



# ACE7318EI

## 1MHz, 18V, 3.0A Synchronous Step-Down Converter

### Description

The ACE7318EI is a high efficiency 1MHz current mode constant on-time (CM-COT) control mode synchronous step-down DC-DC converter capable of delivering 3A current. ACE7318EI integrates main switch and synchronous switch with very low  $R_{DS(ON)}$  to minimize the conduction loss. Low output voltage ripple and small external inductor and capacitor size are achieved with 1MHz switching frequency. It adopts the CM-COT architecture to achieve fast transient responses for high voltage step down applications.

The ACE7318EI requires a minimum number of readily available standard external components and is available in a space saving 6-pin SOT563 ROHS compliant package.

### Features

- High Efficiency: Up to 93%(@3.3V)
- 1MHz Frequency Operation
- Up to 3.0A Output Current@1.2VOUT
- Low  $R_{DS(ON)}$  for internal switches: 70m $\Omega$ /35m $\Omega$ (top/bottom)
- 4.5V to 18V Input Voltage Range
- 0.805V Reference
- Current mode COT control to achieve fast transient responses
- Integrated internal compensation
- Stable with Low ESR Ceramic Output Capacitors
- Over Current Protection with Hiccup Mode
- Thermal Shutdown
- Inrush Current Limit and Soft Start
- Available in SOT563 Package

### Application

- Digital Set Top Boxes
- Flat Panel Television and Monitors
- Notebook computer
- Wireless and DSL Modems



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### Absolute Maximum Rating (Note 1)

Parameter	Min	Max	Unit
Input Supply Voltage, EN	-0.3	20	V
LX Voltages	-0.3	20	V
FB Voltage	-0.3	6	V
BS Voltage	-0.3	23	V
Storage Temperature Range	-65	150	°C
Junction Temperature (Note 2)	160		°C
Power Dissipation	600		mW
Lead Temperature (Soldering, 10s)	260		°C

Note 1: Absolute Maximum Ratings are those values beyond which the life of a device may be impaired.

Note 2:  $T_J$  is calculated from the ambient temperature  $T_A$  and power dissipation  $P_D$  according to the following formula:  $T_J = T_A + P_D \times \theta_{JA}$ . The maximum allowable continuous power dissipation at any ambient temperature is calculated by  $P_{D(MAX)} = (T_{J(MAX)} - T_A) / \theta_{JA}$

### ESD Rating

Items	Description	Value	Unit
$V_{ESD}$	Human Body Model for all pins	±2000	V

JEDEC specification JS-001

### Recommended Operating Conditions

Items	Description	Min	Max	Unit
Voltage Range	IN	4.5	18	V
$T_J$	Operating Junction Temperature Range	-40	125	°C

### Thermal Resistance (Note)

Items	Description	Value	Unit
$\theta_{JA}$	Junction-to-ambient thermal resistance	130	°C/W

Note: Measured on JESD51-7, 4-layer PCB.



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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.