



ACE7150U

1A, 1MHz Synchronous Step-Up DC/DC Converter

Description

The ACE7150U is synchronous rectified, fixed frequency, step-up DC/DC converter series delivering high efficiency in a low profile SOT23-6 and DFN2*2-6L package. The device features true output load disconnection and adjustable output with a current limit of 1A. With an internal NMOS switch, PMOS synchronous rectifier and high switching frequency of 1MHz, the ACE7150U is capable of supplying 5.0V output at 500mA from single Li-ion cell or 300mA from 2 cell AA input using low profile inductors and ceramic capacitors. Current mode PWM control with internal compensation as well as the synchronous rectifier and 1MHz high frequency lead to the fewest number of external parts needed thereby saving BOM cost and PCB area. At light load, ACE7150U enters automatically into pulse skipping mode to keep high efficiency. An internal dumping circuit will be connected to V_{IN} when the switch is idle that eliminates switch ringing and reduces EMI interference. Minimum V_{IN} operation after start-up is only limited by the battery's ability to provide the necessary power as it enters a deeply discharge state.

The device also features low shutdown current less than $1\mu A$. It also limits the inductor current below to 500mA during start-up, minimizing surge currents seen by the input supply.

Features

- 5V at 500mA from single Li-Ion Cell
- Up to 94% efficiency
- Output Load Disconnection
- Internal Synchronous Rectifier
- Input Current Limit 1A
- Pulse Skipping Mode Operation with Typical I_Q as $50\mu A$
- Shutdown Current Lower than $1\mu A$
- 1MHz Switching Frequency for Low Profile Inductor/Capacitor
- Minimum Start-Up Voltage: 2.3V
- Output Voltage: 2.5V to 5.5V
- Anti-Ringing Control to Reduce EMI

Application

- Compact Solution for 5V USB On-The-Go V_{BUS} Power
- Digital Cameras
- Handheld Instruments
- Wireless Handsets
- GPS Receivers
- Medical Instruments



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Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
V_{IN}	V_{IN} Supply Voltage	-0.3 to +6V	V
V_{SW}	SW Voltage	-0.3 to +6V	V
I_{FB}	FB Voltage	-0.3 to +6V	V
$V_{\overline{SHDN}}$	\overline{SHDN} Voltage	-0.3 to +6V	V
V_{OUT}	Output Voltage	-0.3 to +6V	V
T_{OP}	Operating Ambient Temperature Range	-40 to +85	°C
T_{STG}	Storage Temperature Range	-55 to +150	°C
T_L	Maximum Lead Temperature (Soldering , 10s)	+260	°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.

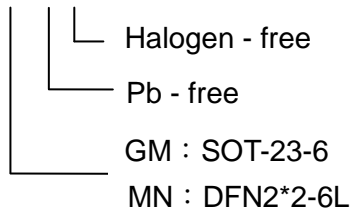


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Ordering Information

ACE7150U XX + H





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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.

ACE Technology Co., LTD.
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