



# SC2151A Type-C/ PD and DPDM Fast Charge Controller with CC/CV Internal Feedback Compensation Integrated

## 1 Description

SC2151A is a Type-C / PD and DPDM fast charge controller, with internal feedback compensation integrated. It complies with the latest Type-C and PD 3.0 standards and supports the proprietary high voltage fast charge protocols with DPDM interface. It targets for the wall adapters and travel adapters applications.

SC2151A minimizes external components by integrating USB PD baseband PHY, Type-C detection, DPDM PHY, VBUS discharging paths, VCONN supply, programmable feedback compensation, voltage and current sense, 10-bit high performance ADC, dual 10-bit DACs, NMOS gate driver, I2C interface and protection circuits. It contains a 32-bit high performance micro-controller core with 24kByte OTP and 2kByte RAM, which provides cost effective solutions to many applications.

SC2151A supports various protection mechanisms including Over Voltage Protection (OVP), Under Voltage Protection (UVP), Over Current Protection (OCP), Short Circuit Protection (SCP), Over Temperature Protection (OTP), DPDM Over Voltage Protection (DPDM OVP), CC Over Voltage Protection (CCOVP), VCONN Over Voltage (VCONN OVP), VCONN Over Current (VCONN OCP) and VCONN Short Protection (VCONN SCP), so to effectively ensure stable and reliable operation of system.

The SC2151A is available in 16-pin QFN package.

## 2 Features

- **USB Type-C**
  - Support Type-C DFP protocols
  - Configurable resistor R<sub>P</sub>
- **USB Power Delivery**
  - Support DFP / UFP / DRP USB PD 3.0
  - Hardware BMC transmitter and receiver
  - Full feature physical layer
  - Hardware CRC
  - Hardware reset
  - Integrate PD 3.0 protocol engine
  - Integrate VCONN and support SOP' for e-marker
- **DPDM Fast Charging Interface**
  - Integrate firmware controlled DPDM interface
  - Support Apple charging, BC1.2, DCP, HVDCP, FC, AFC, FCP, SCP, VOOC, UART, I2C and other proprietary charging protocols
- **Power**
  - Wide operation range: 3.3V to 22V (26V tolerant)
  - Integrate programmable feedback compensation
- **MCU Subsystem**
  - Integrated 32-bit high performance MCU core
  - 24kByte OTP and 2kByte RAM
  - Support I2C interface and multiple I/Os
  - Support sleep mode
- **Analog Block**
  - Dual DACs for voltage regulation and current regulation
  - 10-bit ADC to monitor the voltage / current / other signals
  - Integrated current sense amplifier
  - Integrated NMOS gate driver
  - Integrated VBUS discharging paths at both sides of isolation MOS
  - Integrated temperature sense module
- **Protections**
  - On chip OVP, UVP, SCP, VCONN OVP, VCONN OCP, VCONN SCP, OTP, DPDM OVP, CC OVP
  - VBUS to CC / DPDM short protection
  - GND to CC / DPDM short protection
- **Package**
  - 16-pin QFN, 4mm x 4mm x 0.75mm

## 3 Applications

- Wall adapters
- Travel adapters

## 4 Device Information

Part Number	Package	Body Size
SC2151AQDER	QFN-16	4mm x 4mm x 0.75mm