



ACE7323N

High Efficiency Fast Response 6A, 23V Input Synchronous Step Down Regulator

Description

The ACE7323N develops a high efficiency synchronous step-down DC-DC regulator capable of delivering 6A current. The device integrates main switch and synchronous switch with very low $R_{DS(ON)}$ to minimize the conduction loss.

The ACE7323N operates over a wide input voltage range from 4V to 23V. The DC-DC regulator adopts the instant PWM architecture to achieve fast transient responses for high step down applications and high efficiency at light load. The device provides various protection features for reliable operation. In addition, it operates at pseudo-constant frequency of 600kHz to minimize the size of inductor and capacitor.

Features

- Low $R_{DS(ON)}$ for internal switches (top/bottom): 38/19 m Ω
- Wide input voltage range: 4-23V
- Instant PWM architecture to achieve fast transient responses
- Internal 1.3ms soft-start limits the inrush current
- Pseudo-constant frequency: 600kHz.
- 6A output current capability
- +/-1% internal reference voltage
- PFM/PWM selectable light load operation mode
- Optional bypass input
- Power good indicator
- Output discharge function
- Output current limit protection
- Hiccup mode output short circuit protection
- Output over voltage protection
- Input UVLO
- Over temperature protection with auto recovery
- RoHS Compliant and Halogen Free
- Compact package: QFN3x3-20

Applications

- LCD-TV/Net-TV/3DTV
- Set Top Box
- Notebook
- High Power AP



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Absolute Maximum Ratings (Note1)

Parameter		Value
IN		24V
BST-SW		4V
EN, ILMT, MODE, PG, SW		24V
VCC, FB		4V
BYP		6V
Power Dissipation, PD@TA=25°C		3.3W
Package Thermal Resistance (Note 2)	θ_{JA}	30°C/W
	θ_{JC}	4.5°C/W
Junction Temperature Range		150°C
Lead Temperature (Soldering, 10sec.)		260°C
Storage Temperature Range		-65°C to 150°C
Dynamic SW voltage in 10ns duration		IN+3V to GND-5V

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

Note 2: Package thermal resistance is measured in the natural convection at TA = 25°C on a four-layer Silergy Evaluation Board.

Recommended Operating Conditions (Note 1)

Parameter	Value
Supply Input Voltage	4V to 23V
Junction Temperature Range	-40°C to 125°C
Ambient Temperature Range	-40°C to 85°C

Note 1: The device is not guaranteed to function outside its operating conditions.



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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.