2.0A / 1 or 2-Cells Standalone Li-Lon Switch Mode Battery Charger

Description

The FH5404 is a constant current, constant voltage Li-ion battery charger controller that uses a current mode PWM step-down(buck) switching architecture.

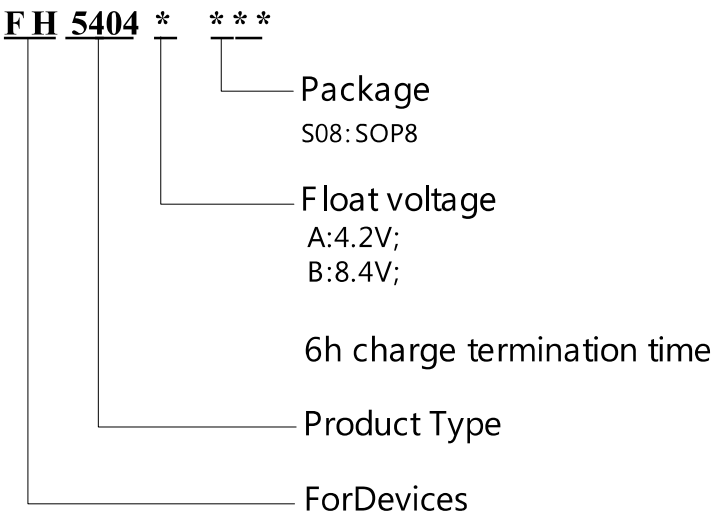
With a 450kHz switching frequency, the FH5404 provides asmall, simple and efficient solution to fast charge one(4.2V/4.34V) or two (8.4V/8.7V) cell-lithium -ion batteries.

The FH5404 charges the battery in three phases: conditioning, constant current, and constant voltage. An external sense resistor sets the charge current with ±10% accuracy. An internal resistor divider and precision reference set the final float voltage to 4.20V/4.34V per cell with ±1% accuracy. An internal comparator detects the near end-of-charge condition while an internal timer sets the total charge time and terminates the charge cycle. The FH5404 automatically re-starts the charge if the battery voltage falls below an internal threshold, 4.05V per cell.The FH5404 also automatically enters sleep mode when DC supplies are removed.

Typical Application

- Small Notebook Computer
- Portable DVD
- Handheld Instruments

Ordering Note



Features

- Wide Input Supply Voltage Range:
  - 6.0V to 20V – 4.2 V Version or 4.35V Version
  - 8.9V to 20V – 8.4 V Version or 8.7V Version
  - 15V to 20V –12.6V Version or 13.05V Version
- High Efficiency Current Mode PWM Controller with 450kHz Switching Frequency
- Up to 2.0A Charging Current
- End-of-Charge Current Detection Output
- 6 Hour Charge Termination Timer
- ±1% Charge Voltage Accuracy
- ±10% Charge Current Accuracy
- Low 9uA Reverse Battery Drain Current
- Automatic Battery Recharge
- Automatic Trickle Charging of Low Voltage Batteries
- Automatic Sleep Mode for Low Power Consumption
- Battery Temperature Sensing
- Stable with Ceramic Output Capacitor

Package

- 8-pin SOP8

Product No.	Description
FH5404AS08	V_{FLOAT} =4.2V; Package : SOP8
FH5404BS08	V_{FLOAT} =8.4V; Package : SOP8

NOTE:
If you need other voltage and package, please contact our sales staff.

Typical Applications

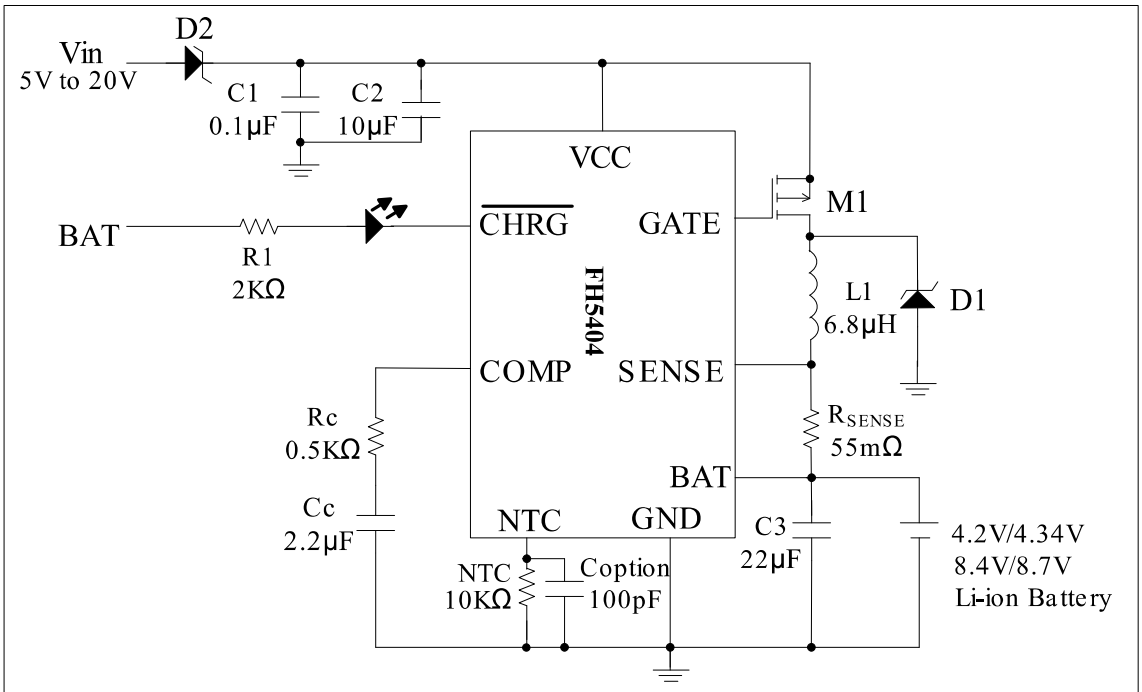


Fig.1 2A Single/Dual Cells Li-Ion Battery Charger (1)

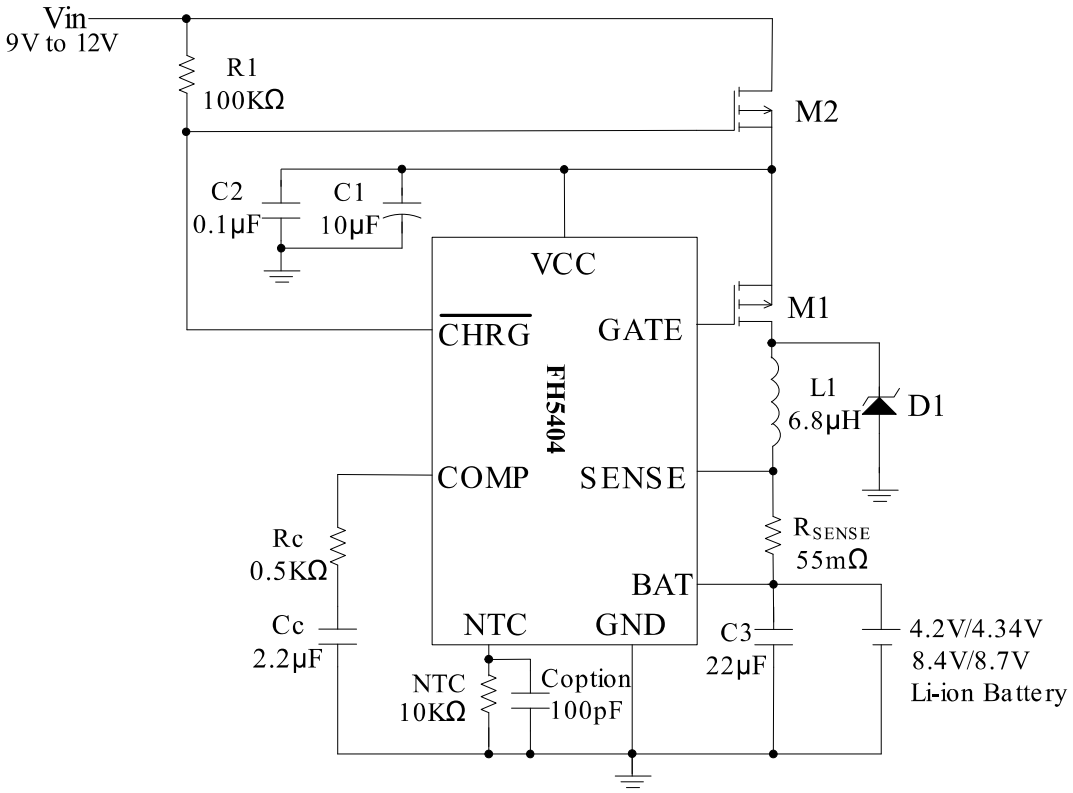
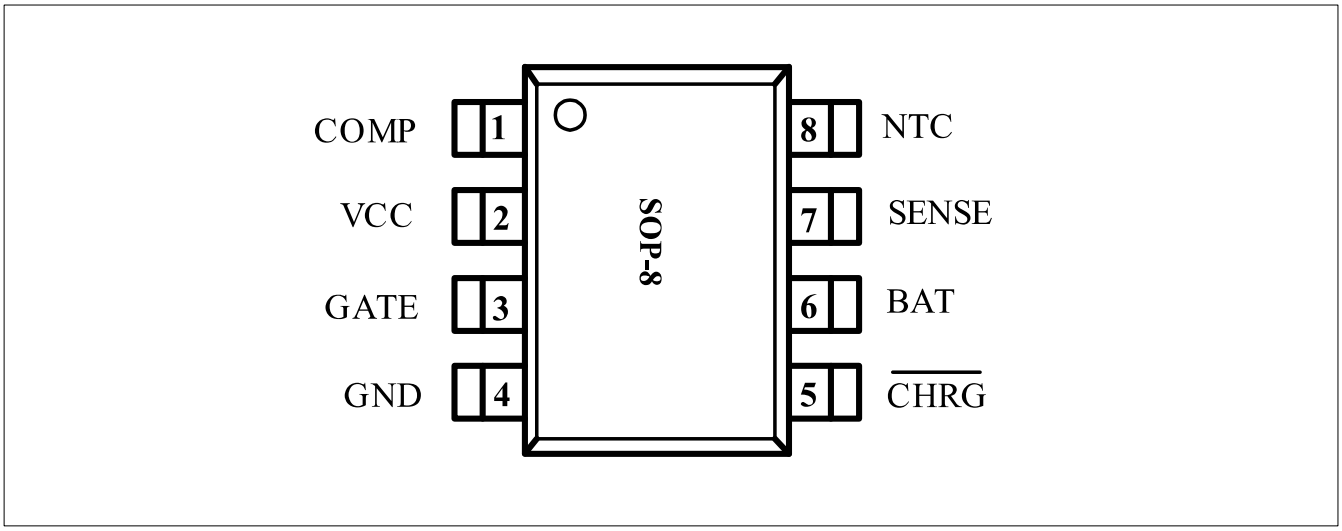


Fig.2 2A Single/Dual Cells Li-Ion Battery Charger (2)

Pin Configuration

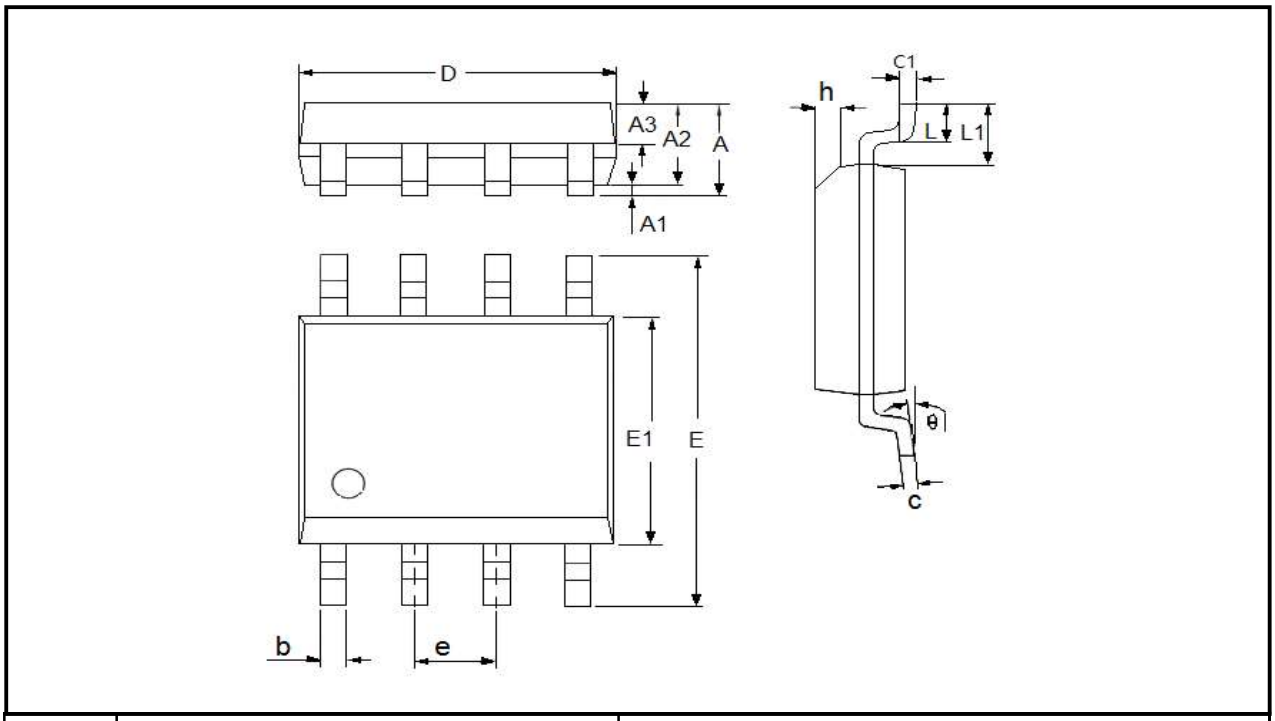


Pin Assignment

Pin Num.	Symbol	Function
1	COMP	Compensation, Soft-Start and Shutdown Control Pin. Charging begins when the COMP pin reaches 850mV. The recommended compensation components are a 2.2μF (or larger) capacitor and a 0.5KΩ series resistor. A 150μA current into the compensation capacitor also sets the soft-start slew rate. Pulling the COMP pin below 600mV will shut down the charger.
2	VCC	Positive Supply Voltage Input.
3	GATE	Gate Drive Output. Driver Output for the external P-Channel MOSFET. The voltage at this pin is internally clamped to 8V below VCC, allowing a low voltage MOSFET with gate-to-source breakdown voltage of 8V or less to be used.
4	GND	Ground.
5	$\overline{\text{CHRG}}$	Charge Status Output.
6	BAT	Battery Sense Input. A bypass capacitor of 22μF is required to minimize ripple voltage. When VBAT is within 250mV of VCC, the FH5404 is forced into sleep mode, dropping ICC to 9μA.
7	SENSE	Current Amplifier Sense Input. A sense resistor, RSENSE, must be connected between the SENSE and BAT pins. The maximum charge current is equal to 110mV/RSENSE.
8	NTC	NTC (Negative Temperature Coefficient) Thermistor Input. With an external 10KΩ NTC thermistor and an option capacitor of 100pf to ground, this pin senses the temperature of the battery pack and stops the charger when the temperature is out of range. To disable the temperature qualification function, ground the NTC pin.

Package Information

- **Package Type: SOP8**



DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	1.3	1.8	0.0512	0.0709
A1	0.05	0.25	0.002	0.0098
A2	1.25	1.65	0.0492	0.065
A3	0.5	0.7	0.0197	0.0276
b	0.3	0.51	0.0118	0.0201
c	0.17	0.25	0.0067	0.0098
D	4.7	5.1	0.185	0.2008
E	5.8	6.2	0.2283	0.2441
E1	3.8	4	0.1496	0.1575
e	1.27(TYP)		0.05(TYP)	
h	0.25	0.5	0.0098	0.0197
L	0.4	1.27	0.0157	0.05
L1	1.04(TYP)		0.0409(TYP)	
θ	0	8°	0	8°
c1	0.25(TYP)		0.0098(TYP)	