ForDevices

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

PRELIMINARY DATASHEET

DESCRIPTION

FH5302 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-DC buck switching regulator either pre-conditions, fast-charges the battery or just regulates a system voltage (VSYS) to a preset voltage. It does not require an external sense resistor for current sensing.

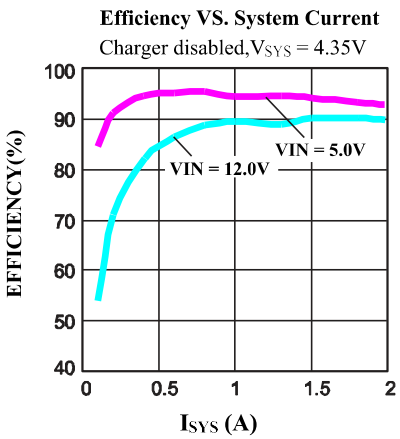
The charging current is determined by programming ISET 1 or ISET 2 pin, depending on the state of the USB_DET. If USB_DET is low, indicating a valid AC adapter input is present, the charge current is set by ISET 1; otherwise, it is set by ISET 2. When the battery voltage reaches the termination voltage i.e. 4.35V, the charging path disconnects SYS to BATT.

The FH5302 also includes a dynamic power path when the SYS load current exceeds current limit of the DC-DC buck regulator internally set, the SYS voltage falls below V_{BATT}, FH5302 turns on the power-path to supplement the system load through the battery.

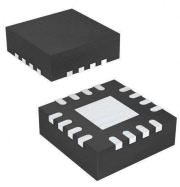
Device Information

Part Number	Package	Body Size(NOM)	Top Marking
FH5302	QFN3*3-16L	3.10mm x 3.10mm	FH5302 YY MM LL

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



(Physical drawing)



QFN3*3-16L

FEATURES

- Switching Charger with Power Path Management
- Up to 95% DC-DC Efficiency
- 50mΩ Power Path MOSFET
- 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
- Package type: QFN3*3-16L

APPLICATIONS

- Tablet PC and Smart Phone
- Portable Audio Speaker
- Power Bank
- Portable Media Players
- Internet Devices

TYPICAL APPLICATION

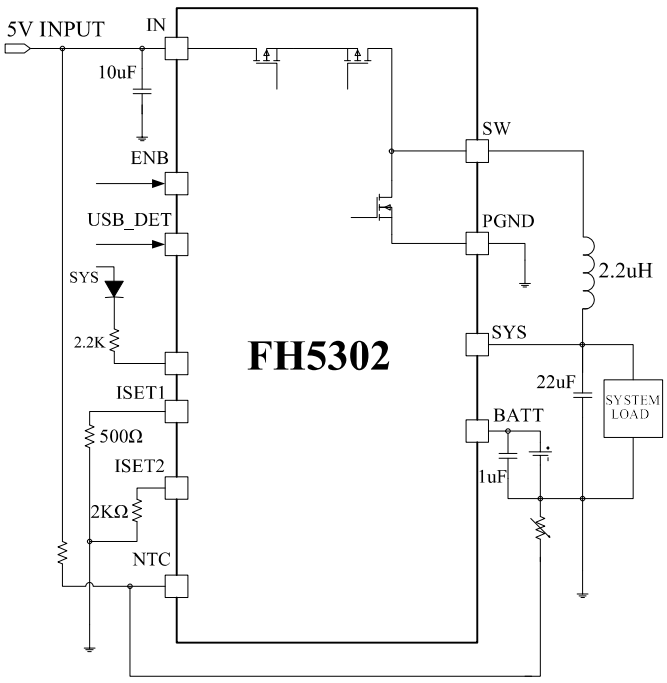
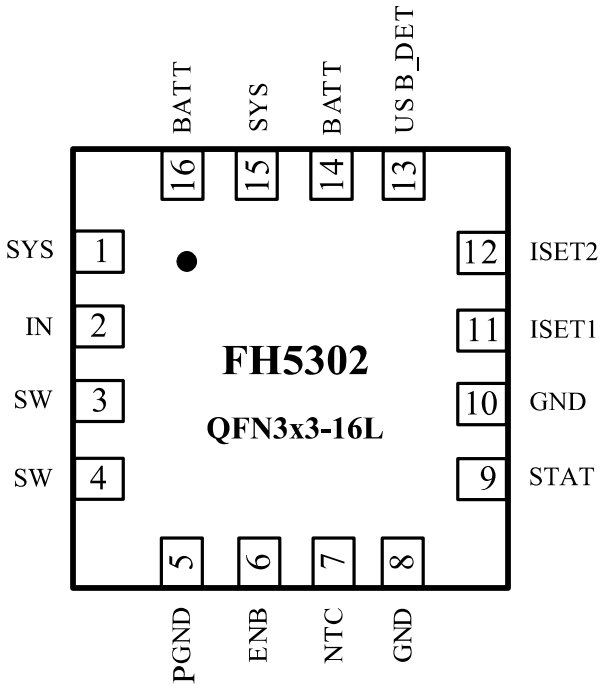


Figure 1. 2.0A Switching Charger with Dynamic Power Path

PIN CONFIGURATION



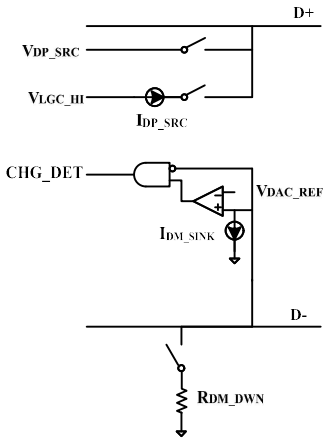


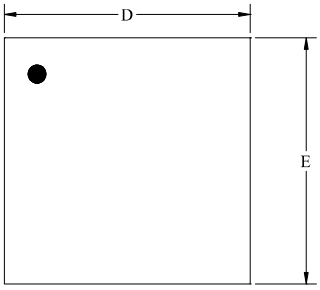
Figure 2. USB D+/D- Detection

PIN DESCRIPTION

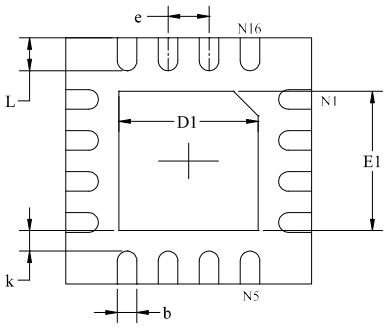
PIN #	NAME	DESCRIPTION
1,15	SYS	System Voltage Pin. It is also the Switching regulator's output pin. Connect an inductor and capacitor to form the output filter.
2	IN	Input pin. Can be connected to an AC adaptor or a USB charger output. Bypass with a 10uF capacitor each to GND and PGND
3,4	SW	Switching node of the Switching Regulator. Connect a 1.0uH to 2.2uH inductor from this pin to SYS
5	PGND	Power Ground. Bypass with a 10.0uF capacitor to IN with a shortest possible trace
6	ENB	Active Low Enable pin. 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
8,10	GND	Analog Ground Pin. Bypass with a 10uF capacitor to IN
9	STATS	Status pin for Charging status indications. An open drain device capable of driving 10mA current
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	Battery pin. Connect a Battery to this pin

PACKAGE OUTLINE DIMENSIONS

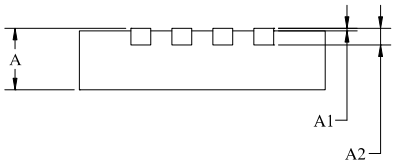
QFN3×3-16L



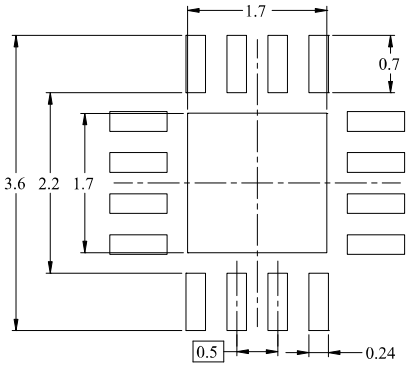
TOP VIEW



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

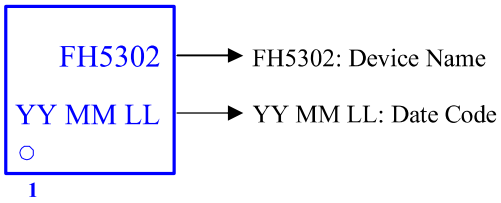
ORDERING INFORMATION

Part Number	Voltage Range	Features	Operating Temperature	Package Type	Top Mark	SPQ
FH5302D16	4.4V ~ 5.5V	● Battery Charger, buck mode ● Output current: 2.5A ● Efficiency: 95% ● Battery CV voltage: 4.35V ● Switch Frequency: 3.0MHz	-40°C to 85°C	QFN3*3-16L	FH5302 YY MM LL	5000PCS/Reel

Note:

- **FH5302** 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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▲ Update by Aug.2019