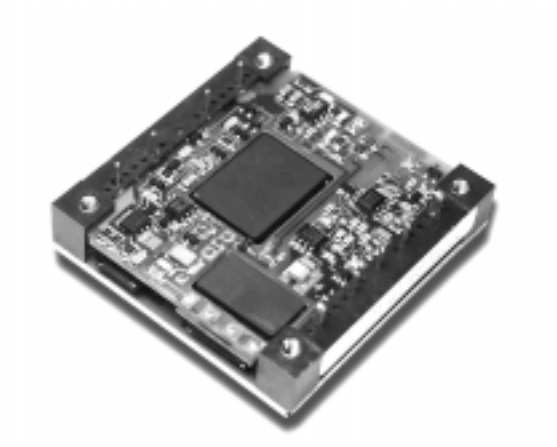
SINGLE 150 WATT

HES SERIES



key features

- high efficiency, 90% at 5V
- industry standard half-brick
- open-frame packaging
- 100C baseplate operation
- water washable
- "true-trim" option
- 1500 VDC isolation
- positive or negative logic

The HES series of single output DC/DC converters provide up to 150W of output power in the industry standard half brick package and footprint. These units feature ultra-high efficiency, class A conducted noise specs, and fixed switching frequency. The HES features IPD's proprietary open frame packaging concept, along with planar magnetics, to provide maximum usable power with minimal thermal constraints. The HES series is especially suited to very harsh Telecom, Networking, and Industrial applications. These units are fully compatible with production board washing processes, and are manufactured in IPD's ISO9001 factory.

technical specifications

input

voltage range	
24 VDC nominal	18 - 36 VDC
48 VDC nominal	36 - 72 VDC
reflected ripple	50 mA
input reverse voltage protection	shunt diode
input ubdervoltage lockout / hysteresis	<34V/1V nominal

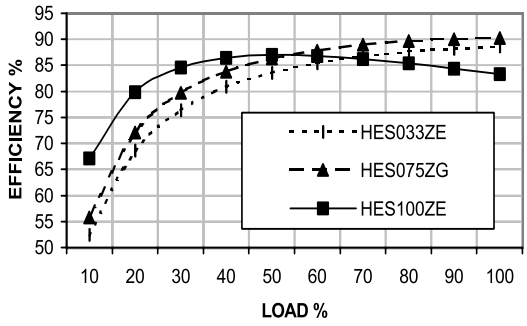
output

setpoint accuracy	±1%
line regulation V_{IN} min. - V_{IN} max., I_{OUT} rated	0.2% Vo
load regulation I_{OUT} min. - I_{OUT} max., V_{IN} nom.	0.2% Vo
remote sense headroom	0.5 VDC
minimum output current	10 %
dynamic regulation, loadstep	25% Io
Pk deviation	4% Vo
settling time	500 uS
voltage trim range	±10%
short circuit / overcurrent protection	shutdown / hiccup
current limit threshold range, %Io rated	110 - 130%
OVP trip range	120 - 140%V_{OUT} nom.
OVP type	self recovering

general

turn-on time	10 ms
remote shutdown	positive or negative logic
remote shutdown reference	Vin negative
switching frequency 2.5 & 3.3, 5V model	200 KHz, 300KHz (respectively)
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, 10-55Hz
MTBF† (Bellcore TR-NWT-000332)	1.8 x 10^6 hrs
safety	UL 1950, CSA 22.2-950, EN60950
weight (approx.)	1.4 oz.

eff. vs load (48 V_{IN})



notes

[1] Industrial temp range of -40 to +85C available, add suffix -I to P/N

† MTBF predictions may vary slightly from model to model.

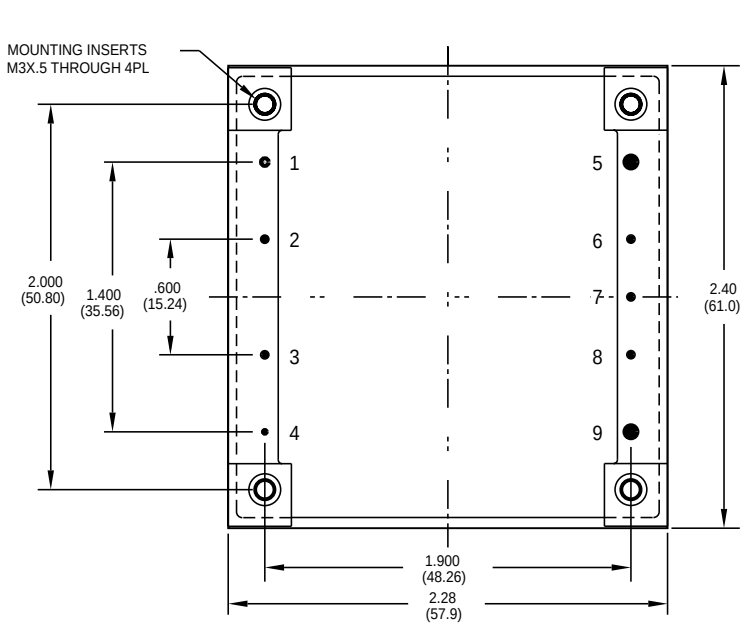
Specifications typically at 25°C, normal line, and full load - unless otherwise stated.

models

VIN (volts)	VIN range (volts)	IIN max.* (amps)	VOUT (volts)	IOUT rated (amps)	ripple & noise pk-pk (mV)	efficiency typ.**	model
48	36 - 72	0.89	2.5	10	100	88%	HES025ZD-A
48	36 - 72	1.13	3.3	10	100	87%	HES033ZE-A
48	36 - 72	1.62	5	10	100	88%	HES050ZG-A
48	36 - 72	1.33	2.5	15	100	87%	HES037ZD-A
48	36 - 72	1.69	3.3	15	100	89%	HES050ZE-A
48	36 - 72	2.42	5	15	100	88%	HES075ZG-A
48	36 - 72	1.77	2.5	20	100	86%	HES050ZD-A
48	36 - 72	2.26	3.3	20	100	88%	HES066ZE-A
48	36 - 72	3.23	5	20	100	88%	HES100ZG-A
48	36 - 72	2.60	2.5	30	100	83%	HES075ZD-A
48	36 - 72	3.33	3.3	30	100	85%	HES100ZE-A
48	36 - 72	4.72	5	30	100	89%	HES150ZG-A
48	36 - 72	2.20	2.1	30	100	80%	HES063ZC-A

* max input current an minimum input voltage, maximum rated output power
** at nominal VIN, rated output.
*** for waterwashable (headerless) version, add suffix -Y to part number
specifications are subject to change without notice.

mechanical drawing



BOTTOM VIEW

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

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

pin function

pin	function
1	-VIN
2	case
3	enable
4	+VIN
5	-VOUT
6	-sense
7	trim
8	+sense
9	+Vout

tolerances (unless otherwise specified)

Inches	**(Millimeters)**
.XX ± .020	.X ± 0.5
.XXX ± .010	.XX ± .25
Pin:	
± .002	± .05