

# HA/HP Series



## DC/DC

## 5 to 7.5 Watts

Single/Dual Outputs

- Surface mount technology
- MOSFET design
- 4:1 ultra wide input range
- Continuous short circuit protection
- Six-sided shielding
- Regulated outputs

### Specifications

#### INPUT

Voltage Range	4.5-5.5Vdc 9-36Vdc 20-72Vdc
Reflected Ripple Filtering	<10mA pk-pk All Models

#### OUTPUT

Voltage Tolerance	± 1%
Ripple and Noise (PARD)	10mV pk-pk (typ) 30mV pk-pk (max)
Short Circuit Protection	Current Limit
Temperature Coefficient	0.02% / °C

#### GENERAL

Regulation:	Fixed	Wide
Line	0.01%	0.25%
Load Single	0.1%	1.0%
Load Dual	0.01%	1.0%
Efficiency	68% (typ) Fixed Input 75% (typ) Wide Input	
I/O Isolation	500 Vdc	
Switching Frequency	50kHz (typ) Fixed Input 200kHz (typ) Wide Input	

#### ENVIRONMENTAL

Operating Temperature	-25°C to +71°C No Derating
Storage Temperature	-25°C to +105°C
Cooling	Free-air Convection

All specifications are typical at nominal line and full load at 25°C unless otherwise noted and are subject to change without notice.

The HA/HP series features the latest in MOSFET design, state of the art surface mount technology, and offers a 4:1 ultra-wide input range, and efficiencies greater than 75% (typ). Features include Pi input filter to reduce input reflected ripple, continuous short circuit protection, and excellent line and load regulation of ±0.25% for line and ±1.0% load. Additional standard features include, 500 Vdc I/O isolation, and an operating temperature range of -25°C to +71°C with no derating. All models are packaged in a six-sided shielded miniature case measuring only 2.0" x 2.0" x 0.375" high.

### Applications

The H Series is ideally suited for sensitive applications in digital and analog requiring low noise, i.e. telecommunications, process control, automatic and portable test equipment.



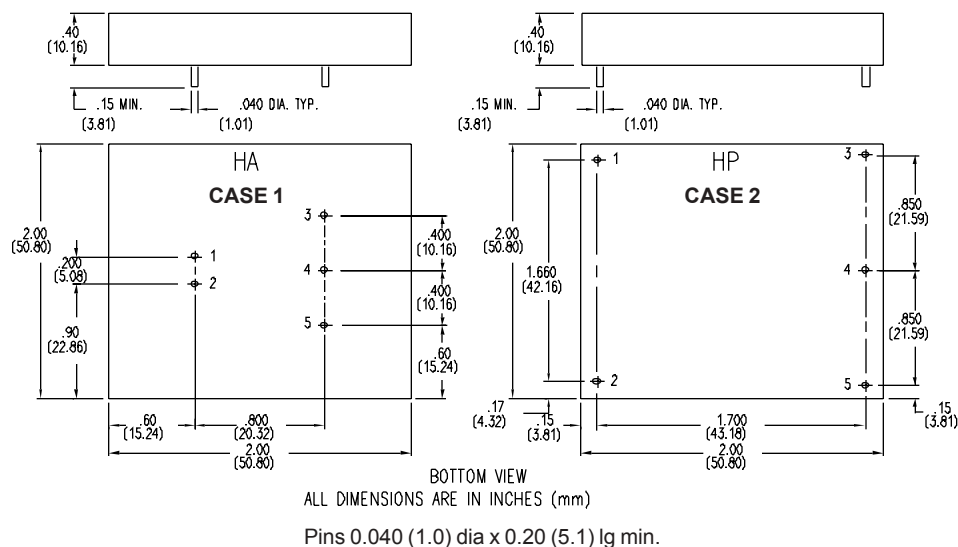
**SEMICONDUCTOR  
CIRCUITS, INC.**

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# HA/HP Series Ordering Information

Input Voltage Range	Output Voltage	Output Current	Case 1 Model Number	Case 2 Model Number
4.5-5.5 Vdc	5Vdc	1000mA	HA11-100-05	HP11-100-05
9-36 Vdc	5 Vdc	1000mA	HA11-100-18	HP11-100-18
20-72 Vdc	5 Vdc	1000mA	HA11-100-48	HP11-100-48
4.5-5.5 Vdc	12 Vdc	600mA	HA12-060-05	HP12-060-05
9-36 Vdc	12 Vdc	600mA	HA12-060-18	HP12-060-18
20-72 Vdc	12 Vdc	600mA	HA12-060-48	HP12-060-48
4.5-5.5 Vdc	15 Vdc	500mA	HA13-050-05	HP13-050-05
9-36 Vdc	15 Vdc	500mA	HA13-050-18	HP13-050-18
20-72 Vdc	15 Vdc	500mA	HA13-050-48	HP13-050-48
4.5-5.5 Vdc	±12 Vdc	±300mA	HA22-060-05	HP22-060-05
9-36 Vdc	±12 Vdc	±300mA	HA22-060-18	HP22-060-18
20-72 Vdc	±12 Vdc	±300mA	HA22-060-48	HP22-060-48
4.5-5.5 Vdc	±15Vdc	±250mA	HA23-050-05	HP23-050-05
9-36 Vdc	±15 Vdc	±250mA	HA23-050-18	HP23-050-18
20-72 Vdc	±15 Vdc	±250mA	HA23-050-48	HP23-050-48

## Dimensions and Connections



### PIN CONNECTIONS

#### Single Output

1. +Input
2. -Input
3. + Output
4. No Pin
5. -Output

### PIN CONNECTIONS

#### Dual Outputs

1. +Input
2. -Input
3. +12 or 15 Vdc Out
4. Common
5. -12 or 15 Vdc Out

### NOTES:

1. Ripple measured with a 3.3 mf tantalum capacitor across each output.

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