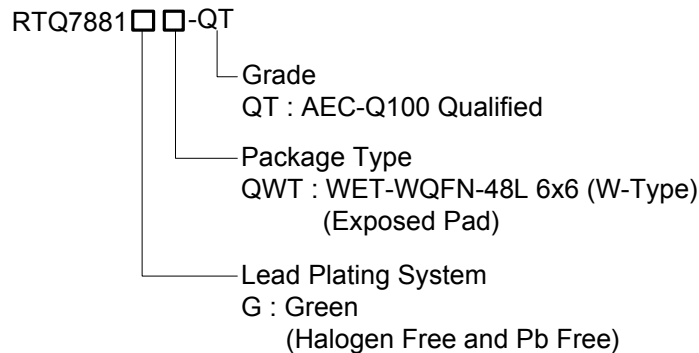


## USB Type-C PD and PWM Buck Controller with AnyPower™ and PD Safe® Features

### General Description

The RTQ7881-QT is a USB Type-C Power Delivery (USB-C PD) and PWM buck controller with highly integrated functions and the flexibility for USB PD provider applications. The IC has embedded an ARM Cortex™-M0 MCU so as to handle 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 properly even when the MCU is not activated. The RTQ7881-QT hereby offers an excellent USB PD solution for a USB-PD Provider application with minimal external components and simple PCB layout.

### Ordering Information



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
- AEC-Q100 Grade 2 Qualified
- Operating Ambient Temperature : -40°C to 105°C
- 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<sub>CONN</sub> Output
  - ▶ Support Other Proprietary Communication Protocols through Internal MCU, DP and DM Pins
- Integrated PWM Buck 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 (11.7 or 23.4mV/step, typ.) and Constant Current (in 9-Bit Resolution) Output Settings
- PD Safe®
  - ▶ 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<sub>BUS</sub>
- Master and Slave I<sup>2</sup>C Interfaces
- GPIOs for MUX Control or Customized Functions
- Built-in Output Bleeders for Quick V<sub>BUS</sub> Discharge
- Built-in Charge Pump for Driving Cost-Effective N-MOSFETs
- Available in WET-WQFN-48L 6x6 Package
- Online Firmware Update via Slave I<sup>2</sup>C Interface

### Applications

- Automotive USB Type-C Power Delivery Charger