

HL8511/21

12V/5V Input Voltage 5A Continuous Load E-Fuse

Description

The HL8511/21 family of E-Fuse are designed to protect circuitry on the output (OUT) from transients on power bus (IN) and large inrush current and protect the power bus from undesired output shorts and unexpected over-load condition.

When the output ramps up, inrush current is limited by limiting the slew rate of output voltage. The slew rate is controlled by a small capacitor at SS pin. An internal small current source charges the SS pin external capacitor. The output voltage tracks the SS pin voltage with a constant ratio until internal power MOSFET is fully turned on. When user leaves SS pin floating, the output typical ramps up time is 0.4 ms.

Current limit level can be set with an external resistor from ISET pin to the ground. An internal charge pump drives the gate of power MOSFET, allowing a very low on-resistance which is just 23 m Ω . When output current is over the current

limit setting, the device regulates power MOSFET to clamp the output current at the setting level. The active of current limit circuit causes power consumption of the device increase. The thermal accumulation of the device may trigger the thermal shutdown, turning off power MOSFET. After the thermal shutdown, HL8511FN01/21FN01 will turn on the power MOSFET again when auto retry delay time (tTSD_dly) expires; HL8511FN02/21FN02 will latch off the power MOSFET unless power cycling input voltage or toggles EN pin.

The output over-voltage event is limited by internal clamping circuits to a safe fixed maximum without external components. For over-voltage protection (OVP), HL8511 provides for 12 V systems; and HL8521 provides for 5 V systems.

HL8511/21 is available in a DFN-10L package with 3mm x 3mm size.

Features

- Integrated 23 mΩ power FET
- Operating voltage range
 - HL8511: 4.5 V - 13.8 V
 - HL8521: 4.5 V - 5.5 V
- Output over-voltage clamp
 - HL8511: 16 V maximum clamp voltage
 - HL8521: 6.75 V maximum clamp voltage
- Thermal fault protection
 - HL8511FN01/21FN01: auto retry
 - HL8511FN02/21FN02: latch off
- Programmable output ramps up rate
- Programmable UVLO
- Programmable, high accuracy current limit range from 1 A to 5 A
- Meet the IEC 62368 requirements (single point failure and Annex G.9)
- DFN-10L 3mm x 3mm

Applications

- Server
- SSD
- POS
- USB Port

Typical Application Diagram

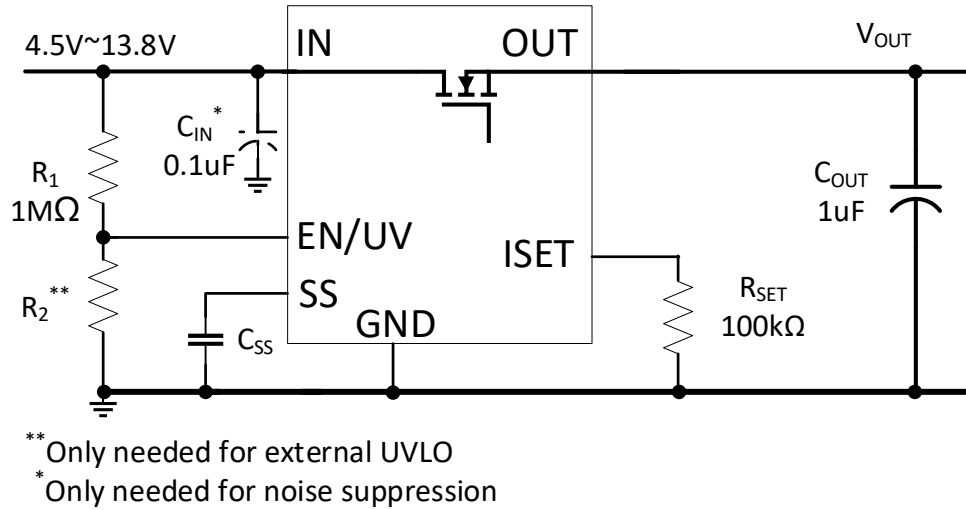


Figure 1. Typical Application Diagram

Order Information

PART NUMBER	UV	OV CLAMP	FAULT RESPONSE	Package
HL8511FN01	4.3 V	15 V	Auto Retry	DNF-10L 3mm x 3mm
HL8511FN02	4.3 V	15 V	Latched	DNF-10L 3mm x 3mm
HL8521FN01	4.3 V	6.1 V	Auto Retry	DNF-10L 3mm x 3mm
HL8521FN02	4.3 V	6.1 V	Latched	DNF-10L 3mm x 3mm

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