SC3503 Fast Turn-Off Synchronous Rectifier Controller

1   Description

SC3503 is a smart secondary-side driver IC designed to drive N-Channel power MOSFET used as synchronous rectifiers in isolated flyback converters. The MOSFET can replace Schottky diode so the system can achieve higher efficiency and superior heat dissipation performance.

The SR MOSFET is turned on when VDS falls below turn-on threshold, and turned off when VDS exceeds turn-off threshold. The SR conduction voltage drop is continuously monitored to minimize the conduction loss. The extremely fast turn-off comparator and driving circuitry ensures the safety of the SR MOSFET, even in current continuous mode (CCM) condition.

The IC can work well in wide output voltage range, even in short circuit conditions. The patented turn on detection circuity prevents SR turn on when Vds rings severely. The wide VDD range and gate driver technology make the controller ideal for wide output voltage range applications, such as adapters, chargers, USB Power Delivery (USB-PD), etc.

This chip supports both high side rectification and low side rectification.

2   Features

- Wide output range, even down to 0V.
- No need of auxiliary winding for power supply.
- Patented programmable turn on detection circuitry prevents MOSFET from mistake turn-on.
- Compliant with multiple types of MOSFETs
- High efficiency can meet CoC V5 and DoE VI.
- 10nS turn off propagation delay
- High switching frequency up to 1MHz.
- Extremely low quiescent current leads to low stand by power.
- Supports DCM, CCM, and Quasi-Resonant mode converters.
- Supports both high and low side synchronous rectification.
- SOT23-6 package available.

3   Applications

- Universal AC-DC Adaptors
- USB PD and QC Chargers
- Flyback Power Supplies with Variable Output Voltage
- AC-DC auxiliary supplies

4   Device Information

ORDER NUMBER	PACKAGE	BODY SIZE
SC3503SBER	SOT23-6	2.9mm x 2.8mm x 1.1mm