

## 2.5A, 3.0MHz, Switching Charger, Buck Control, with Dynamic Power Path Management

PRELIMINARY DATASHEET

### DESCRIPTION

FH5206 is a switching Li-ion battery charger with dynamic power-path control and input current limiting. When a battery is connected, depending on the battery voltage, the DC to DC switching regulator either pre-conditions, fast-charges the battery or just regulates a system voltage ( $V_{SYS}$ ) to a preset voltage. It does not require an external sense resistor for current sensing.

The charging current is determined by programming ISET1 or ISET2 pin, depending on the state of the USB\_DET. If USB\_DET is low, indicating a valid AC adapter input is present, the charge current is set by ISET1; otherwise, it is set by ISET2. When the battery voltage reaches the termination voltage i.e., 4.20V, the charging path disconnects SYS to BATT. The FH5206 also includes a dynamic power path when the SYS load current exceeds current limit of the DC-DC regulator internally set, the SYS voltage falls below  $V_{BATT}$ , FH5206 turns on the power-path to supplement the system load through the battery.

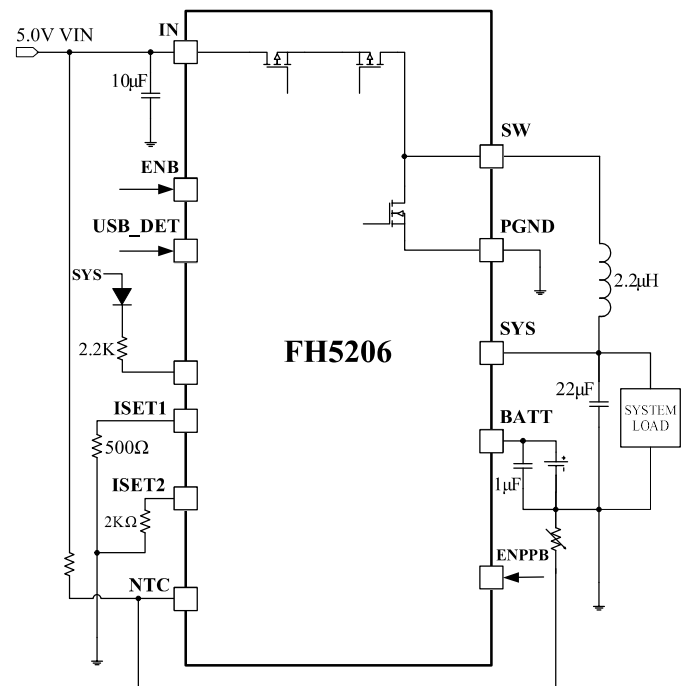
### FEATURES

- Input Voltage Range: ~ 6.0V
- Up to 95% DC-DC Efficiency
- Switch Frequency: 3.0MHz
- 50mΩ Power Path MOSFET
- Battery CV Voltage: 4.20V
- Up to 2.5A Max charging current
- Instant on with a dead Battery or no Battery
- No battery detection
- No External Sense resistor
- Programmable USB and AC IN Charging Current
- Switching Charger with Power Path Management
- RoHS Compliant
- Package type: QFN3\*3-16L

### APPLICATIONS

- Tablet, MID
- Smart Phone
- Power Bank

### TYPICAL APPLICATION

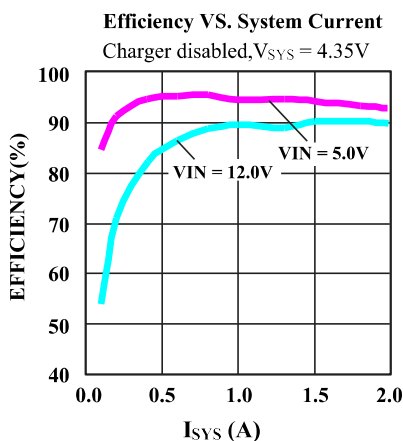


**Figure 1. 2.0A Switching Charger with Dynamic Power Pat**

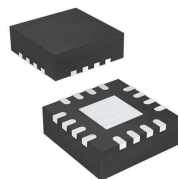
#### Device Information

Part Number	Package	Body Size(NOM)	Top Marking
FH5206	QFN3*3-16L	3.10mm x 3.10mm	FH5206 YY MM LL

Note: For all available packages, see the orderable addendum at the end of the datasheet.



(Physical drawing)



**QFN3\*3-16L**

## PIN CONFIGURATION

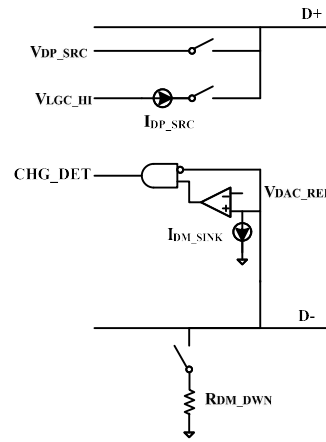
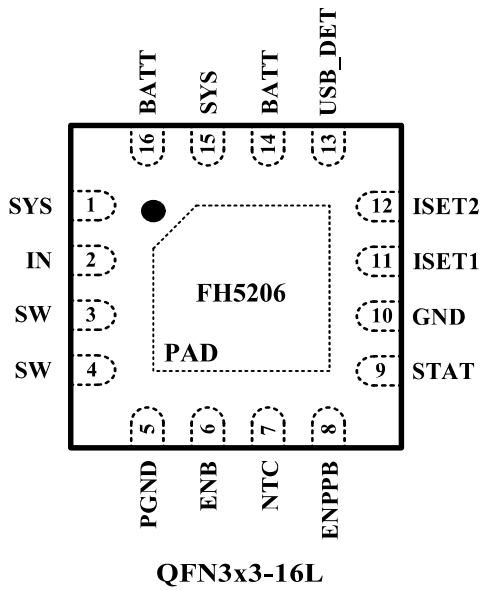


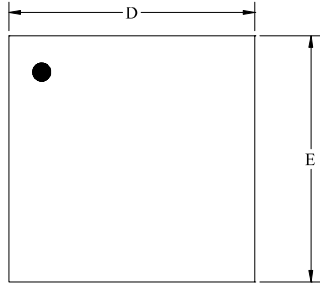
Figure 2. USB D+/D- Detection

## PIN DESCRIPTION

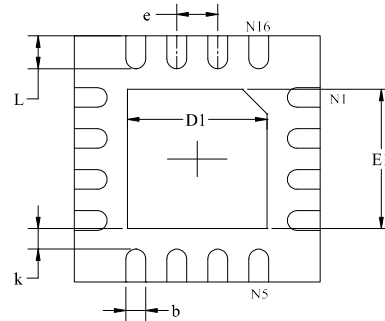
PIN #	NAME	DESCRIPTION
1,15	SYS	<b>System Voltage Pin.</b> It is also the Switching regulator's output pin. Connect an inductor and capacitor to form the output filter
2	IN	<b>Input pin.</b> Can be connected to an AC adaptor or a USB charger output. Bypass with a 10.0uF capacitor each to GND and PGND
3,4	SW	<b>Switching node of the Switching Regulator.</b> Connect a 1.0uH to 2.2uH inductor from this pin to SYS
5	PGND	<b>Power Ground.</b> Bypass with a 10uF capacitor to IN with a shortest possible trace
6	ENB	<b>Active Low Enable pin.</b> Tie this pin low to enable the Charging, tie high to disable Charging, while still keeping power path from BATT to SYS
7	NTC	Thermistor input
8	ENPPB	<b>Shipping mode enable Pin.</b> Tie to GND to enable power path from BATT to SYS, tie to BATT, to disable this path thereby enabling shipping mode to save power to extend battery life.
9	STATS	<b>Status pin for Charging status indications.</b> An open drain device capable of driving 10.0mA current
10	GND	<b>Analog Ground Pin.</b> Bypass with a 10.0uF capacitor to IN
11	ISET1	AC Fast Charge Current set pin for AC input. Connecting a Resistor between ISET1 to GND This sets the fast charge current value for AC adapter when USB_DET is low.
12	ISET2	USB Charge Current set pin for USB input. Connecting a Resistor between ISET2 to GND This sets the charge current value for USB input when USB_DET is high.
13	USB_DET	Charge current selecting input. Pull this pin low if an AC adapter is connected and select fast charging current to be set by ISET1. And set this pin high if a USB input is connected and select USB charging current to be set by ISET2. It is default low.
14,16	BATT	<b>Battery pin.</b> Connect a Battery to this pin

PACKAGE OUTLINE DIMENSIONS

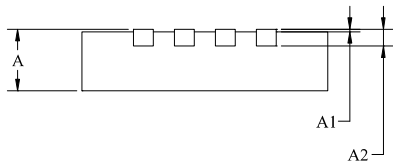
QFN3×3-16L



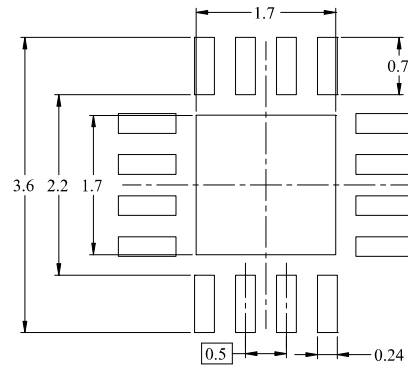
TOP VIEW



BOTTOM VIEW



SIDE VIEW



RECOMMENDED LAND PATTERN  
(Unit: mm)

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	0.700	0.800	0.028	0.031
A1	0.000	0.050	0.000	0.002
A2	0.203 REF		0.008 REF	
D	2.900	3.100	0.114	0.122
D1	1.600	1.800	0.063	0.071
E	2.900	3.100	0.114	0.122
E1	1.600	1.800	0.063	0.071
k	0.200 MIN		0.008 MIN	
b	0.180	0.300	0.007	0.012
e	0.500 TYP		0.020 TYP	
L	0.300	0.500	0.012	0.020

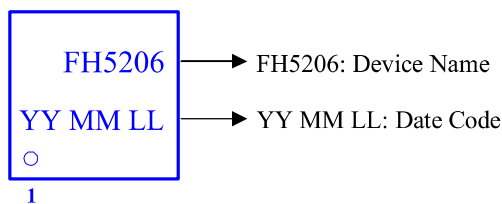
## ORDERING INFORMATION

Part Number	Voltage Range	Features	Operating Temperature	Package Type	Top Mark	SPQ
FH5206D16	4.4V ~ 5.5V	<ul style="list-style-type: none"> <li>Battery Charger, buck mode</li> <li>Output current: 2.5A</li> <li>Efficiency: 95%</li> <li>Battery CV voltage: 4.20V</li> <li>Switch Frequency: 3.0MHz</li> </ul>	-40°C to 85°C	QFN3*3-16L	FH5206 YY MM LL	5000PCS/Reel

**Note:**

- **FH5206** 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.
- ForDevices reserves the right to amend and legally interpret the electrical parameters of this chip device. (<http://www.fordevices.com>)

**Device Name: DFN3\*3-16L**



**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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