Test Report

FL-YE-01W050V144V01-CENTURY-50W-YT2181GTE5





Features

- Wide Input Voltage Range: 100-440 Vac

- High Surge Capability: 4 kV

- High Efficiency: ≥0.91% @ 230Vac

- High PF: 0.957@ 230Vac

- High Reliability with Multiple Protection: open, short, over temperature regulation, current dropping etc.

- High Integration for Low-Cost Design: no VCC cap, no COMP cap, no FB resistor

-Programmable Current Dropping At Both Low Line (e.g. ≤160 Vac) and High Line (e.g. ≥ 290Vac) for Thermal and Reliability Performance

- Easy Manufacturing

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1 Specification

1.1 Input Spec

- Input Voltage: 100-440 Vac
- Input Frequency: 47-63 Hz

1.2 Output Spec

- Tpical Output Voltage: 144V
- Output Current: 310 mA±5%
- LED:24C3B-6VLED

2 Assessment Result

2.1 Behavior of Electricity @ 230Vac

- Efficiency: ≥0.91%@full load
- Power Factor: 95.7%@full load
- THD: 27.89%@full load

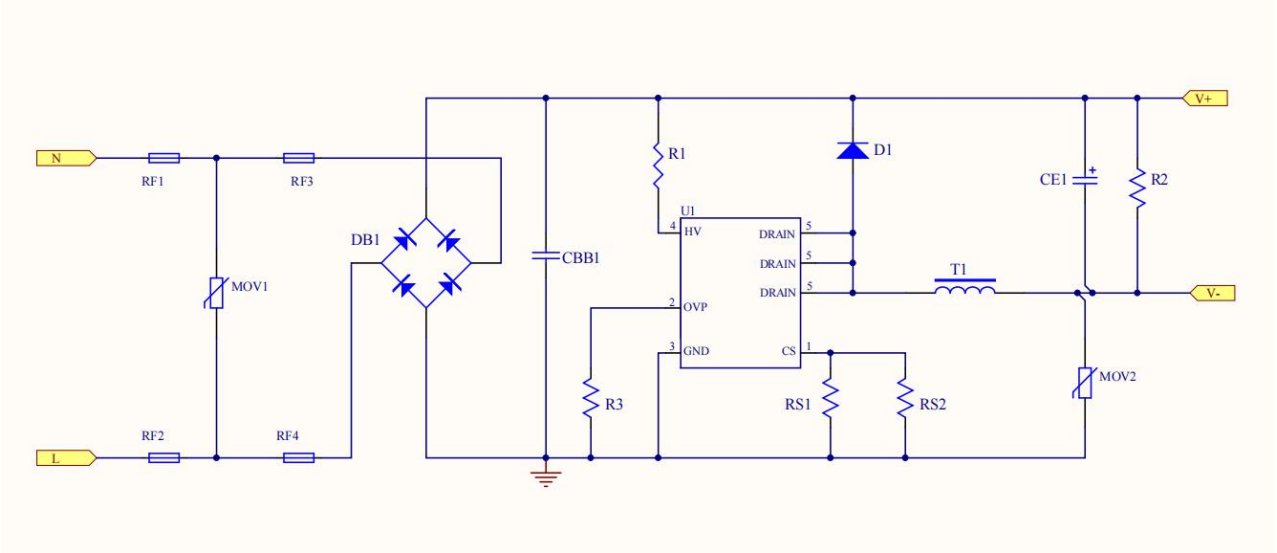
2.2 Defensive Function

-Short Circuit Protection: OK

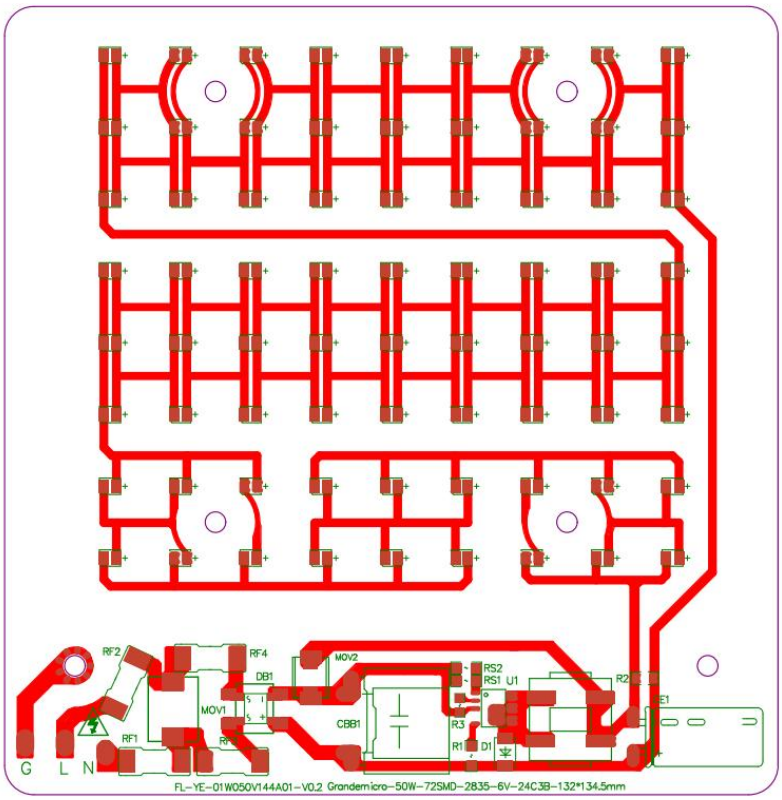
-Surge Level: 4 kV

3 LED Driver

3.1 Schematics



3.2 PCB Layout



3.3 BOM

Type	NO.	Name	Specification Description	Designator	Qty.	Unit
Driver SMD Components	1	MCPCB	MCPCB_FL-YE-01W050V144A01-V0.2_Board size:132*134.5mm_RoHS		1	pcs
	2	SMD LED	LED_SMD2835_1W_6-6.6V_150mA_6500K±510K_Ra80_130-140LM_RoHS		72	pcs
	3	Rectifier Bridge	SMD_ABS210_ABS_1000V_2A_RoHS	DB1	1	PCS
	4	SMD Diode	SMD Diode_ES2J_SMB_600V_2A_RoHS	D1	1	pcs
	5	SMD Resistor	SMD Resistor_1206_20k±5%_RoHS	R1	1	pcs
	6	SMD Resistor	SMD Resistor_1206_220k±5%_RoHS	R2	1	pcs
	7	SMD Resistor	SMD Resistor_1206_1.4Ω±1%_RoHS	RS1	1	pcs
	8	SMD Resistor	SMD Resistor_1206_1.3Ω±1%_RoHS	RS2	1	pcs
	9	SMD IC	SMD IC_YT2181GTE5_ESOP5	U1	1	pcs
	10	SMD fuse resistor	SMD wire-wound resistance_RXF3WS-0411_3WS/350V_5.1Ω±5%_ROHS	RF1,FR2,FR3,FR4	4	pcs
	11	SMD Varistor	SMD Varistor_JQ4032K621G2_4032_RoHS	MOV1	1	PCS
	12	SMD Varistor	SMD Varistor_JQ3225K511G2_3225_RoHS	MOV2	1	PCS
	13	Film capacitor	CBB22_630V_330nF±10%_P=10mm_105℃_Z word molding 2.5mm_ROHS	CBB1	1	pcs
	14	SMD E-Cap	SMD E-CAP_160V_47UF±20%_Φ10*16_Right lying T-type_Passement_RoHS	CE1	1	pcs

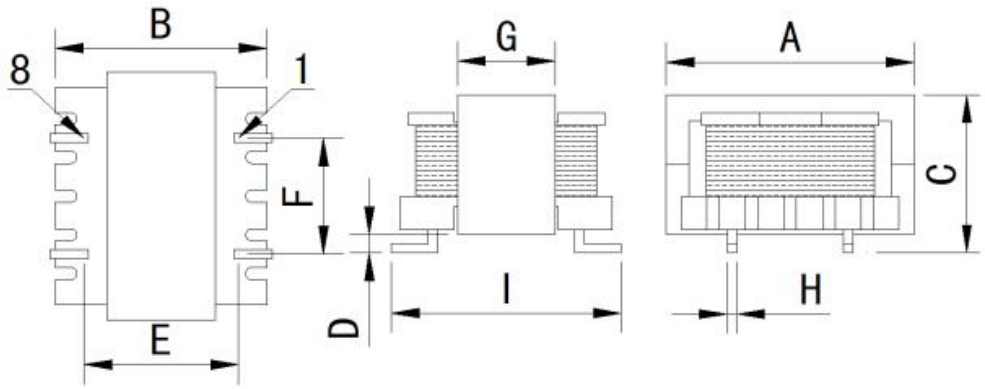
	15	SMD Inductor	SMD Inductor_EE16-7_L_D4+4_F0.6mH_RoHS	T1	1	pcs
Interior Part	1	MCPCB screws	Yuan head screw_taper tapping (shrinking mouth)-M3*3-iron (nickel plating)		6	pcs
Enclosure Part	2	YE-01_lamp body	50W lamp body		1	pcs
	3	YE-01_lens	50W lens		1	pcs
	4	YE-01 lens rubber ring (waterproof ring)	50W lens rubber ring (waterproof ring)		1	pcs
	5	YE-01 reflector	50W reflecto		1	pcs
	6	YE-01 lens screw	Lens screw_Hexagon socket screw_M4*5-304		12	pcs
	7	YE-01 Outlet screw	Waterproof Screw_M12*1.5 Coarse Tooth-Galvanized(4 Piece Set: Nut+Screw+Flat Cone+Large Washer)		1	pcs
	8	Breathing valves	Breather valve_M12*1.5 (gray)		1	pcs
Bracket Part	9	Bracket	50W bracket		1	pcs
	10	Bracket screws	Support screws_Outer hexagonal screws_M6*12-201		2	pcs
	11	Bracket elastic pad	Support spring pad _Spring pad -M6-201		2	pcs
	12	Bracket spacer	Support gasket_flat pad -M6-201		2	pcs

3.4 Transformer

- Iron Core: SMD EE16, PC40 or same texture

- Frame Diagram: SMD EE16 (4+4) vertical type

Overall dimension (unit: mm)



bottom view

A:17.2Max B:14.3Max C:10.7Max D:0.8±0.4 E:10±0.3 F:7.5±0.3 G:7±0.3 H:0.5±0.1 I:14.6±0.5

- Wire Wrapping:

Step	P-S	WIRE	TURNS (TS)	TAPE (TS)
P1	1→8	¢ 0.27mm *1 (Copper wire 180 degrees)	102.5T	/

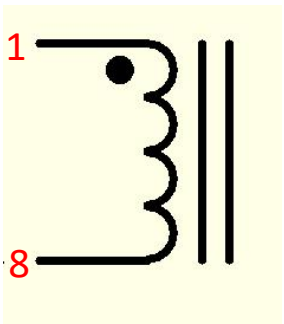
- Key Point:

1) Inductance Value L1-5: 0.6mH ±8% @ 10 kHz,1V

2) Inductor: vacuum dipping paint

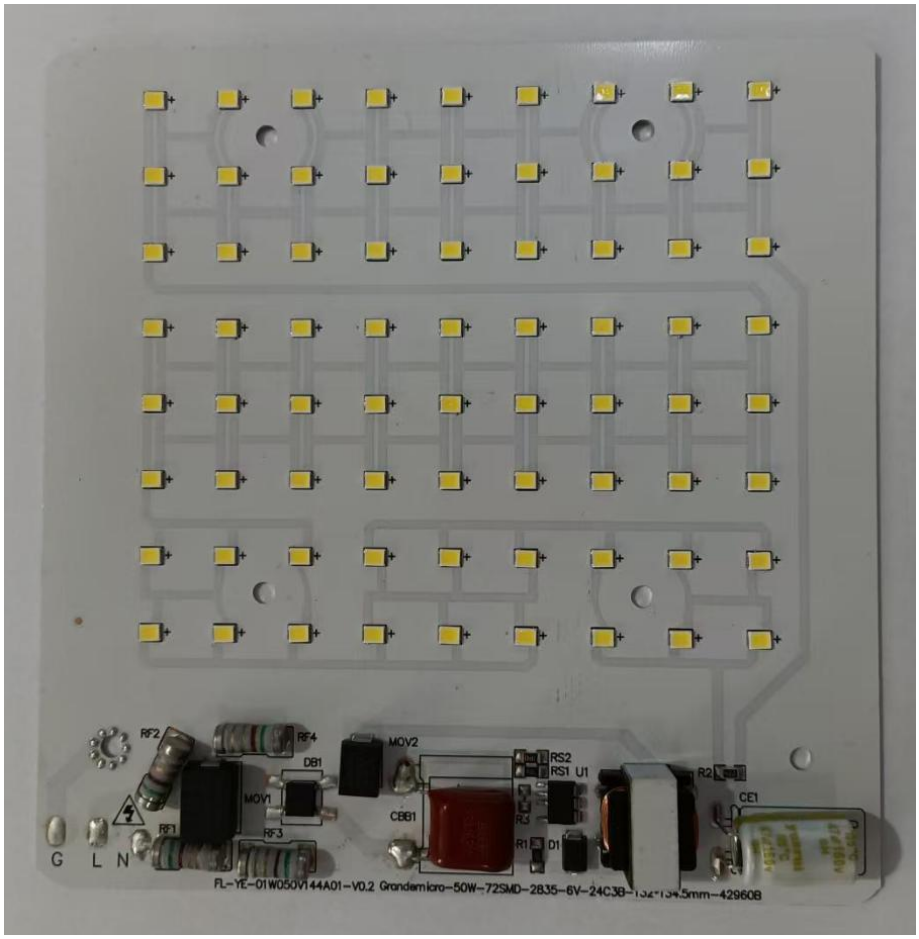
3) Pull out pins2,3,,6,7

- Schematic Diagram of the Inductor:



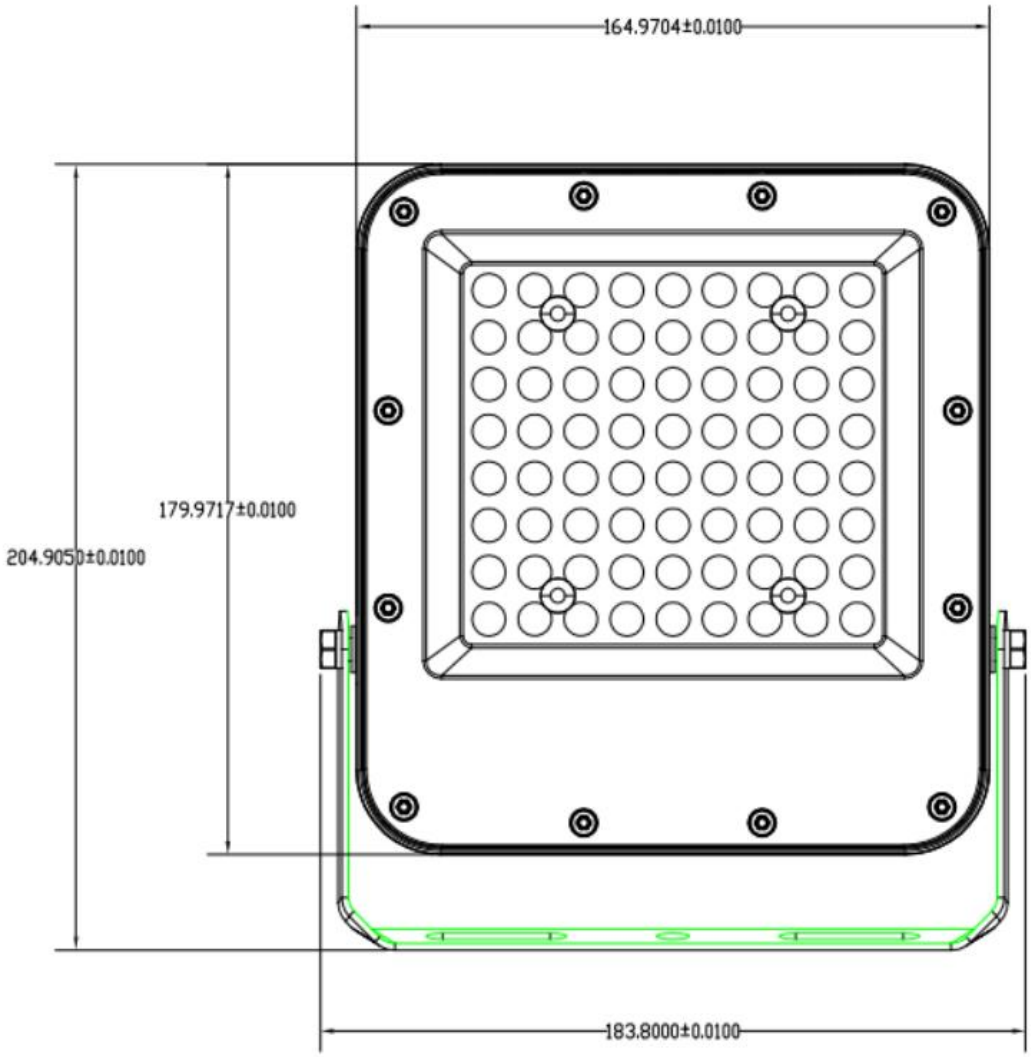
4 LED Driver Picture and Size

- L*W:132*134.5mm

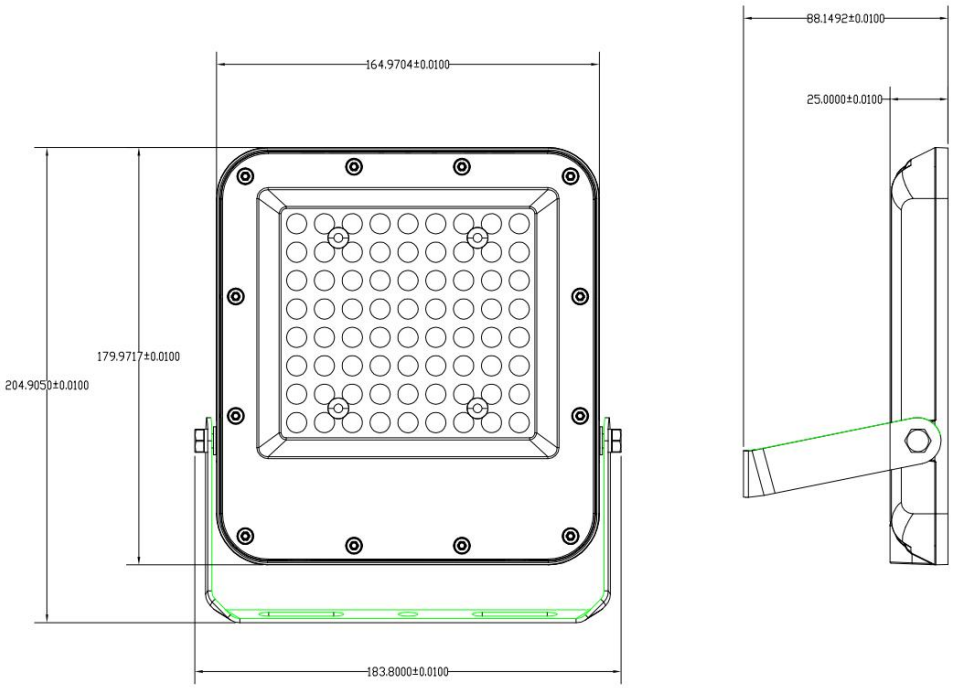


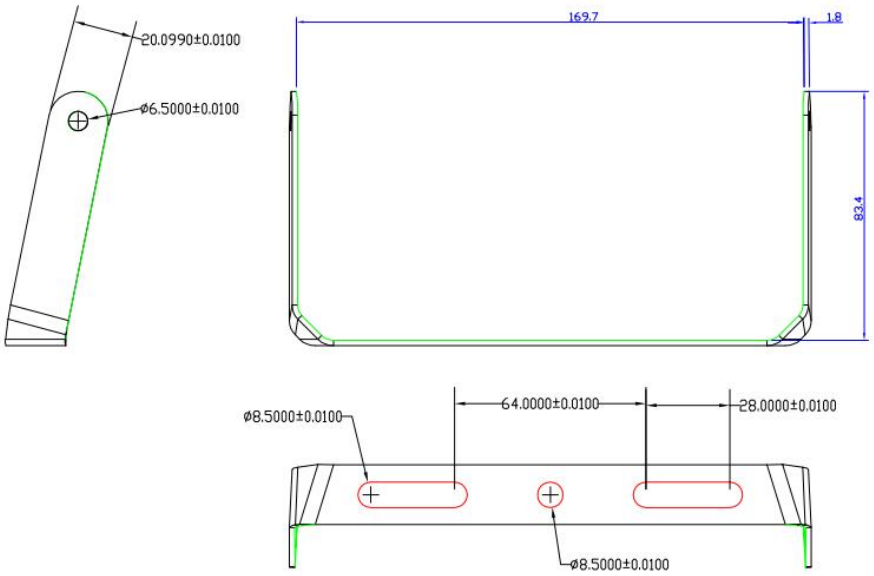
Top view

5 Product size drawing



6 Dimensional installation drawing



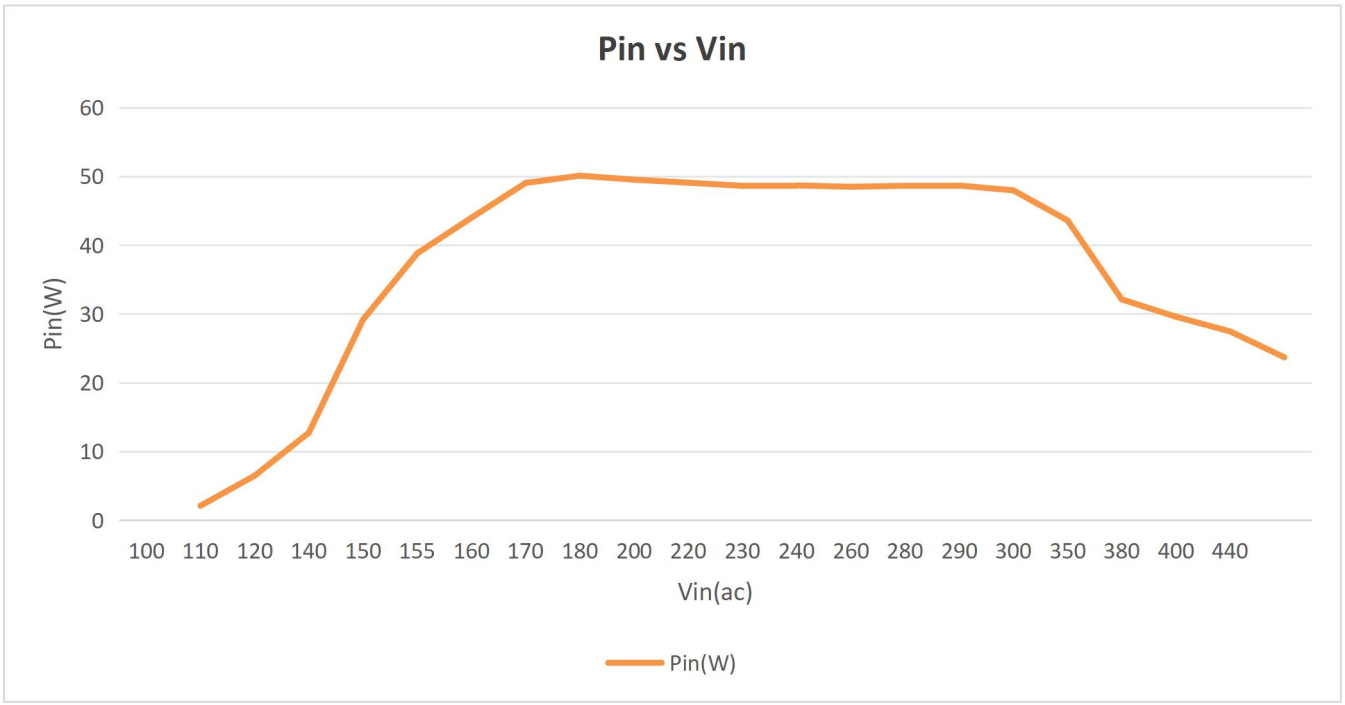


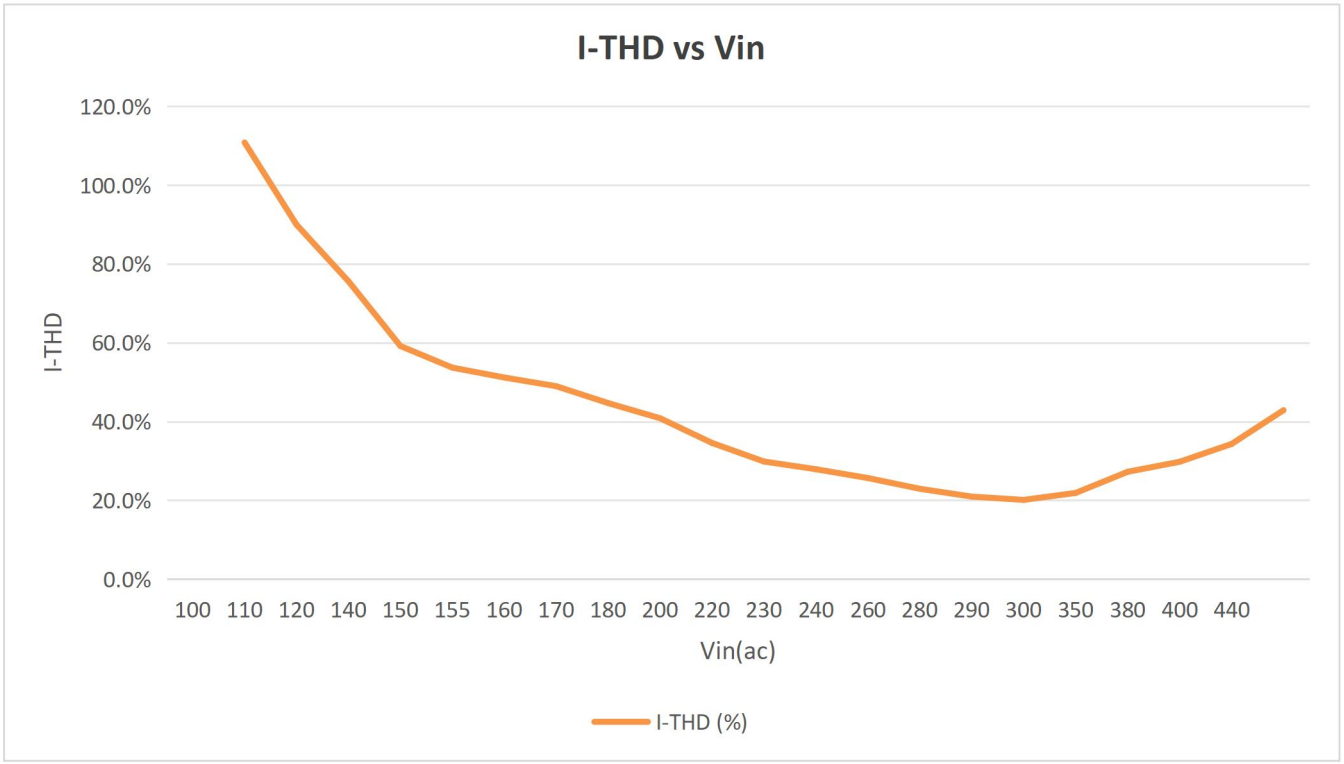
7 Thermal Performance (Unit: ℃)

Environment Temperature	33℃	33℃	33℃
Test Time	90min	90min	90min
Fuse Resistor-FR1	88.5	77.9	76.6
Fuse Resistor-FR4	91.9	80.7	79.1
Bridge-ABS210	82.1	77.1	77.2
ES2J-D1	77.1	76.2	78.0
IC-U1	83.9	80.4	83.3
EE16 Wire-T1	86.6	89.6	93.4
EE16 Core-T1	81.7	84.6	88.1
Cap-CE1	76.4	74.7	75.4
LED1	81.9	80.2	80.7
LED2	81.6	80.4	81.1
LED3	86.8	85.5	86.1
LED4	82.5	81.3	82.1
LED5	85.2	84.1	84.9
LED6	84.5	83.5	84.3
Urms (V)	176V	230V	265V
F(Hz)	50	50	50
Irms mA	0.303	0.219	0.188
Prms W	49.0	48.2	48.2
PF	0.916	0.956	0.968

8 Detail Test Data

Vin(ac)	Hz	Iin (A）	Pin (W)	PF	Vout (V)	Iout (A)	Pout (W)	Efficiency (%)	I-THD (%)
100	60	0.031	2.09	0.657	125.9	0.013	1.64	78.16%	110.82%
110	60	0.080	6.47	0.732	129.1	0.046	5.94	91.77%	89.95%
120	60	0.135	12.72	0.784	132.1	0.088	11.62	91.38%	75.58%
140	60	0.245	29.16	0.848	137.8	0.189	26.04	89.31%	59.16%
150	60	0.298	38.80	0.870	140.2	0.245	34.35	88.52%	53.67%
155	50	0.323	43.98	0.880	141.2	0.275	38.83	88.28%	51.17%
160	50	0.346	49.04	0.888	142.1	0.299	42.49	86.63%	48.96%
170	50	0.328	50.10	0.905	142.4	0.311	44.29	88.40%	44.67%
180	50	0.301	49.52	0.919	142.3	0.311	44.26	89.38%	40.82%
200	50	0.263	49.08	0.939	142.4	0.313	44.57	90.81%	34.55%
220	50	0.233	48.63	0.952	142.3	0.312	44.40	91.31%	29.84%
230	50	0.222	48.68	0.957	142.2	0.313	44.51	91.42%	27.89%
240	50	0.210	48.49	0.963	142.2	0.313	44.51	91.79%	25.65%
260	50	0.194	48.63	0.967	142.3	0.314	44.68	91.88%	22.92%
280	50	0.180	48.67	0.970	142.2	0.315	44.79	92.04%	20.94%
290	50	0.171	47.96	0.970	142.1	0.312	44.34	92.44%	20.11%
300	50	0.152	43.59	0.962	141.0	0.288	40.61	93.15%	21.88%
350	50	0.100	32.11	0.921	137.7	0.215	29.61	92.20%	27.24%
380	50	0.089	29.59	0.900	136.9	0.199	27.24	92.08%	29.78%
400	50	0.079	27.45	0.868	136.2	0.183	24.92	90.81%	34.30%
440	50	0.066	23.69	0.821	135.0	0.157	21.20	89.49%	42.88%

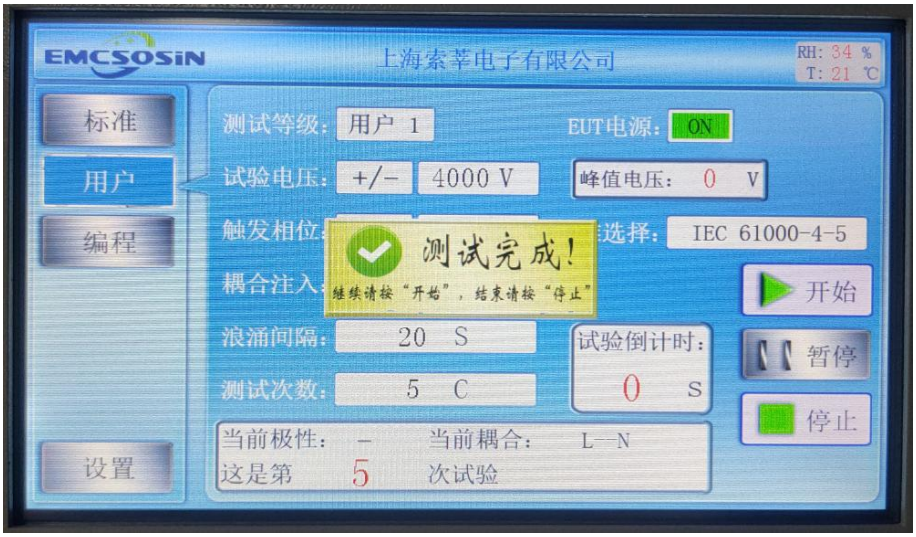

Pin vs Vin
60
50
40
30
20
10
0
Pin(W)
100 110 120 140 150 155 160 170 180 200 220 230 240 260 280 290 300 350 380 400 440
Vin(ac)
Pin(W)


I-THD vs Vin
120.0%
100.0%
80.0%
60.0%
40.0%
20.0%
0.0%
I-THD
100 110 120 140 150 155 160 170 180 200 220 230 240 260 280 290 300 350 380 400 440
Vin(ac)
I-THD (%)

9 Reliability Test

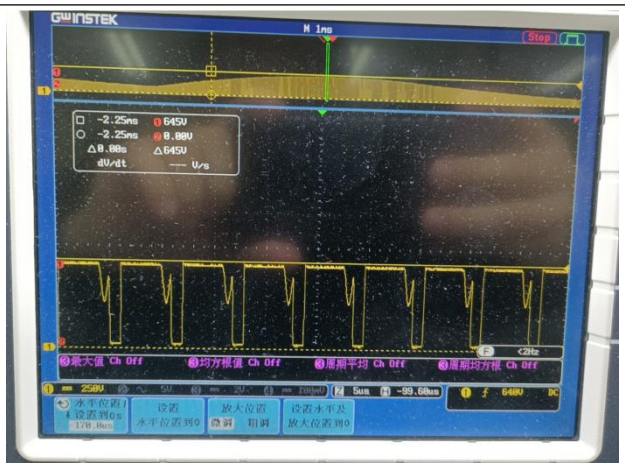
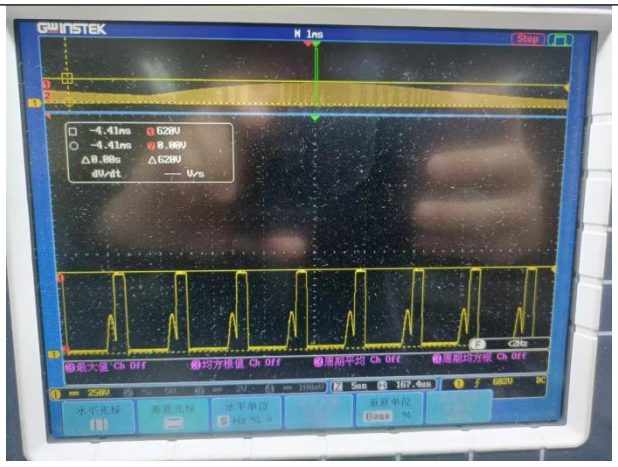
9.1 Short Circuit Protection: OK

9.2 Surge Capability: 5 counts of 4kV for each ± polarity and 0, 90, 180 and 270 phase



9.3 Component stress Test

- MOSFET: 645V
- DIODE: 620V

	
1# Voltage stress of MOSFET	2#： Voltage stress of DIODE ES2J

10Photometric Information

10.1 Initial Photometric Information（undetermined）

杭州创惠仪器有限公司
www.inventfine.cn
Tel: 86-571-88091262
Fax: 86-571-88262100

INVENTFINE®创惠

Lightsource Test Report

Product Infomation

Product Type: 投光灯50w 0min　　Product Number: 52

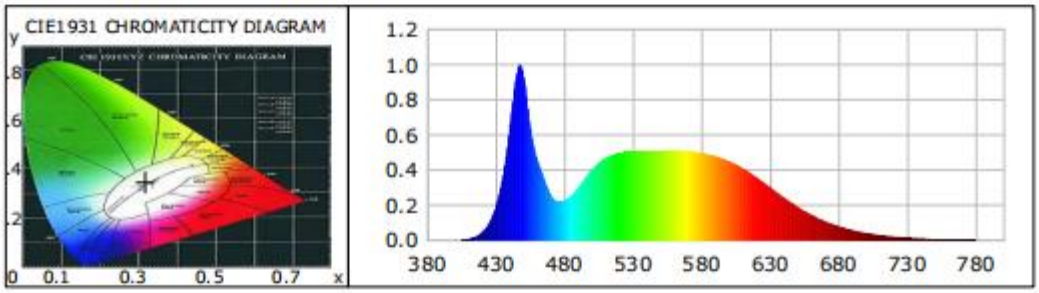
CIE Colorimetric Parameters

Chromaticity coordinates: x=0.3182 y=0.3454　u(u')=0.1956 v=0.3184 v'=0.4777
CCT: Tc=6134K (duv=0.00874)　Color Ratio: R=0.131 G=0.818 B=0.051
Peak Wavelength: 447.1nm　Half Bandwidth: 20.7nm
Dominant Wavelength: 502.5nm　Color Purity: 0.046
Central Wave: 447.8nm　Gravity Wave: 447.5nm
CRI: Ra= 80.8　TM30: Rf= 83, Rg= 95
GAI: GAI_BB_8=87.8, GAI_BB_15=92.0, GAI_EES=84.1

R1 =77	R2 =84	R3 =91	R4 =82	R5 =80	R6 =80	R7 =87	R8 =66
R9 =-8	R10=64	R11=82	R12=62	R13=79	R14=95	R15=71	

Color Quality Scale: Qa= 82.0, Qf= 82.1, Qp= 81.8, Qg= 90.9

Q1 =83	Q2 =98	Q3 =80	Q4 =78	Q5 =83	Q6 =84	Q7 =85	Q8 =90
Q9 =97	Q10=87	Q11=84	Q12=83	Q13=82	Q14=67	Q15=73	



Photometric Parameters

Luminous Flux: 5665.8 lm　Efficiency: 113.39 lm/W　Radiant Power: 17.616 W
Total mains efficacy: 113.39 lm/W　Energy Efficiency Class: E (EU 2019/2015)
Auxiliary lamp correction factor: 1.00

Electric Parameters

Voltage: 229.53V　Current: 0.2266A　Power: 49.97W
Power Factor: 0.9608　Frequency: 50.00Hz　DF: 0.9973

Test Infomation
Scan Range: 380~800:1nm　Photometric Method: sphere-photometer (spec_rev)
Stabilization Time: 0 Min　ALC.: 1.0000　Photometric Condition: Sphere diameter: 1.50m, 4π
Max of Signal: 46649 (1981)　CCD Integration Time: 41.95 ms

Condition: Tx:23.9'C, Ti:23.1'C, R.H.:60%　Test Device: CMS-3000S
Test Lab:　Test Time: 2024-11-11 10:58:17
Operator:　Inspector:

10.2 Stable Photometric Information（undetermined）

杭州创惠仪器有限公司
www.inventfine.cn
Tel: 86-571-88091262
Fax: 86-571-88262100

INVENTFINE 创惠

Lightsource Test Report

Product Infomation

Product Type: 投光灯50w 30min　　Product Number: 53

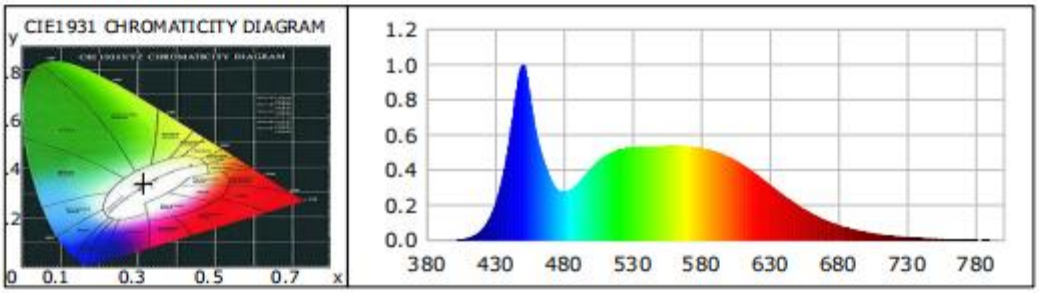
CIE Colorimetric Parameters

Chromaticity coordinates: x=0.3154 y=0.3403　u(u')=0.1955 v=0.3164 v'=0.4746
CCT: Tc=6296K (duv=0.00758)　Color Ratio: R=0.131 G=0.814 B=0.054
Peak Wavelength: 449.9nm　Half Bandwidth: 24.9nm
Dominant Wavelength: 496.8nm　Color Purity: 0.057
Central Wave: 450.7nm　Gravity Wave: 450.4nm
CRI: Ra= 82.0　TM30: Rf= 84, Rg= 94
GAI: GAI_BB_8=88.0, GAI_BB_15=92.6, GAI_EES=85.1

R1 =79	R2 =86	R3 =92	R4 =82	R5 =81	R6 =82	R7 =88	R8 =67
R9 =-4	R10=68	R11=81	R12=62	R13=81	R14=96	R15=73	

Color Quality Scale: Qa= 82.1, Qf= 82.4, Qp= 81.7, Qg= 90.6

Q1 =83	Q2 =98	Q3 =81	Q4 =77	Q5 =82	Q6 =83	Q7 =85	Q8 =90
Q9 =97	Q10=88	Q11=84	Q12=83	Q13=82	Q14=68	Q15=74	



Photometric Parameters

Luminous Flux: 5124.0 lm　Efficiency: 105.13 lm/W　Radiant Power: 16.191 W
Total mains efficacy: 105.13 lm/W　Energy Efficiency Class: F (EU 2019/2015)
Auxiliary lamp correction factor: 1.00

Electric Parameters

Voltage: 229.66V　Current: 0.2212A　Power: 48.74W
Power Factor: 0.9592　Frequency: 50.00Hz　DF: 0.9955

Test Infomation
Scan Range: 380~800:1nm　Photometric Method: sphere-photometer (spec_rev)
Stabilization Time: 30 Min　ALC.: 1.0000　Photometric Condition: Sphere diameter: 1.50m, 4灯
Max of Signal: 45395 (2001)　CCD Integration Time: 48.63 ms

Condition: Tx:24.2'C, Ti:23.8'C, R.H.:60%　Test Device: CMS-3000S
Test Lab:　Test Time: 2024-11-11 11:28:26
Operator:　Inspector:

10.3 Luminaire distribution curve（undetermined）

EVERFINE

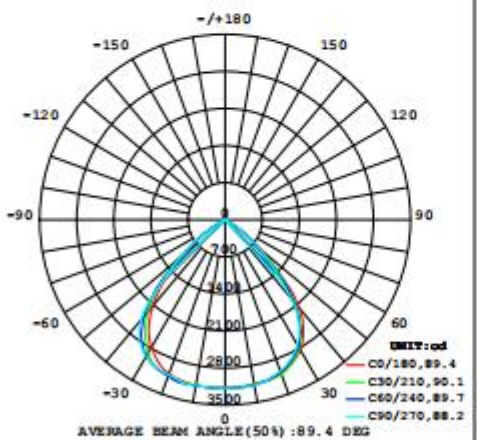
EVERFINE GONIOPHOTOMETERS SYSTEM TEST REPORT Page 1 Of 11

STREETLIGHT PHOTOMETRIC TEST REPORT

Test:U:230.06V I:0.2223A P:48.936W PF:0.9567 Freq:49.99Hz Lamp Flux:5945.57x1 lm		
NAME: 50W	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.:	SUR.:	Shielding Angle:

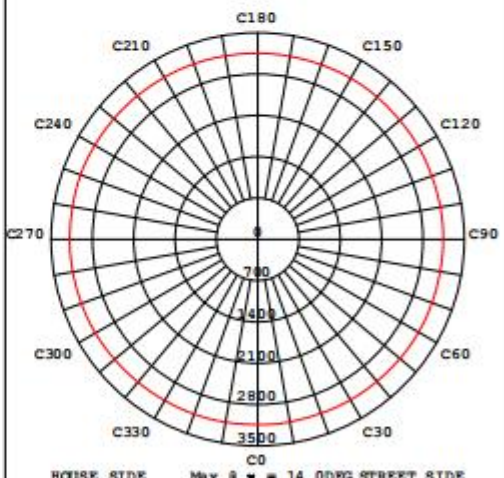
DATA OF LAMP		PHOTOMETRIC DATA Eff: 121.50 lm/W			
MODEL	50W	Imax(cd)	3196	η street_up(%)	0.0
NOMINAL POWER(W)	50	LOR(%)	100.0	η street_down(%)	47.9
RATED VOLTAGE(V)	220	TOTAL FLUX(lm)	5946	η house_up(%)	0.0
NOMINAL FLUX(lm)	5945.57	MAXIMUM @(C,γ)	250,14.0	η house_down(%)	52.1
LAMPS INSIDE	1	η up(%)	0.0	76 FLASHAREA(m2)	0.00100
TEST VOLTAGE(V)	220	η down(%)	100.0	SLI	14.472

INTENSITY DISTRIBUTION DIAGRAM IN C PLANS



AVERAGE BEAM ANGLE(50%):89.4 DEG

MAX INTENSITY CONE SURFACE DISTRIBUTION DIAGRAM



HOUSE SIDE Max @ γ = 14.0DEG STREET SIDE

C Range: 0 - 360DEG
C Interval: 10.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:19 November 2024

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.00.443
Humidity:65.0%
Test Distance:10.470m [K=1.0000]
Remarks:

11 Affix

11.1 Affix1 Schematics

11.2 Affix2 BOM

11.3 Affix3 PCB

11.4 Affix4 Transformer specification

11.5 Affix5 IC Data sheet

Version History

Version	Date	Description
A0	Dec. 2024	Draft
A1	Dec. 2024	Released
A2	Dec. 2025	PCB upgrade