ACE74530N

High Efficiency, 4A, 30V Input Synchronous Step Down Regulator

Description

ACE74530N develops a high efficiency synchronous step-down DC/DC converter capable of delivering 4A output current. ACE74530N operates over a wide input voltage range from 4.5V to 30V and integrates main switch and synchronous switch with very low $R_{DS(ON)}$ to minimize the conduction loss. ACE74530N adopts the proprietary instant PWM architecture to achieve fast transient responses for high step-down applications and high efficiency at light loads. In addition, it operates at pseudo-constant frequency of 500kHz under continuous conduction mode to minimize the size of inductor and capacitor.

Features

- Low $R_{DS(ON)}$ for Internal Switches (Top/Bottom): 80mΩ/50mΩ
- 4.5-30V Input Voltage Range
- 4A Continuous, 5A Peak Load Current Capability
- Pseudo-Constant Frequency: 500kHz at heavy loads
- 1.5% 0.6V Reference
- Output Over Current Limit
- Output Short Circuit Protection with Current Fold Back
- Instant PWM Architecture to Achieve Fast Transient Responses
- External Soft-Start Limits the Inrush Current
- Thermal Shutdown and Auto Recovery
- RoHS Compliant and Halogen Free
- Compact Package: ESOP-8

Applications

- LCD Monitor
- DVR/NVR
- NAS
- Notebook
- High power AP router
- Set Top Box
- LCD TV

Absolute Maximum Ratings (Note 1)

Parameter		Value
VIN, LX, BS, EN		32V
VCC, FB, SS, BS-LX		4V
Power Dissipation, P_D @ T_A = 25°C	ESOP-8	3.3W
Package Thermal Resistance (Note 2)	θ_{JA}	30°C/W
	θ_{JC}	10°C/W
Junction Temperature Range		-40°C to 150°C
Lead Temperature (Soldering, 10 sec.)		260°C
Storage Temperature Range		-65°C to 150°C

Recommended Operating Conditions (Note 3)

Parameter	Value
Supply Input Voltage	4.5V to 30V
Junction Temperature Range	-40°C to 125°C
Ambient Temperature Range	-40°C to 85°C

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.

2: θ_{JA} is measured in the natural convection at T_A = 25°C on a low effective single layer thermal conductivity test board of JEDEC 51-3 thermal measurement standard. Paddle of ESOP-8 packages is the case position for θ_{JC} measurement.

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

Ordering Information

ACE74530N XX + H

- Halogen - free
- Pb - free
- IM: ESOP-8

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 sued 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 shoes 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.