

HBS SERIES - 50 WATT

DESCRIPTION

HBS DC/DC converters provide up to 50 Watts of output power in an industry standard half-brick footprint. The HBS units feature excellent efficiency, Class A conducted noise specs, and fixed switching frequency. The HBS, using open-frame packaging, along with planar magnetics provides maximum useable power with minimal thermal constraints. The HBS series is especially suited to telecom, networking, and industrial applications.



FEATURES

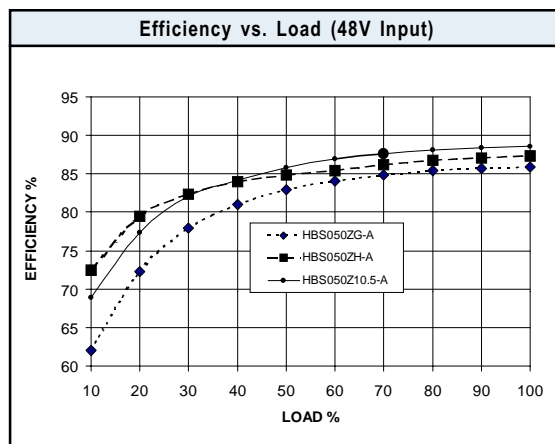
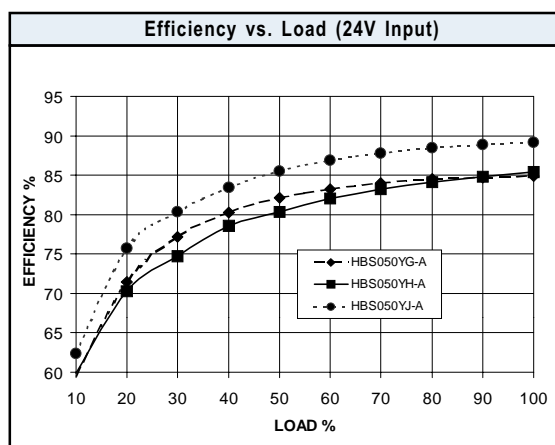
- Industry Standard Half-Brick
- Open-Frame Packaging
- 100°C Baseplate Operation
- Water Washable
- “True-Trim” Option
- 1500V Isolation
- Positive Or Negative Logic

TECHNICAL SPECIFICATIONS

| Input | |
|----------------------------------|-------------|
| Voltage Range | 18 - 36 VDC |
| 24 VDC Nominal | 34 - 75 VDC |
| 48 VDC Nominal | 25 mA |
| Reflected Ripple | Shunt Diode |
| Input Reverse Voltage Protection | |

| 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 μ s |
| 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 |

| 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 x 10 ⁶ hrs |
| Safety | UL, CUL |
| Weight (approx.) | 2.5 oz |



| 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. |
| Safety: Agency approvals may vary from model to model. Please consult factory for specific model information. |
| Units are water-washable and fully compatible with commercial spray or immersion post-wave-solder washing equipment. |

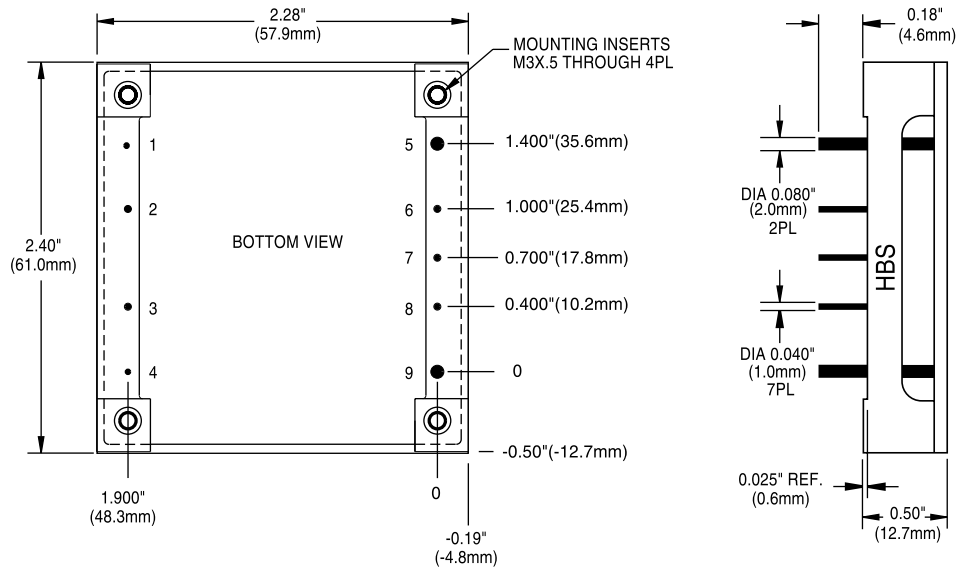
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MODELS - (See the last page of this file for options.)

| Vin (Volts) | Vin Range (Volts) | Iin Max.* (Amps) | Vout (Volts) | Iout Rated (Amps) | Ripple & Noise Pk-Pk (mV) | Efficiency Typ. ** | Model |
|-------------|-------------------|------------------|--------------|-------------------|---------------------------|--------------------|--------------|
| 24 | 18 - 36 | 3.50 | 3.30 | 15.00 | 100 | 80% | HBS050YE-A |
| 24 | 18 - 36 | 2.30 | 3.30 | 10.00 | 100 | 80% | HBS033YE-A |
| 24 | 18 - 36 | 3.60 | 5.00 | 10.00 | 100 | 84% | HBS050YG-A |
| 24 | 18 - 36 | 3.50 | 12.00 | 4.20 | 150 | 85% | HBS050YH-A |
| 24 | 18 - 36 | 3.50 | 15.00 | 3.30 | 150 | 86% | HBS050YJ-A |
| 48 | 34 - 75 | 1.32 | 3.30 | 15.00 | 100 | 80% | HBS050ZE-A |
| 48 | 34 - 75 | 1.22 | 3.30 | 10.00 | 100 | 80% | HBS033ZE-A † |
| 48 | 34 - 75 | 1.80 | 5.00 | 10.00 | 100 | 82% | HBS050ZG-A |
| 48 | 34 - 75 | 1.75 | 12.00 | 4.20 | 150 | 85% | HBS050ZH-A |
| 48 | 34 - 75 | 1.75 | 15.00 | 3.30 | 150 | 87% | HBS050ZJ-A † |

† Denotes advanced product release. Consult factory for product availability.
 * Maximum input current at minimum input voltage, maximum rated output power.
 ** At nominal Vin, rated output.

MECHANICAL DRAWING



| Thermal Impedance | |
|--------------------|----------|
| Natural Convection | 6.6 °C/W |
| 100 LFM | 5.7 °C/W |
| 200 LFM | 4.2 °C/W |
| 300 LFM | 3.1 °C/W |
| 400 LFM | 2.6 °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.) | |

OPTIONS

When ordering equipment options, use the following suffix information. Select the option(s) that you prefer and add them to the model number. Example ordering options are located below the options table.

| OPTION | SUFFIX | APPLICABLE SERIES | REMARKS |
|--|--------|--|--|
| Negative Logic | N | HAS, HBD, HBS, HES, LES, QBS, QES, TES, TQD | TTL "Low" Turns Module ON TTL "High" Turns Module OFF |
| Lucent Compatible Trim | T | HAS, HBD, HBS, HES, QBS, QES | |
| Terminal Strip | TS | XWS, XWD, XWT | |
| Trim | 1 | IAS, LES | |
| Enable | 2 | IAD, IAS, LES, SMS | |
| Trim and Enable | 3 | IAS, LES | |
| Current Share | 4 | SMS | |
| Headerless | Y | Encapsulated EWS, IWS, OWS | |
| PIN LENGTH AND HEATSINK OPTIONS | | | Standard Pin Length is 0.180" (4.6mm) |
| 0.110" (2.8mm) Pin Length | 8 | All Units (Except SMS) | |
| 0.150" (3.8mm) Pin Length | 9 | All Units (Except SMS) | |
| 0.24" (6.1mm) Horizontal Heatsink | 1H | All Units (Except DIP, SIP, and SM Packages) | Includes Thermal Pad |
| 0.24" (6.1mm) Vertical Heatsink | 1V | All Units (Except DIP, SIP, and SM Packages) | Includes Thermal Pad |
| 0.45" (11.4mm) Horizontal Heatsink | 2H | All Units (Except DIP, SIP, and SM Packages) | Includes Thermal Pad |
| 0.45" (11.4mm) Vertical Heatsink | 2V | All Units (Except DIP, SIP, and SM Packages) | Includes Thermal Pad |
| 0.95" (24.1mm) Horizontal Heatsink | 3H | All Units (Except DIP, SIP, and SM Packages) | Includes Thermal Pad |
| 0.95" (24.1mm) Vertical Heatsink | 3V | All Units (Except DIP, SIP, and SM Packages) | Includes Thermal Pad |

Example Options: HBS050ZG-ANT3V = HBS050ZG-A with negative logic, Lucent compatible trim, and 0.95" vertical heatsink.

LES015YJ-3N = LES015YJ with optional trim and enable, negative logic.

QBS066ZG-AT8 = QBS066ZG-A with Lucent compatible trim and 0.110" pin length.

NUCLEAR AND MEDICAL APPLICATIONS Power-One products are not 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 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.