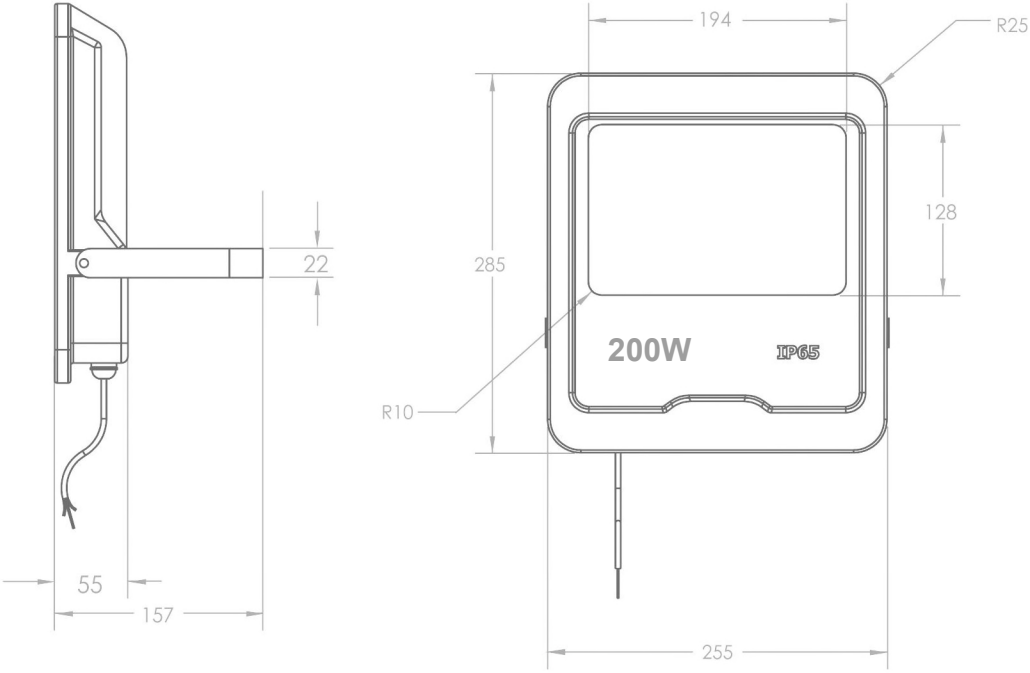


WATT	LUMEN	LED	DRIVER	POWER FACTOR	CCT	CRI
200W	29000	Lumiled	EML	≥ 0.95	6500K	≥80

ELSEWEDY GLOBAL

LUMILEDS

ILLUMINATION

LUXEON 3030 2D Line

High flux, hot-color targeted 6V package

LUXEON 3030 2D is a high flux, hot-color targeted mid power LED. Hot-color targeting ensures that the LEDs are within color target at application conditions—85°C. Using an industry standard packaging of 3.0mm x 3.0mm and 6V surface-mount emitter solution, LUXEON 3030 2D Line comes in all ANSI CCTs and delivers the efficacy and reliability required for both indoor and outdoor illumination markets.

FEATURES AND BENEFITS

- Industry standard package enables drop-in replacement for existing 3030 packages
- 1/9th micro-color binning enables tight color control
- Superior luminous flux at max current for reduced LED count
- Hot-color targeting ensures that color is within ANSI bin at typical application conditions, 85°C
- Enables 3-, 4-, 5-step MacAdam ellipse custom binning kits

PRIMARY APPLICATIONS

- Troffers
- Downlights
- High Bay
- Low Bay
- Floodlights
- More...

Table of Contents

General Product Information

Product Test Conditions

LUXEON 3030 2D Line LEDs are tested with a 20ms monopulse of 120mA at a junction temperature, T_j, of 25°C. Forward voltage and luminous flux are binned at a T_j of 25°C, while color is hot targeted at a T_j of 85°C.

Part Number Nomenclature

Part numbers for LUXEON 3030 2D Line follow the convention below:

L 1 3 0 – **A A B B** 0 0 3 0 0 0 **C** 2 **D**

Where:

- **A A** – designates nominal CCT (22=2200K, 27=2700K, 30=3000K, 35=3500K, 40=4000K, 50=5000K, 57=5700K, 65=6500K)
- **B B** – designates minimum CRI (70=70CRI, 80=80CRI and 90=90CRI)
- **C** – designates package type (W=Round LES, X=Square LES)
- **D** – designates Lumileds internal code (1, 2, 3, etc.=shares the same base part)

Therefore, the following part number is used for a LUXEON 3030 2D (Square LES), 3000K 80CRI:

L 1 3 0 – **3 0 8 0** 0 0 3 0 0 0 **X** 2 **1**

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 3030 2D 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 3030 2D Line at 120mA and 65mA at specified temperature.

PRODUCT	NOMINAL CCT [1]	MINIMUM CRI [2, 3]	LUMINOUS FLUX [2, 3] (lm)		TYPICAL LUMINOUS EFFICACY (lm/W)	TYPICAL LUMINOUS FLUX (lm)	TYPICAL LUMINOUS EFFICACY (lm/W)	PART NUMBER
			MINIMUM	TYPICAL				
			120mA			65mA		
LUXEON 3030 2D (Round LES)	3000K	70	98	117	163	67	180	L130-3070003000W21
	3500K	70	100	119	165	68	183	L130-3570003000W21
	4000K	70	101	122	169	70	188	L130-4070003000W21
	5000K	70	101	122	169	70	188	L130-5070003000W21
	5700K	70	101	122	169	70	188	L130-5770003000W21
	6500K	70	101	122	169	70	188	L130-6570003000W21
	2200K	80	80	94	131	54	145	L130-2280003000W21
	2700K	80	80	107	149	61	165	L130-2780003000W21
	3000K	80	85	109	151	62	168	L130-3080003000W21
	3500K	80	85	113	157	64	174	L130-3580003000W21
	4000K	80	90	118	164	67	182	L130-4080003000W21
	5000K	80	90	118	164	67	182	L130-5080003000W21
	5700K	80	90	118	164	67	182	L130-5780003000W21
	6500K	80	90	118	164	67	182	L130-6580003000W21
	2700K	90	72	90	125	51	138	L130-2790003000W21
	3000K	90	75	92	128	52	142	L130-3090003000W21
	3500K	90	75	95	132	54	146	L130-3590003000W21
	4000K	90	75	98	136	56	151	L130-4090003000W21
	5000K	90	75	98	136	56	151	L130-5090003000W21
LUXEON 3030 2D (Square LES)	3000K	70	110	121	168	69	186	L130-3070003000X21
	3500K	70	111	123	171	70	189	L130-3570003000X21
	4000K	70	117	127	176	72	195	L130-4070003000X21
	5000K	70	117	127	176	72	195	L130-5070003000X21
	5700K	70	117	126	175	72	194	L130-5770003000X21
	6500K	70	111	123	171	70	189	L130-6570003000X21
	2200K	80	89	99	138	56	152	L130-2280003000X21
	2700K	80	101	112	156	64	172	L130-2780003000X21
	3000K	80	102	113	157	64	174	L130-3080003000X21
	3500K	80	107	117	163	67	180	L130-3580003000X21
	4000K	80	110	121	168	69	186	L130-4080003000X21
	5000K	80	110	121	168	69	186	L130-5080003000X21
	5700K	80	110	121	168	69	186	L130-5780003000X21
	6500K	80	110	121	168	69	186	L130-6580003000X21
	2700K	90	86	95	132	54	146	L130-2790003000X21
	3000K	90	88	98	136	56	151	L130-3090003000X21
	3500K	90	91	101	140	58	155	L130-3590003000X21
	4000K	90	94	104	144	59	160	L130-4090003000X21
	5000K	90	94	104	144	59	160	L130-5090003000X21

Notes for Table 1:
1. Correlated color temperature is hot targeted at T_j=85°C.
2. Luminous flux and CRI are specified at T_j=25°. Typical CRI is approximately 2 points higher than the minimum CRI specified, but this is not guaranteed.
3. Lumileds maintains a tolerance of ±2 on CRI and ±7.5% on luminous flux measurements.

Optical Characteristics

Table 2. Optical characteristics for LUXEON 3030 2D Line at 120mA, T_j=25°C.

PART NUMBER	TYPICAL TOTAL INCLUDED ANGLE [1]	TYPICAL VIEWING ANGLE [2]
L130-xxxx003000x21	140°	116°

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 lamp centerline where the luminous intensity is ½ of the peak value.

Electrical and Thermal Characteristics

Table 3. Electrical and thermal characteristics for LUXEON 3030 2D Line at 120mA, T_j=25°C.

PART NUMBER	FORWARD VOLTAGE [1] (V_f)			TYPICAL TEMPERATURE COEFFICIENT OF FORWARD VOLTAGE [2] (mV/°C)	TYPICAL THERMAL RESISTANCE—JUNCTION TO SOLDER PAD (°C/W)
	MINIMUM	TYPICAL	MAXIMUM		
L130-xxxx003000x21	5.8	6.0	6.6	-2.0 to -4.0	12.0

Notes for Table 3:
1. Lumileds maintains a tolerance of ±0.1V on forward voltage measurements.
2. Measured between 25°C and 85°C.

Absolute Maximum Ratings

Table 4. Absolute maximum ratings for LUXEON 3030 2D Line.

PARAMETER	MAXIMUM PERFORMANCE
DC Forward Current [1]	240mA
Peak Pulsed Forward Current [2]	300mA
ESD Sensitivity (ANSI/ESDA/JEDEC JS-001-2012)	Class 2
LED Junction Temperature (DC & Pulse)	125°C
Operating Case Temperature	-40°C to 105°C
LED Storage Temperature	-40°C to 105°C
Soldering Temperature	JEDEC 020D 260°C
Allowable Reflow Cycles	3
Reverse Voltage ($V_{reverse}$) [3]	-5V

Notes for Table 4:
1. 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 25% of the maximum allowable DC forward current
2. Pulse operation with the maximum peak pulse forward current is acceptable if the pulse on time is ≤5ms per cycle and the duty cycle is ≤50%
3. At a maximum reverse current of 10µA. LUXEON 3030 2D LEDs are not designed to be driven in reverse bias.

Characteristics Curves

Spectral Power Distribution Characteristics

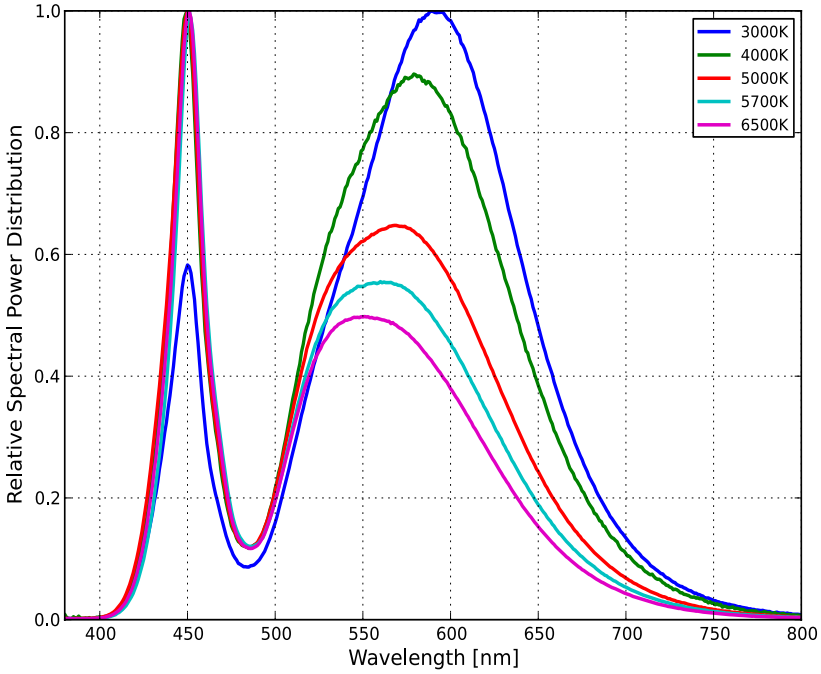


Figure 1a. Typical normalized power vs. wavelength for L130-xx70003000x21 at 120mA, T_j=25°C.

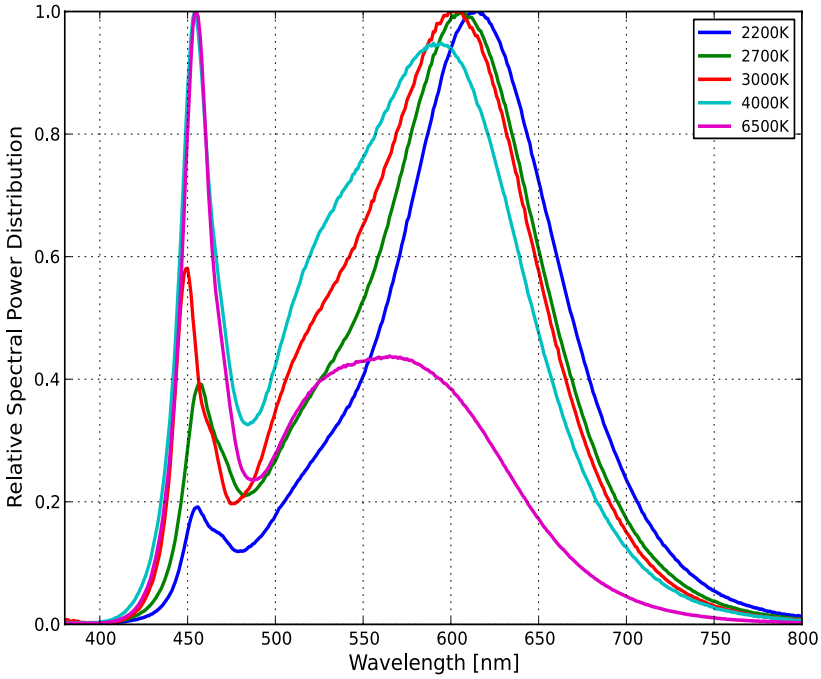


Figure 1b. Typical normalized power vs. wavelength for L130-xx80003000x21 at 120mA, T_j=25°C.

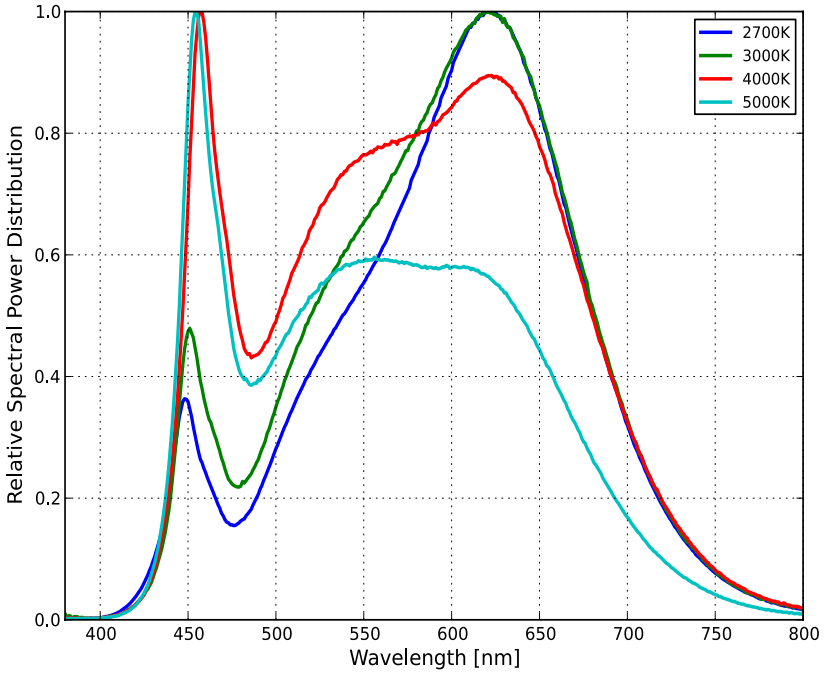


Figure 1c. Typical normalized power vs. wavelength for L130-xx90003000x21 at 120mA, T_j=25°C.

Light Output Characteristics

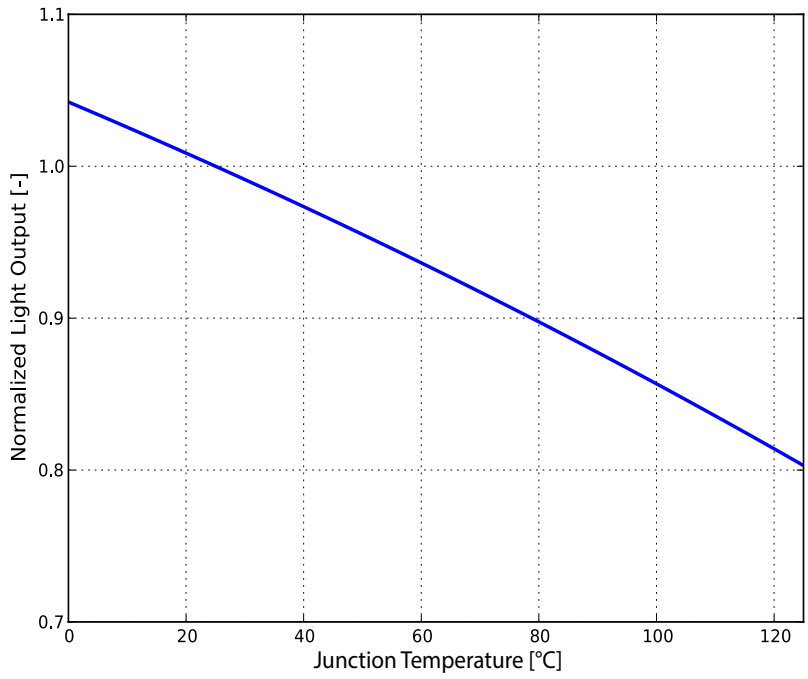
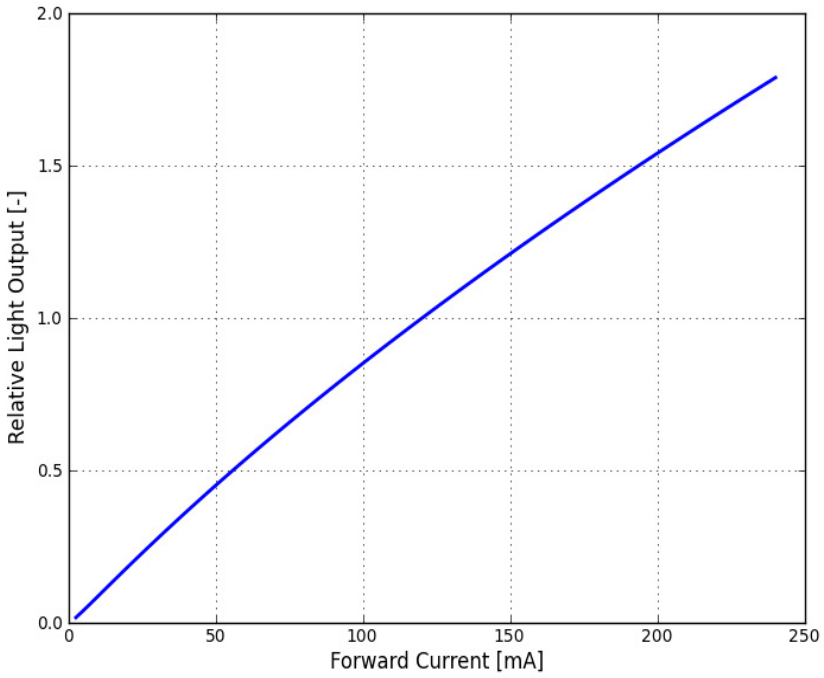


Figure 2. Typical normalized light output vs. junction temperature for L130-xxxx003000x21 at 120mA.



ESTIMATED TYPICAL RATIO COMPARED TO FLUX AT RATED CONDITION 120mA, T_j=25°C.				
60mA	65mA	100mA	150mA	200mA
53%	57%	85%	121%	154%

Figure 3. Typical normalized light output vs. forward current for L130-xxxx003000x21 at T_j=25°C.

Forward Current Characteristics

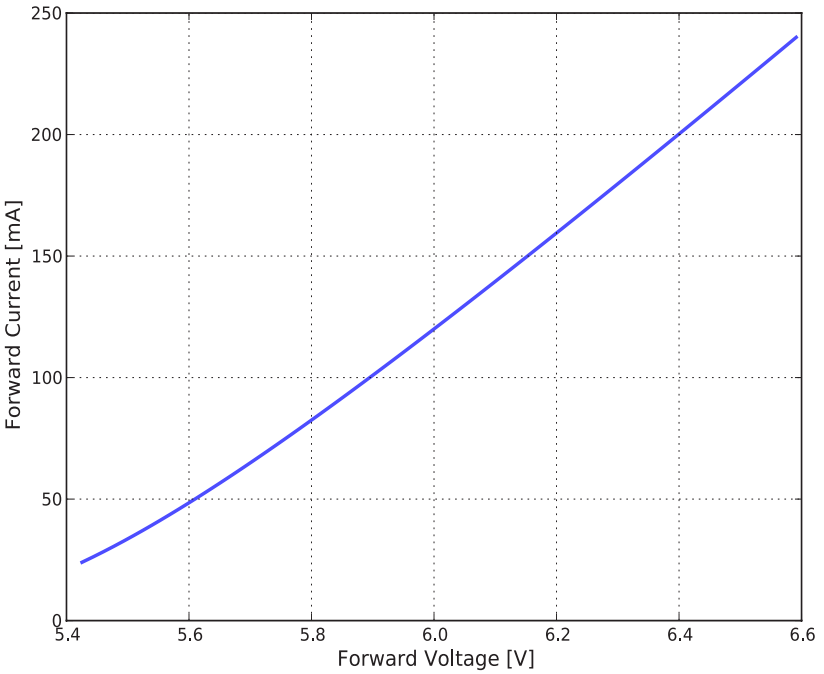


Figure 4. Typical forward current vs. forward voltage for L130-xxxx003000x21 at T_j=25°C.

Radiation Pattern Characteristics

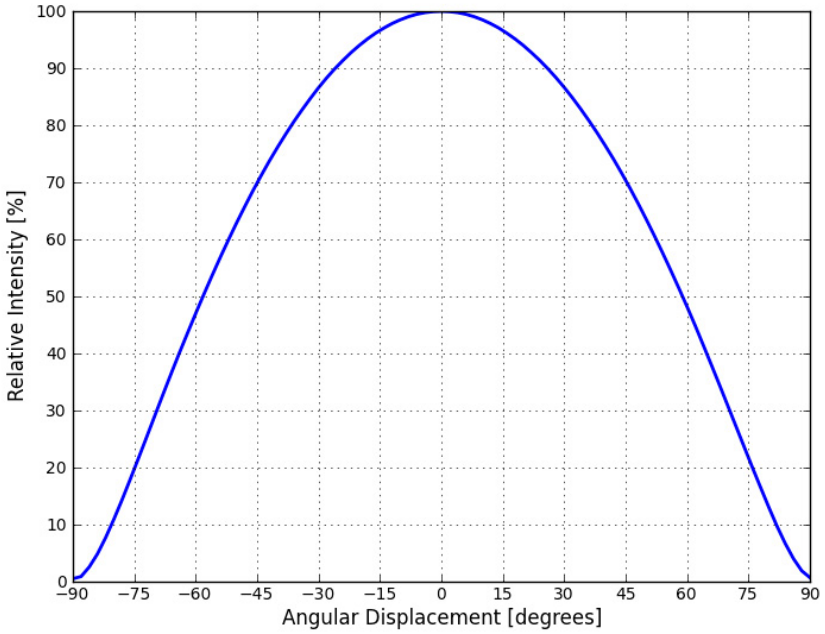


Figure 5. Typical radiation pattern for L130-xxxx003000x21 at 120mA, T_j=25°C.

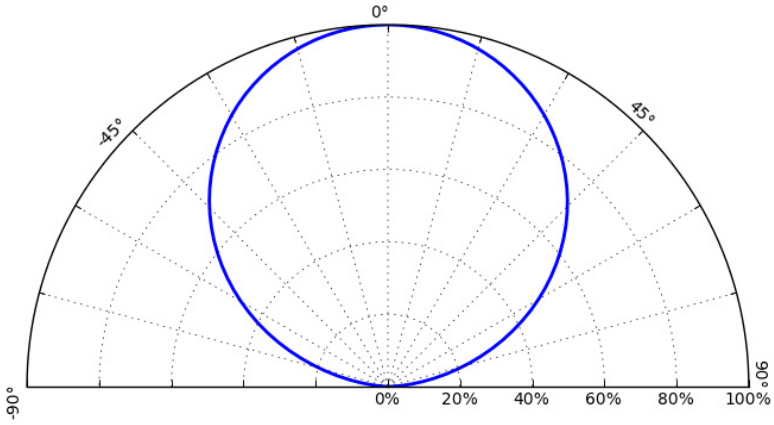


Figure 6. Typical polar radiation pattern for L130-xxxx003000x21 at 120mA, T_j=25°C.

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 3030 2D Line LEDs are labeled using a 4- or 5-digit alphanumeric CAT code following the format below.

A B C D or **A x B C D**

A – designates luminous flux bin (example: H=90 to 95 lm, M=110 to 115 lm)

x – designates Lumileds internal code

B C – designates color bin (example: 7D, 7E, 7F, 7G, 7H, 7J, 7K, 7L or 7M for 3000K parts)

D – designates forward voltage bin (example: G=5.8 to 6.0V, J=6.2 to 6.4V)

Therefore, a LUXEON 3030 2D with a lumen range of 90 to 95 lm, color bin of 7J, and a forward voltage range of 5.8 to 6.0V has the following CAT code:

H 7 J G

Luminous Flux Bins

Table 5 lists the standard luminous flux bins for LUXEON 3030 2D Line 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 5. Luminous flux bin definitions for LUXEON 3030 2D Line at 120mA, T_j=25°C.

BIN	LUMINOUS FLUX [1] (lm)	
	MINIMUM	MAXIMUM
D	70	75
E	75	80
F	80	85
G	85	90
H	90	95
J	95	100
K	100	105
L	105	110
M	110	115
N	115	120
P	120	125
Q	125	130
R	130	135
S	135	140
T	140	145

Notes for Table 5:
1. Lumileds maintains a tolerance of ±7.5% on luminous flux measurements.

Color Bin Definitions

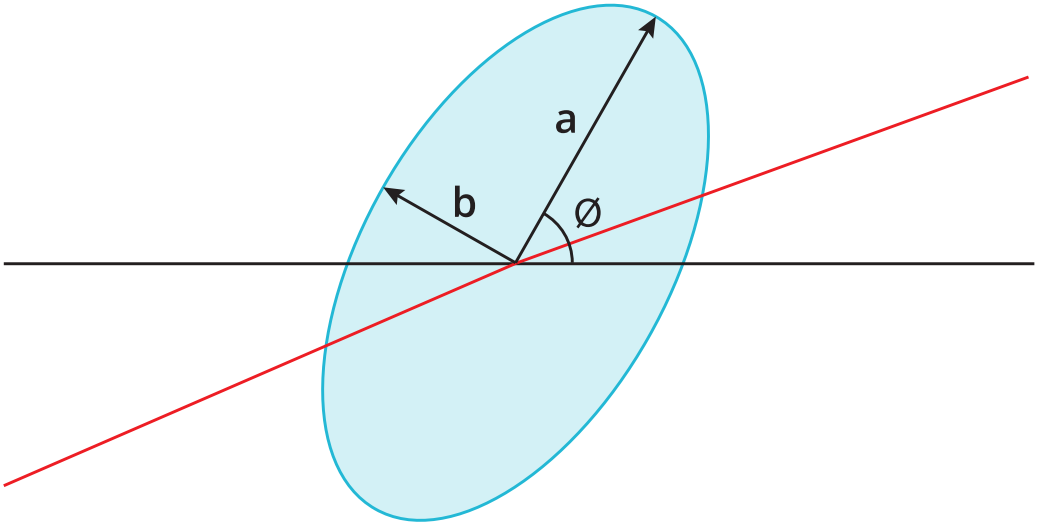


Figure 7. 3- and 5-step MacAdam ellipse illustration for Tables 6a-6h.

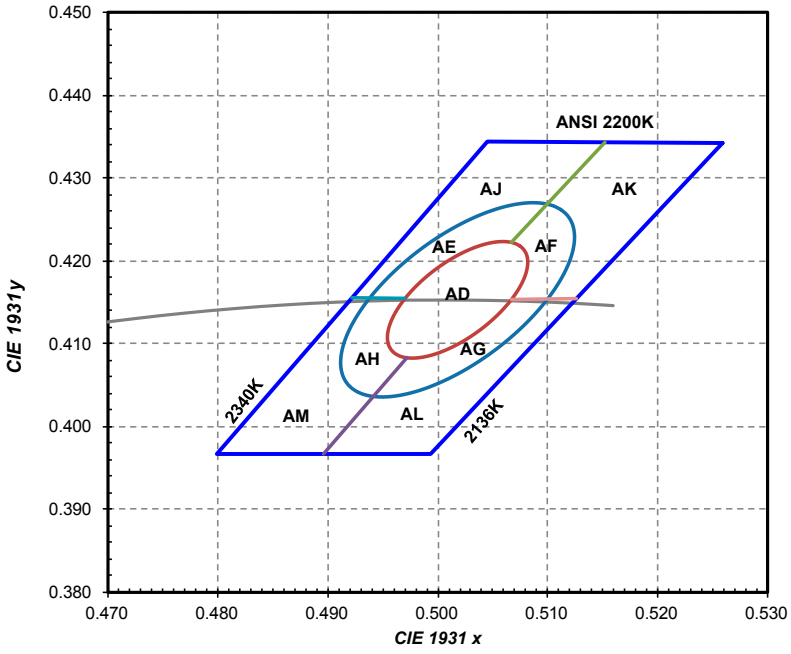


Figure 8a. 1/9th color bin structure for LUXEON 3030 2D Line 2200K, hot-color targeted at 85°C.

Table 6a. 3- and 5-step MacAdam ellipse color bin definitions for L130-22xx003000x21 at test current, hot-color targeted at 85°C.

NOMINAL CCT	COLOR SPACE	CENTER POINT [1] (cx, cy)	MAJOR AXIS, a	MINOR AXIS, b	ELLIPSE ROTATION ANGLE, Θ
2200K	Single 3-step MacAdam ellipse	(0.5018, 0.4153)	0.008625	0.003975	49.27°
2200K	Single 5-step MacAdam ellipse	(0.5018, 0.4153)	0.014375	0.006625	49.27°

Notes for Table 6a:
1. Lumileds maintains a tolerance of ±0.007 on x and y color coordinates in the CIE 1931 color space.

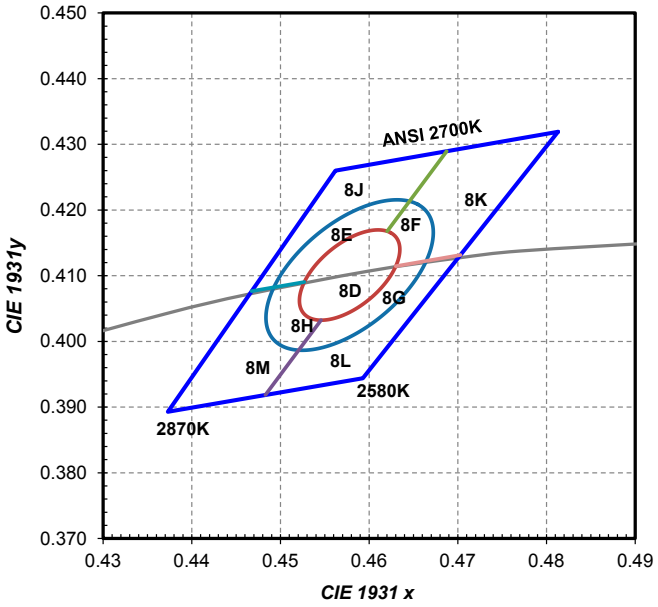


Figure 8b. 1/9th color bin structure for LUXEON 3030 2D Line 2700K, hot-color targeted at 85°C.

Table 6b. 3- and 5-step MacAdam ellipse color bin definitions for L130-27xx003000x21 at test current, hot-color targeted at 85°C.

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°
2700K	Single 5-step MacAdam ellipse	(0.4578, 0.4101)	0.01350	0.00700	53.70°

Notes for Table 6b:
1. Lumileds maintains a tolerance of ±0.007 on x and y color coordinates in the CIE 1931 color space.

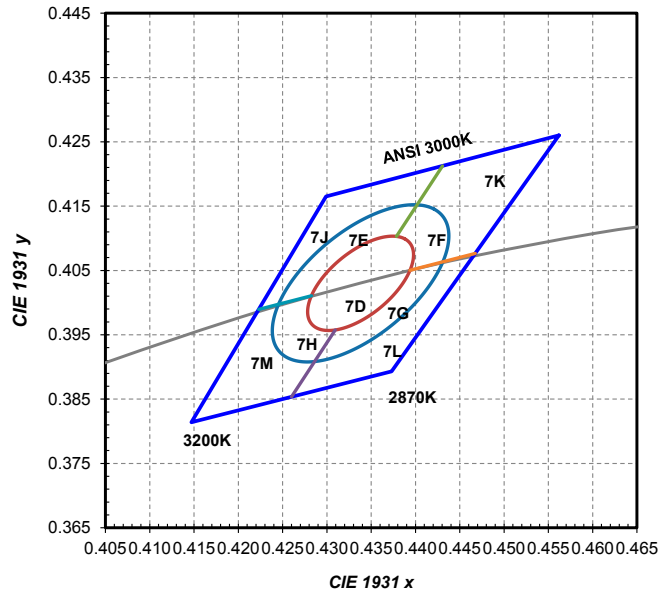


Figure 8c. 1/9th color bin structure for LUXEON 3030 2D Line 3000K, hot-color targeted at 85°C.

Table 6c. 3- and 5-step MacAdam ellipse color bin definitions for L130-30xx003000x21, hot-color targeted at 85°C.

NOMINAL CCT	COLOR SPACE	CENTER POINT [1] (cx, cy)	MAJOR AXIS, a	MINOR AXIS, b	ELLIPSE ROTATION ANGLE, Θ
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°

Notes for Table 6c:
1. Lumileds maintains a tolerance of ±0.007 on x and y color coordinates in the CIE 1931 color space.

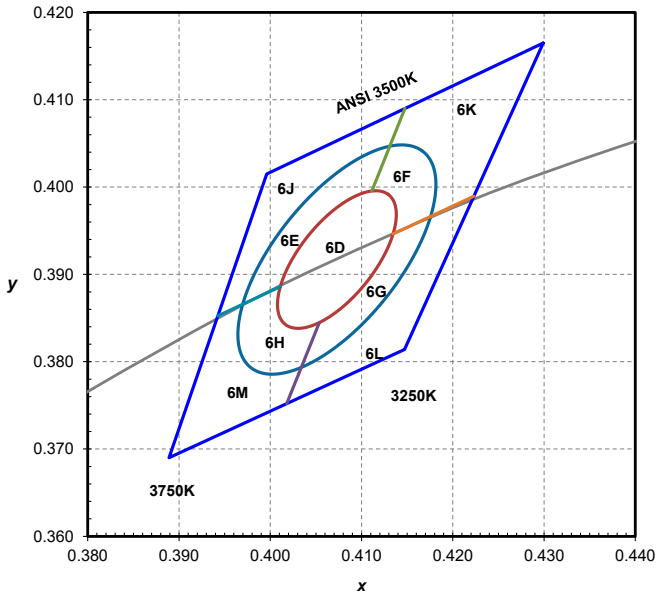


Figure 8d. 1/9th color bin structure for LUXEON 3030 2D Line 3500K, hot-color targeted at 85°C.

Table 6d. 3- and 5-step MacAdam ellipse color bin definitions for L130-35xx003000x21, hot-color targeted at 85°C.

NOMINAL CCT	COLOR SPACE	CENTER POINT [1] (cx, cy)	MAJOR AXIS, a	MINOR AXIS, b	ELLIPSE ROTATION ANGLE, Θ
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°

Notes for Table 6d:
1. Lumileds maintains a tolerance of ±0.007 on x and y color coordinates in the CIE 1931 color space.

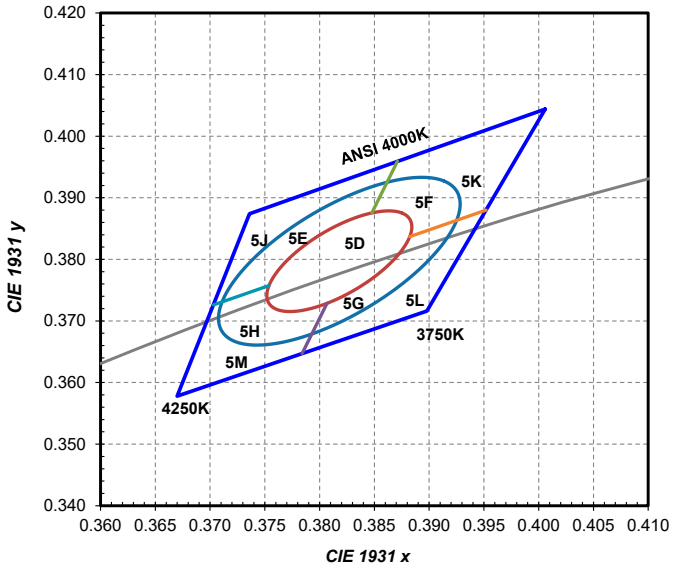


Figure 8e. 1/9th color bin structure for LUXEON 3030 2D Line 4000K, hot-color targeted at 85°C.

Table 6e. 3- and 5-step MacAdam ellipse color bin definitions for L130-40xx003000x21, hot-color targeted at 85°C.

NOMINAL CCT	COLOR SPACE	CENTER POINT [1] (cx, cy)	MAJOR AXIS, a	MINOR AXIS, b	ELLIPSE ROTATION ANGLE, Θ
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°

Notes for Table 6e:
1. Lumileds maintains a tolerance of ±0.007 on x and y color coordinates in the CIE 1931 color space.

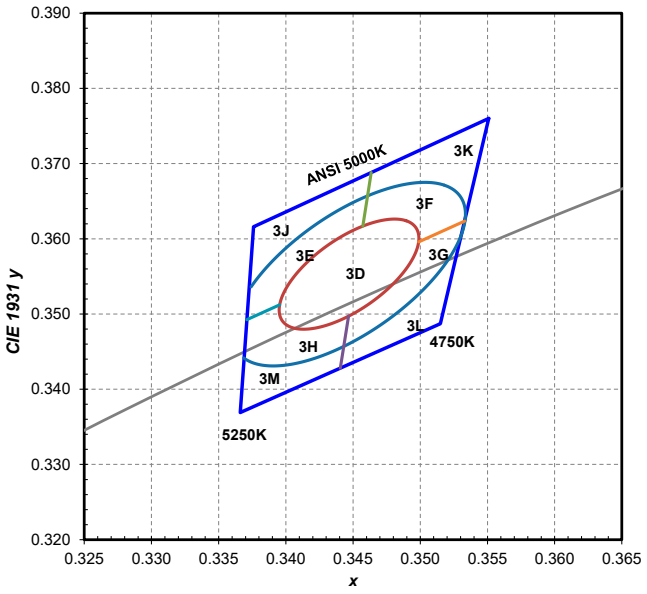


Figure 8f. 1/9th color bin structure for LUXEON 3030 2D Line 5000K, hot-color targeted at 85°C.

Table 6f. 3- and 5-step MacAdam ellipse color bin definitions for L130-50xx003000x21, hot-color targeted at 85°C.

NOMINAL CCT	COLOR SPACE	CENTER POINT [1] (cx, cy)	MAJOR AXIS, a	MINOR AXIS, b	ELLIPSE ROTATION ANGLE, Θ
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°

Notes for Table 6f:
1. Lumileds maintains a tolerance of ±0.007 on x and y color coordinates in the CIE 1931 color space.

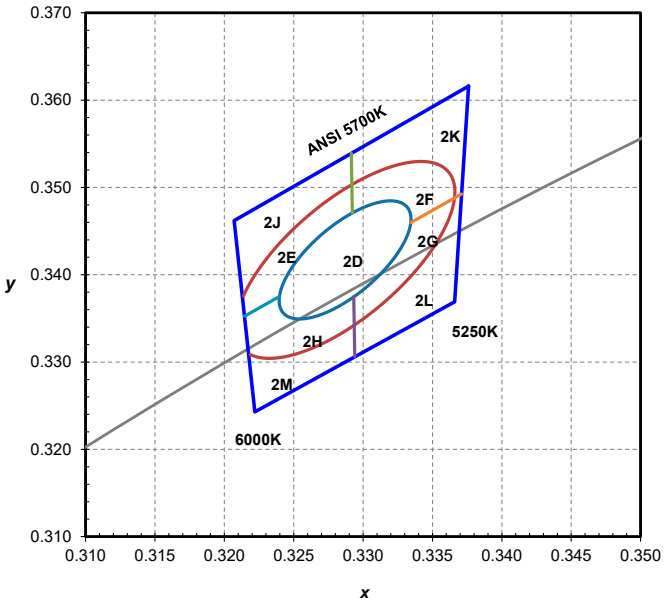


Figure 8g. 1/9th color bin structure for LUXEON 3030 2D Line 5700K, hot-color targeted at 85°C.

Table 6g. 3- and 5-step MacAdam ellipse color bin definitions for L130-57xx003000x21, hot-color targeted at 85°C.

NOMINAL CCT	COLOR SPACE	CENTER POINT [1] (cx, cy)	MAJOR AXIS, a	MINOR AXIS, b	ELLIPSE ROTATION ANGLE, Θ
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°

Notes for Table 6g:
1. Lumileds maintains a tolerance of ±0.007 on x and y color coordinates in the CIE 1931 color space.

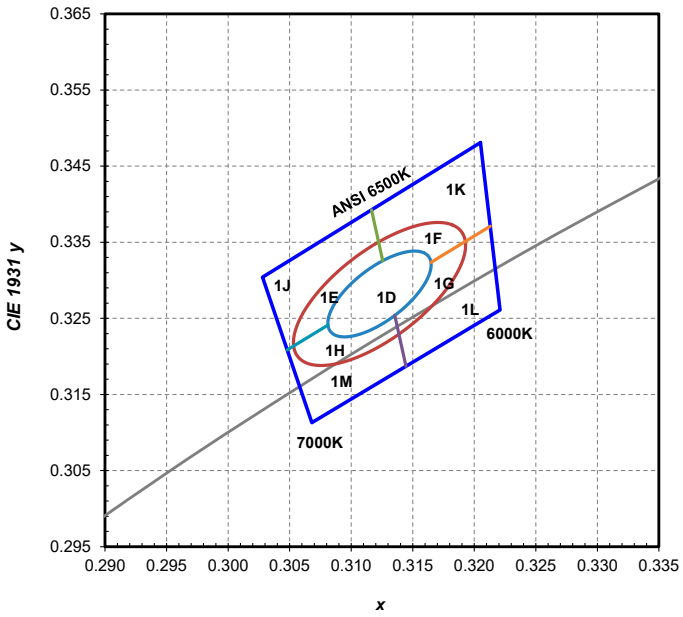


Figure 8h. 1/9th color bin structure for LUXEON 3030 2D Line 6500K, hot-color targeted at 85°C.

Table 6h. 3- and 5-step MacAdam ellipse color bin definitions for L130-65xx003000x21, hot-color targeted at 85°C.

NOMINAL CCT	COLOR SPACE	CENTER POINT [1] (cx, cy)	MAJOR AXIS, a	MINOR AXIS, b	ELLIPSE ROTATION ANGLE, Θ
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°

Notes for Table 6h:
1. Lumileds maintains a tolerance of ±0.007 on x and y color coordinates in the CIE 1931 color space.

Forward Voltage Bins

Table 7. Forward voltage bin definitions for LUXEON 3030 2D Line, T_j=25°C.

BIN	FORWARD VOLTAGE [1] (V_f)	
	MINIMUM	MAXIMUM
G	5.8	6.0
H	6.0	6.2
J	6.2	6.4
K	6.4	6.6

Notes for Table 7:
1. Lumileds maintains a tolerance of ±0.1V on forward voltage measurements.

Mechanical Dimensions

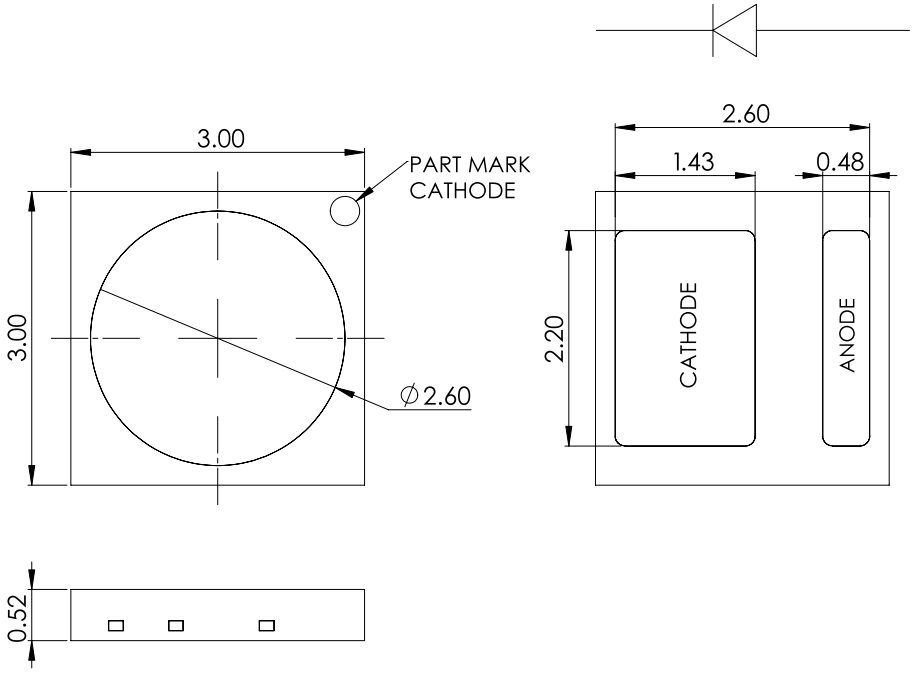


Figure 9a. Mechanical dimensions for LUXEON 3030 2D (Round LES).

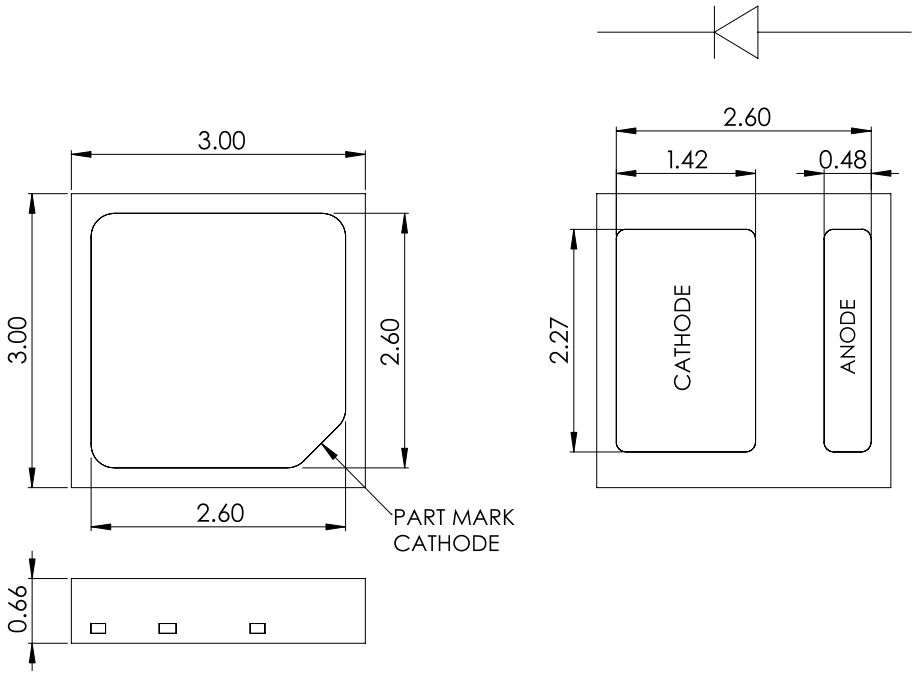


Figure 9b. Mechanical dimensions for LUXEON 3030 2D (Square LES).

Notes for Figures 9a and 9b:
1. Drawings are not to scale.
2. All dimensions are in millimeters.
3. Tolerance: ±0.10mm.

Reflow Soldering Guidelines

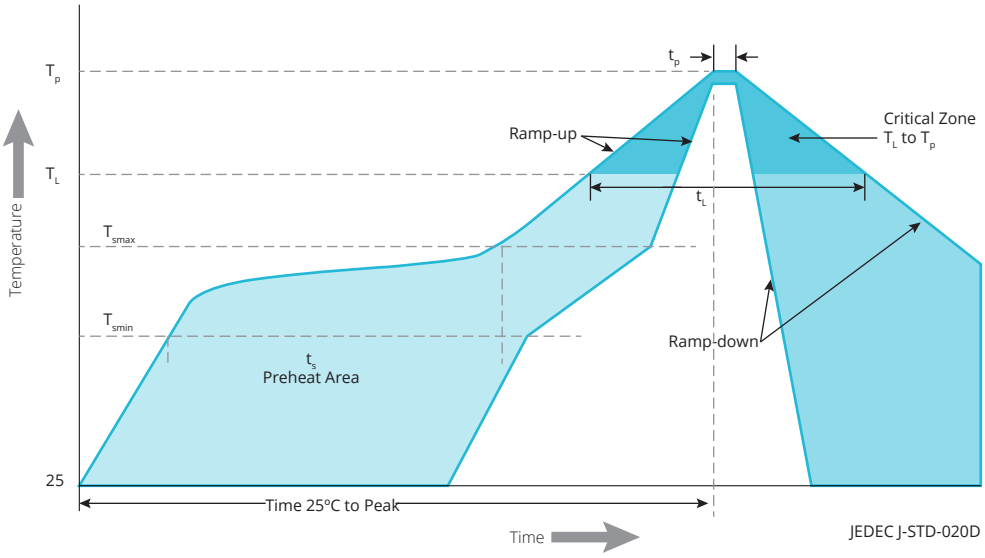


Figure 10. Visualization of the acceptable reflow temperature profile as specified in Table 8.

Table 8. Reflow profile characteristics for LUXEON 3030 2D Line.

PROFILE FEATURE	LEAD FREE ASSEMBLY
Preheat Minimum Temperature (T_{smin})	150°C
Preheat Maximum Temperature (T_{smax})	200°C
Preheat Time (t_{smin} to t_{smax})	60 to 120 seconds
Ramp-Up Rate (T_L to T_p)	3°C / second maximum
Liquidus Temperature (T_L)	217°C
Time Maintained Above Temperature T_L (t_L)	60 to 150 seconds
Peak / Classification Temperature (T_p)	260°C
Time Within 5°C of Actual Temperature (t_p)	20 to 40 seconds
Ramp-Down Rate (T_p to T_L)	6°C / second maximum
Time 25°C to Peak Temperature	8 minutes maximum

Notes for Table 8:
1. All temperatures refer to the application Printed Circuit Board (PCB), measured on the surface adjacent to the package body.

JEDEC Moisture Sensitivity

Table 9. Moisture sensitivity levels for LUXEON 3030 2D Line.

LEVEL	FLOOR LIFE		SOAK REQUIREMENTS STANDARD	
	TIME	CONDITIONS	TIME	CONDITIONS
3	168 Hours	30°C / 60% RH	192 Hours +5 / -0	30°C / 60% RH

Solder Pad Design

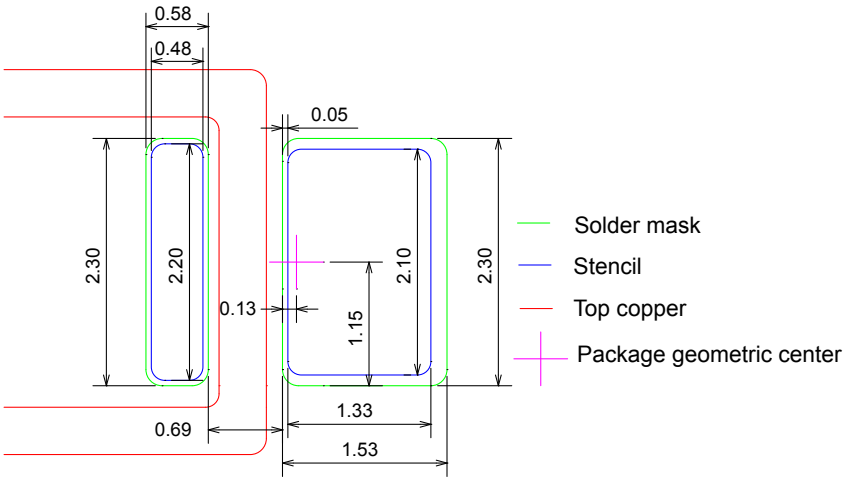


Figure 11. Recommended PCB solder pad layout for LUXEON 3030 2D Line.

Notes for Figure 11:
1. Drawings are not to scale.
2. All dimensions are in millimeters.

Packaging Information

Pocket Tape Dimensions

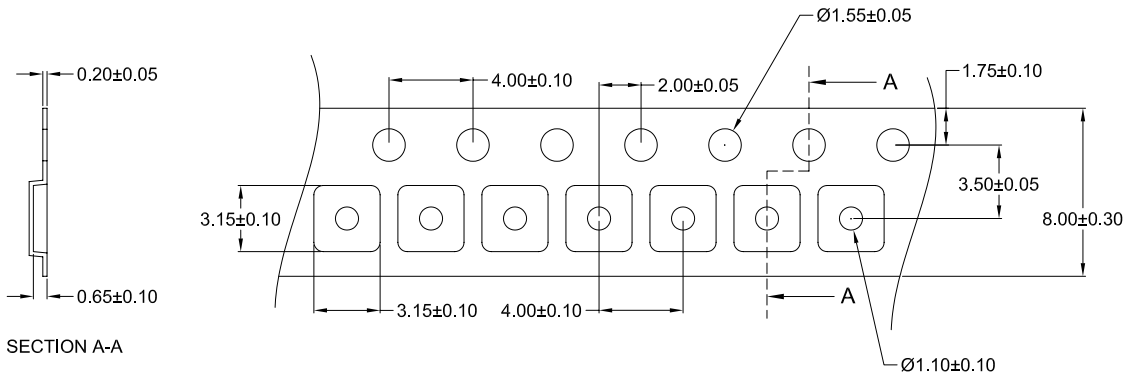


Figure 12a. Pocket tape dimensions for LUXEON 3030 2D (Round LES).

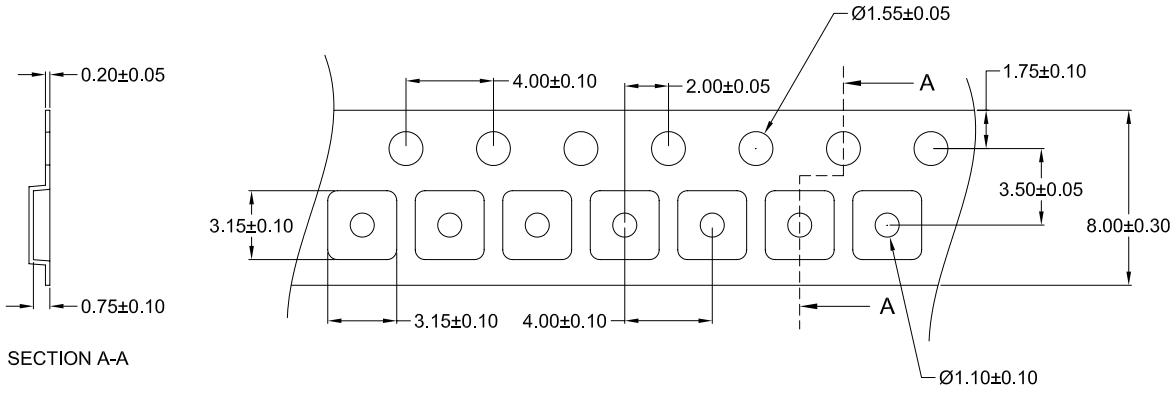


Figure 12b. Pocket tape dimensions for LUXEON 3030 2D (Square LES).

Notes for Figures 12a and 12b:
1. Drawings are not to scale.
2. All dimensions are in millimeters.

Reel Dimensions

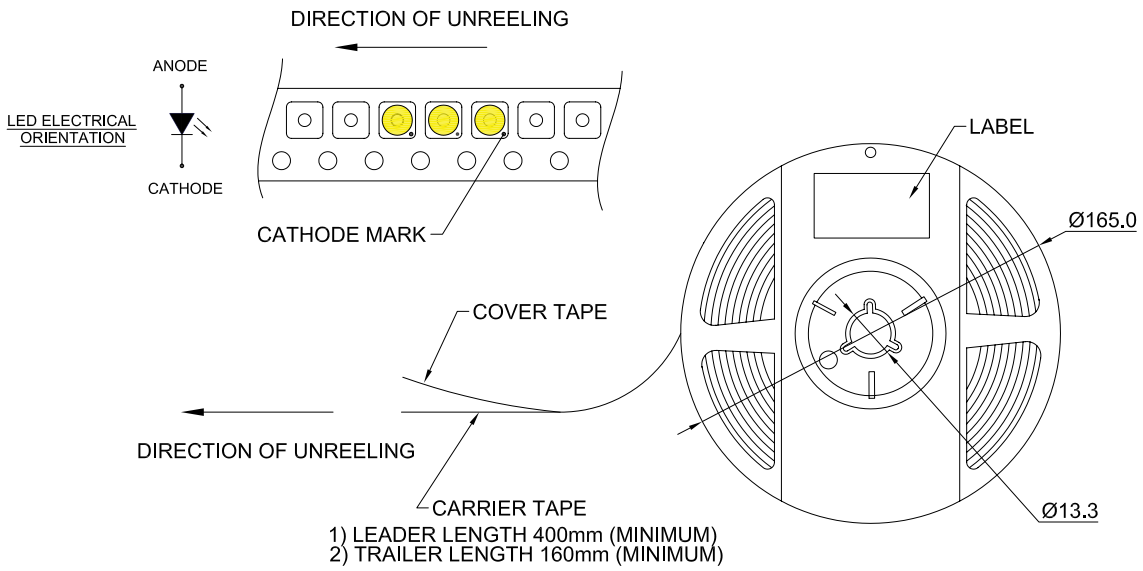


Figure 13a. Reel dimensions for LUXEON 3030 2D (Round LES).

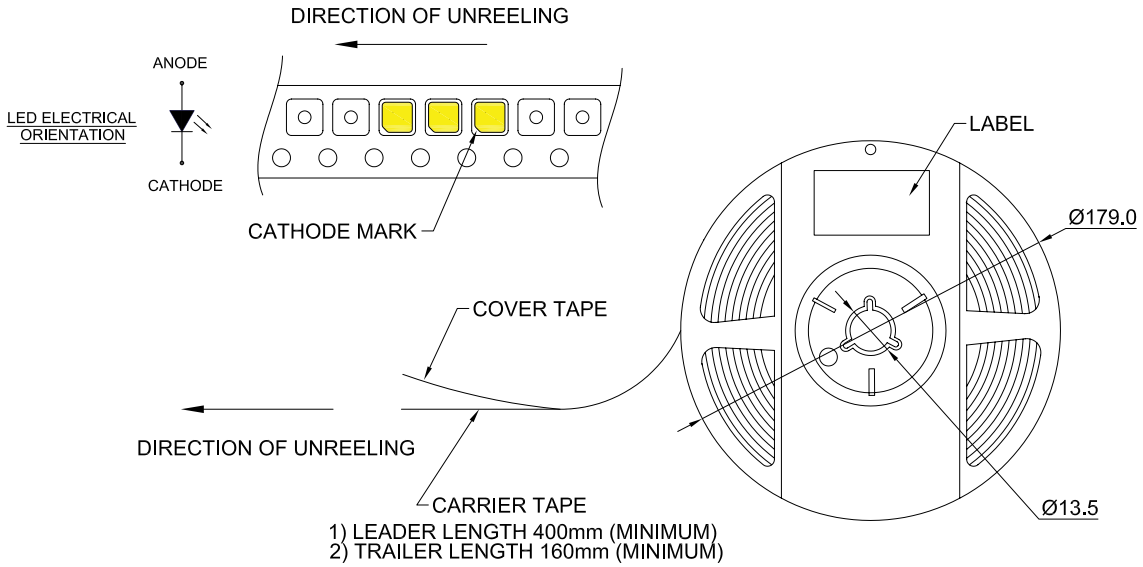


Figure 13b. Reel dimensions for LUXEON 3030 2D (Square LES).

Notes for Figures 13a and 13b:
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 better, safer, more beautiful—with light.

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

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DS207 LUXEON 3030 2D Line
Product Datasheet 20190430

深圳市志和兴业电子有限公司

Shenzhen Zhihe Xingye Electronics Co.,LTD

规　格　书

Product Specifications

产品名称(Product Name): 50WLED Waterproof Led Driver

产品型号（Product Model）： **ZH-HLA-50H**

版　本　号（Ver No）： **VER:1.0**

发行日期（Release Date）： **2015-12-05**

志和核准栏(Zhihe Approved)		
工程师(Engineer)	审核(Audit)	批准(Approval)
客户核准栏(Client Approved)		
工程师(Engineer)	审核(Audit)	批准(Approval)

尊敬的客户:您好!感谢您选择使用志和电源!现提供本公司电源样品和有关规格及图面资料,敬请给予办理测试认定手续,谢谢!!!

Dear customer: hello! Thank you for choosing to use your blog and power! We will provide you with the power sample and the relevant specifications and graphic materials. Please kindly provide us with the test confirmation procedures. Thank you!

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Telephone :**0755-23591578　23591579**

Fax:**0755-23018866**

变更履历表

版本	变更内容描述		日期	操作人
	变更前	变更后		
VER:1.0		初次发行	**2015-12-05**	**XING**

■特性【Characteristic】

●国际通用交流输入范围(高达 277VAC)
The international AC Input range(Max 277VAC)
●具有主动式 PFC 功能
Built-in Active PFC fuction
●保护种类：短路保护，过流保护，过压保护
Protection:Short Circuit,Over-Current,Over-Voltage
●IP65 防护等级，户内户外安装
IP65 waterproof grade,Suitable for Indoor and Outdoor
● 适用于 LED 照明
Used for LED Illumination
● 符合世界照明设备安全标准
Comply with world lighting safety standards
●可应用在干燥，潮湿环境下
It can be used in dry and humid environment.
● 3 年保固（请参照保修声明）
3 Years warranty(Refer to the warranty statement)

■通用描述

ZH-HLA-50H 系列是我公司研发的高功率因数，高效率，高可靠性，高恒流精度的 LED 驱动电源，具有功能齐全，规格多样，可满足更多不同参数需求的客户，同时拥有完善的保护功能，以保证电源和灯具的寿命和可靠性。

ZH-HLA-50H Series were researched and development by our company with high power factor,high efficiency,high reliability LED driver. With complete function and Varied specifications can meet more different parameters requirement form different customs. Still with perfect protection function to ensure the lifetime of driver and lighting.

■型号列表 Item List

型 号 Model	输出电压范围 Output Voltage	输出电流范围 Output range	最大输出功率 Max Power	输出电流精度 Current Tolerance	效率(典型) Efficiency
ZH-HLA-50H-36	25-36V	1.5A	54W	3%	(36V)86%
ZH-HLA-50H-42	30-42V	1.2A	50W	3%	(42V)86%
ZH-HLA-50H-54	40-54V	0.9A	48W	3%	(54V)87%

注：
1. 测试条件：230Vac 输入,满载，25℃。

Test Condition :230Vac Input Full Load 25℃

■技术参数规格 Technical Specifications

【1. 输入参数 Input Parameter】

项目 Items	参数 Parameter	最小值 MIN	典型值 TYP	最大值 MAX	备注 Remarks
1.1	输入电压范围 Vac (AC input range/Vac)	100	110-240	277	额定 110-277Vac (Rated 110-277Vac)
1.2	输入频率范围 HZ (Input Frequency/ HZ)	47Hz	---	63Hz	
1.3	最大输入电流 A (Input Current (Max)/A)	---	---	0.65A	Vin=100Vac
1.4	输入浪涌电流 A (Input inrush current/ A)	---	10A	30A	Vin=230Vac/50Hz,冷启动 (Vim=230Vac/50Hz,Cold start)
1.5	功率因数 PF (Power Factor/ PF)	0.95	0.98	---	Vin=230Vac/50Hz，满载 (Vin=230Vac/50Hz，full load)
1.6	总谐波失真 THD % Total Harmonic (Distortion/THD %)	---	8%	15%	Vin=230Vac/50Hz，满载 (Vin=230Vac/50Hz，full load)

【2. 输出参数选型 Output Parameter List】

ZH-HLA-50H-36

项目 Items	参数 Parameter	最小值 MIN	典型值 TYP	最大值 MAX	备注 Remarks
2.1	输出电流 mA (Output current m A)	1455	1500	1545	典型值±3%, CR 模式 Typical values±3%,CR model
2.2	空载电压 dcV (No load Voltage dcV)	42	45	50	Vin=100-265Vac
2.3	输出电压纹波 MV (Output voltage ripple MV)		2900	3600	Vin=230Vac/50Hz，满载 (Vin=230Vac/50Hz，full load)
2.4	输出负载电压范围 (Output load voltage range)	25	--	36V	Vin=100-265Vac
2.5	效率 (Efficiency)	89%	90%		Vin=230Vac/50Hz，满载 (Vin=230Vac/50Hz，full load)
2.6	输出过冲 (Output Overshoot)			+10%	冷启动输出峰值 (Cold start output peak)

2.7	上升时间 (Rise Time)			500mS	
2.8	开机延迟时间 (Turn-on Delay TIME)		1.5S	2S	100-265Vac

ZH-HLA-50H-42

项目 Items	参数 Parameter	最小值 MIN	典型值 TYP	最大值 MAX	备注 Remarks
2.9	输出电流 mA (Output current m A)	1165	1200	1235	典型值±3%,CR 模式 Typical values±3%,CR model
2.10	空载电压 dcV (No load Voltage dcV)	42	45	50	Vin=100-265Vac
2.11	输出电压纹波 MV (Output voltage ripple MV)		2900	3600	Vin=230Vac/50Hz，满载 (Vin=230Vac/50Hz，full load)
2.12	输出负载电压范围 (Output load voltage range)	30	--	42V	Vin=100-265Vac
2.13	效率 (Efficiency)	89%	90%		Vin=230Vac/50Hz，满载 (Vin=230Vac/50Hz，full load)
2.14	输出过冲 (Output Overshoot)			+10%	冷启动输出峰值 (Cold start output peak)
2.15	上升时间 (Rise Time)			500mS	
2.16	开机延迟时间 (Turn-on Delay TIME)		1.5S	2S	100-265Vac

ZH-HLA-50H-54

项目 Items	参数 Parameter	最小值 MIN	典型值 TYP	最大值 MAX	备注 Remarks
2.17	输出电流 mA (Output current m A)	870	900	930	典型值±3%,CR 模式 Typical values±3%,CR model
2.18	空载电压 dcV (No load Voltage dcV)	56	58	60	Vin=100-265Vac
2.19	输出电压纹波 MV (Output voltage ripple MV)		2900	3600	Vin=230Vac/50Hz，满载 (Vin=230Vac/50Hz，full load)
2.20	输出负载电压范围 (Output load voltage range)	40	--	54V	Vin=100-265Vac
2.21	效率	89%	90%		Vin=230Vac/50Hz，满载

	(Efficiency)				(Vin=230Vac/50Hz，full load)
2.22	输出过冲 (Output Overshoot)			+10%	冷启动输出峰值 (Cold start output peak)
2.23	上升时间 (Rise Time)			500mS	
2.24	开机延迟时间 (Turn-on Delay TIME)		1.5S	2S	100-265Vac

【3. 保护功能 PROTECTION FUNCION】

项目 Items	参数 Parameter	最小值 MIN	典型值 TYP	最大值 MAX	备注 Remarks
3.1	输出过压保护 (Output Over-Voltage Protection)	---	120%	---	过压锁定 （Over voltage recovery）
3.2	短路保护 （Short Circuit Protection）	可长时间短路不损坏，短路功率≤2W Not damaged with long time short circuit ， short circuit power≤1W			可自恢复,打嗝模式 （Return to normal status when output limit current to get right)
3.3	过温保护 （Over Temperature）				-----

【4. 环境要求 Environment Requirement】

项目 Items	参数 Parameter	最小值 MIN	典型值 TYP	最大值 MAX	备注 Remarks
4.1	工作温度 (Operation Temperature)	-40°C	25°C	+60°C	参考降额曲线 （Ref to Derating Curve）
4.2	贮藏温度 (Storage Temperature)	-40°C	25°C	+85°C	
4.3	工作湿度 （Relative Operation Humidity）	10%RH	---	90%RH	
4.4	贮藏湿度 (Relative Storage Humidity）	5%RH	---	95RH	
4.5	海拔高度 （Height Above Sea Level）	-100m	---	3000m	
4.6	冷却方式 （Cooling Method）	空气自然冷却 （Air Cooling）			

【5. 其他要求 Reliability Requirements】

项目 Items	参数 Parameter	最小值 MIN	典型值 TYP	最大值 MAX	备注 Remarks
5.1	老化 （Burn-in）	30-50℃的环境下老化 2 时 （Burn-in for 2hours 30-50℃ ）			裸板 (Bare-board)

		30-50℃的环境下老化 3 时 (Burn-in for 3hours 30-50℃)			电源成品 (Power supply)
5. 2	平均间隔故障时间估算 （MTBF Estimation）	36000hours	---	---	加速实验验证评估获得 (Accelerated experimental verification evaluation)
5. 3	温度系数 (Temperature Coefficient)	-0.02%/℃	---	+0.02%/℃	
5. 4	重量 (Weight)	200g	240g	280g	
5. 5	壳温 (Case Temperature)	---	---	90°C	
5. 6	尺寸 (Size)	107*38*30 (L*W*H)			L±2mm,Other±1mm

【6. 安规标准 Safety Standards &EMI/EMS 标准 EMI/EMS Standards】

10.1 安规要求 Safety Requirements			
项目 Projects		技术指标 (Technical indicators)	备注 (Remark)
介电耐压强度 （Dielectric compressive strength）	输入对输出 （Input to output）	2000Vac/5mA Max/60 seconds	加强绝缘，无击穿、无飞弧 Reinforced insulation,No breakdown、No arcing
	初级对地 （Junior to ground）	2000Vac/5mA Max / 60 seconds	基本绝缘，无击穿、无飞弧 The basic insulation,No breakdown、No arcing
绝缘电阻 （Insulation resistance）	输入对输出 (Input to output)	≥10 MΩ	测试电压：500Vdc The test voltage：500Vdc
接地电阻 （Grounding resistance）		≤0. 1Ω	10A/2min
10.2 EMC 要求 (EMC Ask for)			
项目 Projects		标准/级别 Standard/grade	状态 State
传导 CE （Conduction CE）		EN55015:2006+A1:2007+A2:2009	不符合
辐射 RE （Radiation RE）		EN55015:2006+A1:2007+A2:2009	不符合
浪涌 （Surge）		IEC/EN61000-4-5	LEVEL 4 判据 B（差模 5KV，共模 5KV）

备注：

1. 如未特别说明，所有规格参数均在输入为 230VAC. 25℃环境温度下进行量测。
If not specified otherwise, all specifications and parameters are tested in the input to 230 vac. Under 25 ℃ temperature measurement.
2. 纹波和噪声测量方法：使用一条 0.5² mm 双绞线，同时终端要并联 0.1uf 和 47uf 的电容，在 20MHZ 带宽下进行量测。
Ripple and noise measurement method: using a squared 0.5 mm twisted pair, and a terminal to 0.1 of and 47of

capacitance in parallel, the measurement under 20 MHZ bandwidth

3. 精度：包含设定误差、线性调整率和负载调整率。

TORLERANCE: contains setting error, linear regulation and load regulation.

4.低输入电压情况下需减额输出，具体请参照静态特性曲线图。

While low Input voltage shall be reduced , Need deduction under low input voltage output, Refer to the static characteristic curve.

5.启动时间是在冷机启动下测得，频繁的开关机可能使启动时间有所变化。

Cold-Start time is measured under cold machine start, frequent switch machine could change the start up time .

6. 参考保修声明。

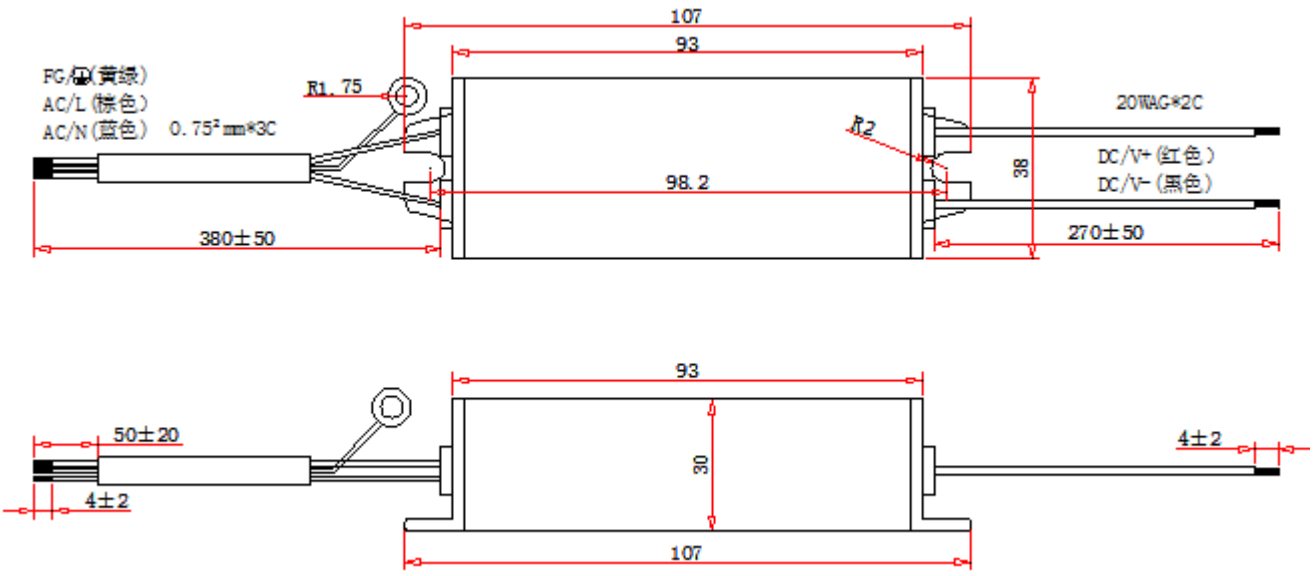
Reference warranty statement

■结构尺寸 Size

Blank:(ZH-HLA-50H*)

注：1.长度公差±2mm，其它尺寸公差±1mm

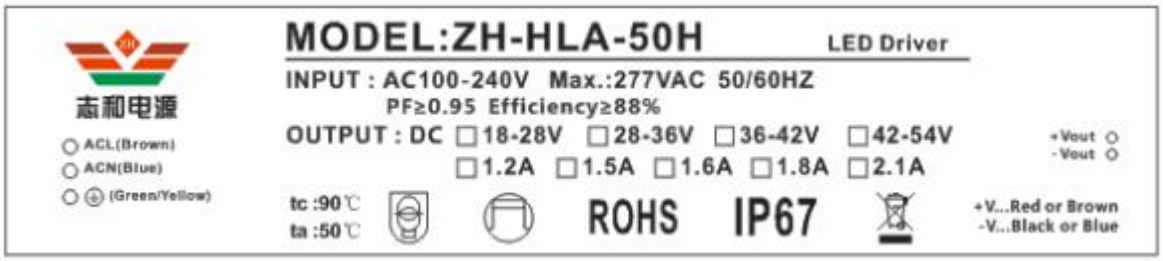
L±2mm,Other±1mm



■标签图档 The label image file

注：标签为激光雕刻于外壳上盖表面（亦可按客户要求设定版面内容，或粘贴纸质标签），S/N 为产品成品生产日期随订单实际生产日期变动

Note:The label is designed for the laser to be carved on the outer surface of the shell (or to set the layout or paste the paper label as required by the customer).S/N changes the production date of the finished product with the actual production date of the order.

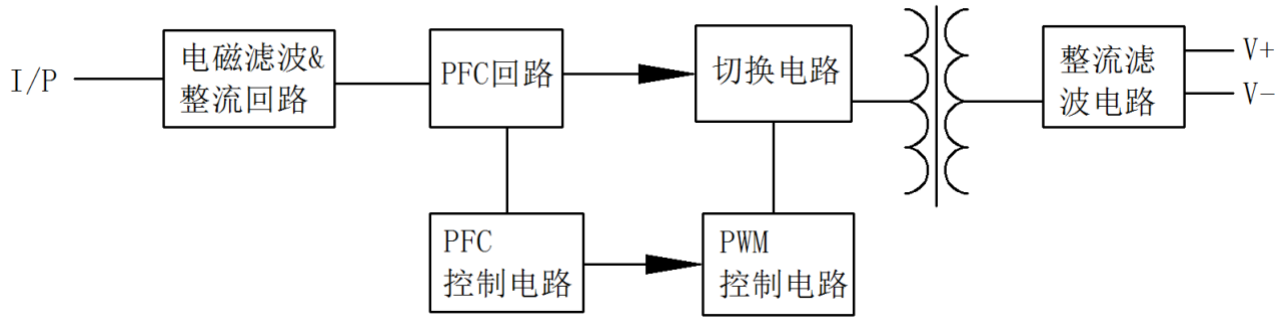


■线材说明 Wire instructions

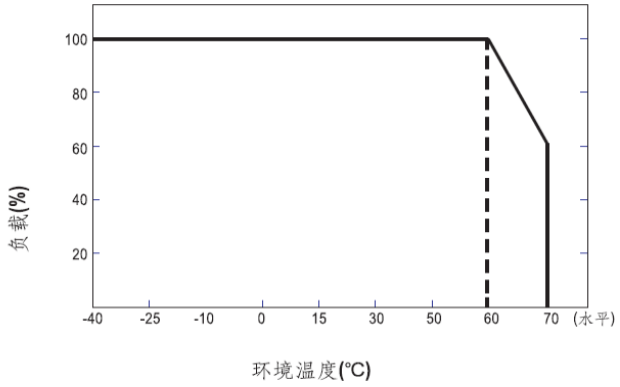
AC 输入线（AC Input wire）	3*1.0² mm，橡胶线，外露线长 38cm（±5cm），其中剥线 4cm（±1mm），上锡 8mm（±2mm）。外露线长 3*1.0² mm,Rubber Thread,The length of exposed wire38m(±5cm) Wire stripping 5.8cm(±5mm）Wicking 8mm(±2mm）。 棕色为 L，蓝色为 N，黄滚绿为 P/E。 Brown as L ,Blue as N ,Yellow and Green as P/E
DC 输出线（DC Output wire）	2*20#，硅胶线，外露线长 27cm（±5cm），上锡 4mm（±2mm）。 2*1.0² mm,silicone line,The length of exposed wire17cm(±5cm) ， Wicking 4mm(±2mm）。 红色为+，黑色为-。 Red as +,Black as -

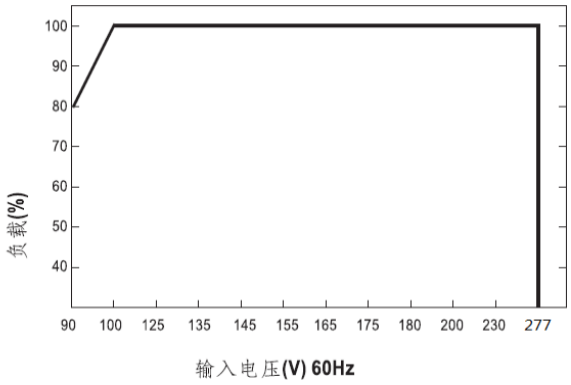
注：线材可按客户要求定制

■电路结构方框图 Block Diagram



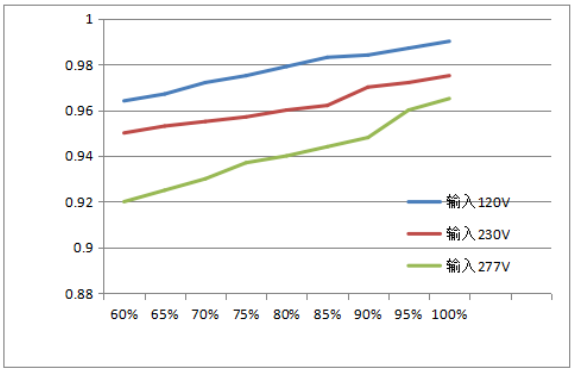
■环境与输入电压减额曲线 Reliability Curve/Static Characteristic



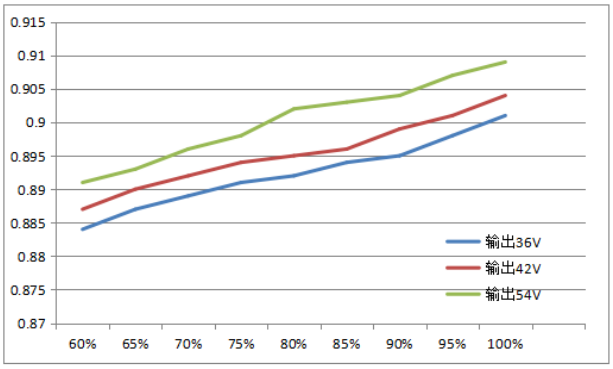


■功率因数特性和效率曲线 Power Factor Characteristic

功率因数与输出功率



输出功率与效率



■LED 模块驱动方式

建议驱动输出端直接连接 LED 光源，不宜在输出端和 LED 光源之间加装其他控制器件。

典型的 LED 电源不是以恒压（CV）模式驱动就是以恒流(CV)模式驱动 LED 光源。志和此款电源既可以在恒压模式驱动 LED，也可以在恒流模式驱动 LED。

LED driver method has two ways .one called directly method another called with led method.

The typical led driver method are constant voltage(cv) model and constant current(cc) model. This ZH power can be worked with constant voltage and constant current too.