

## 8A I<sub>MAX</sub> Continue, #1 Cell Li-ion/Polymer Battery Protection IC

PRELIMINARY DATASHEET

### GENERAL DESCRIPTION

The FH7019/FH7020 product is a high integration solution for lithium-ion/polymer battery protection. FH7019/FH7020 contains advanced MOSFET, high-accuracy voltage detection circuits and delay circuits. FH7019/FH7020 put into an DFN3x3-10L package with simple components makes it an ideal solution in limited space of battery pack.

FH7019/FH7020 has all the protection functions required in the battery application including overcharging, over-discharging, over-current and load short circuiting protection etc. The accurate overcharging detection voltage ensures safe and full utilization charging. The power-down current drains little current from the cell while in storage.

The device is not only targeted for digital cellular phones, but also for any other Li-Ion and Li-Poly battery-powered information appliances requiring long-term battery life.

#### Device Information (1)

PART NUMBER	PACKAGE	BODY SIZE (NOM)
FH7019	DFN (10L)	3.00mm × 3.00mm
FH7020	DFN (10L)	3.00mm × 3.00mm

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

### TYPICAL APPLICATION

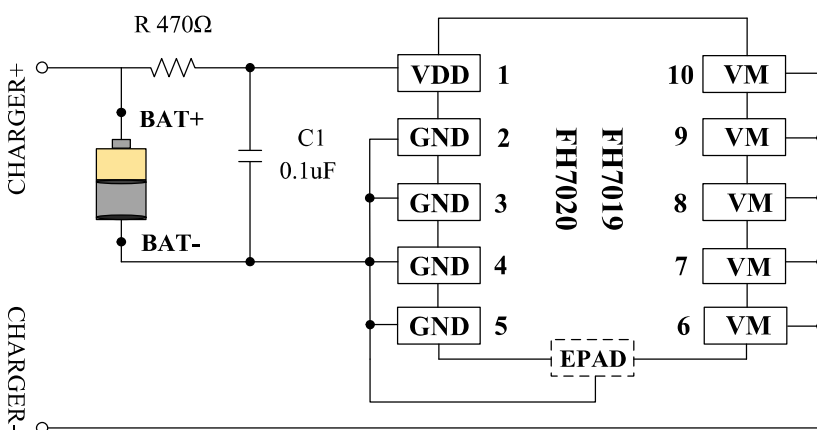


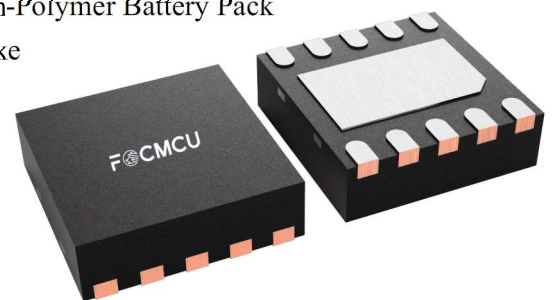
Figure 1. Typical Application Circuit

### KEY FEATURES

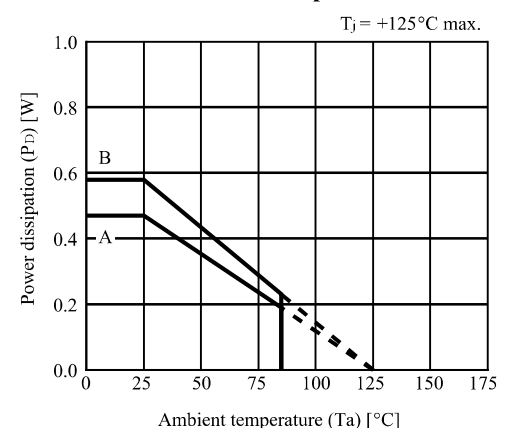
- Protection of Charger Reverse Connection
- Protection of Battery Cell Reverse Connection without external load
- Integrate Advanced Power MOSFET with Equivalent of 9mΩ R<sub>SS(ON)</sub>
- Package Type: DFN3x3-10L
- Over-temperature Protection
- Overcharge Current Protection
- Two-step Overcurrent Detection:
  - ▲ Overdischarge Current
  - ▲ Load Short Circuiting
- Charger Detection Function
- 0V Battery Charging Function
- Delay Times are generated inside
- High-accuracy Voltage Detection
- Low Current Consumption
  - ▲ Operation Mode: 7.0uA typ.
  - ▲ Power-down Mode: 4.0uA typ.
- RoHS Compliant and Lead (Pb) Free

### APPLICATIONS

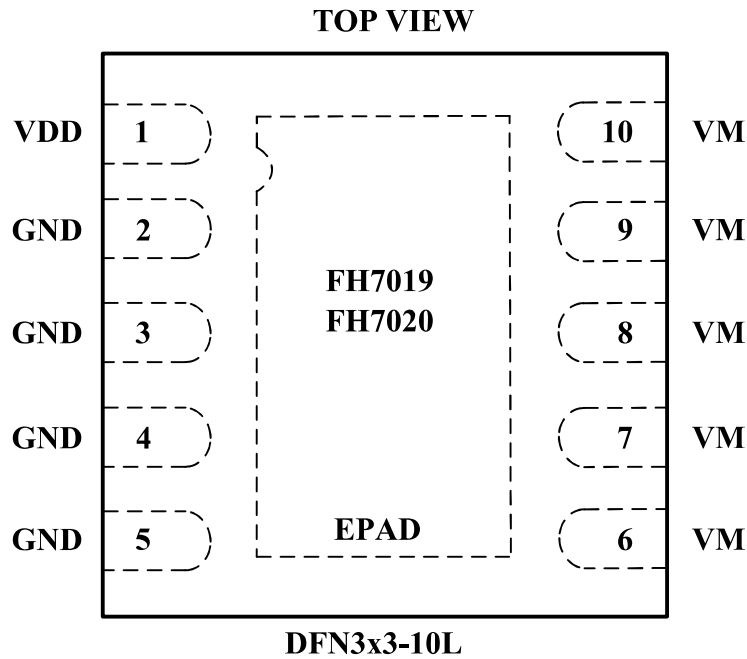
- One-Cell Lithium-ion Battery Pack
- Lithium-Polymer Battery Pack
- E-Smoke



#### Power Dissipation



**PIN CONFIGURATION**



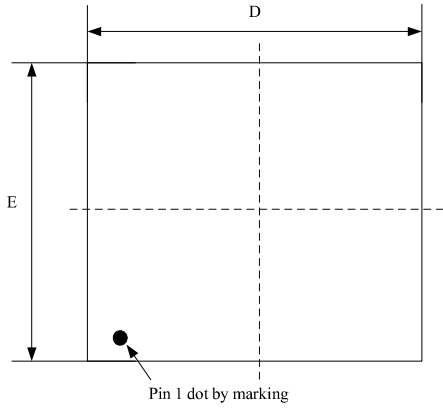
**Figure 2. PIN Configuration**

**PIN DESCRIPTION**

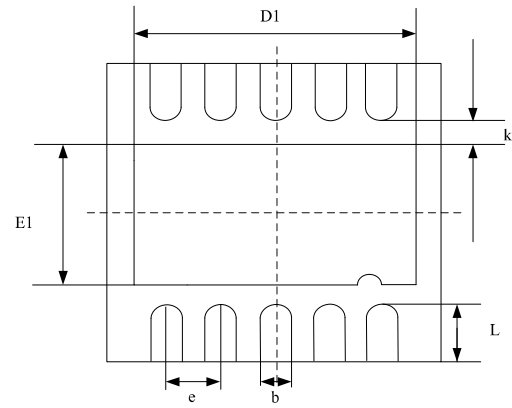
<b>PIN NUMBER</b>	<b>PIN NAME</b>	<b>PIN DESCRIPTION</b>
1	VDD	Power Supply.
2, 3, 4, 5	GND	Ground, connect the negative terminal of the battery to these pins. Please connect these pins with EPAD by mass mental.
6, 7, 8, 9, 10	VM	The internal FET switch connects this terminal to GND. Please connect these pins by mass mental.
11	EPAD	Exposed pad, must connect with GND of FH7019/FH7020.

## PACKAGE OUTLINE

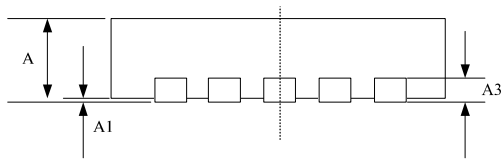
Type: DFN3x3-10L



TOP VIEW



BOTTOM VIEW



SIDE VIEW

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.700/0.800	0.800/0.900	0.028/0.031	0.031/0.035
A1	0.000	0.050	0.000	0.002
A3	0.203REF		0.008REF	
D	2.924	3.076	0.115	0.121
E	2.924	3.076	0.115	0.121
D1	2.300	2.500	0.091	0.098
E1	1.600	1.800	0.063	0.071
k	0.200MIN		0.008MIN	
b	0.200	0.300	0.008	0.012
e	0.500TYP		0.020TYP	
L	0.324	0.476	0.013	0.019

## ORDERING INFORMATION

Part Number	Input Voltage	Features	Operating Temperature	Package Type	Top Mark	SPQ
FH7019D10	~ 6.0V	<ul style="list-style-type: none"> <li>• #1 Cell battery protection IC</li> <li>• OCU[V<sub>CU</sub>]: 4.30V ± 50mV</li> <li>• OCRV[V<sub>CL</sub>]: 4.10 ± 50mV</li> <li>• ODV[V<sub>DL</sub>]: 2.4 ± 100mV</li> </ul>	-40°C to +85°C	DFN3.0x3.0-10L	FH7019 <u>Y W L</u>	5000EA/Reel
FH7020D10	~ 6.0V	<ul style="list-style-type: none"> <li>• #1 Cell battery protection IC</li> <li>• OCU[V<sub>CU</sub>]: 4.425V ± 50mV</li> <li>• OCRV[V<sub>CL</sub>]: 4.25 ± 50mV</li> <li>• ODV[V<sub>DL</sub>]: 2.4 ± 100mV</li> </ul>	-40°C to +85°C	DFN3.0x3.0-10L	FH7020 <u>Y W L</u>	5000EA/Reel

**Note:**

- **FH7019 / FH7020** devices are Pb-free and RoHs compliant.
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- FOCMCU Inc. reserves the right to amend and legally interpret the electrical parameters of this chip device. (<http://www.fordevices.com>)



### 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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