

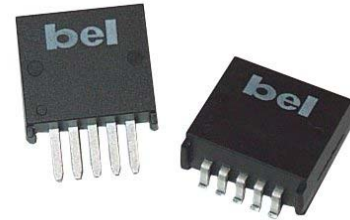
NON-ISOLATED DC/DC CONVERTERS

4.5 – 13.2V Input / 1.0 – 3.3V Output / 6A



S7AH-06E / V7AH-06E Series PRELIMINARY

- Compact surface mount package
- High efficiency means less power dissipation
- Remote on/off
- Extra wide input voltage range
- Ideal for Intermediate Bus Architecture applications



Description

The S/V7AH-06E Series are non-isolated step down DC/DC converters that operate from with an extra wide input range (4.5V to 13.2V). This allows them to operate from a nominal 5V or 12V source or from an unregulated source such as a bus converter in an Intermediate Bus Architecture application. These modules are available in a range of output voltages from 1.0V to 3.3V. They are offered in a compact overmolded package rated at 6A. Optional lead-forming provides a vertical mount product for minimal footprint or a surface mount option for very low profile. Standard features include remote on/off, over current protection and output voltage adjust. These products maybe used almost anywhere low-voltage silicon is being employed and a nominal 5 – 12V source is available. Typical applications include file servers, routers, line cards, and other computing and communications equipment.

Part Selection

Output Voltage	Input Voltage	Max. Output Current	Max. Output Power	Typical Efficiency*	Part Number Surface Mount	Part Number Vertical Mount
3.3V	4.5 – 13.2V	6A	19.8W	90%	S7AH-06E330	V7AH-06E330
2.5V	4.5 – 13.2V	6A	15.0W	88%	S7AH-06E250	V7AH-06E250
1.8V	4.5 – 13.2V	6A	10.8W	85%	S7AH-06E180	V7AH-06E180
1.5V	4.5 – 13.2V	6A	9.0W	84%	S7AH-06E150	V7AH-06E150
1.2V	4.5 – 13.2V	6A	7.2W	82%	S7AH-06E120	V7AH-06E120

* Typical Efficiency at $V_{in} = 8V$ (slightly higher for $V_{in} = 5V$, slightly lower for $V_{in} = 12V$)

Input Specifications

Parameter	Min	Typ	Max	Notes
Input Voltage Range	4.5 VDC		13.2 VDC	
Input Current (no load)		50mA		
Input Current (full load)			5.7A	
Reflected Ripple Current		60mA rms 150mA pk-pk	120mA rms 250mA pk-pk	With a simulated source impedance of 500nH, 5Hz to 20 MHz

Output Specifications

Parameter	Min	Typ	Max	Notes
Voltage Adjustability	90%		110%	
Output Current	0A		6A	
Setpoint Accuracy	-2.5%		+2.5%	
Total Regulation	-2.0%		+2.0%	Includes line, load and temperature.
Ripple and Noise			100mV pk-pk 50mV rms	0 to 20MHz Bandwidth Use 1.0uF ceramic and 10uF Aluminum on output

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Output Specifications (continued)

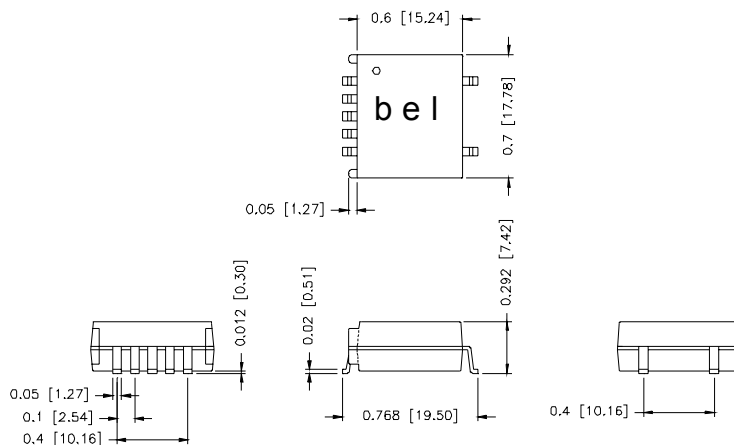
Parameter	Min	Typ	Max	Notes
Transient Response 3.3V / 2.5V 1.8V / 1.5V / 1.2V			200mV / 150uS 160mV / 150uS	Max dev / recovery time di/dt = 0.5A/uS, Vin = 8VDC Ta = 25°C, 50-100% load change with 220uF external capacitance.

General Specifications

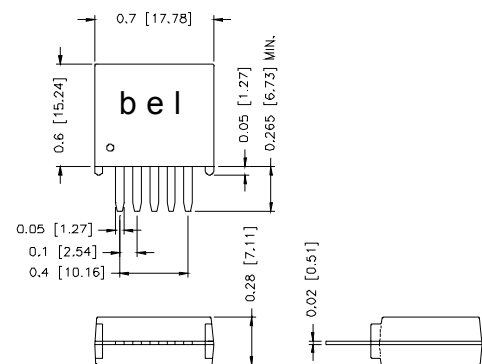
Parameter	Specification
Switching Frequency	400kHz typical (fixed)
Dimensions	inches 0.7 x 0.65 x 0.32 mm 17.78 x 16.51 x 8.13
Weight	6.2 g
Operating Temperature	-40°C to 85°C
Non-Operating Temperature	-40°C to 100°C
Protection Features	Latching shutdown 130% to 250% max Io
Remote On/Off	
Signal Low (OFF)	-0.3 to 1.3V
Signal High (ON)	3.5 to 6.5V

Pin Connections

Pin	Function
1	On/Off
2	Vin
3	Ground
4	Vout
5	Trim



S7AH-06Exxx



V7AH-06Exxx

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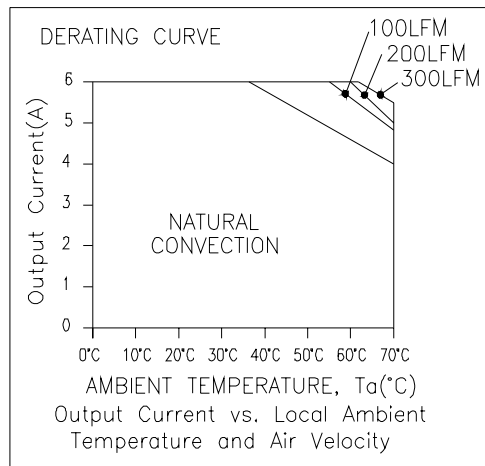
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Derating Guidelines



Output Trim Equations

Equations for calculating the trim resistor (in k Ω) given the desired adjusted voltage (V_{adj}) and the nominal output voltage of the converter (V_{nom}) are shown below. The Trim Down resistor should be connected between the Trim pin and V_{out} . The Trim Up resistor should be connected between the Trim pin and Ground. Only one of the resistors should be used for any given application.

$$R_{TrimDown} = \frac{A}{V_{nom} - V_{adj}} - B$$

$$R_{TrimUp} = \frac{C}{V_{adj} - V_{nom}} - D$$

Vnom	A	B	C	D
3.3V	168.70	152.80	37.14	90.90
1.8V	74.95	152.80	37.14	90.90