

RAA489800

Bidirectional Buck-Boost Voltage Regulator

The [RAA489800](#) is a bidirectional, buck-boost voltage regulator that provides buck-boost voltage regulation and protection features. The advanced Renesas R3™ Technology provides high light-load efficiency, fast transient response, and seamless DCM/CCM transitions.

The RAA489800 takes input power from a wide range of DC power sources up to 23V (such as conventional AC/DC adapters (ADP), USB PD ports, travel ADP) and safely converts it to a regulated voltage up to 21V. The RAA489800 can also convert a wide range DC power source connected at its output (system side) to a regulated voltage to its input (ADP side). This bidirectional buck-boost regulation feature makes the RAA489800's application very flexible. In addition to 4-switch buck-boost configuration, it can also support 2-switch Buck mode operation.

The RAA489800 includes various system operation functions such as the Forward mode enable pin, Reverse mode enable pin, programmable soft-start time, and adjustable forward and reverse V_{OUT} . It also has forward and reverse power-good indicators. The protection functionalities include OCP, OVP, UVP, and OTP.

The RAA489800 has serial communication through SMBus/I²C that allows programming of many critical parameters to deliver a customized solution. These programming parameters include, but are not limited to: output current limit, input current limit, and output voltage setting.

Features

- Bidirectional buck, boost, and buck-boost operation
- Configurable for 4-switch buck-boost or 2-switch buck operation
- Input voltage range: 3.8V to 23V (no dead zone)
- Output voltage: up to 21V
- Up to 1MHz switching frequency
- Pin programmable soft-start time
- LDO output for VDD and VDDP
- System FAULT status ALERT function
- Input/output internal discharge function
- Active switching for negative voltage transitions
- Pass Through mode in both directions
- Forward and Reverse mode enable pins
- OCP, OVP, UVP, and OTP protection
- Absolute overvoltage protection
- SMBus and auto-increment I²C compatible
- Pb-free (RoHS compliant)
- 32 Ld 4x4 TQFN package
- UL 2367, IEC 62368-1: File No. E520109

Applications

- Tablets, Ultrabooks, power banks, mobile devices, and USB-C

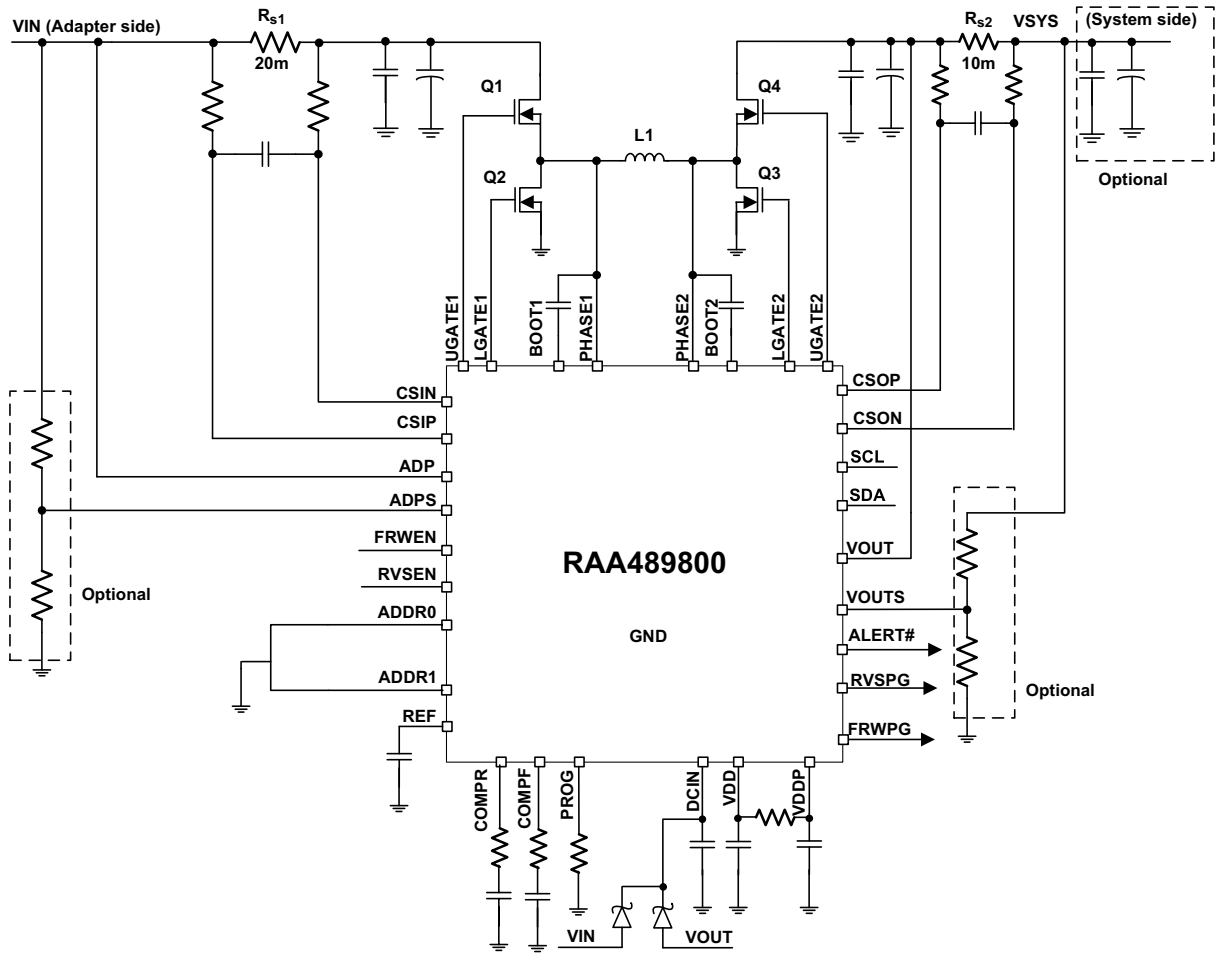


Figure 1. Typical Application Circuit in 4-Switch Buck-Boost Configuration