

High Efficiency, 1.0MHz, 2.0A Buck-Boost DC/DC Regulator

Description

FH39702 is a wide input voltage range, high efficiency, fixed frequency buck-boost converter that operates from input voltage above, below or equal to the output voltage. It provides a power supply for system powered by either a two-cell or three-cell alkaline, Ni-Cd or Ni-MH battery, or a one-cell Li-Ion or Li-polymer battery.

FH39702 can support for 2.0A load current capability. It is based on a fixed frequency, pulse-width-modulation (PWM) controller using synchronous rectification to obtain maximum efficiency. The output voltage and compensation circuit can be programmed using external resistors and capacitors network. During shutdown, the load is disconnected, the load is disconnected from the battery.

The device is packaged in tight QFN2x3-13L.

Features

- Input Voltage Range: 2.6V to 5.5V
- Continuous output current capability: 2.0A
- Fixed frequency operation with battery voltage above, below or equal to the output.
- Four internal power switches to form true 4-switches buck-boost with single inductor.
- Seamless buck-boost transition.
- Output disconnect at shutdown.
- Power good indicator.
- Compact package: QFN2x3-13L
- Built in thermal shut down protection, hard short protection.

Applications

- Palmtop Computers
- Handheld Instruments
- Digital Cameras/Camcorders
- Personal Medical Products
- All 2-cell and 3-cell alkaline, Ni-Cd or Ni-MH or signal-cell Li battery powered products
- High Power LED's
- MP3/MP4 Players

Typical Applications

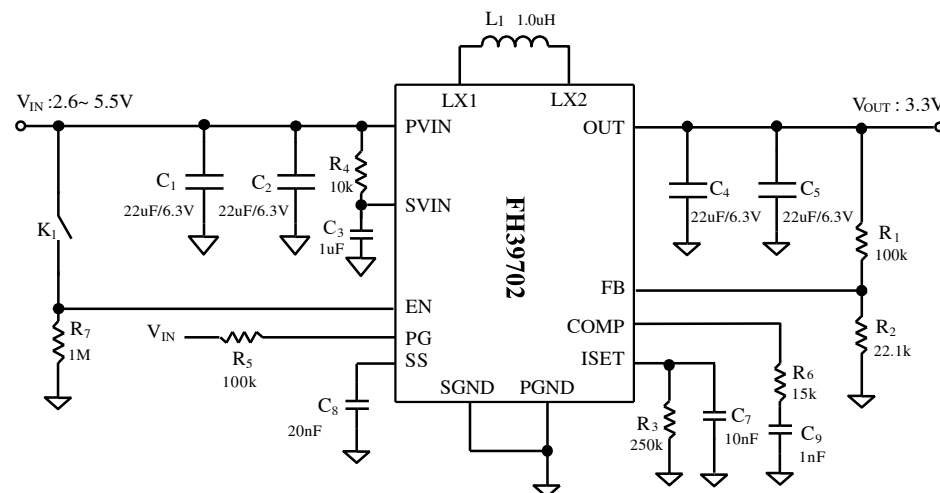


Figure 1. Schematic diagram

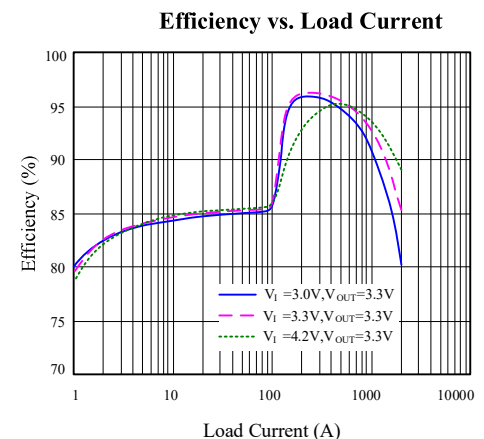
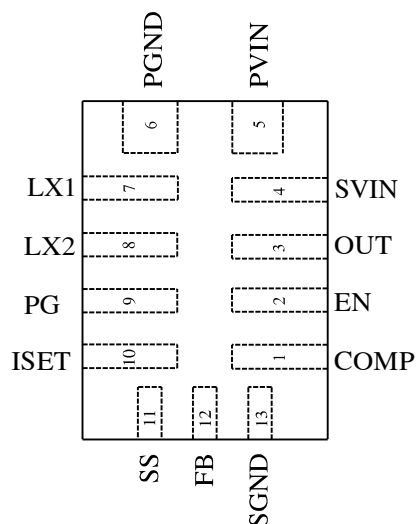


Figure 2. Efficiency Figure

PIN CONFIGURATION

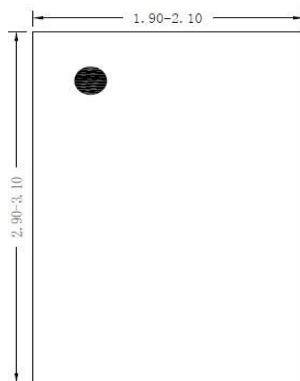
PIN DESCRIPTION



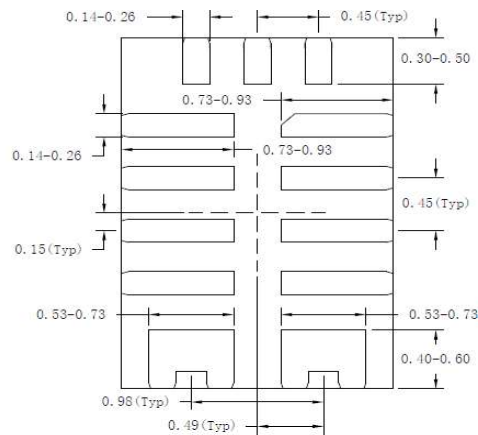
Pin Name	Pin Number	Description
COMP	1	External compensation for voltage loop.
EN	2	Enable control. Pull high to turn on. Internal integrated with 1M Ω pull down Resistor.
OUT	3	Output of the synchronous rectifier. Decouple this pin to GND with at least 22uF ceramic cap. Minimize the loop area formed by output cap, OUT pin and GND paddles.
SVIN	4	Signal power input pin. Decouple this pin to GND with at least 1uF ceramic cap.
PVIN	5	Power input pin. Decouple this pin to GND with at least 22uF ceramic cap. Minimize the loop area formed by input cap, PVIN pin and GND paddles.
PGND	6	Power ground pin.
LX1	7	Inductor connection 1 Connect this node to the switching node of the inductor.
LX2	8	Inductor connection 2. Connect this node to the switching node of the inductor.
PG	9	Power good indicator.
ISET	10	Apply a resistor and capacitor parallel network to sense the output average current. If V_{ISET} is lower than 0.2V, IC will go into PFM mode. Do not let it floating. Tie to ground for forced PWM operation.
SS	11	Connect this pin to a soft-start capacitor to program soft-start time.
FB	12	Output feedback pin. Connect this pin to the center point of the output resistor divider to program the output voltage.
SGND	13	Signal ground pin.

Package Outline Drawing

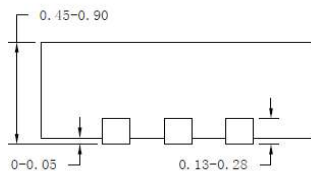
Type: QFN2x3-13L



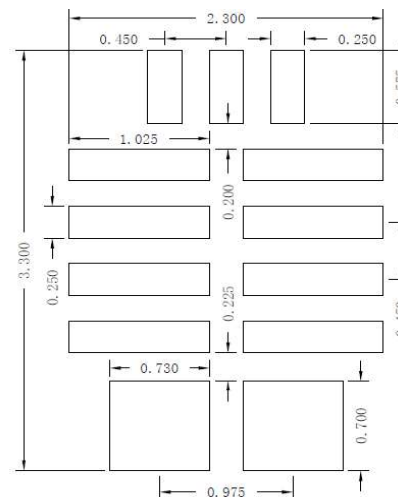
Top View



Bottom View



Side View



Recommended PCB layout

(Reference Only)

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

Ordering Information

Part Number	Voltage Range	Features	Operating Temperature	Package Type	Top Mark	SPQ
FH39702N13	2.6V ~ 5.5V	<ul style="list-style-type: none"> • Synchronous Buck-Boost • 96% Efficiency • Quiescent Current: 60uA • Iout: Up to 2.0A(Continuous) 	-40°C to 85°C	QFN2*3-13L	ZN <u>X</u> <u>Y</u> <u>Z</u>	3000PCS/Reel

Note:

- **FH39702** 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.

**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 Jul.2020