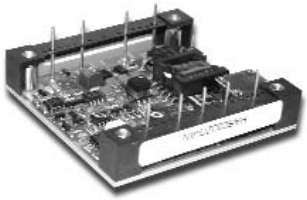
HAS SERIES - 30 WATT

DESCRIPTION

HAS DC/DC converters provide up to 30 watts of output power in an industry-standard package and footprint. With a maximum case temperature of 100°C, the HAS is well suited for the most demanding telecom, networking, and industrial applications. The HAS features 1500 VDC isolation, short circuit, and overtemperature protection, as well as six-sided shielding. The HAS series is available with optional enable and voltage trim pins. Please see the IAD series for dual output applications.



FEATURES

- Industry Standard Half-Brick
- Low-Cost Design
- 100°C Baseplate Operation
- Open-Frame Packaging
- 24V and 48V Input Versions
- Input Pi Filter
- Optional Enable Logic
- 1500V Isolation

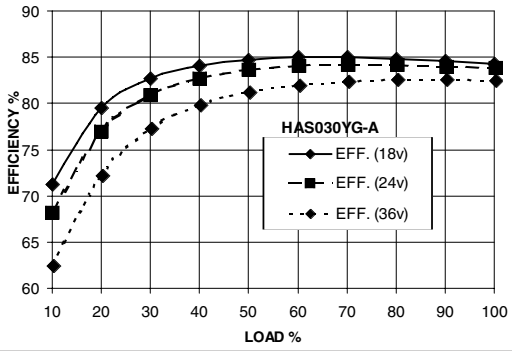
TECHNICAL SPECIFICATIONS

Input	
Voltage Range	
24 VDC Nominal	18 - 36 VDC
48 VDC Nominal	36 - 75 VDC
Reflected Ripple	50 mA

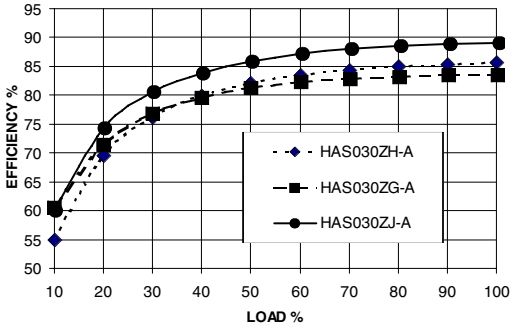
Output	
Setpoint Accuracy	±1%
Line Regulation V_{in} Min. - V_{in} Max., I_{out} Rated	0.2% V_{out}
Load Regulation I_{out} Min. - I_{out} Max., V_{in} Nom.	0.2% V_{out}
Remote Sense Headroom	0.5 VDC
Minimum Output Current	10 %
Dynamic Regulation, Loadstep	25% I_{out}
Pk Deviation	4% V_{out}
Settling 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.
Remote Shutdown Reference	V_{in} Negative
Shutdown Pin Current, Sourced At Off	10 mA Max.

General	
Turn-On Time	10 mS
Remote Shutdown	Positive/Negative Logic
Switching Frequency	250 kHz
Isolation	
Input - Output	1500 VDC
Input - Case	1050 VDC
Output - Case	500 VDC
Temperature Coefficient	0.03%/°C
Case Temperature	
Operating Range	-40 To +100°C
Storage Range	-40 To +125°C
Humidity Max., Non-Condensing	95%
Vibration, 3 Axes, 5 Min Each	5 g, 10 - 55 Hz
MTBF† (Bellcore TR-NWT-000332)	2.5 X 10^6 hrs
Safety	UL, cUL, TUV
Weight (Approx.)	1.4 oz

Efficiency vs. Load (24V Input)



Efficiency vs. Load (48V Input)



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.

HAS SERIES - 30 WATT

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

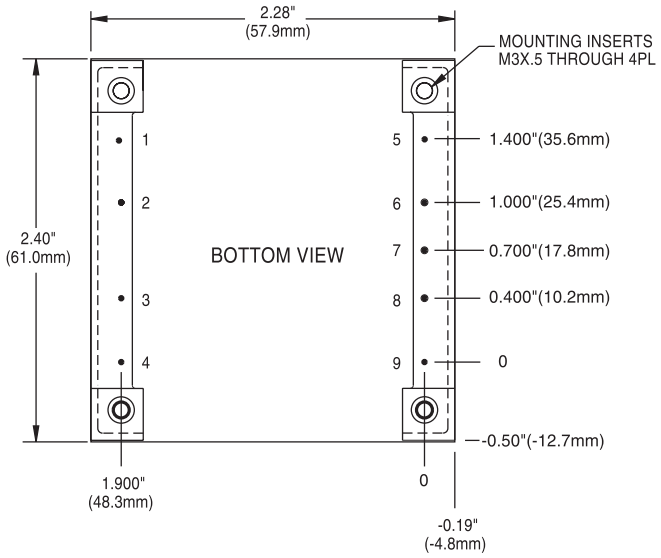
MODEL	INPUT VOLTAGE (VOLTS)	INPUT VOLTAGE RANGE (VOLTS)	MAXIMUM INPUT CURRENT (AMPS)*	OUTPUT VOLTAGE (VOLTS)	RATED OUTPUT CURRENT (AMPS)	RIPPLE & NOISE pk-pk (mV)	TYPICAL EFFICIENCY**
HAS030YG-A	24	18-36	2.2	5	6.0	100	83%
HAS030YH-A	24	18-36	2.2	12	2.5	150	87%
HAS030YJ-A	24	18-36	2.2	15	2.0	150	86%
HAS030ZE-A	48	36-75	1.0	3.3	6.0	100	81%
HAS030ZG-A	48	36-75	1.3	5	6.0	100	83%
HAS030ZH-A	48	36-75	1.3	12	2.5	150	88%
HAS030ZJ-A	48	36-75	1.3	15	2.0	150	88%

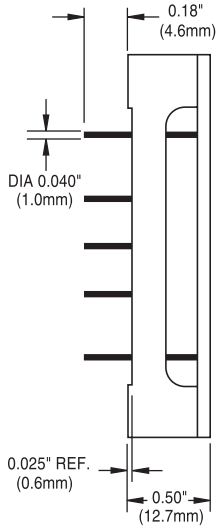
NOTES:

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

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

MECHANICAL DRAWING





Thermal Impedance	
Natural Convection	7.9 °C/W
100 LFM	6.8 °C/W
200 LFM	4.9 °C/W
300 LFM	3.6 °C/W
400 LFM	3.0 °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, HLS, LES, QBS, QES, QLS, TES, TQD	TTL "Low" Turns Module ON TTL "High" Turns Module OFF
Lucent-Compatible Trim	T	HAS, HBD, HBS, HES, HLS, QBS, QES, QLS	
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, HLS, HLD, QLS, SIP, SM, TLD, and TKD Packages)	Includes Thermal Pad
0.24" (6.1mm) Vertical Heatsink	1V	All Units (Except DIP, HLS, HLD, QLS, SIP, SM, TLD, and TKD Packages)	Includes Thermal Pad
0.45" (11.4mm) Horizontal Heatsink	2H	All Units (Except DIP, HLS, HLD, QLS, SIP, SM, TLD, and TKD Packages)	Includes Thermal Pad
0.45" (11.4mm) Vertical Heatsink	2V	All Units (Except DIP, HLS, HLD, QLS, SIP, SM, TLD, and TKD Packages)	Includes Thermal Pad
0.95" (24.1mm) Horizontal Heatsink	3H	All Units (Except DIP, HLS, HLD, QLS, SIP, SM, TLD, and TKD Packages)	Includes Thermal Pad
0.95" (24.1mm) Vertical Heatsink	3V	All Units (Except DIP, HLS, HLD, QLS, SIP, SM, TLD, and TKD 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.

For the Most Up-To-Date Information
www.power-one.com
24 Hours/Day—7 Days/Week