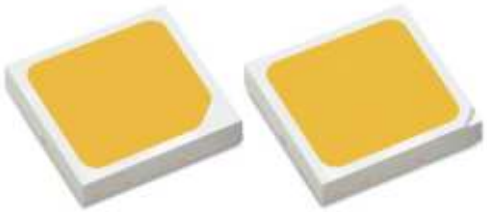
LUMILEDS

ILLUMINATION

LUXEON 3030 HE
LUXEON 3030 HE Plus

Industry leading efficacy, 3V 3030 package





LUXEON 3030 HE and LUXEON 3030 HE Plus are superior high efficacy, mid power packages built on the legacy of the LUXEON 3030 product line. They serve as go-to solutions for various indoor and outdoor fixture applications that require top notch lm/W and µmol/J performance and long lifetime. LUXEON 3030 HE and LUXEON 3030 HE Plus adopt quadrant bin structure within 3 SDCM, which enables 2 SDCM by kitting. Futhermore, with the latest NightScape Technology, LUXEON 3030 HE Plus enabled revolutionary environmental friendly outdoor solutions with blue content below 2%.

Now With NightScape Technology

NightScape Technology enables white light with blue light content that is less than 2%.

FEATURES AND BENEFITS

- Superior high efficacy at rated current enables outstanding lm/W at system level
- Reliable package design from a proven product line affirms application long lifetime
- Quadrant bin structure within 3 SDCM enables 2 SDCM by kitting
- Industry standard package allows drop-in replacement for existing 3030 packages
- Robust coating design for enhanced sulfurprotection capability (LUXEON 3030 HE Plus) [1]

[1] Refer to reliability datasheet for more details.

PRIMARY APPLICATIONS

- Panel / Soft Lights
- Spotlights
- Linear
- Troffers
- Downlights
- Wall Pack
- Horticulture

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c UL us No. E507562 RoHS COMPLIANT

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General Product Information

Product Test Conditions

LUXEON 3030 HE and LUXEON 3030 HE Plus LEDs are tested and binned with a 20ms monopulse of 65mA at a junction temperature, T_J, of 25°C.

Part Number Nomenclature

Part numbers for LUXEON 3030 HE and LUXEON 3030 HE Plus follow the convention below:

L 1 3 0 – **A A A A B B** 3 0 C C C C C

Where:

A A A A – designates nominal CCT and CRI (2780=2700K, 80CRI; 3090=3000K, 90CRI, etc., and NSC1=Nightscape)

B B – designates product code (HA=LUXEON 3030 HE Plus, HB=LUXEON 3030 HE)

C C C C C – designates options for product specification (000B1 = base part number of performance proliferation B1, 000C1 = base part number of performance proliferation C1 000D1 = base part number of performance proliferation D1, 00KD1 = base part number of performance proliferation D1 with KSF phosphor inside. Besides, there would be custom part numbers that are derived from base part number for kitting purpose etc., and those would take the last five digits to differentiate from base part number. For examples, 000B4 = 3SDCM kitting by opposite bin of proliferation B1, 000B5 = pure 3SDCM of proliferation bin kitting from four B1, 000B7 = 2SDCM by opposite 3SDCM inner bins of proliferation B1)

Therefore, the following part number is used for a LUXEON 3030 HE Plus, 3000K 80CRI LED with pure 3SDCM of proliferation C1:

L 1 3 0 – **3 0 8 0 H A** 3 0 0 0 0 C 5

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 Holding B.V. is committed to providing environmentally friendly products to the solid-state lighting market. LUXEON 3030 HE is compliant to the European Union directives on the restriction of hazardous substances in electronic equipment, namely the RoHS Directive 2011/65/EU including amendments 2015/863/EU & 2017/2102/EU and REACH Regulation (EC) 1907/2006. Lumileds Holding B.V. 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 1a. Product performance of LUXEON 3030 HE and LUXEON 3030 HE Plus at 65mA, T_j= 25°C

PART	NOMINAL CCT [1]	MINIMUM CRI [2, 3]	LUMINOUS FLUX [2, 3] (lm)		TYPICAL LUMINOUS EFFICACY (lm/W)	PART NUMBER
			MINIMUM	TYPICAL		
			65mA			
LUXEON 3030 HE	3000K	70	32.7	35.5	195	L130-3070HB30000B1
	3500K	70	34.0	37.0	203	L130-3570HB30000B1
	4000K	70	34.5	37.5	206	L130-4070HB30000B1
	5000K	70	34.5	37.5	206	L130-5070HB30000B1
	5700K	70	34.0	37.0	203	L130-5770HB30000B1
	6500K	70	33.5	36.4	200	L130-6570HB30000B1
	2700K	80	29.0	33.5	184	L130-2780HB30000B1
	3000K	80	29.5	34.0	187	L130-3080HB30000B1
	3500K	80	30.0	35.0	192	L130-3580HB30000B1
	4000K	80	32.0	36.5	201	L130-4080HB30000B1
	5000K	80	31.5	36.0	198	L130-5080HB30000B1
	5700K	80	31.5	36.0	198	L130-5780HB30000B1
	6500K	80	31.0	35.5	195	L130-6580HB30000B1
	2700K	90	24.5	28.0	154	L130-2790HB30000B1
	3000K	90	25.0	28.5	157	L130-3090HB30000B1
	3500K	90	26.0	29.5	162	L130-3590HB30000B1
	4000K	90	27.5	30.5	168	L130-4090HB30000B1
	5000K	90	27.0	30.0	165	L130-5090HB30000B1
	5700K	90	27.0	30.0	165	L130-5790HB30000B1
	6500K	90	27.0	30.0	165	L130-6590HB30000B1
LUXEON 3030 HE Plus	2200K	70	29.5	32.0	182	L130-2270HA30000B1
	3000K	70	34.0	37.0	210	L130-3070HA30000B1
	3500K	70	35.0	38.0	216	L130-3570HA30000B1
	4000K	70	36.0	39.0	221	L130-4070HA30000B1
	5000K	70	36.0	39.0	221	L130-5070HA30000B1
	5700K	70	35.0	38.0	216	L130-5770HA30000B1
	6500K	70	34.5	37.5	213	L130-6570HA30000B1
	2700K	80	30.0	33.5	190	L130-2780HA30000B1
	3000K	80	32.0	35.0	199	L130-3080HA30000B1
	3500K	80	33.0	36.0	204	L130-3580HA30000B1
	4000K	80	34.0	37.0	210	L130-4080HA30000B1
	5000K	80	34.0	37.0	210	L130-5080HA30000B1
	5700K	80	33.5	36.5	207	L130-5780HA30000B1
	6500K	80	33.0	36.0	204	L130-6580HA30000B1
	2700K	90	26.0	28.5	162	L130-2790HA30000B1
	3000K	90	27.0	29.5	167	L130-3090HA30000B1
	3500K	90	27.5	30.5	173	L130-3590HA30000B1
	4000K	90	28.5	31.5	179	L130-4090HA30000B1
	5000K	90	28.5	31.5	179	L130-5090HA30000B1
	5700K	90	28.5	31.5	179	L130-5790HA30000B1
	6500K	90	28.0	31.0	176	L130-6590HA30000B1

Table 1a continued on next page:

1. Correlated color temperature is hot targeted at T_j=25°C.
2. Luminous flux and CRI are specified 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.

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Table 1a. Product performance of LUXEON 3030 HE and LUXEON 3030 HE Plus at 65mA, T_j= 25°C, Continued.

PART	NOMINAL CCT [1]	MINIMUM CRI [2, 3]	LUMINOUS FLUX [2, 3] (lm)		TYPICAL LUMINOUS EFFICACY (lm/W)	PART NUMBER
			MINIMUM	TYPICAL		
			65mA			
LUXEON 3030 HE Plus	1850K [4]	50	29.5	32.2	183	L130-NSC1HA30000C1
	2200K	70	29.5	33.1	188	L130-2270HA30000C1
	3000K	70	34.0	37.7	215	L130-3070HA30000C1
	3500K	70	35.0	38.7	221	L130-3570HA30000C1
	4000K	70	36.0	39.4	224	L130-4070HA30000C1
	5000K	70	36.0	39.4	224	L130-5070HA30000C1
	5700K	70	35.0	38.5	219	L130-5770HA30000C1
	6500K	70	34.5	38.0	216	L130-6570HA30000C1
	2700K	80	30.0	33.8	193	L130-2780HA30000C1
	3000K	80	32.0	35.2	201	L130-3080HA30000C1
	3500K	80	33.0	36.6	209	L130-3580HA30000C1
	4000K	80	34.0	37.6	214	L130-4080HA30000C1
	5000K	80	34.0	37.6	214	L130-5080HA30000C1
	5700K	80	33.5	37.0	211	L130-5780HA30000C1
	6500K	80	33.0	36.6	209	L130-6580HA30000C1
	2700K	90	26.0	28.8	164	L130-2790HA30000C1
	3000K	90	27.0	30.0	171	L130-3090HA30000C1
	3500K	90	27.5	30.5	174	L130-3590HA30000C1
	4000K	90	28.5	32.1	183	L130-4090HA30000C1
	5000K	90	28.5	32.1	183	L130-5090HA30000C1
	5700K	90	28.5	32.1	183	L130-5790HA30000C1
	6500K	90	28.0	31.3	178	L130-6590HA30000C1
	2200K	70	32.6	35.0	199	L130-2270HA30000D1
	3000K	70	36.9	39.7	226	L130-3070HA30000D1
	3500K	70	37.7	40.5	231	L130-3570HA30000D1
	4000K	70	37.9	40.8	232	L130-4070HA30000D1
	5000K	70	38.4	41.3	235	L130-5070HA30000D1
	5700K	70	37.8	40.6	231	L130-5770HA30000D1
	6500K	70	37.2	40.0	228	L130-6570HA30000D1
	2700K	80	32.6	35.1	200	L130-2780HA30000D1
	3000K	80	33.5	36.0	205	L130-3080HA30000D1
	3500K	80	35.0	37.6	214	L130-3580HA30000D1
	4000K	80	35.9	38.6	220	L130-4080HA30000D1
	5000K	80	36.4	39.1	223	L130-5080HA30000D1
	5700K	80	36.3	39.0	222	L130-5780HA30000D1
	6500K	80	36.0	38.7	221	L130-6580HA30000D1
	2700K	90	27.2	29.3	167	L130-2790HA30000D1
	3000K	90	29.1	31.3	178	L130-3090HA30000D1
	3500K	90	29.8	32.0	182	L130-3590HA30000D1
	4000K	90	30.2	32.5	185	L130-4090HA30000D1
	5000K	90	31.0	33.3	190	L130-5090HA30000D1
	5700K	90	31.0	33.3	190	L130-5790HA30000D1
	6500K	90	30.7	33.0	188	L130-6590HA30000D1
	2700K	90	28.6	30.7	175	L130-2790HA3000KD1
	3000K	90	29.9	32.2	183	L130-3090HA3000KD1
	3500K	90	33.9	36.5	208	L130-3590HA3000KD1
	4000K	90	34.7	37.3	213	L130-4090HA3000KD1
	5000K	90	34.9	37.5	214	L130-5090HA3000KD1
	5700K	90	34.9	37.5	214	L130-5790HA3000KD1
	6500K	90	34.3	36.9	210	L130-6590HA3000KD1

Notes for Table 1a:
1. Correlated color temperature is hot targeted at T_j=25°C.
2. Luminous flux and CRI are specified 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.
4. With Nightscape technology inside.

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Table 1b. Percent Blue for LUXEON 3030 HE Plus with NightScape Technology at test current, T_j=25°C

PART NUMBER	BLUE CONTENT [1]	
	TYPICAL	MAXIMUM
L130-NSC1HA30000C1	1%	2%

Notes for Table 1b:
1. Blue content is defined as the radiometric flux emitted between 400nm and 500nm divided by the total radiometric power.

Optical Characteristics

Table 2. Optical characteristics for LUXEON 3030 HE and LUXEON 3030 HE Plus at 65mA, T_j= 25°C

PART NUMBER	TYPICAL TOTAL INCLUDED ANGLE [1]	TYPICAL VIEWING ANGLE [2]
L130-xxxxHx30000x1	160°	110°

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 3030 HE and LUXEON 3030 HE Plus at 65mA, 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		
L130-xxxxHB30000B1	2.75	2.80	2.85	-1.0 to -2.0	23.0
L130-xxxxHA30000B1	2.66	2.70	2.76	-1.0 to -2.0	10.0
L130-xxxxHA30000C1	2.66	2.70	2.76	-1.0 to -2.0	10.0
L130-xxxxHA30000D1	2.65	2.70	2.75	-1.0 to -2.0	4.0

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

Absolute Maximum Ratings

Table 4. Absolute maximum ratings for LUXEON 3030 HE and LUXEON 3030 HE Plus

PARAMETER	MAXIMUM PERFORMANCE
DC Forward Current [1][2]	240mA/480mA/270mA
Peak Pulsed Forward Current [1][3]	350mA/700mA/300mA
ESD Sensitivity (ANSI/ESDA/JEDEC JS-001-2012)[1]	Class 2/Class 2/Class 3B
LED Junction Temperature (DC & Pulse)	125°C
Operating Case Temperature	-40°C to 105°C
LED Storage Temperature	-40°C to 105°C
Soldering Temperature	JEDEC 020D 260°C
Allowable Reflow Cycles	3
Reverse Voltage ($V_{reverse}$) [4]	-5V

Notes for Table 4:
1. Maximum performance is listed for LUXEON 3030 HE/ LUXEON 3030 HE Plus -0B1 and -0C1/ LUXEON 3030 HE plus -0D1
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 25% of the maximum allowable DC forward current
3. Pulse operation with the maximum peak pulse forward current is acceptable if the pulse on time is ≤5ms per cycle and the duty cycle is ≤50%
4. At a maximum reverse current of 10µA. LUXEON 3030 HE and LUXEON 3030 HE Plus LEDs are not designed to be driven in reverse bias.

Characteristics Curves

Spectral Power Distribution Characteristics

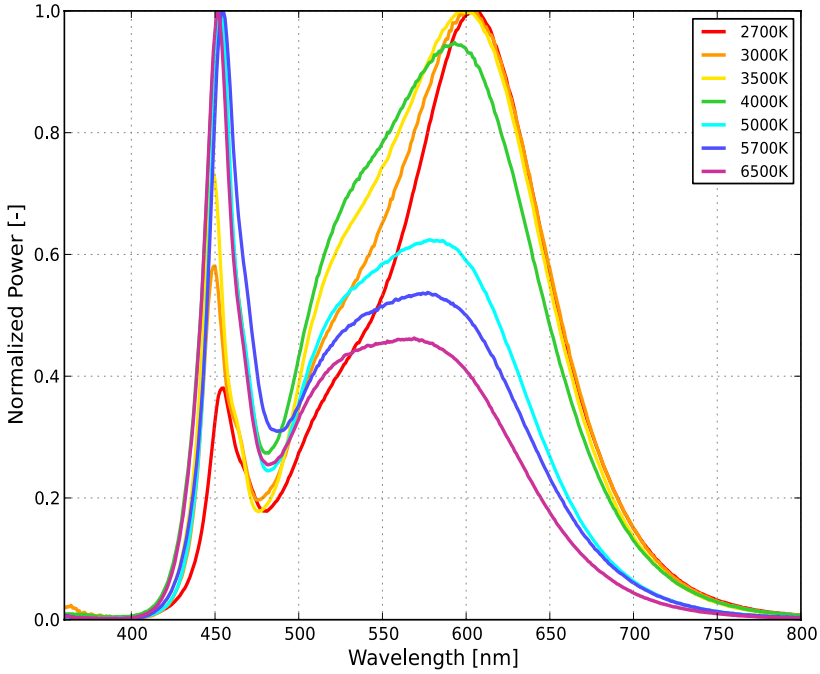


Figure 1a. Typical normalized power vs. wavelength for L130-xx80Hx30000x1 at 65mA, T_j=25°C

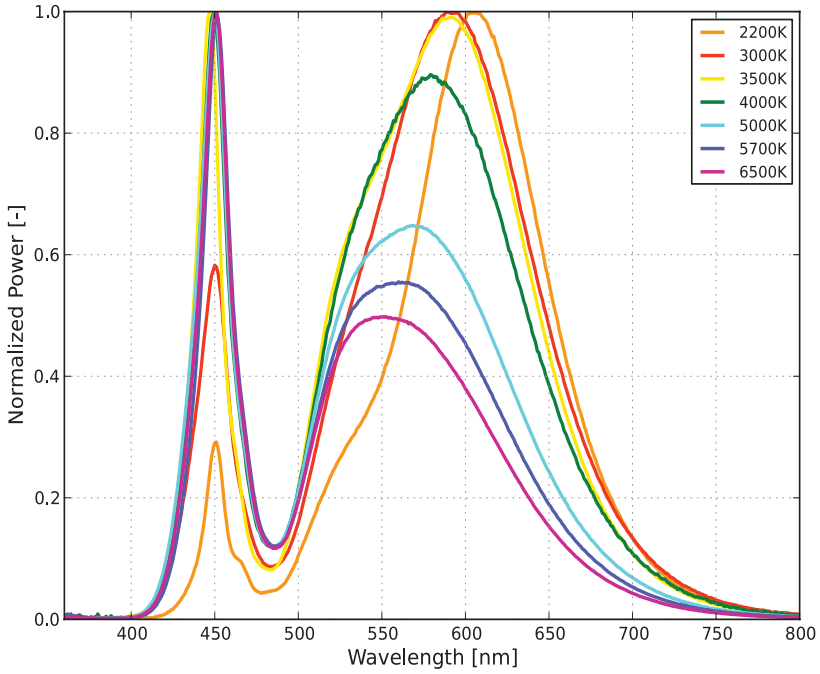


Figure 1b. Typical normalized power vs. wavelength for L130-xx70Hx30000x1 at 65mA, T_j=25°C

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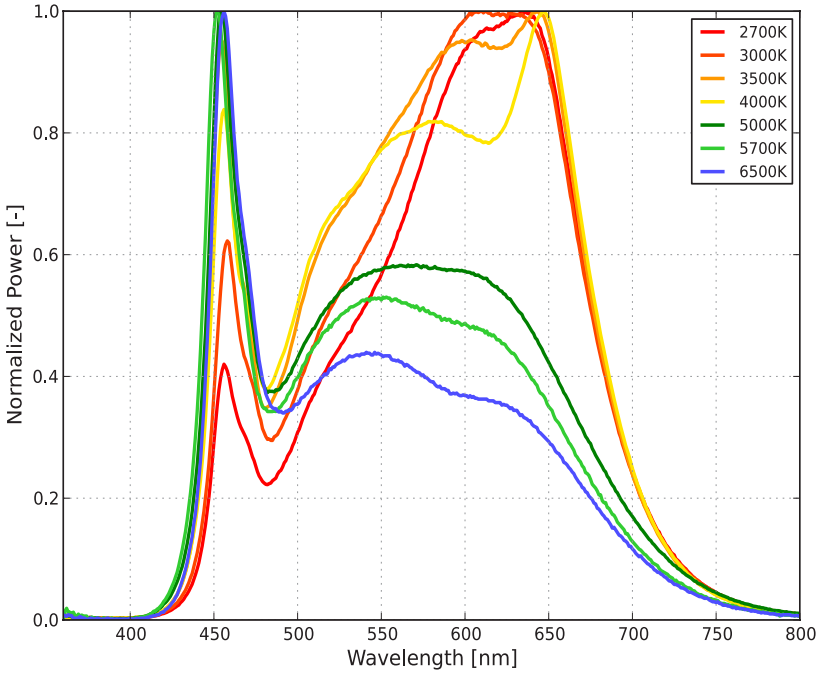


Figure 1c. Typical normalized power vs. wavelength for L130-xx90Hx30000x1 at 65mA, T_j=25°C

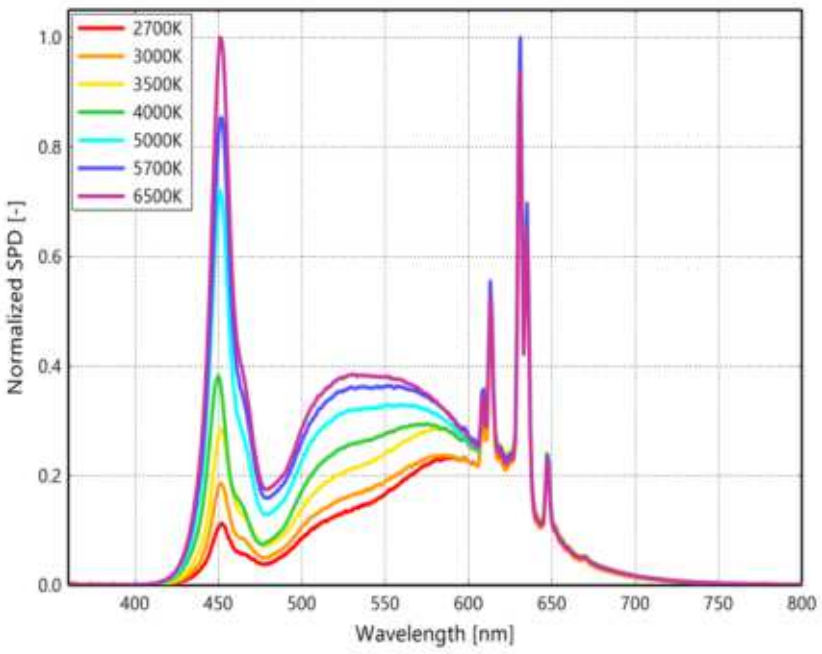


Figure 1d. Typical normalized power vs. wavelength for L130-xx90Hx3000KD1 at 65mA, T_j=25°C

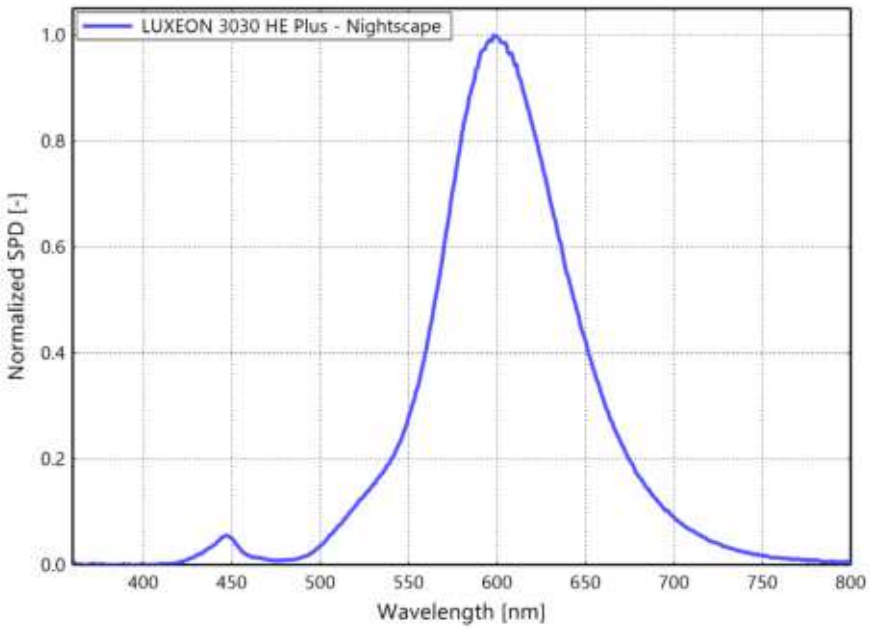


Figure 1e. Typical normalized power vs. wavelength for L130-NSC1HA30000C1 at 65mA, T_j=25°C

Light Output Characteristics

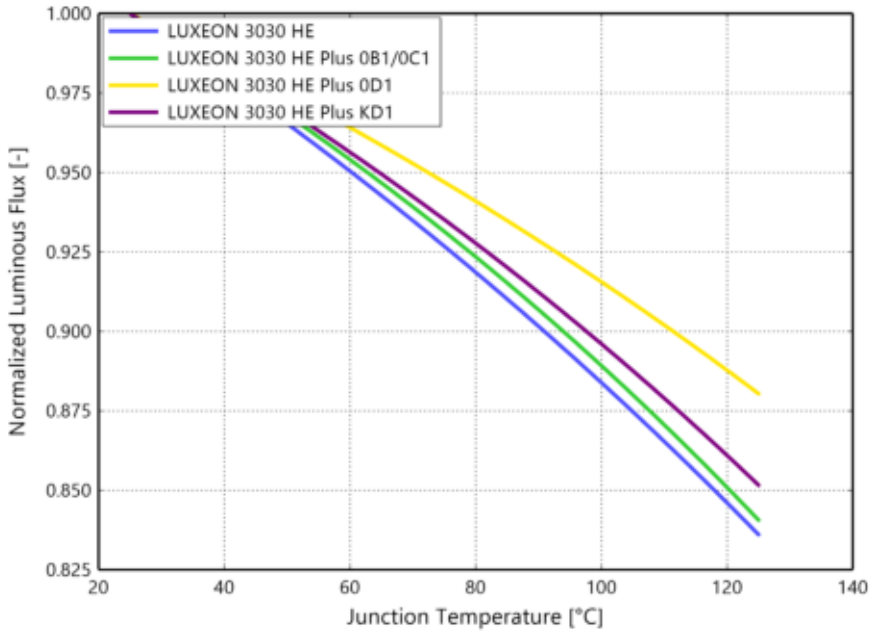


Figure 2. Typical normalized light output vs. junction temperature for LUXEON 3030 HE and LUXEON 3030 HE Plus at 65mA

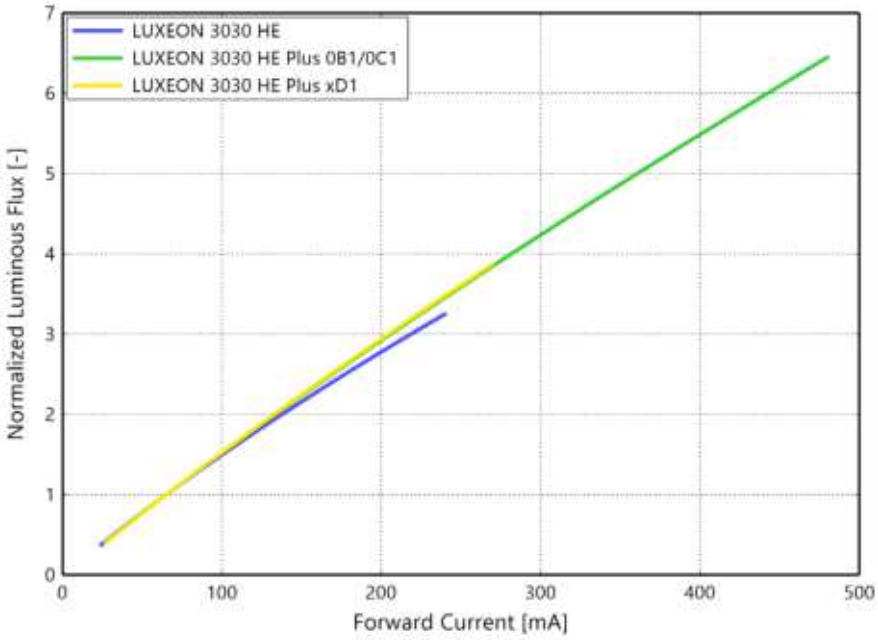


Figure 3. Typical normalized light output vs. forward current for LUXEON 3030 HE and LUXEON 3030 HE Plus at T_j=25°C

Forward Current Characteristics

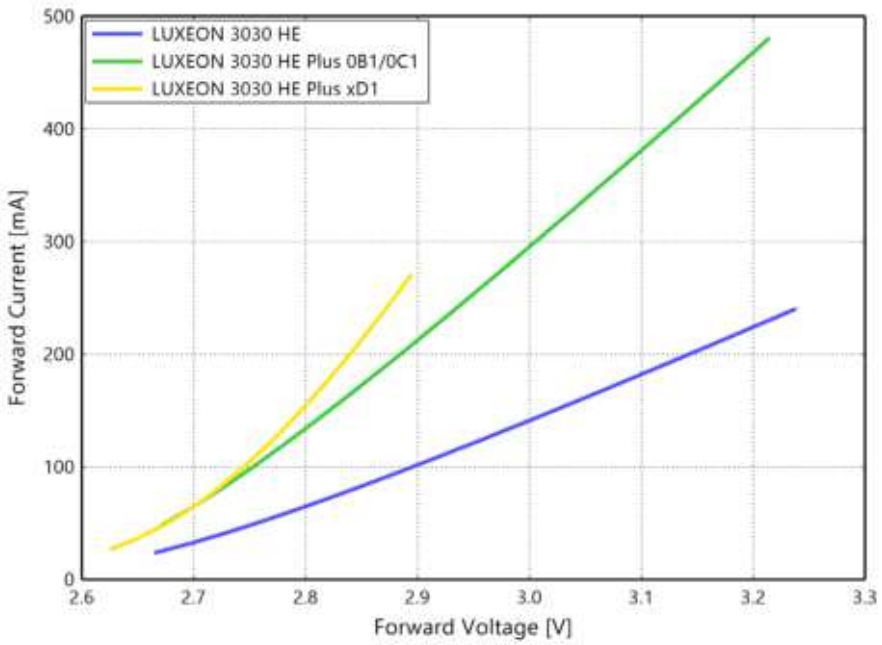


Figure 4. Typical forward current vs. forward voltage for LUXEON 3030 HE and LUXEON 3030 HE Plus at T_j=25°C

Radiation Pattern Characteristics

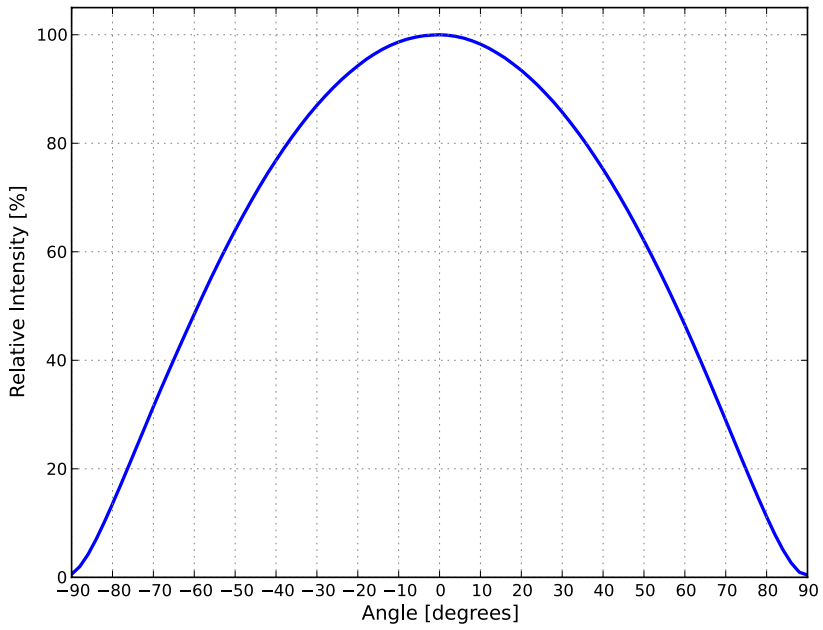


Figure 5. Typical radiation pattern for LUXEON 3030 HE and LUXEON 3030 HE Plus at 65mA, T_j=25°C

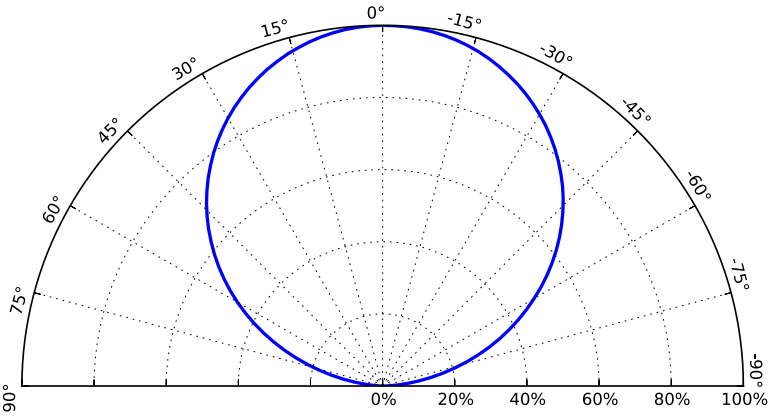


Figure 6. Typical polar radiation pattern for LUXEON 3030 HE and LUXEON 3030 HE Plus, T_j=25°C

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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.

LUXEON 3030 HE and LUXEON 3030 HE Plus LEDs are labeled using a 4- or 5-digit alphanumeric CAT code following the format below:

A B C D or **A x B C D**

A – designates luminous flux bin (example: F=35.5 to 37.0 lm, G=37.0 to 38.5 lm)

x – designates Lumileds internal code

B C – designates color bin (example: 5E, 5H, 5F, 5G for 4000K parts)

D – designates forward voltage bin (example: K=2.66 to 2.76V for LUXEON 3030 HE Plus 0B1/0C1)

Therefore, a LUXEON 3030 HE and LUXEON 3030 HE Plus with a lumen range of 35.5 to 37.0 lm, color bin of 5E, and a forward voltage range of 2.66 to 2.76V has the following CAT code:

F 5 E K

Luminous Flux Bins

Table 5 lists the standard luminous flux bins for LUXEON 3030 HE and LUXEON 3030 HE Plus Line emitters. Although several bins are outlined, product availability in a particular bin varies by production run and by product performance. Not all bins are available in all CCTs.

Table 5. Luminous flux bin definitions for LUXEON 3030 HE and LUXEON 3030 HE Plus at 65mA, T_j=25°C

BIN	LUMINOUS FLUX [1] (lm)	
	MINIMUM	MAXIMUM
Y	25.0	26.5
Z	26.5	28.0
A	28.0	29.5
B	29.5	31.0
C	31.0	32.5
D	32.5	34.0
E	34.0	35.5
F	35.5	37.0
G	37.0	38.5
H	38.5	40.0
J	40.0	41.5
K	41.5	43.0
L	43.0	44.5

Notes for Table 5:
1. Lumileds maintains a tolerance of ±7.5% on luminous flux measurements.

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Color Bin Definitions

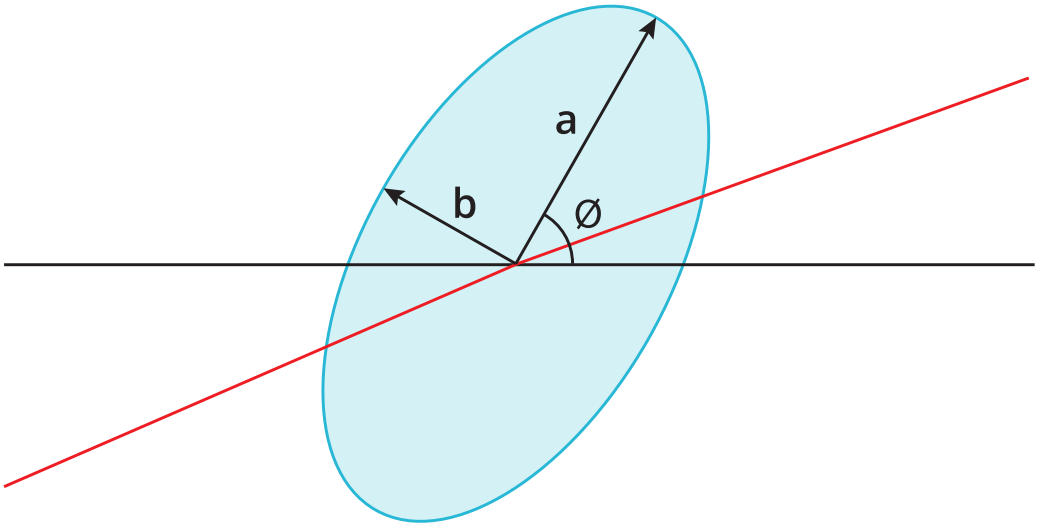


Figure 8. 3- and 5-step MacAdam ellipse illustration for Tables 6a-6g

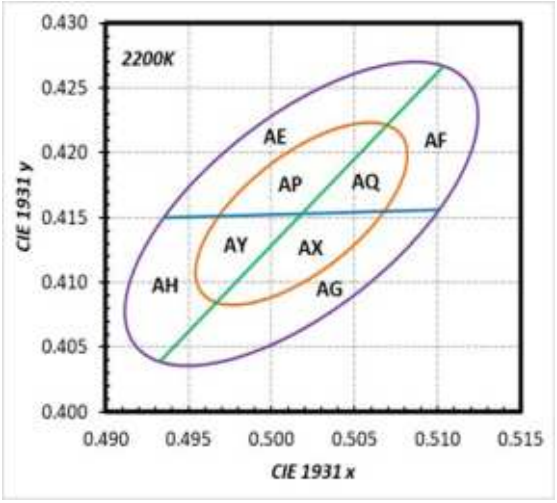


Figure 9a. 1/8th color bin structure for LUXEON 3030 HE and LUXEON 3030 HE Plus 2200K, at 65mA, T_j=25°C

Table 6a. 3- and 5-step MacAdam ellipse color bin definitions for LUXEON 3030 HE and LUXEON 3030 HE Plus 2200K, at 65mA, T_j=25°C

NOMINAL CCT	COLOR SPACE	CENTER POINT [1] (cx, cy)	MAJOR AXIS, a	MINOR AXIS, b	ELLIPSE ROTATION ANGLE, Θ
2200K	Single 3-Step MacAdam ellipse	(0.5018, 0.4153)	0.00860	0.00400	49.27°
2200K	Single 5-Step MacAdam ellipse	(0.5018, 0.4153)	0.01440	0.00660	49.27°

Notes for Table 6a:
1. Lumileds maintains a tolerance of ±0.007 on x and y color coordinates in the CIE 1931 color space.

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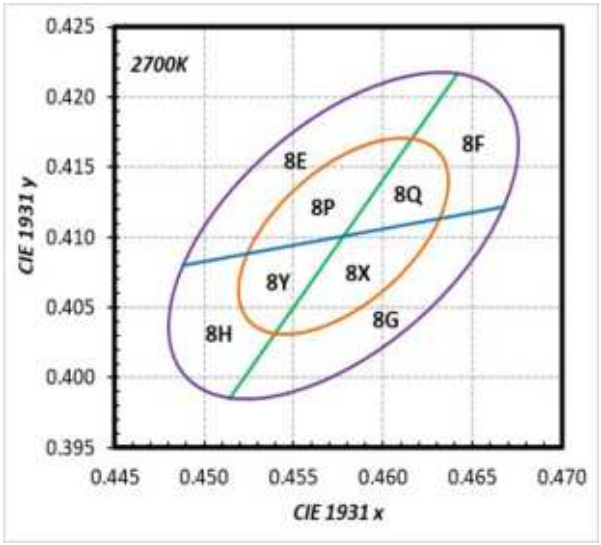


Figure 9b. 1/8th color bin structure for LUXEON 3030 HE and LUXEON 3030 HE Plus 2700K, at 65mA, T_j=25°C

Table 6b. 3- and 5-step MacAdam ellipse color bin definitions for LUXEON 3030 HE and LUXEON 3030 HE Plus 2700K, at 65mA, T_j=25°C

NOMINAL CCT	COLOR SPACE	CENTER POINT [1] (cx, cy)	MAJOR AXIS, a	MINOR AXIS, b	ELLIPSE ROTATION ANGLE, Θ
2700K	Single 3-Step MacAdam ellipse	(0.4578, 0.4101)	0.00810	0.00420	53.70°
2700K	Single 5-Step MacAdam ellipse	(0.4578, 0.4101)	0.01350	0.00700	53.70°

Notes for Table 6b:
1. Lumileds maintains a tolerance of ±0.007 on x and y color coordinates in the CIE 1931 color space.

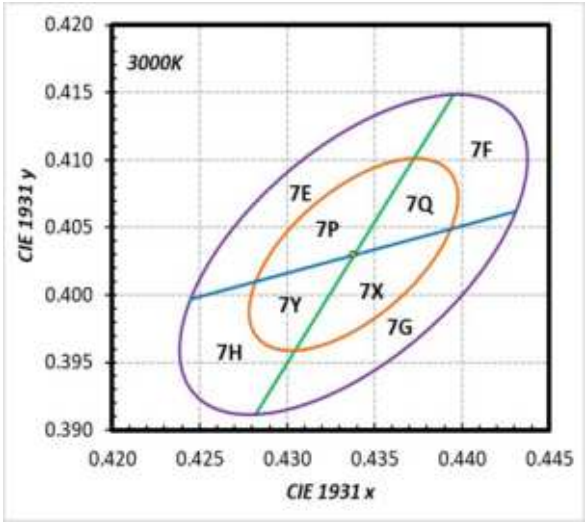


Figure 9c. 1/8th color bin structure for LUXEON 3030 HE and LUXEON 3030 HE Plus 3000K, at 65mA, T_j=25°C

Table 6c. 3- and 5-step MacAdam ellipse color bin definitions for LUXEON 3030 HE and LUXEON 3030 HE Plus 3000K, at 65mA, T_j=25°C

NOMINAL CCT	COLOR SPACE	CENTER POINT [1] (cx, cy)	MAJOR AXIS, a	MINOR AXIS, b	ELLIPSE ROTATION ANGLE, Θ
3000K	Single 3-Step MacAdam ellipse	(0.4338, 0.4030)	0.00834	0.00408	53.22°
3000K	Single 5-Step MacAdam ellipse	(0.4338, 0.4030)	0.01390	0.00680	53.22°

Notes for Table 6c:
1. Lumileds maintains a tolerance of ±0.007 on x and y color coordinates in the CIE 1931 color space.

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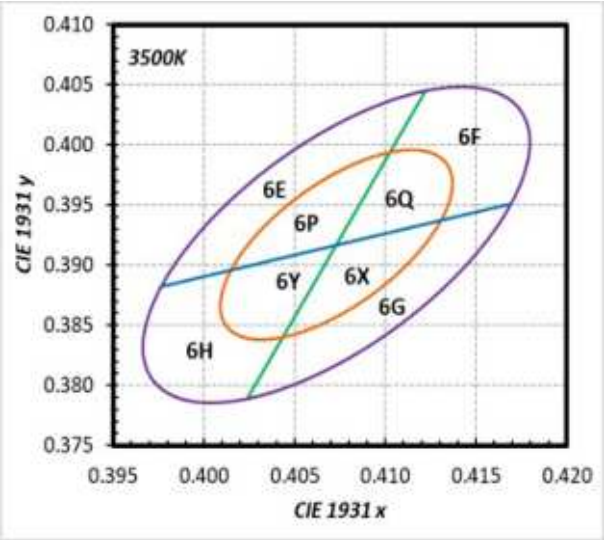


Figure 9d. 1/8th color bin structure for LUXEON 3030 HE and LUXEON 3030 HE Plus 3500K, at 65mA, T_j=25°C

Table 6d. 3- and 5-step MacAdam ellipse color bin definitions for LUXEON 3030 HE and LUXEON 3030 HE Plus 3500K, at 65mA, T_j=25°C

NOMINAL CCT	COLOR SPACE	CENTER POINT [1] (cx, cy)	MAJOR AXIS, a	MINOR AXIS, b	ELLIPSE ROTATION ANGLE, Θ
3500K	Single 3-Step MacAdam ellipse	(0.4073, 0.3917)	0.00927	0.00414	54.00°
3500K	Single 5-Step MacAdam ellipse	(0.4073, 0.3917)	0.01545	0.00690	54.00°

Notes for Table 6d:
1. Lumileds maintains a tolerance of ±0.007 on x and y color coordinates in the CIE 1931 color space.

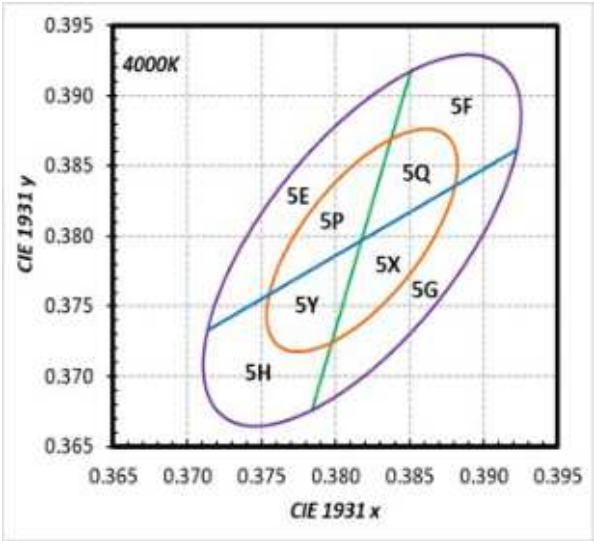


Figure 9e. 1/8th color bin structure for LUXEON 3030 HE and LUXEON 3030 HE Plus 4000K, at 65mA, T_j=25°C

Table 6e. 3- and 5-step MacAdam ellipse color bin definitions for LUXEON 3030 HE and LUXEON 3030 HE Plus 4000K, at 65mA, T_j=25°C

NOMINAL CCT	COLOR SPACE	CENTER POINT [1] (cx, cy)	MAJOR AXIS, a	MINOR AXIS, b	ELLIPSE ROTATION ANGLE, Θ
4000K	Single 3-Step MacAdam ellipse	(0.3818, 0.3797)	0.00939	0.00402	53.72°
4000K	Single 5-Step MacAdam ellipse	(0.3818, 0.3797)	0.01565	0.00670	53.72°

Notes for Table 6e:
1. Lumileds maintains a tolerance of ±0.007 on x and y color coordinates in the CIE 1931 color space.

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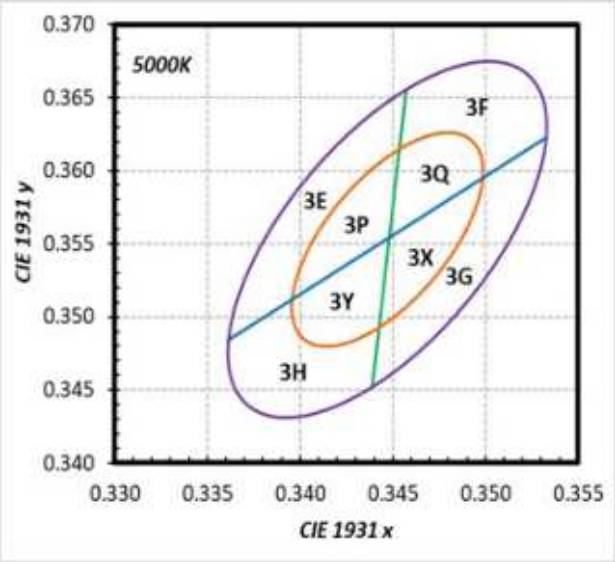


Figure 9f. 1/8th color bin structure for LUXEON 3030 HE and LUXEON 3030 HE Plus 5000K, at 65mA, T_j=25°C

Table 6f. 3- and 5-step MacAdam ellipse color bin definitions for LUXEON 3030 HE and LUXEON 3030 HE Plus 5000K,at 65mA, T_j=25°C

NOMINAL CCT	COLOR SPACE	CENTER POINT [1] (cx, cy)	MAJOR AXIS, a	MINOR AXIS, b	ELLIPSE ROTATION ANGLE, Θ
5000K	Single 3-Step MacAdam ellipse	(0.3447, 0.3553)	0.00822	0.00354	59.62°
5000K	Single 5-Step MacAdam ellipse	(0.3447, 0.3553)	0.01370	0.00590	59.62°

Notes for Table 6f:
1. Lumileds maintains a tolerance of ±0.007 on x and y color coordinates in the CIE 1931 color space.

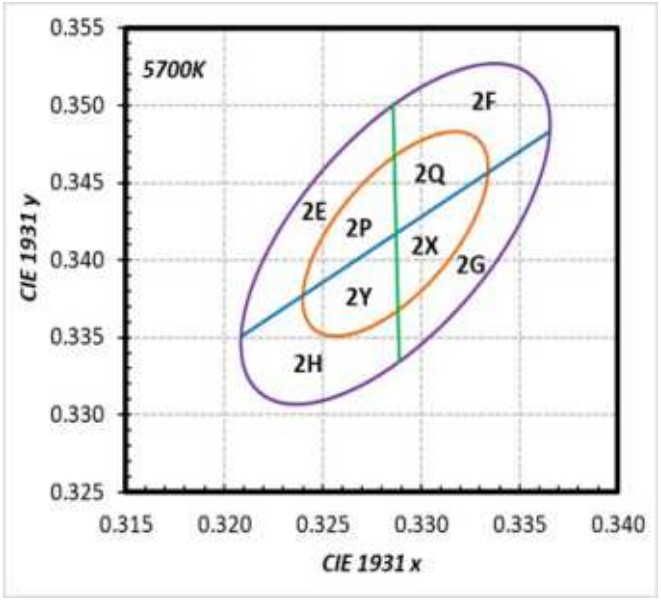


Figure 9g. 1/8th color bin structure for LUXEON 3030 HE and LUXEON 3030 HE Plus 5700K, at 65mA, T_j=25°C

Table 6g. 3- and 5-step MacAdam ellipse color bin definitions for LUXEON 3030 HE and LUXEON 3030 HE Plus 5700K, at 65mA, T_j=25°C

NOMINAL CCT	COLOR SPACE	CENTER POINT [1] (cx, cy)	MAJOR AXIS, a	MINOR AXIS, b	ELLIPSE ROTATION ANGLE, Θ
5700K	Single 3-Step MacAdam ellipse	(0.3287, 0.3417)	0.00746	0.00320	59.09°
5700K	Single 5-Step MacAdam ellipse	(0.3287, 0.3417)	0.01243	0.00533	59.09°

Notes for Table 6g:
1. Lumileds maintains a tolerance of ±0.007 on x and y color coordinates in the CIE 1931 color space.

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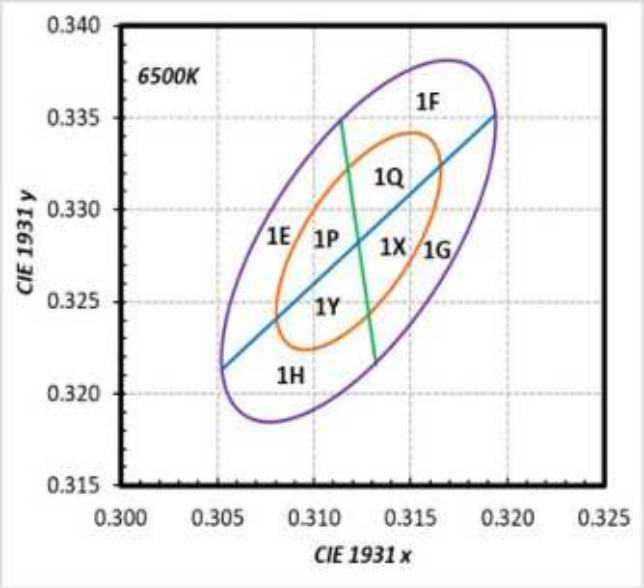


Figure 9h. 1/8th color bin structure for LUXEON 3030 HE and LUXEON 3030 HE Plus 6500K, at 65mA, T_j=25°C

Table 6h. 3- and 5-step MacAdam ellipse color bin definitions for LUXEON 3030 HE and LUXEON 3030 HE Plus 6500K, at 65mA, T_j=25°C

NOMINAL CCT	COLOR SPACE	CENTER POINT [1] (cx, cy)	MAJOR AXIS, a	MINOR AXIS, b	ELLIPSE ROTATION ANGLE, Θ
6500K	Single 3-Step MacAdam ellipse	(0.3123, 0.3282)	0.00669	0.00285	58.57°
6500K	Single 5-Step MacAdam ellipse	(0.3123, 0.3282)	0.01115	0.00475	58.57°

Notes for Table 6h:
1. Lumileds maintains a tolerance of ±0.007 on x and y color coordinates in the CIE 1931 color space.

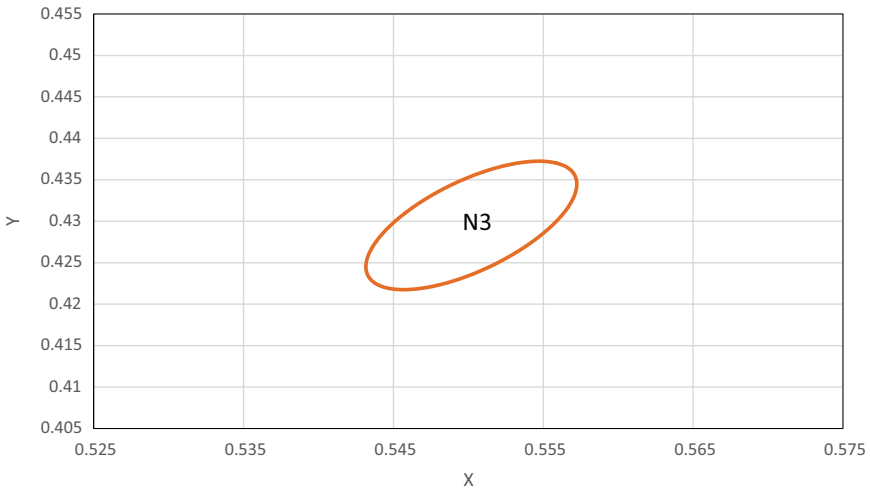


Figure 9i. color bin structure for LUXEON 3030 HE Plus - NightScape, at 65mA, T_j=25°C

Table 6i. 3-step MacAdam ellipse color bin definitions for LUXEON 3030 HE Plus - NightScape, at 65mA, T_j=25°C

NOMINAL CCT	COLOR SPACE	CENTER POINT [1] (cx, cy)	MAJOR AXIS, a	MINOR AXIS, b	ELLIPSE ROTATION ANGLE, Θ
1850	Single 3-Step MacAdam ellipse	(0.5510, 0.4300)	0.0096	0.0046	49.27°

Notes for Table 6i:
1. Lumileds maintains a tolerance of ±0.007 on x and y color coordinates in the CIE 1931 color space.

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Forward Voltage Bins

Table 7a. Forward voltage bin definitions for LUXEON 3030 HE, at 65mA, T_j=25°C

BIN	FORWARD VOLTAGE [1] (V_f)	
	MINIMUM	MAXIMUM
L	2.75	2.85

Notes for Table 7a:
1. Lumileds maintains a tolerance of ±0.1V on forward voltage measurements.

Table 7b. Forward voltage bin definitions for LUXEON 3030 HE Plus 0B1/0C1, at 65mA, T_j=25°C

BIN	FORWARD VOLTAGE [1] (V_f)	
	MINIMUM	MAXIMUM
K	2.66	2.76

Notes for Table 7b:
1. Lumileds maintains a tolerance of ±0.1V on forward voltage measurements.

Table 7c. Forward voltage bin definitions for LUXEON 3030 HE Plus xD1, at 0.65mA, T_j=25°C

BIN	FORWARD VOLTAGE [1] (V_f)	
	MINIMUM	MAXIMUM
1	2.455	2.485
2	2.485	2.515

Notes for Table 7c:
1. Lumileds maintains a tolerance of ±0.1V on forward voltage measurements.
2. LUXEON 3030 HE Plus xD1 is binned at both 65mA (single bin) and 0.65mA (two bins)

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Mechanical Dimensions

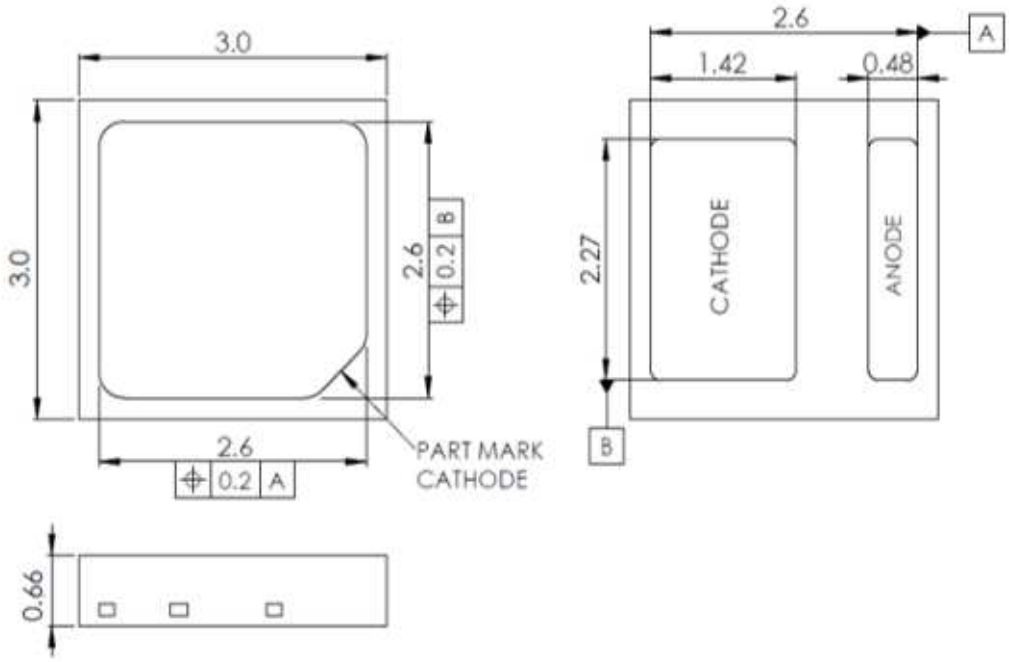


Figure 10. Mechanical dimensions for LUXEON 3030 HE

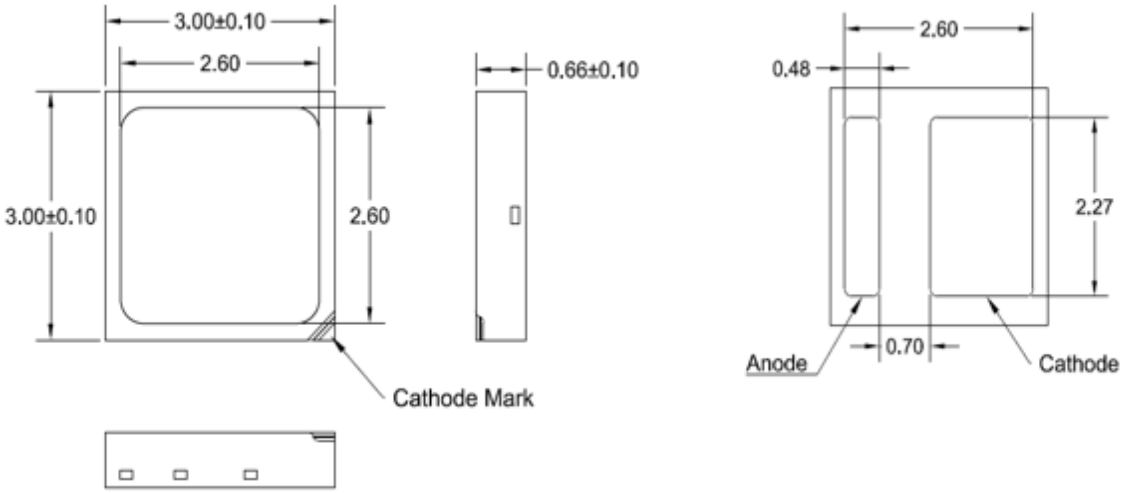


Figure 11a. Mechanical dimensions for LUXEON 3030 HE Plus 0B1/0C1

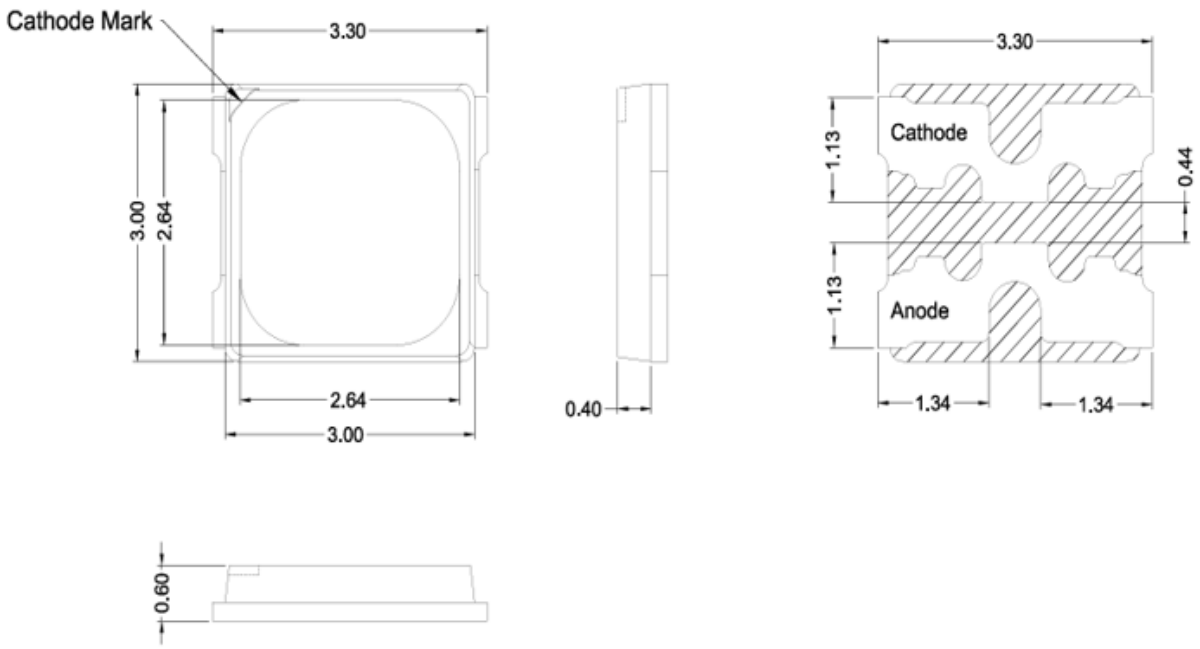


Figure 11b. Mechanical dimensions for LUXEON 3030 HE Plus xD1

Notes for Figures 10,11a and 11b:
1. Drawings are not to scale.
2. All dimensions are in millimeters.
3. Tolerance: ±0.10mm.

Reflow Soldering Guidelines

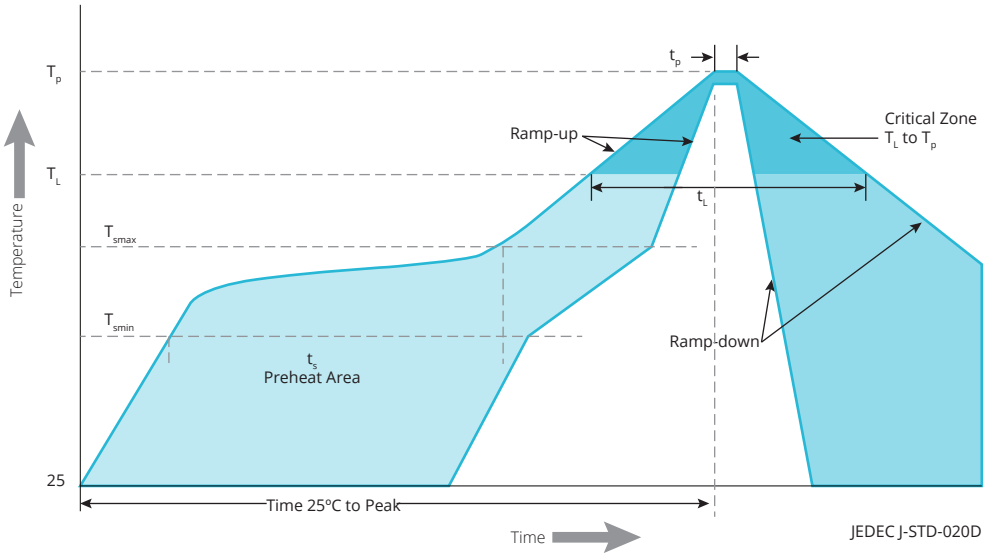


Figure 12. Visualization of the acceptable reflow temperature profile as specified in Table 8

Table 8a. Reflow profile characteristics for LUXEON 3030 HE and LUXEON 3030 HE Plus 0B1/0C1

PROFILE FEATURE	LEAD FREE ASSEMBLY
Preheat Minimum Temperature (T_{smin})	150°C
Preheat Maximum Temperature (T_{smax})	200°C
Preheat Time (t_{smin} to t_{smax})	60 to 120 seconds
Ramp-Up Rate (T_L to T_p)	3°C / second maximum
Liquidous Temperature (T_L)	217°C
Time Maintained Above Temperature T_L (t_L)	60 to 150 seconds
Peak / Classification Temperature (T_p)	260°C
Time Within 5°C of Actual Peak Temperature (t_p)	20 to 40 seconds
Ramp-Down Rate (T_p to T_L)	6°C / second maximum
Time 25°C to Peak Temperature	8 minutes maximum

Notes for Table 8a:
1. All temperatures refer to the application Printed Circuit Board (PCB), measured on the surface adjacent to the package body.

Table 8b. Reflow profile characteristics for LUXEON 3030 HE Plus xD1

PROFILE FEATURE	LEAD FREE ASSEMBLY
Preheat Minimum Temperature (T_{smin})	150°C
Preheat Maximum Temperature (T_{smax})	200°C
Preheat Time (t_{smin} to t_{smax})	60 to 120 seconds
Ramp-Up Rate (T_L to T_p)	3°C / second maximum
Liquidous Temperature (T_L)	217°C
Time Maintained Above Temperature T_L (t_L)	100 seconds maximum
Peak / Classification Temperature (T_p)	245°C typical, 260°C maximum
Time Within 5°C of Actual Peak Temperature (t_p)	10 to 30 seconds
Ramp-Down Rate (T_p to T_L)	6°C / second maximum
Time 25°C to Peak Temperature	8 minutes maximum

Notes for Table 8b:
1. All temperatures refer to the application Printed Circuit Board (PCB), measured on the surface adjacent to the package body.

JEDEC Moisture Sensitivity

Table 9. Moisture sensitivity levels for LUXEON 3030 HE and LUXEON 3030 HE Plus

LEVEL	FLOOR LIFE		SOAK REQUIREMENTS STANDARD	
	TIME	CONDITIONS	TIME	CONDITIONS
3	168 Hours	30°C / 60% RH	192 Hours +5 / -0	30°C / 60% RH

Solder Pad Design

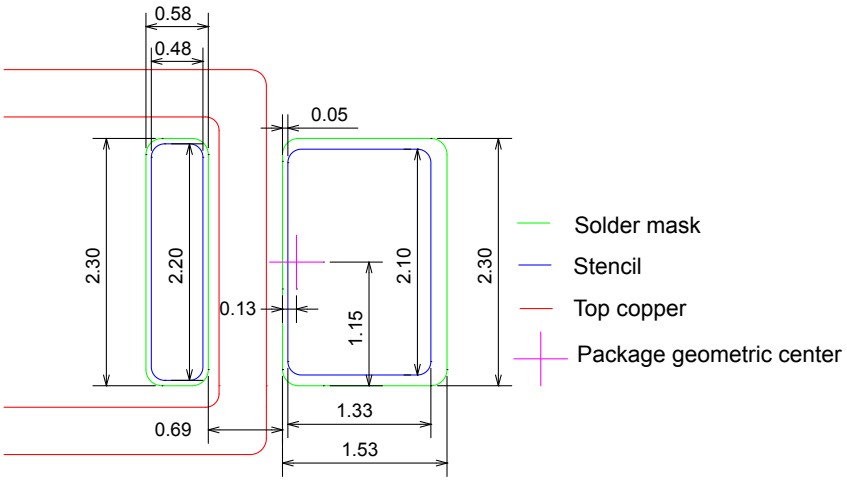


Figure 13a. Recommended PCB solder pad layout for LUXEON 3030 HE and LUXEON 3030 HE Plus 0B1/0C1

Notes for Figure 13a:
1. Drawings are not to scale.
2. All dimensions are in millimeters.

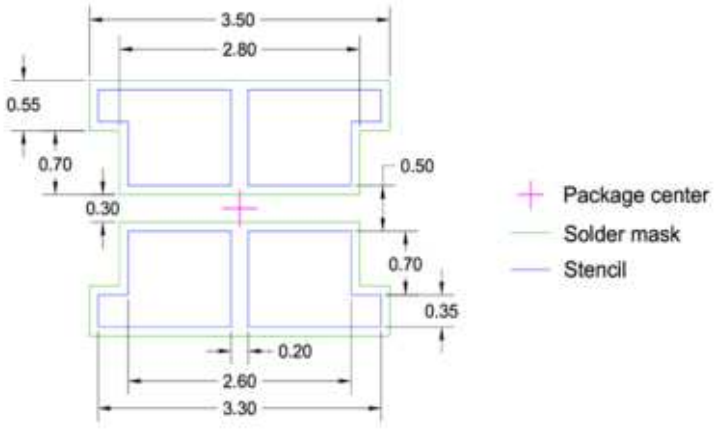


Figure 13b. Recommended PCB solder pad layout for LUXEON 3030 HE Plus xD1

Notes for Figure 13b:
1. Drawings are not to scale.
2. All dimensions are in millimeters.

Packaging Information

Pocket Tape Dimensions

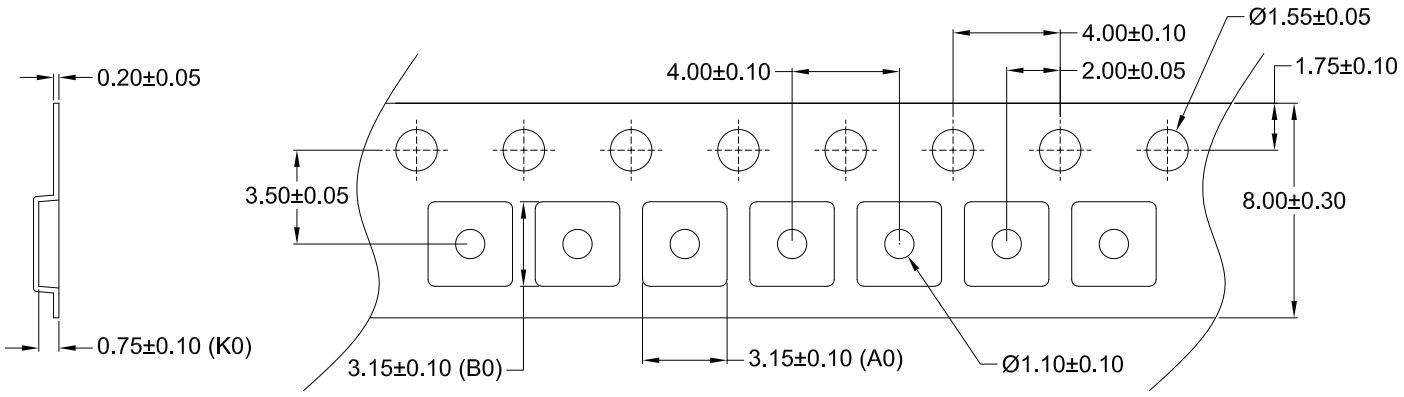


Figure 14a. Pocket tape dimensions for LUXEON 3030 HE and LUXEON 3030 HE Plus 0B1/0C1

Notes for Figure 14a:
1. Drawings are not to scale.
2. All dimensions are in millimeters.

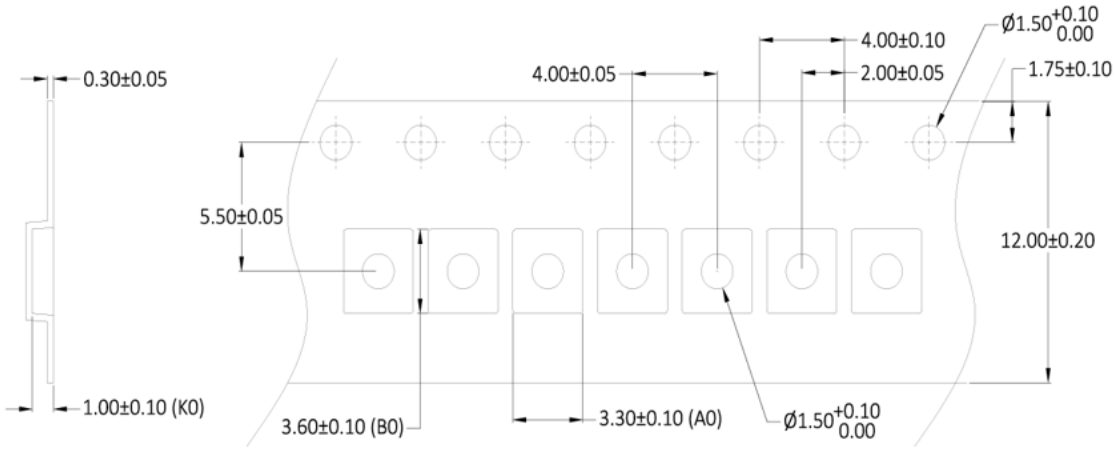


Figure 14b. Pocket tape dimensions for LUXEON 3030 HE and LUXEON 3030 HE Plus 0B1/0C1

Notes for Figure 14b:
1. Drawings are not to scale.
2. All dimensions are in millimeters.

Reel Dimensions

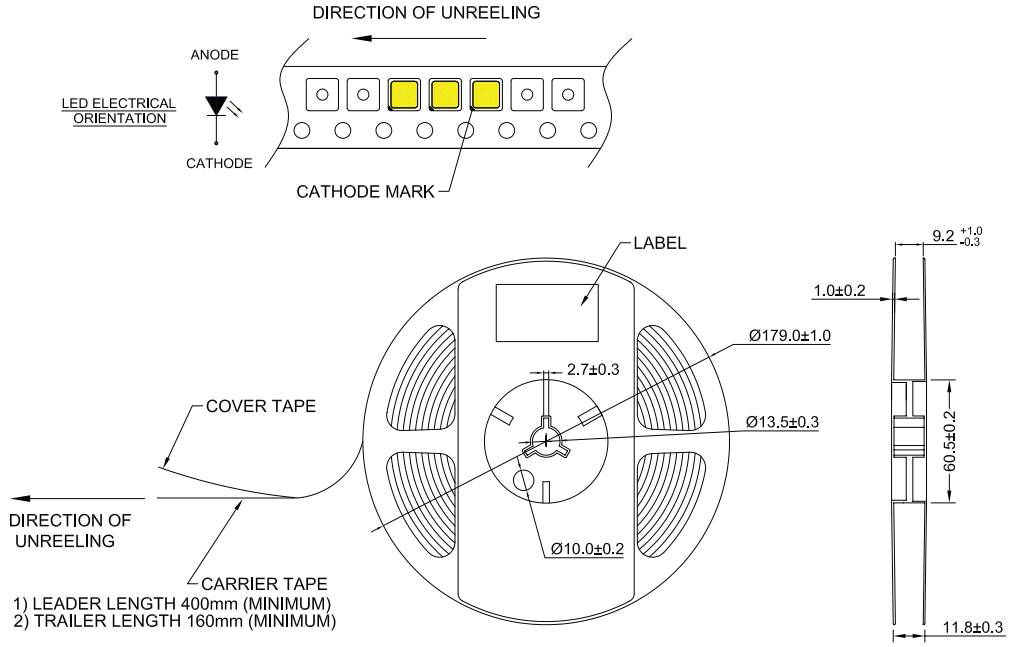


Figure 15a. Reel dimensions for LUXEON 3030 HE and LUXEON 3030 HE Plus

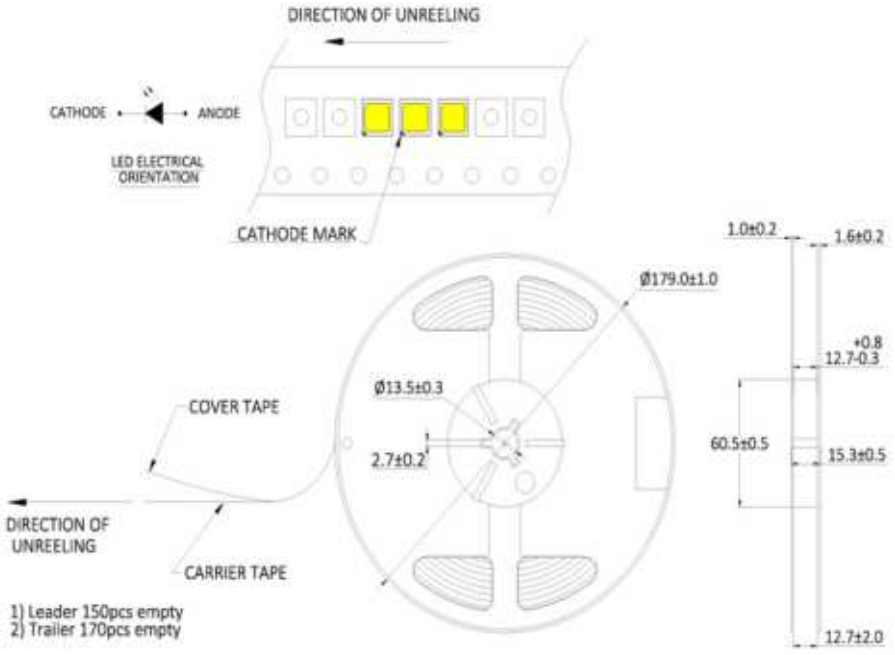


Figure 15b. Reel dimensions for LUXEON 3030 HE and LUXEON 3030 HE Plus

Notes for Figures 15a and 15b:
1. Drawings are not to scale.
2. All dimensions are in millimeters.

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