

Description

HBS single output dc-dc converters provide up to 150 watts of output power in an industry standard, half-brick package and footprint. The HBS Series features excellent efficiency, Class A conducted noise specifications, and fixed switching frequency. The HBS features open-frame packaging, along with planar magnetics to provide maximum useable power with minimal thermal constraints. The HBS Series is well suited for telecom, networking, and industrial applications, and is fully compatible with production board-washing processes.

Technical Specifications

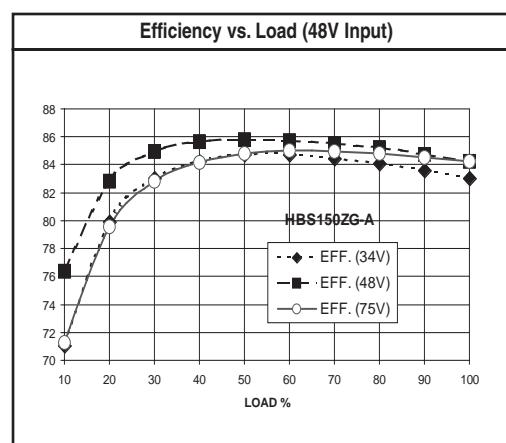
| Input | |
|----------------------------------|-------------|
| Voltage range | |
| 24 VDC nominal | 18 - 36 VDC |
| 48 VDC nominal | 34 - 75 VDC |
| Reflected ripple | 25 mA |
| Input Reverse Voltage Protection | Shunt Diode |

| Output | |
|--|---------------------------|
| Setpoint Accuracy | ±1% |
| Line Regulation V_{in} Min. - V_{in} Max., I_{out} Rated | ±0.2% V_{out} |
| Load Regulation I_{out} Min. - I_{out} Max., V_{in} Nom. | ±0.2% V_{out} |
| Remote Sense Headroom | 0.5 VDC |
| Minimum Output Current | 10%, I_{out} Rated |
| Dynamic Regulation, Loadstep | 25% I_{out} |
| Pk Deviation | 4% V_{out} |
| Settling Time | 500 µs |
| Voltage Trim Range | ±10% |
| Short Circuit / Overcurrent Protection | Hiccup |
| Current Limit Threshold Range, % of I_{out} Rated | 110 - 140% |
| OVP Trip Range | 115 - 140% V_{out} Nom. |
| OVP | Hiccup |

| Notes | |
|--|--|
| † MTBF predictions may vary slightly from model to model. | |
| Specifications typically at 25 °C, normal line, and full load, unless otherwise stated. | |
| Soldering Conditions: I/O pins, 260 °C, ten seconds; fully compatible with commercial wave-soldering equipment. | |
| Units are water-washable and fully compatible with commercial spray or immersion post wave-solder washing equipment. | |

Features

- RoHS lead solder exemption compliant
- Industry-standard half-brick
- Open-frame packaging
- 100 °C base plate operation
- Water washable
- “True-trim” option
- 1500 V isolation
- Positive or negative logic



| General | |
|--------------------------------|----------------------------|
| Turn-On Time | 10 ms |
| Remote Shutdown | Positive or Negative Logic |
| Remote Shutdown Reference | V_{in} Negative |
| Switching Frequency | 500 kHz |
| Isolation | |
| Input - Output | 1500 VDC |
| Input - Case | 1050 VDC |
| Output - Case | 500 VDC |
| Temperature Coefficient | 0.2%/°C |
| Case Temperature | |
| Operating Range | -40 to +100 °C |
| Storage Range | -40 to +125 °C |
| Thermal Shutdown Range | 105 to 115 °C |
| Vibration, 3 Axes, 5 Min Each | 5 g, 10 - 55 Hz |
| MTBF† (Bellcore TR-NWT-000332) | 2.1×10^6 hrs |
| Safety | UL, cUL, VDE |
| Weight (approx.) | 2.5 oz |

Model Selection

| MODEL | INPUT VOLTAGE (VOLTS) | INPUT VOLTAGE RANGE (VOLTS) | MAXIMUM INPUT CURRENT (AMPS)* | OUTPUT VOLTAGE (VOLTS) | RATED OUTPUT CURRENT (AMPS) | RIPPLE & NOISE pk-pk (mV) | TYPICAL EFFICIENCY** |
|-------------------|-----------------------|-----------------------------|-------------------------------|------------------------|-----------------------------|---------------------------|----------------------|
| HBS150YG-A | 24 | 18-36 | 11.7 | 5 | 30 | 100 | 80% |
| HBS150YH-A | 24 | 18-36 | 10.5 | 12 | 12.5 | 150 | 85% |
| HBS150ZG-A | 48 | 34-75 | 5.84 | 5 | 30 | 100 | 83% |
| HBS150ZH-A | 48 | 34-75 | 5.2 | 12 | 12.5 | 150 | 86% |
| HBS150ZJ-A | 48 | 34-75 | 5.2 | 15 | 10 | 150 | 84% |
| HBS150ZK-A | 48 | 34-75 | 5.2 | 24 | 6.25 | 240 | 86% |

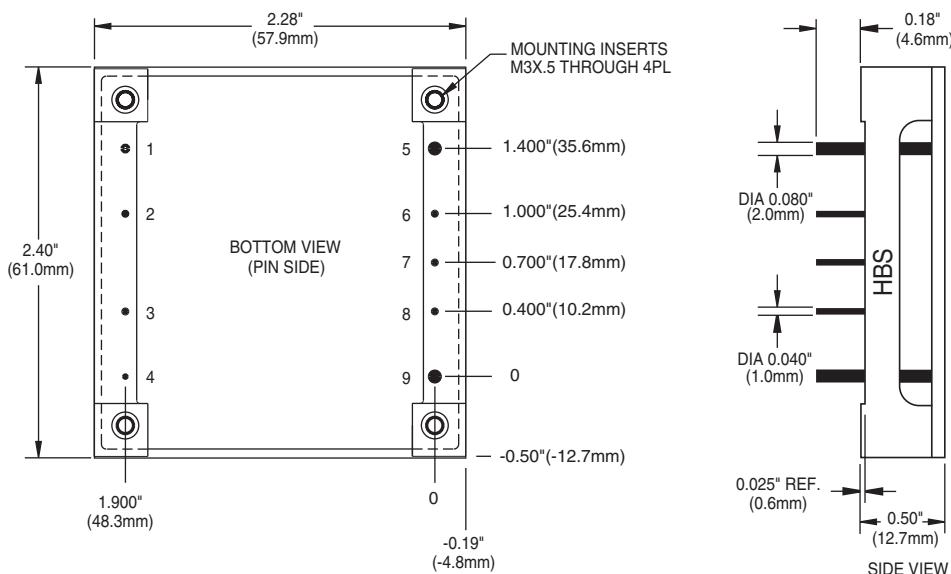
NOTES:

* Maximum input current at minimum input voltage, maximum rated output power.

** At nominal V_{in} , rated output.

 Model numbers highlighted in yellow or shaded are not recommended for new designs.

Mechanical Drawing



| Thermal Impedance | |
|--------------------|----------|
| Natural Convection | 3.4 °C/W |
| 100 LFM | 2.7 °C/W |
| 200 LFM | 2.2 °C/W |
| 300 LFM | 1.8 °C/W |
| 400 LFM | 1.6 °C/W |

Note:
Thermal impedance data is dependent on many environmental factors. The exact thermal performance should be validated for specific application.

| Pin | Function |
|-----|------------|
| 1 | $-V_{in}$ |
| 2 | Case |
| 3 | On/Off |
| 4 | $+V_{in}$ |
| 5 | $-V_{out}$ |
| 6 | -Sense |
| 7 | Trim |
| 8 | +Sense |
| 9 | $+V_{out}$ |

| Tolerances | |
|--|---------------|
| Inches: | (Millimeters) |
| .XX ± 0.020 | .X ± 0.5 |
| .XXX ± 0.010 | .XX ± 0.25 |
| Pin: | |
| ± 0.002 | ± 0.05 |
| (Dimensions as listed unless otherwise specified.) | |

Ordering Information
Suffix Code Identification:

| Series Applicability: HAS, HBD, HBS, HES, QBS, QES, TES, TQD | | |
|--|--------------------------------------|-------------|
| Features & Options | Descriptions | Suffix Code |
| Remote ON/OFF | Positive Logic | None |
| | Negative Logic | N |
| Trim | Standard Power-One (Negative) | None |
| | Industry-standard (Positive) | T |
| Pin Length | 0.18" (4.6mm), standard model length | None |
| | 0.145" (3.68mm) | 7 |
| | 0.110" (2.8mm) | 8 |
| Special Options | Customer-specific models | S# |
| NOTE: Contact factory for availability of specific options. | | |

NUCLEAR AND MEDICAL APPLICATIONS - Power-One products are not designed, intended for use in, or authorized for use as critical components in life support systems, equipment used in hazardous environments, or nuclear control systems without the express written consent of the respective divisional president of Power-One, Inc.

TECHNICAL REVISIONS - The appearance of products, including safety agency certifications pictured on labels, may change depending on the date manufactured. Specifications are subject to change without notice.