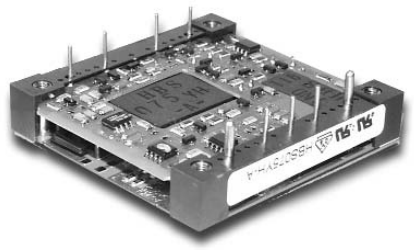
power-one™
Changing the Shape of Power



RoHS Compliant

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

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.

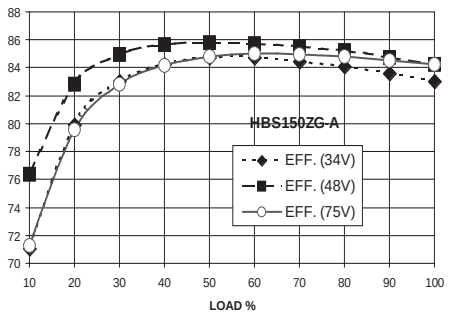
Technical Specifications

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.

Efficiency vs. Load (48V Input)



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, VDE
Weight (approx.)	2.5 oz

power-one™
Changing the Shape of Power

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%

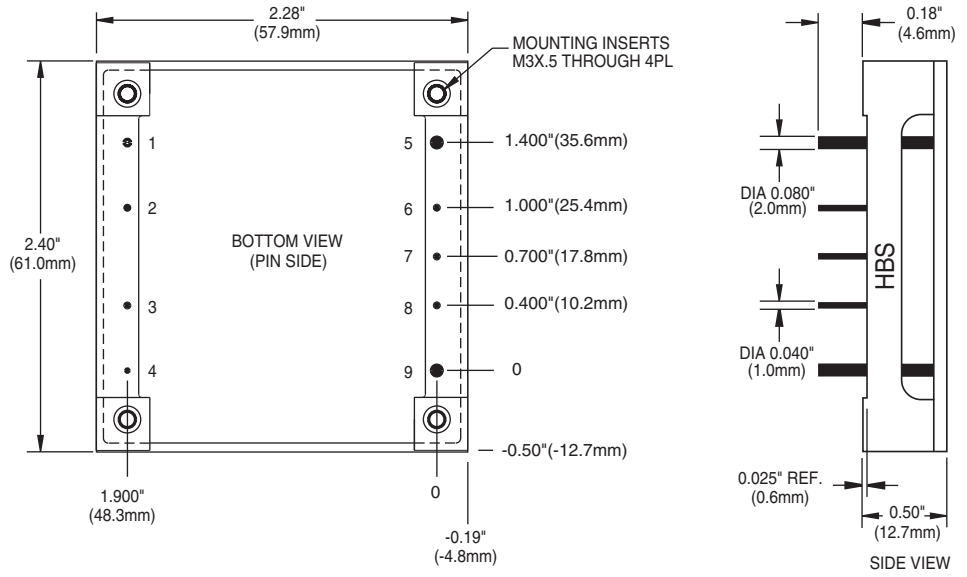
NOTES:

* 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.