

Adjustable Freq. | Vin:~100V | 3.0A | DC-DC Synchronous Buck Control

Description

FH89032 is a high voltage Buck Control designed for high performance synchronous buck DC-DC applications with input voltages up to 100V.

FH89032 integrates a high efficiency synchronous step-down switching regulator, which includes a 120V, 70mΩ high side and a 120.0V, 70.0mΩ low side MOSFETs to provide 3.0A continuous load current over 12V to 100V wide operating input voltage.

FH89032 switching frequency is programmable from 50 kHz up to 500kHz allowing the flexibility to tune for efficiency and size. The output voltage can be precisely regulated using the internally 1.20V reference voltage for low voltage applications.

Protection features include user programmable under voltage lockout, over voltage lockout and over current protection. The supply current drops below 10uA in shut-down mode. FH89032 is a good choice for car infotainment application, telecom bus converter, etc.

Features

PRELIMINARY DATASHEET

- Wide operating input range: 12.0V to 100.0V
- 3.0A continuous output current capability
- Integrated 120V, 70mΩ high side and 120V, 70mΩ low side power MOSFET switches
- Operation Adjustable Frequency from 50kHz to 500kHz
- Precision Reference Voltage (1.2V)
- Programmable Soft-Start with Pre-biased Load Capability
- Programmable EN Off Delay Function
- Programmable Over-Load Protection with 0.2s blank timer and Hiccup
- Programmable Cycle-by-Cycle Current Limiting Protection
- Programmable Input Under-Voltage Lockout Protection with Latch
- Programmable Input Over-Voltage Protection with Latch
- Output Over-Voltage Protection
- Over-Temperature Protection
- Package type: QFN5*5mm-32L

Applications

- Car applications
- Telecom Bus Converters
- General purpose
- USB Type-C Power Delivery
- Industrial DC-DC Motor Drivers
- 48V Non-Isolated DC/DC Converter

Typical Application Schematic

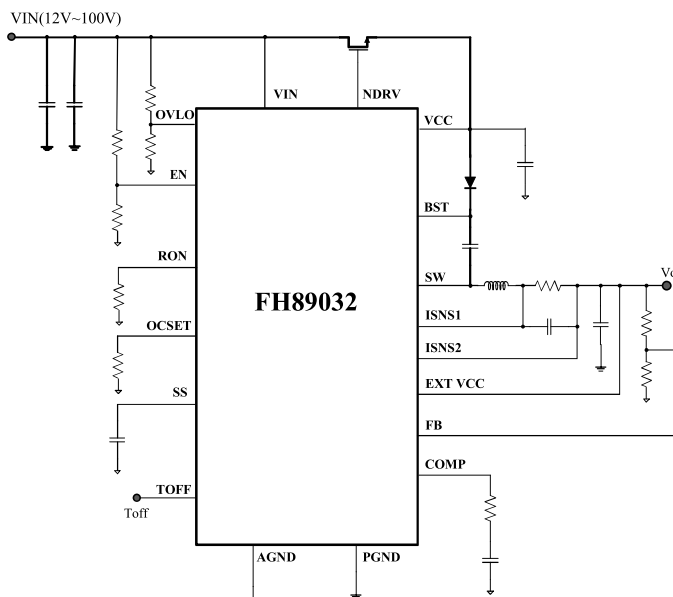
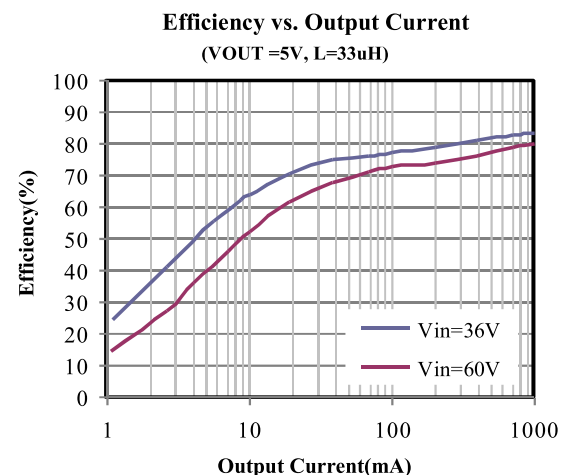
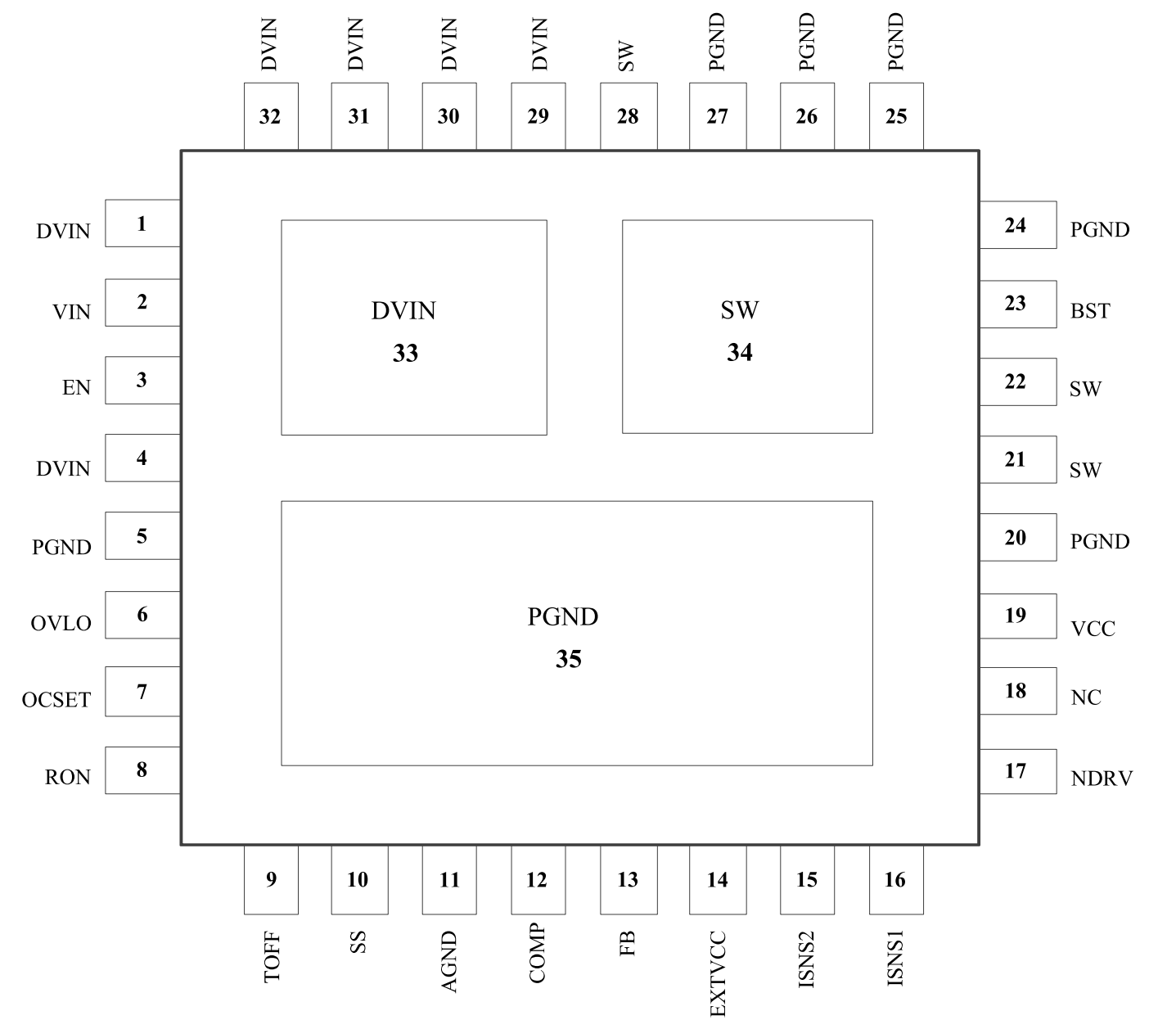


Figure 1. Application Schematic



Pin Configuration

(Top View)



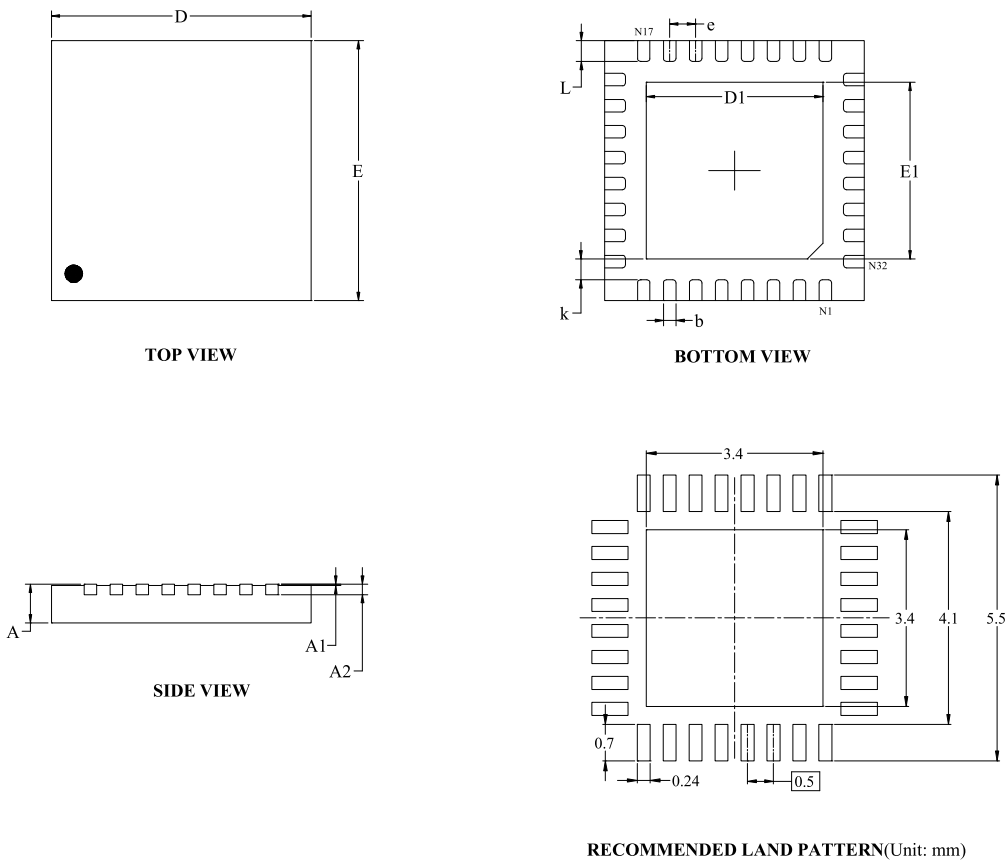
QFN5*5-32L Package

Pin Functions

FH89032		Description
Pin Number	Pin Name	
2	VIN	Analog Input voltage.
3	EN	Enable pin.
1 4 29 30 31 32 33	DVIN	Power Input voltage.
5 20 24 25 26 27 35	PGND	Power Ground. This pin serves as a separate ground for the MOSFET driver and should be connected to the system's power ground plane.
6	OVLO	An external voltage divider is used to set the over voltage threshold levels.
7	OCSET	Current limit set point. A resistor from this pin to GND will set the positive and negative current limit threshold.
8	RON	Connect this pin to GND by a resistor to set the switching frequency.
9	TOFF	This pin provides user programmable shutdown delay time function. Connect to GND: No Delay Connect to VCC: 20S Floating: 10S
10	SS	This pin provides user programmable soft-start function. External capacitor connected from this pin to ground sets the startup time of the output voltage.
11	AGND	Signal ground for internal reference and control circuitry.
12	COMP	Output of error amplifier. An external resistor and capacitor network is typically connected from this pin to ground to provide
13	FB	Feedback Input. FB senses the output voltage. Connect FB with a resistor divider connected between the output and ground. FB is a sensitive node. Keep FB away from noisy signal, such as SW and BST pin.
14	EXTVCC	External Power Input to an Internal LDO linear regulator Connected to VCC. This LDO supplies VCC power from EXTVCC, bypassing the external NDRV LDO whenever EXTVCC is higher than 10V. Do not exceed 30V on this pin. Do not connect EXTVCC to a voltage greater than VIN. Connect to GND if not used.
15	ISNS2	Inductor current sense input 2.
16	ISNS1	Inductor current sense input 1.
17	NDRV	Drive Output for External Pass Device of the NDRV LDO Linear Regulator for VCC. Connect this pin to the gate of an external NMOS or NPN pass device.
19	VCC	This pin provides power for the internal blocks of the IC. A minimum of 4.7uF capacitor must be connected from this pin to ground.
21 22 28 34	SW	Switch Node. Connect this pin to the switching node of inductor.
23	BST	This pin powers the high side driver and must be connected to a voltage higher than input voltage. A minimum of 0.1uF, high frequency capacitor must be connected from this pin to switch node.
18	NC	Not Connected.

PACKAGE OUTLINE DIMENSIONS

- Type: QFN-5*5-32L



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	4.924	5.076	0.194	0.200
D1	3.300	3.500	0.130	0.138
E	4.924	5.076	0.194	0.200
E1	3.300	3.500	0.130	0.138
k	0.200 MIN		0.008 MIN	
b	0.180	0.300	0.007	0.012
e	0.500 TYP		0.020 TYP	
L	0.324	0.476	0.013	0.019

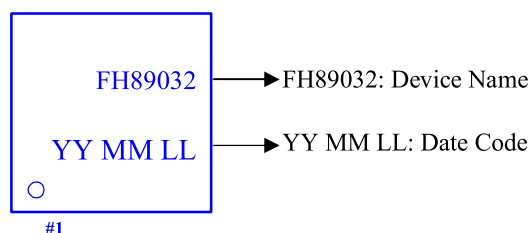
NOTE: This drawing is subject to change without notice.

ORDERING INFORMATION

Part Number	Operating Voltage	Features	Operating Temperature	Package Type	Top Mark	SPQ
FH89032D32	12.0V~100.0V	<ul style="list-style-type: none"> • DC-DC Synchronous buck(Step-down) • Integrated power MOSFET • Continuous output: 3.0A • Frequency: 50kHz~500kHz • VFB: 1.2V 	-40°C to +125°C	QFN5*5-32L	89032 <u>YY MM LL</u>	5000PCS/Reel

Note:

- **FH89032** 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.
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Device Name: DFN5*5-32L**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.2021