
Dual or three-cell Li-ion Switch Mode Battery Charger

■ General Description

The FH5405 is a complete battery charger controller for two(8.4V) or three(12.6V) cell lithium-ion battery. The FH5405 provides a small, simple and efficient solution to fast charge Li-ion battery. The FH5405 built in anti current backward function, so the application does not need the blocking diode. An external sense resistor sets the charge current with high accuracy. An internal resistor divider and precision reference set the final float voltage to two (8.4V) or three(12.6V) cell with $\pm 1\%$ accuracy. When the input supply is removed, the FH5405 automatically enters a low current sleep mode, dropping the battery drain current to 8.0 μ A. After the charge cycle ends, If the battery voltage drops below two(8.2V) or three(12.2V) cell, a new charge cycle will automatically begin. FH5405 has the function of charging timing protection, which automatically turns off after 6.0 hours of charging.

■ Typical Applications

- Charging Docks
- Portable Computers
- Handheld Instrument TEMP

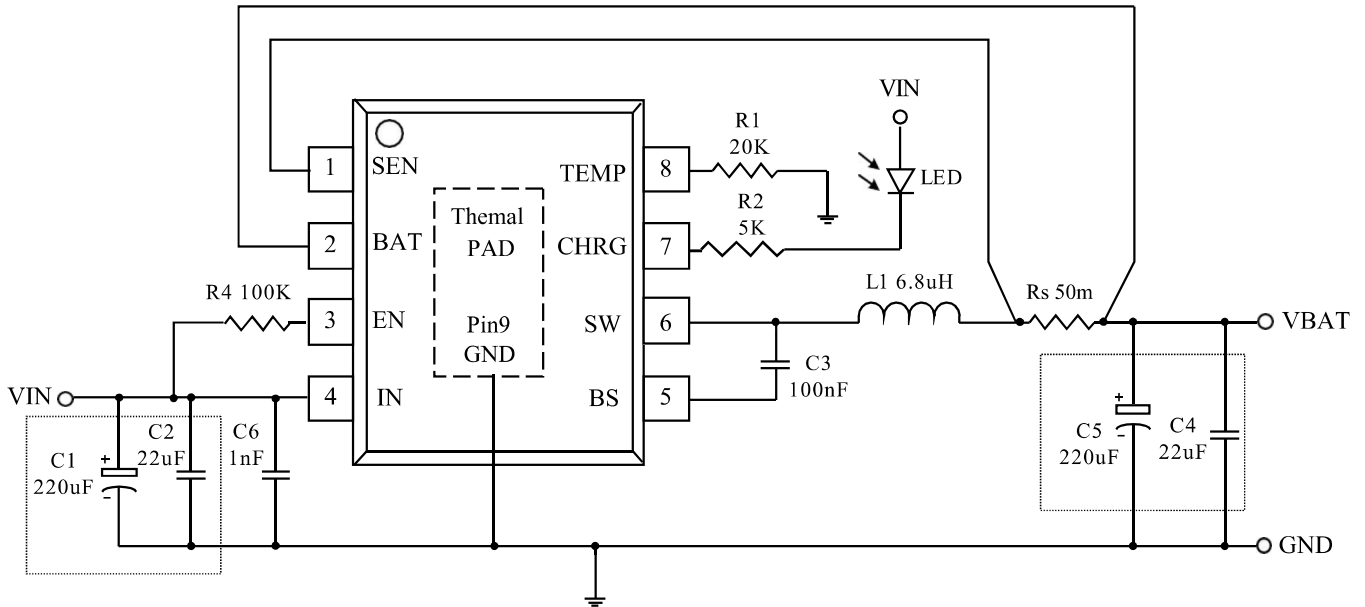
■ Features

- Input Supply Range:
 - #2 Cell: 10.0V~16.0V
 - #3 Cell: 13.5V~16.0V
- Maximum Charge Current:
 - #2 Cell: 2.0A
 - #3 Cell: 1.5A
- Built in anti current backward function
- High Efficiency Current Mode PWM Controller
- Built-in input adaptive function
- Constant Switching Frequency for Minimum Noise
- Charge voltage accuracy: $\pm 1\%$
- Automatic Recharge
- Automatic Shutdown When Input Supply is Removed
- 6 hour charging timing protection
- Automatic Trickle Charging of Low Voltage
- Stable with Ceramic Output Capacitor
- Battery Temperature Sensing

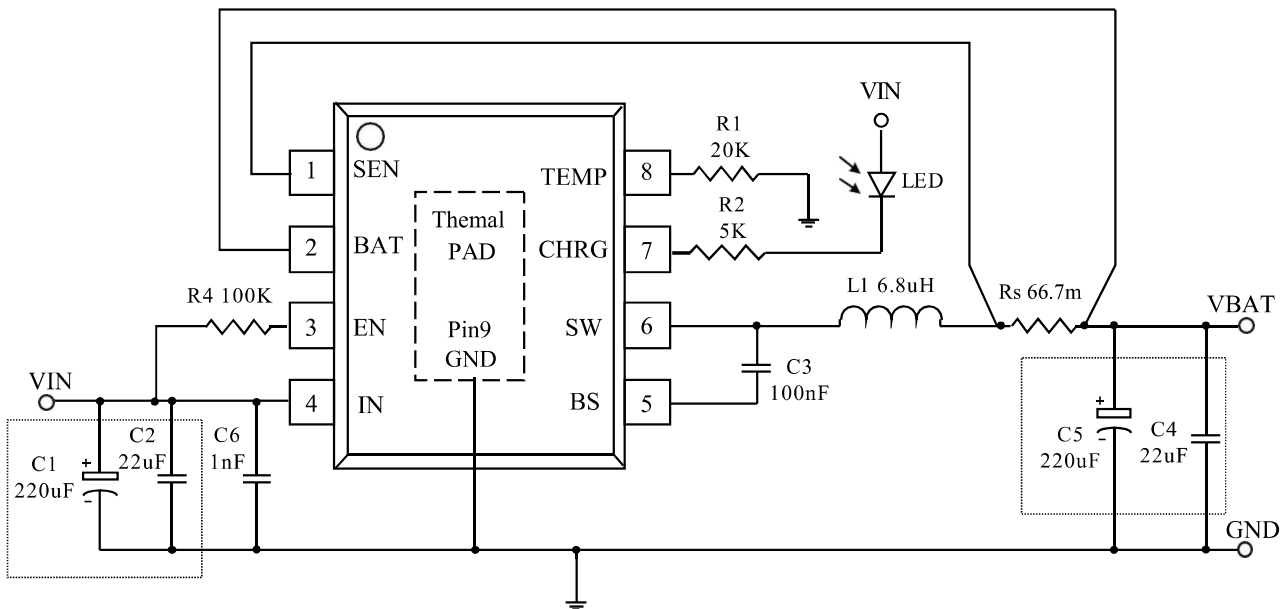
■ Package

- 8-Pin ESOP-8L

■ Typical Application Circuit



FH5405A Application circuit

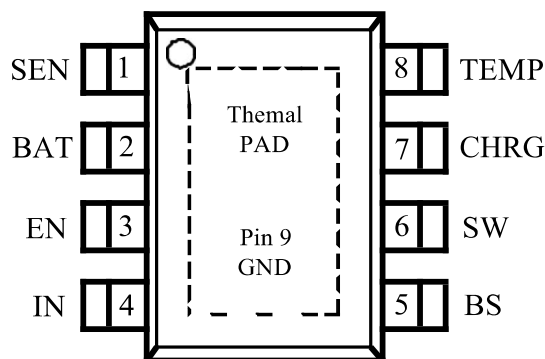


FH5405B Application circuit

NOTE:

1. The input capacitor is in the dotted line box. The input requires 220uF or more electrolytic capacitor. The larger the charging power, the larger the capacity of the electrolytic capacitor.
2. For the hot-swappable application at the BAT end, it is also necessary to add electrolytic capacitors, it is recommended to be 220uF or more.

■ Pin Configuration

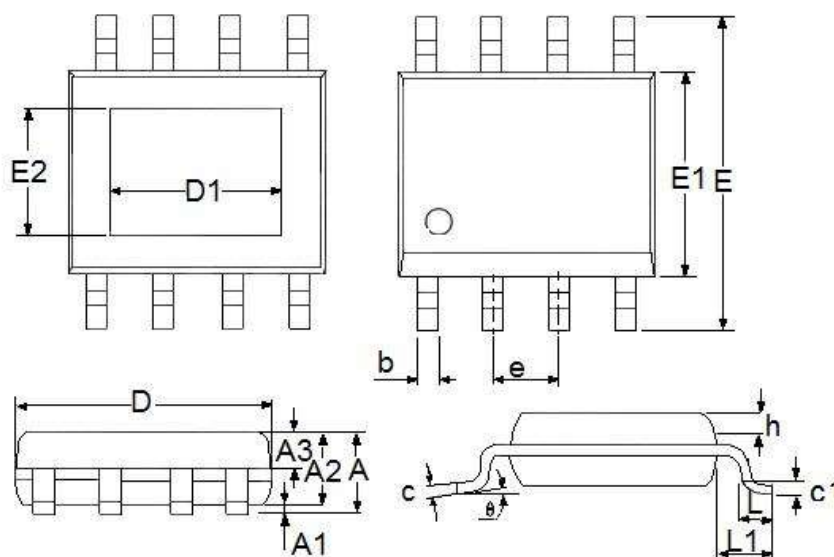


■ Pin Assignment

Pin Num.	Symbol	Function
1	SEN	Charge Current program. The output current is set by an external resistor according to the following formula: $I_{OUT} = 100mV/R_s$.
2	BAT	Feedback Pin. Receives the feedback voltage from an external resistor across the output
3	EN	ON/OFF Control
4	IN	Positive Supply Voltage Input. VIN can range from 10V to 16V. A 10μF low ESR capacitor is required near the chip.
5	BS	The driver of upper MOSFET
6	SW	Switching
7	CHRG	Open drain, When the charge current drops below the End-of-Charge threshold, the N-channel MOSFET turns off. When the input supply is removed, CHRG pin becomes high impedance.
8	TEMP	Temperature sense. TEMP Thermistor Input. a negative temperature coefficient thermistor to ground, this pin senses the temperature of the battery pack and stops the charger. To disable the temperature qualification function, put a 20KΩ resistor to ground.
9	Thermal PAD	The thermal PAD is the Ground of the chip.

■ Packaging Information

- Packaging Type: ESOP-8L



DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	1.3	1.75	0.0512	0.0689
A1	0	0.2	0.0000	0.0079
A2	1.25	1.65	0.0492	0.0650
A3	0.5	0.7	0.0197	0.0276
b	0.33	0.51	0.0130	0.0201
c	0.17	0.25	0.0067	0.0098
D	4.7	5.1	0.1850	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	0.0500
L1	1.04(TYP)		0.0409(TYP)	
θ	0	8°	0.0000	8°
c1	0.25(TYP)		0.0098(TYP)	
D1	3.1(TYP)		0.122(TYP)	
E2	2.21(TYP)		0.087(TYP)	

■ Ordering Information

Part Number	V _{FLOAT}	Packaged	Top Mark	SPQ
FH5405AS08	8.40V	ESOP-8L	FH5405A * * * *	2500PCS/Reel
FH5405BS08	12.60V	ESOP-8L	FH5405B * * * *	2500PCS/Reel

- FH5405A / FH5405B devices are Pb-free and RoHS compliant.
- The surface prints of our semiconductor devices are subject to change during the production process and do not involve changes in electrical parameters, and we will not separately state the notice.

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