



LUXEON CX Plus CoB

最低热阻, 行业标准封装

LUXEON CX Plus CoB 采用标准封装, 共含六款产品, 涵盖 500 至 7,000 流明的流明封装。得益于其业界领先的热阻与坚固的基板材料, CX Plus CoB 使温度更低、效率更高的灯具成为了可能。LUXEON CX Plus CoB 从现有生态系统中受益, 实现快速即时的设计, 同时保留现有光学器件、夹具及文件。



性能与利益

最低热阻, 实现更可靠的系统与更高的光通量

即时轻松升级目前使用传统方形封装 CoB 的现有设计

MCPCB 基板, 与陶瓷基板相比可使系统更坚固

三阶麦克亚当椭圆分群, 80 CRI, 摆脱分档藩篱

显色指数: 80CRI 和 90CRI

应用

筒灯

聚光灯

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General Product Information

Product Test Conditions

LUXEON CX Plus CoB LEDs are tested and binned with a DC drive current specified below at a junction temperature, T_j , of 85°C:

100mA	-	LUXEON CoB S01
200mA	-	LUXEON CoB M02
350mA	-	LUXEON CoB M03
450mA	-	LUXEON CoB L04
550mA	-	LUXEON CoB L05
800mA	-	LUXEON CoB L08

Part Number Nomenclature

Part numbers for LUXEON CX Plus CoB follow the convention below:

L 2 C 4 - **A A B B** - **D D D E F F G** 0

Where:

- A A** - designates nominal CCT (27=2700K, 30=3000K, 35=3500K, 40=4000K, 50=5000K)
- B B** - designates minimum CRI (80=80CRI and 90=90CRI)
- D D D** - designates product configuration (S01, M02, M03, L04, L05, L08)
- F F** - designates light emitting surface (LES) size (06=6mm, 09=9mm, 12=12mm, 14=14mm)
- G** - designates options for product specification

Therefore, the following part number is used for a LUXEON CX Plus CoB M03, 3000K 80CRI, with a 9mm LES:

L 2 C 4 - **3 0 8 0** - **M 0 3 E 0 9** 0 0

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 CX Plus CoB 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 CX Plus CoB at specified test current, $T_j=85^\circ\text{C}$.

PRODUCT	NOMINAL CCT	MINIMUM CRI ^[1, 2, 3]	LUMINOUS FLUX ^[1, 4] (lm)		TYPICAL LUMINOUS EFFICACY (lm/W)	TEST CURRENT (mA)	LES ^[5] (mm)	PART NUMBER
			MINIMUM	TYPICAL				
LUXEON CoB S01	2700K	80	384	426	124	100	6	L2C4-2780-S01E0600
	3000K	80	396	440	128	100	6	L2C4-3080-S01E0600
	3500K	80	412	458	133	100	6	L2C4-3580-S01E0600
	4000K	80	432	480	139	100	6	L2C4-4080-S01E0600
	5000K	80	432	480	139	100	6	L2C4-5080-S01E0600
	2700K	90	321	356	103	100	6	L2C4-2790-S01E0600
	3000K	90	337	374	108	100	6	L2C4-3090-S01E0600
	3500K	90	367	408	118	100	6	L2C4-3590-S01E0600
	4000K	90	374	416	121	100	6	L2C4-4090-S01E0600
LUXEON CoB M02	2700K	80	793	881	128	200	9	L2C4-2780-M02E0900
	3000K	80	834	927	134	200	9	L2C4-3080-M02E0900
	3500K	80	851	946	137	200	9	L2C4-3580-M02E0900
	4000K	80	885	983	142	200	9	L2C4-4080-M02E0900
	5000K	80	876	973	141	200	9	L2C4-5080-M02E0900
	2700K	90	656	729	106	200	9	L2C4-2790-M02E0900
	3000K	90	689	765	111	200	9	L2C4-3090-M02E0900
	3500K	90	744	826	120	200	9	L2C4-3590-M02E0900
	4000K	90	765	851	123	200	9	L2C4-4090-M02E0900
LUXEON CoB M03	2700K	80	1356	1507	124	350	9	L2C4-2780-M03E0900
	3000K	80	1400	1555	128	350	9	L2C4-3080-M03E0900
	3500K	80	1456	1618	133	350	9	L2C4-3580-M03E0900
	4000K	80	1499	1666	137	350	9	L2C4-4080-M03E0900
	5000K	80	1499	1666	137	350	9	L2C4-5080-M03E0900
	2700K	90	1123	1247	102	350	9	L2C4-2790-M03E0900
	3000K	90	1190	1322	109	350	9	L2C4-3090-M03E0900
	3500K	90	1247	1386	114	350	9	L2C4-3590-M03E0900
	4000K	90	1297	1441	118	350	9	L2C4-4090-M03E0900
LUXEON CoB L04	3000K	80	1845	2050	130	450	12	L2C4-3080-L04E1200
	3500K	80	1920	2133	135	450	12	L2C4-3580-L04E1200
	4000K	80	1976	2196	139	450	12	L2C4-4080-L04E1200
	5000K	80	1976	2196	139	450	12	L2C4-5080-L04E1200
	3000K	90	1568	1743	111	450	12	L2C4-3090-L04E1200
	3500K	90	1661	1845	117	450	12	L2C4-3590-L04E1200
	4000K	90	1694	1882	119	450	12	L2C4-4090-L04E1200

Table 1 continued on next page:

1. Lumileds maintains a tolerance of ± 2 on CRI and $\pm 6.5\%$ on luminous flux measurements.
2. Typical CRI is approximately 2 points higher than the minimum CRI specified, but this is not guaranteed.
3. R9 value of 90CRI products is >50 .
4. Maximum luminous flux is 10% above typical luminous flux.
5. Light Emitting Surface (LES) is the inner diameter (phosphor area) inside the dam.

Table 1. Product performance of LUXEON CX Plus CoB at specified test current, $T_j=85^\circ\text{C}$ continued.

PRODUCT	NOMINAL CCT	MINIMUM CRI ^[1, 2, 3]	LUMINOUS FLUX ^[1, 4] (lm)		TYPICAL LUMINOUS EFFICACY (lm/W)	TEST CURRENT (mA)	LES ^[5] (mm)	PART NUMBER
			MINIMUM	TYPICAL				
LUXEON CoB L05	3000K	80	2313	2570	134	550	12	L2C4-3080-L05E1200
	3500K	80	2360	2622	137	550	12	L2C4-3580-L05E1200
	4000K	80	2406	2673	140	550	12	L2C4-4080-L05E1200
	5000K	80	2406	2673	140	550	12	L2C4-5080-L05E1200
	3000K	90	1928	2142	112	550	12	L2C4-3090-L05E1200
	3500K	90	2041	2268	118	550	12	L2C4-3590-L05E1200
	4000K	90	2082	2313	121	550	12	L2C4-4090-L05E1200
LUXEON CoB L08	2700K	80	3206	3563	128	800	14	L2C4-2780-L08E1400
	3000K	80	3375	3750	135	800	14	L2C4-3080-L08E1400
	3500K	80	3443	3825	137	800	14	L2C4-3580-L08E1400
	4000K	80	3510	3900	140	800	14	L2C4-4080-L08E1400
	5000K	80	3510	3900	140	800	14	L2C4-5080-L08E1400
	2700K	90	2734	3038	109	800	14	L2C4-2790-L08E1400
	3000K	90	2869	3188	114	800	14	L2C4-3090-L08E1400
	3500K	90	3038	3375	121	800	14	L2C4-3590-L08E1400
	4000K	90	3038	3375	121	800	14	L2C4-4090-L08E1400

Notes for Table 1:

1. Lumileds maintains a tolerance of ± 2 on CRI and $\pm 6.5\%$ on luminous flux measurements.
2. Typical CRI is approximately 2 points higher than the minimum CRI specified, but this is not guaranteed.
3. R9 value of 90CRI products is >50 .
4. Maximum luminous flux is 10% above typical luminous flux.
5. Light Emitting Surface (LES) is the inner diameter (phosphor area) inside the dam.

Optical Characteristics

Table 2. Optical characteristics for LUXEON CX Plus CoB at specified test current, $T_j=85^\circ\text{C}$.

PART NUMBER	TYPICAL TOTAL INCLUDED ANGLE ^[1]	TYPICAL VIEWING ANGLE ^[2]
L2C4-xxxx-xxxExx00	135°	115°

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 $\frac{1}{2}$ of the peak value.

Electrical and Thermal Characteristics

Table 3. Electrical and thermal characteristics for LUXEON CX Plus CoB at specified test current, $T_j=85^\circ\text{C}$.

PART NUMBER	FORWARD VOLTAGE ^[1] (V_f)			TYPICAL TEMPERATURE COEFFICIENT OF FORWARD VOLTAGE ^[2] (mV/ $^\circ\text{C}$)	TYPICAL THERMAL RESISTANCE—JUNCTION TO CASE ^[3] ($^\circ\text{C}/\text{W}$)
	MINIMUM	TYPICAL	MAXIMUM		
L2C4-xxxx-S01E0600	32.5	34.5	37.5	-16	1.70
L2C4-xxxx-M02E0900	32.5	34.5	37.5	-16	0.90
L2C4-xxxx-M03E0900	32.5	35.0	37.5	-16	0.60
L2C4-xxxx-L04E1200	32.5	34.8	37.5	-16	0.50
L2C4-xxxx-L05E1200	32.5	34.8	37.5	-16	0.45
L2C4-xxxx-L08E1400	32.5	34.5	37.5	-16	0.38

Notes for Table 3:

1. Lumileds maintains a tolerance of $\pm 2\%$ on forward voltage measurements.
2. Measured between 25°C and 85°C .
3. Thermal resistance is measured between junction and the bottom of the LUXEON CoB substrate.

Absolute Maximum Ratings

Table 4. Absolute maximum ratings for LUXEON CX Plus CoB.

PARAMETER	MAXIMUM PERFORMANCE
DC Forward Current ^[1,2]	2x test current, except for S01, rated at 250mA maximum
LED Junction Temperature ^[1] (DC & Pulse)	125°C
ESD Sensitivity (ANSI/ESDA/JEDEC JS-001-2012)	Class 3B
Operating Case Temperature ^[1]	-40°C to 105°C
LED Storage Temperature	-40°C to 120°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

Characteristic Curves

Spectral Power Distribution Characteristics

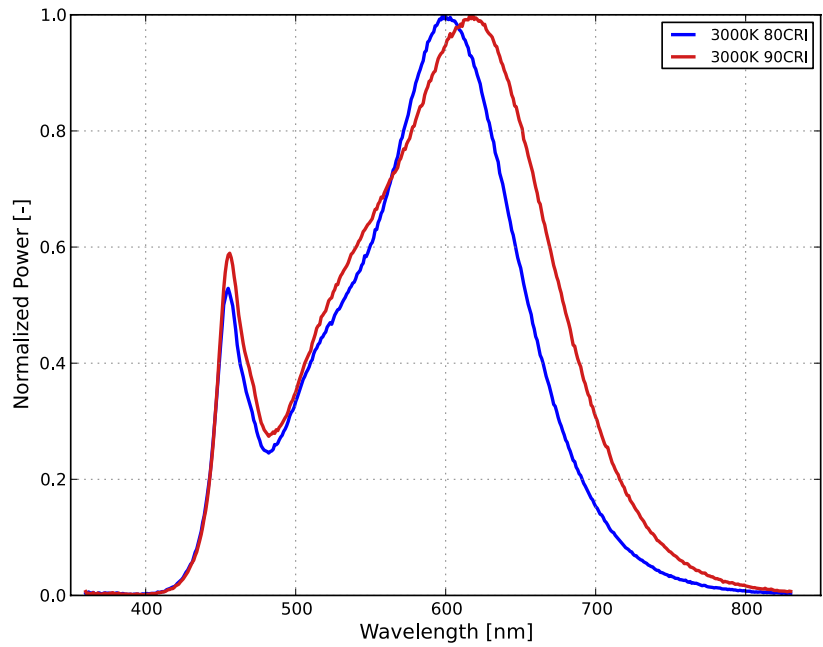


Figure 1. Typical normalized power vs. wavelength for L2C4-xxxx-xxxExx00 at specified test current, $T_j=85^{\circ}\text{C}$.

Light Output Characteristics

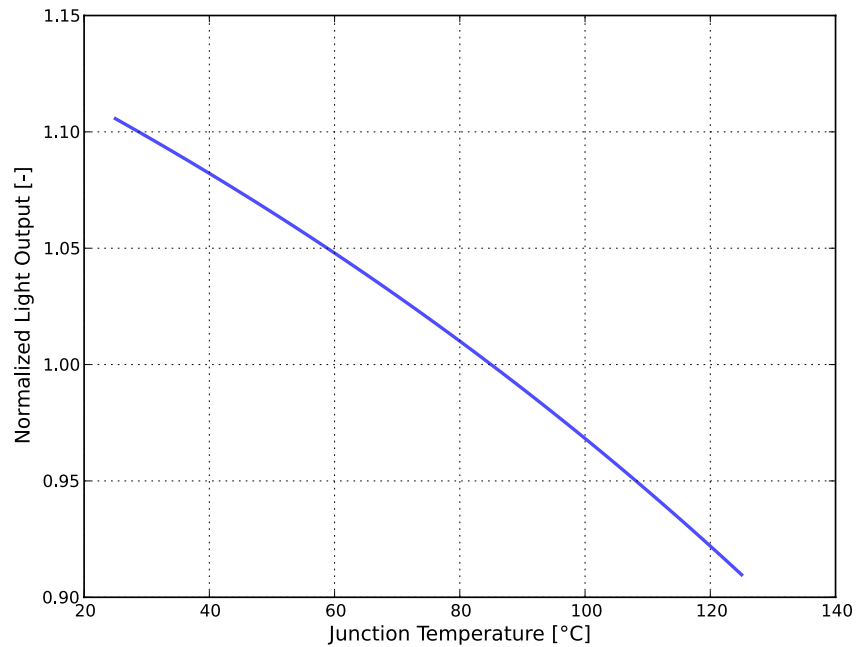
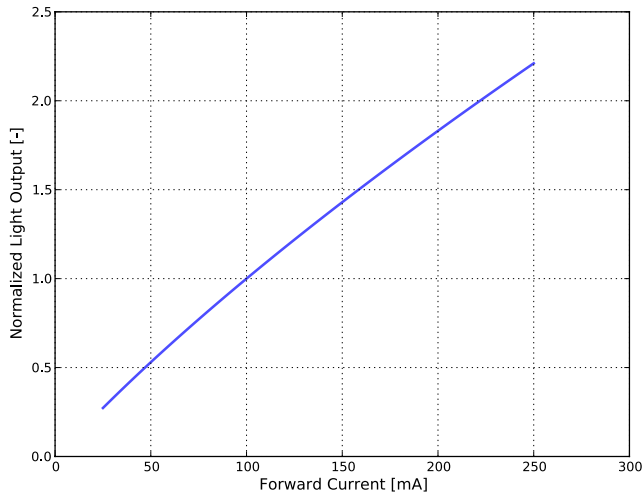
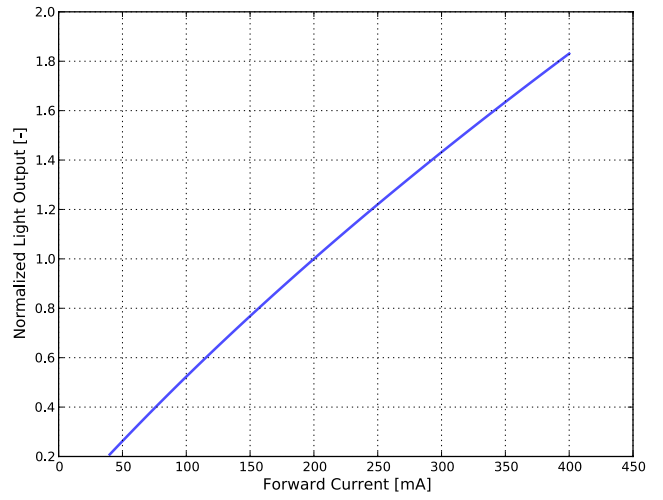


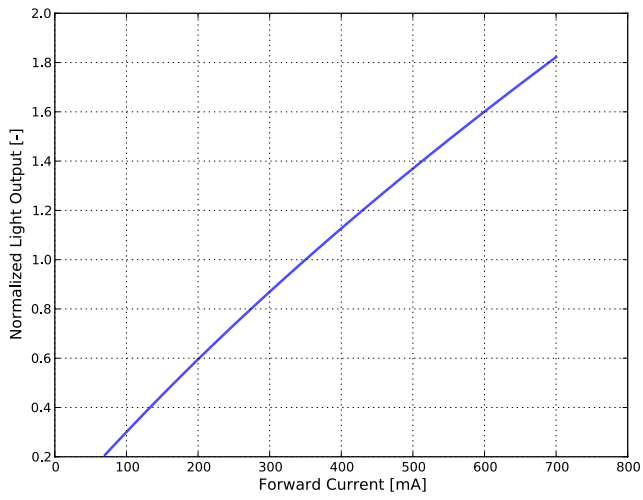
Figure 2. Typical normalized light output vs. junction temperature for L2C4-xxxx-xxxExx00 at specified test current.



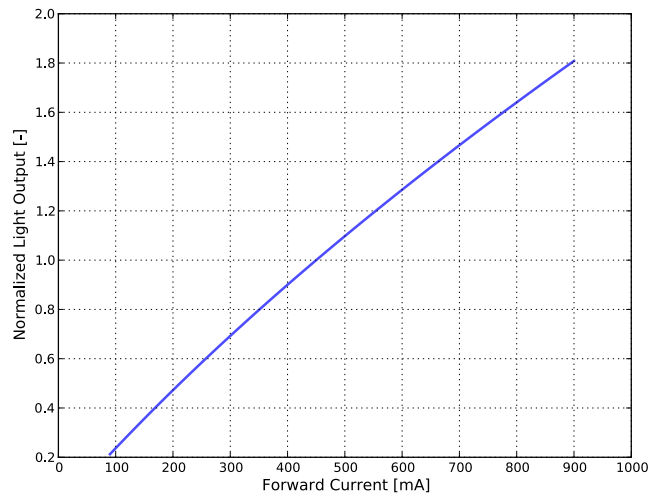
L2C4-xxxx-S01E0600



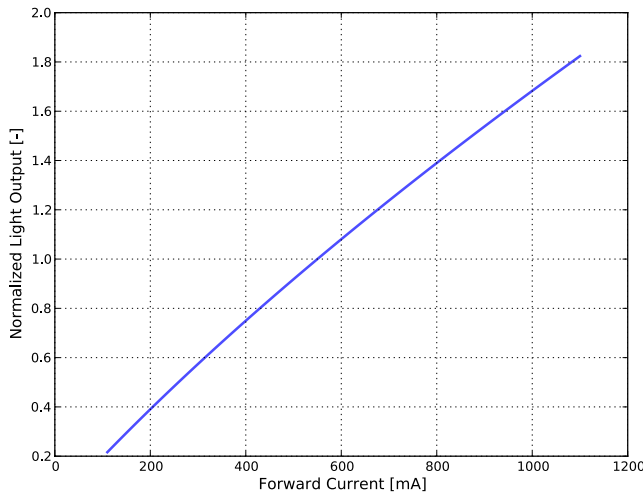
L2C4-xxxx-M02E0900



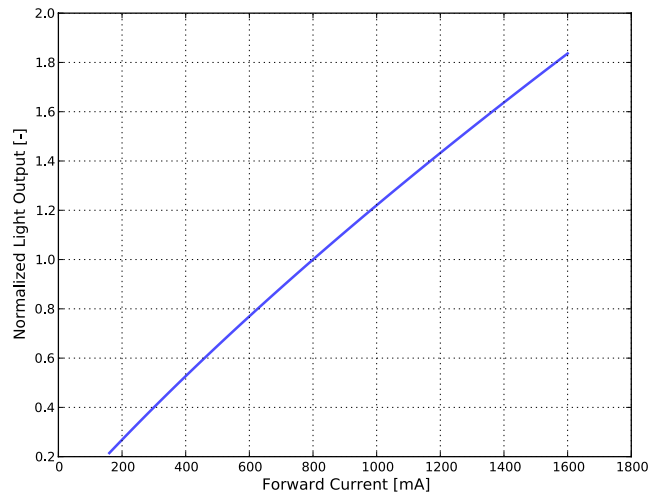
L2C4-xxxx-M03E0900



L2C4-xxxx-L04E1200



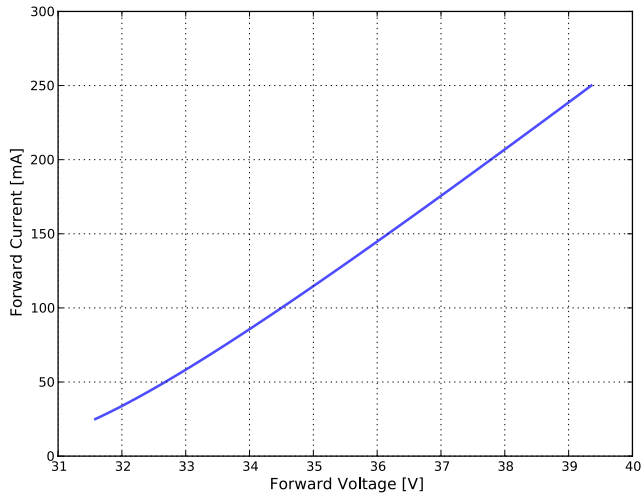
L2C4-xxxx-L05E1200



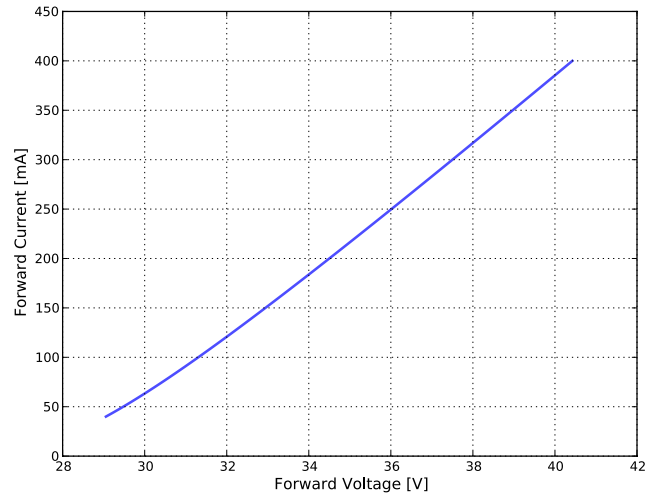
L2C4-xxxx-L08E1400

Figure 3. Typical normalized light output vs. forward current for LUXEON CX Plus CoB at $T_j=85^{\circ}\text{C}$.

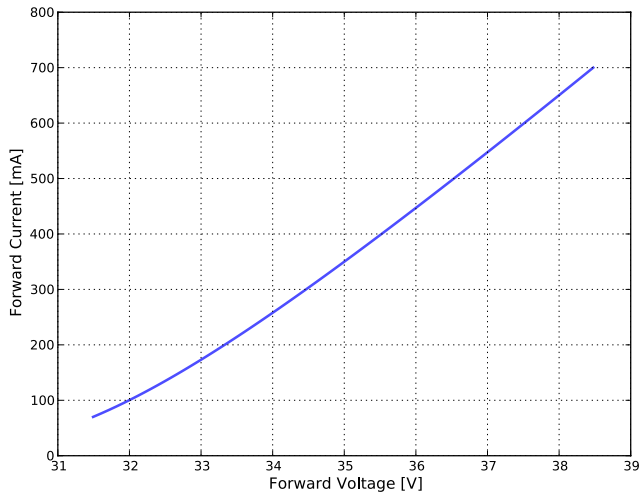
Forward Current Characteristics



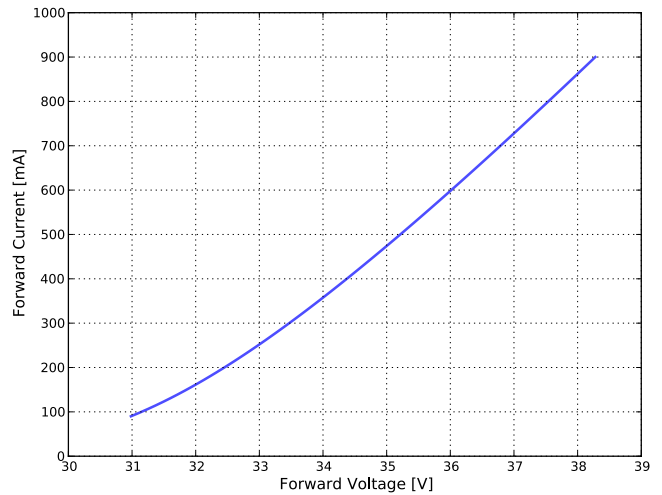
L2C4-xxxx-S01E0600



L2C4-xxxx-M02E0900



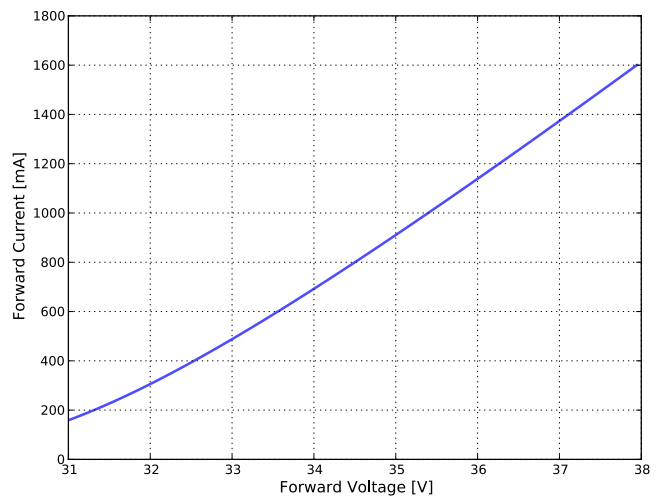
L2C4-xxxx-M03E0900



L2C4-xxxx-L04E1200



L2C4-xxxx-L05E1200



L2C4-xxxx-L08E1400

Figure 4. Typical forward current vs. forward voltage for LUXEON CX Plus CoB at $T_j=85^\circ\text{C}$.

Radiation Pattern Characteristics

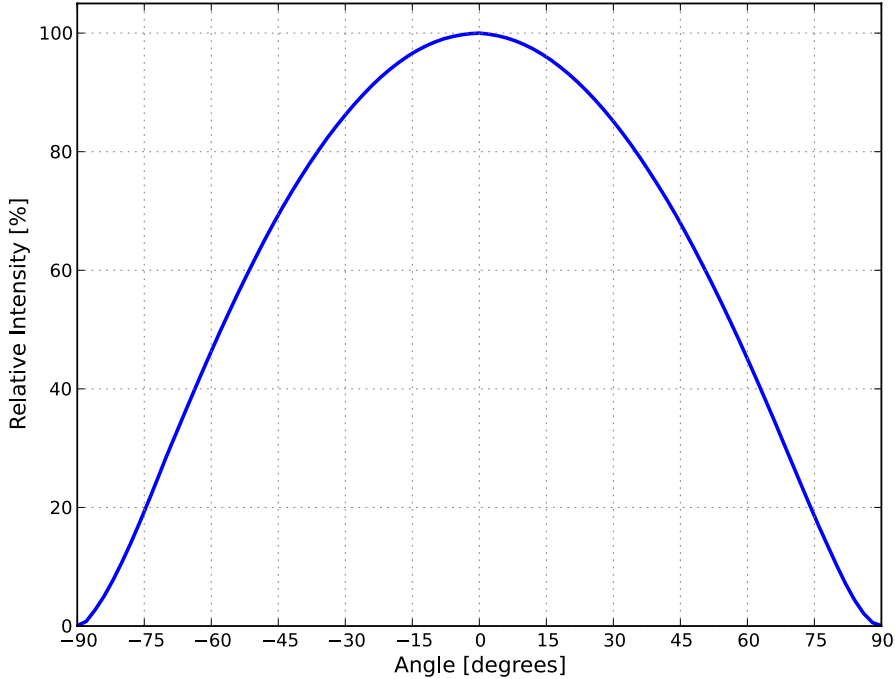


Figure 5. Typical radiation pattern for LUXEON CX Plus CoB at specified test current, $T_j=85^{\circ}\text{C}$.

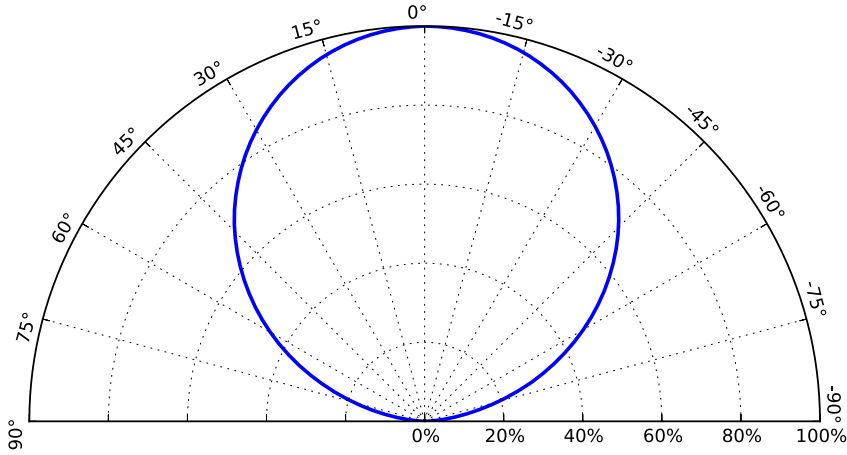


Figure 6. Typical polar radiation pattern for LUXEON CX Plus CoB at specified test current, $T_j=85^{\circ}\text{C}$.

Color Bin Definitions

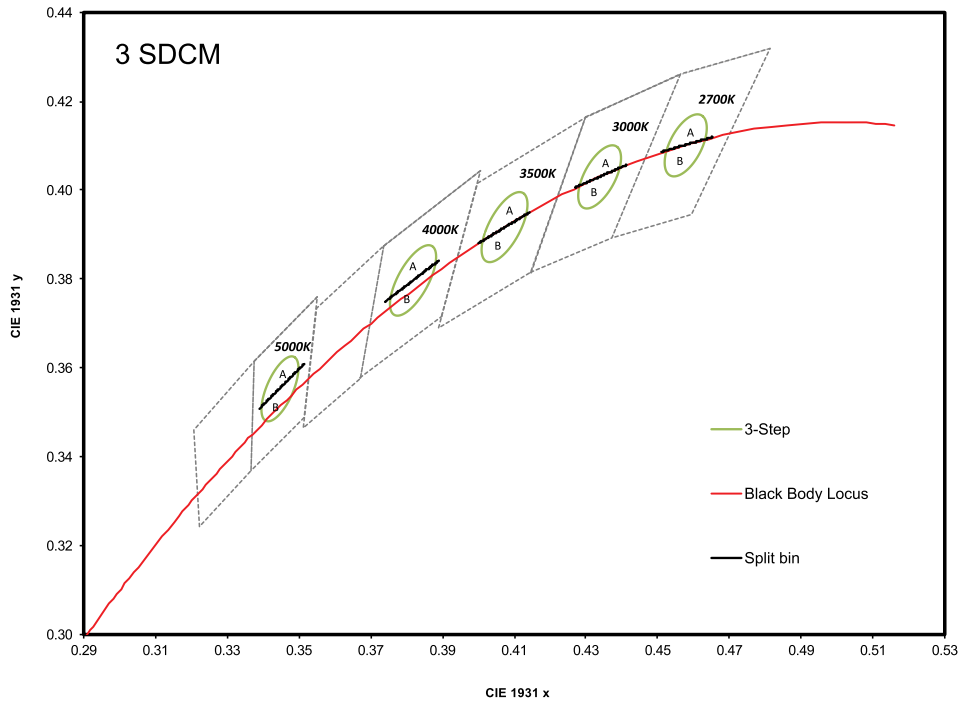


Figure 7. 3-step MacAdam ellipse illustration for Table 5.

Table 5. 3-step MacAdam ellipse color bin definition for LUXEON CX Plus CoB.

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°
3000K	Single 3-step MacAdam ellipse	(0.4338, 0.4030)	0.00834	0.00408	53.20°
3500K	Single 3-step MacAdam ellipse	(0.4073, 0.3917)	0.00927	0.00414	54.00°
4000K	Single 3-step MacAdam ellipse	(0.3818, 0.3797)	0.00939	0.00402	53.70°
5000K	Single 3-step MacAdam ellipse	(0.3447, 0.3553)	0.00822	0.00354	59.60°

Notes for Table 5:

1. Lumileds maintains a tolerance of ± 0.005 on x and y coordinates in the CIE 1931 color space.

CAT Codes

The following CAT codes are used for LUXEON CX Plus CoB:

- 3S** – Full 3-step MacAdam ellipse
- 3A** – Upper half 3-step MacAdam ellipse
- 3B** – Lower half 3-step MacAdam ellipse

Mechanical Dimensions

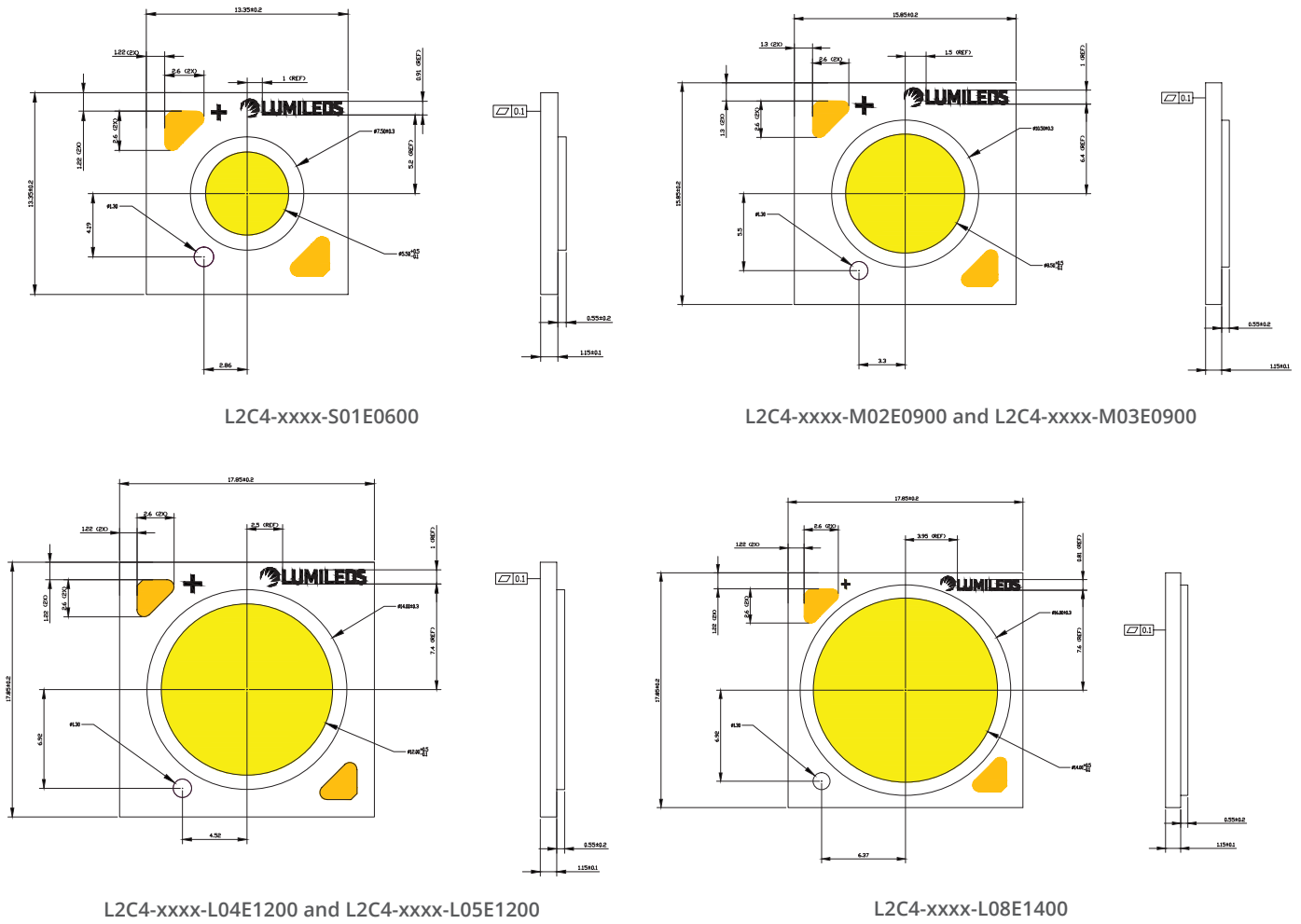


Figure 8. Mechanical dimensions for LUXEON CX Plus CoB.

- Notes for Figure 8:
1. Drawings are not to scale.
 2. All dimensions are in millimeters.

Packaging and Labeling Information

LUXEON CX Plus CoB LEDs are packaged in tubes then in a carton box. Each tube contains a specified number of LEDs. The LEDs in each tube come from a single category code, ensuring they are all well-matched for light output, color, and forward voltage. Each tube contains a rubber stopper at one end. The tube label has both alphanumeric and bar code information. The carton boxes have printed information providing part numbers with CAT codes that indicate luminous flux, color and forward voltage bins.

Table 6. Number of LEDs per tube for LUXEON CX Plus CoB.

PART NUMBER	TOTAL UNITS PER TUBE	TOTAL TUBES PER INNER BOX	TOTAL UNITS PER INNER BOX
L2C4-xxxxS01E0600	20	5	100
L2C4-xxxxM02E0900	20	5	100
L2C4-xxxxM03E0900	20	5	100
L2C4-xxxxL04E1200	20	5	100
L2C4-xxxxL05E1200	20	5	100
L2C4-xxxxL08E1400	20	5	100

Tube

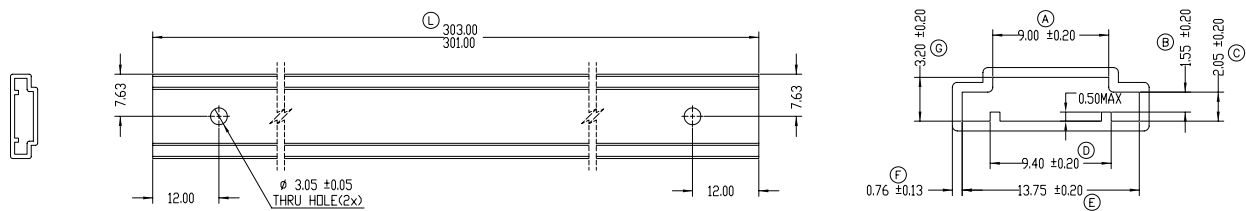


Figure 9a. Tube dimensions for L2C4-xxxx-S01E0600.

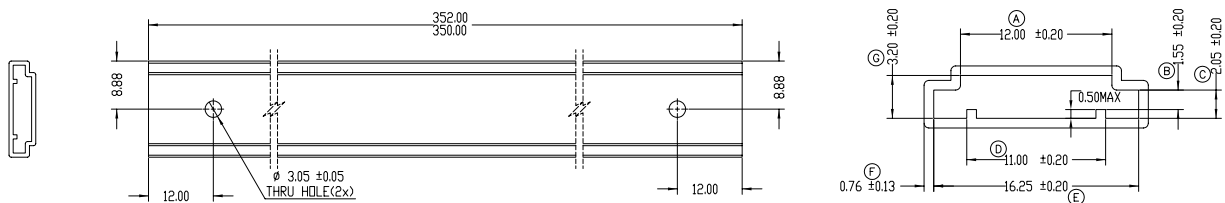


Figure 9b. Tube dimensions for L2C4-xxxx-M02E0900 and L2C4-xxxx-M03E0900.

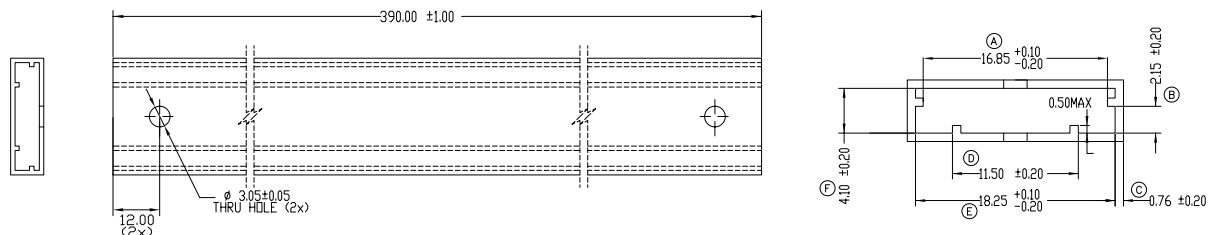


Figure 9c. Tube dimensions for L2C4-xxxx-L04E1200, L2C4-xxxx-L05E1200 and L2C4-xxxx-L08E1400.

- Notes for Figures 9a, 9b and 9c:
1. Drawings are not to scale.
 2. All dimensions are in millimeters.

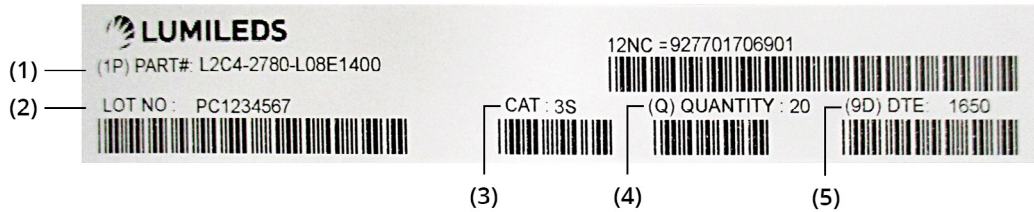


Figure 10. Example of a tube label for LUXEON CX Plus CoB.

Notes for Figure 10 – Tube Label descriptions for customer use:

Field labels not described are for Lumileds internal use only.

1. Lumileds part number.
2. Unique production lot identification number. This number is required for traceability purpose.
3. Product category code.
4. Number of LED emitters in a tube.
5. LED test date in YYWW format.

Inner Box

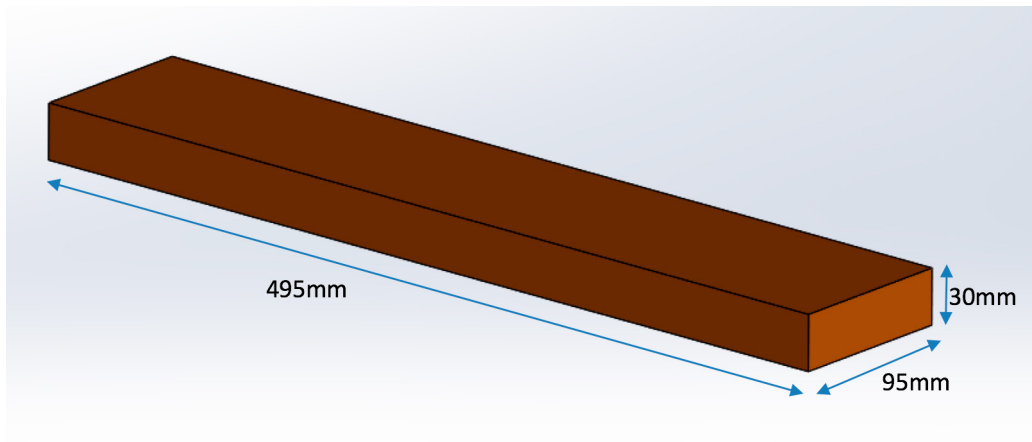


Figure 11. Dimensions for inner box packaging for LUXEON CX Plus CoB.

Table 7. Inner box information for LUXEON CX Plus CoB.

BOX TYPE	DIMENSIONS (mm)			AVERAGE WEIGHT (100pcs/box)
	H	L	W	
Inner Box	30	495	95	0.232Kg



Figure 12. Example of inner box label for LUXEON CX Plus CoB.

Notes for Figure 12 – Inner Box Label descriptions for customer use:

Field labels not described are for Lumileds internal use only.

1. Lumileds part number.
2. Number of LED emitters in a box.
3. LED test date in YYWW format.
4. Customer part number for custom requests only.
5. Unique production lot identification number. This number is required for traceability purpose.
6. Product category code.

Outer Box

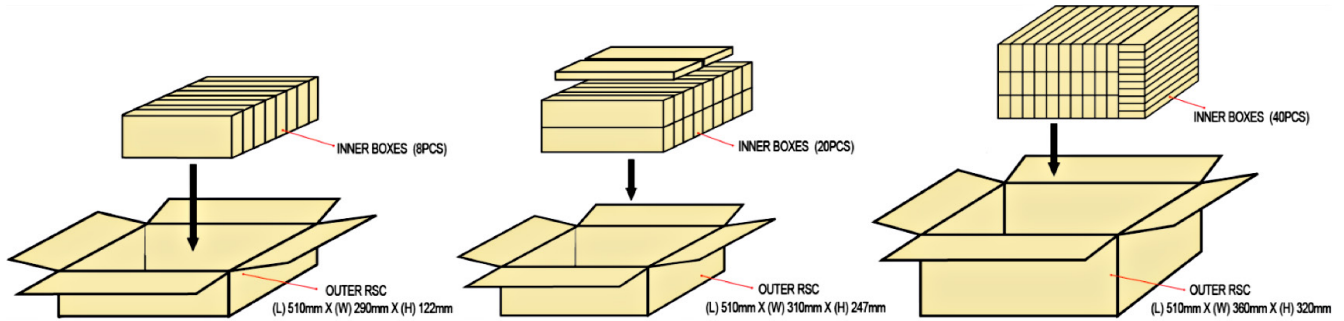


Figure 13. Dimensions for outer box packaging for LUXEON CX Plus CoB.

Table 8. Outer box information for LUXEON CX Plus CoB.

BOX TYPE	DIMENSIONS (mm)			MAXIMUM INNER BOXES PER OUTER BOX	MAXIMUM QUANTITY PER OUTER BOX	AVERAGE WEIGHT (100pcs/box)
	H	L	W			
Outer Box 8	122	510	290	8	800	2.36Kg
Outer Box 20	247	510	310	20	2000	5.34Kg
Outer Box 40	320	510	360	40	4000	10.88Kg

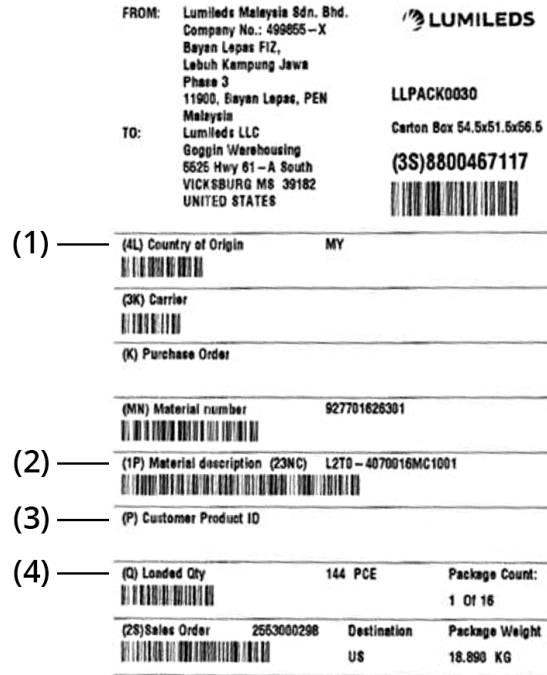


Figure 14. Example of outer box label for LUXEON CX Plus CoB.

Notes for Figure 14 – Outer Box Label descriptions for customer use:
Field labels not described are for Lumileds internal use only.

1. Country code of origin of manufacturing of parts (e.g. MY for Malaysia, CN for China) according to ISO 3166-1 alpha-2 document.
2. Lumileds part number.
3. Customer part number for custom requests only.
4. Total number of LED emitters in a shipment box.

About Lumileds

Lumileds is the global leader in light engine technology. The company develops, manufactures and distributes groundbreaking LEDs and automotive lighting products that shatter the status quo and help customers gain and maintain a competitive edge.

With a rich history of industry “firsts,” Lumileds is uniquely positioned to deliver lighting advancements well into the future by maintaining an unwavering focus on quality, innovation and reliability.

To learn more about our portfolio of light engines, visit lumileds.com.

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