

## Specification for Approval

Product Name:            35W Constant Voltage LED Driver  
Product Model:        LSV-035B024 CE  UL   
Rev.                        B.2  
Sample Date:            \_\_\_\_\_

<b>CUSTOMER AUTHORIZED SIGNATURE</b>		
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## 1 Scope

This document defines the electrical, mechanical and environmental specifications of a 35W constant voltage LED driver. The LED driver shall meet the RoHS requirement.

This enclosure of LED driver is:

- With AL Case       With Plastic Case       Open Frame       Others

Note: For all items do not list test temperature in this document, all tests are under 25°C±10°C ambient temperature.

## 2 Input Characteristics

### 2.1 Input Voltage and Frequency

Item	Minimum	Nominal	Maximum
Input Voltage	90Vac	100-277Vac	305Vac
Input Frequency	47Hz	60Hz/50Hz	63Hz

### 2.2 AC Input Current

Under 25°C±10°C ambient temperature, rated input and output range (reference input voltage –Load curve), maximum AC input current value is 0.5A.

### 2.3 Inrush Current(Cold Start)

Under 25°C±10°C ambient temperature, 230Vac input, the peak value of the inrush current is less than 75 A.

### 2.4 Power Factor

2.4.1 Under 25°C±10°C ambient temperature, 230Vac input, 100% load, the typical value of power factor is 0.96; the minimum value is 0.95. (reference Power Factor vs. Load Curve).

### 2.5 Efficiency

2.5.1 Under 25°C±10°C ambient temperature, 230Vac input, 100% load, the typical value of efficiency is 87% the minimum value of efficiency is 85%. (reference Efficiency vs. Load Curve).

### 2.6 Input Current THD

2.6.1 Under 25°C±10°C ambient temperature, 230Vac input, 100% load, the maximum value of input current THD is 20%.

## 3 Output Characteristics

### 3.1 Output Power

Under full input voltage range(reference Input Voltage vs. Load Curve), the maximum value of output power is 35W.

### 3.2 Output voltage and Current

Item(Unit)	Value	Test Condition(Under 25°C±10°C Ambient Temperature)
Maximum Output Power(W)	35	full input voltage range
Rated Output Voltage(V)	24	full input voltage range
Load Current Range(A)	0~1.46	full input voltage range
Output Voltage Precision	±5%	full input voltage range, full load range
No Load Voltage(V)	≤26	full input voltage range

### 3.3 Output Voltage Ripple

Under 25°C±10°C ambient temperature, 230Vac input, 100% load, the ratio of output voltage ripple peak value and average output voltage is less than 3%.

### 3.4 Turn-On Delay Time

Under 25°C±10°C ambient temperature, rated input voltage, 100% load, turn-on delay time is less than 3000ms.

### 3.5 Output Voltage Overshoot

Under 25°C±10°C ambient temperature, 100% load, turn-on at full input voltage range, the ratio of output voltage overshoot and rated output voltage is less than 10%.

### 3.6 Line Regulation

Under 25°C±10°C ambient temperature, 100% load, change input from 90Vac to 305Vac, line regulation is less than 3%.

### 3.7 Load Regulation

Under 25°C±10°C ambient temperature, 230Vac input voltage, change load from 50% to 100%, load regulation is less than 3%.

## 4 Protection

### 4.1 Short Circuit Protection

The input power shall decrease when the output rail short, the power supply shall not be damaged.

### 4.2 Over Current Protection

The product will enter hiccup status when 2 maximum load current applied to the output, and the product shall be self-recovery when the fault condition is removed.

### 4.3 Over Voltage Protection

When the output voltage is over 1.1-1.5 Rated Load Voltage, the driver shuts off automatically and enters protection status, the driver will work normally after fault condition removed and AC input reapply.

## 5 Safety and Electromagnetic Compatibility

### 5.1 Safety Standards

Safety Category	Country and region	Standards	Accordant
CCC	China	GB19510.1	
		GB19510.14	
CE	Europe	EN61347-1	√
		EN61347-2-13	
CB	CB member	IEC61347-1	√
		IEC61347-2-13	
UL	America	UL 8750	√
		UL 1310 (Class 2 Power Units)	
		UL 1012	
cUL	Canada	CSA C22.2 No.107.1-01	√
		CSA C22.2 No.223-M91 (Power Supplies With Extra-Low-Voltage Class 2 Outputs)	
KC	Korea	K61347-1	
		K61347-2-13	
		K62384	
PSE	Japan	J61347-1	
		J61347-2-13	
SAA	Australia	IEC 61347-2-13	
		AS/NZS 61347.1	

### 5.2 Electromagnetic Compatibility Standards

EMC Certification	Country and region	Standards	Accordant
CCC	China	GB 17743	
		GB 17625.1	
FCC	America	FCC part 15	
CE	Europe	EN 55015	√
		IEC 61000-3-2	
		IEC 61000-3-3	
		IEC 61547	
KC	Korea	K61547	
		K00015	
PSE	Japan	J55015	

## 6 Details of Safety Specifications

### 6.1 Dielectric Strength

6.1.1 input to output : 3750Vac, 60s, current is less than 10mA;

6.1.2 input to FG: 1600Vac, 60s, current is less than 10mA;

6.1.3 output to FG: 1600Vac, 60s, current is less than 10mA.

**Note:** 25°C±10°C ambient temperature, I/P: L,N Line;O/P: Vo+, Vo-.



## 6.2 Grounding Resistance

Under 25°C±10°C ambient temperature, pass 25A current for 60s, the measured grounding resistance is less than 0.1Ω.

## 6.3 Leakage Current

Leakage Current is defined as the current flowing through the ground wire. Under 25°C±10°C ambient temperature and 230Vac/50Hz input, the leakage current shall be less than 0.75mA.

## 6.4 Insulation Resistance

Under 25°C±10°C ambient temperature and less than 70% relative humidity, apply 500V dc voltage to each port of Input to output, input to GND, output to GND and last 60s, the insulation resistance is at least 100MΩ.

## 6.5 Surge Immunity Test

Under 25°C±10°C ambient temperature, L line to N line is 4000V, L line to FG is 6000V, N line to FG is 6000V.

# 7 Environmental Specifications

## 7.1 Operated Temperature And Humidity

Temperature: -40°C to +60°C, please refer to Temperature vs Load Curve; Relative Humidity: 20% to 95%, non-condensing.

## 7.2 Storage Temperature And Humidity

Temperature: -40°C to +85°C; Relative Humidity: 20% to 95%, non-condensing.

## 7.3 Vibration

10 to 500HZ Sweep at constant acceleration of 1.0G (depth: 3.5mm ) for 1 Hour for each of the perpendicular axes X, Y, Z.

## 7.4 Degrees of Protection

IP67

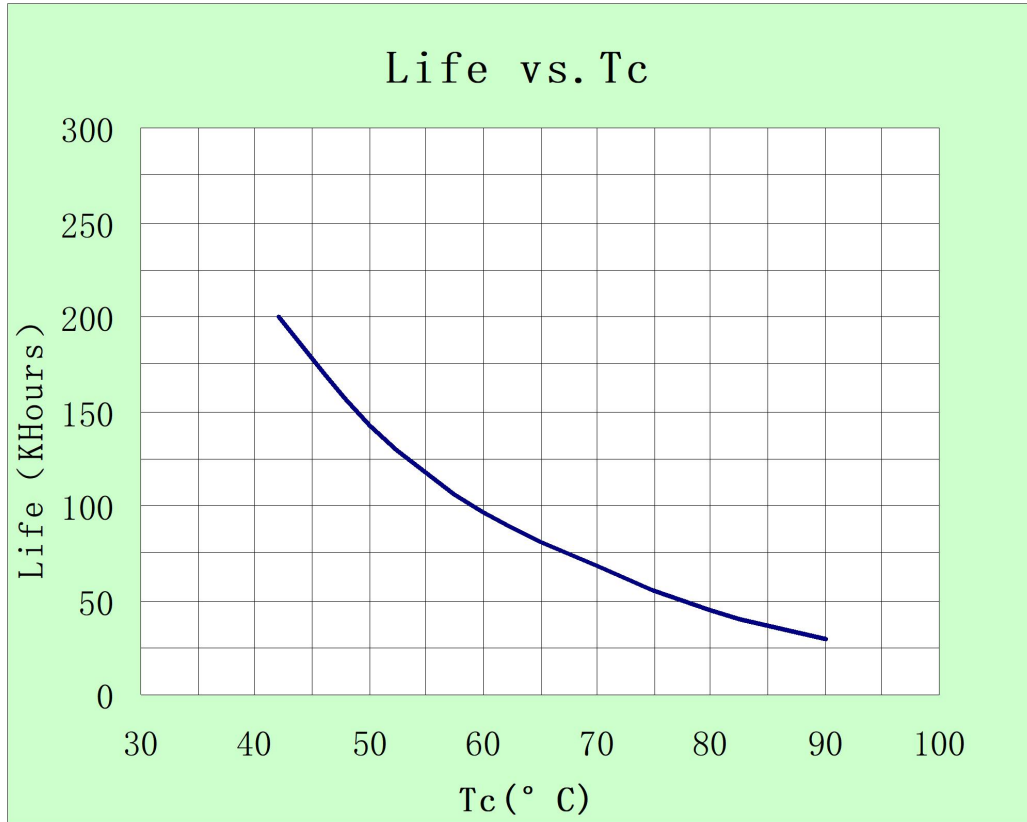
# 8 Reliability

## 8.1 Mean Time Between Failure (MTBF) Qualification (According as MIL-HDBK-217F Standards)

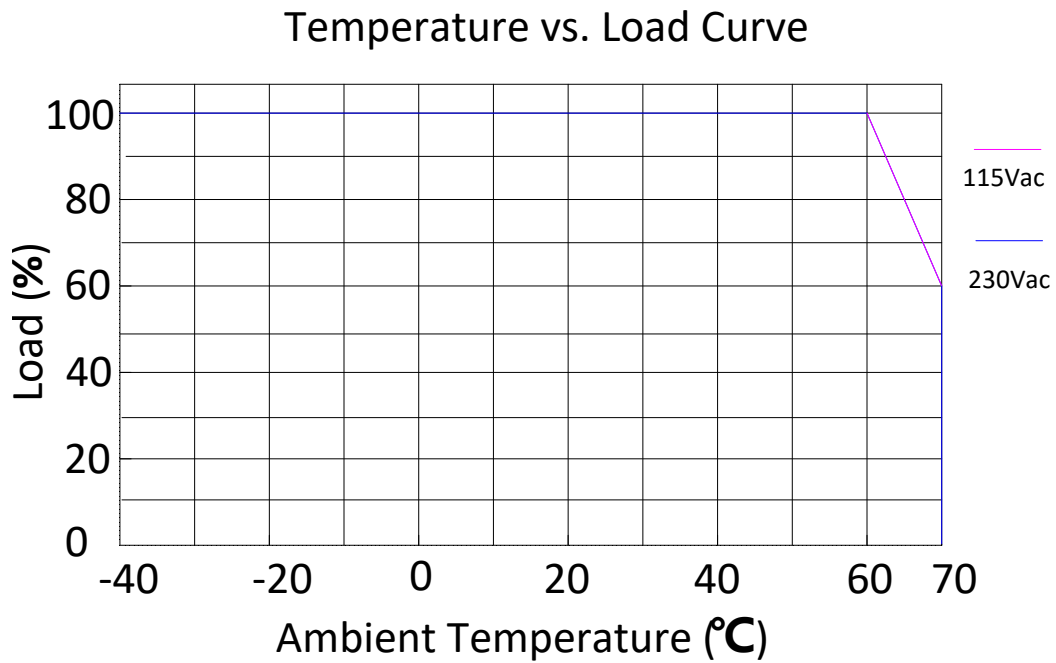
Mean time between failure is at least 200,000 hours under 25°C ambient temperature, 230Vac input, and 80% load.

## 8.2 Life Time Qualification

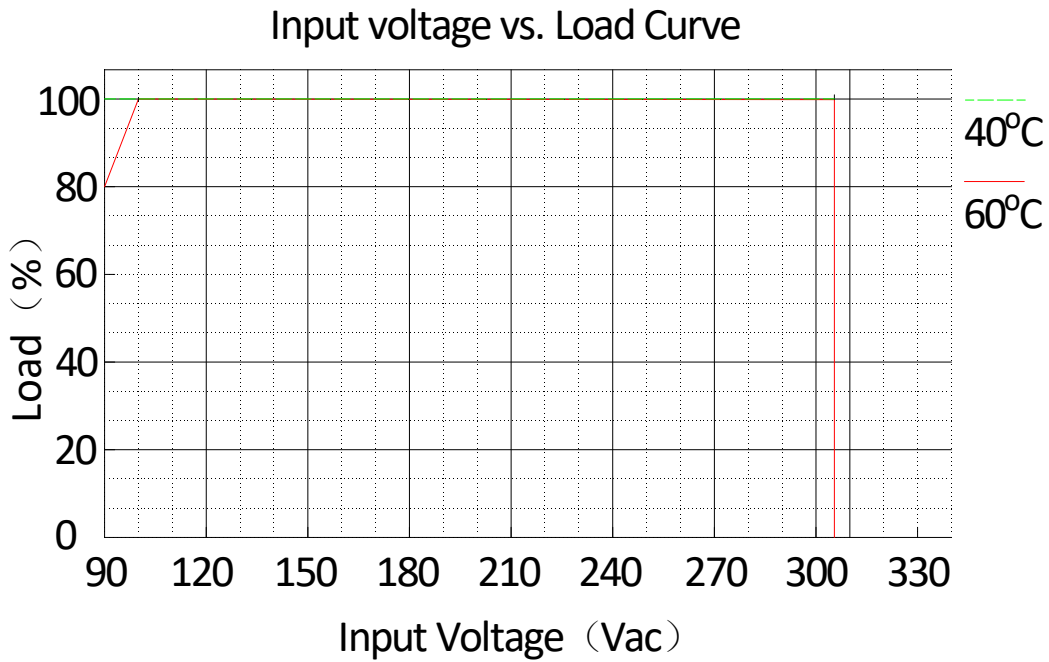
The life time is at least 50,000 hours, under 70°C case temperature, 230Vac input, and 100% load(reference Life vs.TC curve).



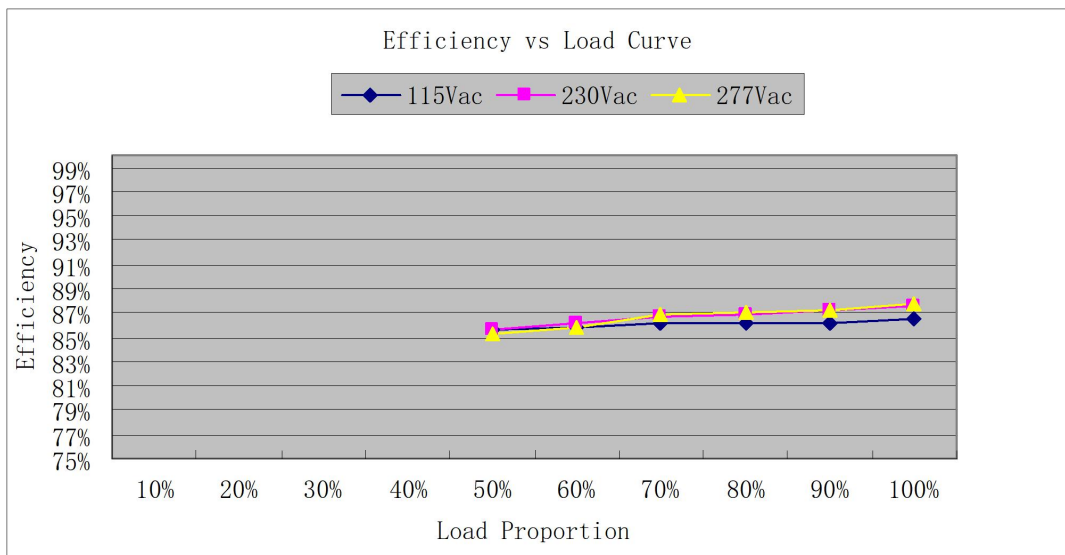
9 Temperature vs. Load Curve



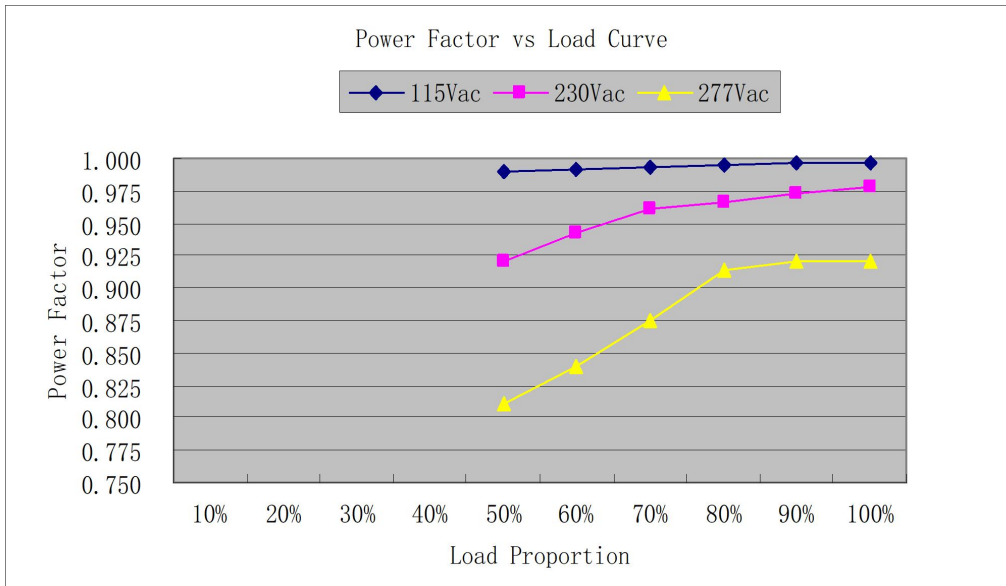
10 Input voltage vs. Load Curve



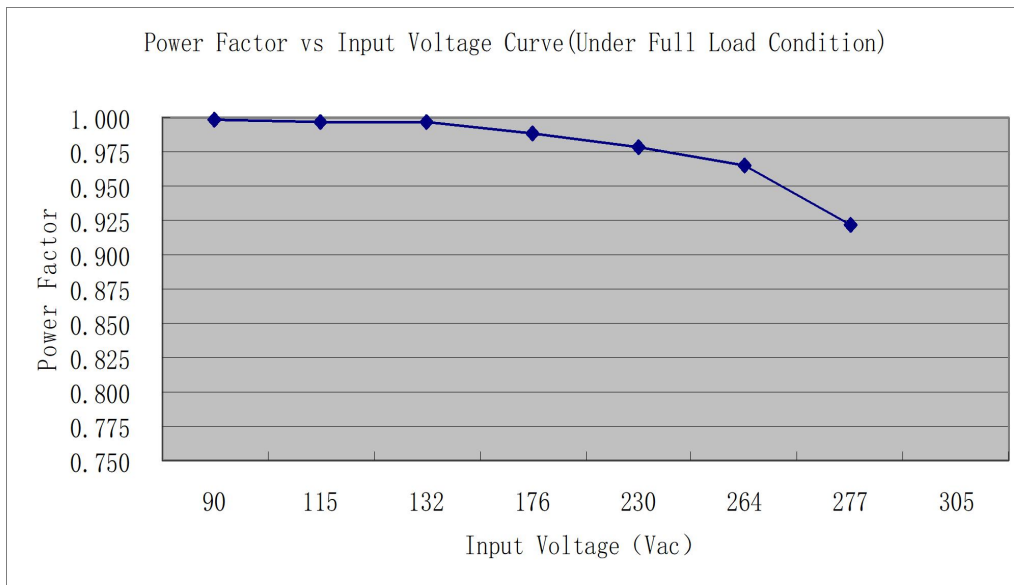
11 Efficiency vs. Load Curve



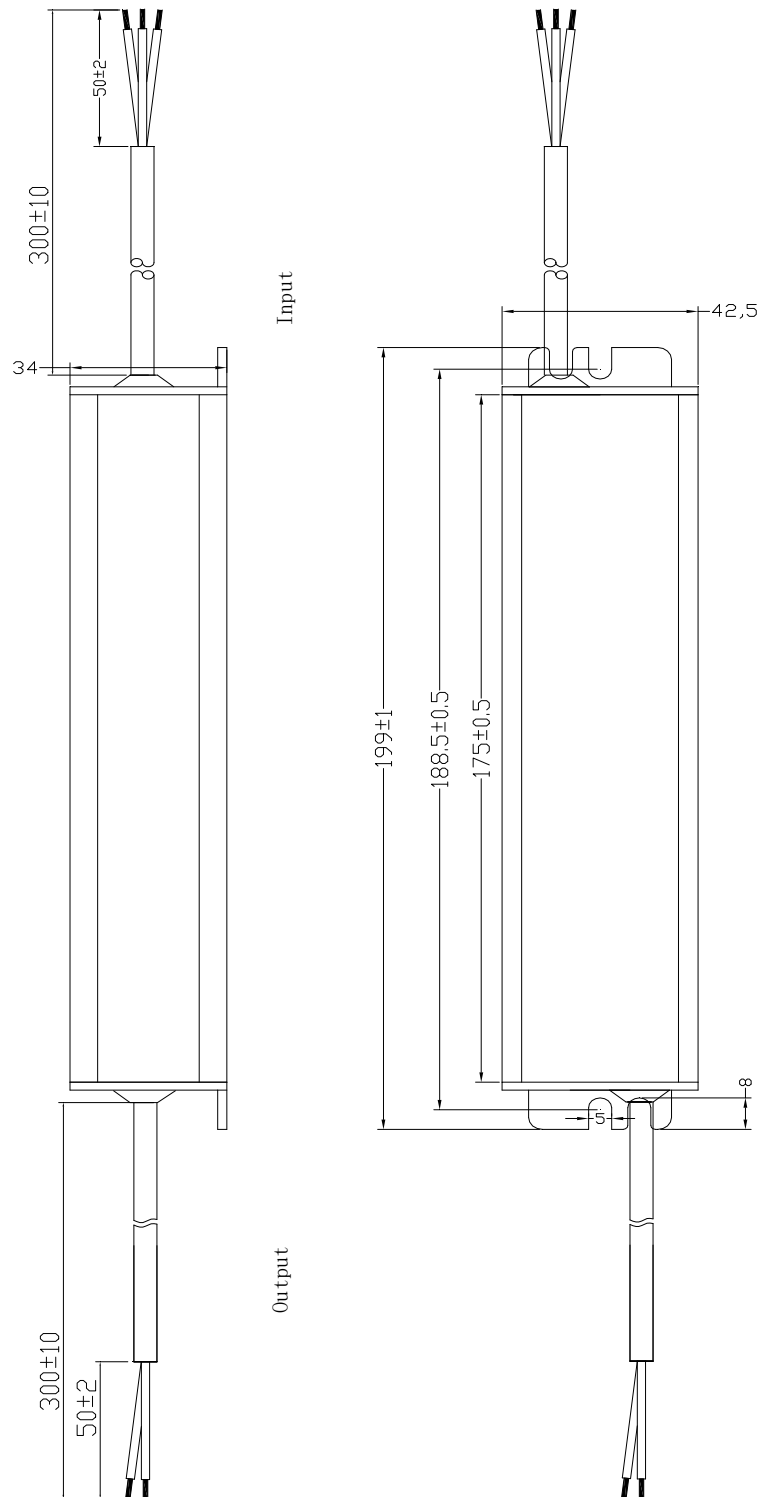
**12 Power Factor vs. Load Curve**



**13 Power Factor vs. Input Voltage Curve**



14 Mechanical Outline Drawing



Wire	Specification	Note
AC Input	CCC+VDE 3x1.0mm <sup>2</sup> L=300mm	for CE
	18AWG 3C L=300mm	For UL
DC Output	CCC+VDE 2x1.0mm <sup>2</sup> L=300mm	for CE
	18AWG 2C L=300mm	For UL

**15 Label**

**15.1 Label of CE Marking**



Remark:  
Above label is laser engraved

1608 03 0949 A 0001  
Y M D CODE LINE NO.

Bar code for 128 formate  
Date of production need to be updated

**15.2 Label of UL Marking**



Remark:  
Above label is laser engraved

1608 03 0950 A 0001  
Y M D CODE LINE NO.

Bar code for 128 formate  
Date of production need to be updated

**16 Weight**

510±50g