



SLM63035

28V Synchronous Buck Li-Battery Charger

Description

SLM63035 is a 2.5A lithium ion battery charger with wide voltage input. It is a synchronous buck converter with a fixed frequency of 550kHz. It has a charging efficiency of more than 90% and a very small calorific value.

SLM63035 integrates 28V high-voltage devices, which can effectively prevent chip is damaged by surge voltage or incorrect connection of high-voltage adapter, and has high security.

The SLM63035 includes a complete charging termination circuit, automatic recharging and a 4.35V preset charging voltage with an accuracy of $\pm 1\%$. The SLM63035 has many functions, such as anti back filling protection, output short circuit protection, chip and battery temperature protection.

SLM63035 is packaged in a miniaturized DFN3x3-10L package, which requires only a small number of peripheral components and a very small area of PCB board. Therefore, SLM63035 can be embedded in various handheld applications as an efficient charger for large capacity batteries.

Maximum Rating

- Input power voltage(V_{IN}): -0.3V~28V
- VGC: $V_{IN}-7V\sim V_{IN}+0.3V$
- NCHRG、NSTDBY: -0.3V~28V
- BAT: -0.3V~14V
- VS: -0.3V~14V
- LX: -0.3V~14V
- Others: -0.3V~7V
- Short circuit duration of BAT: continuous
- Maximum junction temperature: 145°C
- Working environment temperature range: -40°C~85°C
- Storage temperature range: -65°C~125°C
- Welding temperature (10 seconds):260°C

Features

- Maximum working voltage is 26.0V and the withstand voltage is 28V
- Fixed switching frequency of 550kHz
- High output efficiency of more than 90%
- Maximum adjustable output current of 2.5A
- Automatic identification of input current and adaptive adapter
- There is no need to prevent reverse current diode
- No external power MOS transistor or freewheeling diode is required
- Accuracy of 4.35V charging voltage with accuracy of $\pm 1\%$
- It can withstand 28V high voltage charging state dual indication output
- Shutdown current is only 20uA
- 2.9V trickle charging
- Soft start limits surge current
- Battery temperature monitoring function
- Output short circuit protection function
- DFN3x3-10L package

Applications

- Electronic cigarette
- Electric toys
- Power tools
- MP3 and MP4 players
- Digital camera
- Electronic dictionary
- GPS
- Portable equipment, various chargers

Complete Charge Cycle

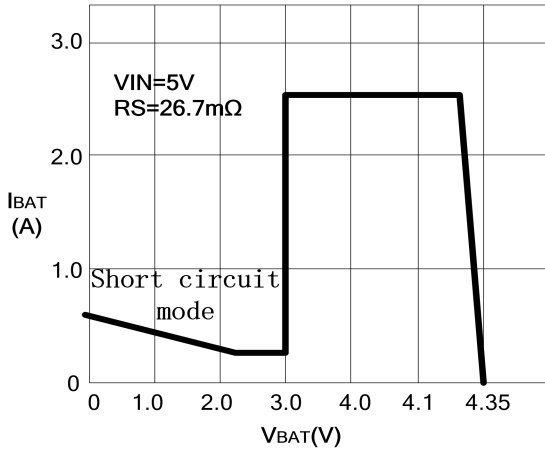


Figure 1

the heat sink at the bottom. As the main radiator of IC, the copper foil of PCB board should be as wide as possible, and extend outward to the larger copper foil area, so as to spread the heat to the surrounding environment.

Placing vias in the PCB to the inner layer or back layer also has a significant effect on improving the overall thermal performance of the charger, as shown in Figure 3. A 1.7mm * 3.0 mm square pad is placed at the SLM63035 position of PCB board as the heat sink of SLM63035, and several through holes of 0.8 mm diameter are placed on the pad as heat dissipation holes. When chip is welded, solder is poured into the back layer of PCB to effectively connect the heat sink at the bottom of SLM63035 and the heat sink of PCB board, so as to ensure the efficient heat dissipation of SLM63035. **The efficient heat dissipation of the chip is the premise of maintaining a large charging current for a long time.**

Typical Application

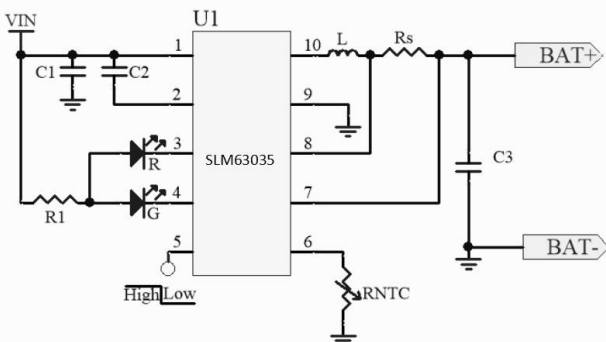


Figure 2

Application Tips

The efficient heat dissipation of the chip is the premise of maintaining a large charging current for a long time.

DFN3x3-10L package has a small size, so the layout of PCB board should be paid special attention to in consideration of heat dissipation. The heat dissipation path for dissipating heat generated by IC is from the chip to the lead frame, and reaches the copper surface of PCB through

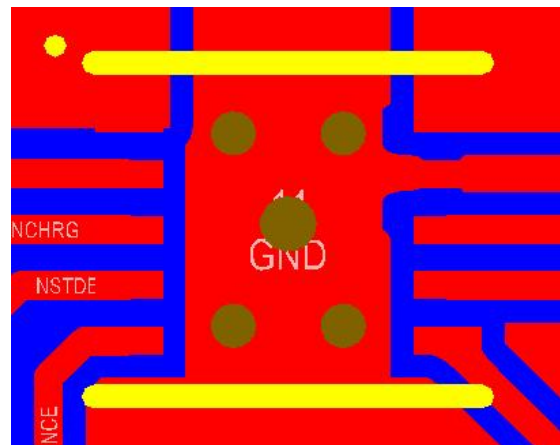


Figure 3

When PCB layout is designing, other heat sources independent of charging IC should be considered, because their own temperature will affect the overall temperature rise and maximum charging current.

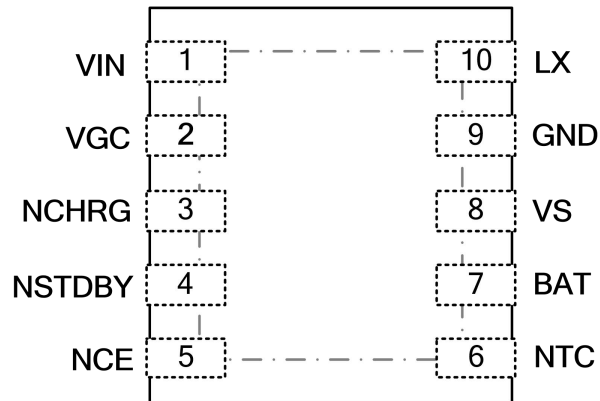


Figure 4. SLM63035 Pin

PIN	Symbol	Function
1	VIN	Input power terminal
2	VGC	Internal drive clamp end
3	NCHRG	Battery charging indicating terminal
4	NSTDBY	Battery charging completion indicator
5	NCE	Enable control terminal
6	NTC	Battery temperature detection input
7	BAT	Battery voltage detection terminal
8	VS	Battery current detection terminal
9	GND	Land
10	LX	Switch end