16V/0.75A Fully Integrated Linear Charger for #2 Cell Li-ion Battery

PRELIMINARY DATASHEET

DESCRIPTION

FH5410 is a fully integrated constant current(CC)/constant voltage(CV) charger for #2 cell Li-ion battery. Its compact package with minimum external components requirement makes the FH5410 ideal for portable applications.

No external sense resistor or blocking diode is necessary for the FH5410. Build-in thermal feedback mechanism regulates the charge current to control the die temperature during high power operation or at elevated ambient temperature.

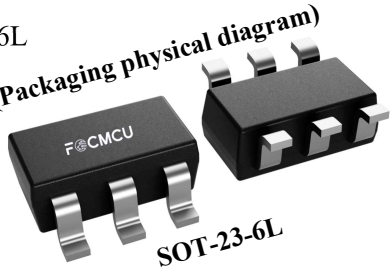
The FH5410 has a pre-charge function for trickle charging deeply discharged batteries. The fast charge current can be programmed by an external resistor. CV regulation mode is automatically enabled once the battery's charging curve reaches the constant voltage portion.

The output current then decays and is finally terminated once the charge current drops to 1/10th of the programmed value. The FH5410 keeps monitoring the battery voltage and enables a new charge cycle once the voltage drops by 150mV below the CV value.

FH5410 is in a tiny SOT-23-6L package.

FEATURES

- 16V standoff input voltage at VIN and BAT pins
- 8.4V charge termination voltage
- Charge current up to 750mA in SOT-23-6L package
- No damage when battery reversely connected
- 25uA supply current when standby
- Soft-start limits in-rush current
- Package type: SOT-23-6L



APPLICATIONS

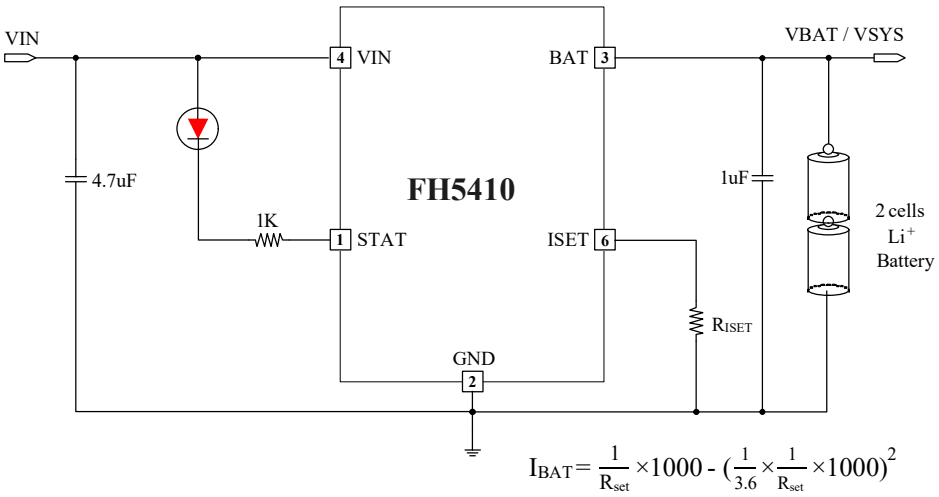
- Cellular Telephones
- Bluetooth applications
- Li-ion battery powered devices

Device Information (1)

PART NUMBER	PACKAGE	BODY SIZE (NOM)
FH5410	SOT-23 (6L)	2.90mm x 1.60mm

(1) For all available packages, see the orderable addendum at the end of the data sheet.

TYPICAL APPLICATION



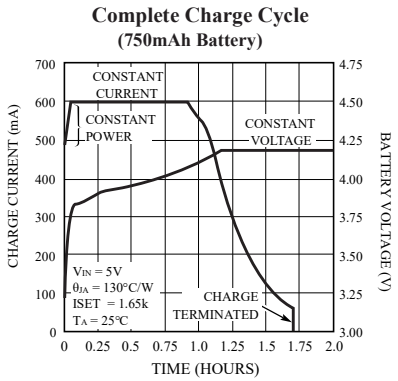
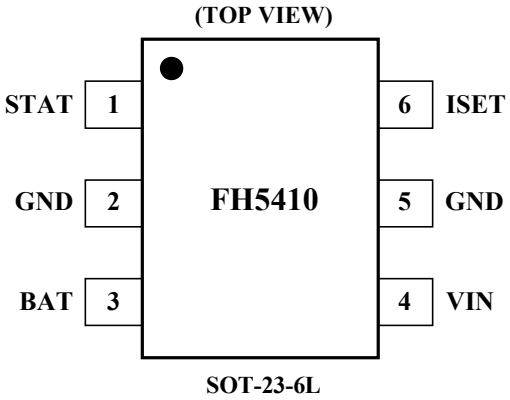


Figure 1. FH5410 typical application

PIN CONFIGURATION



PIN DESCRIPTION

PIN #	NAME	DESCRIPTION
1	STAT	Open-Drain Charge Status Output. The STAT pin outputs low when the battery is charging. Upon the completion of the charge cycle, it becomes high-impendence.
2, 5	GND	Ground.
3	BAT	Charge Current Output. This pin provides charge current to the battery and regulates the final float voltage to 8.4V which is set by an internal precision resistor divider.
4	VIN	Positive Input Supply. Needs to be bypassed with at least a 1μF capacitor.
6	ISET	Program, Monitor the charge current and Shutdown. This pin set to 1.0V in constant-current mode. The charge current is programmed by connecting a 1% resistor (Rset), between ISET, to GND pin. The charge current can be calculated using the following formula: $I_{BAT}=\frac{1}{R_{set}}\times1000-(\frac{1}{3.6}\times\frac{1}{R_{set}}\times1000)^2$ The ISET pin can also be used to switch the charger to shutdown mode by disconnecting the program resistor from ground.

ABSOLUTE MAXIMUM RATINGS

(Note: Exceeding these limits may damage the device. Exposure to absolute maximum rating conditions for long periods may affect device reliability.)

VIN Voltage ..... -0.3V to 20V

BAT Voltage ..... -0.3V to 16V

All other pin Voltage ..... -0.3V to 6V

Operating Temperature Range ..... -40°C to 85°C

Storage Temperature Range ..... -55°C to 150°C

Thermal Resistance	θ_{JA}	θ_{Jc}	
SOT23-6L	190	50	°C/W

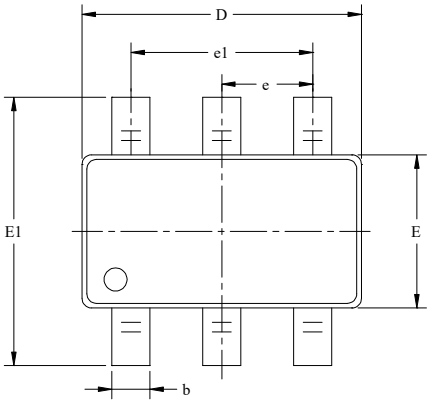
Lead Temperature (Soldering, 10sec) ..... 260°C

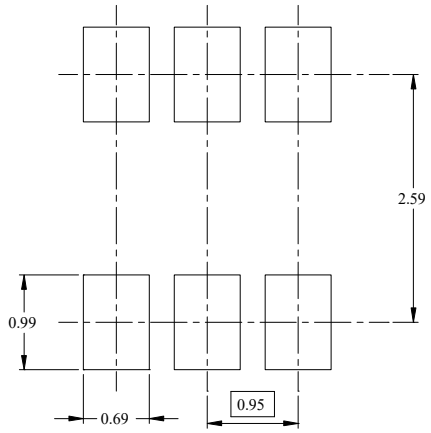
ESD HBM (Human Body Mode) 2KV

ESD MM (Machine Mode) 200V

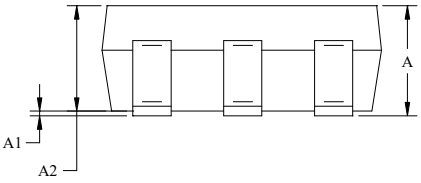
PACKAGE OUTLINE DIMENSIONS

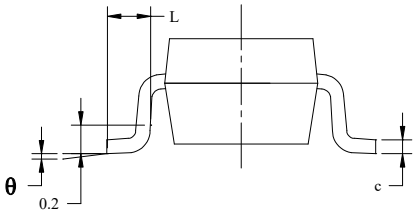
Type: SOT-23-6L





RECOMMENDED LAND PATTERN (Unit: mm)





Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950 BSC		0.037 BSC	
e1	1.900 BSC		0.075 BSC	
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

ORDERING INFORMATION

Part Number	Input Voltage	Features	Operating Temperature	Package Type	Top Mark	SPQ
FH5410M6	8.5V ~ 16.0V	● Linear charger, #2Cell li-ion battery ● Vflog: 8.4V ● Chager current: 750mA ● VBAT: 5.86V ● C/10 battery charger	-40℃ to +85℃	SOT-23-6L	E* Y W	3000EA/Reel

Note:

- **FH5410** 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.
- If you have any other custom purchase needs, please contact our sales department.
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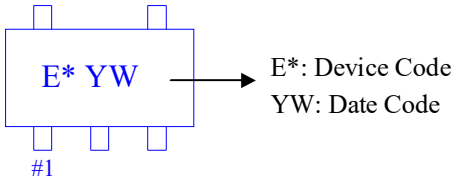
Device Name: SOT-23-5L



ESD SENSITIVITY CAUTION

ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

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Note:

CAUTION STATIC SENSITIVE DEVICES NOT TO BE HANDLED BY UNAUTHORISED PERSONNEL

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▲ Update by Aug.2022