

## 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.

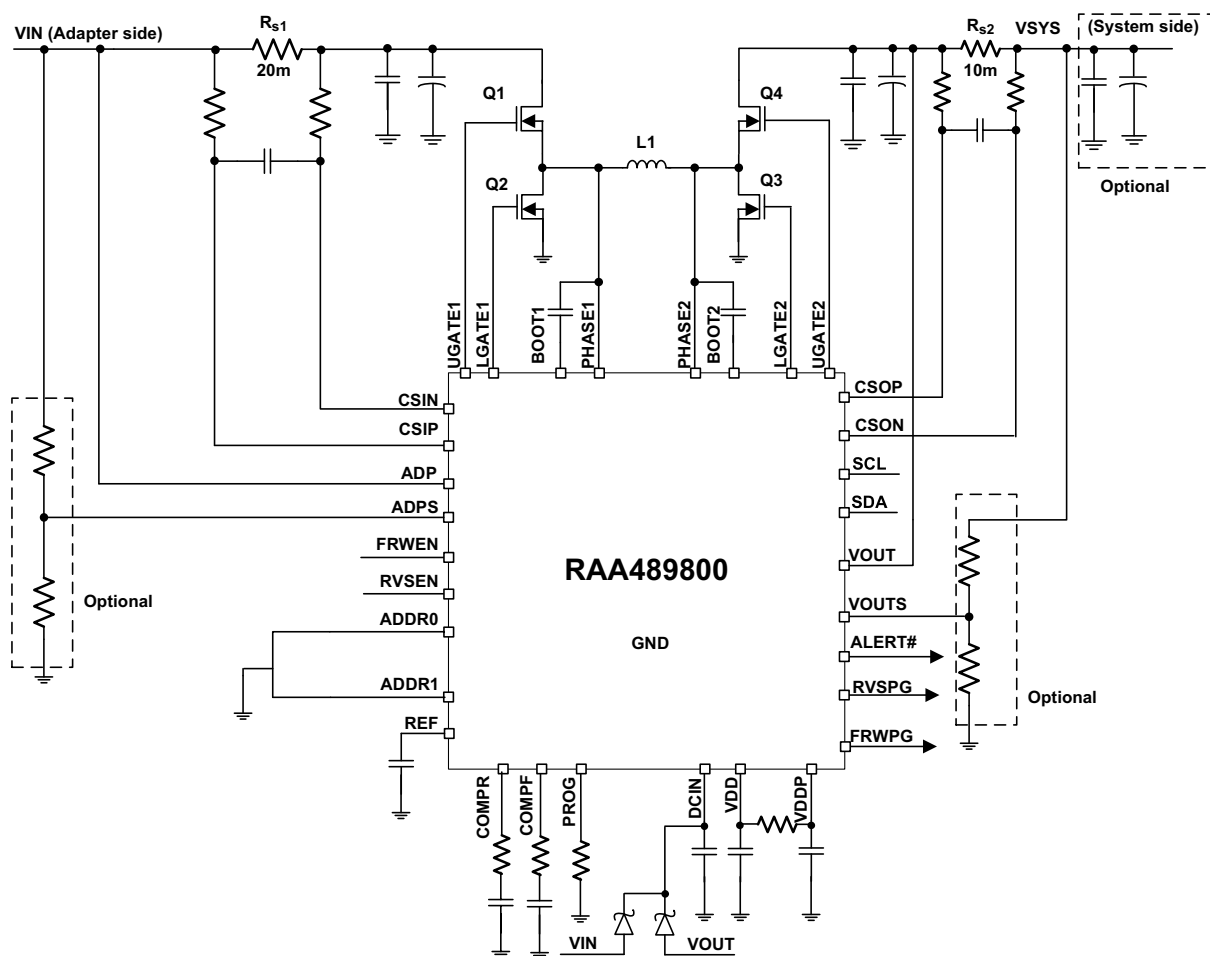
The RAA489800 has serial communication through SMBus/I<sup>2</sup>C that allows programming of many critical parameters to deliver a customized solution. These programming parameters include, but are not limited to: output current limit, input current limit, and output voltage setting.

### 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 I<sup>2</sup>C 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**

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(Rev.1.0 Mar 2020)

### Corporate Headquarters

TOYOSU FORESIA, 3-2-24 Toyosu,  
Koto-ku, Tokyo 135-0061, Japan  
[www.renesas.com](http://www.renesas.com)

### Contact Information

For further information on a product, technology, the most up-to-date version of a document, or your nearest sales office, please visit:  
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