

30V Input Integrated Synchronous Switch Buck Regulator Product Brief

Features

- Up to 95% Efficiency
- Input Voltage Range: 4.0V to 30V (maximum)
- Output Voltage Range: 2.0V to 15V
- Integrated Low- and High-Side NMOS Switches
 - 200 mΩ, Low Side
 - 300 mΩ, High Side
- 800mA Output Current Capability
- Reference Voltage: 0.8V
- Automatic PFM/PWM Operation (MCP16311):
 - Pulse Frequency Modulation (PFM) Operation Disabled (MCP16311B)
 - Pulse-Width Modulation (PWM) Operation: 500 kHz
- Low Device Quiescent Current:
 - <30 μA (non-switching, PFM Mode)
- Internal Compensation
 - Minimizes Number of External Components
- Internal Soft-Start: 300 μs
- Current Limit
- Under Voltage Lockout (UVLO):
 - 4.0V typical to start
 - 3.6V typical to stop
- Overtemperature Protection
- Thermal Shutdown:
 - +150°C
 - +25°C Hysteresis

Applications

- PIC[®]/dsPIC[®] DSC Microcontroller Bias Supply
- 24V Industrial Input DC-DC Conversion
- General Purpose DC-DC Conversion
- Local Point-of-Load Regulation
- Automotive Battery Regulation
- Set-Top Boxes
- Cable Modems
- Wall Transformer Regulation
- Laptop Computers
- Networking Systems
- AC-DC Digital Control Bias
- Distributed Power Supplies

General Description

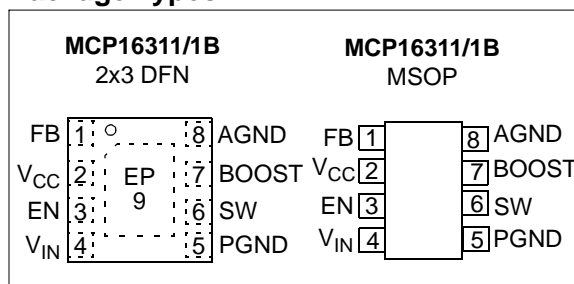
The MCP16311/1B is a compact, high-efficiency, fixed frequency, synchronous step-down DC-DC converter in an 8-pin MSOP or 2 x 3 DFN package that operates from input voltage sources up to 30V. Integrated features include a high-side switch, fixed frequency Peak Current Mode Control, internal compensation, peak current limit and overtemperature protection. The MCP16311/1B provides all the active functions for local DC-DC conversion with fast transient response and accurate regulation.

High converter efficiency is achieved by integrating the current-limited, low-resistance, high-speed low- and high-side switches and associated drive circuitry. The MCP16311 has PFM/PWM mode; it switches to PFM for light load conditions and for large conversion ratios. This results in higher efficiency over all the load ranges. MCP16311B runs in PWM mode only, and is recommended for noise-sensitive applications.

The MCP16311/1B can supply up to 800 mA of continuous current, while regulating the output voltage from 1.8V to 15V. An integrated, high-performance peak current mode architecture keeps the output voltage tightly regulated, even during input voltage steps and output current transient conditions that are common in power systems.

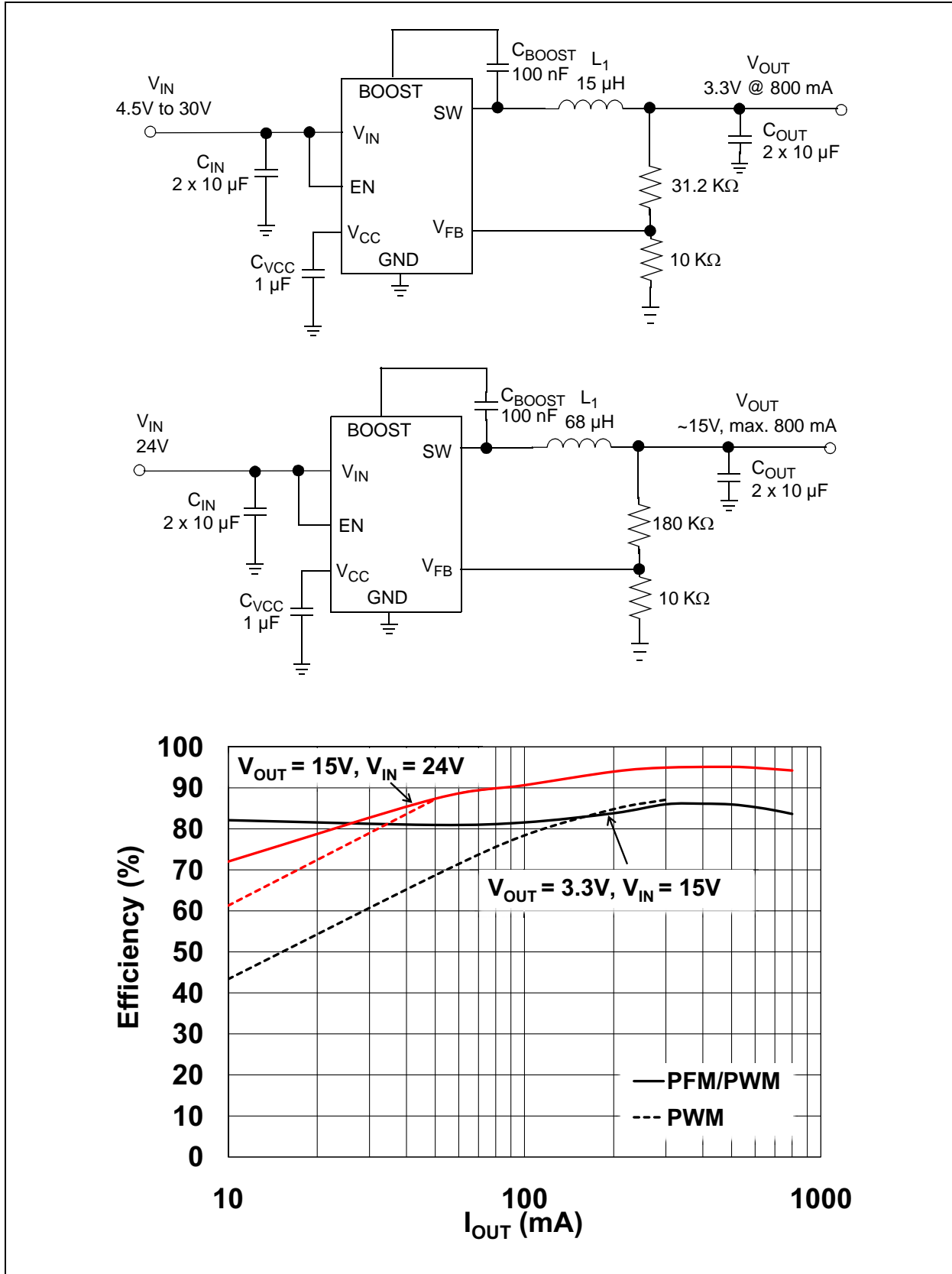
The EN input is used to turn the device on and off. While off, only a few micro amps of current are consumed from the input.

Package Types



MCP16311/1B

Typical Applications and Efficiency Diagram



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