



# LUXEON SunPlus CoB Line

LEDs for ease of design and high PPF density for a deep penetration into the plant canopy



LUXEON SunPlus CoB Line LEDs are purpose-built to enable ease of system design for Horticulture applications. LUXEON SunPlus CoB Line offers the only CoBs available today that are binned and tested based on Photosynthetic Photon Flux (PPF). LUXEON SunPlus CoB Line includes three different sizes: 1208 with an LES of 15mm, 1211 with an LES of 19mm, and 1825 with an LES of 32mm.

## FEATURES AND BENEFITS

115° angle for directional light distribution for greenhouse applications

Ideal solution for more directional horticulture applications that require a high light output and wattage

## PRIMARY APPLICATIONS

Horticulture

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# General Product Information

## Product Test Conditions

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

900mA	-	LUXEON CoB 1208
1200mA	-	LUXEON CoB 1211
2250mA	-	LUXEON CoB 1825

## Part Number Nomenclature

Part numbers for LUXEON SunPlus CoB Line follow the convention below:

**L 2 C 5 - A A B B C C C C D E E F F**

Where:

- A A** - designates product type (SP=SunPlus)
- B B** - designates color (P1=Purple, R1=Rose)
- C C C C** - designates product configuration (example: 1208, 1211, 1825)
- D** - designates options for product specification
- E E** - designates light emitting surface (LES) size (15=15mm, 19=19mm, 32=32mm)
- F F** - designates options for product specification

Therefore, the following part number is used for a LUXEON SunPlus CoB 1211 with a 19mm LES:

**L 2 C 5 - S P P 1 1 2 1 1 E 1 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 SunPlus CoB Line 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 SunPlus CoB Line at specified test current,  $T_j=85^\circ\text{C}$ .

PRODUCT	COLOR	PPF ( $\mu\text{mol/s}$ ) <sup>[1]</sup> in PAR (400 TO 700nm) <sup>[2]</sup>		TEST CURRENT (mA)	LES <sup>[3]</sup> (mm)	PART NUMBER
		MINIMUM	TYPICAL			
LUXEON SunPlus CoB 1208	Purple (12.5% Blue) <sup>[4]</sup>	47.70	53.00	900	15	L2C5-SPP11208E1500
LUXEON SunPlus CoB 1211		63.90	71.00	1200	19	L2C5-SPP11211E1900
LUXEON SunPlus CoB 1825		179.10	199.00	2250	32	L2C5-SPP11825G3200
LUXEON SunPlus CoB 1825	Rose	180.00	200.00	2250	32	L2C5-SPR11825G3200

**Notes for Table 1:**

- Lumileds maintains a tolerance of  $\pm 6.5\%$  on  $\mu\text{mol/s}$  for LUXEON SunPlus CoB Line.
- PAR is the photosynthetic active radiation from 400 to 700nm.
- Light emitting surface (LES) is the inner diameter (phosphor area) inside the dam.
- PPF in blue spectrum (420–480nm) ranges from 10–15% of total PPF in PAR (400–700nm). Typical PPF in the blue spectrum is 12.5%.

## Optical Characteristics

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

PART NUMBER	TYPICAL TOTAL INCLUDED ANGLE <sup>[1]</sup>	TYPICAL VIEWING ANGLE <sup>[2]</sup>
L2C5-SPx1xxxxxx00	135°	115°

**Notes for Table 2:**

- Total angle at which 90% of total luminous flux is captured.
- 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 SunPlus CoB Line at specified test current,  $T_j=85^\circ\text{C}$ .

PART NUMBER	FORWARD VOLTAGE <sup>[1]</sup> ( $V_f$ )			TYPICAL TEMPERATURE COEFFICIENT OF FORWARD VOLTAGE <sup>[2]</sup> (mV/°C)	TYPICAL THERMAL RESISTANCE—JUNCTION TO CASE <sup>[3]</sup> (°C/W)
	MINIMUM	TYPICAL	MAXIMUM		
L2C5-SPx11208E1500	32.5	34.8	37.5	-16	0.29
L2C5-SPx11211E1900	32.5	34.8	37.5	-16	0.23
L2C5-SPx11825G3200	48.8	51.7	56.3	-16	0.05

**Notes for Table 3:**

- Lumileds maintains a tolerance of  $\pm 2\%$  on forward voltage measurements.
- Measured between  $25^\circ\text{C}$  and  $85^\circ\text{C}$ .
- Thermal resistance is measured between junction and the bottom of the LUXEON CoB substrate.

# Absolute Maximum Ratings

Table 4. Absolute maximum ratings for LUXEON SunPlus CoB Line.

PARAMETER	MAXIMUM PERFORMANCE
DC Forward Current <sup>[1,2]</sup>	2x test current <sup>[3]</sup>
LED Junction Temperature <sup>[1]</sup> (DC & Pulse)	125°C
ESD Sensitivity (ANSI/ESDA/JEDEC JS-001-2012)	Class 3B
Operating Case Temperature <sup>[1]</sup>	-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:**

- Proper current derating must be observed to maintain the junction temperature below the maximum allowable junction temperature.
- 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 20% of the maximum allowable DC forward current.

## Characteristic Curves

### Spectral Power Distribution Characteristics

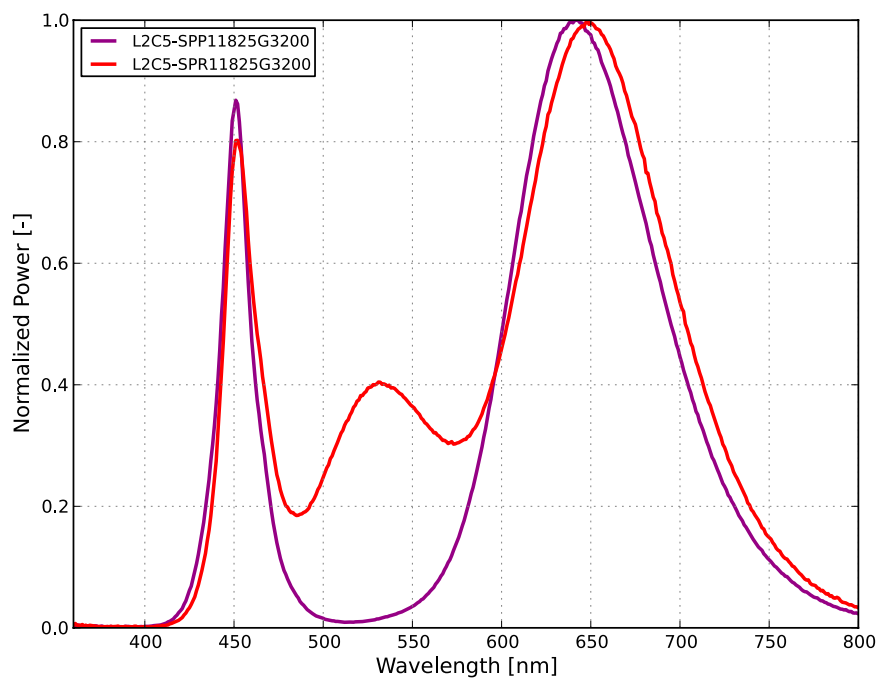


Figure 1. Typical normalized power vs. wavelength for LUXEON SunPlus CoB Line at specified test current,  $T_j=85^\circ\text{C}$ .

# Photon Output Characteristics

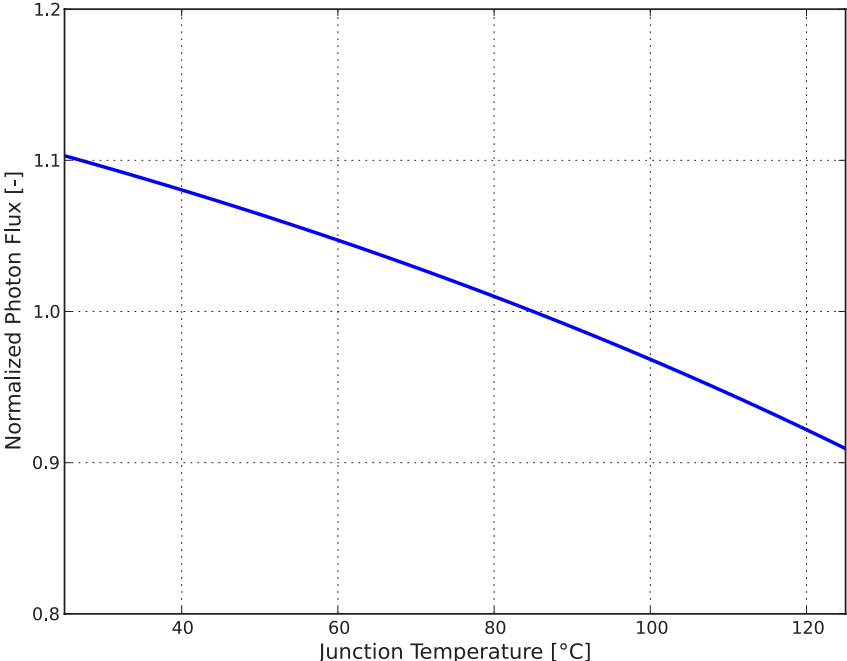


Figure 2a. Typical normalized photon output vs. junction temperature for LUXEON SunPlus CoB Line at specified test current,  $T_j=85^\circ\text{C}$ .

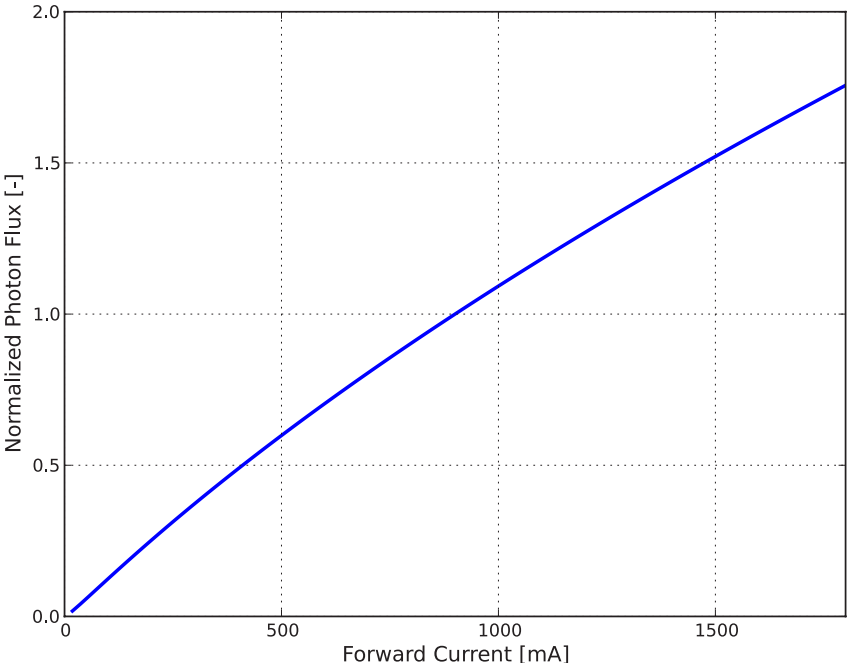


Figure 2b. Typical normalized photon output vs. forward current for L2C5-SPx11208E1500 at specified test current,  $T_j=85^\circ\text{C}$ .

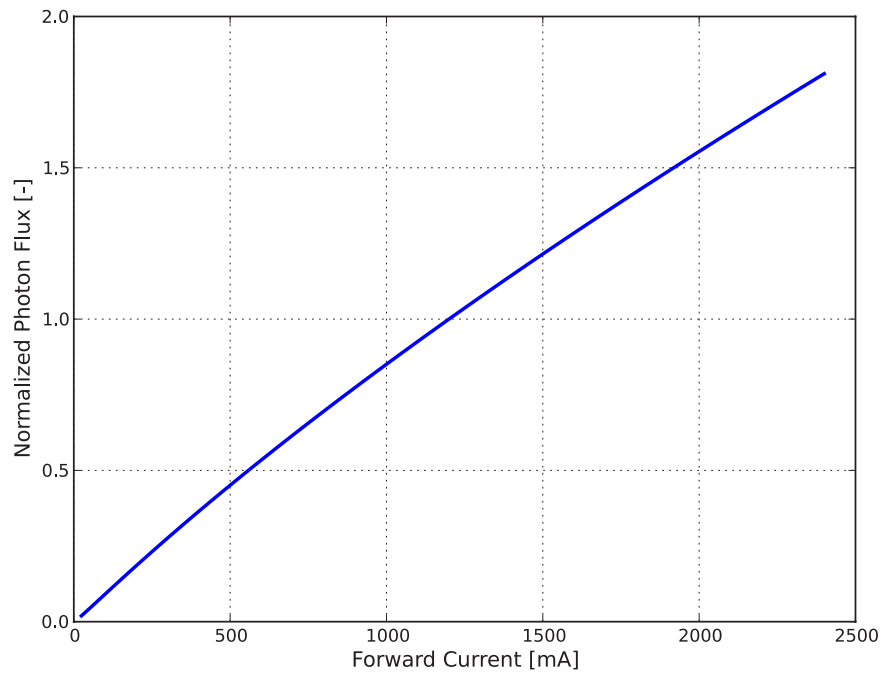


Figure 2c. Typical normalized photon output vs. forward current for L2C5-SPx11211E1900 at specified test current,  $T_j=85^\circ\text{C}$ .

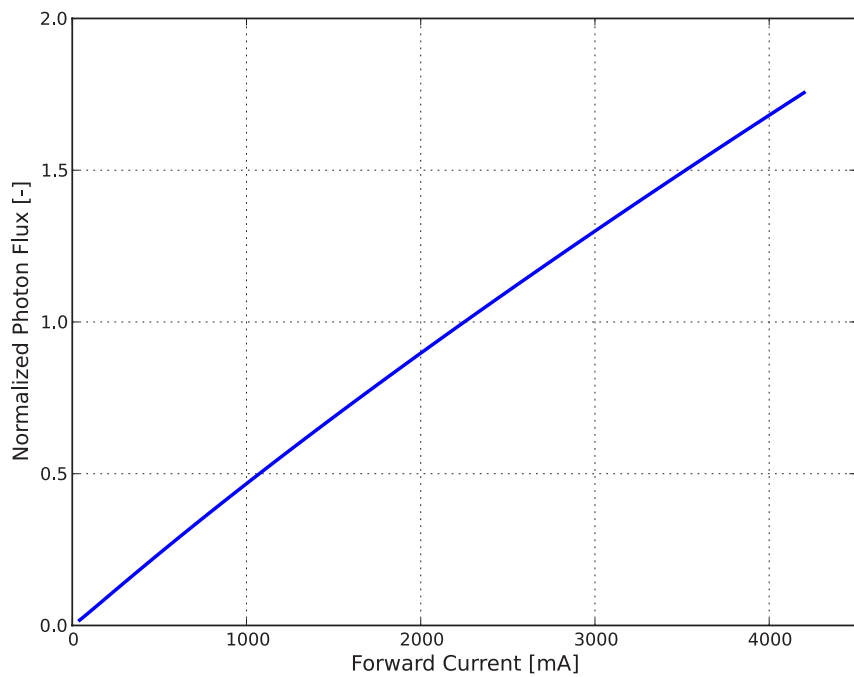


Figure 2d. Typical normalized photon output vs. forward current for L2C5-SPx11825G3200 at specified test current,  $T_j=85^\circ\text{C}$ .

# Forward Current Characteristics

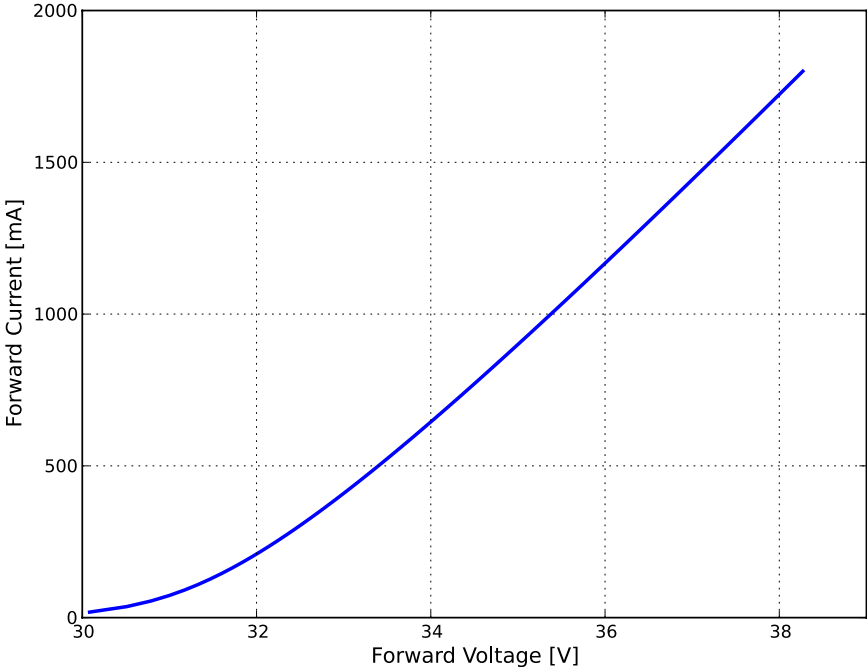


Figure 3a. Typical forward current vs. forward voltage for L2C5-SPx11208E1500 at  $T_j=85^\circ\text{C}$ .

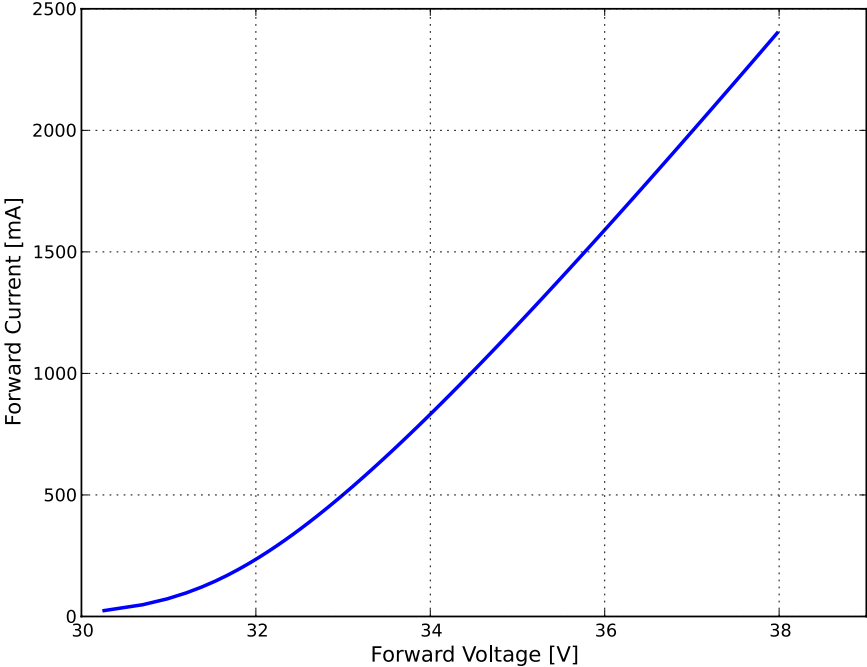


Figure 3b. Typical forward current vs. forward voltage for L2C5-SPx11211E1900 at  $T_j=85^\circ\text{C}$ .



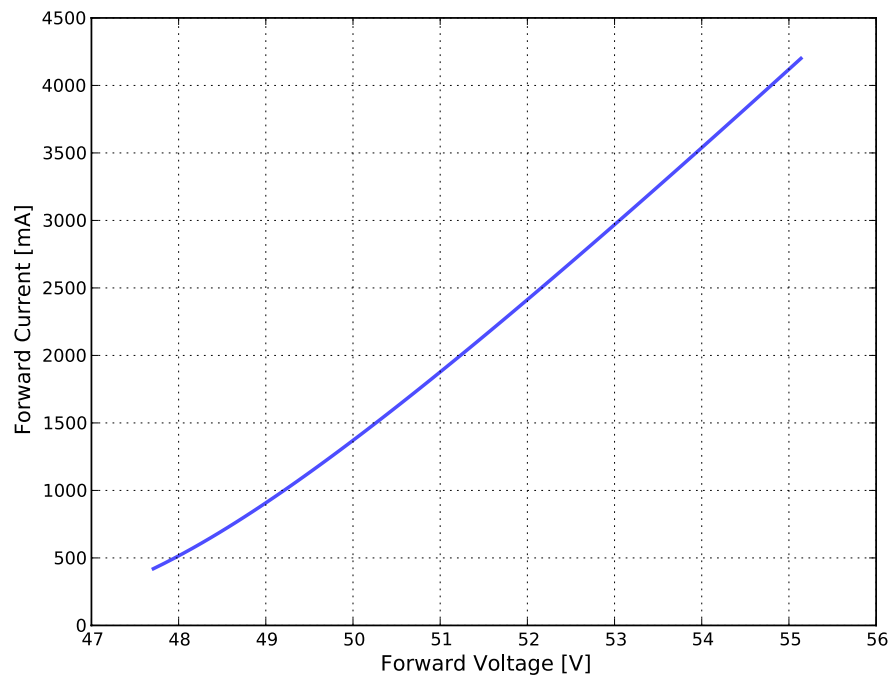


Figure 3c. Typical forward current vs. forward voltage for L2C5-SPx11825G3200 at  $T_j=85^{\circ}\text{C}$ .

# Radiation Pattern Characteristics

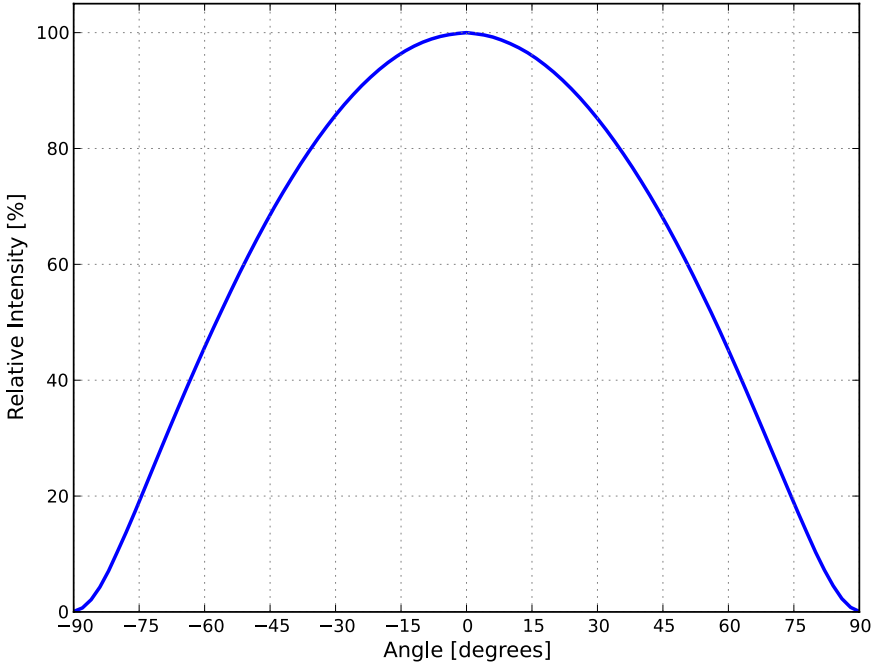


Figure 4. Typical radiation pattern for LUXEON SunPlus CoB Line at specified test current,  $T_j=85^{\circ}\text{C}$ .

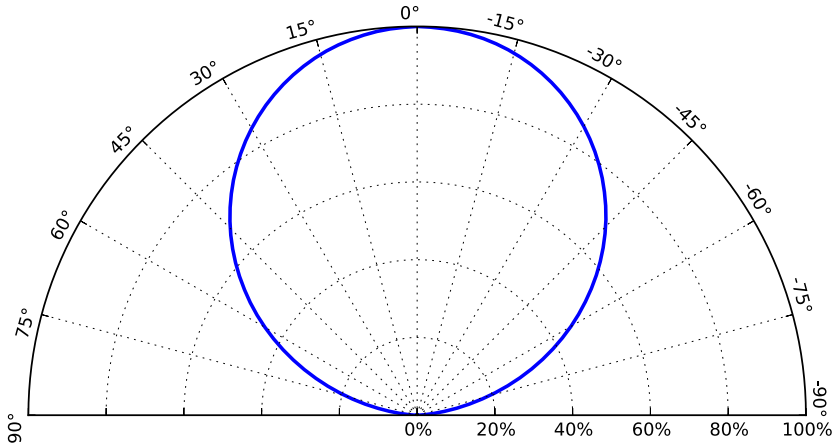


Figure 5. Typical polar radiation pattern for LUXEON SunPlus CoB Line at specified test current,  $T_j=85^{\circ}\text{C}$ .

# Mechanical Dimensions

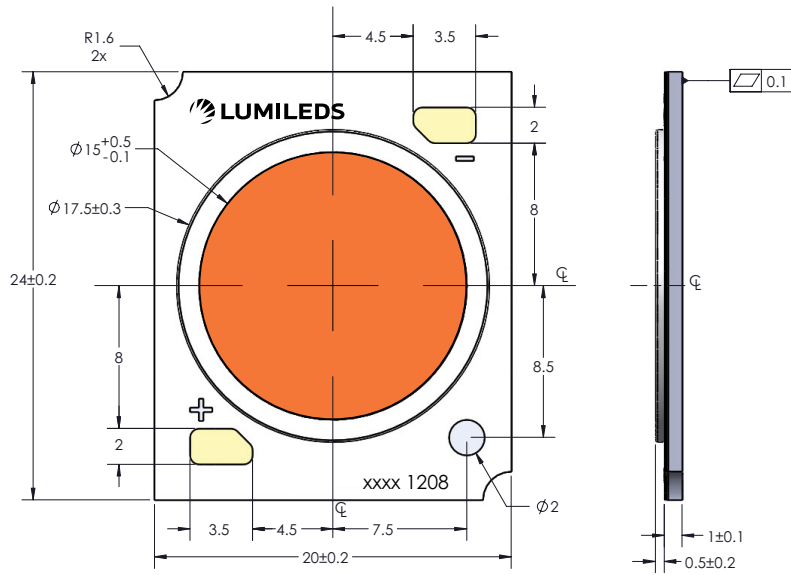


Figure 6a. Mechanical dimensions for L2C5-SPx11208E1500.

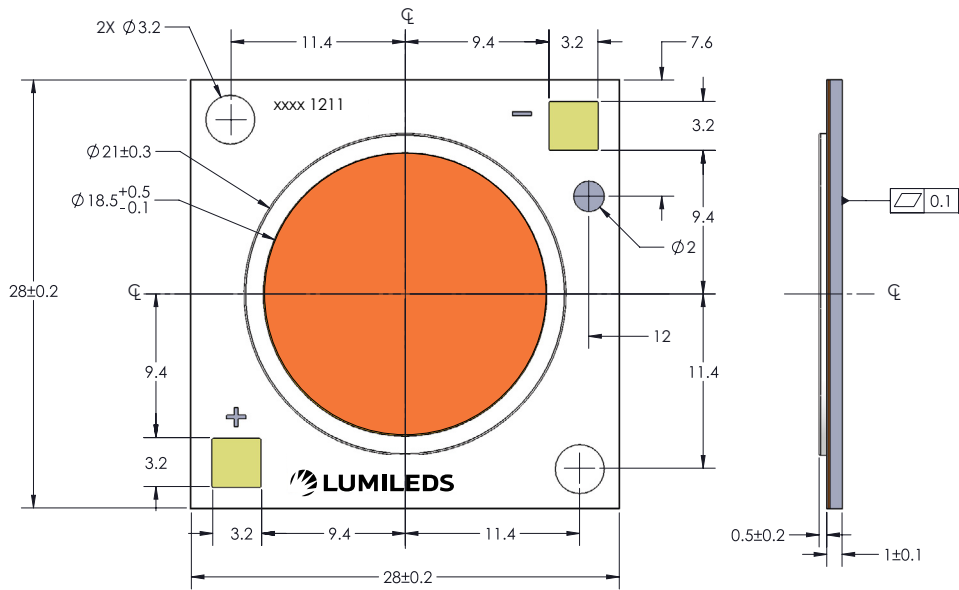


Figure 6b. Mechanical dimensions for L2C5-SPx11211E1900.

Notes for Figures 6a and 6b:  
 1. Drawings not to scale.  
 2. All dimensions are in millimeters.



# Tube

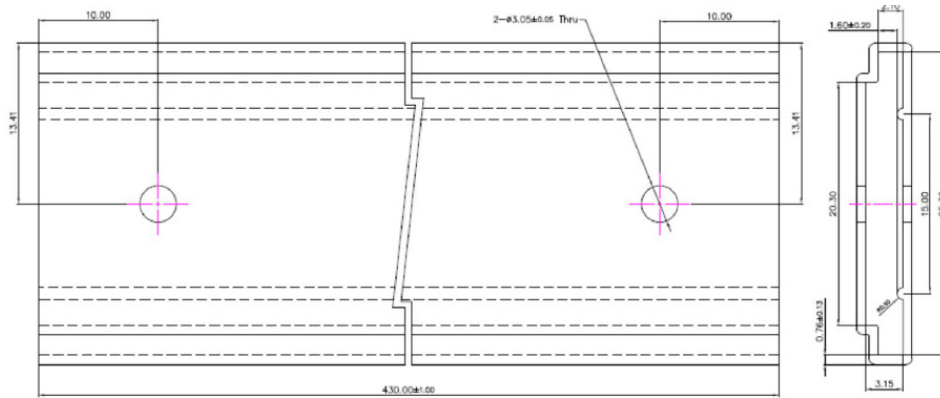


Figure 7a. Tube dimensions for L2C5-SPx11208E1500.

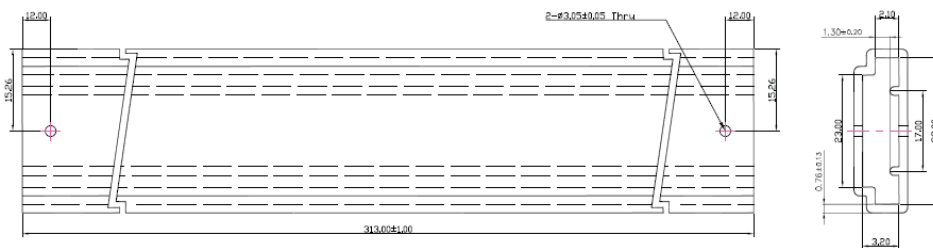


Figure 7b. Tube dimensions for L2C5-SPx11211E1900.

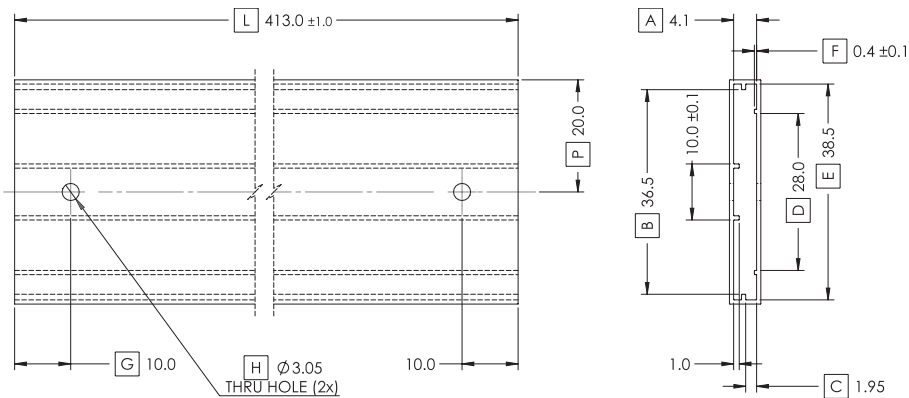


Figure 7c. Tube dimensions for L2C5-SPx11825G3200.

- Notes for Figures 7a, 7b and 7c:
1. Drawings not to scale.
  2. All dimensions are in millimeters.

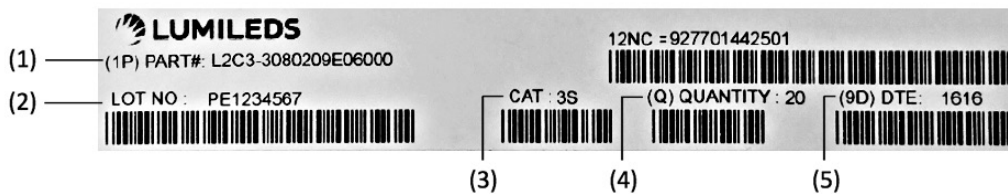


Figure 8. Example of a tube label for LUXEON SunPlus CoB Line.

- Notes for Figure 8 - 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 YYYY format.

## Inner Box

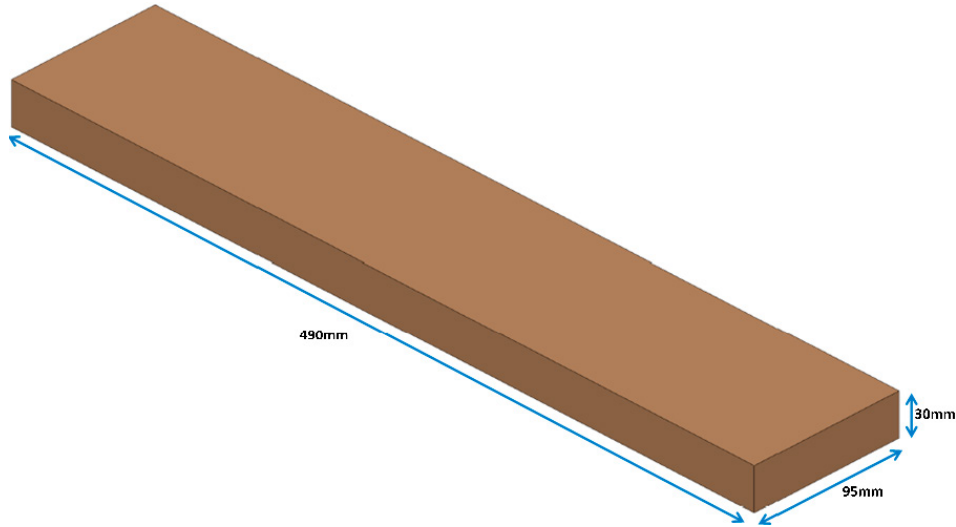


Figure 9. Dimensions for inner box packaging for LUXEON SunPlus CoB Line.

Table 6. Inner box information for LUXEON SunPlus CoB Line.

BOX TYPE	DIMENSIONS (mm)			AVERAGE WEIGHT (100pcs/box)	AVERAGE WEIGHT (100pcs/box)
	H	L	W		
Inner Box	30	490	95	0.340Kg	0.305Kg



Figure 10. Example of inner box label for LUXEON SunPlus CoB Line.

Notes for Figure 10 – 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

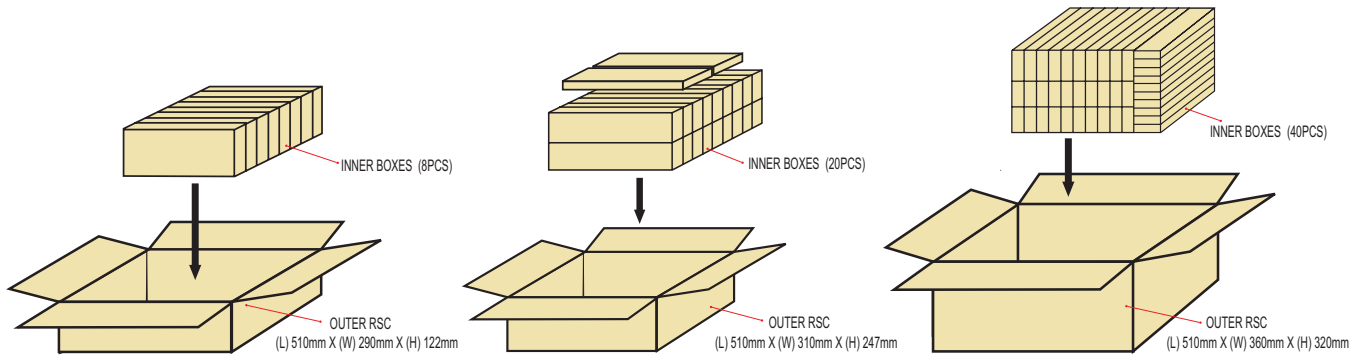


Figure 11. Dimensions for outer box packaging for LUXEON SunPlus CoB Line.

Table 7. Outer box information for LUXEON SunPlus CoB Line.

BOX TYPE	DIMENSIONS (mm)			MAXIMUM INNER BOXES PER OUTER BOX	MAXIMUM QUANTITY PER OUTER BOX	AVERAGE WEIGHT (100pcs/box)	AVERAGE WEIGHT (50pcs/box)
	H	L	W				
Outer Box 8	122	510	290	8	800	3.05kg	2.77kg
Outer Box 20	247	510	310	20	2000	7.55kg	6.85kg
Outer Box 40	320	510	360	40	4000	15.10kg	13.70kg

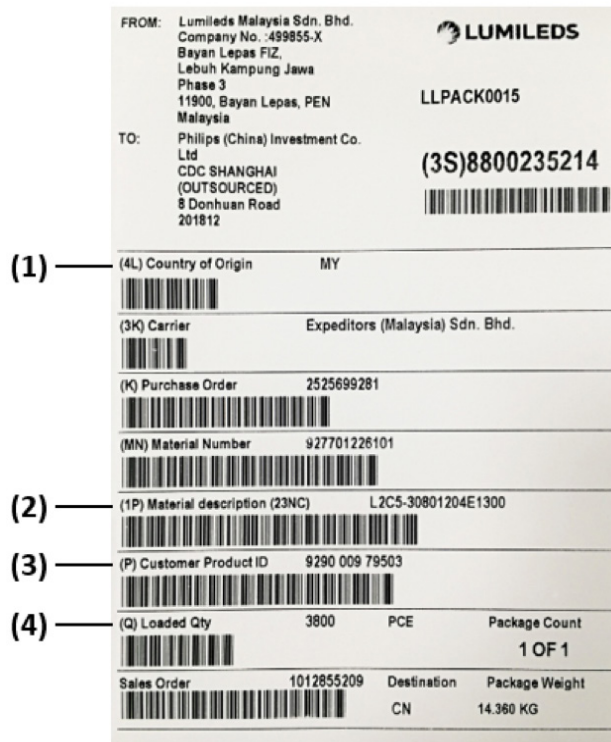


Figure 12. Example of outer box label for LUXEON SunPlus CoB Line.

Notes for Figure 12 – 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

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](http://lumileds.com).



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