

60V, 600mA Monolithic Buck(Step-Down) Switching Regulator

Datasheet Brief

PRELIMINARY DATASHEET

Description

The FH48102/04/05 is a monolithic 60.0V, high-efficiency, 600mA buck(step-down) switching regulator. FH4810x integrates a 80.0V 550mΩ high side and a 80V, 350mΩ low side MOSFETs to provide 600mA continuous load current over a 4.5V to 60.0V wide operating input voltage.

With a fixed switching frequency of 300kHz/1.2/2.1MHz, this current mode PWM controlled converter allows the use of small external components, such as ceramic input and output caps, as well as small inductors.

Peak current mode control provides fast transient responses and cycle-by-cycle current limiting.

With these high input voltages, linear regulators cannot be used for high supply currents without overheating the regulator. Instead, high efficiency switching regulators such as FH4810x must be used to minimize thermal dissipation.

FH4810x is available SOT-23-6L Packages.

Device Information (1)

PART NUMBER	PACKAGE	PACKAGE SIZE
FH48102	SOT (6)	2.90mm × 1.60mm
FH48104		
FH48105		

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

Key Features

- 4.5V to 60.0V wide operating input range
- 600mA continuous output current capability
- Fixed Switching Frequency:
300kHz (FH48102) 1.2MHz (FH48104) 2.1MHz (FH48105)
- Integrated 80V, 550mΩ high side and 80V, 350mΩ low side power MOSFET switches
- Up to 92% efficiency (FH48104)
- Internal Soft-Start limits the inrush current at turn-on
- Internal compensation to save external components
- Input Under-Voltage Lockout
- Input over-voltage protection to protect device from working in high voltage and high current condition
- Output Over-Voltage Protection(OVP)
- Output short protection
- Over-Temperature Protection(OTP)
- Pulse skip mode at light load to improve light load efficiency
- Stable with Low ESR Ceramic Output Capacitors
- Fewest external components and intensive internal protection features
- SOT-23-6L Package

Applications

- Power Meters
- Distributed Power Systems
- Battery Chargers
- Pre-Regulator for Linear Regulators
- Automotive Applications

Typical Application Schematic

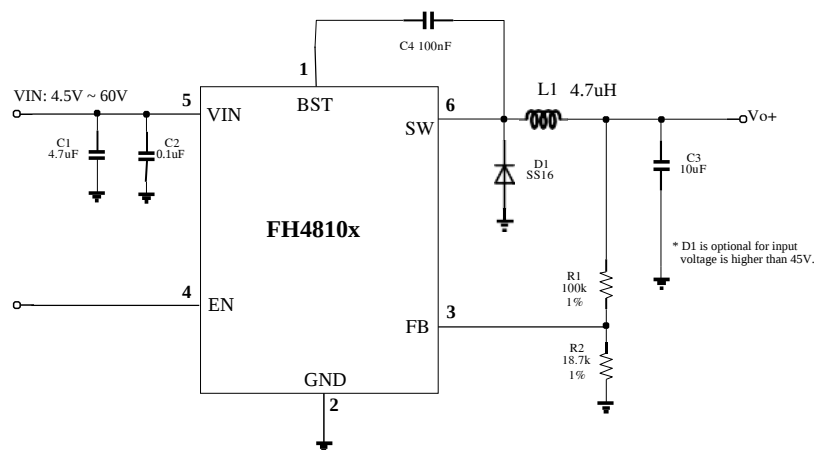


Figure 1. FH4810x Schematic

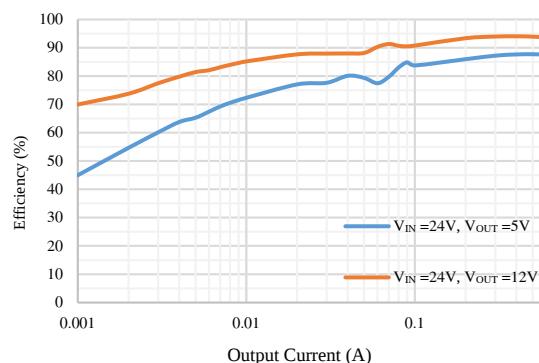
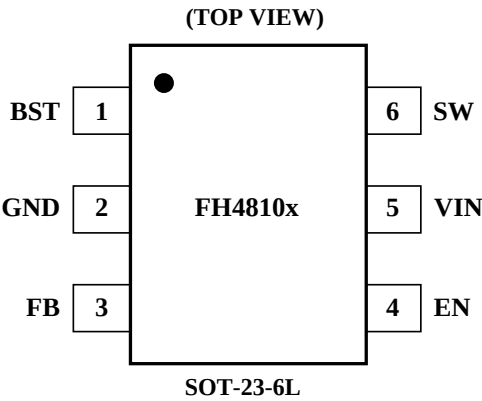


Figure 2. Efficiency, Vin = 24V

Pin Configuration

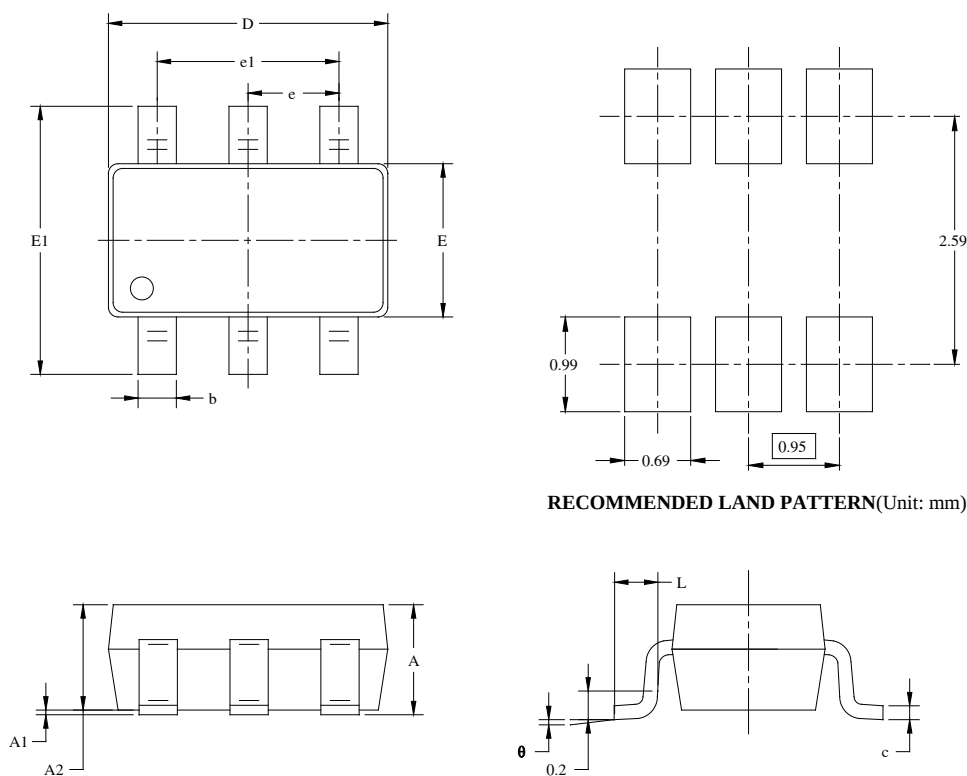


Pin Functions

Pin		I/O	Description
Number	Name		
1	BST(BOOT)	I	Boot-Strap pin Connect a 0.1μ F or greater capacitor between SW and BST to power the high side gate driver. 在 SW 和 BST 之间连接一个 0.1μF 或更大的电容器，为高侧栅驱动器供电
2	GND	G	Ground. 参考地
3	FB	I	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 SW and BST pin. 反馈输入。FB 感应输出电压。将 FB 连接到一个连接在输出和接地之间的分压器上。FB 是一个敏感节点。保持 FB 远离 SW 和 BST 引脚。
4	EN(CE)	I	Enable Input. EN is a digital input that turns the regulator on or off. Drive EN high to turn on the regulator; low to turn it off. EN pin is pulled to VIN internally by a larger resistor. 启用输入。EN 是一个数字输入，用于开启或关闭调节器。将 EN 拉高以开启调节器；拉低则关闭它。EN 引脚通过一个较大的电阻器内部连接到 VIN。
5	VIN	I	Power Input. Vin supplies the power to the IC. Supply Vin with a 4.5V to 60V power source. Bypass Vin to GND with a large capacitor and at least another 0.1uF ceramic capacitor to eliminate noise on the input to the IC. Put the capacitors close to Vin and GND pins. 电源输入。Vin 为集成电路提供电源。为 Vin 提供一个 4.5V 到 55V 的电源。使用一个大电容器和至少另外一个 0.1uF 的陶瓷电容器将 Vin 旁路接地，以消除集成电路输入中的噪声。将电容器放置在靠近 Vin 和接地引脚的位置。
6	SW(LX)	O	Power Switching pin. Connect this pin to the switching node of inductor. 电压切换引脚。将此引脚连接到电感的切换节点。

Packaging Information

SOT-23-6L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950 BSC		0.037 BSC	
e1	1.900 BSC		0.075 BSC	
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

ORDERING INFORMATION

Part Number	Input Voltage	Features	Operating Temperature	Package Type	Top Mark	SPQ
FH48102M6	6.5 ~ 55.0V	• DC-DC buck(step-down) • 95% efficiency • Duty Cycle: 96% (typ) • Switching Frequency: 300kHz	-40°C to +125°C	SOT-23-6L	D2 <u>Y W L</u>	3000EA/Reel
FH48103M6	6.5 ~ 60.0V	• DC-DC buck(step-down) • 95% efficiency • Duty Cycle: 95% (typ) • Switching Frequency: 600kHz	-40°C to +125°C	SOT-23-6L	D3 <u>Y W L</u>	3000EA/Reel
FH48104M6	4.5 ~ 60.0V	• DC-DC buck(step-down) • 92% efficiency • Duty Cycle: 94% (typ) • Switching Frequency: 1.2MHz	-40°C to +125°C	SOT-23-6L	D4 <u>Y W L</u>	3000EA/Reel
FH48105M6	6.5 ~ 55.0V	• DC-DC buck(step-down) • 91% efficiency • Duty Cycle: 92% (typ) • Switching Frequency: 2.1MHz	-40°C to +125°C	SOT-23-6L	D5 <u>Y W L</u>	3000EA/Reel

Note:

- **FH48102 | FH48103 | FH48104 | FH48105** 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.
- FOCMCU Inc. reserves the right to amend and legally interpret the electrical parameters of this chip device. (<http://www.fordevices.com>)