

HL9512SC05

Offline AC-DC Primary Side PWM Controller for Flyback Converter

Overview

The HL9512 is a flyback PWM controller, which operates in a quasi-resonant (QR) and continuous conduction mode (CCM), to significantly enhance system efficiency and power density. The control method is based on load conditions: for heavy load, the valley switching with fixed blanking time is applied; and for medium load, the valley switching with variable blanking time is applied to optimize efficiency. In addition, it offers constant output voltage (CV) regulation through opto-coupler feedback controller with shunt regulator and integrates HV startup. The brown-in voltage is programmed by external DMAG pin resistor.

Wide VDD operating range can be allowed for variable output mode applications, such as USB-PD/PPS or conventional DP/DN protocol communication. The controller provides stable gate voltage to drive external power switch thru VREG pin.

The HL9512 has protections, such as V_{DD} over-voltage protection (V_{DD} OVP), V_{DMAG} over-voltage protection (V_{DMAG} OVP), V_{DMAG} under-voltage protection (V_{DMAG} UVP), internal over-temperature protection (OTP), brown-out protection, and externally triggered shut-down (SD) function for safety.

Features

- High average efficiency by QR and CCM switching operation
- Wide VDD operating range up to 80V
- Smart driver and frequency hopping for better EMI performance
- MOSFET Driver compatible
- mWSaver® Technology for ultra-Low standby power consumption (<20mW)
- Integrated over-voltage protection (OVP), under-voltage protection (UVP), and over-temperature protection (OTP).
- Programmable thermal shunt down protection through external NTC (SD)
- Programmable brown-in protection and brown-out protection
- External depletion MOSFET startup
- Limit power source (LPS) with adaptive constant current protection (CC)
- Cycle by cycle current pulse limit (VCS_LIM)
- Current sense short circuit protection (CSSP)
- Secondary side diode short protection (SSSP)
- Accurate protection behavior for auto-restart, latch, and long auto-restart mode

Applications

- Battery Chargers for Smartphones and Tablet PCs
- Adapters for Portable Devices
- Flyback Power Supplies with Low and/or Variable Output Voltage

Simplified Application Diagram

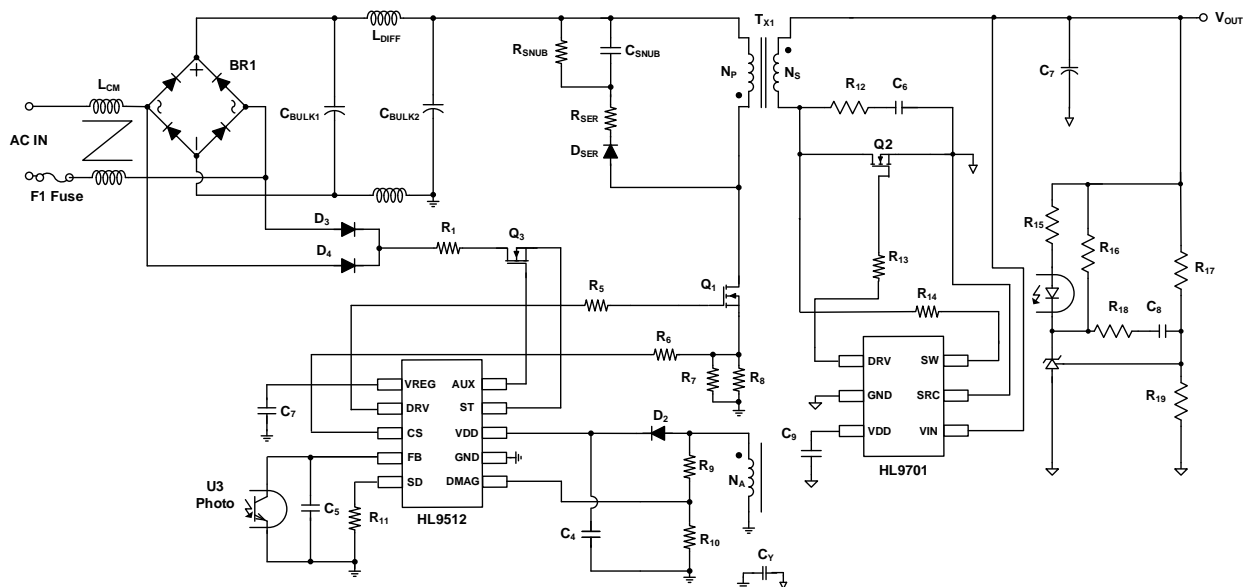


Figure: HL9512 Simplified Application Diagram

Ordering Information

Part Number	Operating Temperature Range	Package	Packing Method
HL9512SC05	-40°C to +125°C	10-Lead, SOIC	5K/Tape & Reel

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