



# ACE7551U

## 600mA, 1.2MHz, Synchronous Step-Down DC-DC Converter

### Description

ACE7551U is a high-efficiency pulse-width-modulated (PWM) step-down DC-DC converter, capable of delivering 600mA output current over a wide input voltage range from 2.5V to 5.5V. The target application of ACE7551U is for portable electronic devices that are powered from 1-cell Li-ion battery or from other power sources within the range such as cellular phones, PDAs and handy-terminals. Internal synchronous rectifier with low  $R_{DS(ON)}$  dramatically reduces conduction loss at PWM mode. No external Schottky diode is required in practical application. The ACE7551U automatically turns off the synchronous rectifier while the inductor current is low and enters discontinuous PWM mode. This can increase efficiency at light load condition.

ACE7551U enter shutdown mode and consumes less than 0.1uA when EN pin is pulled low. The operation frequency is set to 1.2MHz. This along with small SOT-23-5 package and DFN2\*2-6L package provides small PCB area application. Other features include lower internal reference voltage with 2% accuracy, over temperature protection, and over current protection.

### Features

- High Efficiency: Up to 90%
- 1.2MHz Constant Switching Frequency
- 600mA Output Current
- Integrated Main Switch and Synchronous Rectifier. No Schottky Diode Required
- 2.5V to 5.5V Input Voltage Range
- Low Quiescent Current: 50 $\mu$ A
- Thermal Fault Protection
- <1 $\mu$ A Shutdown Current
- Lead Free SOT-23-5 Package and DFN2\*2-6L Package

### Application

- Cellular and Smart Phones
- Microprocessors and DSP Core Supplies
- Wireless and DSL Modems
- PDAs, GPS
- MP3 Player
- Portable Instruments



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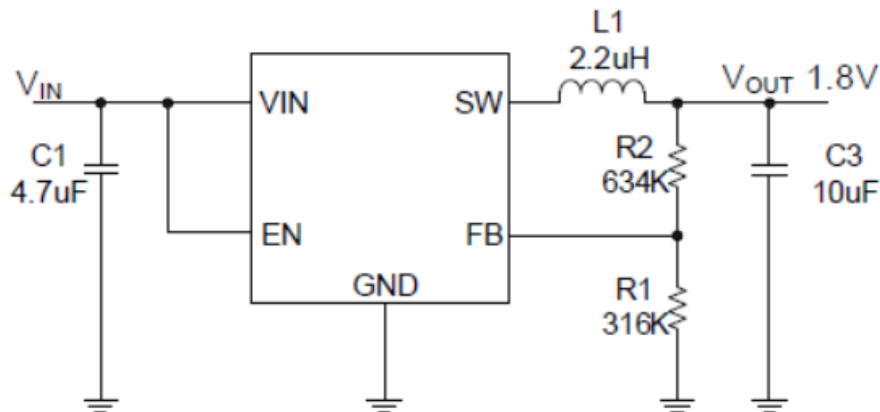
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### Absolute Maximum Ratings (NOTE1)

Symbol	Parameter	Value	Unit	
$V_{IN}$	$V_{IN}$ Supply Voltage	-0.3 to 6V	V	
$V_{EN}, V_{FB}$	EN, FB Voltages	-0.3 to $V_{IN}+0.3$	V	
$V_{SW}$	SW Voltage	-0.3 to $V_{IN}+0.3$	V	
$I_{SW}$	Peak SW Sink and Source Current	1.5	A	
$P_D$	Continuous Power Dissipation at $T_A=25^{\circ}C$	SOT23-5	0.89	W
		DFN2*2-6L	1.56	
$T_{OP}$	Operating Temperature Range	-40 to 85	$^{\circ}C$	
$T_{STG}$	Storage Temperature Range	-65 to 150	$^{\circ}C$	

Note 1: Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

### Typical Application





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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.