions

LUXEON 2835 Commercial LEDs are tested and binned with a 20ms monopulse specified below at a junction temperature, T_j, of 25°C.

65mA – LUXEON 2835S 3V

Part Number Nomenclature

Part numbers for LUXEON 2835 Commercial follow the convention below:

L 1 2 8 – **A A B B** S **C** 3 5 **D D E E E**

Where:

- **A A** – designates nominal ANSI CCT (27=2700K, 30=3000K, 35=3500K, 40=4000K, 50=5000K, 57=5700K, 65=6500K)
- **B B** – designates minimum CRI (80=80CRI and 90=90CRI)
- **C** – designates voltage of the part (A=3V)
- **D D** – designates options for product specification
- **E E E** – designates options for product specification

Therefore, the following part number is used for a LUXEON 2835 Commercial 4000K 80CRI, 3V LED:

L 1 2 8 – **4 0 8 0** S **A** 3 5 A **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. LUXEON 2835 Commercial 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).

Performance Characteristics

Product Selection Guide

Table 1. Product performance of LUXEON 2835 Commercial LEDs at specified test conditions.

VOLTAGE	PRODUCT	NOMINAL CCT [1]	MINIMUM CRI [2, 3]	LUMINOUS FLUX [2, 3] (lm)		TYPICAL LUMINOUS EFFICACY (lm/W)	TEST CURRENT (mA)	PART NUMBER
				MINIMUM	TYPICAL			
3V	LUXEON 2835S	2700K	80	30.0	32.5	181.0	65	L128-2780SA35A00A1
		3000K	80	32.0	33.5	186.5	65	L128-3080SA35A00A1
		3500K	80	32.5	34.0	189.0	65	L128-3580SA35A00A1
		4000K	80	33.0	35.0	195.0	65	L128-4080SA35A00A1
		5000K	80	33.0	35.0	195.0	65	L128-5080SA35A00A1
		5700K	80	33.0	35.0	195.0	65	L128-5780SA35A00A1
		6500K	80	32.5	34.5	192.0	65	L128-6580SA35A00A1
		2700K	90	24.0	26.5	147.5	65	L128-2790SA35A00A1
		3000K	90	25.0	27.5	153.0	65	L128-3090SA35A00A1
		3500K	90	26.0	28.5	158.5	65	L128-3590SA35A00A1
		4000K	90	27.0	29.0	161.5	65	L128-4090SA35A00A1
		5000K	90	27.0	29.0	161.5	65	L128-5090SA35A00A1
		5700K	90	27.0	29.0	161.5	65	L128-5790SA35A00A1
		6500K	90	27.0	28.7	160.0	65	L128-6590SA35A00A1

Notes for Table 1:
1. Correlated color temperature is cold-targeted at T_j=25°C for 3V products.
2. Luminous flux and CRI specs are based upon mounted package on highly reflective surface at T_j=25°C. Typical CRI is approximately 2 points higher than the minimum CRI specified, but this is not guaranteed.
3. Lumileds maintains a tolerance of ±2 on CRI and ±7.5% on luminous flux measurements.

Optical Characteristics

Table 2. Optical characteristics for LUXEON 2835 Commercial at specified test current, T_j=25°C.

PART NUMBER	TYPICAL TOTAL INCLUDED ANGLE [1]	TYPICAL VIEWING ANGLE [2]
L128-xxxxSx35xxxxx	160°	120°

Notes for Table 2:
1. Total angle at which 90% of total luminous flux is captured.
2. Viewing angle is the off axis angle from the LED centerline where the luminous intensity is ½ of the peak value.

Electrical and Thermal Characteristics

Table 3. Electrical and thermal characteristics for LUXEON 2835 Commercial at specified test current, T_j=25°C.

PART NUMBER	FORWARD VOLTAGE [1] (V_f)			TYPICAL TEMPERATURE COEFFICIENT OF FORWARD VOLTAGE [2] (mV/°C)	TYPICAL THERMAL RESISTANCE—JUNCTION TO SOLDER PAD (°C/W)
	MINIMUM	TYPICAL	MAXIMUM		
L128-xxxxSA35A00A1	2.6	2.76	2.95	-1.0 to -2.0	18.6

Notes for Table 3:
1. Lumileds maintains a tolerance of ±0.1V on forward voltage measurements.
2. Measured between 25°C and 85°C.

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Absolute Maximum Ratings

Table 4. Absolute maximum ratings for LUXEON 2835 Commercial.

PARAMETER	MAXIMUM PERFORMANCE
DC Forward Current [1, 2]	200mA for L128-xxxxSA35A00A1
Peak Pulsed Forward Current [1, 3]	400mA for L128-xxxxSA35A00A1
LED Junction Temperature [1] (DC & Pulse)	125°C for L128-xxxxSA35A00A1
ESD Sensitivity (ANSI/ESDA/JEDEC JS-001-2012)	Class 2
Operating Case Temperature [1]	-35°C to 100°C
LED Storage Temperature	-35°C to 85°C
Soldering Temperature	JEDEC 020c 260°C
Allowable Reflow Cycles	3
Reverse Voltage ($V_{reverse}$)	LUXEON LEDs are not designed to be driven in reverse bias

Notes for Table 4:
1. Proper current derating must be observed to maintain the junction temperature below the maximum allowable junction temperature.
2. Residual periodic variations due to power conversion from alternating current (AC) to direct current (DC), also called "ripple," are acceptable if the following conditions are met:
   – The frequency of the ripple current is 100Hz or higher
   – The average current for each cycle does not exceed the maximum allowable DC forward current
   – The maximum amplitude of the ripple does not exceed the maximum peak pulsed forward current
3. At ≤50% duty cycle with pulse width of 5ms.

Characteristics Curves

Spectral Power Distribution Characteristics

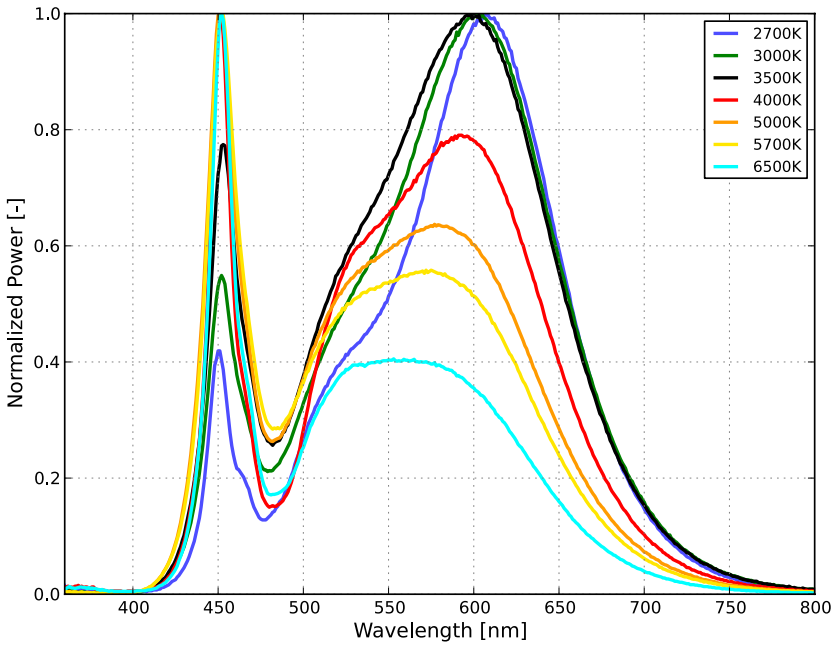

Figure 1a. Typical normalized power vs. wavelength for 80CRI LUXEON 2835S 3V at specified test current, T_j=25°C.

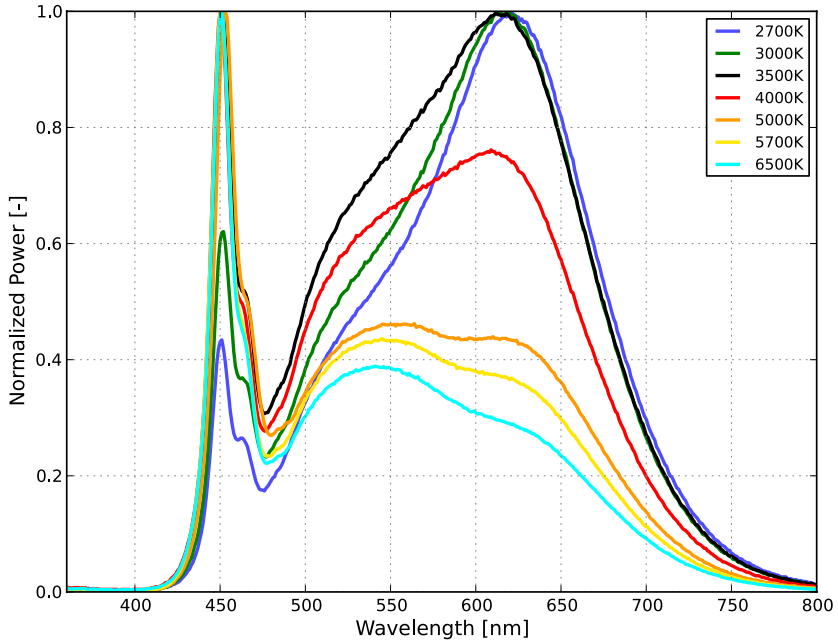

Figure 1b. Typical normalized power vs. wavelength for 90CRI LUXEON 2835S 3V at specified test current, T_j=25°C.

Light Output Characteristics

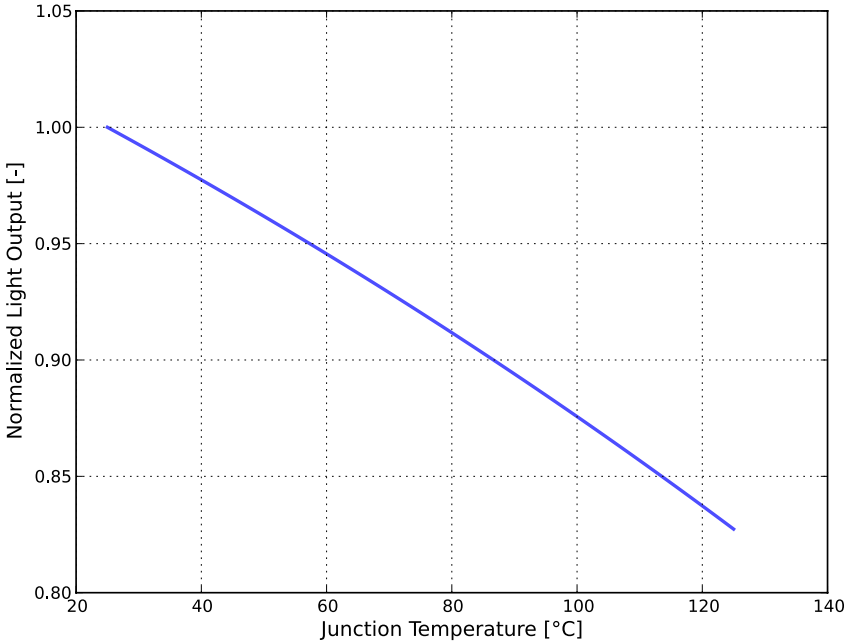

Figure 2. Typical normalized light output vs. junction temperature for LUXEON 2835S 3V Line at specified test current.

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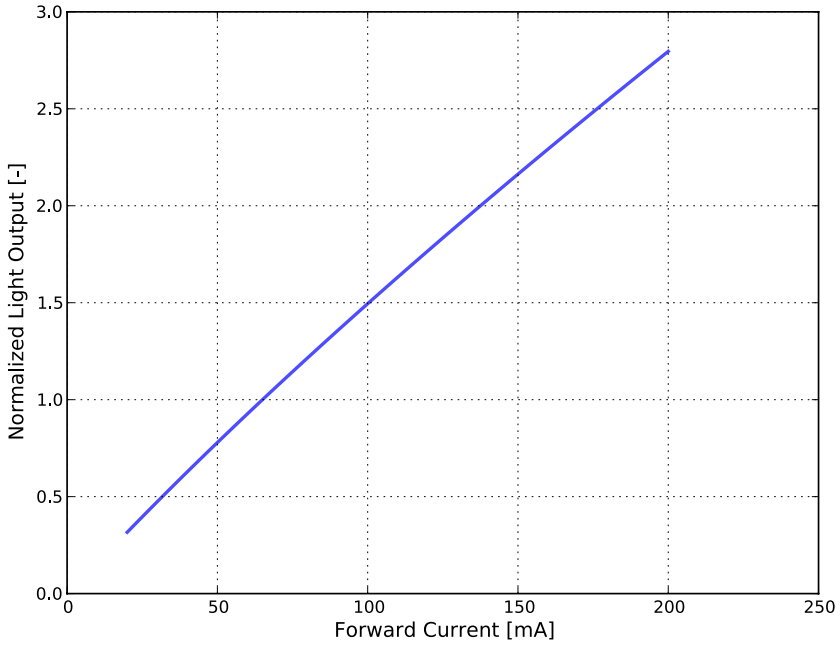

Figure 3. Typical normalized light output vs. forward current for LUXEON 2835S 3V Line at T_j=25°C.

Forward Current Characteristics

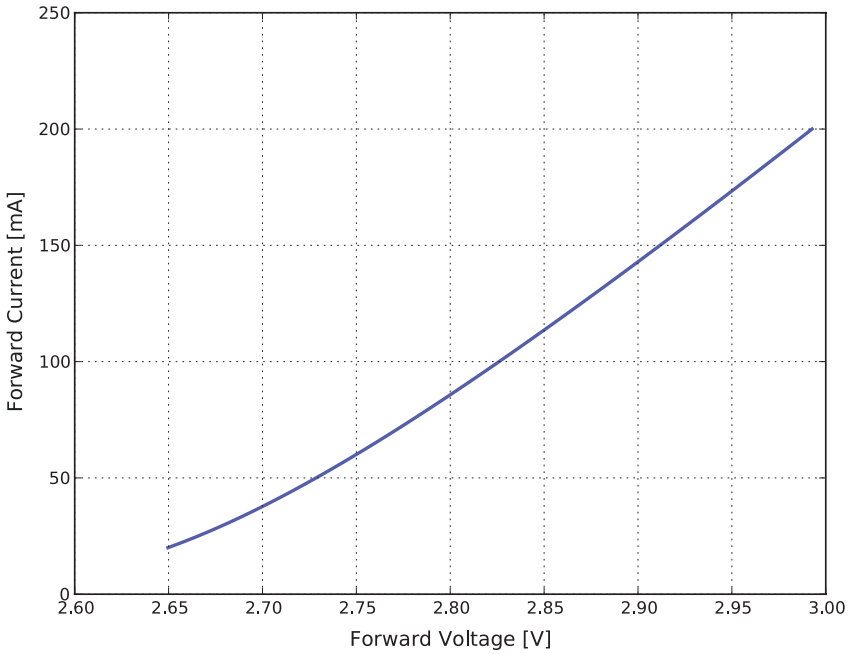

Figure 4. Typical forward current vs. forward voltage for LUXEON 2835S 3V at T_j=25°C.

Radiation Pattern Characteristics

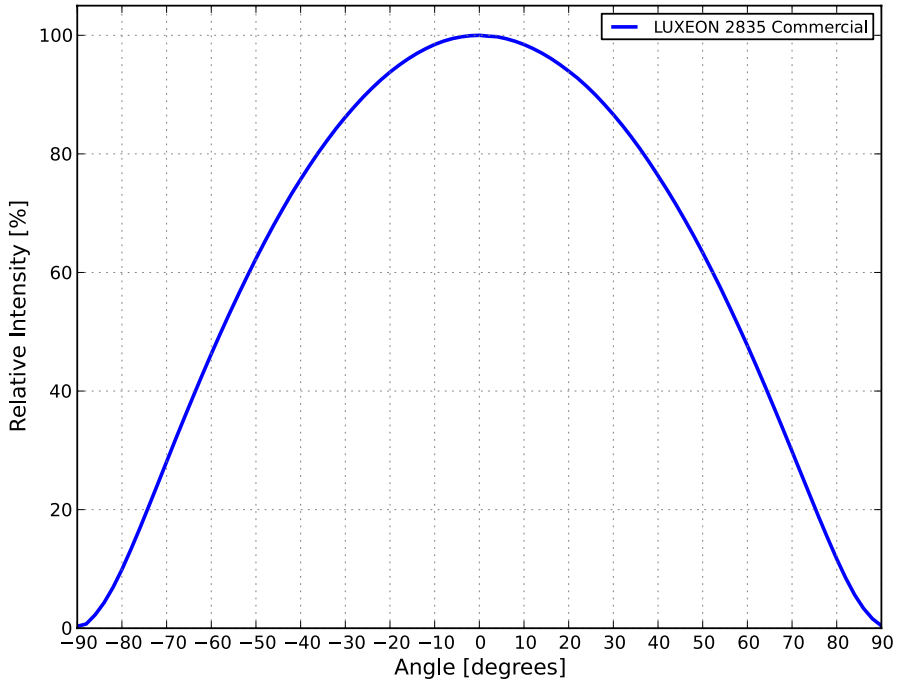

Figure 5. Typical radiation pattern for LUXEON 2835 Commercial at test current, T_j=25°C.

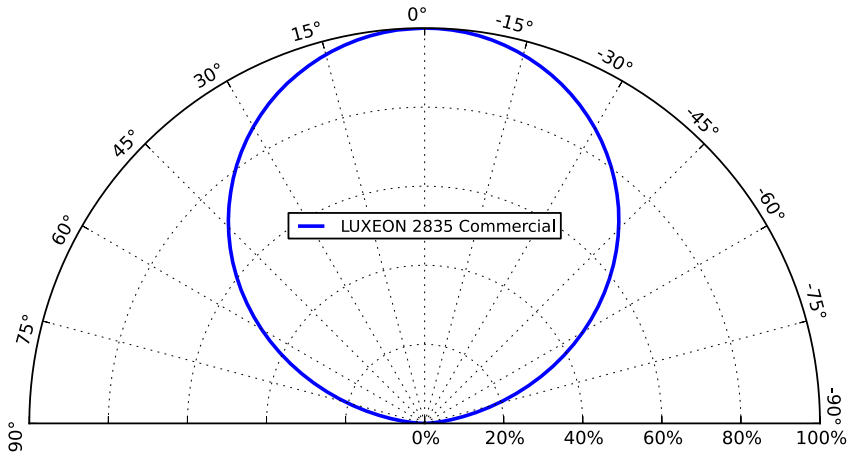

Figure 6. Typical polar radiation pattern for LUXEON 2835 Commercial at test current, T_j=25°C.

Mechanical Dimensions

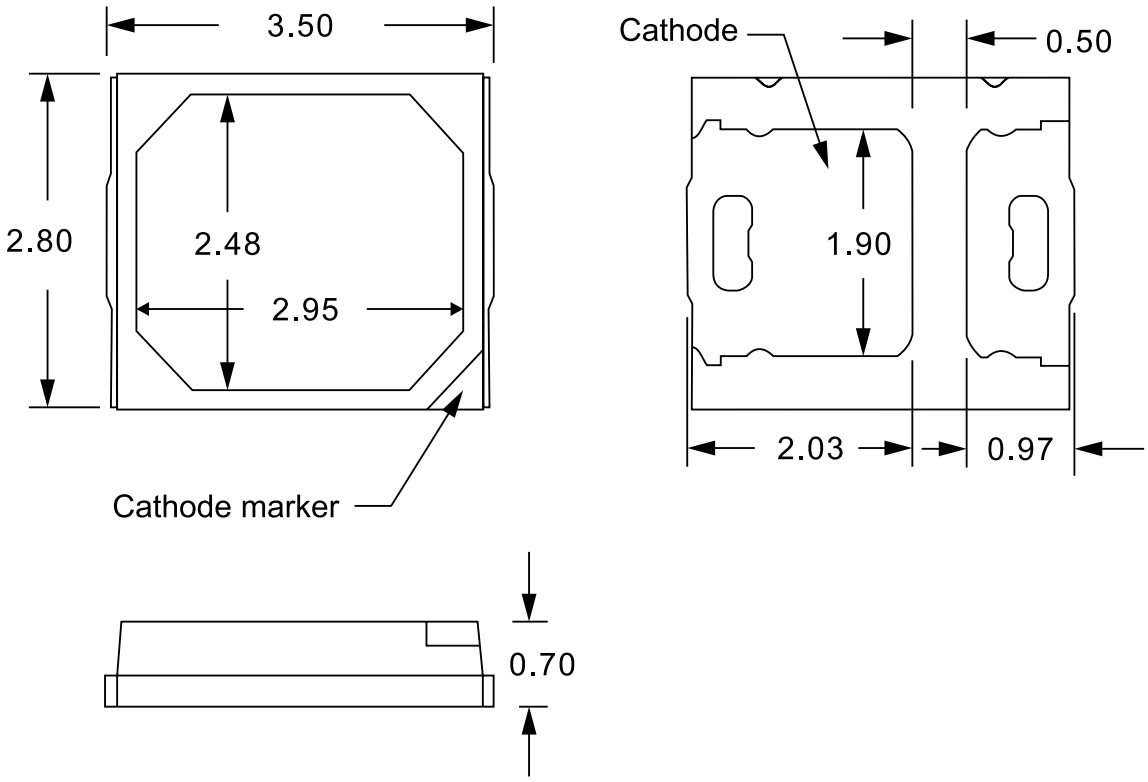

Figure 7. Mechanical dimensions for LUXEON 2835 Commercial.

Notes for Figure 7:
1. Drawings are not to scale.
2. All dimensions are in millimeters.
3. Tolerance: ±0.1mm.

Reflow Soldering Guidelines

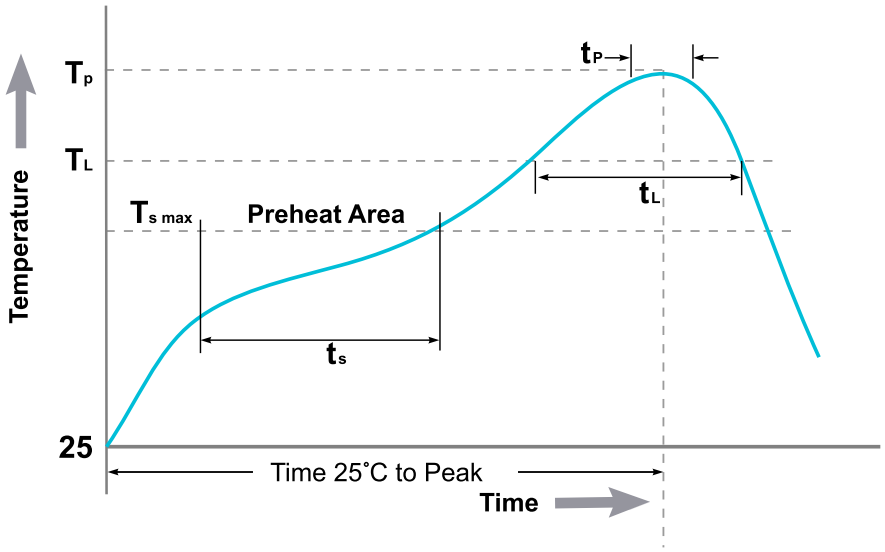

Figure 8. Visualization of the acceptable reflow temperature profile as specified in Table 5.

Note for Figure 8:
1. This general guideline may not apply to all designs and configurations of reflow soldering equipment.

Table 5. Reflow profile characteristics for LUXEON 2835 Commercial.

PROFILE FEATURE	LEAD-FREE ASSEMBLY
Preheat Maximum Temperature (T_{smax})	180°C
Preheat Time (t_s)	120 seconds maximum
Ramp-Up Rate (T_{smax} to T_p)	5°C / second maximum
Liquidus Temperature (T_L)	220°C
Time Maintained Above Temperature T_L (t_L)	60 seconds maximum
Peak / Classification Temperature (T_p)	260°C
Time Within 5°C of Actual Peak Temperature (t_p)	10 seconds maximum
Time 25°C to Peak Temperature	3.5 minutes maximum

JEDEC Moisture Sensitivity

Table 6. Moisture sensitivity levels for LUXEON 2835 Commercial.

LEVEL	FLOOR LIFE		SOAK REQUIREMENTS STANDARD	
	TIME	CONDITIONS	TIME	CONDITIONS
4	72 Hours	≤30°C / 60% RH	96 Hours +2 / -0	30°C / 60% RH

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Solder Pad Design

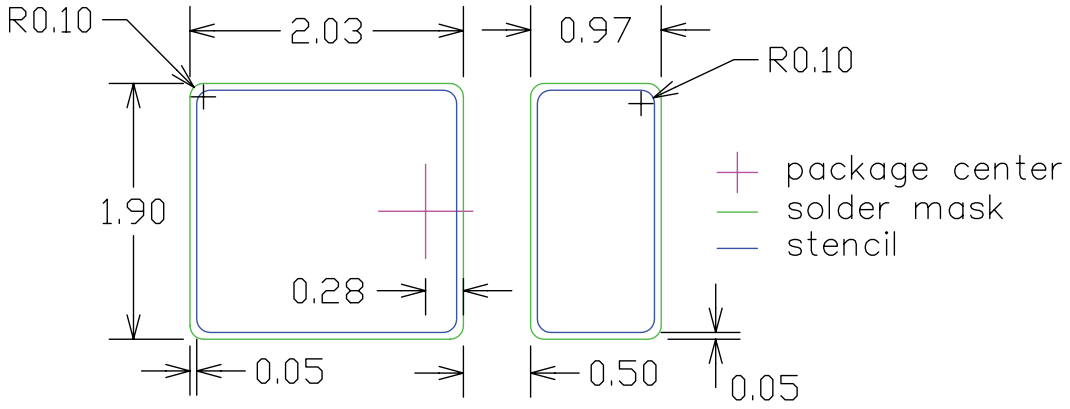

Figure 9. Recommended PCB solder pad layout for LUXEON 2835 Commercial.

Notes for Figure 9:
1. Drawings are not to scale.
2. All dimensions are in millimeters.

Packaging Information

Pocket Tape Dimensions

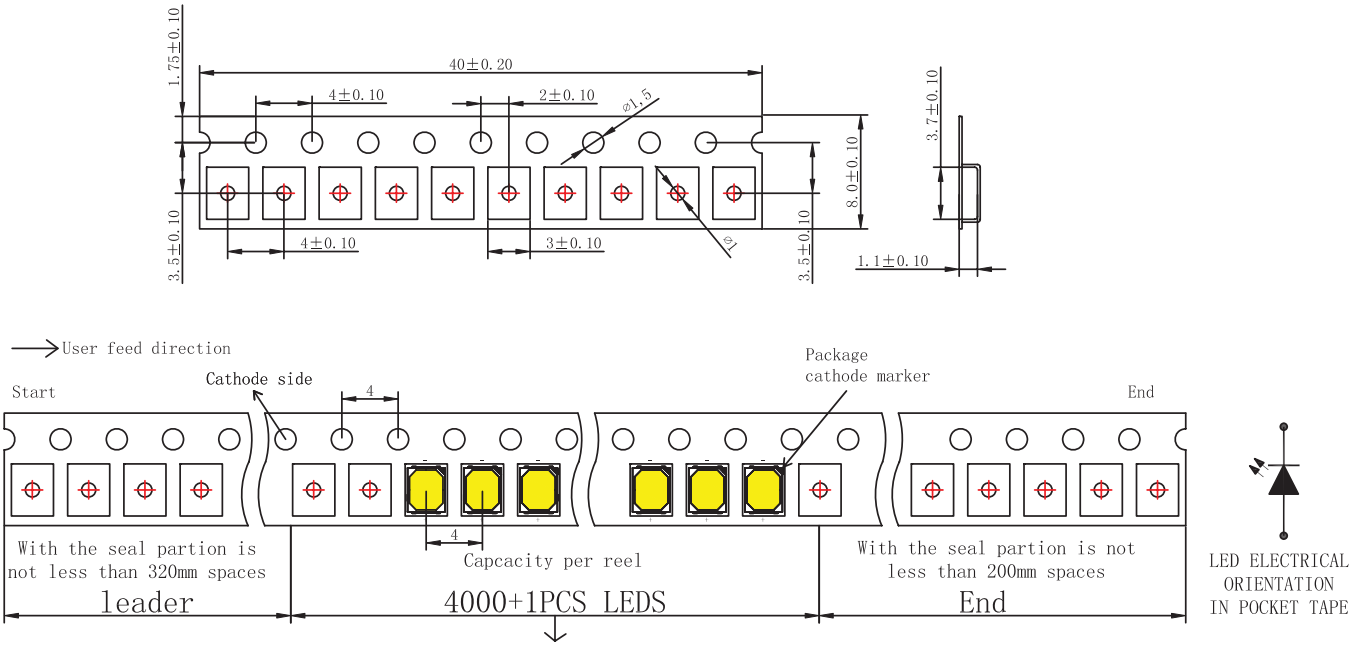

Figure 10. Pocket tape dimensions for LUXEON 2835 Commercial.

Notes for Figure 10:
1. Drawings are not to scale.
2. All dimensions are in millimeters.

Reel Dimensions

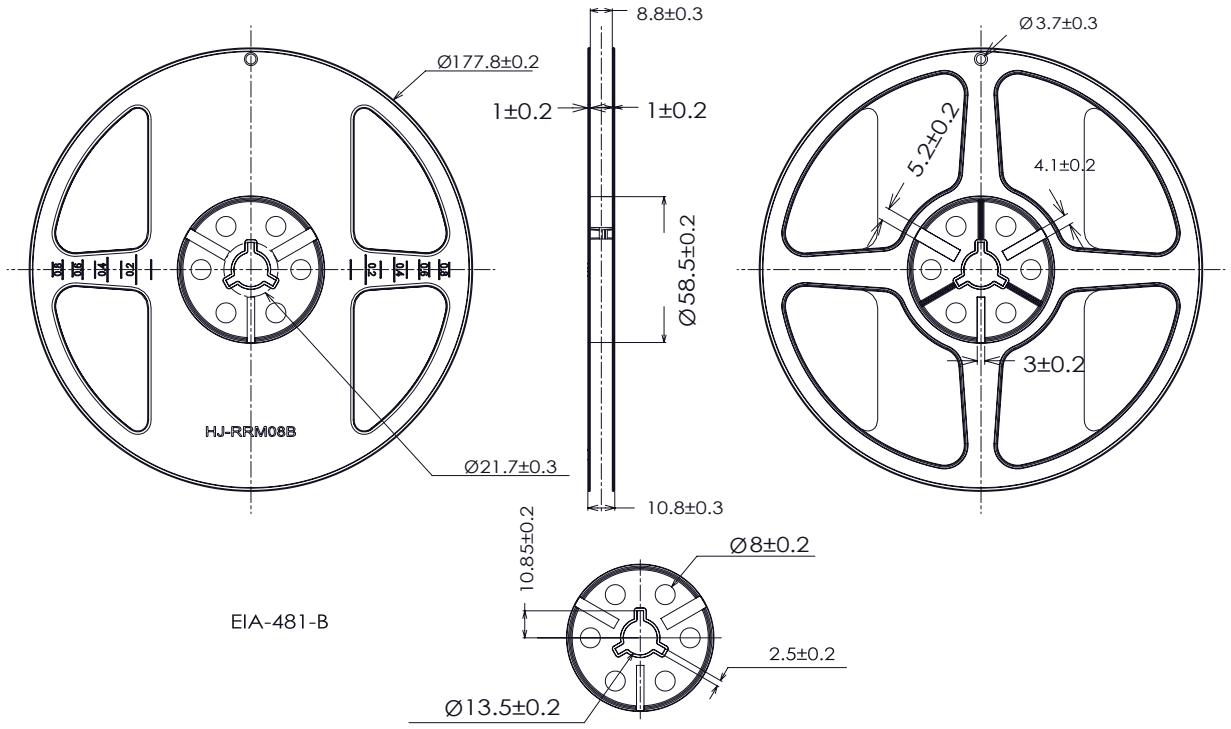

Figure 11. Reel dimensions for LUXEON 2835 Commercial.

Notes for Figure 11:
1. Drawings are not to scale.
2. All dimensions are in millimeters.

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.

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