

Power Management IC 3CH DC-DC + 1CH LDO

General Description

The **FH7056** is a 4-CH power management IC for applications powered by one Li-Ion battery or a DC 5V adapter. It integrates three synchronous buck regulators and one N-MOS LDO in a single chip. 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 FH7056 is available in a 24 pin QFN 4x4 package.

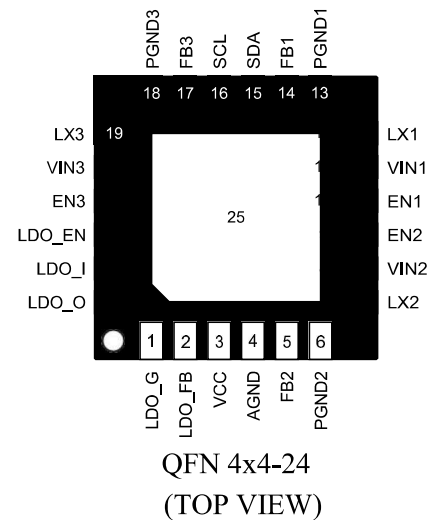
Features

- 2.7V to 5.5 V Input Voltage Range
- Three Buck Converters
 - I²C Controlled VID Programmable Reference Voltage from 0.58 V to 0.8V -- 6 Bits VID, 5mV Steps
 - Output Voltage Can Also be Set by Resistor Divider
 - -- The Initial Reference Voltage is 0.6V
 - Continuous Loading: 3.0A (CH1), 3.0A (CH2), 2.0A (CH3)
 - Fixed 1.5MHz Switching Frequency
 - 180° Out of Phase Operation
 - 100% Duty Cycle Low Dropout Operation
 - Independent Enable Control
 - Internal Compensation
 - Cycle -by-Cycle Current Limit
 - <1uA Shutdown Current Hiccup
 - Short Circuit Protection
- One LDO Regulator
 - I²C Controlled VID Programmable Reference Voltage from 0.58V to 0.8V
 - 6 Bits VID, 5mV Steps
 - Output Voltage Can Also be Set by Resistor Divider
 - The Initial Reference Voltage is 0.6V
 - 500mA Output Current (Peak 1A Output Current)
 - Maximum 500mV Dropout Voltage
 - Independent Enable Control
- I²C Compatible Interface with Standard Mode(100KHz) and Fast Mode(400KHz)
- Auto Recovery OTP Protection
- Available in 24 -pin 4mm x 4 mm QFN Package

Applications

- Smart Phone
- IP Camera
- OTT
- Digital Camera

Pin Configurations



Function Block Diagram

TBD

Figure 1. FH7056 block diagram

Pin Description

Pin Name	Function Description	Pin No.
LDO_G	Ground pin of LDO.	1
LDO_FB	Feed back input of LDO. Connect to LDO_OUT 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
PGND2	Power ground 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 4.7 uF 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 two 10uF MLCC capacitors 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
PGND1	Power ground pin of CH1.	13
FB1	Feed back input of CH1. Connect to output voltage with a resistor divider.	14
SDA	I ² C interface data pin.	15
SCL	I ² C interface clock pin.	16

Pin Name	Function Description	Pin No.
FB3	Feedback input of CH3. Connect to output voltage with a resistor divider.	17
PGND3	Power ground pin of CH3.	18
LX3	Internal MOSFET switching output of CH3. Connect LX3 pin with a low pass filter circuit to obtain a stable DC output voltage.	19
VIN3	Power input pin of CH3. Recommended to use a 4.7uF MLCC capacitor between VIN3 pin and PGND3 pin.	20
EN3	CH4 turns on/turns off control input. Don't leave this pin floating.	21
LDO_EN	LDO turns on/turns off control input. Don't leave this pin floating.	22
LDO_I	Power input pin of LDO. Recommended to use a 1uF MLCC capacitor between LDO_IN pin and LDO_GND pin.	23
LDO_O	The output pin of the LDO.	24
Exposed Pad	The Exposed Pad must be soldered to a large PCB copper plane and connected to GND for appropriate dissipation.	25

Application Circuit Diagram

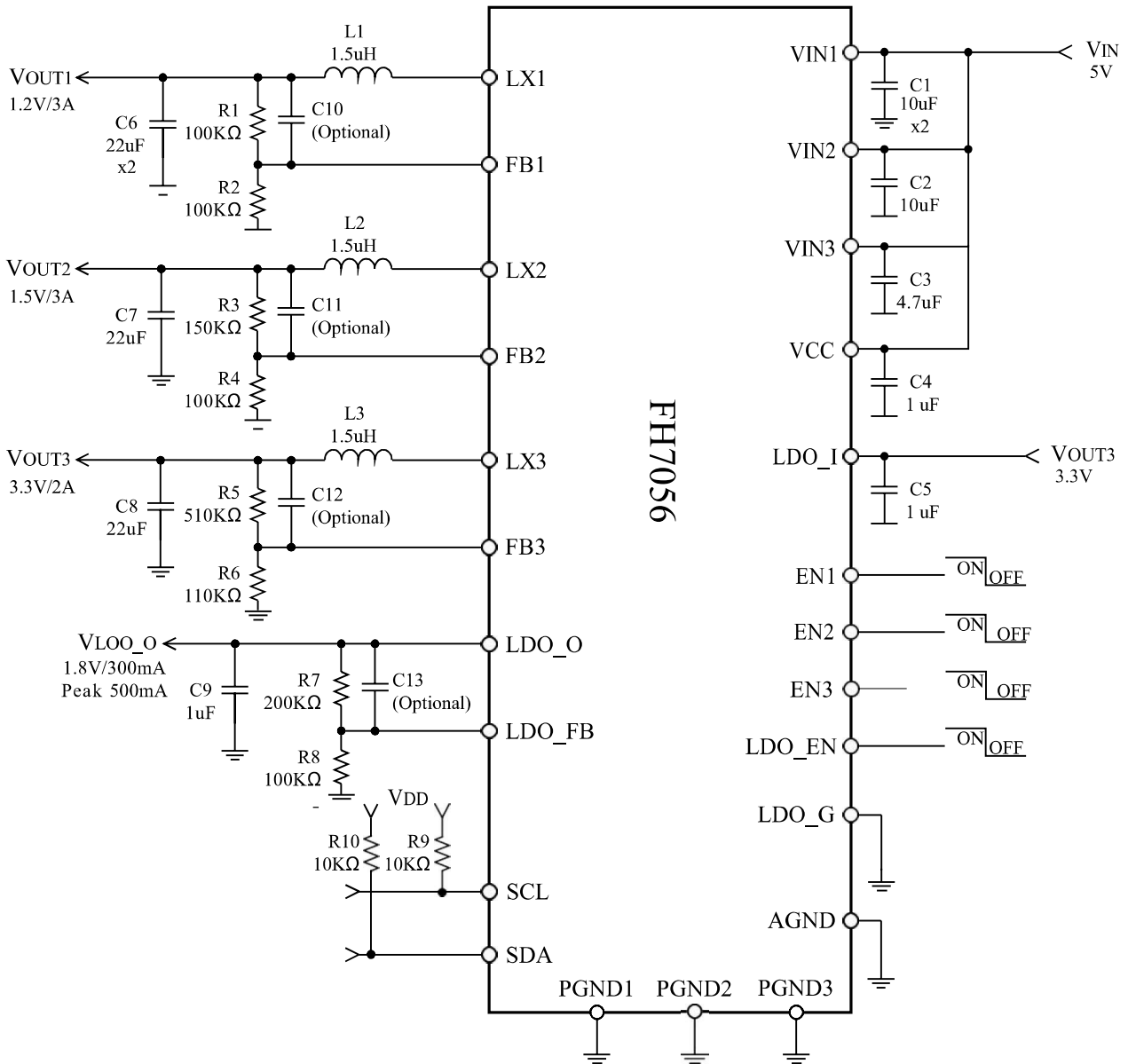
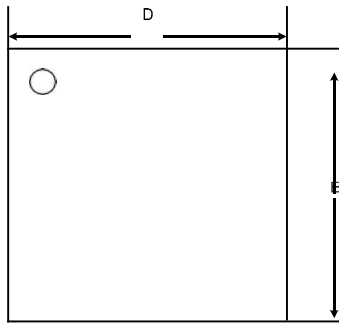


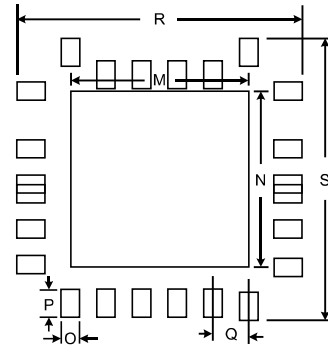
Figure 2. Typical application circuit diagram

Package Information

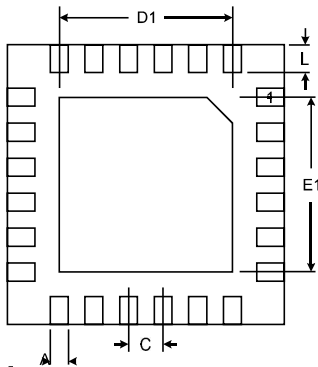
QFN 4mm * 4mm -24 Package



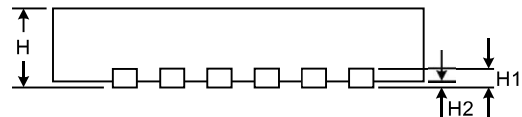
Top View



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
FH7056QN24	QFN 4mm x 4mm -24	Tape & Reel / 3000

Note (1): "QD": Package type code. (2): "R": Tape & Reel .