

USB Type-C PD and PWM Buck-Boost Controller with AnyPower™ and PDsafe™ Features

General Description

The RT7880 is a USB Type-C Power Delivery (USB-C PD) and PWM buck-boost controller with highly integrated functions and flexibility for USB PD provider applications. The IC has an embedded ARM Cortex™-M0 MCU, which handles various functions of communication protocol, smart control of the PWM converter, firmware-based protections, and customized functions. The IC features hardware-based protections, such as inductor peak current limit, VBUS over-voltage protection (VBUS OVP), VO under-voltage protection (VO UVP), and VCONN current limit protection, so that the protections have faster responses and can still function even when the MCU is not activated. The RT7880 can offer an excellent USB PD solution for a USB-PD Provider application with few external components and simple PCB layout.

Applications

- Desktop PC, LCD Monitor, LCD TV
- Docking Station, Portable Hard Disk
- USB Car Charger, USB Power Bank

Ordering Information

RT7880□ □

- Package Type
QW : WQFN-40L 5x5 (W-Type)
- Lead Plating System
G : Green (Halogen Free and Pb Free)

Note :

Richtek products are :

- ▶ RoHS compliant and compatible with the current requirements of IPC/JEDEC J-STD-020.
- ▶ Suitable for use in SnPb or Pb-free soldering processes.

Features

- Support USB Type-C Power Delivery (PD) Provider Application
- Type-C, USB PD and Communication Protocols
 - ▶ Compliant with USB PD 3.0 Specification, USB Type-C Cable and Connector Specification 1.2
 - ▶ Alternate Mode and V_{CONN} Output
 - ▶ Support Other Proprietary Communication Protocols through Internal MCU, DP and DM Pins
- Integrated PWM Buck-Boost Controller
 - ▶ Wide Input Voltage Range : 4V to 36V
 - ▶ Peak-Current Mode PWM Operation
 - ▶ Programmable PWM Switching Frequency (200kHz to 600kHz)
 - ▶ Pulse-Skipping Mode for Light-Load Efficiency; Selectable Forced CCM Operation
- AnyPower™ for Constant Voltage Output (15.6 or 23.4mV/step, typ.) and Constant Current (in 9-Bit Resolution) Output Settings
- PDsafe™
 - ▶ Adjustable Converter Input Current Limit
 - ▶ Programmable VBUS OVP and VO UVP
 - ▶ Adjustable External OTP
 - ▶ VCONN1/2 Output Current Limit
- Cable Voltage Drop Compensation for V_{BUS}
- Master and Slave I²C Interfaces
- GPIOs for MUX Control or Customized Functions
- Built-in Output Bleeders for Quick V_{BUS} Discharge
- Built-in Charge Pump for Driving Cost-Effective N-MOSFETs
- Available in WQFN-40L 5x5 Package
- Online Firmware Update via Slave I²C Interface