

1.0μA Ultra low Iq, 0.8V Startup, 1.0A Synchronous Boost

DESCRIPTION

FH4104 is a high efficiency synchronous step-up converter with ultra-low quiescent current down to 1.0μA. It is capable of delivering at least 2W of power from a low voltage source, i.e. 0.4A at 5V output. It also features a true-shutoff function that disconnects the input from output, during shutdown and output short-circuit conditions. This eliminates the need for an external MOSFET and its control circuitry to disconnect the input from output and provides robust output overload protection.

A switching frequency of 1.4MHz minimizes solution footprint by allowing the use of tiny and low profile inductors and ceramic capacitors. An internal synchronous MOSFET provides highest efficiency and with a current mode control that is internally compensated, external parts count is reduced to minimal. With the ultra-low Iq feature, FH4104 is ideal for solution that requires low standby power and compact board size such as IoT applications.

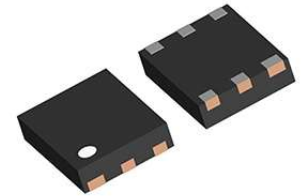
FH4104 is housed in a SOT-23-6L and DFN2x2-6L package.

FEATURES

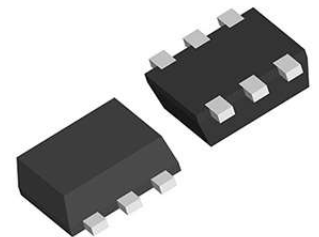
- Ultra low IQ when No Switching: 1.0uA for adjustable version and 1.2uA for fixed voltage version
- 0.8V Startup
- 5.0V/0.7A Output Capability at Vin =3.0V
- Output to Input Reversed Current Protection
- Up to 94% Efficiency
- Internal Synchronous Rectifier and Output Disconnect
- Short-circuit Protection
- Adjustable version and Fixed voltage: 3.3V/5V
- SOT-23-6L & DFN2*2-6L Package

APPLICATIONS

- Tablet, MID
- Smart Phone
- Power Bank

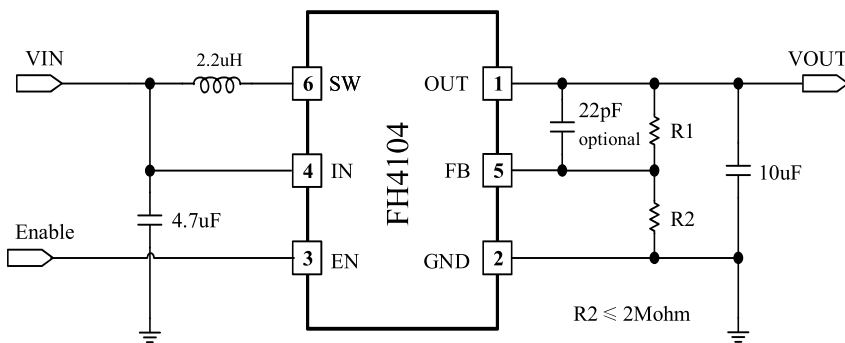


DFN2*2-6L



SOT-23-6L

TYPICAL APPLICATION



* Pin number is just for SOT-23-6L package, adjustable version

* For fixed voltage version, R1, R2 and 22pF are not needed and pin5 is NC.

Figure 1. Typical Application Circuit

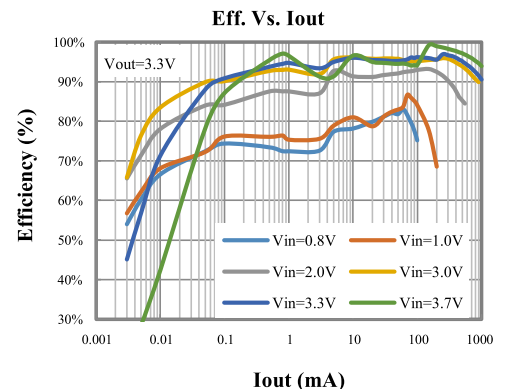
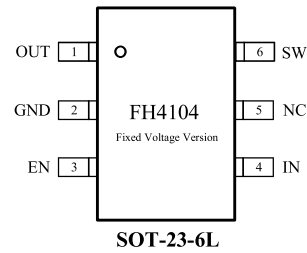
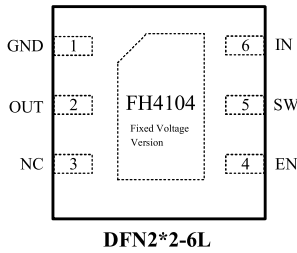
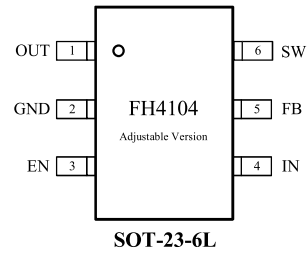
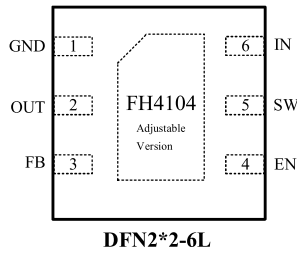


Figure 2. Efficiency

PIN CONFIGURATION

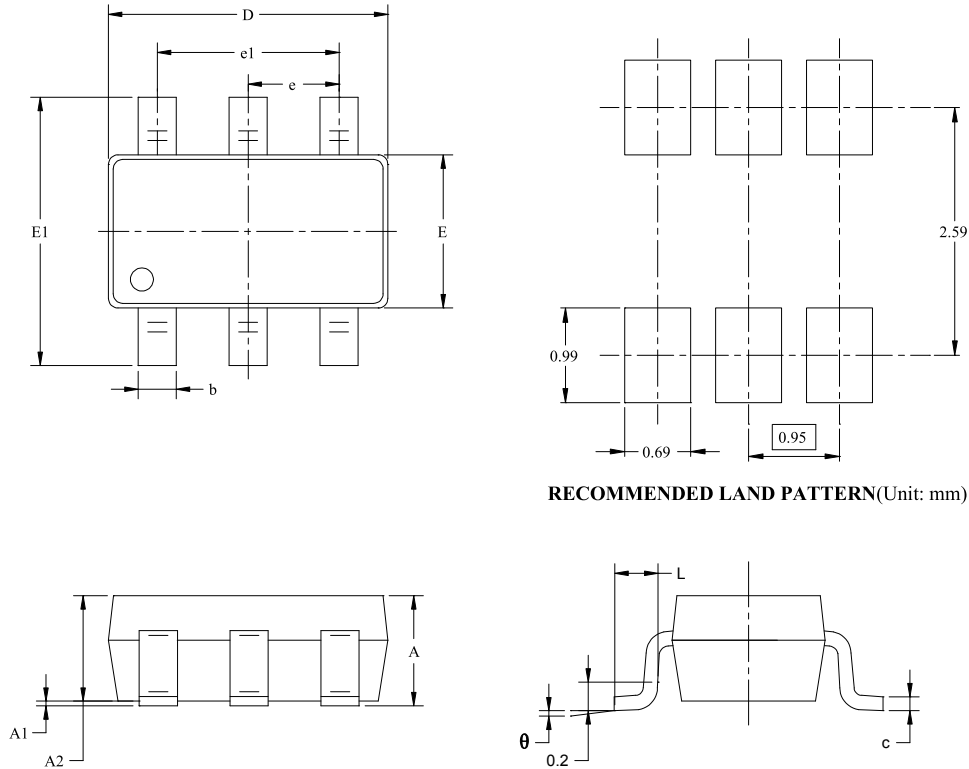


PIN DESCRIPTION

| SOT-23-6L PIN # | DFN2*2-6L PIN # | NAME | DESCRIPTION |
|--------------------|--------------------|------|--|
| 1 | 2 | OUT | Output pin. Bypass with a 4.7μF or larger ceramic capacitor closely between this pin and GND |
| 2 | 1 | GND | Ground Pin |
| 3 | 4 | EN | Enable pin for the IC. Drive this pin high to enable the part, low to disable. |
| 4 | 6 | IN | Input Supply Voltage. Bypass with a 4.7μF ceramic capacitor to GND |
| 5 | 3 | FB | Feedback Input. Add an external resistor divider from the OUT to FB and GND to set VOUT for adjustable output voltage. There is no FB pin for fixed voltage version. The pin is "Not Connected". |
| 6 | 5 | SW | Inductor Connection. Connect an inductor Between SW and the regulator output. |

PACKAGE OUTLINE

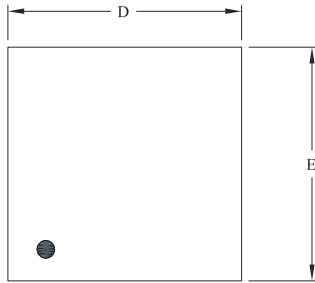
Package: SOT-23-6L



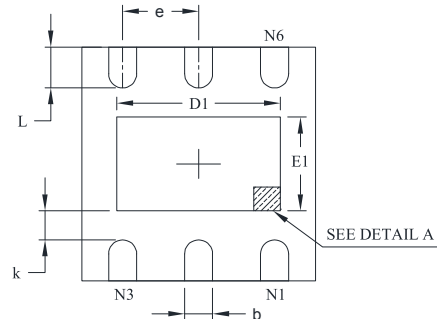
| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|------------------------------|-------|-------------------------|-------|
| | MIN | MAX | MIN | MAX |
| A | 1.050 | 1.250 | 0.041 | 0.049 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 1.050 | 1.150 | 0.041 | 0.045 |
| b | 0.300 | 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° |

PACKAGE OUTLINE

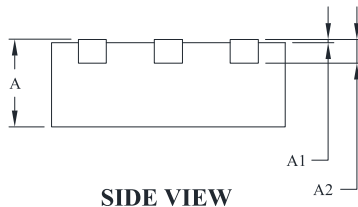
Package: DFN2*2-6L



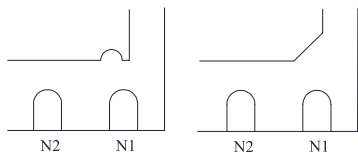
TOP VIEW



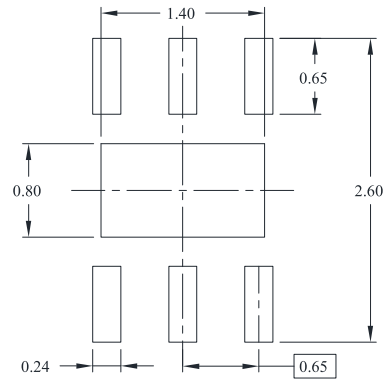
BOTTOM VIEW



SIDE VIEW



DETAIL A



RECOMMENDED LAND PATTERN (Unit: mm)

Pin #1 ID and Tie Bar Mark Options

NOTE: The configuration of the Pin #1 identifier is optional, but must be located within the zone indicated.

| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|------------------------------|-------|-------------------------|-------|
| | MIN | MAX | MIN | MAX |
| A | 0.700 | 0.800 | 0.028 | 0.031 |
| A1 | 0.000 | 0.050 | 0.000 | 0.002 |
| A2 | 0.203 REF | | 0.008 REF | |
| D | 1.900 | 2.100 | 0.075 | 0.083 |
| D1 | 1.100 | 1.450 | 0.043 | 0.057 |
| E | 1.900 | 2.100 | 0.075 | 0.083 |
| E1 | 0.600 | 0.850 | 0.024 | 0.034 |
| k | 0.200 MIN | | 0.008 MIN | |
| b | 0.180 | 0.300 | 0.007 | 0.012 |
| e | 0.650 TYP | | 0.026 TYP | |
| L | 0.250 | 0.450 | 0.010 | 0.018 |

ORDERING INFORMATION

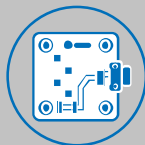
| Part Number | Voltage Range | Features | Operating Temperature | Package Type | Top Mark | SPQ |
|-------------|---------------|---|-----------------------|--------------|-------------------------------|--------------|
| FH4104M6 | 1.5V ~ 4.5V | <ul style="list-style-type: none"> • Synchronous Boost(Step-up) • 94% Efficiency • Vout: Adjustable | -40°C to 85°C | SOT-23-6L | PB <u>X</u> <u>Y</u> <u>Z</u> | 3000PCS/Reel |
| FH4104C33M6 | 1.5V ~ 4.5V | <ul style="list-style-type: none"> • Synchronous Boost(Step-up) • 94% Efficiency • Vout: Fixed 3.3V Output | -40°C to 85°C | SOT-23-6L | PL <u>X</u> <u>Y</u> <u>Z</u> | 3000PCS/Reel |
| FH4104C50M6 | 1.5V ~ 4.5V | <ul style="list-style-type: none"> • Synchronous Boost(Step-up) • 94% Efficiency • Vout: Fixed 5.0V Output | -40°C to 85°C | SOT-23-6L | FA <u>X</u> <u>Y</u> <u>Z</u> | 3000PCS/Reel |
| FH4104D6 | 1.5V ~ 4.5V | <ul style="list-style-type: none"> • Synchronous Boost(Step-up) • 94% Efficiency • Vout: Adjustable | -40°C to 85°C | DFN2*2-6L | P6 <u>X</u> <u>Y</u> <u>Z</u> | 3000PCS/Reel |
| FH4104C33D6 | 1.5V ~ 4.5V | <ul style="list-style-type: none"> • Synchronous Boost(Step-up) • 94% Efficiency • Vout: Fixed 3.3V Output | -40°C to 85°C | DFN2*2-6L | Pi <u>X</u> <u>Y</u> <u>Z</u> | 3000PCS/Reel |
| FH4104C50D6 | 1.5V ~ 4.5V | <ul style="list-style-type: none"> • Synchronous Boost(Step-up) • 94% Efficiency • Vout: Fixed 5.0V Output | -40°C to 85°C | DFN2*2-6L | Pw <u>X</u> <u>Y</u> <u>Z</u> | 3000PCS/Reel |

Note:

- **FH4104** 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.



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