

100.0V Input, 3.5A Peak Current, High Efficiency
Asynchronous Buck(Step-down) DC-DC Converter

PRELIMINARY DATASHEET

DESCRIPTION

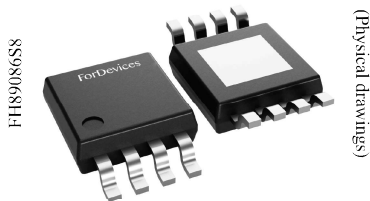
The FH89086 is a high-voltage, step-down, switching regulator that delivers up to 2.0A of continuous current to the load. It integrates a high-side, high-voltage, power MOSFET with a current limit of 3.5A, typically. The wide 5V to 100V input range accommodates a variety of buck (step-down) applications, making it ideal for automotive, industry, and lighting applications. Hysteretic voltage-mode control is employed for very fast response.

The switching frequency can be up to 1.0MHz, allowing for small component size. Thermal shutdown and short-circuit protection(SCP) provide reliable and fault-tolerant operations. A 0.2mA quiescent current allows the FH89086 to be used in battery-powered applications.

The FH89086 is available in ESOP-8L package.

Package Type

- 8-PIN ESOP



FEATURES

- Wide Input Range: 5.0V to 100V
- 3.5A Typical Peak Switching Current Limit
- Hysteretic Control: No Compensation
- Up to 1.0MHz Switching Frequency
- PWM Dimming Control Input for LED Application
- Short-Circuit Protection(SCP) with Integrated High-Side Power MOSFET
- Quiescent Current: 200uA
- Thermal Shutdown
- Packages type: Pb-free Packages, ESOP-8L

APPLICATIONS

- Solar Energy Systems
- Automotive System Power
- Industrial Power Supplies
- High-Power LED Drivers
- Scooters, e-Bike Control Power Supplies

TYPICAL APPLICATION

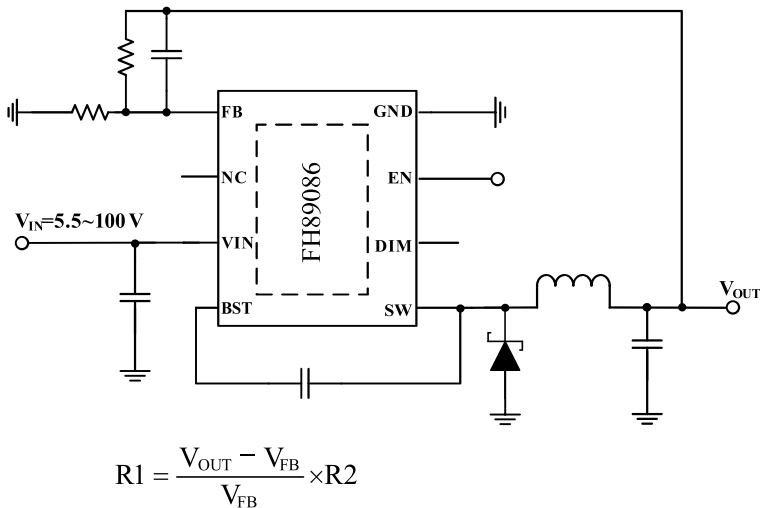
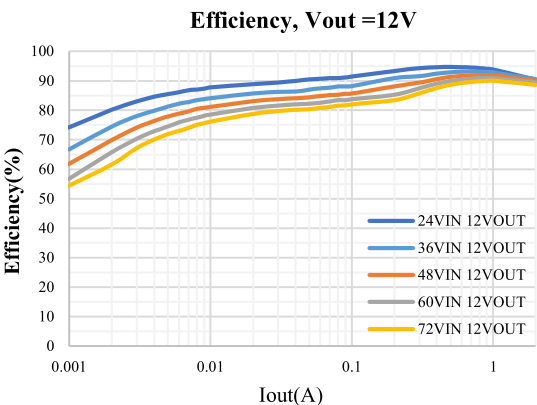


Figure 1. FH89086 Typical Application



DEVICE ORDER INFORMATION

| PART NUMBER | PACKAGE MARKING | PACKAGE DISCRIPTION |
|-------------|------------------|---------------------|
| FH89086S8 | 89086 / YY MM LL | 8-Lead Plastic ESOP |

1) For Tape & Reel, Add Suffix R (e.g. FH89086S8R).

100V输入， 3.5A开关限流降压变换器

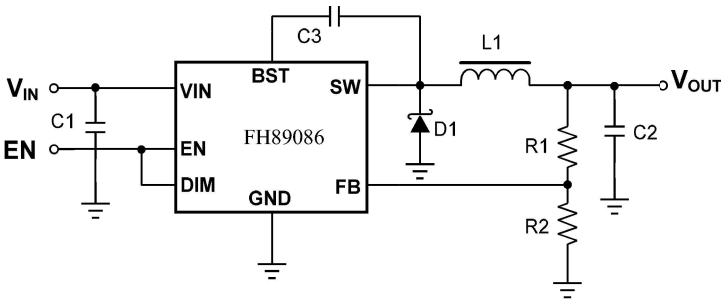
器件描述

FH89086 是一款高压降压开关稳压器，可向负载提供高达2A的连续电流。它集成了高压的高端功率MOSFET，电流限制通常为3.5A。其极宽的5V 至 100V输入电压范围能适应各种降压应用，使其成为汽车、工业和照明应用的理想选择。迟滞电压模式控制的应用，使其具有良好的瞬态响应能力。

开关频率可高达1MHz，从而允许小尺寸的外围器件。过热保护和短路保护（SCP）使芯片具有较好的可靠性和容错机制。200μA的静态电流允许FH89086用于电池供电的应用中。

FH89086器件提供 ESOP-8L 封装。

典型应用



电气特性

- 宽输入电压: 5V – 100V
- 峰值开关电流限值典型3.5A
- 最高1MHz开关频率
- 支持PWM调光控制输入，应用于LED
- 集成高端MOSFET的短路保护
- 200μA静态电流
- 过热关断保护
- ESOP8封装

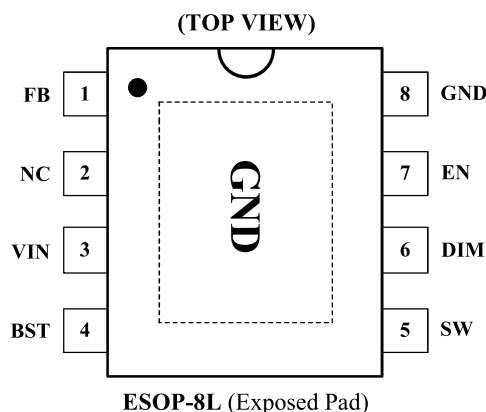
应用领域

- 电动车控制电源
- 太阳能系统
- 汽车系统电源
- 工业电源
- 大功率LED驱动器

引脚功能

| ESOP-8L 引脚 # | 名称 | 描述 |
|-----------------|-----|---|
| 1 | FB | 反馈。FB 输入至电压迟滞比较器。通过环路调节，平均反馈电压被保持在 200mV。 |
| 2 | NC | 内部无连接。 |
| 3 | VIN | 输入电源。输入电源给内部所有控制电路供电，包括BST调节器和上管开关驱动。为了最大限度地降低开关电压尖峰，接地去耦电容必须放在输入引脚附近。 |
| 4 | BST | 自举。给内部上管 MOSFET 驱动供电。连接一个电容在 BST 和 SW 之间。 |
| 5 | SW | 开关节点。内部上管的源极输出。需要一个低导通压降的肖特基二极管接地。该二极管必须靠近 SW 放置，以降低开关峰值电压。 |
| 6 | DIM | PWM 调光输入。DIM 适用于 LED 驱动器应用。拉低 DIM 可熄灭背光。拉高 DIM 可点亮背光。如果不需要背光调光功能，例如在普通降压应用中，可将 DIM 和 EN 接在一起。 |
| 7 | EN | 启动输入。将EN拉低至指定阈值以下，关闭 FH89086。将EN 拉高至指定阈值以上，或让 EN 悬空可启动 FH89086。 |
| 8 | GND | 接地。为避免大的高频电流环路，接地引脚应尽可能靠近输出电容器。将散热焊盘连接至接地面以优化散热性能。 |

TERMINAL CONFIGURATION

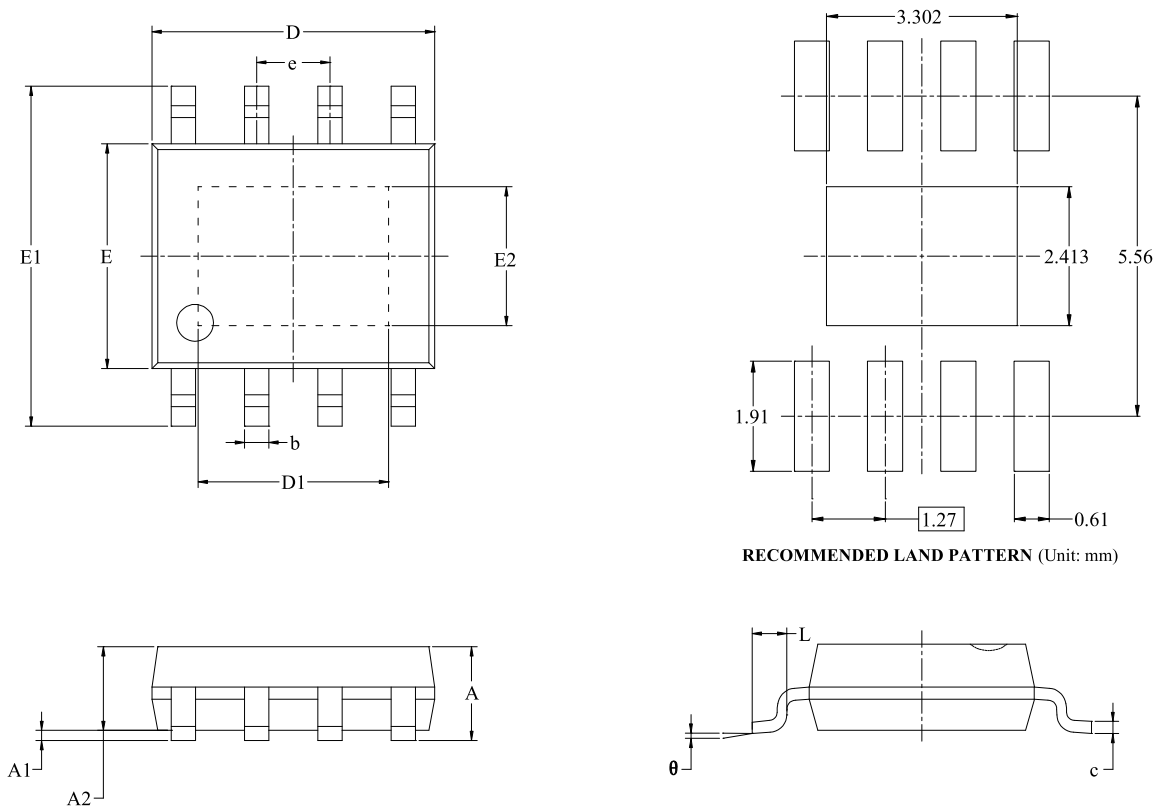


TERMINAL FUNCTION

| Terminal No. | Name | Description |
|--------------|------|---|
| 1 | FB | Feedback. FB is the input to the voltage hysteretic comparators. The average FB voltage is maintained at 200mV by loop regulation. |
| 2 | NC | No connection. |
| 3 | VIN | Input supply. VIN supplies power to all of the internal control circuitries, both BST regulators, and the high-side switch. A decoupling capacitor to ground must be placed close to VIN to minimize switching spikes. |
| 4 | BST | Bootstrap. BST is the positive power supply for the internal, floating, high-side MOSFET driver. Connect a bypass capacitor between BST and SW. |
| 5 | SW | Switch node. SW is the output from the high-side switch. A low forward voltage Schottky rectifier to ground is required. The rectifier must be placed close to SW to reduce switching spikes. |
| 6 | DIM | PWM dimming input. DIM is useful in LED driver applications. Pull DIM below the specified threshold for dimming off. Pull DIM above the specified threshold for dimming on. If the dimming function is not needed, such as in common buck applications, then connect DIM and EN together. |
| 7 | EN | Enable input. Pull EN below the specified threshold to shut down the FH89086. Pull EN above the specified threshold or leave EN floating to enable the FH89086. |
| 8 | GND | Ground. GND should be placed as close to the output capacitor as possible to avoid the high-current switch paths. Connect the exposed pad to GND plane for optimal thermal performance. |
| EP | GND | Provides both electrical and thermal connection from the device to the board. A matching ground pad must be provided on the PCB and the device connected to it via solder. For proper electrical operation, this ground pad must be connected to the system ground. |

PACKAGE OUTLINE DIMENSIONS

ESOP-8L (Exposed Pad)



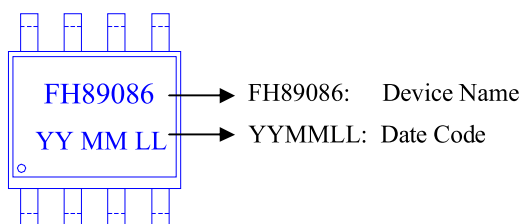
| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|----------|------------------------------|--------|-------------------------|--------|
| | MIN | MAX | MIN | MAX |
| A | | 1.700 | | 0.06 7 |
| A1 | 0.000 | 0.1 00 | 0.00 0 | 0.004 |
| A2 | 1.350 | 1.550 | 0.053 | 0.061 |
| b | 0.330 | 0.510 | 0.013 | 0.020 |
| c | 0.170 | 0.250 | 0.00 7 | 0.010 |
| D | 4.700 | 5.100 | 0.185 | 0.20 1 |
| D1 | 3.202 | 3.402 | 0.126 | 0.134 |
| E | 3.800 | 4.000 | 0.150 | 0.157 |
| E1 | 5.800 | 6.200 | 0.228 | 0.24 4 |
| E2 | 2.313 | 2.513 | 0.091 | 0.099 |
| e | 1.27 BSC | | 0.050 BSC | |
| L | 0.400 | 1.270 | 0.016 | 0.050 |
| θ | 0° | 8° | 0° | 8° |

ORDERING INFORMATION

| Part Number | Voltage Range | Features | Operating Temperature | Package Type | Top Mark | SPQ |
|-------------|---------------|---|-----------------------|--------------|---------------------|--------------|
| FH89086S8 | 5.0V ~ 100.0V | <ul style="list-style-type: none"> • DC-DC Buck(Step-down) • 3.5A Peak Current • Switching Frequency: 1.0MHz • Input logic: 3.3V / 5.0V • Quiescent Current: 200uA • V_{FB}: 200mV | -40°C to 125°C | ESOP-8L | FH89086 YY MM LL | 2500PCS/Reel |

Note:

- **FH89086** 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: ESOP-8L**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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