

4-CH Power Management IC

General Description

The FH7059 is a 4-CH power management IC for applications powered by one Li-ion battery or a DC 5.0V adapter. It integrates four synchronous buck regulators and can provide high efficiency output at light load and heavy load operation. The internal compensation architecture simplifies the application circuit design. Besides, the independent enable control makes the designer have the greatest flexibility to optimize timing for power sequencing purposes.

The FH7059 is available in a QFN4*4-24L package.

Applications

- ▶ Smart Phone
- ▶ STB
- ▶ OTT
- ▶ MiFi

Features

- ▶ 2.7V to 5.5 V Input Voltage Range
- ▶ Four Buck Converters
 - Output Voltage Range: 0.6V to V_{in}
 - Maximum Continuous Load Current: 2.0A, Maximum Peak Load Current: 4.0A (4CH total output power consumption must be less than 10W)
 - 180° Phases Shifted Architecture
 - Fixed 1.5MHz Switching Frequency
 - 100% Duty Cycle Low Dropout Operation
 - <1uA Shutdown Current
 - Independent Enable Control
 - Internal Compensation
 - Cycle-by-Cycle Current Limit
 - Short Circuit Protection
- ▶ Each Channel Efficiency Up to 95%
- ▶ Auto Recovery OTP Protection
- ▶ Available in 24-pin 4mm x 4mm QFN Package

Application Circuit Diagram

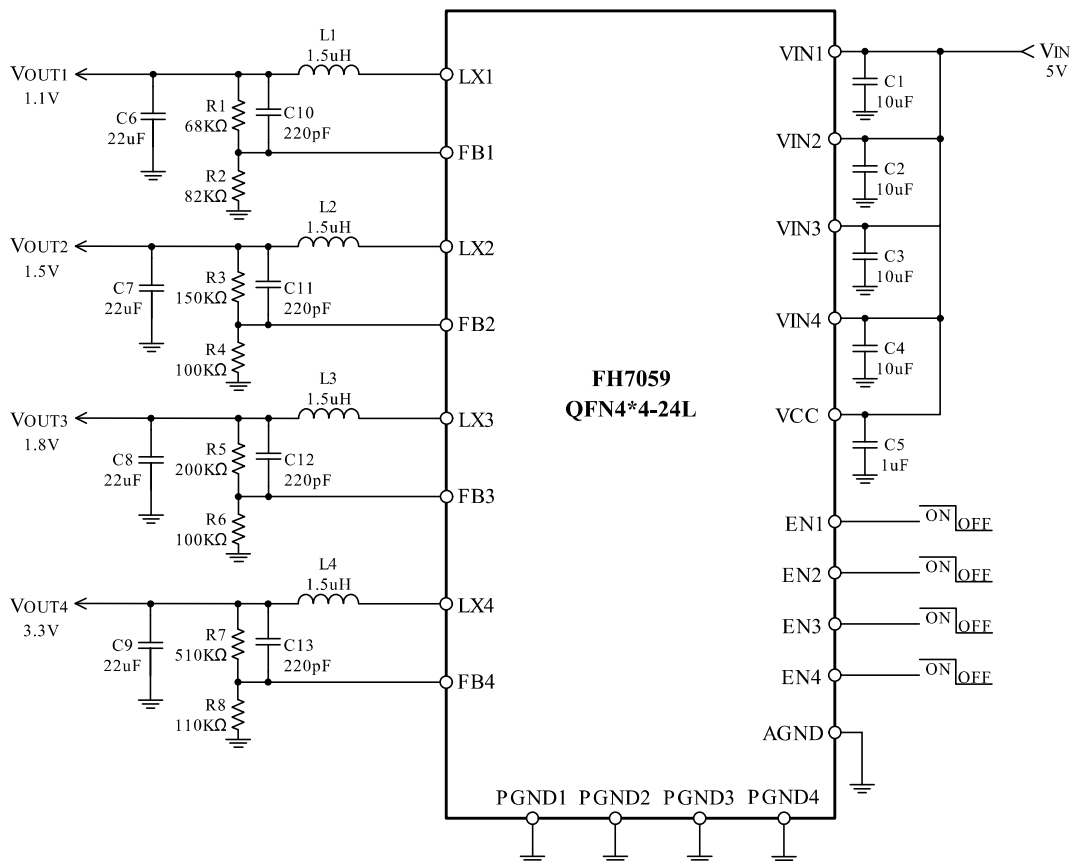
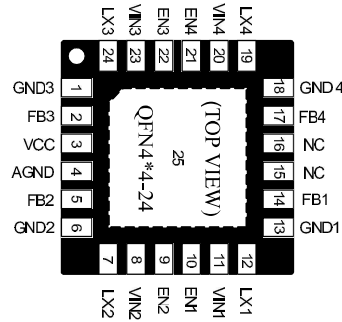


Figure 1. Typical application circuit diagram

Pin Configurations

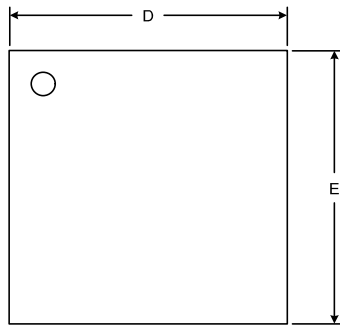


Pin Description

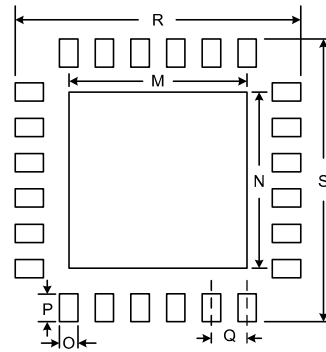
Pin Name	Function Description	Pin No.
GND3	Power g round pin of CH3 .	1
FB3	Feed back input of CH3. Connect to output voltage with a resistor divider.	2
VCC	Input supply pin for internal control circuit.	3
AGND	Analog ground pin.	4
FB2	Feed back input of CH2 . Connect to output voltage with a resistor divider.	5
GND2	Power g round pin of CH2 .	6
LX2	Internal MOSFET switching output of CH2 . Connect LX2 pin with a low pass filter circuit to obtain a stable DC output voltage.	7
VIN2	Power input pin of CH2 . Recommended to use a 10uF MLCC capacitor between VIN2 pin and PGND2 pin.	8
EN2	CH2 turns on/turns off control input. Don't leave this pin floating.	9
EN1	CH1 turns on/turns off control input. Don't leave this pin floating.	10
VIN1	Power input pin of CH1 . Recommended to use a 10uF MLCC capacitor between VIN1 pin and PGND1 pin.	11
LX1	Internal MOSFET switching output of CH1 . Connect LX1 pin with a low pass filter circuit to obtain a stable DC output voltage.	12
GND1	Power g round pin of CH1 .	13
FB1	Feed back input of CH1. Connect to output voltage with a resistor divider.	14
NC	No connect.	15, 16
FB4	Feed back input of CH4 . Connect to output voltage with a resistor divider.	17
GND4	Power g round pin of CH4 .	18
LX4	Internal MOSFET switching output of CH4 . Connect LX4 pin with a low pass filter circuit to obtain a stable DC output voltage.	19
VIN4	Power input pin of CH4 . Recommended to use a 10uF MLCC capacitor between VIN4 pin and PGND4 pin.	20
EN4	CH4 turns on/turns off control input. Don't leave this pin floating.	21
EN3	CH3 turns on/turns off control input. Don't leave this pin floating.	22
VIN3	Power input pin of CH3 . Recommended to use a 10uF MLCC capacitor between VIN3 pin and PGND3 pin.	23
LX3	Internal MOSFET switching output of CH3 . Connect LX3 pin with a low pass filter circuit to obtain a stable DC output voltage.	24
Exposed Pad	The Exposed Pad must be soldered to a large PCB copper plane and connected to GND for appropriate dissipation.	25

Package Information

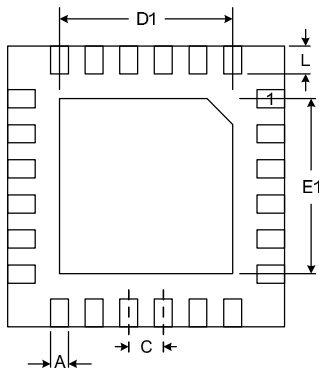
QFN4mm*4mm-24L



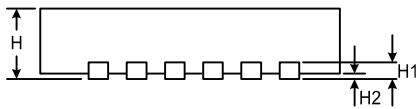
Top View



Recommended Layout Pattern



Bottom View



Side View

Unit: mm

Symbol	Dimension		Symbol	Dimension
	Min	Max		Typ
A	0.18	0.30	M	2.60
C	0.45	0.55	N	2.60
D	3.95	4.05	O	0.30
E	3.95	4.05	P	0.80
D1	2.30	2.70	Q	0.50
E1	2.30	2.70	R	4.70
L	0.35	0.45	S	4.70
H	0.80	1.00		
H1	0.17	0.25		
H2	0.00	0.05		

Ordering Information

Part Number	Package Type	Packing Information
FH7059DN24	QFN 4mm*4mm-24	Tape & Reel / 3000

Note (1): "QD": Package type code.

(2): "R": Tape & Reel .