



High Quality
Evolution
Commitment



HEC-60LTB-PSAH Rev A1.0

A. Features

IP 20

- High Efficiency (Up to 89%).
- Active Power Factor Correction (Typical 0.95).
- Isolation Class II
- All-Round Protection: OVP/SCP/OTP/OPP.]
- Fully isolated plastic case with IP20 and dry location.
- 1-10V, PWM, and resistance dimming function.
- Class 2 and SELV.



B. Description

The **HEC-60LTB-PSAH** Series operate from a 200 ~ 305Vac input range. They are designed to be highly efficient and highly reliable. Features include over voltage protection, short circuit protection, and over temperature protection.

C. Models

| Output Current | Input Voltage Range <small>Note 1</small> | Output Voltage Range <small>Note 4</small> | Max. Output Power | Efficiency <small>Note 2</small> | Power Factor <small>Note 2</small> | Model Number |
|----------------|--|---|-------------------|-------------------------------------|---------------------------------------|----------------|
| 700mA | 220 ~ 305Vac | 18V~54V | 60 W | 89% | 0.95 | HEC-60LTB-PSAH |
| 900mA | 220 ~ 305Vac | 18V~54V | | | | |
| 1050mA | 220 ~ 305Vac | 18V~54V | | | | |
| 1200mA | 220 ~ 305Vac | 18V~48V | | | | |
| 1400mA | 220 ~ 305Vac | 18V~42V | | | | |
| 1600mA | 220 ~ 305Vac | 18V~36V | | | | |
| 1750mA | 220 ~ 305Vac | 18V~32V | | | | |
| 2100mA | 220 ~ 305Vac | 18V~28V | | | | |

| Voltage | Current | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---------|---------|----|---|---|----|----|----|----|----|----|----|
| 54 Vdc | 700mA | ON | - | - | ON | ON | ON | ON | ON | ON | ON |
| | 900mA | ON | - | - | ON | ON | ON | ON | ON | ON | - |
| | 1050mA | ON | - | - | ON | ON | ON | ON | ON | - | - |
| 48 Vdc | 1200mA | ON | - | - | ON | ON | ON | ON | - | - | - |
| 42 Vdc | 1400mA | ON | - | - | ON | ON | ON | - | - | - | - |
| 36 Vdc | 1600mA | ON | - | - | ON | ON | - | - | - | - | - |
| 32 Vdc | 1750mA | - | - | - | ON | - | - | - | - | - | - |
| 28 Vdc | 2100mA | - | - | - | - | - | - | - | - | - | - |



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D. Electronic Specifications

- Input Specifications

| Parameter | Min. | Typ. | Max. | Notes |
|----------------------|------|------|----------|---|
| Input Voltage (V) | 200 | - | 305 | |
| Input Frequency (Hz) | 47 | | 63 | |
| Input AC Current (A) | - | - | 0.25 | Measured at full load and 277Vac input. |
| Leakage Current (mA) | - | - | 0.7 | At 277Vac 60Hz input. |
| Inrush Current (A) | - | - | 40 | At 220Vac input 25°C Cold Start. Duration=100μs, 10%Ipk-10%Ipk. |
| Inrush Current (I2t) | | - | 0.16 A2s | At 220Vac input 25°C Cold Start. Duration=100μs, 10%Ipk-10%Ipk. |
| Power Factor | 0.9 | - | - | At 277Vac input, full load. |
| THD (%) | - | 20 | 25 | |

- Output Specifications

| Parameter | Min. | Typ. | Max. | Notes |
|----------------------------|------|------|------|---|
| Output Current (mA) | | | | |
| Io = 700 mA | 665 | | 735 | |
| Io = 900 mA | 855 | | 945 | |
| Io = 1050 mA | 997 | | 1102 | |
| Io = 1200 mA | 1140 | | 1260 | |
| Io = 1400 mA | 1330 | | 1470 | |
| Io = 1600 mA | 1520 | | 1680 | |
| Io = 1750 mA | 1662 | | 1837 | |
| Io = 2100 mA | 1995 | | 2205 | |
| No Load Output Voltage (V) | | | | |
| Io = 700 mA | | | | There will be no damage or hazardous conditions occurred with no loading. |
| Io = 900 mA | | | | |
| Io = 1050 mA | | | | |
| Io = 1200 mA | ---- | ---- | 63 | |
| Io = 1400 mA | | | | |
| Io = 1600 mA | | | | |
| Io = 1750 mA | | | | |
| Io = 2100 mA | | | | |





| | | | | |
|------------------------------|------|------|--------------|---|
| Output Ripple Voltage (V) | ---- | ---- | 10% Vomax | Measured by 20 MHz bandwidth oscilloscopes and the output paralleled a 0.1uF ceramic capacitor and a 10uF electrolytic capacitor. |
| Output Voltage Overshoot (%) | - | - | 110 | At full load condition. |
| Line Regulation (%) | - | - | ±3 | |
| Load Regulation (%) | - | - | ±5 | |
| Turn-on Delay Time (s) | - | 0.5 | 1.0 | Measured at 220Vac input. |

- General Specifications

| Parameter | Min. | Typ. | Max. | Notes |
|--|-----------------|---------|------|---|
| Efficiency (%) Io = 700 mA Io = 900 mA Io = 1050 mA Io = 1200 mA Io = 1400 mA Io = 1600 mA Io = 1750 mA Io = 2100 mA | - | - | 89 | Measured at full load and 277Vac input. |
| MTBF (hours) | 320,000 | - | - | Measured at full load 50°C ambient temperature (MIL-HDBK-217F). |
| Life Time (hours) | | 100,000 | - | Measured at rated input voltage with full load, Case temperature=60°C @ Tc point. See life time vs. Tc curve for the details. |
| Case Temperature (°C) | - | - | 85 | |
| Dimensions Millimeters(L × W × H) | 200 × 44 × 30.5 | | | |

- Protection Functions

| Parameter | Min. | Typ. | Max. | Notes |
|--------------------------------|--|------|---------|---|
| Over Voltage Protection | | | 1.50 Vo | Hiccup mode. The power supply shall be self-recovery when the fault condition is removed. |
| Over Temperature Protection-Tc | Hiccup mode. When the case temperature is higher than 110°C, the power supply output will turn off automatically; when the case temperature is lower than 75°C, the power supply output will be auto recovery. | | | |
| Short Circuit Protection | No damage shall occur when any output operating in a short circuit condition. The power supply shall be self-recovery when the fault condition is removed. | | | |





- Environmental Specifications

| Parameter | Min. | Typ. | Max. | Notes |
|----------------------------|------|------|------|--|
| Operating Temperature (°C) | -40 | - | +60 | Humidity: 20% RH to 80% RH; See Derating Curve for more details. |
| Storage Temperature (°C) | -40 | - | +80 | Humidity: 10% RH to 90% RH. |

- Safety and EMC Compliance

| Safety Category | Standard |
|-------------------------------------|--|
| UL/CUL | UL8750, UL1310 Class 2, CSA C22.2 NO. 223-M91 Class 2. |
| CE | EN 61347-1, EN61347-2-13. |
| EMI Standards <small>Note 6</small> | Notes |
| EN 55015 | Conducted emission Test & Radiated emission Test. |
| EN 61000-3-2 | Harmonic current emissions. |
| EN 61000-3-3 | Voltage fluctuations & flicker. |
| FCC Part 15 | FCC 47 CFR Part 15 Subpart B, ICES-003 Issue 4 ANSI C63.4-2003 |
| EMS Standards | Notes |
| EN 61000-4-2 | Electrostatic Discharge (ESD): 8 KV air discharge, 4 KV contact discharge. |
| EN 61000-4-3 | Radio-Frequency Electromagnetic Field Susceptibility Test-RS. |
| EN 61000-4-4 | Electrical Fast Transient / Burst-EFT: Level 2, Criteria A. |
| EN 61000-4-5 | Surge Immunity Test: AC Power Line: line to line 1 KV. |
| EN 61000-4-6 | Conducted Radio Frequency Disturbances Test-CS. |
| EN 61000-4-8 | Power Frequency Magnetic Field Test. |
| EN 61000-4-11 | Voltage Dips. |
| EN 61547 | Electromagnetic Immunity Requirements Applies To Lighting Equipment. |

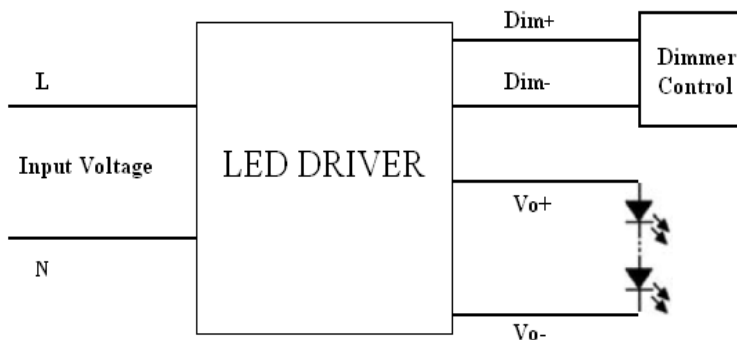
Notes:

1. Normal input voltage range 220~277Vac.
2. Measured at input 220V with a full load.
3. All specifications are typical at 25 °C unless otherwise stated.
4. Constant current operation region is preferably 75%~100% rated output voltage. This is the suitable operation region for LED related applications, but please reconfirm special electrical requirements for some specific system design.
5. Derating may be needed under low input voltages. Please check the static curve for more details.
6. The power supply is considered as a component that will be operated in combination with final equipment. Since EMC performance will be affected by the complete installation, the final equipment manufacturers must re-qualify EMC Directive on the complete installation again.



E. Dimming Control

The dimmer control is operated from an input signal (DC voltage / PWM signal / Variable Resistor). Please refer to the diagram.



Notes:

1. If the dimming pin is not used, Dimming pin can be open.

| Parameter | Min. | Typ. | Max. | Notes |
|---|------|------|--------|-------|
| 1-10V Dimming Voltage (V) | 1 | - | + 10.8 | |
| PWM Signal | 5 | 10 | + 10.8 | |
| 0~10K Ω Variable Resistor (Ω) | -0 | - | +10K | |

- Dimming Model Output Voltage Range

| Parameter | Min. | Typ. | Max. | Notes |
|--------------|------|------|------|---------------------------|
| Io = 700 mA | 31 | - | 54 | Measured at 220Vac input. |
| Io = 900 mA | 28 | - | 54 | |
| Io = 1050 mA | 25 | - | 54 | |
| Io = 1200 mA | 22 | - | 48 | |
| Io = 1400 mA | 21 | - | 42 | |
| Io = 1600 mA | 21 | - | 36 | |
| Io = 1750 mA | 21 | - | 32 | |
| Io = 2100 mA | 21 | - | 28 | |





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| Parameter | Min. | Typ. | Max. | Notes |
|--------------|------|------|------|---------------------------|
| Io = 700 mA | 45 | - | 54 | Measured at 277Vac input. |
| Io = 900 mA | 40 | - | 54 | |
| Io = 1050 mA | 36 | - | 54 | |
| Io = 1200 mA | 32 | - | 48 | |
| Io = 1400 mA | 28 | - | 42 | |
| Io = 1600 mA | 24 | - | 36 | |
| Io = 1750 mA | 21 | - | 32 | |
| Io = 2100 mA | 21 | - | 28 | |

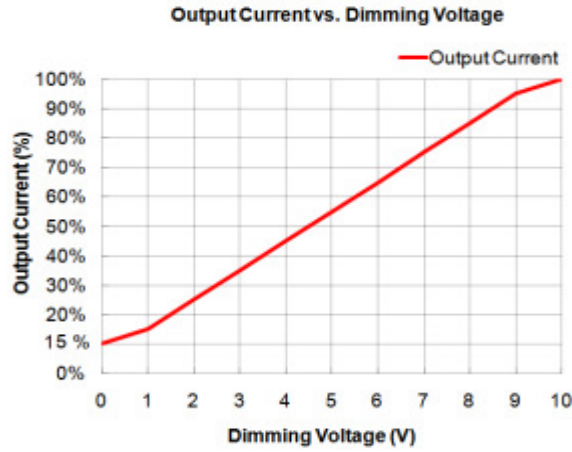


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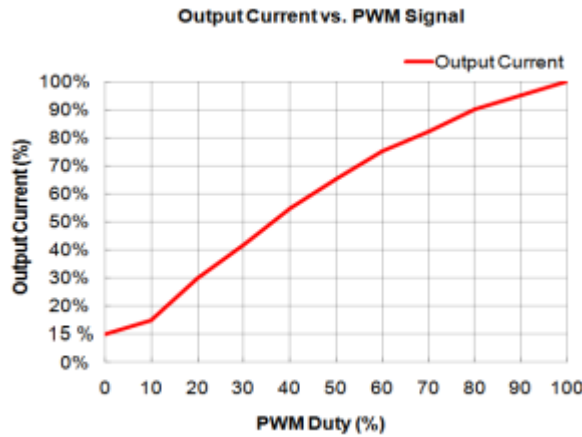
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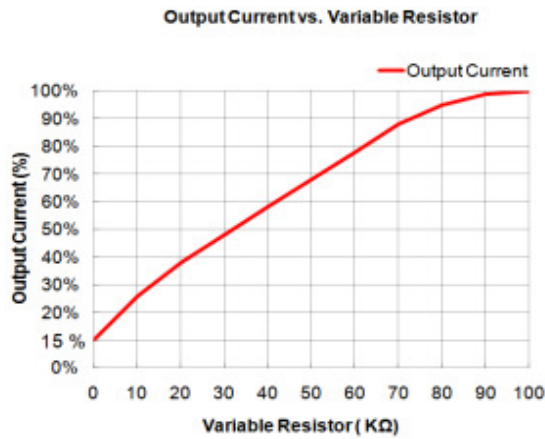
- DC Voltage Dimming Curve



- PWM Signal Dimming Curve



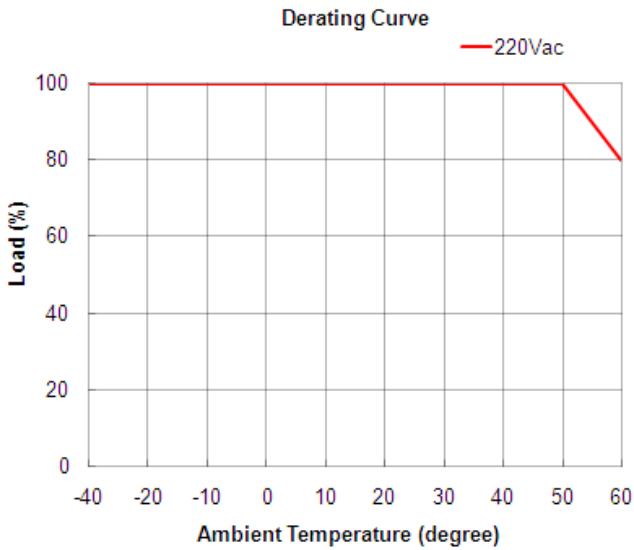
- Variable Resistor Curve



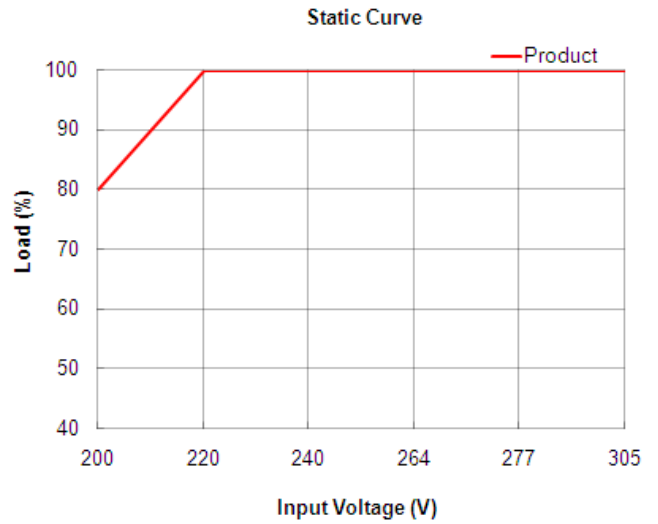


F. Electronic Curve

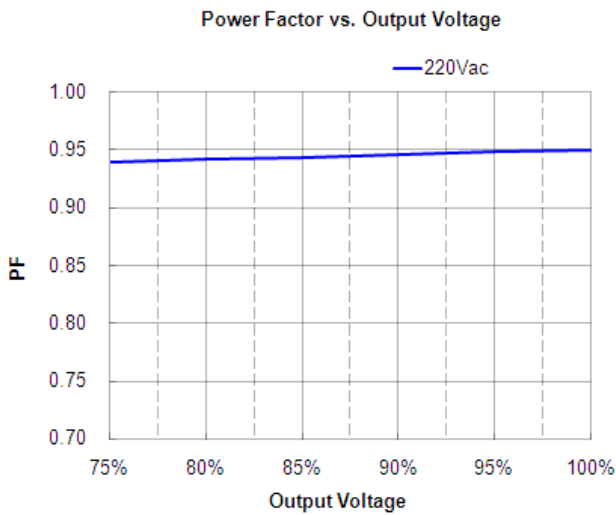
- Derating Curve



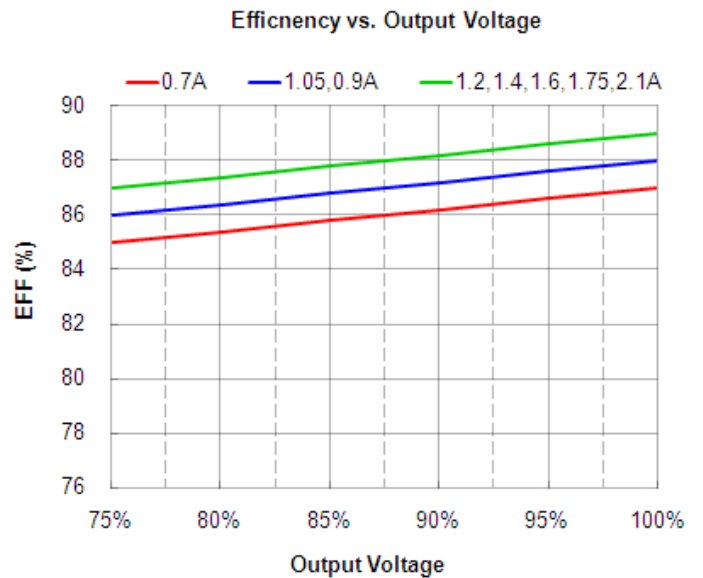
- Static Curve



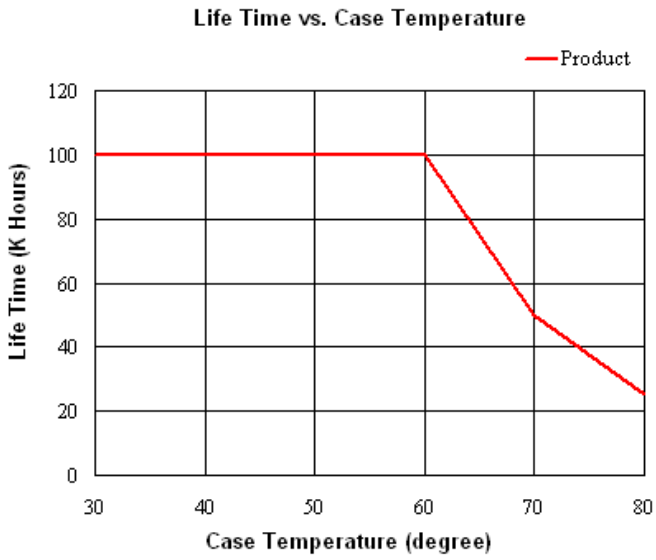
- Power Factor Characteristics Curve



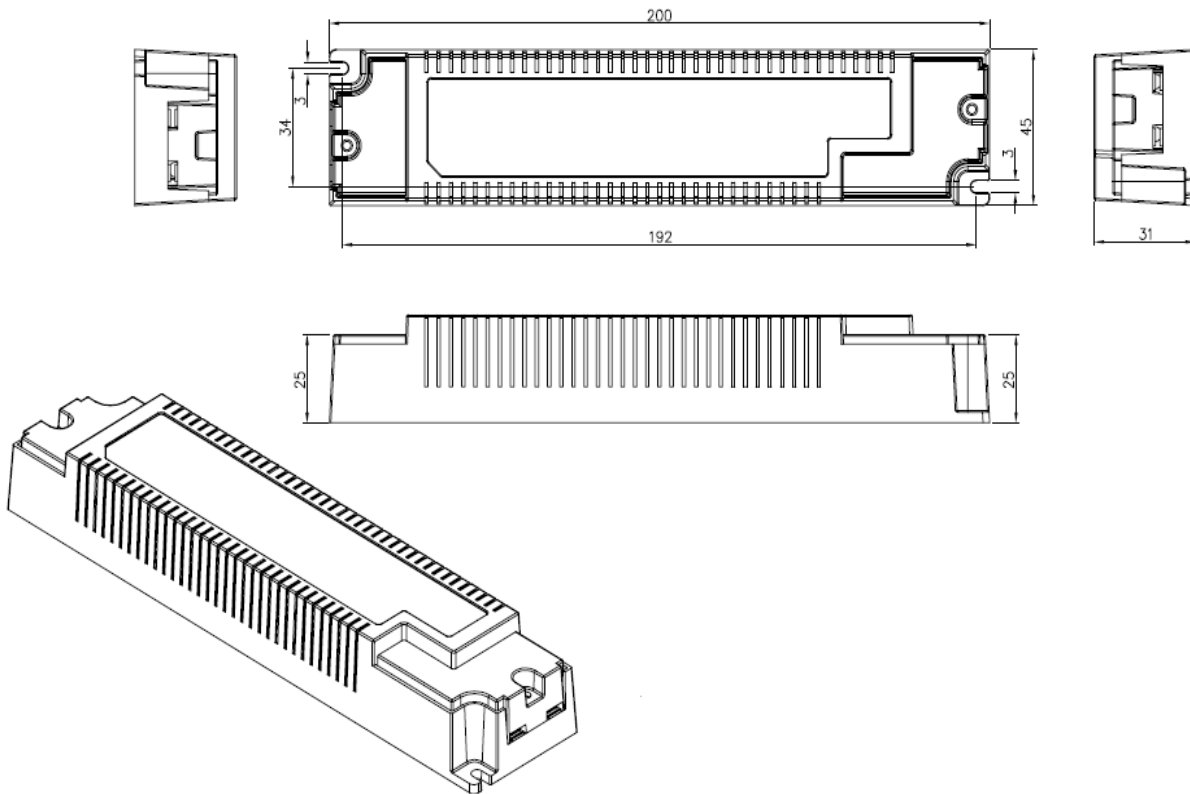
- Efficiency Characteristics Curve



- Life Time vs. Case Temperature Curve



G. Mechanical Outline





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H. RoHS Compliance Outline

Our products comply with the European Directive 2011/65/EU, calling for the elimination of lead and other hazardous substances from electronic products.

I. Revision History

| Change Date | Rev. | Description of Change | | |
|-------------|------|-----------------------|------|----|
| | | Item | From | To |
| 2014-11-25 | A1.0 | Datasheets Release | / | / |



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