ACE7259C

500KHz, 18V, 2.5A Synchronous Step-Down Converter

Description

The ACE7259C is a fully integrated synchronous rectified step-down converter that provides wide 4.4V to 18V input voltage range and 2.5A continuous load current capability. The ACE7259C can achieve high efficiency and reduce power loss at light load. In shutdown mode, the Max supply current is about 10μA. The ACE7259C protection function includes cycle- by-cycle current limit, UVLO and thermal shutdown. Besides, internal soft-start prevents inrush current at fast power-on. This device uses Constant On-Time (COT) control mode which provides fast load transient response. Internal loop compensation function reduces the external compensator components and simplifies the design process.

The ACE7259C requires a minimum number of readily available standard external components and is available in a SOT23-6 package.

Features

- Wide Input Voltage Range: 4.4V to 18V
- 2.5A Output Current
- 0.6V Reference Voltage
- Low $R_{DS(ON)}$ Integrated Power MOSFET (140/70mΩ)
- 10μA(typ) Shutdown Current
- Integrated internal compensation
- High Efficiency at Light Load
- Internal 2ms Soft-Start
- Cycle-by-Cycle Current Limit
- Over-Temperature Protection with Auto Recovery
- Under Voltage Lockout (UVLO)
- Hiccup Short Circuit Protection
- Available in a SOT23-6 Package
- RoHS Compliant

Application

- Distributed Power System
- Flat Panel Television and Monitors
- STB (Set-Top-Box)
- Networking, XDSL Modem

Absolute Maximum Ratings

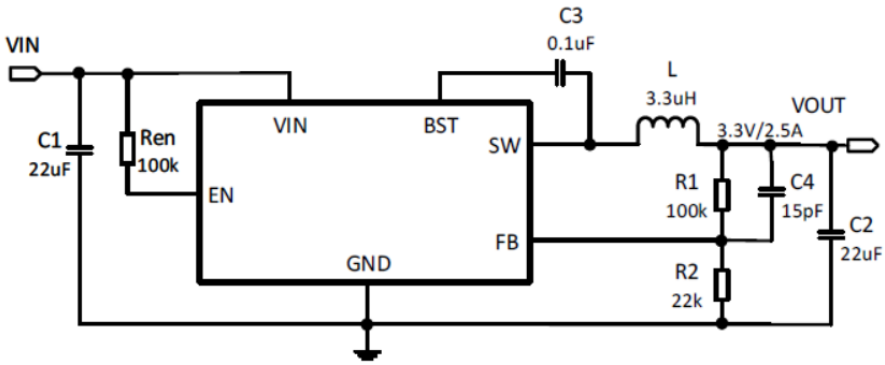
Parameter	Value
Supply voltage VIN	-0.3V to 18V
Switch node voltage VSW	-0.3V to 18V
Boost voltage VBST	V_{SW}-0.3V to V_{SW}+6V
Enable voltage VEN	-0.3V to 18V
FB voltage VFB	-0.3V to 18V
Power dissipation (PD)	0.63W
Package thermal resistance (θ_{JA})	150°C /W
Package thermal resistance (θ_{JC})	50°C /W
Max operating junction temperature (TJ)	150°C
Operating temperature range	-40°C to 85°C
Storage temperature range	-55°C to 150°C
Lead temperature (soldering, 10s)	260°C

Ordering information

ACE7259C XX+ H

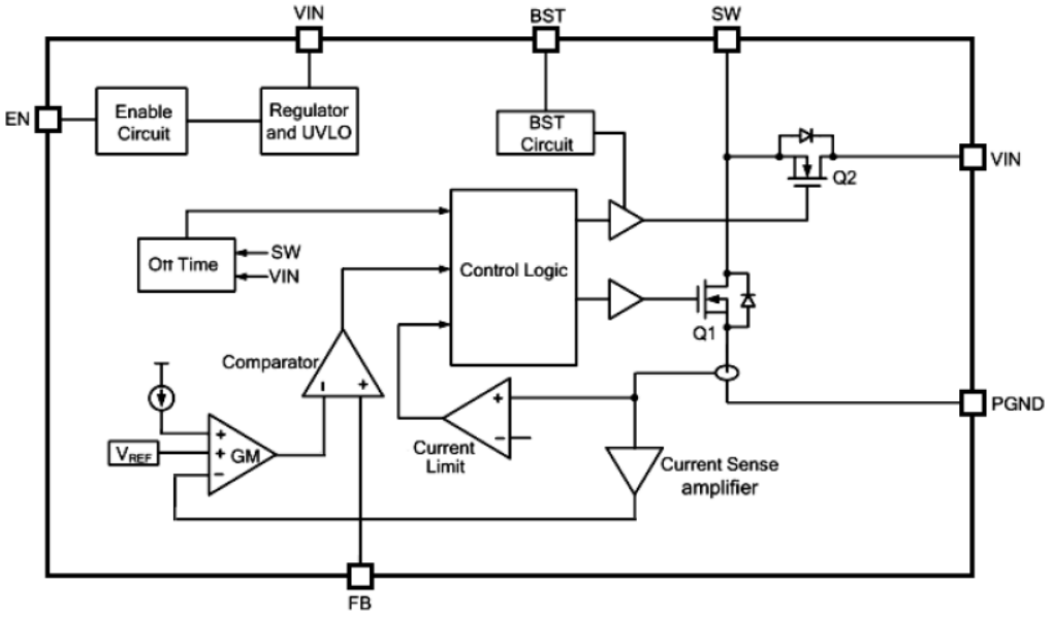
- H: Halogen - free
- +: Pb - free
- XX: GM: SOT23-6

Typical Application



Note: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.

Block Diagram



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.