16V/120mA, 1.0mA Termination Current, Linear Charger Single Cell Li-Ion Battery Chargers

PRELIMINARY DATASHEET

DESCRIPTION

FH5016 is a single cell, fully integrated constant current (CC)/constant voltage (CV) Li-ion battery charger. Its compact package with minimum external components requirement makes the FH5016 ideal for portable applications. No external sense resistor or blocking diode is necessary for the FH5016. Build-in thermal feedback mechanism regulates the charge current to control the die temperature during high power operation or at elevated ambient temperature.

The FH5016 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 FH5016 keeps monitoring the battery voltage and enables a new charge cycle once the voltage drops by120mV below the CV value.

FH5016 is in a DFN2*2-8L package.

FEATURES

- Input standoff voltage: 16.0V
- 4.2V charge termination voltage
- Termination current: 1.0mA
- 2.9V trickle charge threshold
- Charge current programmable, up to 120mA
- 250nA BAT current when no charging
- Soft-start limits in-rush current
- Package type: DFN2*2-8L

APPLICATIONS

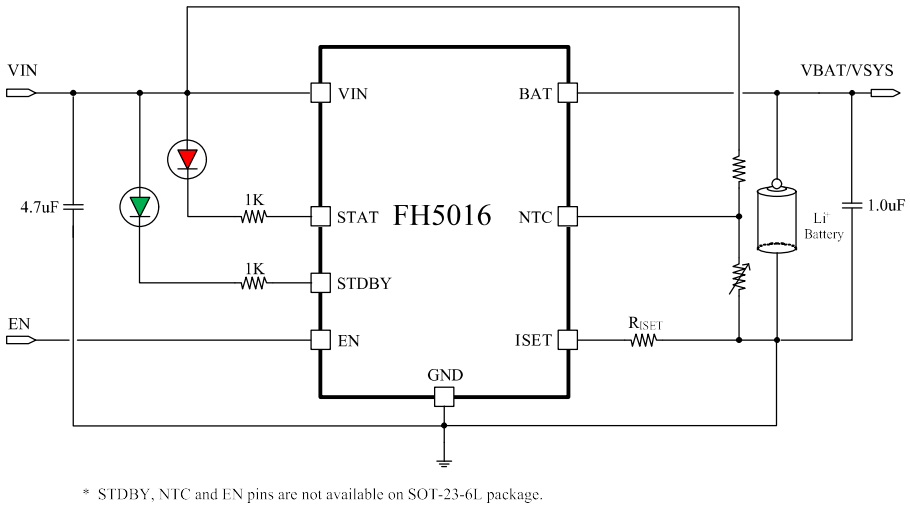
- E-cigarette
- IOT Gadgets
- Bluetooth applications
- Li-ion battery powered devices

Device Information (1)

PART NUMBER	PACKAGE	BODY SIZE (NOM)
FH5016	DFN (8L)	2.00mm × 2.00mm

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

TYPICAL APPLICATION



* STDBY, NTC and EN pins are not available on SOT-23-6L package.

Figure 1. Typical application circuits

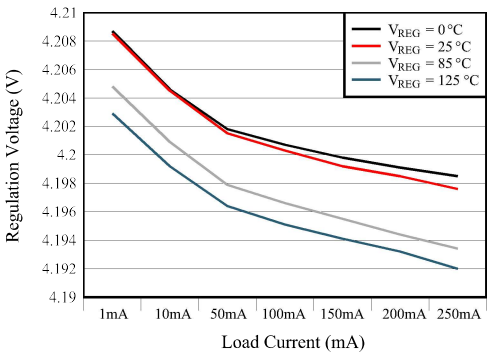
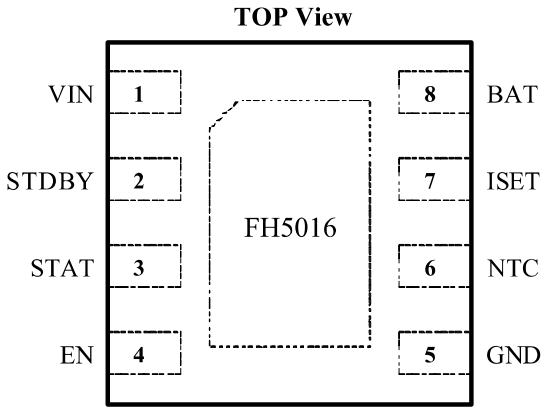


Figure 2. Load Regulation Over Temperature

PIN CONFIGURATION



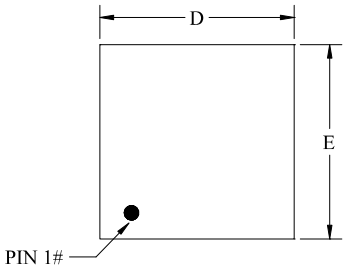
DFN2*2-8L

PIN DESCRIPTION

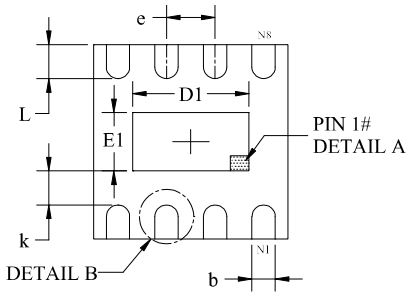
PIN#	NAME	DESCRIPTION
6	NTC	Battery Temperature Monitoring input pin. It sets the valid temperature operating range for both battery charging and discharging.
7	ISET	Program, Monitor the charge current and Shutdown. This pin set to 1.0V in constant-current mode. The charge current is programmed by connecting a 1% resistor (Rset), between ISET, to GND pin. The charge current can be calculated using the following formula: $I_{BAT}=\frac{1}{R_{set}}\times 100-(\frac{1}{3.6}\times\frac{1}{R_{set}}\times 100)^2$ The ISET pin can also be used to switch the charger to shutdown mode by disconnecting the program resistor from ground.
5	GND	Ground.
1	VIN	Positive Input Supply. Needs to be bypassed with at least a 4.7μF capacitor.
8	BAT	Charge Current Output. This pin provides charge current to the battery and regulates the final float voltage to 4.2V which is set by an internal precision resistor divider.
2	STDBY	Open-Drain Output for Charge Finished flag. The STDBY pin outputs low when the battery is finished charging. When in the status of charging, it becomes high-impendence.
3	STAT	Open-Drain Output for In Charging flag, The STAT pin outputs low when the battery is in charging. Up on the completion of the charge cycle, it becomes high-impendence.
4	EN	Enable the IC charger or not. Drive this pin high or floating to enable charger, low to disable.

PACKAGE OUTLINE DIMENSIONS

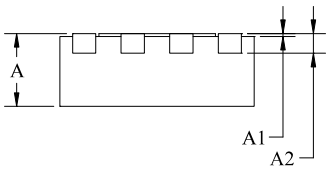
- **Type: DFN2*2-8L**



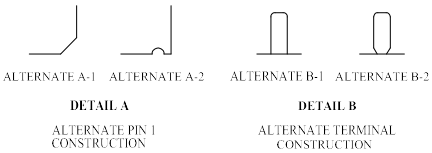
TOP VIEW

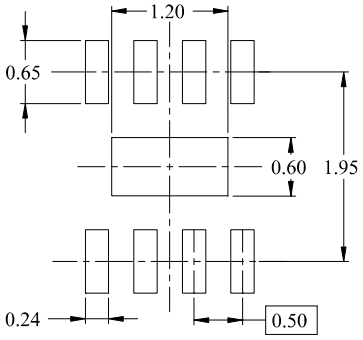


BOTTOM VIEW



SIDE VIEW





RECOMMENDED LAND PATTERN (Unit: mm)

Symbol	Dimensions In Millimeters		
	MIN	MOD	MAX
A	0.700	0.750	0.800
A1	0.000	-	0.050
A2	0.203 REF		
D	1.900	2.000	2.100
E	1.900	2.000	2.100
D1	1.100	1.200	1.300
E1	0.500	0.600	0.700
b	0.180	-	0.300
e	0.500 TYP		
k	0.200 MIN		
L	0.250	0.350	0.450

NOTE: This drawing is subject to change without notice.

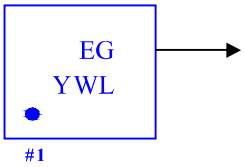
ORDERING INFORMATION

Part Number	Input Standoff Voltage	Features	Operating Temperature	Package Type	Top Mark	SPQ
FH5016D8	~ 16.0V	● #1 Cell linear battery chargers ● Trickle Voltage: 2.9V ● Charge current: up to 120mA ● 250nA BAT current ● Vfloat: 4.2V	-40°C to +85°C	DFN2.0*2.0-8L	EG Y W L	3000EA/Reel

Note:

- **FH5016** 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.
- FOCMCU Inc. reserves the right to amend and legally interpret the electrical parameters of this chip device. (http://www.fordevices.com)

Device Name: DFN2*2-8L



EG: Device Code
YWL: Date Code

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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▲ Update by Dec.2022