

LUXEON Versat 3030 HP CW 150

Industry-leading solutions for exterior automotive lighting

LUXEON Versat is perfect for high-volume assembly where consistency is never compromised. This family of products provides design flexibility, automotive reliability and ease of integration/manufacturing to facilitate simplified system integration for high volume automotive designs. The LUXEON Versat 3030 HP CW 150 LED is designed to meet the needs of exterior automotive front lighting applications. All LUXEON Versat 3030 LEDs are IEC-60810 qualified and cold binned at 25°C.



FEATURES AND BENEFITS

- Optimized package drives efficient light extraction
- Industry standard footprint for simple integration
- Low Z profile simplifies optical design and minimizes design space

PRIMARY APPLICATIONS

- Backup/Reverse
- Daytime Running Lights
- Front Fog
- License Plate

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General Information

Product Test Conditions

LUXEON Versat 3030 HP CW 150 is tested and binned using a 20ms monopulse (MP) at 150mA drive current, case temperature, T_C , of 25°C.

Part Number Nomenclature

Part numbers for LUXEON Versat 3030 HP CW 150 follow the convention below:

A 1 V A – **A B C D E F G H J K M N P**

Where:

- A – designates product segment (A=Automotive)
- 1 – designates product level (1=Level 1)
- V – designates product line/family (V=LUXEON Versat)
- A – designates package size (A=High Performance)
- A B C D** – designates correlated color temperature (5850=White)
- E** – designates binning current (A=150mA)
- F** – open space
- G** – designates generation (1=first generation)
- H** – open space
- J K M N** – designates minimum luminous flux (0058=58 lumens, 0064=64 lumens, etc.)
- P** – designates option code for distribution (1=MPP, 0=SSD, default)

Therefore, the following part number is used for a LUXEON Versat 3030 HP CW 150 with a minimum luminous flux of 58 lumens:

A 1 V A – **5 8 5 0 A 0 1 0 0 0 5 8 0**

Environmental Compliance

Lumileds LLC is committed to providing environmentally friendly products to the solid-state lighting market. LUXEON Versat 3030 HP CW 150 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 selection for LUXEON Versat 3030 HP CW 150 at 20ms MP, 150mA, T_c=25°C.

COLOR	MINIMUM LUMINOUS FLUX ^[1] (lm)	TEST CURRENT (mA)	PART NUMBER
Cool White	0053	150	A1VA-5850A01000530
	0058	150	A1VA-5850A01000580
	0064	150	A1VA-5850A01000640

Notes for Table 1:
1. Lumileds maintains a tolerance of ±6.5% on luminous flux measurements.

Optical Characteristics

Table 2. Typical optical characteristics for LUXEON Versat 3030 HP CW 150 at 20ms MP, 150mA, T_c=25°C.

PART NUMBER	CORRELATED COLOR TEMPERATURE		TOTAL INCLUDED ANGLE ^[1] θ _{0.90V}	VIEWING ANGLE ^[2] 2θ _{1/2}
	MINIMUM	MAXIMUM		
A1VA-5850A010xxx0	5500K	6250K	138°	120°

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. Typical electrical and thermal characteristics for LUXEON Versat 3030 HP CW 150 at 20ms MP, 150mA, T_c=25°C.

PART NUMBER	FORWARD VOLTAGE ^[1] (V _f)		THERMAL RESISTANCE— JUNCTION TO CASE (°C/W)			
			Rθ _{j-c} el ^[2]		Rθ _{j-c} real ^[3]	
	MINIMUM	MAXIMUM	TYPICAL	MAXIMUM	TYPICAL	MAXIMUM
A1VA-5850A010xxx0	2.70	3.49	13.00	20.00	22.00	34.00

Notes for Table 3:
1. Lumileds maintains a tolerance of ±0.06V on forward voltage measurements.
2. Rθ_{j-c} el: Electrical thermal resistance (junction to case).
3. Rθ_{j-c} real: Real thermal resistance (junction to case) with wall plug efficiency included. Reference JESD51-51, JESD51-14, 4.1.3.

Absolute Ratings

Table 4. Absolute ratings for LUXEON Versat 3030 HP CW 150.

PARAMETER	PERFORMANCE
Minimum DC Forward Current	30mA
Maximum DC Forward Current	250mA
Maximum Junction Temperature ^[1]	150°C
Operating Case Temperature at Test Current ^[1]	-40°C to 125°C
Operating Case Temperature at Maximum Current ^[1]	-40°C to 125°C
LED Storage Temperature	-40°C to 130°C
Soldering Temperature	260°C
Allowable Reflow Cycles	3
ESD Sensitivity ^[2]	±8 kV HBM, ±400V MM, ±2kV CDM
Reverse Voltage ($V_{reverse}$)	LUXEON LEDs are not designed to be driven in reverse bias
Autoclave Conditions	121°C at 2 ATM 100% Relative Humidity for 96 Hours Maximum

Notes for Table 4:

1. Proper current derating must be used to maintain junction temperature below the maximum. LUXEON Versat LEDs driven at or above maximum LED case temperature may have shorter lifetime.
2. Measured using human body model (per JESD22 A114), machine model (per JESD22 A115) and charged device model (per JESD22 C101).

JEDEC Moisture Sensitivity

Table 5. Moisture sensitivity levels for LUXEON Versat 3030 HP CW 150.

LEVEL	FLOOR LIFE		STANDARD SOAK REQUIREMENTS	
	TIME	CONDITIONS	TIME	CONDITIONS
1	Unlimited	≤30°C / 25% RH	168 Hours +5 / -0	25°C / 25% RH

Characteristic Curves

Spectral Power Distribution Characteristics

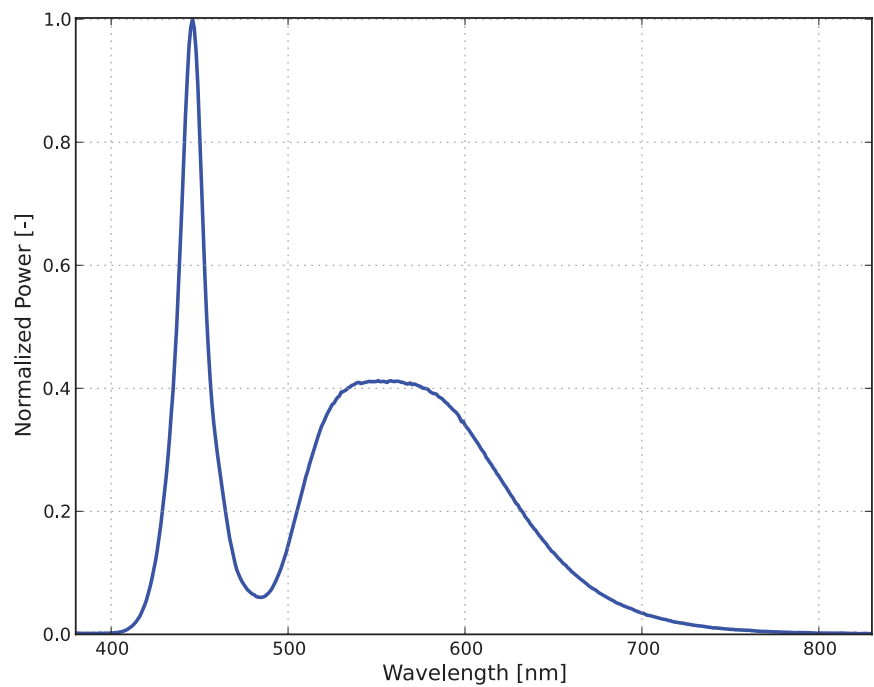


Figure 1. Typical normalized power vs. wavelength for LUXEON Versat 3030 HP CW 150 at 20ms MP, 150mA, $T_c=25^{\circ}\text{C}$.

Light Output Characteristics

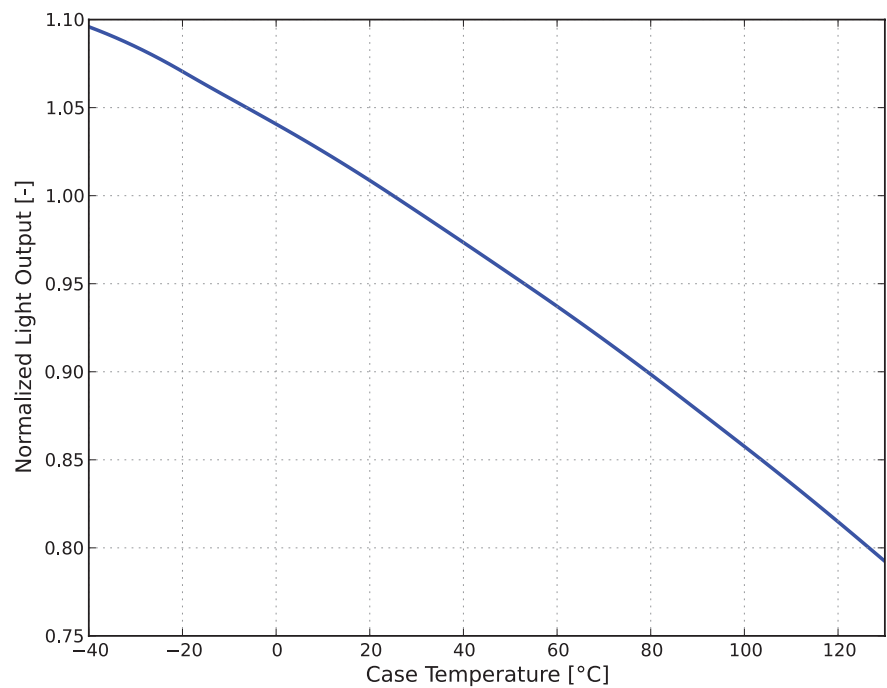


Figure 2. Typical normalized light output vs. case temperature for LUXEON Versat 3030 HP CW 150 at 20ms MP, 150mA.

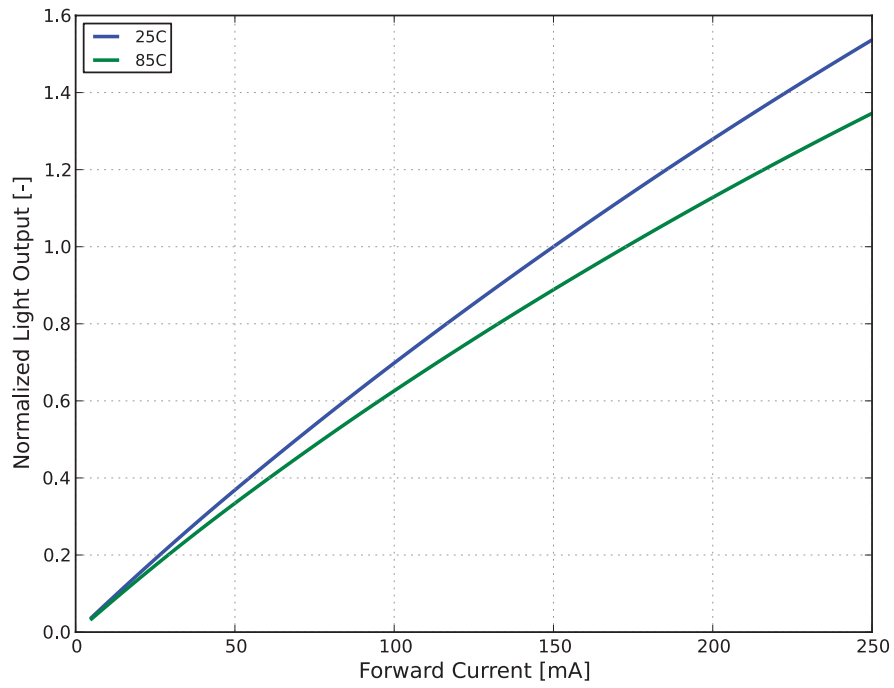


Figure 3. Typical normalized light output vs. forward current for LUXEON Versat 3030 HP CW 150 at $T_c=25^\circ\text{C}$.

Forward Current and Forward Voltage Characteristics

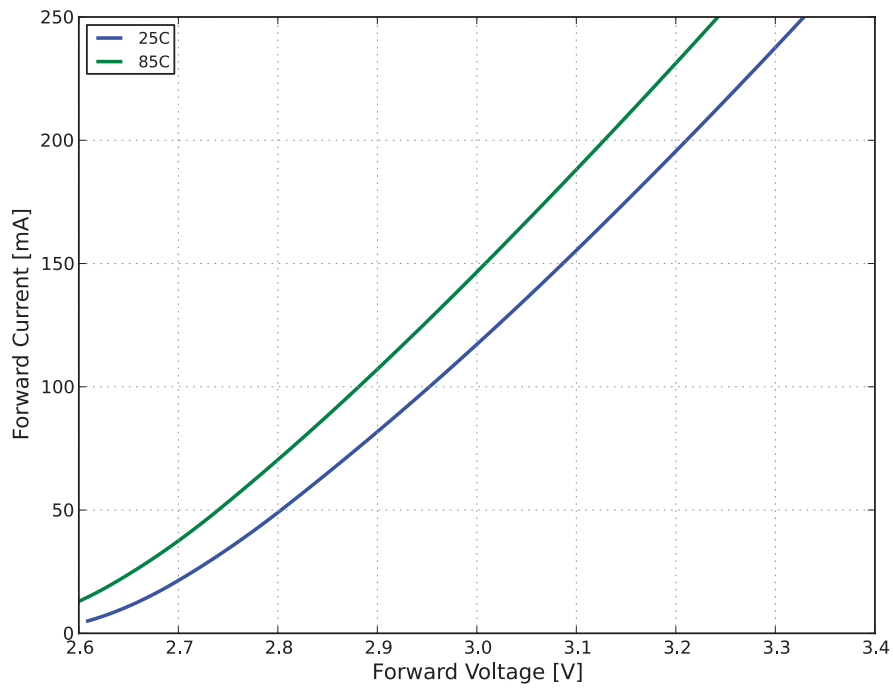


Figure 4. Typical forward current vs. forward voltage for LUXEON Versat 3030 HP CW 150 at $T_c=25^\circ\text{C}$.

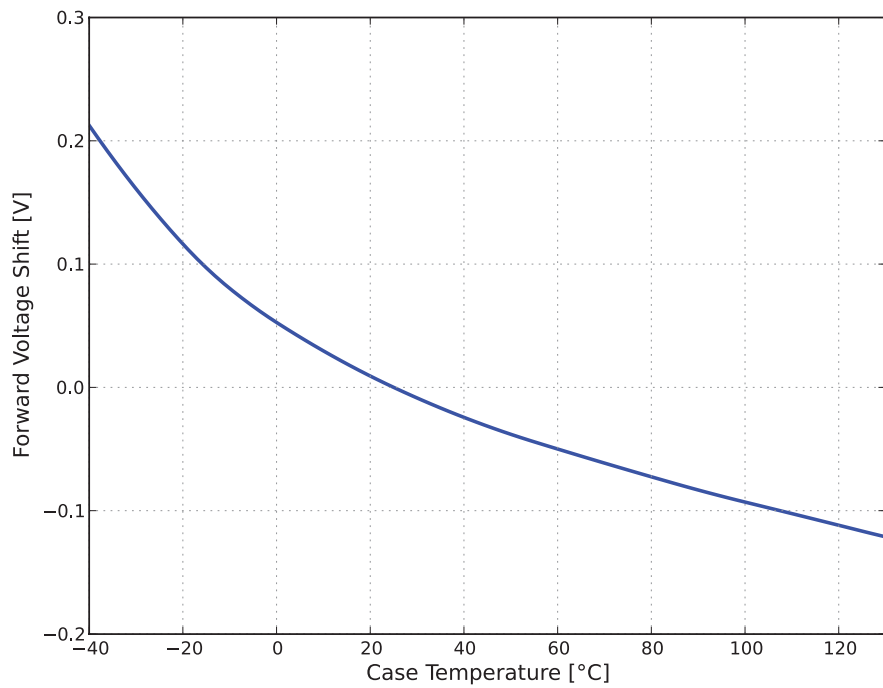


Figure 5. Typical forward voltage shift vs. case temperature for LUXEON Versat 3030 HP CW 150 at 20ms MP, 150mA.

Color Shift Characteristics

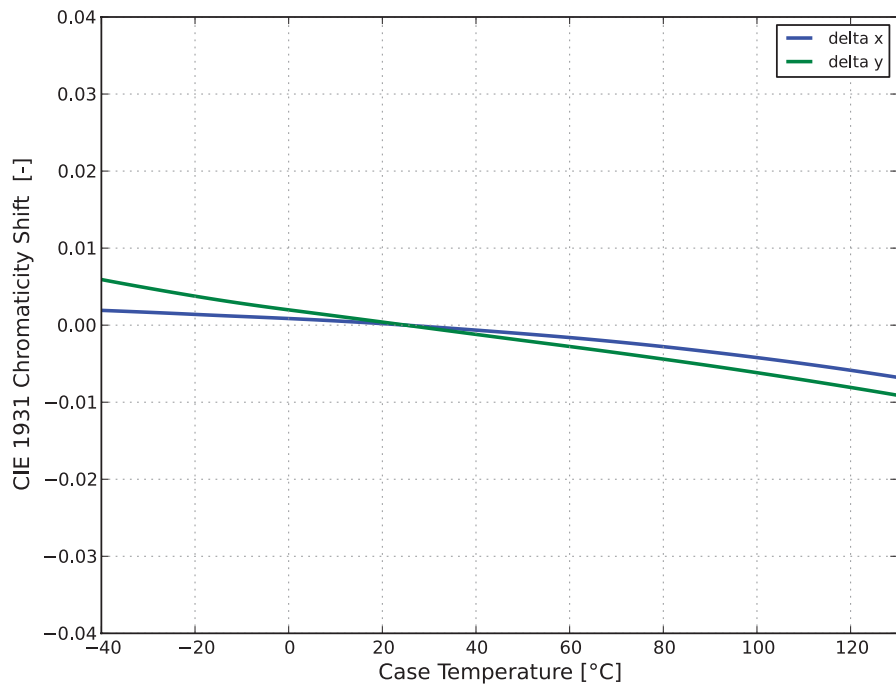


Figure 6. Typical color shift in CIE 1931 x and y coordinates for LUXEON Versat 3030 HP CW 150 at 20ms MP, 150mA.

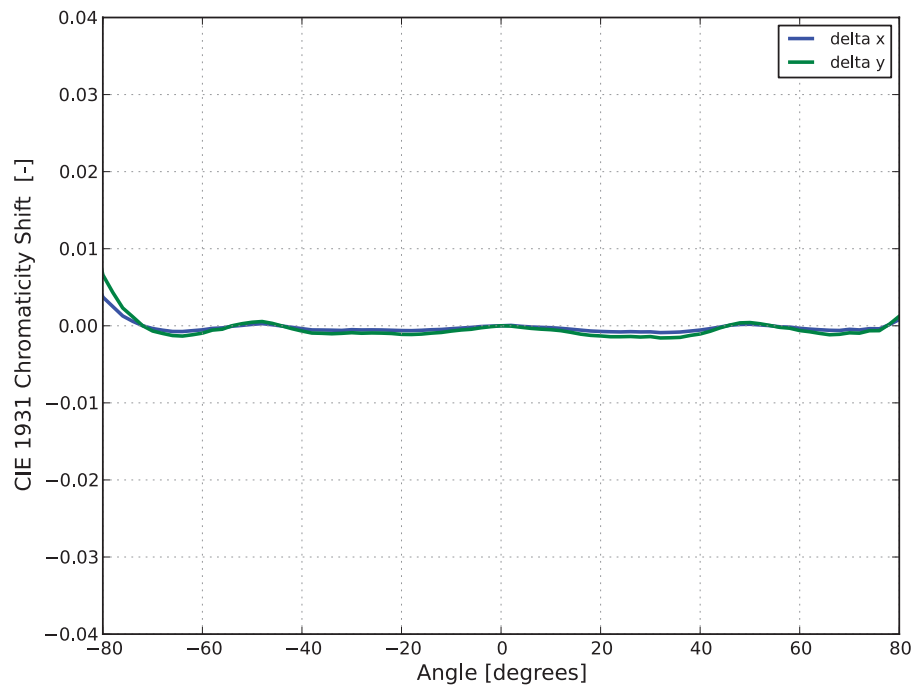


Figure 7. Typical color shift in CIE 1931 x and y coordinates over angle for LUXEON Versat 3030 HP CW 150 at 20ms MP, 150mA.

Radiation Pattern Characteristics

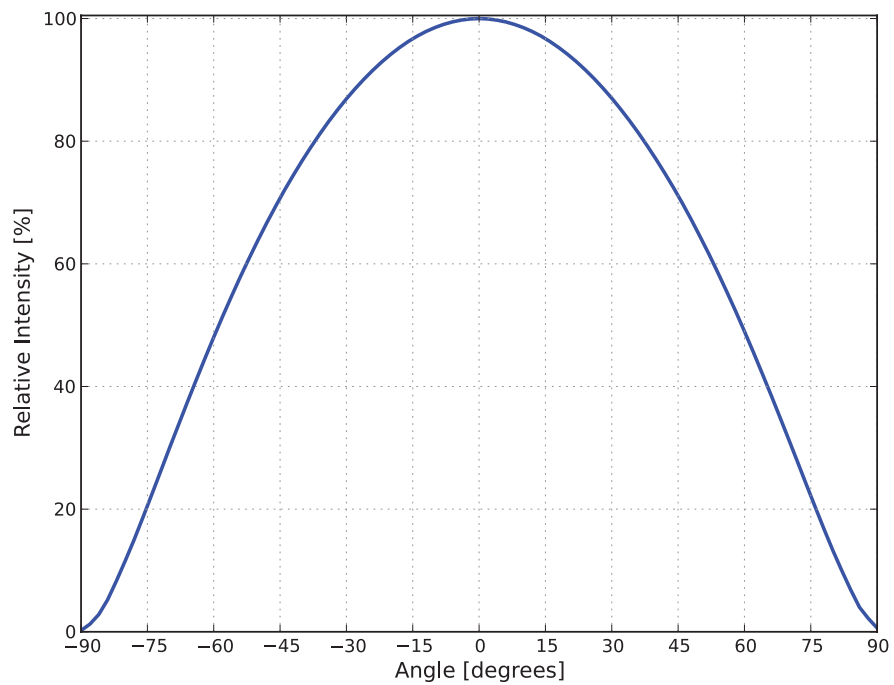


Figure 8. Typical radiation pattern for LUXEON Versat 3030 HP CW 150 at 20ms MP, 150mA, $T_c=25^{\circ}\text{C}$.

Operating Limits Characteristics

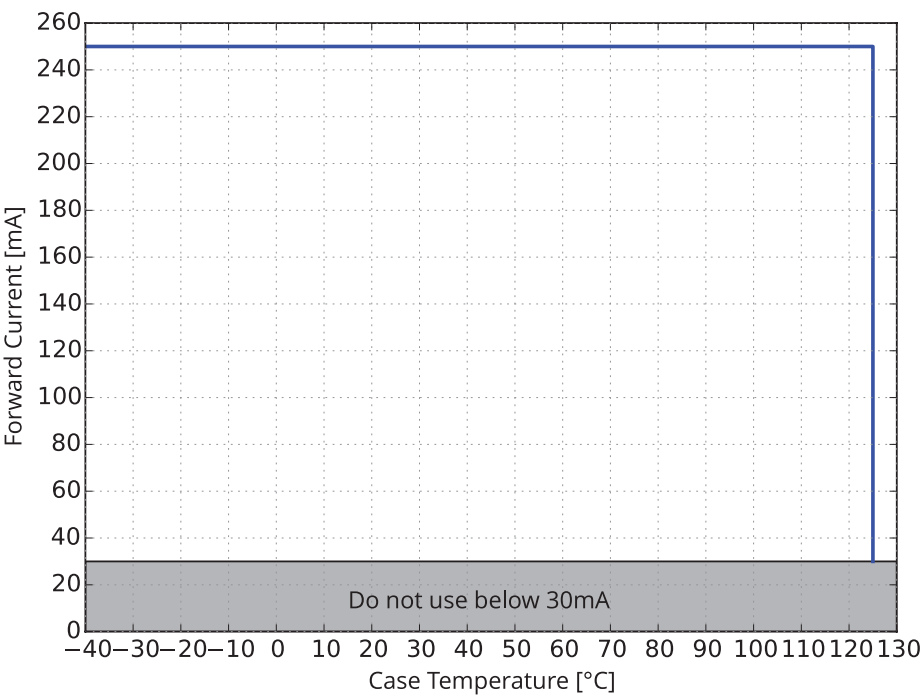


Figure 9. Maximum forward current vs. case temperature for LUXEON Versat 3030 HP CW 150.

Permissible Pulse Handling Characteristics

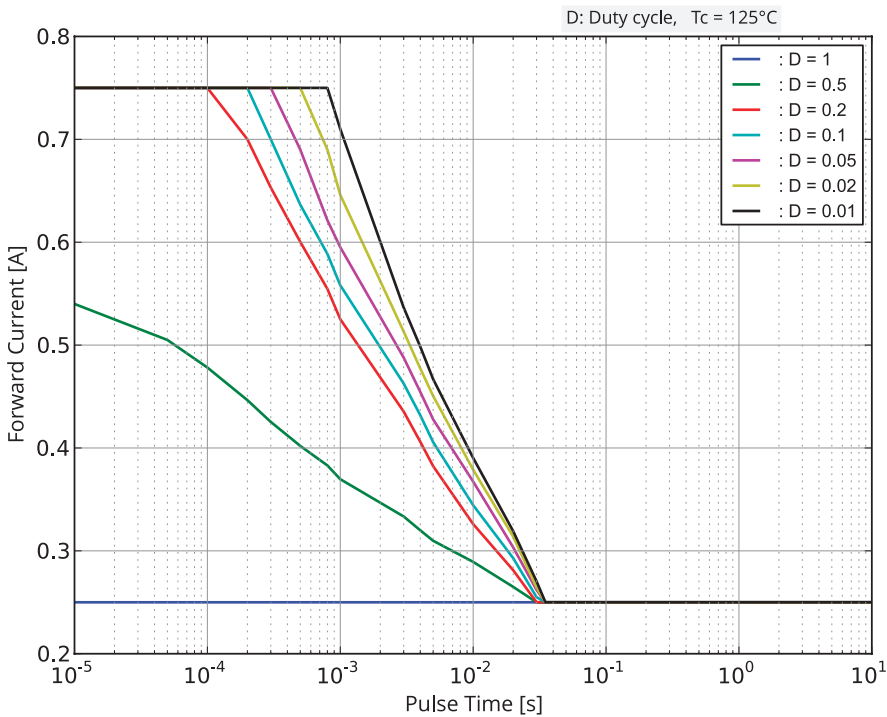


Figure 10. Permissible pulse handling capability for LUXEON Versat 3030 HP CW 150.

Product Bin and Labeling Definitions

Designing with LUXEON Versat 3030 HP CW 150

Flux bins supportable for car programs depend on product color and program start-of-production and end-of-production dates. Flux roadmaps by year and product color are maintained and available from the sales representative. Please contact a local sales representative to request the flux bin range with best supportability for program timing.

Decoding Product Bin Labeling

In the manufacturing of semiconductor products, there are variations in performance around the average values given in the technical datasheets. For this reason, Lumileds bins the LED components for luminous flux or radiometric power, color point, peak or dominant wavelength and forward voltage.

LUXEON Versat 3030 HP CW 150 LEDs are labeled using a 4-digit alphanumeric CAT code following the format below:

A B C D

Where:

- A** – designates luminous flux bin (example: H=58 lumens to 64 lumens)
- B C** – designates color code (1D, 2C, 3B, 4A)
- D** – designates forward voltage bin (example: B=2.94V to 3.20V)

Therefore, a LUXEON Versat 3030 HP CW 150 with a lumen range of 58 to 64, color code of 3B and a forward voltage of 2.94 to 3.20 has the following CAT code:

H 3 B B

Luminous Flux Bins

Table 6 lists the standard photometric luminous flux bins for LUXEON Versat 3030 HP CW 150 emitters. Product availability in a particular bin varies by color and platform start of production date. Contact local sales representative for best supportability of programs.

Table 6. Luminous flux bin definitions for LUXEON Versat 3030 HP CW 150, T_c=25°C.

BIN	LUMINOUS FLUX ^[1] (lm)	
	MINIMUM	MAXIMUM
A	30	33
B	33	36
C	36	40
D	40	44
E	44	48
F	48	53
G	53	58
H	58	64
J	64	70
K	70	76
L	76	82
M	82	88
N	88	94
P	94	100

Notes for Table 6:
1. Lumileds maintains a tolerance of ±6.5% on luminous flux measurements.

Color Codes

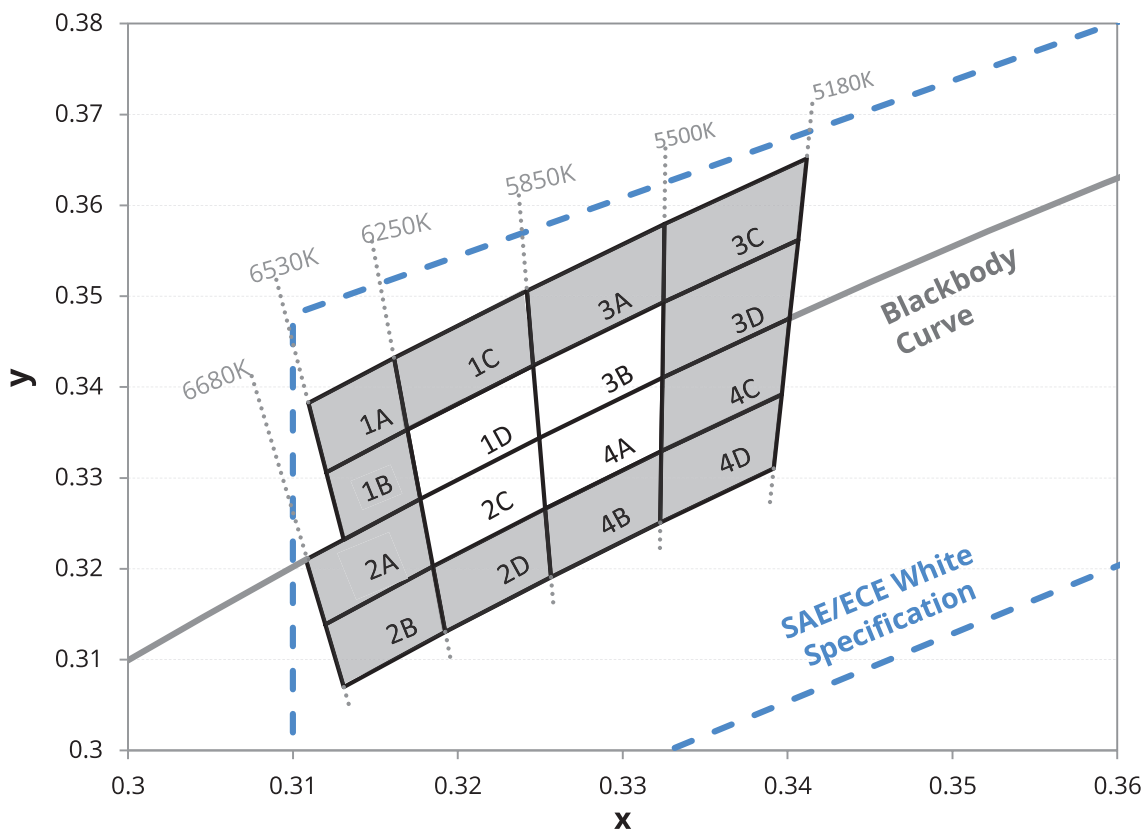


Figure 11. Color bin structure in CIE 1931 color space for LUXEON Versat 3030 HP CW 150.

- Notes for Figure 11:
1. Lumileds supports the following bins for LUXEON Versat 3030 HP CW 150: 1D, 2C, 3B and 4A.
 2. Color bins must be ordered by fine bin designators, shown below.
C3 = 3A, 3B, 3C, 3D
CC = 1D, 2C, 3B, 4A

Color Bin Definitions

Table 7. Color bin definitions for LUXEON Versat 3030 HP CW 150.

COLOR BIN	x	y	6-DIGIT IEC CODE	TYPICAL CCT	COLOR BIN	x	y	6-DIGIT IEC CODE	TYPICAL CCT
2B	0.3120	0.3139	ebvG33	6460K	1B	0.3120	0.3306	fbwA23	6390K
	0.3185	0.3203				0.3169	0.3353		
	0.3192	0.3131				0.3177	0.3277		
	0.3131	0.3070				0.3131	0.3232		
2D	0.3185	0.3203	ebyG33	6050K	1D	0.3169	0.3353	fbyA33	6050K
	0.3253	0.3266				0.3246	0.3424		
	0.3256	0.3191				0.3249	0.3344		
	0.3192	0.3131				0.3177	0.3277		
4B	0.3253	0.3266	ecbG33	5680K	3B	0.3246	0.3424	fcbA33	5680K
	0.3323	0.3329				0.3325	0.3493		
	0.3323	0.3251				0.3324	0.3410		
	0.3256	0.3191				0.3249	0.3344		
4D	0.3323	0.3329	eceG33	5350K	3D	0.3325	0.3493	fceA33	5350K
	0.3396	0.3392				0.3406	0.3562		
	0.3392	0.3310				0.3401	0.3476		
	0.3323	0.3251				0.3324	0.3410		
2A	0.3109	0.3211	ebvD33	6460K	1A	0.3109	0.3382	fbwD23	6390K
	0.3177	0.3277				0.3161	0.3432		
	0.3185	0.3203				0.3169	0.3353		
	0.3120	0.3139				0.3120	0.3306		
2C	0.3177	0.3277	ebyD33	6050K	1C	0.3161	0.3432	fbyD33	6050K
	0.3249	0.3344				0.3242	0.3506		
	0.3253	0.3266				0.3246	0.3424		
	0.3185	0.3203				0.3169	0.3353		
4A	0.3249	0.3344	ecbD33	5680K	3A	0.3242	0.3506	fcbD33	5680K
	0.3324	0.3410				0.3325	0.3579		
	0.3323	0.3329				0.3325	0.3493		
	0.3253	0.3266				0.3246	0.3424		
4C	0.3324	0.3410	eceD33	5350K	3C	0.3325	0.3579	fceD33	5350K
	0.3401	0.3476				0.3412	0.3652		
	0.3396	0.3392				0.3406	0.3562		
	0.3323	0.3329				0.3325	0.3493		

Notes for Table 7:

1. Lumileds maintains a tester tolerance of ± 0.005 on x and y color coordinates.
2. CIE 1931 x and y coordinate frame.

Pocket Tape Dimensions



1. Drawings are not to scale.
2. All dimensions are in millimeters.
3. Ao is the width of pocket, Ko is the depth of pocket, and Bo is the height of pocket.

Technical drawing of a reel of tape showing dimensions and labels:

- ENVIRONMENTAL**: Label pointing to the top edge of the reel.
- CATHODE**: Label pointing to the top terminal of the LED symbol.
- ANODE**: Label pointing to the bottom terminal of the LED symbol.
- LED ELECTRICAL ORIENTATION**: Label pointing to the LED symbol.
- SPROCKET HOLE**: Label pointing to a hole in the tape edge.
- Unit**: Label pointing to a single tape unit.
- DIRECTION OF UNREELING**: Label pointing to the right, indicating the direction of tape movement.
- 1) LEADER LENGTH 400 POCKETS (MINIMUM)**: Label pointing to the leader section of the tape.
- 2) TRAILER LENGTH 160 POCKETS (MINIMUM)**: Label pointing to the trailer section of the tape.
- THRU HOLE**: Label pointing to a hole in the tape.
- CUSTOMER LABEL**: Label pointing to a label on the tape.
- INTERNAL LABEL**: Label pointing to a label on the tape.
- HUB DIA**: Label pointing to the hub diameter.
- Ø 329.0 ±1.0**: Dimension for the outer diameter of the reel.
- 100.0 ±0.5**: Dimension for the hub diameter.
- 0.0**: Dimension for the thickness of the tape.
- 2.1 -0.2**: Dimension for the thickness of the tape.
- Ø 38.0 ±1.0**: Dimension for the inner diameter of the tape.
- Ø 12.3 ±0.5 (3x)**: Dimension for the hole diameter in the tape.
- 16.6 MAX**: Dimension for the maximum width of the tape.

Figure 14. Reel dimensions for LUXEON Versat 3030 HP CW 150.

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

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 safer, better and more beautiful—with light.

To learn more about our lighting solutions, visit lumileds.com.



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