Highly Integration USB PD Controller with Synchronous Rectification

General Description

The RT7207KB is a programmable controller with integrated synchronous rectification control. Its internal MCU handles various proprietary protocols via the D+/D- interface and supports USB PD Type-C via the CC1/CC2 pins.

The RT7207KB provides high integration for high power density off-line AC-DC converter designs. In addition to saving external components, and through the built-in synchronous rectification controller and integration of diverse functions and protections, it not only improves efficiency but also enhances safety.

An internal synchronous rectifier controller can optimize efficiency and provide safe operate in both continuous-conduction mode (CCM) and discontinuous-conduction mode (DCM) even in the condition of a wide output voltage range of 3.0V to 21V.

Dual operational amplifiers with respectively the digital-to-analog converter (DAC) programmable reference voltages are included for voltage-loop and current-loop regulation to provide programmable constant-voltage (CV) and constant-current (CC) regulation in high precision.

Ordering Information

RT7207KB□□□-□

- Programmed Firmware Code AABBX
  - AA : Application Code
  - BB : Model Code
  - X : Customer Approved Version Code
- Package Type
  - QW : WQFN-24L 4x4 (W-Type) (Exposed Pad-Option 2)
- Lead Plating System
  - G : Green (Halogen Free and Pb Free)
- RT7207KB Version
  - (Refer to Version Table)

Note :

The 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

- **Protocol Support**
  - **USB PD2.0/PD3.0 and PPS**
  - **Proprietary Protocols**
- **Highly Integrated**
  - **Embedded MCU with an Mask ROM of 32kB, an OTP-ROM of 16kB, and an SRAM of 2kB**
  - **Built-in Synchronous Rectifier Controller and Driver**
  - **Built-in Charge Pump for a Wide V_{DD} Operation Range of 3V to 21V**
  - **Built-in Shunt Regulators for Programmable Constant-Voltage and Constant-Current Control**
  - **Built-in 10-bit Analog-to-Digital Converter (ADC)**
  - **Programmable Cable Compensation**
  - **BLD Pin for Quick Discharge of Output Capacitor**
  - **VBUS Pin for Detection VBUS Voltage and Quick Discharge of VBUS Capacitor**
  - **USBP Pin for Direct Drive of External Blocking N-MOSFET**
  - **Power-Saving Mode in Standby Mode**
- **Protection**
  - **Adaptive Output Over-Voltage Protection**
  - **Adaptive Under-Voltage Protection**
  - **CC1/CC2/D+/D- Over-Voltage Protection**
  - **Firmware-Programmable Over-Current Protection**
  - **Firmware-Programmable Over-Temperature Protection**

Applications

- USB PD Type-C or Proprietary Protocols (e.g., FCP, SCP and AFC) Chargers/Adapters for Smart Phones, NBs, Tablets and All Other Electronics.
- USB PD Extension Cores with Offline AC-DC Converters.

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