

# LUXEON XF-3014 CV

Flexible light source distributing uniform light across user selectable lengths

LUXEON XF-3014 CV is for constant voltage driven applications that require a flexible design capable of maintaining uniform light distribution over long lengths. These current regulated flexible strips come in variable length options and are either cuttable or include snap-together connectors for precision design. LUXEON XF-3014 CV is designed for ease of system integration, faster time to market and best-in-class reliability.

LUXEON XF-3014 CV is available in the following configurations:

- 6 LEDs per segment cuttable every 96mm
- 6 LEDs, 96mm segments with connectors
- 30 LEDs, 480mm segments with connectors



## FEATURES AND BENEFITS

112 lumens per 96mm segment with 105 lm/W efficacy at 24V,  $T_j=50^{\circ}\text{C}$

2700, 3000 and 4000K CCT offerings with 80CRI

<2% light output attenuation over 10m length

Backside adhesive for attachment to heat sink allows for ease of mounting and assembly

Complete integrated solution guarantees simplified supply chain and faster time to market

5 year limited warranty

## PRIMARY APPLICATIONS

Downlights

Indoor Area Lighting

- Under Cabinet

Specialty Lighting

- Cove
- Accent

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# General Product Information

## Product Test Conditions

The typical input voltage for each LUXEON XF-3014 CV strip is 24V. Each 96mm base segment is an LED string composed of 6 LEDs in series. These are connected to constant current regulators which provide 45mA per segment nominally.

LUXEON XF-3014 LEDs are tested and binned with a 20ms monopulse (MP) drive current of 60mA at a junction temperature,  $T_j$ , of 25°C. The minimum, typical, and maximum performance for LUXEON XF-3014 CV in this datasheet are derived from individual LED measurements. The confidence level on all minimum and maximum performance parameters in this datasheet is 99% to within individual LED tolerance.

## Part Number Nomenclature

Part numbers for LUXEON XF-3014 CV follow the convention below:

L 2 1 9 – **A A B B C D D** F V 0 **E** 0 0

Where:

- A A** – designates nominal ANSI CCT (27=2700K, 30=3000K, 40=4000K)
- B B** – designates minimum CRI (80=80CRI)
- C** – designates sectional type (C=cuttable, 0=not cuttable)
- D D** – designates number of LEDs per segment (06=6 LEDs, 30=30 LEDs)
- E** – designates connector option (C=connectors, 0=no connectors)

Therefore, the following part number is used for a LUXEON XF-3014 CV 3000K 80CRI cuttable every 6 LEDs without connectors:

L 2 1 9 – **3 0 8 0 C 0 6** F V 0 **0** 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 XF-3014 CV 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 XF-3014 CV at 24V, specified current,  $T_j=50^{\circ}\text{C}$ .

| CONFIGURATION                             | NOMINAL CCT | MINIMUM CRI <sup>[1]</sup> | LUMINOUS FLUX <sup>[2]</sup> (lm) |         | TYPICAL LUMINOUS EFFICACY (lm/W) | REGULATED CURRENT <sup>[3]</sup> (mA) | SEGMENT TYPE <sup>[4]</sup> | PART NUMBER        |
|---|-------------|----------------------------|-----------------------------------|---------|----------------------------------|---------------------------------------|-----------------------------|--------------------|
|   |             |                            | MINIMUM                           | TYPICAL |                                  |                                       |                             |                    |
| 6 LEDs, 96mm<br>(1 parallel x 6 series)   | 2700K       | 80                         | 86                                | 98      | 92                               | 45                                    | Cuttable                    | L219-2780C06FV0000 |
|   | 3000K       | 80                         | 90                                | 102     | 96                               | 45                                    | Cuttable                    | L219-3080C06FV0000 |
|   | 4000K       | 80                         | 100                               | 112     | 105                              | 45                                    | Cuttable                    | L219-4080C06FV0000 |
| 6 LEDs, 96mm<br>(1 parallel x 6 series)   | 2700K       | 80                         | 86                                | 98      | 92                               | 45                                    | Connectors                  | L219-2780006FV0C00 |
|   | 3000K       | 80                         | 90                                | 102     | 96                               | 45                                    | Connectors                  | L219-3080006FV0C00 |
|   | 4000K       | 80                         | 100                               | 112     | 105                              | 45                                    | Connectors                  | L219-4080006FV0C00 |
| 30 LEDs, 480mm<br>(5 parallel x 6 series) | 2700K       | 80                         | 430                               | 490     | 92                               | 225                                   | Connectors                  | L219-2780030FV0C00 |
|   | 3000K       | 80                         | 450                               | 510     | 96                               | 225                                   | Connectors                  | L219-3080030FV0C00 |
|   | 4000K       | 80                         | 500                               | 560     | 105                              | 225                                   | Connectors                  | L219-4080030FV0C00 |

**Notes for Table 1:**

1. Lumileds maintains a tolerance of  $\pm 2$  on CRI measurements.
2. Lumileds maintains a tolerance of  $\pm 7.5\%$  on luminous flux measurements.
3. Supply should be capable of providing 45mA per 96mm segment or 6 LEDs in series.
4. Cuttable options feature pre-tinned solder terminals and comes in 19.2m continuous reel.

## Electrical and Thermal Characteristics

Table 2. Electrical and thermal characteristics for LUXEON XF-3014 CV at 24V, specified current,  $T_j=50^{\circ}\text{C}$ .

| PART NUMBER        | TYPICAL INPUT VOLTAGE (V) <sup>[1]</sup> | TEMPERATURE COEFFICIENT OF OUTPUT CURRENT <sup>[2]</sup> (%/ $^{\circ}\text{C}$ ) | THERMAL RESISTANCE <sup>[3]</sup> ( $^{\circ}\text{C}/\text{W}$ ) |   |
|--------------------|--|---|---|---|
|                    |  |   | JUNCTION TO SOLDER JOINT <sup>[4]</sup> , $R\theta_{j-c}$         | SOLDER JOINT TO HEAT SINK <sup>[5]</sup> , $R\theta_{c-HS}$ |
| L219-xxxxxxFV0000  | 24                                       | -0.2  | 40  | 30  |
| L219-xxxx0xxFV0C00 | 24                                       | -0.2  | 40  | 30  |

**Notes for Table 2:**

1. See Figure 2 for light output vs. input voltage characteristics.
2. Per constant current regulator.
3.  $T_c$  is measurement point next to LED. See AB208 for details.
4.  $R\theta_{j-c}$  specified from LED junction to  $T_c$  (solder joint). Measured with flex strip laminated onto aluminum plate.
5.  $R\theta_{c-HS}$  specified from  $T_c$  to heat-sink. Measured with flex strip laminated on aluminum plate.

# Absolute Maximum Ratings

Table 3. Absolute maximum ratings for LUXEON XF-3014 CV.

| PARAMETER  | MAXIMUM PERFORMANCE  |
|--|--|
| Maximum Supply Voltage <sup>[1]</sup>                | 32V for L219-xxxxC06FV0000<br>27V for L219-xxxx006FV0C00<br>27V for L219-xxxx030FV0C00 |
| LED Junction Temperature <sup>[2]</sup> (DC & Pulse) | 100°C  |
| ESD Sensitivity (ANSI/ESDA/JEDEC JS-001-2012)        | IEC 61000-4-2 HBM Level 2 (±4/4 kV contact/air discharge)                              |
| Operating Temperature at Tc point <sup>[3]</sup>     | -40°C to 85°C  |
| Operating Temperature at Tc1 point <sup>[4]</sup>    | -40°C to 105°C   |
| Flex Substrate Temperature                           | 105°C  |
| Storage Temperature                                  | <30°C <65%RH for ≤1 year   |
| UL Recognition                                       | LUXEON XF-3014 CV UL recognized for Class 2 drivers only                               |
| Reverse Voltage (V <sub>reverse</sub> )              | LUXEON LEDs are not designed to be driven in reverse bias                              |

**Notes for Table 3:**

1. For full current operation supply should be capable of at least 19V and 45mA per 6 LEDs segment (96mm).
2. Proper current derating must be observed to maintain the junction temperature below the maximum allowable junction temperature.
3. Measured at Tc point next to LED. See AB208 for details.
4. Measured at Tc1 point next to Constant Current Regulator.

## Characteristic Curves

### Spectral Power Distribution Characteristics



Figure 1: Typical normalized power vs. wavelength for LUXEON 3014 at 60mA, T<sub>j</sub>=25°C.

## Light Output Characteristics



Figure 2: Typical light output vs. input voltage for LUXEON XF-3014 CV at 4000K, 80CRI,  $T_j=50^\circ\text{C}$ .

## Efficacy Characteristics



Figure 3: Typical efficacy vs. input voltage for LUXEON XF-3014 CV at 4000K, 80CRI,  $T_j=50^\circ\text{C}$ .

## Radiation Pattern Characteristics



Figure 4: Typical radiation pattern for LUXEON 3014 at 60mA,  $T_j=25^\circ\text{C}$ .

## Color Bin Definition

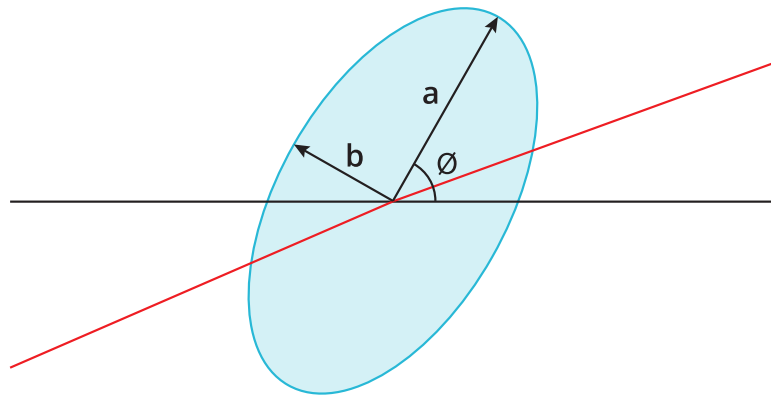


Figure 5: 3-step MacAdam ellipse illustration for Table 4.

Table 4. 3-step MacAdam ellipse color bin definitions for LUXEON XF-3014 CV at 24V, specified current,  $T_j=50^\circ\text{C}$ .

| NOMINAL CCT | COLOR SPACE                   | CENTER POINT (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°                           |
| 3000K       | Single 3-step MacAdam Ellipse | (0.4338, 0.4030)      | 0.00834       | 0.00408       | 53.22°                           |
| 4000K       | Single 3-step MacAdam Ellipse | (0.3818, 0.3797)      | 0.00670       | 0.00533       | 53.72°                           |

**Notes for Table 4:**

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

# Mechanical Dimensions



Figure 6a: Mechanical dimensions for L219-xxxxC06FV0000.

**Notes for Figure 6a:**

1. Drawings are not to scale.
2. All dimensions are in millimeters.





Figure 6b: Mechanical dimensions for L219-xxxx006FV0C00.

Notes for Figure 6b:

1. Drawings are not to scale.
2. All dimensions are in millimeters.



Figure 6c: Mechanical dimensions for L219-xxxx030FV0C00.

Notes for Figure 6c:

1. Drawings are not to scale.
2. All dimensions are in millimeters.

# Packaging Information

Table 5. Packaging information for LUXEON XF-3014 CV.

| PART NUMBER        | UNITS PER REEL | UNIT LENGTH (m) | REEL LENGTH (m) | SINGLE PACKAGING INCREMENT (SPI) |
|--------------------|----------------|-----------------|-----------------|----------------------------------|
| L219-xxxxC06FV0000 | 1              | 19.200          | 19.20           | 1 Reel                           |
| L219-xxxx006FV0C00 | 20             | 0.096           | 1.92            | 1 Reel                           |
| L219-xxxx030FV0C00 | 20             | 0.480           | 9.60            | 1 Reel                           |

## Reel Dimensions



Figure 7a: Reel dimensions for L219-xyy006FV0C00.

Table 6. Reel dimension information for Figure 7a.

| ITEMS           | A   | N    | W1       | W3       | C    | B    |
|-----------------|-----|------|----------|----------|------|------|
| DIMENSIONS (mm) | 178 | 59.8 | 12.4     | 13.4     | 13.3 | 2.2  |
| TOLERANCE       | ±2  | ±2   | +2<br>-0 | +3<br>-1 | ±0.5 | ±0.5 |

Notes for Figure 7a:

1. Drawings are not to scale.
2. All dimensions are in millimeters.



Figure 7b: Reel dimensions for L219-xyy030FV0C00 and L219-xyyC06FV0000.

Table 7. Reel dimension information for Figure 7b.

| ITEMS                  | A   | B   | C            | D    | E  | W (max) |
|------------------------|-----|-----|--------------|------|----|---------|
| <b>DIMENSIONS (mm)</b> | 330 | 2.2 | 13.0         | 20.2 | 90 | 12.5    |
| <b>TOLERANCE</b>       | -   | -   | +0.5<br>-0.2 | -    | -  | ±0.5    |

Notes for Figure 7b:

1. Drawings are not to scale.
2. All dimensions are in millimeters.

# About Lumileds

Lumileds is the light engine leader, delivering innovation, quality and reliability.

For 100 years, Lumileds commitment to innovation has helped customers pioneer breakthrough products in the automotive, consumer and illumination markets.

Lumileds is shaping the future of light with our LEDs and automotive lamps, and helping our customers illuminate how people see the world around them.

To learn more about our portfolio of light engines, visit [lumileds.com](http://lumileds.com).



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