



# ACE729H

## 3A, 18V, High Efficiency Synchronous-Rectified Step-Down Converter

### Description

The ACE729H is a synchronous step-down converter with an input voltage range of 4.75V to 18V. It delivers up to 3A continuous output current with high efficiency over a wide output current range. The converter operates in fixed frequency PWM mode set by external resistance at FREQ pin.

The output voltage can be regulated as low as 0.8V(ACE729HA). The device enters shutdown mode and consumes less than 6uA when the EN pin is pulled low.

Other features include soft-start, over temperature protection, and over current protection. The ACE729H is available in ESOP-8 package.

### Features

- Wide Input Voltage from 4.75V to 18V
- Adjustable Output Voltage form 0.8V to 15V
- 3A Output Current
- Up to 95% High Efficiency
- Integrated 105mΩ/85mΩ Power MOSFET Switches
- Programmable Switching Frequency: 300KHz to 1.5MHz
- Internal Soft Start
- Over Current Protection and Hiccup
- Over Temperature Protection
- RoHS Compliant and Halogen Free

### Application

- Networking Systems
- Notebook Computers
- FPGA, DSP, ASIC Power Supplies



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### Absolute Maximum Ratings <sup>(Note 1)</sup>

Parameter	Value
Input Supply Voltage ( $V_{IN}$ )	-0.3V to 20V
LX	-0.3V to ( $V_{IN} + 0.3V$ ), < 6.0V
BOOT	( $V_{LX}-0.3V$ ) to ( $V_{LX} + 0.3V$ )V
Others	-0.3V to 6.0V
ESD <sup>(Note 2)</sup>	
Human Body Mode	2kV
Machine Mode	200V

Note 1: Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability and lifetime.

2: This device is sensitive to electrostatic discharge. Follow proper handling procedures.

### Thermal Information

Parameter	Value	
Continuous Junction Temperature Range	-40°C to 150°C	
Storage Temperature Range	-65°C to 150°C	
Lead Temperature (Soldering, 10 second)	260°C	
Package Thermal Resistance (Note 1)	ESOP-8, $\theta_{JA}$	50°C/W
	ESOP-8, $\theta_{JC}$	10°C/W
Maximum Power Dissipation, PD @ $T_A = 25^\circ\text{C}$ (Note 2)	ESOP-8	2W

### Recommended Operation Condition

Parameter	Value
Continuous Junction Temperature Range	-40°C to 120°C
Ambient Temperature Range	-40°C to 85°C
Input Voltage Range ( $V_{IN}$ )	4.75V to 18.5V
Output Voltage Range ( $V_{OUT}$ )	$V_{FB}$ to $V_{IN}-3V$

Note 1: The Thermal Resistance specifications are based on a JEDEC standard JESD51-3 single-layer PCB.  $\theta_{JA}$  will vary with board size and copper area.

Note 2: The maximum allowable power dissipation is a function of the maximum junction temperature,  $T_{J(MAX)}$ , the junction-to-ambient thermal resistance,  $\theta_{JA}$ , and the ambient temperature,  $T_A$ . The maximum allowable power dissipation at any ambient temperature is calculated using:  $P_{D(MAX)} = (T_{D(MAX)} - T_A) / \theta_{JA}$ . The maximum power dissipation is determined using  $T_A = 25^\circ\text{C}$ , and  $T_{J(MAX)} = 125^\circ\text{C}$



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#### Notes

ACE does not assume any responsibility for use as critical components in life support devices or systems without the express written approval of the president and general counsel of ACE Technology Co., LTD. As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user.
2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

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