



SLM6900

Multi-Cell Li-Ion Battery Switching Charger

Description

The SLM6900 is a charging circuit that supports multi-cell lithium or lithium iron phosphate batteries. It is preset with a three- or four-cell lithium battery charging mode and supports other output voltage modes that are regulated by a peripheral divider resistor. It is a step-down switching converter with a fixed frequency of 300KHz, so it has high charging efficiency and very low heat generation.

The SLM6900 includes a complete charge termination circuit, automatic recharge, and a charge voltage control circuit with an accuracy of $\pm 1.0\%$. It integrates input low voltage protection, output short circuit protection, and battery temperature protection.

The SLM6900 is housed in a TSSOP-14L package and has a simple peripheral application as an efficient charger for large-capacity batteries.

Absolute Maximum Ratings

- COMP: -0.3V~7.5V
- VIN: -0.3V~45V(Inrush)
-0.3V~30V(Continuous)
- Others: -0.3V~VIN+0.3V
- BAT Short Circuit Duration: Continuous
- Maximum Junction Temperature: 145°C
- Operating Temperature Range: -40°C~85°C
- Storage Temperature Range: -65°C~125°C
- Lead Temperature (Soldering, 10 sec): 260°C

Features

- Wide Input Voltage Range
- 300KHz Fixed Switching Frequency
- Preset 3 or 4 Lithium Battery Output Voltages
- Adjustable Output Voltage
- Output Voltage Accuracy: $\pm 1.0\%$
- Charging Status Dual Indication, No Battery and Fault Status Indication
- Low voltage trickle charging function
- Soft Start Limits Inrush Current
- Battery Temperature Monitoring Function
- High Surge Voltage Capability
- Packaging with TSSOP-14L

Applications

- Handheld Device
- Laptop
- Convenience Industrial or Medical Equipment
- Power Tools
- Lithium Battery or Lithium Iron Phosphate Battery

Pin Configuration

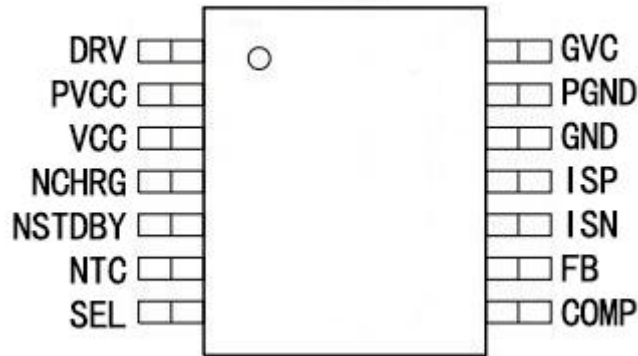


Figure 1

Pin	Name	Description
1	DRV	Power MOSFET Gate Driver
2	PVCC	Gate Driver Supply Input
3	VCC	Chip Supply Input
4	NCHRG	Battery Charging Indicator
5	NSTDBY	Battery Charging Done Indication
6	NTC	Battery Temperature Detection
7	SEL	Output Voltage Selection
8	COMP	Loop Stability Compensation
9	FB	Battery Voltage Feedback
10	ISN	Charge Current Sense Negative Terminal
11	ISP	Charge Current Sense Positive Terminal
12	GND	Small Signal Ground
13	PGND	Gate Driver Ground
14	GVC	Gate Driver Voltage Clamp



Pin Assignment

DRV(Pin1): External PMOS transistor gate drive terminal. This terminal voltage is clamped by GVC within the range of VCC-6.3V (Typ.), so that the external PMOS can be selected with a low V_{GS} type to improve charging efficiency and reduce cost.

PVCC, VCC(Pin2、 3): Power supply voltage terminal.

NCHRG(Pin4): Charge status indicator. When the charger charges the battery, the pin is pulled low by the internal switch, indicating that charging is in progress, otherwise the pin is in a high impedance state.

NSTDBY(Pin5): Charging completion indicator. When the battery is fully charged, the pin is pulled low by the internal switch, indicating that charging is complete. Otherwise the pin is in a high impedance state.

NTC(Pin6): The battery temperature detection terminal connects this terminal to the negative temperature coefficient thermistor of the battery. If this function is not used, it will be suspended or connected to VCC, and the grounding will turn off the charging function.

SEL(Pin7): Battery output voltage selection terminal. If this terminal is grounded, it is selected as a 3-cell lithium battery solution, if it is connected to VCC, it is a 4-cell lithium battery solution, if it is left floating, the battery full voltage is determined by an external voltage dividing resistor.

COMP(Pin8): Charging loop stability compensation terminal. Connect a series resistor and capacitor to ground.

FB(Pin9): Battery voltage feedback terminal. When SEL is connected to GND or VCC, the series resistor can slightly increase the saturation voltage to compensate for the line and battery internal resistance loss. When the SEL is floating, the FB terminal is fixed at 1.2V, and the external charging resistor determines the battery charging voltage.

ISN(Pin10): Charge current detection negative terminal. Connect this terminal to the negative terminal of the charge current setting resistor.

ISP(Pin11): The charging current is detected at the positive terminal. Connect this terminal to the positive terminal of the charge current setting resistor.

GND, PGND(Pin12、 13): Power ground.

GVC(Pin14): Drive the gate voltage clamp. A 100nF capacitor is connected between this terminal and VCC, so that the external driver tube gate voltage is clamped within a range of not less than VCC-6.3V.