

# PowerZero™ Multi-Mode Flyback Controller

## General Description

The RT7789D series is an enhanced high-efficiency multi-mode PWM flyback controller, incorporating Richtek's proprietary PowerZero™ and SmartJitter™ technology. The innovative PowerZero™ technology, featuring an integrated HV device, provides an excellent green power solution, while the SmartJitter™ technology can reduce EMI emissions of a switch-mode power supply in green mode as well as eliminate output ripple due to frequency jittering. Also, the RT7789D series features a multi-mode control scheme, operating from continuous-conduction mode (CCM) to discontinuous-conduction mode (DCM) with valley switching, to achieve high efficiency and optimal performance.

The RT7789D is a current-mode PWM controller for flyback converters. It integrates comprehensive and programmable protection features, which include brown-in/brown-out protection, VDD over-voltage protection (VDD OVP), output over-voltage and under-voltage protection (Output OVP and UVP), secondary rectifier short-circuit protection (SRSP), and external over-temperature protection (External OTP). For constant output power regulation, a resistor connected to CS pin can be used to achieve accurate line compensation across the universal input voltage range. With the above features, the RT7789D enables a cost-effective and compact design for a wide range of AC-DC conversion applications. It is available in a SOP-8 package.

## Features

- **Proprietary PowerZero™ Technology**
  - Integrating a 700V Start-up Device
  - Brown-In/Brown-Out Protection
- **Proprietary SmartJitter™ Technology**
  - Reducing EMI Emissions of SMPS
  - Eliminating Frequency-Jittering-Induced Output Ripple
- **Operating in Continuous-Conduction Mode (CCM), Discontinuous-Conduction Mode (DCM), and DCM with Valley Switching**
- **Accurate Over-Current Protection (OCP)**
- **Programmable Line Compensation**
- **Programmable Output OVP and UVP**
- **Programmable External OTP**
- **Driver Capability : 300mA/–300mA**
- **High Noise Immunity**
- **RoHS Compliant and Halogen Free**

## Applications

- Switching AC-DC Adapter
- NB Adapter
- Printer Adapter

## Simplified Application Circuit

