

HL9586

GaN Integrated Primary Side Controller for Flyback Converter

Overview

The HL9586 is part of the primary flyback controller family of devices integrated with GaNSEN. The HL9586 is a flyback controller that incorporates 650V with 600mΩ GaN power SenseFET. It operates in a quasi-resonant (QR) mode and continuous conduction mode (CCM) to significantly enhance system efficiency and power density. The control method is based on the 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 with shunt regulator.

Wide VDD operating ranges can be allowed for variable output mode applications, such as USB-PD/PPS or conventional DP/DN protocol communication.

The HL9586 has protections, such as VDD over-voltage protection (VDD OVP), VDMAG over-voltage protection (VDMAG OVP), VDMAG under-voltage protection (VDMAG UVP), internal over-temperature protection (OTP), brown-out protection, and externally triggered shut-down (SD) function for safety.

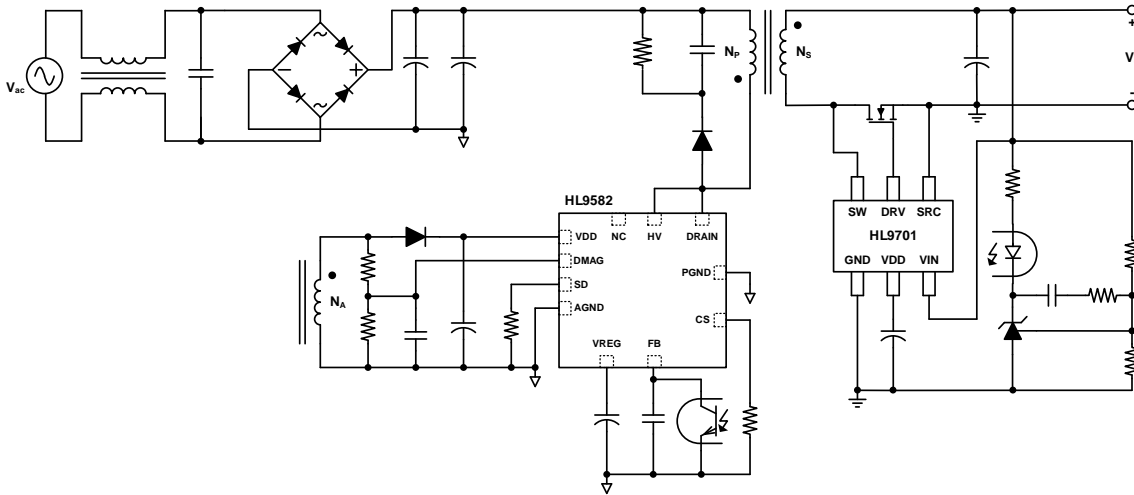
Features

- Integrated eMode GaN SenseFET
- Low 600mΩ Rds(on) resistance
- High average efficiency by QR and CCM switching operations
- Wide VDD operating ranges up to 80V
- Smart driver and frequency hopping for better EMI performance
- Built-in current sensing circuit
- Integrated high-voltage (HV) startup to reduce external components
- Ultra-low standby power consumption (<20mW)
- Limit power source (LPS) with adaptive constant current protection (CC)
- Adaptive current sense limit
- Over-voltage protection (OVP), under-voltage protection (UVP), and internal over-temperature protection (OTP)
- Thermal shunt down protection through external NTC resistor (SD)
- Brown-in protection and brown-out protection
- Current sense short protection (CSSP)
- Abnormal over current protection (AOCP)

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



Ordering Information

Part Number	Operating Temperature Range	Package	Packing Method
HL9586	-40°C to +125°C	QFN 5x6	5K/Tape & Reel

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