

## High Efficiency, 15A Synchronous Step Up Regulator with Accurate Output Current Limit

PRELIMINARY DATASHEET

### General Description

The FH47315 develops a high efficiency synchronous boost (step-up) regulator with programmable output current limit. The device adopts adaptive constant off time and current mode control. The integrated low  $R_{DS(ON)}$  switches minimize the conduction loss.

The FH47315 features cycle-by-cycle peak current limit, output short circuit protection and true shutdown. The device also provides enable control and power good indicator for system sequence control. Low output voltage ripple and small external inductor and capacitor size are achieved with programmable pseudo-constant frequency.

The FH47215 regulators are available in 18-lead QFN4x4, packages.

#### Device Information (1)

PART NUMBER	PACKAGE	BODY SIZE (NOM)
FH47315	QFN (18)	4.00 mm × 4.00 mm

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

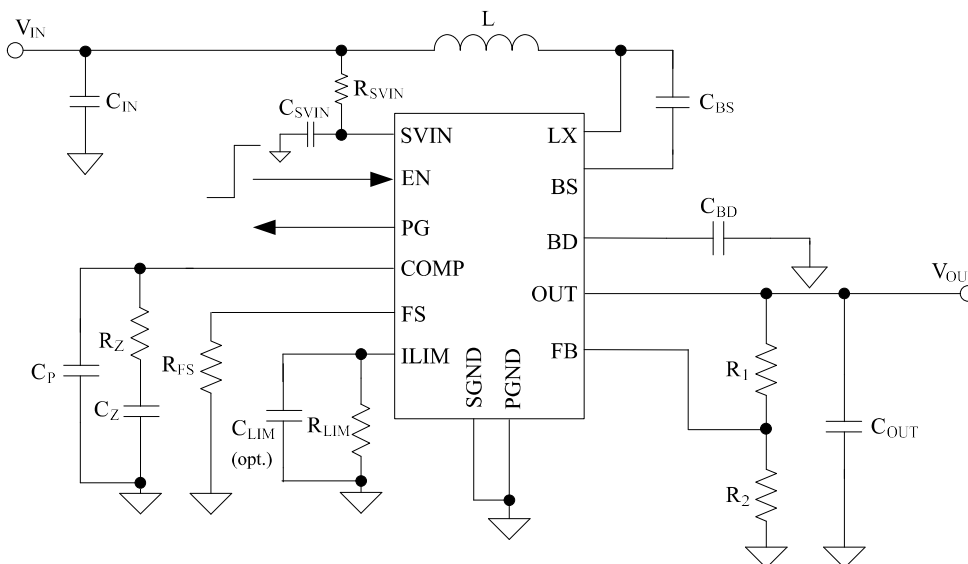
### Features

- Input Range: 4.5 ~ 30.0V
- Programmable Pseudo-constant Frequency
- Low  $R_{DS(ON)}$  Internal Switch  
Main FET: 16mΩ  
Rectified FET: 18mΩ  
Disconnection FET: 18mΩ
- True Shutdown Function
- Programmable Output Current Limit
- Internal Soft-start Limits the Inrush Current
- Input Voltage UVLO
- Over Temperature Protection
- Over Voltage Protection
- Output Short Circuit Protection
- Minimum ON Time: 100ns typical
- Minimum OFF Time: 120ns typical
- RoHS Compliant and Halogen Free
- Package type: QFN4x4-18L

### Applications

- Portable POS
- Bluetooth Speaker
- E-Cigarette
- Fast-Charging Power Bank

### Typical Applications



Note:  $V_{OUT} = 1.0V \times (R1 / R2 + 1)$

Figure 1. FH47315 Schematic Diagram

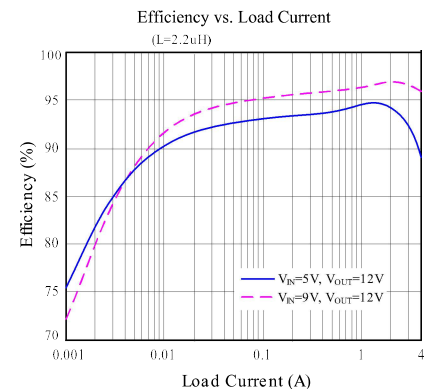
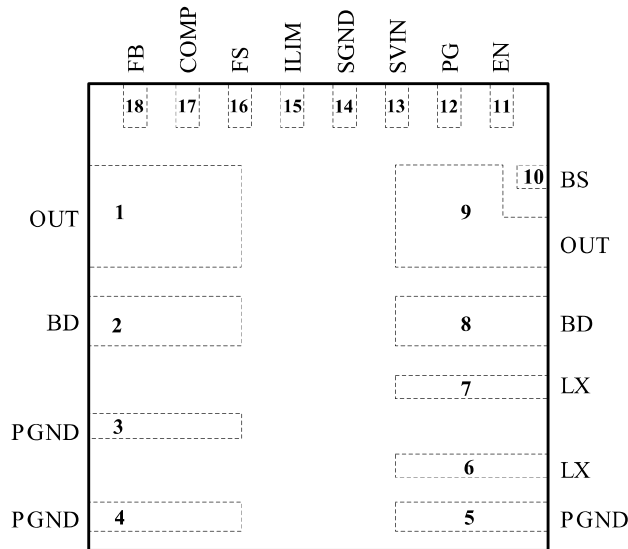


Figure 2. Efficiency vs. Load Current

## PIN CONFIGURATIONS

(TOP VIEW)



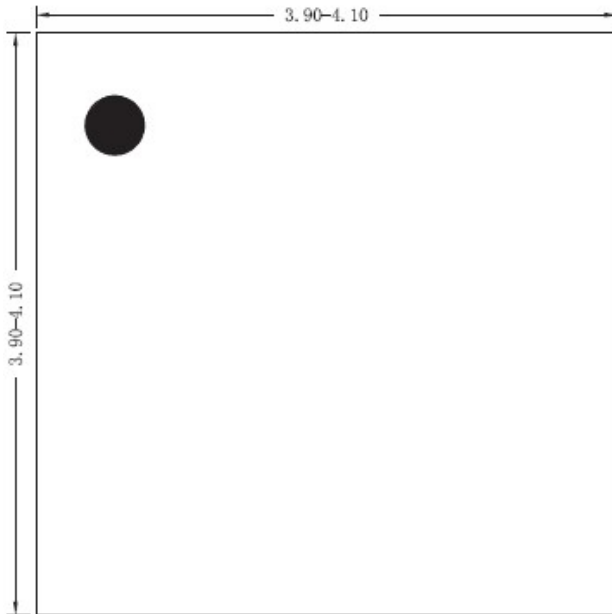
(QFN4\*4-18L)

## PIN DESCRIPTION

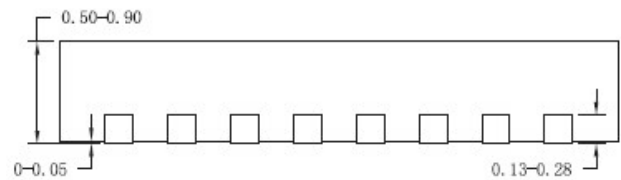
FH47315		I/O	Pin Function
Pin No.	Pin Name		
1,9	OUT	OUT	The boost converter output pin.
2,8	BD	OUT	Connected to the Drain of internal Disconnect FET. Bypass at least 4.7μF ceramic cap to PGND.
3,4,5	PGND	OUT	Power ground pin.
6,7	LX	IN	Inductor node. Connect an inductor from power input to LX pin.
10	BS	OUT	Boot-strap pin. Supply rectified FET's gate driver. Decouple this pin to LX with 0.1uF ceramic cap.
11	EN	IN	Enable control. Pull high to turn on the IC. Do not leave it floating.
12	PG	IN	Power good indicator. Open drain output, pull low when the output < 90% of regulation voltage, high impedance otherwise.
13	SVIN	IN	IC power supply input pin. Decouple this pin to SGND pin with 1.0uF ceramic cap.
14	SGND	/	Signal ground pin.
15	ILIM	OUT	Output current limit program pin. Connect a resistor RLIM from this pin to SGND to program output current limitation threshold. $I_{LIM}(A) = 30(V) / R_{LIM}(k\Omega)$
16	FS	IN	Switching frequency setting pin. Connect a resistor from this pin to ground to program the switching frequency. $F_{SW}(kHz) = 1.4 \times 10^6 / R_{FS}(\Omega)^{0.645}$ .
17	COMP	OUT	Loop compensation pin. Connect a RC network across this pin and ground to stabilize the control loop.
18	FB	IN	Feedback pin. Connected to the center of resistor voltage divider to program the output voltage: $V_{OUT} = 1.0V \times (R1 / R2 + 1)$
/	EP	/	Thermal pad, which is recommended to connected to PGND.

Package Outline Drawing

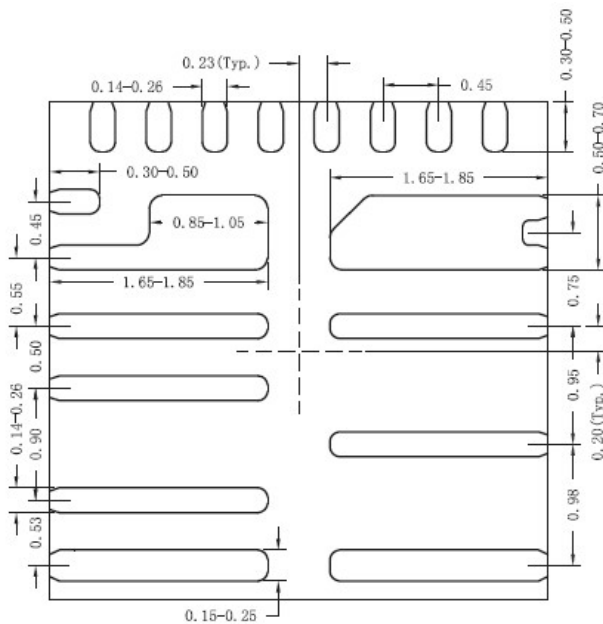
Type: QFN4.0\*4.0-18L



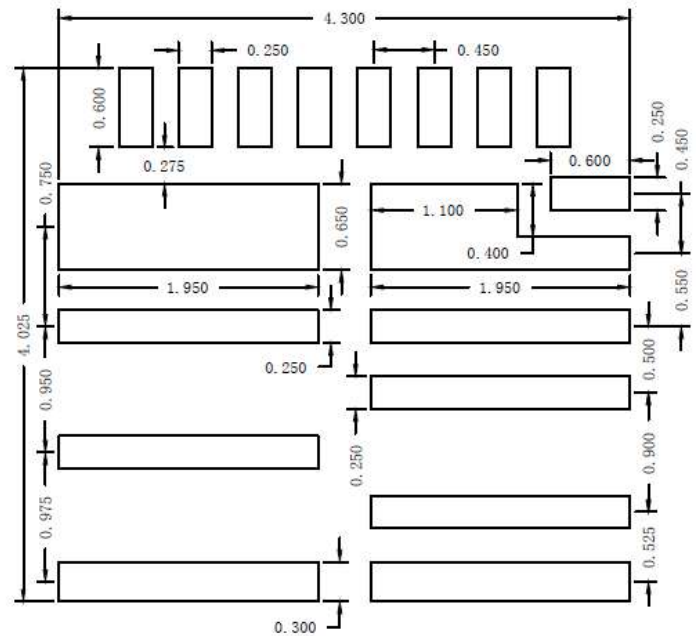
Top View



Side View



Bottom View



Recommended PCB layout (Reference only)

Notes: All dimension in MM and exclude mold flash & metal burr

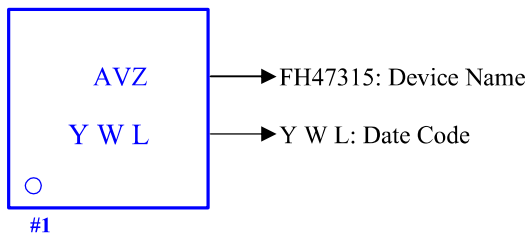
## Ordering Information

Part Number	Input Voltage	Features	Operating Temperature	Package Type	Top Mark	SPQ
FH47315D18	4.5V ~ 30.0V	<ul style="list-style-type: none"> <li>• DC-DC boost (step-up)</li> <li>• Output Voltage: up to 33.0V</li> <li>• VFB: 1.0V</li> <li>• Frequency: 345kHz</li> <li>• Output Current: 15A, ILIM: 21A</li> <li>• IQ: 230uA(Max.)</li> </ul>	-40°C to +85°C	QFN4*4-18L	AVZ Y W L	5000EA/Reel

**Note:**

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- If you have any other custom purchase needs, please contact our sales department.
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**Device Name: DFN4\*4-18L**



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