

## SPECIFICATION

Product name : HBE-60D-150X

Release date : 2024/9/26

|               |                |                               |     |      |
|---------------|----------------|-------------------------------|-----|------|
| <b>SUNCOM</b> | Product Type   | LED INTEGRATED SPECIAL DRIVER |     |      |
|               | Product Series | HBG-60D-150X Series           | REV | V1.0 |

## Features

- Class I type for insulation
- Input voltage range:320-480Vdc
- Efficiency 93% (Typ.)
- Constant current output ,with power limitation for control mode
- Metal material case, protection grade against water and dust: IP67
- Surge level:
  - differential mode : 4kV
  - common mode :6kV
- Function available:
  - Output current is dimmed by external potentiometer (Only Type A)
  - Output current is dimmed by Isolated 3 in 1 dimmer (Only Type P)
- guaranteed Lifetime : 5 years

## Applications

High-end shoebox light, wall light, floodlight flat mining light,  
Street lights, tunnel lights

## Model list

| Model NO.                    | Rated Input voltage | Max Output power | Output voltage                        | The default current | Eff. |
|------------------------------|---------------------|------------------|---------------------------------------|---------------------|------|
| HBG-60D-150A<br>HBG-60D-150P | 320-480Vdc          | 60W              | 90-150Vdc<br>Rated Power (100-150Vdc) | 0.5A                | ≥93% |

### Note:

1. Test conditions: If not specified, all specification parameters are measured at 400Vdc input, rated load, and ambient temperature of 25 ° C.
2. When the input is lower than 300±10Vdc, the output power is halved, and when the input is higher than 320Vdc again, the work will resume; Special attention should be paid to the application, please refer to the input voltage VS output power diagram.

|               |                |                               |     |      |
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## Input characteristics

| Parameter           | Min    | Typ.   | Max    | Remark                                    |
|---------------------|--------|--------|--------|-------------------------------------------|
| Rated input voltage | -      | 400Vdc | -      | -                                         |
| Input voltage range | 320Vdc | -      | 480Vdc | -                                         |
| Input current       | -      | -      | 0.2A   | @320Vdc input ,with full load             |
| Inrush current      | -      | -      | 70A    | 400Vdc input ,with full load (cold start) |

## Output characteristics

| Parameter            | Min   | Typ. | Max    | Remark                    |
|----------------------|-------|------|--------|---------------------------|
| Rated current        | -     | 0.4A | -      | -                         |
| Output current range | 0.3A  | -    | 0.6A   | -                         |
| Output voltage range | 90Vdc | -    | 150Vdc | Constant power:100-150VDC |
| Rated power          | -     | 60W  | -      | -                         |
| No-load voltage      | -     | -    | 180V   | -                         |
| Efficiency@400Vdc    | -     | 93%  | -      | full load                 |
| Current accuracy     | -5%   | -    | +5%    | full load                 |
| Line regulation      | -3%   | -    | +3%    | full load                 |
| Load regulation      | -3%   | -    | +3%    | full load                 |
| Starting time        | -     | -    | 500ms  | Full load@400Vdc          |

**Note: 1.The output current is limited by the input and output voltage, please refer to “I-V WORKING AREA” for details;**

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## Dimming characteristics

| Dimming function               |                                 | Min   | Typ. | Max    | Instructions                                          |
|--------------------------------|---------------------------------|-------|------|--------|-------------------------------------------------------|
| 1-10V Dimming<br>(Optional)    | Safe operation voltage range    | 1V    | -    | 12V    | Beyond the range may lead to a failure of the driver. |
|                                | Dimming output range            | 10%   | -    | 100%   | -                                                     |
|                                | Rated operation voltage range   | 1V    | -    | 10V    | -                                                     |
| PWM Dimming<br>(Optional)      | PWM high level                  | 9.5V  | -    | 10.5V  | -                                                     |
|                                | PWM low level                   | 0V    | -    | 0.3V   | -                                                     |
|                                | Rated dimming frequency         | 300Hz | -    | 2000Hz | -                                                     |
|                                | PWM duty cycle                  | 10%   | -    | 99%    | full power output at 99%duty cycle                    |
| Resistor Dimming<br>(Optional) | Rated external resistance value | 10KΩ  | -    | 100KΩ  | -                                                     |
|                                | Dimming output range            | 10%   | -    | 100%   | -                                                     |

### Note:

1. Output current of dimming port: 100uA (typical value).

## Protections

| Protection                      | description                                                                                                                                                |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| under-voltage protection        | When the input voltage is less than $300 \pm 10\text{Vdc}$ , the output power is halved, and when the input is higher than 320Vdc again, the work resumes. |
| Output overload protection      | Protection mode:hiccup mode,and recovers automatically when the fault condition is removed.                                                                |
| Output short circuit protection | Hiccup mode,and recovery automatically when the fault condition is removed.                                                                                |
| Over temperature protection     | Could recover automatically; when the temperature of the case is greater than $90 \pm 5^\circ\text{C}$ , the output power decreases to a half.             |
| Output over-voltage protection  | Protection mode:Hiccup or clamp at a certain output highest voltage state,when the fault is removed, the driver works normally                             |

### Note:

1. Unless otherwise specified, all parameters should be measured at the condition of 400Vdc input ,with rated load ,and ambient temperature of 25°C;
2. Including setting error, linear adjustment rate and load adjustment rate;

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## Environmental characteristics

| Environmental categories     | Parameter                                                                                                  |
|------------------------------|------------------------------------------------------------------------------------------------------------|
| Working temperature          | -40 ~ +55°C Vin@400Vdc((Refer to "Service Life Curve"))                                                    |
| Safety case temperature      | -40 ~ 90°C                                                                                                 |
| Working humidity             | 20 ~ 95% RH,non-condensing                                                                                 |
| Storage temperature、humidity | -40~+80°C, 10 ~ 95% RH                                                                                     |
| Resistant to vibration       | 10 ~ 500Hz, 5G 12 min/cycle, X, Y, Z axis 72 min each                                                      |
| MTBF                         | 230Khrs min. MIL-HDBK-217F (Ta=25°C)                                                                       |
| Lifetime                     | 50000 hours, Vin@400Vdc, 80% load, shell temperature 75°C,.Refer to" Tcase VS Lifetime" curve for details. |

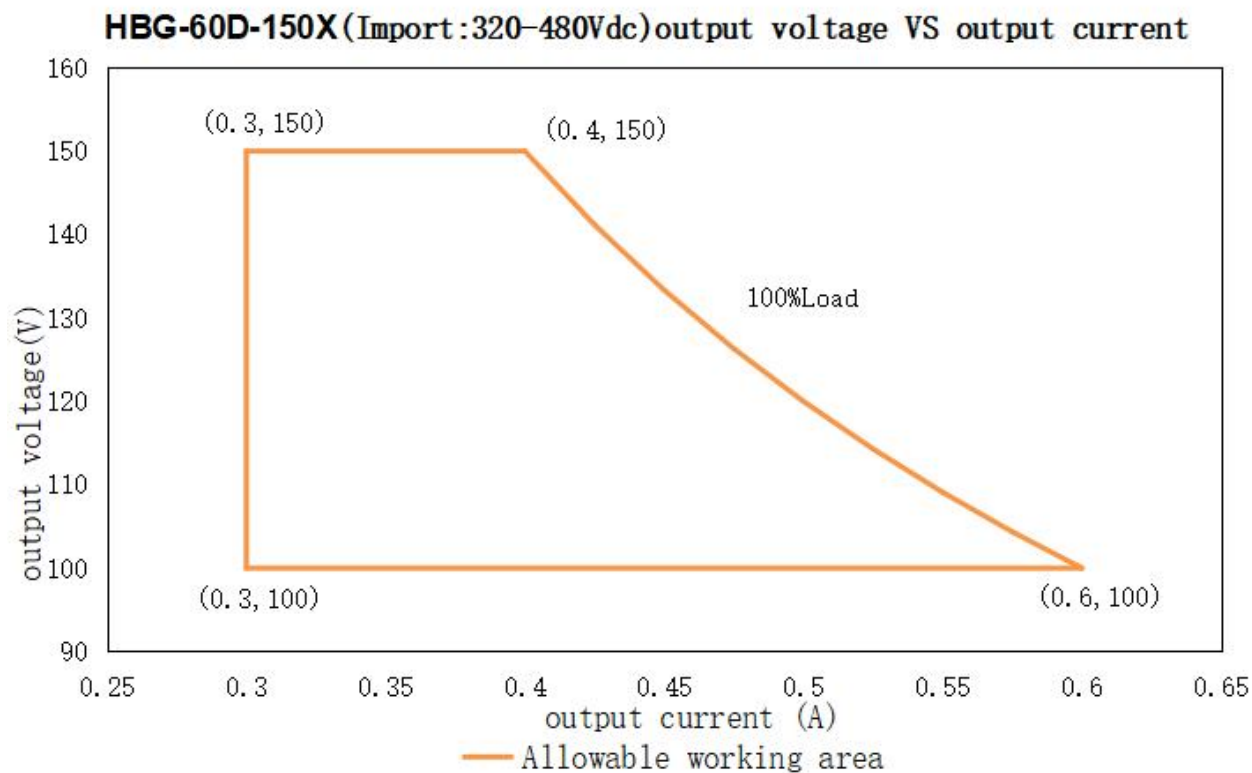
## Safety and EMC

| Safety categories    | Standard                                                                                                                  |
|----------------------|---------------------------------------------------------------------------------------------------------------------------|
| Safety               | GB19510.1、GB19510.14、EN61347-1、EN61347-2-13、IEC61347-1、IEC61347-2-13、AS/NZS61347.1、AS61347.2.13、EN 62384;                 |
| EMC                  | EN 55015、EN 61547、EN 61000-3-2、GB/T 17743、GB17625.1、EN 61000-3-3                                                          |
| Surge level          | Differential mode L-N $\pm 4\text{KV}(2\Omega)$ ,common mode L, N-PE $\pm 6\text{KV}(12\Omega)$ Refer toIEC61000-4-5 2014 |
| High-pot test        | I/P-PE:1.5KVac O/P-PE : 0.5KVac I/P-DIM:3.75KVac                                                                          |
| Insulation impedance | I/P-PG:100M Ohms/500Vdc                                                                                                   |
| Leakage current      | 0.7mA@480Vdc                                                                                                              |

### Note:

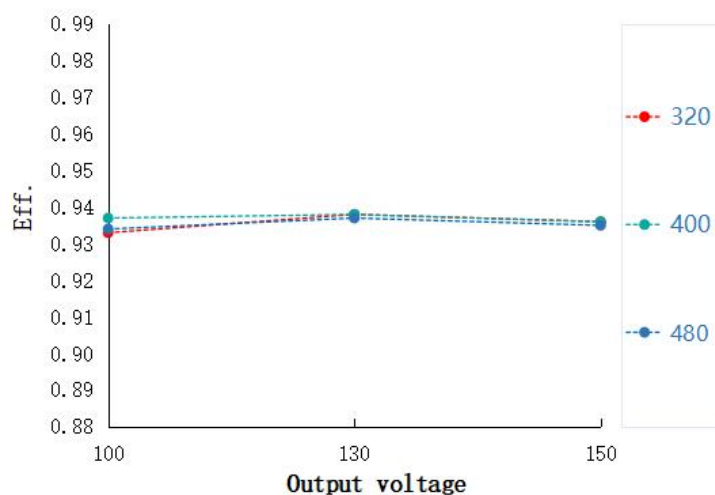
**1.Attention! As a component of the whole, the EMC performance of the final product is not only decided by the driver, even if the driver is well-designed and fulfil all the required compliance. The final equipment manufacturers must re-qualify EMC Directive on the complete product.**

## I-V Working area

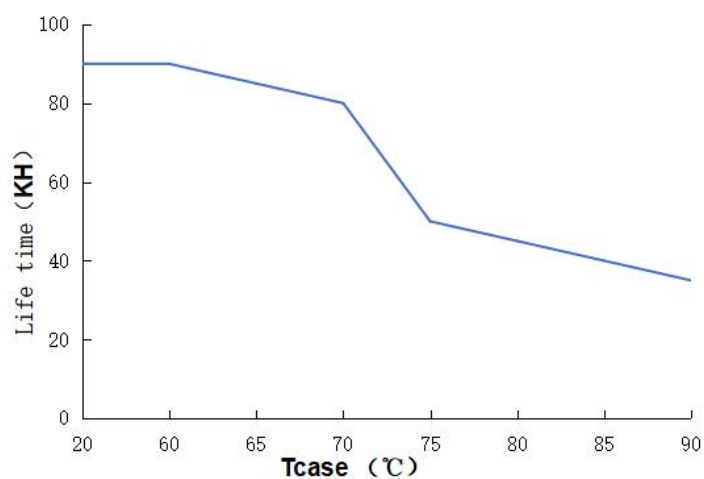


| Load                 | Output |        |        |        |        |        |
|----------------------|--------|--------|--------|--------|--------|--------|
| Load working Voltage | 100Vdc | 110Vdc | 120Vdc | 130Vdc | 140Vdc | 150Vdc |
| Io_MAX               | 0.60A  | 0.55A  | 0.50A  | 0.46A  | 0.43A  | 0.40A  |
| Po_MAX               | 60W    | 60W    | 60W    | 60W    | 60W    | 60W    |

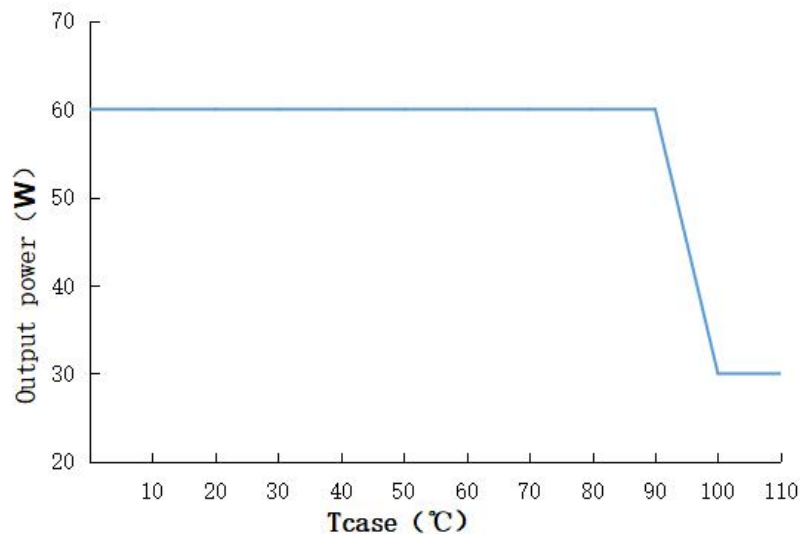
### Eff. VS Output voltage



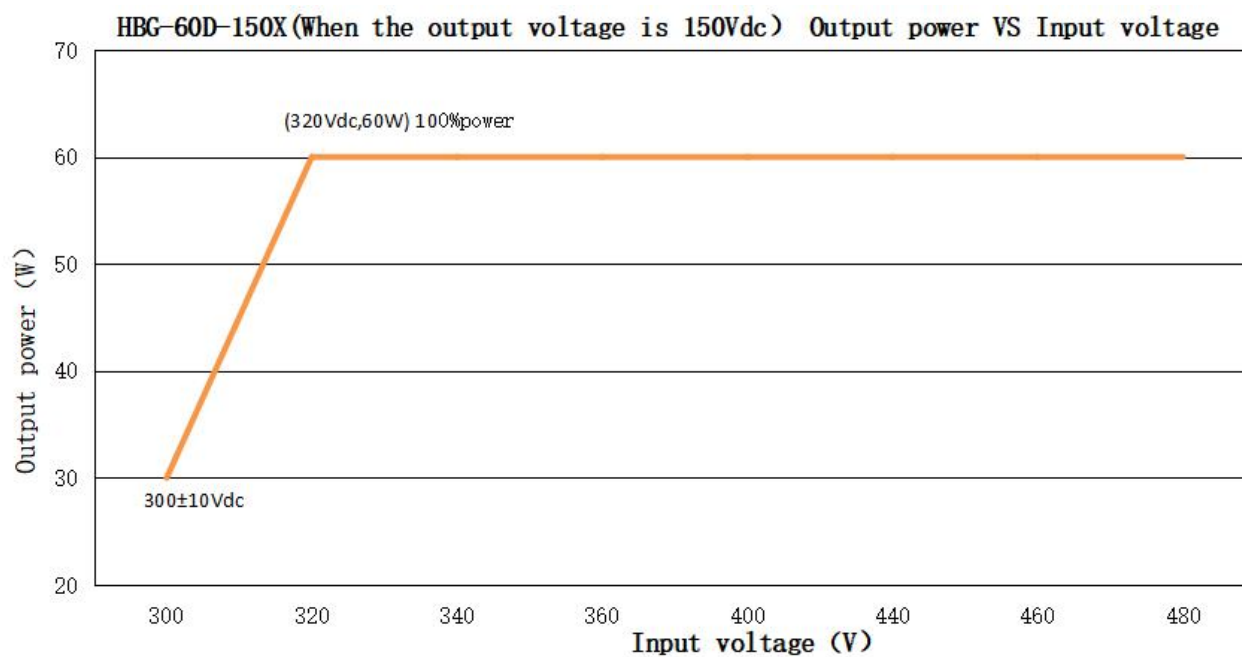
### Tcase VS Life time



## Output power VS Tcase



## Output power VS Input voltage



HBG-60D-150X (Rated output current value and output power corresponding to different input voltages when the output voltage is 150Vdc)

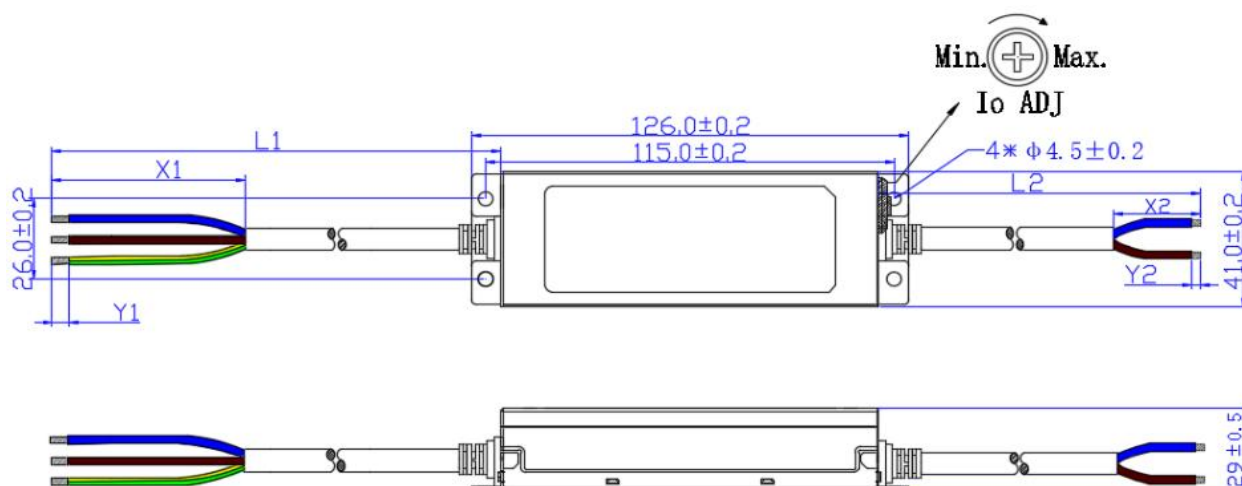
| Input Voltage  | 300Vdc | 320Vdc | 350Vdc | 370Vdc | 400Vdc | 420Vdc | 450Vdc | 480Vdc |
|----------------|--------|--------|--------|--------|--------|--------|--------|--------|
| I <sub>o</sub> | 0.2A   | 0.4A   | 0.4A   | 0.4A   | 0.4A   | 0.4A   | 0.4A   | 0.4A   |
| P <sub>o</sub> | 30W    | 60W    | 60W    | 60W    | 60W    | 60W    | 60W    | 60W    |

|                                                                                  |                |                               |     |      |
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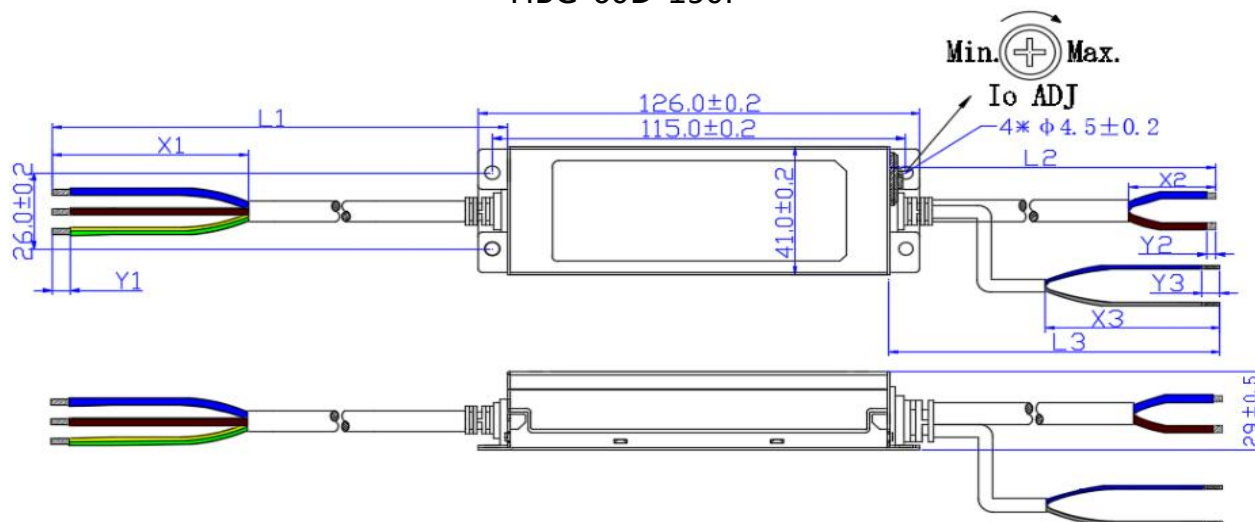
## Mechanical specification

|                |                    |
|----------------|--------------------|
| Size (mm)      | L126mm*W41mm*H29mm |
| Weight (g)     | 290g               |
| Packaging (mm) |                    |

### HBG-60D-150A



### HBG-60D-150P



| category          | Input line specification                                                | Output line specification                                               | Dimming and auxiliary power cord specifications            |
|-------------------|-------------------------------------------------------------------------|-------------------------------------------------------------------------|------------------------------------------------------------|
| specification     | Rubber round wire HO5RN-F<br>3*1.0mm2 Outer diameter :7.2mm VDE/CCC/SAA | Rubber round wire HO5RN-F<br>2*1.0mm2 Outer diameter :6.8mm VDE/CCC/SAA | PVC sheath wire 22AWG 300V,<br>105°C Outer diameter :4.8mm |
| colour            | AC-L brown; AC-N Blue<br>PG Green/yellow-green                          | LED+ brown; LED- Blue                                                   | DIM+ purple; DIM-pink                                      |
| exposure          | 440±10mm ( L1 )                                                         | 290±10mm ( L2 )                                                         | 290±10mm ( L3 )                                            |
| peel off the skin | 50±5mm ( X1 )                                                           | 25±5mm ( X2 )                                                           | 50±5mm ( X3 )                                              |
| Wicking           | 10±1mm ( Y1 )                                                           | 5±1mm ( Y2 )                                                            | 10±1mm ( Y3 )                                              |

|                                                                                  |                |                               |     |      |
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Version

| DATE      | DESCRIPTION      | REV. | CHECK |
|-----------|------------------|------|-------|
| 2024.9.26 | Initial version. | V1.0 |       |