5.0V输入，三节锂电池升压型充电器IC

PRELIMINARY DATASHEET

器件概述

FH5408 是一款面向 5V 适配器的三节锂电池同步升压充电电路。它是采用全内置的功率器件MOS和 650kHz 开关频率的同步升压型转换器，因此具有高达 92% 以上的充电效率，最大可支持 1000mA 充电电流。

FH5408 包括完整的充电终止电路、自动再充电和一个精确度达 ±1% 的 12.6V预设充电电压，内部集成了防反灌保护、输出短路保护、芯片及电池温度保护等多种功能。

FH5408 可以自适应适配器的电流供应能力，确保输入适配器不会出现过载现象，所以适用于各种直流设备以及标准的 USB 充电设备。

FH5408 集成了 20.0V 功率型 MOSFET。可以抗高达 20V 的电压，并且集成了欠压和过压保护功能，具有很高的可靠性，无需额外加抗浪涌或过压保护器件。

FH5408 采用小型化的封装 QFN 4x4-16L，节省 PCB 面积尺寸有效利用。

应用领域

- 平板电脑
- 蓝牙音箱
- 智能锁
- 移动电源
- 电动工具
- 各种便携式设备

电气特性

- 输入电压保护高达 20.0V
- 全内置功率型整流 MOSFET
- 输出效率可达 92%
- 可调输出电流可达 1000mA
- 输入电流自动识别，适配器自适应
- 芯片高温自动限流和过温关断保护
- 无需防反灌电流二极管
- FH5408 无需外置功率器件MOSFET 或续流二极管
- 充电电压精度达到 ±1% (Vflog: 12.6V)
- 充电状态双灯指示、无电池或故障状态显示
- 3节锂电池 8.4V 涓流充电电压阈值
- 集成欠压及过压保护功能
- 电池温度监测功能
- 输出短路保护功能
- 采用小型化的封装 QFN4x4-16L

最大额定值

- 输入电源电压 (VIN)：-0.3V~22V
- BAT：-0.3V ~ 22V
- TM：-0.3V ~ 7V
- 其它：-0.3V ~ VIN+0.3V
- BAT 短路持续时间：连续
- 最大结温：145℃
- 工作环境温度范围：-40℃ ~ 85℃
- 贮存温度范围：-65℃ ~ 125℃
- 引脚温度 (焊接时间10秒)：260℃

典型应用

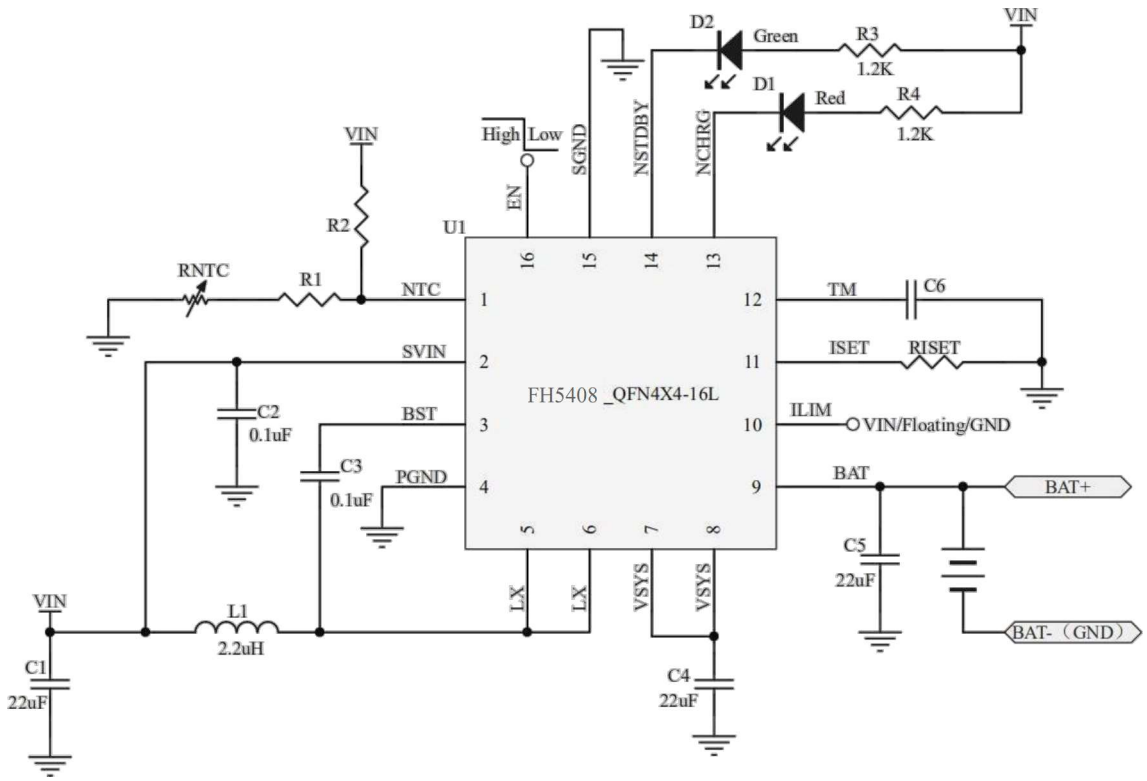


图 1. FH5408 典型应用电路

引脚功能

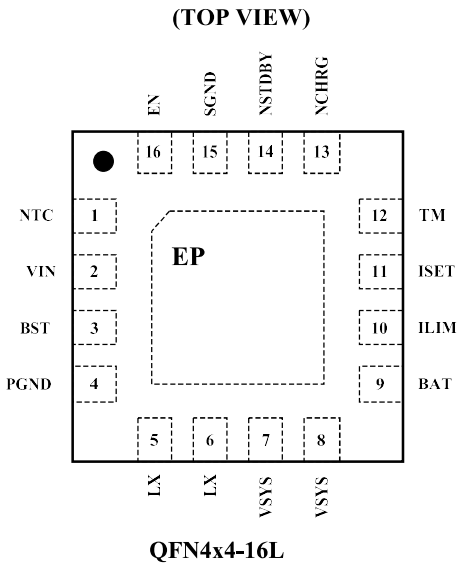


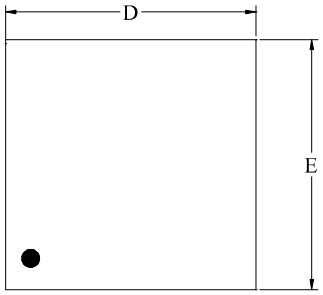
图 2. FH5408 引脚封装图

引脚说明

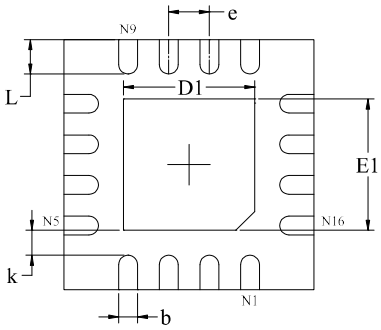
引脚序号	引脚名称	功能描述
1	NTC	电池温度监测，当电压处于VIN 的30%~75%区间时，芯片正常充电。
2	VIN	电源输入端，内部集成有欠压及过压保护功能。
3	BST	自举，在该脚与LX 脚之间接一个0.1uF 的电容，用来给内部功率MOS 提供驱动能力。
4	PGND	功率接地。
5丨6	LX	开关端，外接电感器元件。
7丨8	VSYS	升压输出端，至少接一个10uF 的电容器到接地。
9	BAT	电池端，连接充电电池正极
10	ILIM	输入限流保护设置，有接低、悬空、接高三档，可设置允许VIN 压降最大降低值。
11	ISET	充电电流设置，设置算式是：$I_{BAT} = (1.0/R_{ISET}) * 5000A$ 。
12	TM	充电时间限制设定端。
13	NCHRG	充电指示端，通过发光二极管（LED）来指示充电状态，充电时灯亮，充饱时灯灭，充电异常时以约1Hz 频率闪烁。
14	NSTDBY	充饱指示端，通过发光二极管来指示充饱状态，电池充饱时灯亮，其它状态灯灭。
15	SGND	信号接地。
16	EN	芯片使能端，高有效。

封装结构信息

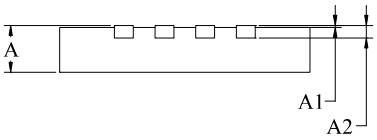
QFN4x4-16L



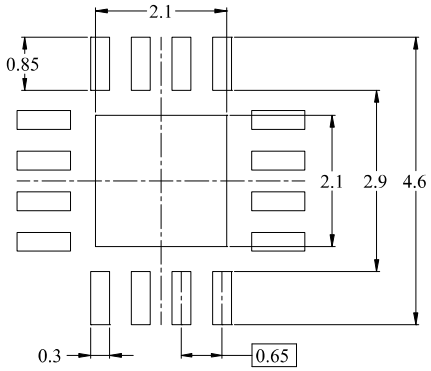
TOP VIEW



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	3.900	4.100	0.154	0.161
D1	2.000	2.200	0.079	0.087
E	3.900	4.100	0.154	0.161
E1	2.000	2.200	0.079	0.087
k	0.200 MIN		0.008 MIN	
b	0.250	0.350	0.010	0.014
e	0.650 TYP		0.026 TYP	
L	0.450	0.650	0.018	0.026

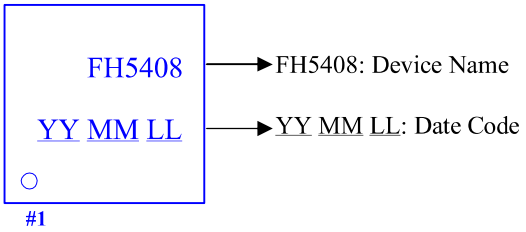
订购信息

Part Number	Voltage Range	Features	Operating Temperature	Package Type	Top Mark	SPQ
FH5408D16	3.0V ~ 20.0V	● 5V Input, 3Cell, Boost(Step-up) ● Integrated MOSFET ● Output current: 1000mA ● Vflog accuracy: ±1% ● FREQ: 650kHz	-40°C to 85°C	QFN4x4-16L	FH5408 YY MM LL	5000PCS/Reel

Note:

- **FH5408** 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: QFN4x4-16L



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.2018