FH47120

ForDevices

High Efficiency, 16.0V, 10.0A Synchronous Boost(Step-Up) Regulator

Preliminary Specification

General Description

FH47120 develops a high efficiency, high power density synchronous boost regulator. The device adopts adaptive constant off time and current mode control. The integrated low $R_{DS(ON)}$ switches minimize the conduction loss.

FH47120 provides selectable PFM/PWM light load operation mode. The device features cycle by cycle peak current limit. Low output voltage ripple and small external inductor and capacitor size are achieved with programmable pseudo-constant frequency.

Applications

- Power Bank
- High Power AP
- E-Cigarette
- Bluetooth Speaker

Features

- Input Range: 2.8 to 16.0V
- Programmable Pseudo-constant Frequency: 300kHz-2MHz
- Low $R_{DS(ON)}$ for Internal Switch
  Main FET: 10mΩ
  Rectifier FET: 20mΩ
- PFM/PWM Selectable Light Load Operation Mode
- Internal Loop Compensation
- Programmable Peak Current Limit
- Internal Soft-start Time Limit the Inrush Current
- Input Voltage UVLO
- Over Temperature Protection
- Over Voltage Protection
- RoHS Compliant and Halogen Free
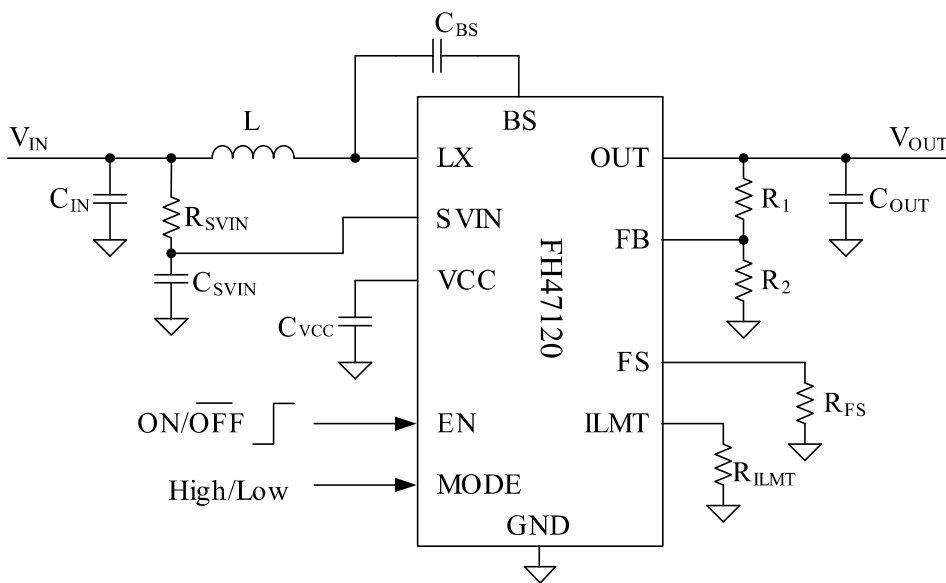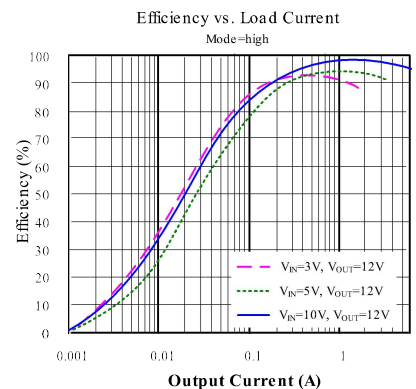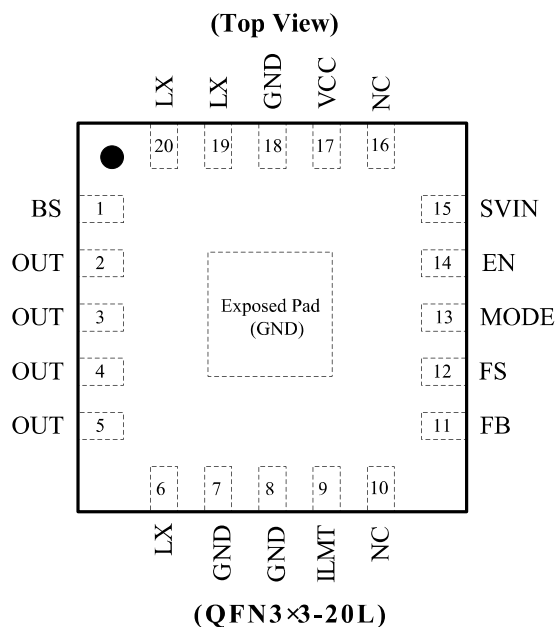- Compact Package: QFN3×3-20L
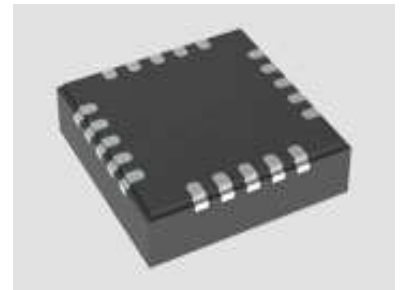
Typical Applications

Figure1. Schematic Diagram

FH47120

Pin Configuration

(Top View)

**(QFN3×3-20L)**

Pin Description

Pin Name	Pin Number	Pin Description
BS	1	Boost-strap pin. Supply Rectifier FET's gate driver. Decouple this pin to the LX pin with a 0.1µF ceramic capacitor
OUT	2,3,4,5	The Boost converter output pin.
LX	6,19,20	Inductor node. Connect an inductor from power input to the LX pin.
GND	7,8,18, EP	Ground pin of the IC.
ILMT	9	Switch peak current limit setting. Connect a resistor from this pin to GND. $I_{LMT}(A)=1200/R_{ILMT}(k\Omega)-2$
NC	10,16	Not connected.
FB	11	Feedback pin. Connected to the center of resistor voltage divider to program the output voltage: $V_{OUT}=1V \times (R_1/R_2+1)$
FS	12	Switching frequency setting pin. Connect a resistor from this pin to ground to program the switching frequency. $f_S(kHz) = 73565/R_{FS}(k\Omega)+300$
MODE	13	Operating mode selection under light load. Pull this pin low for PFM operation, and pull this pin high or leave it floating for PWM operation.
EN	14	Enable control. Pull high to turn on the IC. Do not leave it floating.
SVIN	15	IC power supply input pin. Decouple this pin to the GND pin with a 1µF ceramic capacitor.
VCC	17	Output of the internal regulator. Decouple this pin to the GND pin with a 1µF ceramic capacitor.

ForDevices

Preliminary Specification

PACKAGE OUTLINE DIMENSIONS

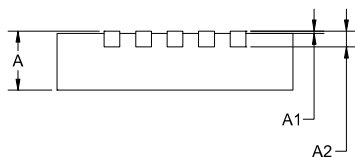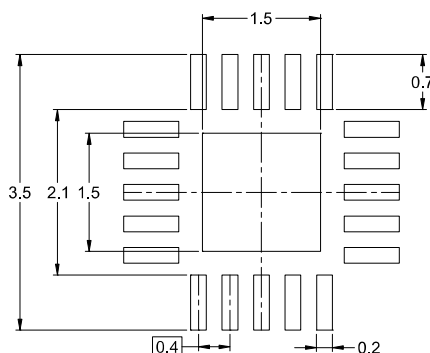### Type: QFN3*3-20L
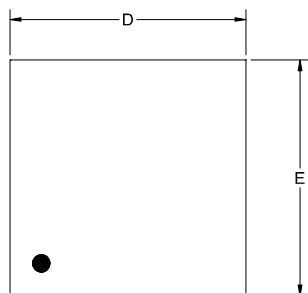
TOP VIEW
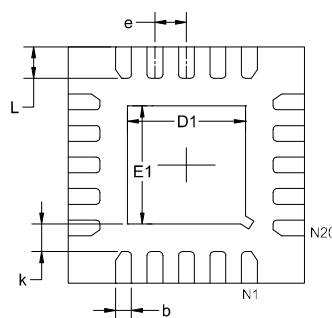
BOTTOM VIEW

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	2.924	3.076	0.115	0.121
D1	1.400	1.600	0.055	0.063
E	2.924	3.076	0.115	0.121
E1	1.400	1.600	0.055	0.063
k	0.200 MIN		0.008 MIN	
b	0.150	0.250	0.006	0.010
e	0.400 TYP		0.016 TYP	
L	0.324	0.476	0.013	0.019

Ordering Information

Part Number	Voltage Range	Features	Operating Temperature	Package Type	Top Mark	SPQ
FH47120N20	2.8V ~ 16.0V	● Synchronous Boost(Step-up) ● 97% Efficiency ● VFB Voltage: 1.0V ● IQ: 200uA ● Switching Frequency: 300kHz ~ 2.0MHz ● Current Limit: 10.0A	-40℃ to 85℃	QFN3.0*3.0-20L	BMF xyz	5000PCS/Reel

Note:

➢ **FH47120** devices are Pb-free and RoHs compliant.

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➢ 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.

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 Nov.2020