



# ACE7176U

## Low Power DC/DC Boost Converter

### Description

The ACE7176U is a PFM controlled step-up DC-DC converter with a switching frequency up to 1MHz. The device is ideal to generate output voltage for small to medium LCD bias supplies and white LED backlight supplies from a single cell Li-Ion battery. The part can also be used to generate standard 3.3V/5V to 12V power conversions.

With a high switching frequency of 1MHz, a low profile and small board area solution can be achieved using a chip coil and an ultra small ceramic output capacitor. The ACE7176U has an internal 400mA switch current limit, offering lower output voltage ripple. The low quiescent current (typically 36 $\mu$ A) together with an optimized control scheme, allows device operation at very high efficiencies over the entire load current range.

### Features

- 2.0V to 6.0V Input Voltage Range
- Adjustable Output Voltage up to 28V
- 400mA Internal Switch Current
- Up to 1MHz Switching Frequency
- 36 $\mu$ A Typical No Load Quiescent Current
- 1 $\mu$ A Maximum Shutdown Current
- Internal Soft-Start
- Available in Tiny SOT23-5 and DFN2\*2-6LPackages

### Application

- LCD Bias Supply
- White LED Supply for LCD Backlights
- Digital Still Camera
- PDAs, Organizers and Handheld PCs
- Cellular Phones
- Standard 3.3V/5V to 12V Conversion



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### Absolute Maximum Ratings

Over operating free-air temperature (unless otherwise noted) <sup>(Note 1)</sup>

Symbol	Parameter	Value	Units	
$V_{IN}$	Supply Voltage on VIN <sup>(Note 2)</sup>	-0.3 to 7.0	V	
$V_{FB}, V_{EN}$	Voltages on FB, EN <sup>(Note 2)</sup>	-0.3 to $V_{IN}+0.3$	V	
$V_{SW}$	Switch Voltage on SW <sup>(Note 2)</sup>	30	V	
$P_D$	Continuous Power Dissipation at $T_A = 25^\circ\text{C}$	SOT23-5	0.5	W
		DFN2*2-6L	1.0	
$T_J$	Operating Junction Temperature	-40 to 150	$^\circ\text{C}$	
$T_{STG}$	Storage Temperature Range	-65 to 150	$^\circ\text{C}$	
$T_L$	Maximum Lead Temperature for Soldering 10 seconds	260	$^\circ\text{C}$	

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 under recommended operating conditions is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

Note 2: All voltage values are with respect to network ground terminal.

### Recommended Operating Conditions

Symbol	Parameter	Min	Typ	Max	Unit
$V_{IN}$	Input Voltage Range	2.0		6.0	V
$V_{OUT}$	Output Voltage Range			28	V
L	Inductor <sup>(Note 3)</sup>	2.2	10		$\mu\text{H}$
f	Switching Frequency <sup>(Note 3)</sup>			1	MHz
$C_{IN}$	Input Capacitor <sup>(Note 3)</sup>		4.7		$\mu\text{F}$
$C_{OUT}$	Output Capacitor <sup>(Note 3)</sup>	1			$\mu\text{F}$
$T_A$	Operating Ambient Temperature	-40		85	$^\circ\text{C}$
$T_J$	Operating Junction Temperature	-40		125	$^\circ\text{C}$

Note 3: Refer to application section for further information.





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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.