ACE7316LA

500KHz, 16V, 3A Synchronous Step-Down Converter

Description

The ACE7316LA is a fully integrated, high-efficiency 3A synchronous rectified step-down converter. The ACE7316LA operates at high efficiency over a wide output current load range.

This device offers two operation modes, PWM control and PFM Mode switching control, which allows a high efficiency over the wider range of the load.

The ACE7316LA requires a minimum number of readily available standard external components and is available in SOT23-6 package.

Features

- High efficiency: up to 96%
- 500KHz frequency operation
- Up to 3A output current
- No schottky diode required
- 4.5V to 16V input voltage range
- 0.8V reference
- Slope compensated current mode control for excellent line and load transient response
- Integrated internal compensation
- Stable with low ESR ceramic output capacitors
- Over current protection with hiccup-mode
- Over temperature protection
- Inrush current limit and soft start
- Available in SOT23-6
- -30°C to 85°C temperature range

Application

- Distributed power systems
- Digital set top boxes
- Flat panel television and monitors
- Wireless and DSL modems
- Notebook computer

Absolute Maximum Rating

Parameter	Value
Supply voltage V_{IN}	-0.3V to 17V
Switch node voltage VSW	-0.3V to (V_{IN}+0.3V)
Boost voltage V_{BST}	VSW-0.3V to V_SW+5V
Enable voltage V_{EN}	-0.3V to (V_{IN}+0.3V)
All other pins	-0.3V to 6V
Package thermal resistance (θ_{JA})	150°C /W
Package thermal resistance (θ_{JC})	50°C /W
Max operating junction temperature (T_J)	150°C
Operating temperature range	-30°C to 85°C
Storage temperature range	-65°C to 150°C
Lead temperature (soldering, 10s)	260°C

Ordering information

ACE7316LA XX + H

- H: Halogen - free
- \+ : Pb - free
- XX: GM: SOT-23-6

Typical Application

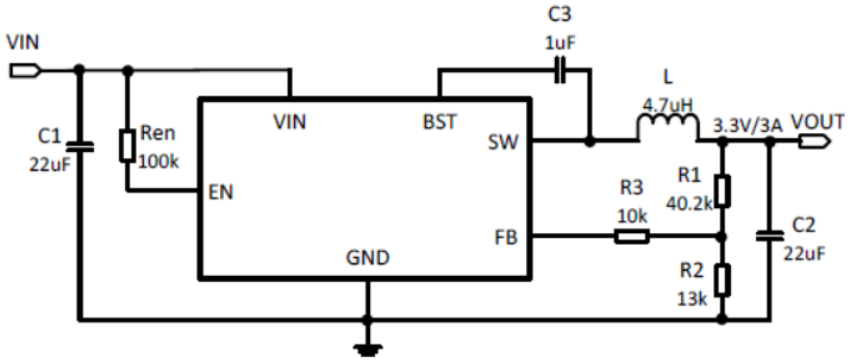


Figure 1.

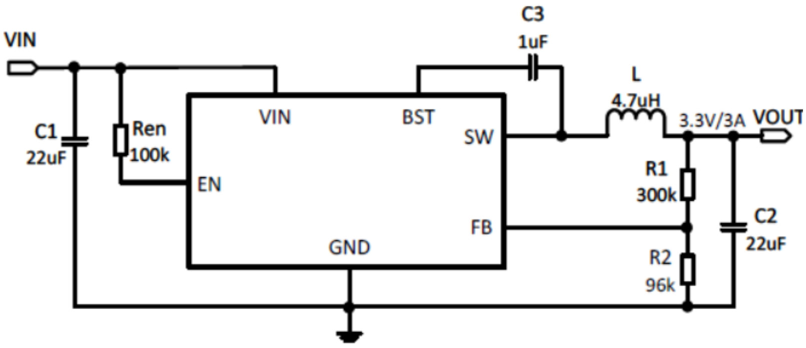
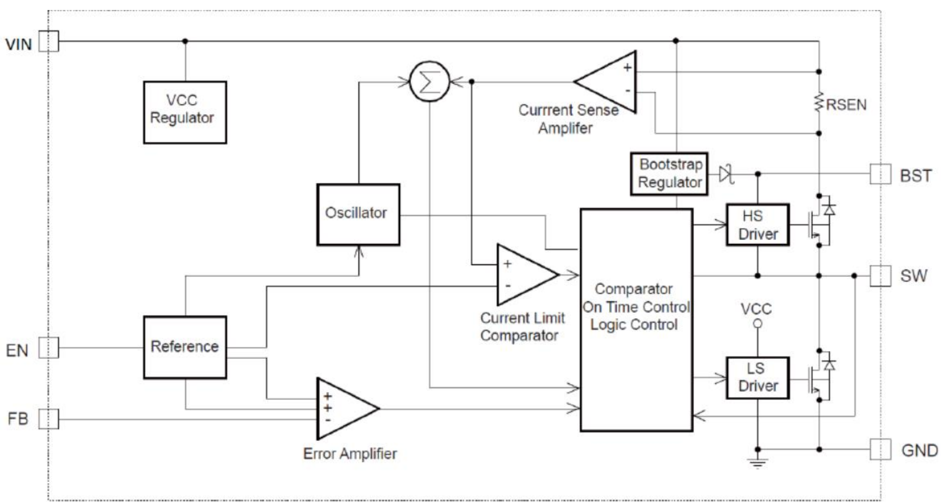


Figure 2.

Note:

1. C1 and C2 recommended using 22uF ceramic capacitors. If the electrolytic capacitor is used, it is recommended that the ceramic capacitor in parallel with a capacitance value of 0.1uF or more.
2. The resistance R3 in Figure 1 makes the loop more stable. If it isn't used, the resistance R1 、 R2 should be adjusted(See Figure2.). The value of R1 is recommended to be about 300kΩ.

Block Diagram



Typical Application Circuits

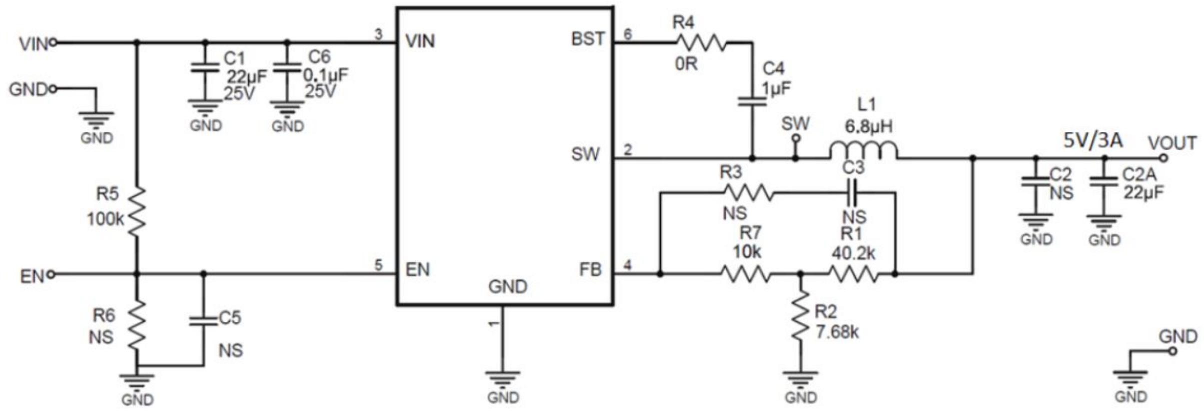


Figure3. 12V VIN, 5V/3A

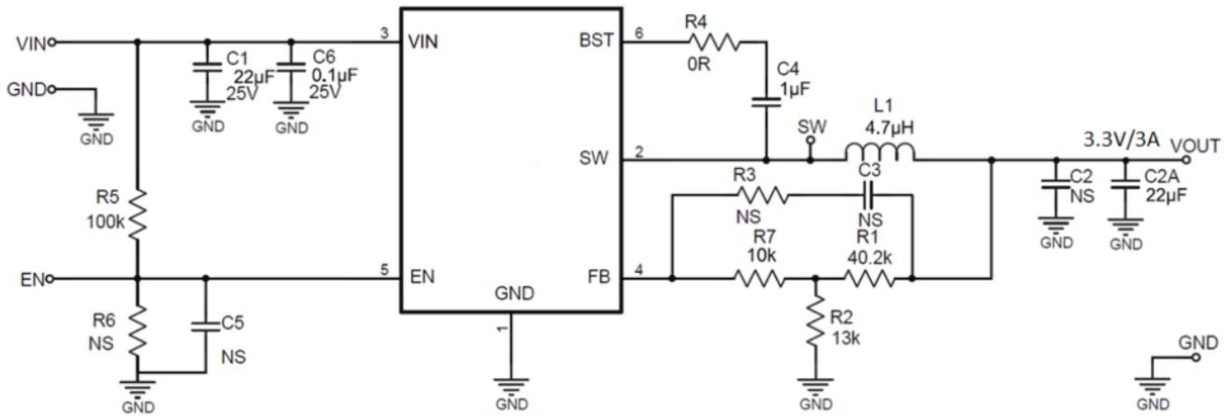


Figure4. 12V VIN, 3.3V/3A

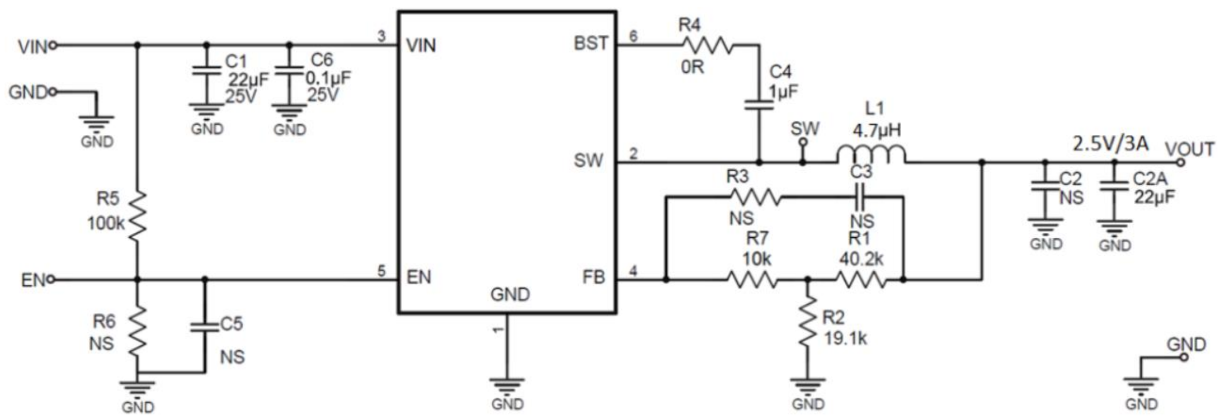


Figure5. 12V VIN, 2.5V/3A

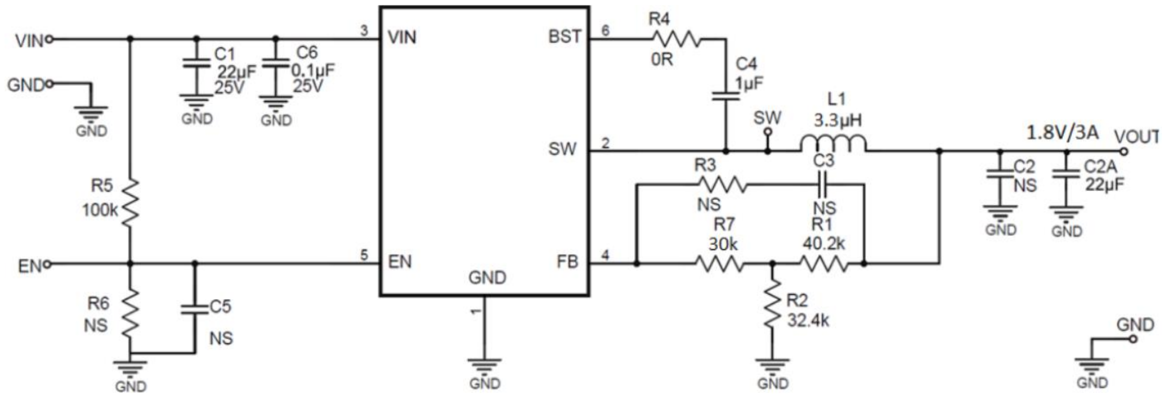


Figure6. 12V VIN, 1.8V/3A

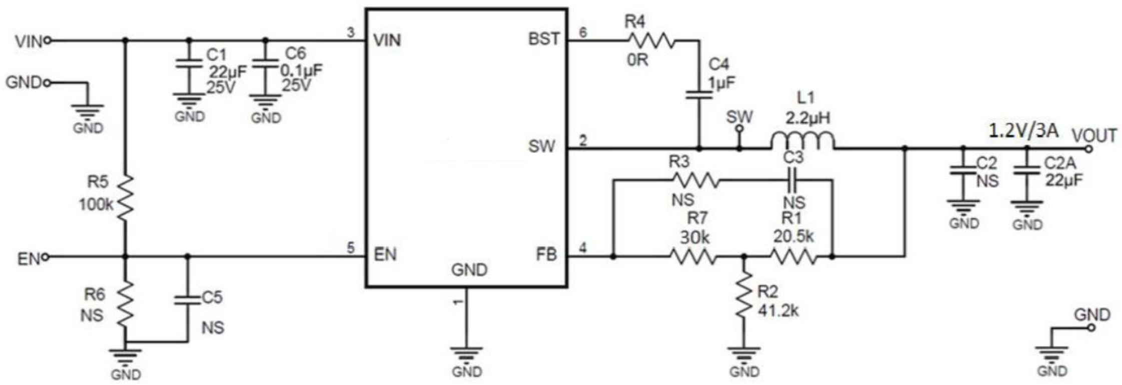


Figure7. 12V VIN, 1.2V/3A

Notes

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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.

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