

# LUXEON 2835 Commercial



## 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 2835 Commercial LEDs are labeled using a 4- or 5-digit alphanumeric CAT code following the format below:

**A or Ax B C D**

Where:

- A or Ax** – designates luminous flux bin (example: L=29 to 31 lm, M=31 to 33 lm)
- B C** – designates correlated color bin (example: 7D, 7E, 7F, 7G, 7H for 3000K parts)
- D** – designates forward voltage bin (example: C=2.6 to 2.7V, D=2.7 to 2.8V)

Therefore, a LUXEON 2835S 3V LED with a lumen range of 29 to 31 lm, color bin of 7D and a forward voltage range of 2.7 to 2.8V has the following CAT code:

**L 7 D D**

## Luminous Flux Bins

Note : Lumileds will supply LUXEON 2835 Commercial with full distribution. Advanced bin selection and kitting will not be available for this part.

Table 1 lists the standard luminous flux bins for LUXEON 2835 Commercial 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 1. Luminous flux bin definitions for LUXEON 2835 Commercial,  $T_j=25^{\circ}\text{C}$ .

PRODUCT	BIN	LUMINOUS FLUX <sup>(1)</sup> (lm)	
		MINIMUM	MAXIMUM
LUXEON 2835S 3V	G	21.0	23.0
	H	23.0	25.0
	J	25.0	27.0
	K	27.0	29.0
	L	29.0	31.0
	M	31.0	33.0
	N	33.0	35.0
	P	35.0	37.0
	Q	37.0	39.0
	R	39.0	41.0
	S	41.0	43.0
	T	43.0	45.0
	U	45.0	47.0
LUXEON 2835S 6V	Z	50.0	55.0
	A	55.0	60.0
	B	60.0	65.0
	C	65.0	70.0
	D	70.0	75.0
	E	75.0	80.0
	F	80.0	85.0
	G	85.0	90.0
	H	90.0	95.0
	J	95.0	100.0
	K	100.0	105.0
	L	105.0	110.0
	M	110.0	115.0
	N	115.0	120.0
	P	120.0	125.0
	Q	125.0	130.0
	R	130.0	135.0
	S	135.0	140.0
	T	140.0	145.0
	U	145.0	150.0

**Notes for Table 1:**

1. Lumileds maintains a tolerance of  $\pm 7.5\%$  on luminous flux measurements.

## Color Bin Definition

Note : Lumileds will supply LUXEON 2835 Commercial with full distribution. Advanced bin selection and kitting will not be available for this part.

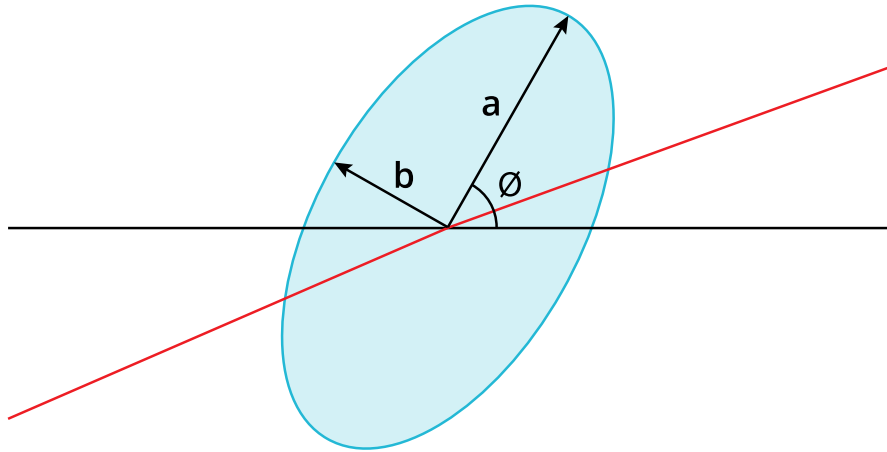


Figure 1. 3- and 5-step MacAdam ellipse illustration for Tables 2a-2g.

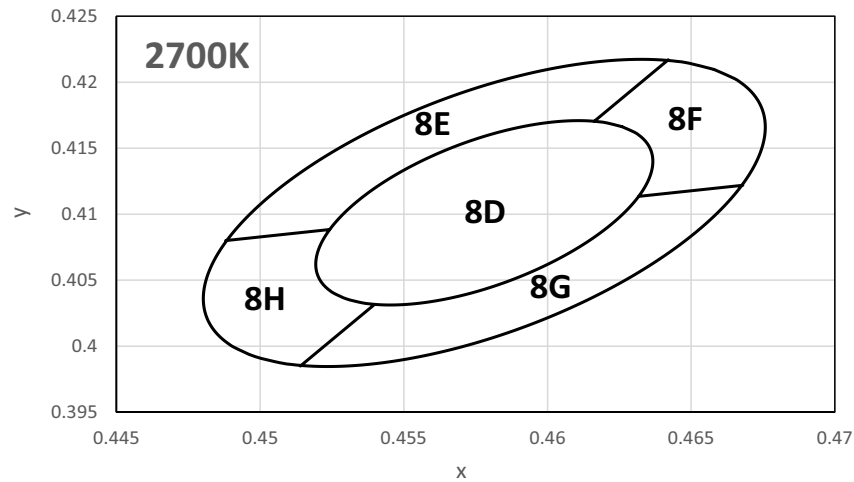


Figure 2a. 1/5<sup>th</sup> color bin structure for LUXEON 2835 Commercial 2700K at specified test current and binning temperature of  $T_j=25^{\circ}\text{C}$ .

Table 2a-1. 3- and 5-step MacAdam ellipse color bin definitions for LUXEON 2835 Commercial 2700K, at specified test and binning conditions.

NOMINAL CCT	COLOR SPACE	CENTER POINT <sup>(1)</sup> (cx, cy)	MAJOR AXIS, a	MINOR AXIS, b	ELLIPSE ROTATION ANGLE, $\theta$
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°

Table 2a-2. 4 quadrants definition for LUXEON 2835 Commercial 2700K, at specified test and binning conditions.

POINT	x	y
1	0.4642	0.4217
2	0.4488	0.4080
3	0.4514	0.3985
4	0.4668	0.4122
Center	0.4578	0.4101

**Notes for Table 2a:**

1. Lumileds maintains a tolerance of  $\pm 0.007$  on x and y color coordinates in the CIE 1931 color space.

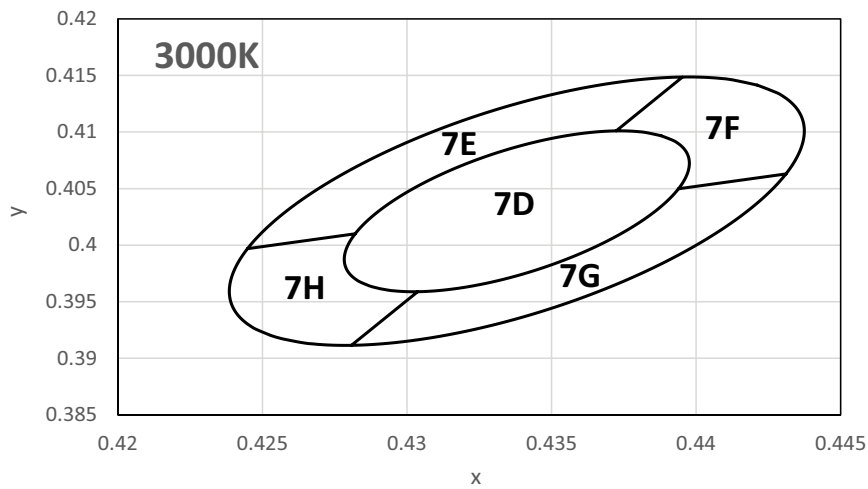


Figure 2b. 1/5<sup>th</sup> color bin structure for LUXEON 2835 Commercial 3000K at specified test current and binning temperature of  $T_j=25^{\circ}\text{C}$ .

Table 2b-1. 3- and 5-step MacAdam ellipse color bin definitions for LUXEON 2835 Commercial 3000K, at specified test and binning conditions.

NOMINAL CCT	COLOR SPACE	CENTER POINT <sup>(1)</sup> (cx, cy)	MAJOR AXIS, a	MINOR AXIS, b	ELLIPSE ROTATION ANGLE, $\theta$
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°

Table 2b-2. 4 quadrants definition for LUXEON 2835 Commercial 3000K, at specified test and binning conditions.

POINT	x	y
1	0.4395	0.4148
2	0.4245	0.3997
3	0.4282	0.3912
4	0.4431	0.4062
Center	0.4338	0.4030

**Notes for Table 2b:**

1. Lumileds maintains a tolerance of  $\pm 0.007$  on x and y color coordinates in the CIE 1931 color space.

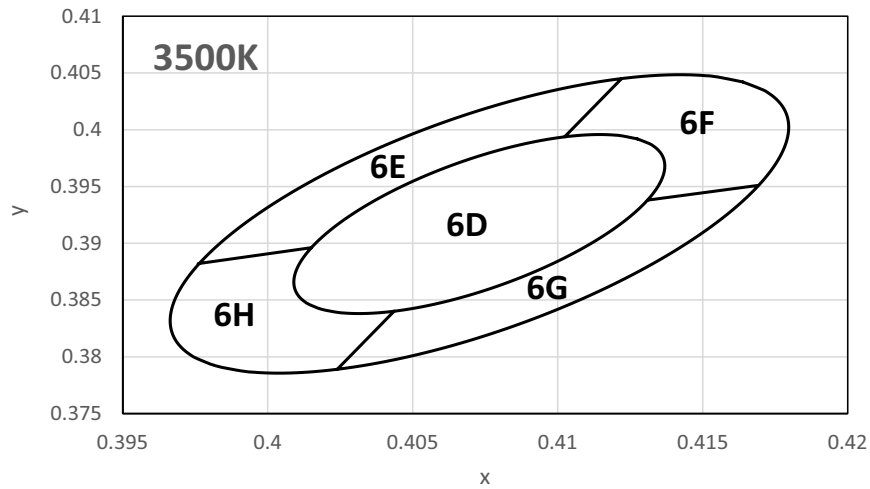


Figure 2c. 1/5<sup>th</sup> color bin structure for LUXEON 2835 Commercial 3500K at specified test current and binning temperature of  $T_j=25^{\circ}\text{C}$ .

Table 2c-1. 3- and 5-step MacAdam ellipse color bin definitions for LUXEON 2835 Commercial 3500K, at specified test and binning conditions.

NOMINAL CCT	COLOR SPACE	CENTER POINT <sup>(1)</sup> (cx, cy)	MAJOR AXIS, a	MINOR AXIS, b	ELLIPSE ROTATION ANGLE, $\theta$
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°

Table 2c-2. 4 quadrants definition for LUXEON 2835 Commercial 3500K, at specified test and binning conditions.

POINT	x	y
1	0.4122	0.4045
2	0.3976	0.3882
3	0.4024	0.3789
4	0.4169	0.3951
Center	0.4073	0.3917

**Notes for Table 2c:**

1. Lumileds maintains a tolerance of  $\pm 0.007$  on x and y color coordinates in the CIE 1931 color space.

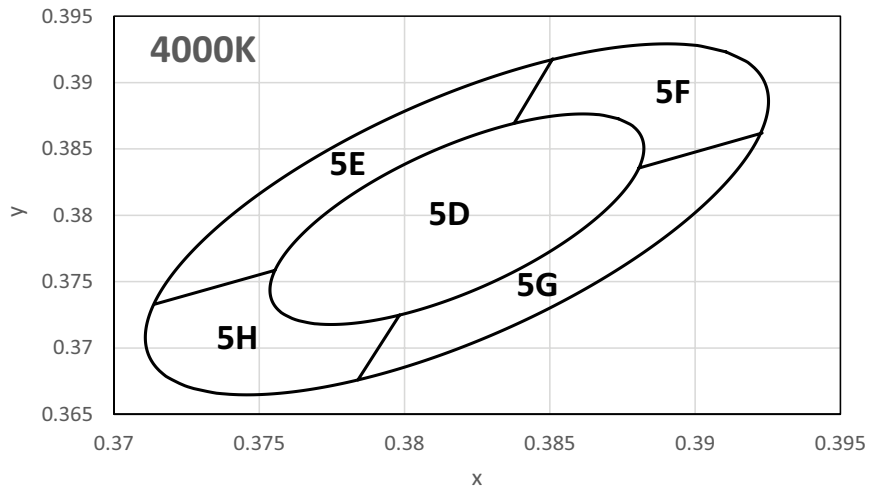


Figure 2d. 1/5<sup>th</sup> color bin structure for LUXEON 2835 Commercial 4000K at specified test current and binning temperature of  $T_j=25^{\circ}\text{C}$ .

Table 2d-1. 3- and 5-step MacAdam ellipse color bin definitions for LUXEON 2835 Commercial 4000K, at specified test and binning conditions.

NOMINAL CCT	COLOR SPACE	CENTER POINT <sup>(1)</sup> (cx, cy)	MAJOR AXIS, a	MINOR AXIS, b	ELLIPSE ROTATION ANGLE, $\theta$
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°

Table 2d-2. 4 quadrants definition for LUXEON 2835 Commercial 4000K, at specified test and binning conditions.

POINT	x	y
1	0.3851	0.3918
2	0.3714	0.3733
3	0.3784	0.3676
4	0.3923	0.3862
Center	0.3818	0.3797

**Notes for Table 2d:**

1. Lumileds maintains a tolerance of  $\pm 0.007$  on x and y color coordinates in the CIE 1931 color space.

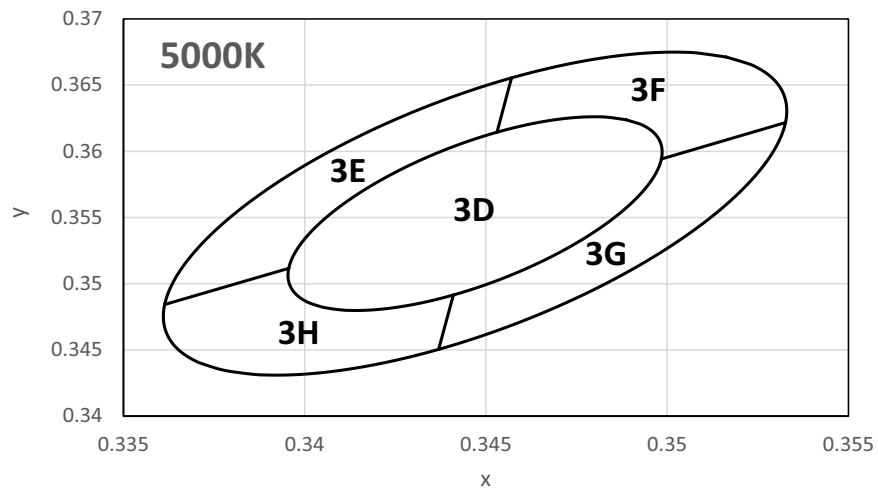


Figure 2e. 1/5<sup>th</sup> color bin structure for LUXEON 2835 Commercial 5000K at specified test current and binning temperature of  $T_j=25^{\circ}\text{C}$ .

Table 2e-1. 3- and 5-step MacAdam ellipse color bin definitions for LUXEON 2835 Commercial 5000K, at specified test and binning conditions.

NOMINAL CCT	COLOR SPACE	CENTER POINT <sup>(1)</sup> (cx, cy)	MAJOR AXIS, a	MINOR AXIS, b	ELLIPSE ROTATION ANGLE, $\theta$
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°

Table 2e-2. 4 quadrants definition for LUXEON 2835 Commercial 5000K, at specified test and binning conditions.

POINT	x	y
1	0.3457	0.3655
2	0.3361	0.3484
3	0.3439	0.3452
4	0.3533	0.3623
Center	0.3447	0.3553

**Notes for Table 2e:**

1. Lumileds maintains a tolerance of  $\pm 0.007$  on x and y color coordinates in the CIE 1931 color space.

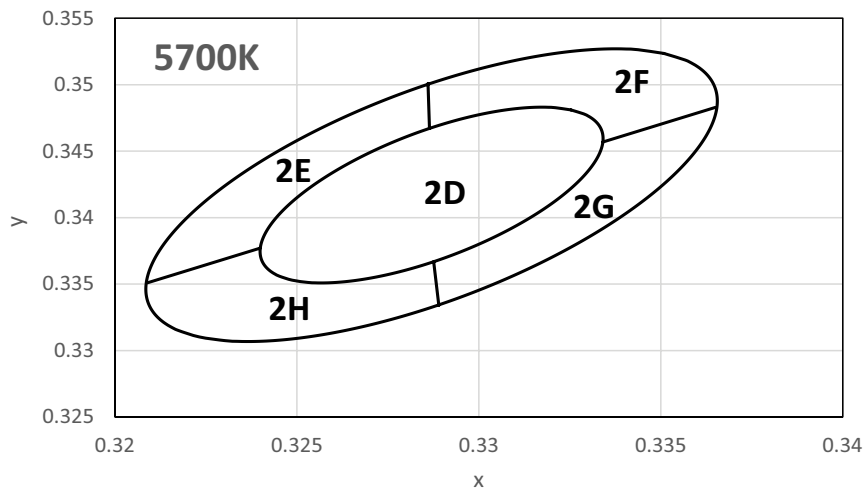


Figure 2f. 1/5<sup>th</sup> color bin structure for LUXEON 2835 Commercial 5700K at specified test current and binning temperature of  $T_j=25^{\circ}\text{C}$ .

Table 2f-1. 3- and 5-step MacAdam ellipse color bin definitions for LUXEON 2835 Commercial 5700K, at specified test and binning conditions.

NOMINAL CCT	COLOR SPACE	CENTER POINT <sup>(1)</sup> (cx, cy)	MAJOR AXIS, a	MINOR AXIS, b	ELLIPSE ROTATION ANGLE, $\theta$
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°

Table 2f-2. 4 quadrants definition for LUXEON 2835 Commercial 5700K, at specified test and binning conditions.

POINT	x	y
1	0.3286	0.3501
2	0.3209	0.3351
3	0.3289	0.3334
4	0.3365	0.3483
Center	0.3287	0.3417

Notes for Table 2f:

1. Lumileds maintains a tolerance of  $\pm 0.007$  on x and y color coordinates in the CIE 1931 color space.



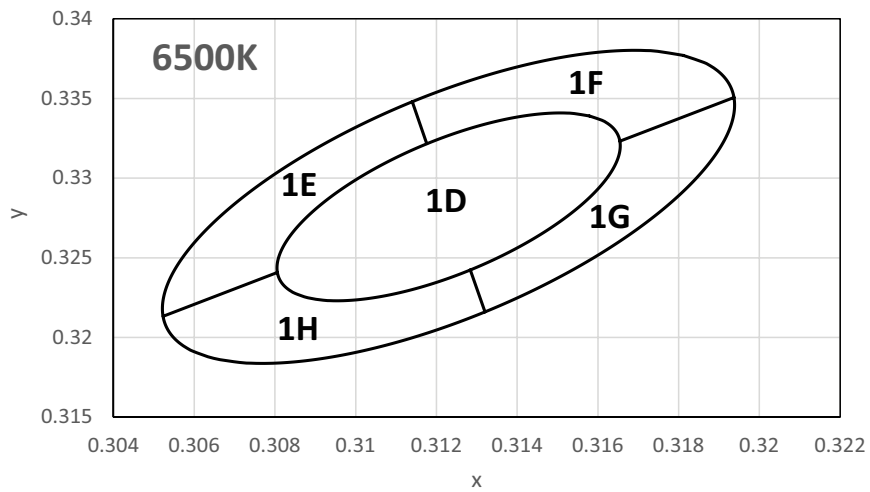


Figure 2g. 1/5<sup>th</sup> color bin structure for LUXEON 2835 Commercial 6500K at specified test current and binning temperature of  $T_j=25^{\circ}\text{C}$ .

Table 2g-1. 3- and 5-step MacAdam ellipse color bin definitions for LUXEON 2835 Commercial 6500K, at specified test and binning conditions.

NOMINAL CCT	COLOR SPACE	CENTER POINT <sup>(1)</sup> (cx, cy)	MAJOR AXIS, a	MINOR AXIS, b	ELLIPSE ROTATION ANGLE, $\theta$
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°

Table 2g-2. 4 quadrants definition for LUXEON 2835 Commercial 6500K, at specified test and binning conditions.

POINT	x	y
1	0.3114	0.3348
2	0.3052	0.3213
3	0.3132	0.3216
4	0.3194	0.3352
Center	0.3123	0.3282

**Notes for Table 2g:**

1. Lumileds maintains a tolerance of  $\pm 0.007$  on x and y color coordinates in the CIE 1931 color space.

# Forward Voltage Bins

Note : Lumileds will supply LUXEON 2835 Commercial with full distribution. Advanced bin selection and kitting will not be available for this part.

Table 3. Forward voltage bin definitions for LUXEON 2835 Commercial at specified test current, T<sub>j</sub>=25°C.

PRODUCT	BIN	FORWARD VOLTAGE <sup>[1]</sup> (V <sub>f</sub> )	
		MINIMUM	MAXIMUM
LUXEON 2835S 3V	C	2.60	2.70
	D	2.70	2.80
	E	2.80	2.90
	F	2.90	3.00
LUXEON 2835S 6V	G	5.80	6.00
	H	6.00	6.20
	J	6.20	6.40
	K	6.40	6.60

Notes for Table 3:  
1. Lumileds maintains a tolerance of ±0.10V on forward voltage measurements.

## 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](https://lumileds.com).



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