

## Up to 30V Output, 1.0MHz, Boost(Step-up) Converter, and WLED Bias Driver

PRELIMINARY DATASHEET

### Description

The FH4004 is a high-frequency boost converter dedicated for small to medium LCD bias supply. The device is ideal to generate output voltages up to 30V from a dual-cell NiMH/NiCd or a single-cell Li-Ion battery. The part can also be used to generate standard 3.3V or 5.0V to 12.0V power conversions. Optimized operation frequency can meet the requirement of small LC filters value and low operation current with high efficiency. Internal soft start function can reduce the inrush current.

The device has a 0.60A switch current limit, offering lower output voltage ripple and allows the use of a smaller form factor inductor for lower power applications. Low quiescent current power applications. Low quiescent current allows device operation at very high efficiencies over the entire load current range.

The FH4004 is available in 5-pin SOT package.

### Features

- Input Voltage: 2.5V to 5.5V
- Adjust Output Voltage Range Up to 30.0V
- Feedback Voltage: 1.23V/1.25V/1.20V
- Fixed Switching Frequency: 1.0MHz
- 0.6A Switch Peak Current Limit
- Internal Compensation
- Thermal Shutdown Protection
- Over Voltage Protection
- Operating Junction Temperature: -40°C to 125°C
- Available in SOT-23-5L package

### APPLICATIONS

- LCD Bias Supply
- White-LED Supply for LCD Backlights
- Digital Still Camera
- PDAs, Organizers, and Handheld PCs
- Cellular Phones
- Internet Audio Player
- Standard 3.3V/5.0V to 12V Conversion

### Typical Application Circuit

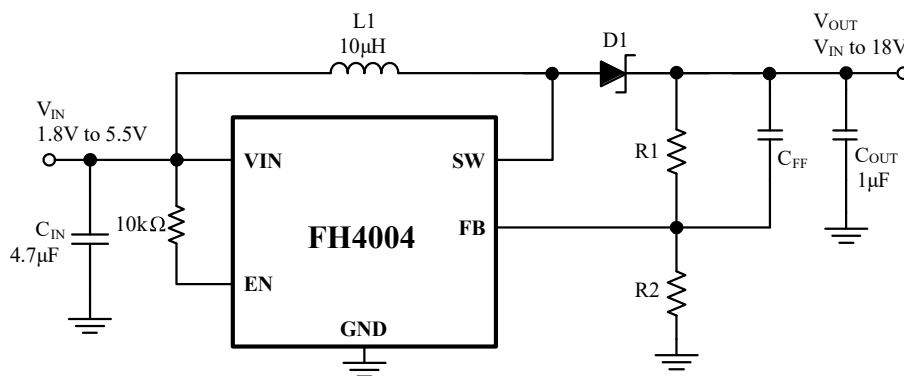
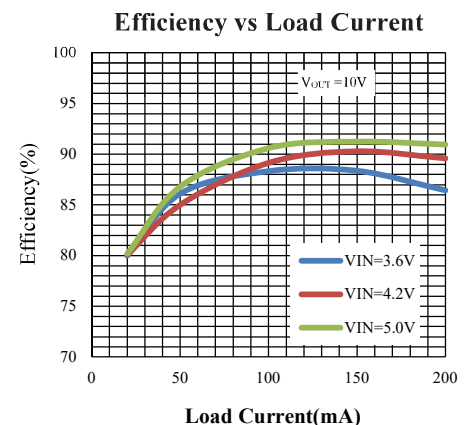
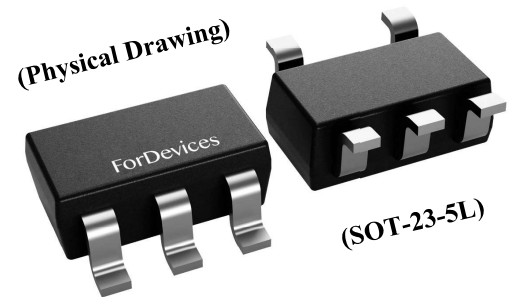
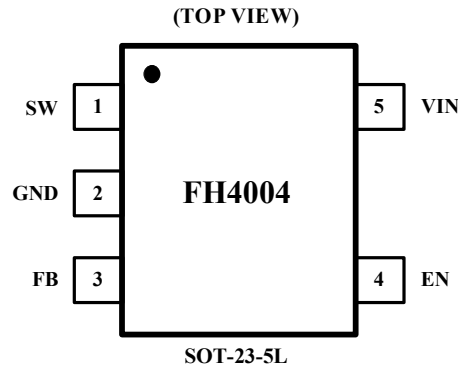


Figure 1. FH4004 LCD Bias Supply



## Pin Configuration



## Pin Description

Pin	Name	Function
1	SW	Power Switch Output. SW is the drain of the internal MOSFET switch. Connect the power inductor and output rectifier to SW. SW can swing between GND and 40V.
2	GND	Ground Pin.
3	FB	Feedback Input. The FB voltage is 1.23V(typ.). Connect a resistor divider to FB.
4	EN	EN pin of the boost converter. It is a multi-functional pin which can be used for enable control and PWM dimming. Should not be left floating.
5	IN	Input Supply Pin. Must be locally bypassed.

## Functional Block Diagram

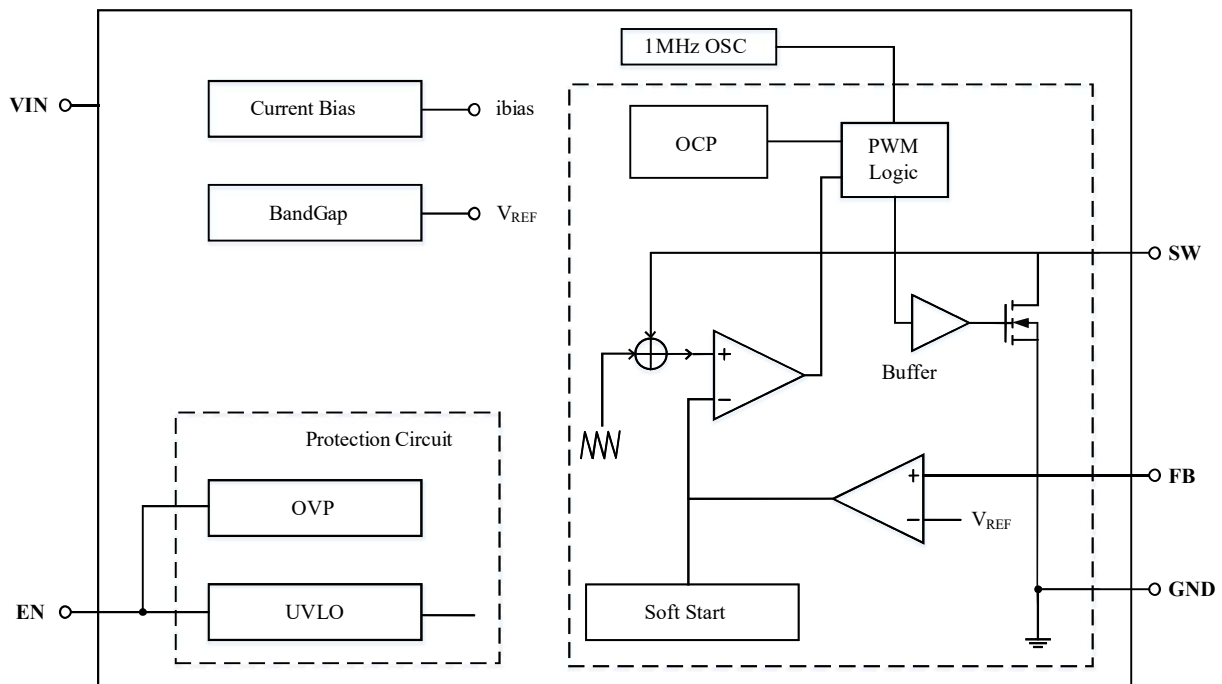
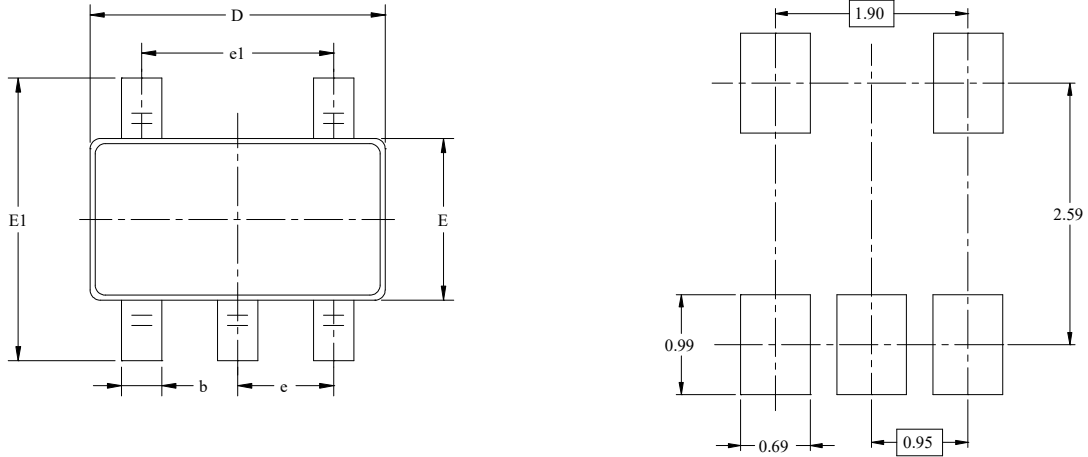


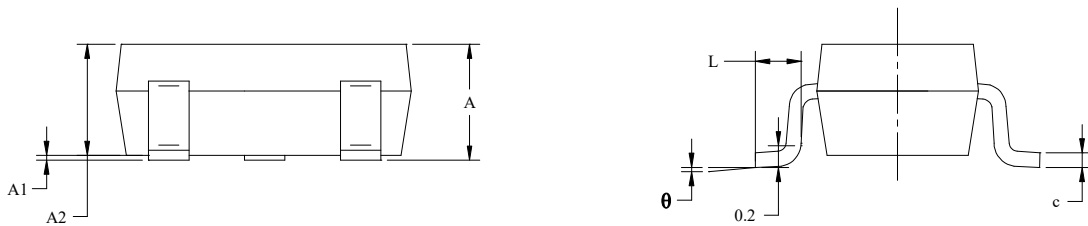
Figure 2. FH4004 Block Diagram

## PACKAGE OUTLINE DIMENSIONS

Type: SOT-23-5L



RECOMMENDED LAND PATTERN(Unit: mm)



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°

NOTE:

- CONTROL DIMENSION IS IN INCHES. DIMENSION IN BRACKET IS IN MILLIMETERS.
- PACKAGE LENGTH DOES NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.
- PACKAGE WIDTH DOES NOT INCLUDE INTERLEAD FLASH OR PROTRUSIONS.
- LEAD COPLANARITY (BOTTOM OF LEADS AFTER FORMING) SHALL BE 0.004" INCHES MAX.
- DRAWING CONFORMS TO JEDEC MS-012, VARIATION BA.
- DRAWING IS NOT TO SCALE.

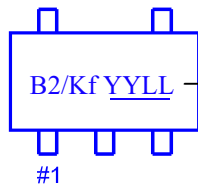
## ORDERING INFORMATION

Part Number	Voltage Range	Features	Feedback Voltage	Operating Temperature	Package Type	Top Mark	SPQ
FH4004AM5	2.5~5.5V	<ul style="list-style-type: none"> <li>• Boost(Step-up)</li> <li>• Up to 30.0V</li> </ul>	1.23V	-40°C to +85°C	SOT-23-6L	Kf/B2F3 <u>YY LL</u>	3000PCS/Reel
FH4004BM5	2.5~5.5V	<ul style="list-style-type: none"> <li>• Frequency: 1.0MHz</li> <li>• OCP/OVP/OCT/UVLO</li> </ul>	1.25V	-40°C to +85°C	SOT-23-6L	B2F5 <u>YY LL</u>	3000PCS/Reel
FH4004CM5	2.5~5.5V	<ul style="list-style-type: none"> <li>• Duty Cycle: 90%(Max.)</li> </ul>	1.20V	-40°C to +85°C	SOT-23-6L	B21G <u>YY LL</u>	3000PCS/Reel

**Note:**

- **FH4004A/FH4004B/FH4004C** 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. (<http://www.fordevices.com>)

**Device Name: SOT-23-5L**



B2/Kf: Device Code  
YYLL: Date Code



**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 Jan.2020