



SC2012C USB-PD Controller (Sink) with Multiple Fast Charge Protocols PHY Integrated

1 Description

The SC2012C is a highly integrated USB PD controller, mainly used for power consumer application. It complies with the latest USB Type-C and PD 3.0 and supports the most popular high voltage fast charge protocols DPDM interface. SC2012C is suitable for different kind of mobile devices.

The SC2012C has the voltage rating of 30V. It minimizes external components by integrating USB PD baseband PHY, Type-C detection, voltage and current sense, 10bit high performance ADC, PWM output for VBUS regulation, NMOS gate driver, VBUS discharging path, I2C interface and protection circuits. It is embedded 32-bit high performance micro-controller with 32K-Bytes OTP, which provides cost effective solutions to many applications.

SC2012C supports various protection mechanisms, including over-voltage protection, over current protection, short circuit protection, over temperature protection, under-voltage protection, DP/DM pin over voltage protection, and CC pin over voltage protection, so to effectively ensure the stable and reliable operation of the system.

The SC2012C is available in 20-pin QFN packages.

2 Features

- **USB Type-C**
 - Support Type-C sink protocols
 - Support Rd when battery is dead
- **USB Power Delivery**
 - Support USB PD 3.0, DFP and UFP
 - Hardware BMC transmitter and receiver
 - Full feature physical layer
 - Hardware CRC
 - Hardware reset
 - Integrate PD 3.0 protocol engine
 - Support SOP' to be compatible with e-marker
- **DPDM Fast Charging Interface**
 - Firmware controlled DPDM interface
 - Support Apple charge profile detection, BC1.2, DCP, HVDCP, FC, AFC, FCP, SCP, VOOC, UART and other proprietary charging protocols
- **Power**
 - Wide operation range: VBUS range from 2.7V to 24.5V (30V tolerant)
- **MCU Subsystem**
 - Integrated 32-bit MCU core
 - 32-KB OTP and 1-KB RAM
 - Support I2C interface and multiple I/Os
- **Analog Block**
 - PWM for voltage regulation
 - Up to 8-channel 10-bit ADC to monitor the voltage / current / external signals
 - Integrated current sense amplifier
 - Integrated NMOS gate driver for isolation MOS
 - Integrated VBUS discharging paths at both sides of isolation MOS
 - Build-in NPN transistor driver for VCC regulation
- **Protections**
 - On chip OVP, UVP, DPDM OVP, CC OVP
 - VBUS to CC / DPDM short protection
 - GND to CC / DPDM short protection
- **Package**
 - 20-pin QFN, 3mm x 3mm x 0.75mm

3 Applications

- Mobile devices
- Wireless charging TX devices.
- Other fast charge instruments

4 Device Information

Part Number	Package	BODY SIZE
SC2012CQDKR	QFN-20	3mm x 3mm x 0.75mm