

## 2.5V-5.5VIN, 40.0VOUT, 1.2MHz, Boost(Step-up) Regulator White LED Driver with Single Wire Dimming Control

### General Description

The FH2127 series is a boost(step-up) converter designed for driving up to 10 white LEDs or up to 40.0V output voltage from a single cell Lithium Ion battery. The device features integrated overvoltage protection and feedback voltage is regulated to 100mV to 600mV. Low feedback voltage helps to reduces power loss and improves efficiency.

Customers can choose different FB voltages according to their application. 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. Both SOT-23-5L/SOT-23-6L and DFN2×2-6L package type provides the best solution for PCB space saving and total BOM cost.

### Datasheet Brief

### Features

- 2.5V to 5.5V Input Voltage
- Up to 40V Output Voltage
- 1.2MHz Fixed Switching Frequency
- 0.1/0.2/0.25/0.3/0.6 V Feedback Voltage
- Internal 1.6A Switch Current Limit
- Support Analog and PWM Dimming Mode
- Internal 40V Over Voltage Protection
- Internal Compensation
- Thermal Shutdown
- Driving Up to 10 White LEDs
- Dimming with wide Frequency Range
- Available in SOT23-5L/SOT23-6L, DFN2×2-6L package

### Applications

- Camera Flash White LED
- Digital still cameras
- PDA LED back light
- LCD Bias Supply

### Typical Application Circuit

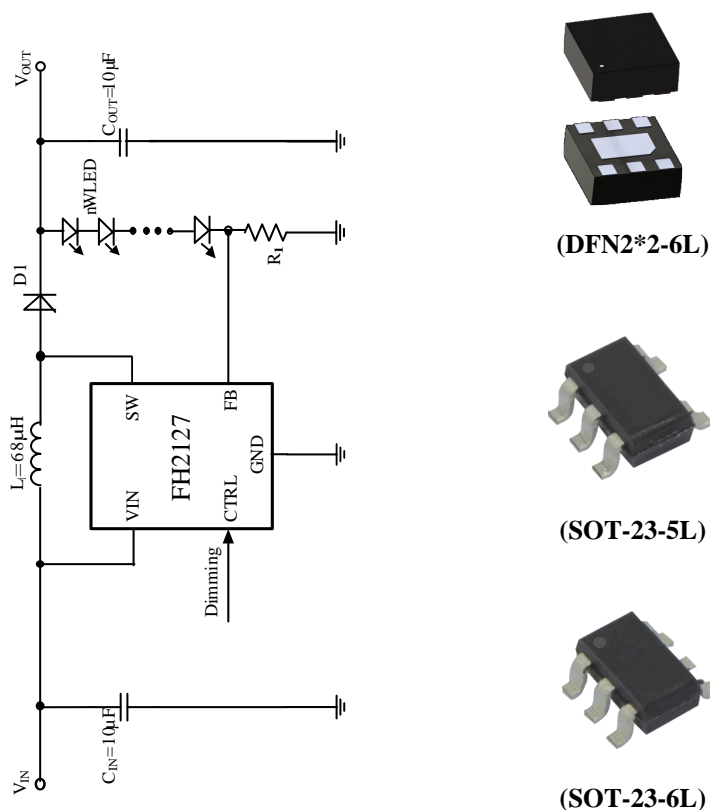


Figure 1. Typical White LED Application Circuit

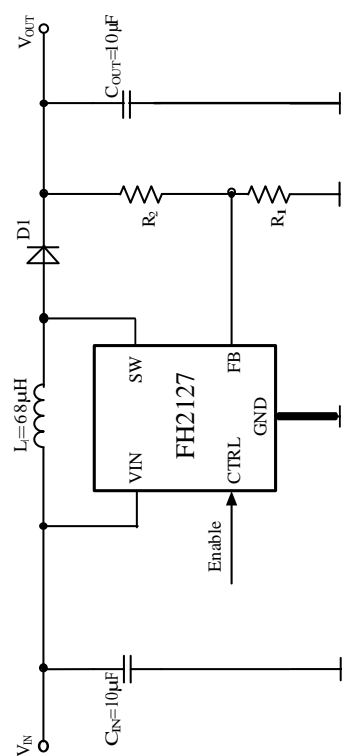
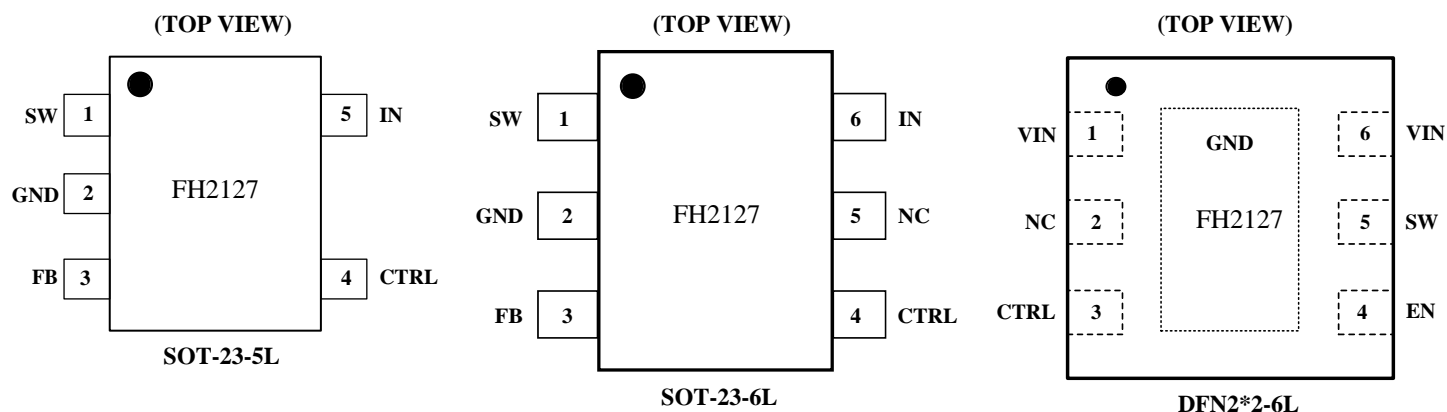


Figure 2. Typical Boost Application Circuit

## Pin Configuration

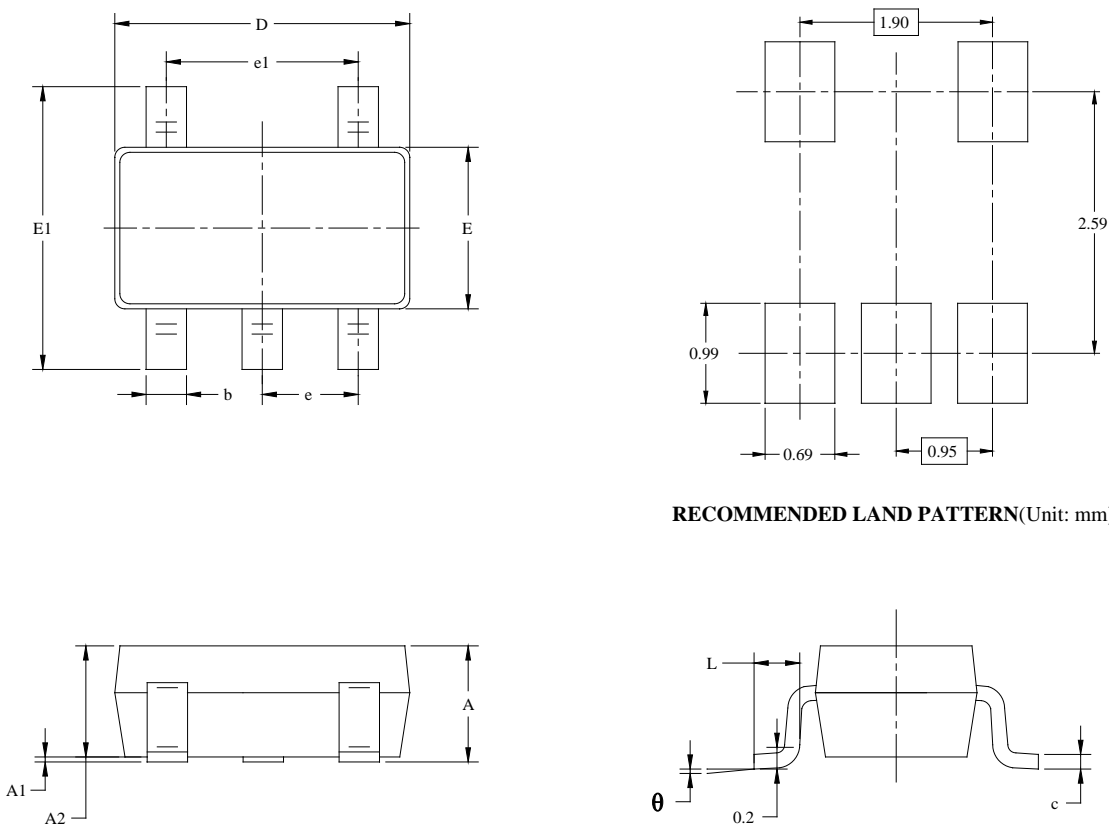


## Pin Description

SOT23-5 Pin No.	DFN2×2-6 Pin No.	SOT23-6 Pin No.	Name	Function
1	6	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	EPAD	2	GND	Ground Pin.
3	4	3	FB	Feedback Reference Voltage Pin. Series connect a resistor between WLED and ground as a current sense. Sense the current feedback voltage to set the current rating.
4	3	4	CTRL	CTRL 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	1	6	IN	Input Supply Pin. Must be locally bypassed.
NA	2, 3	5	NC	No Connection.

PACKAGE OUTLINE DIMENSIONS

SOT-23-5L

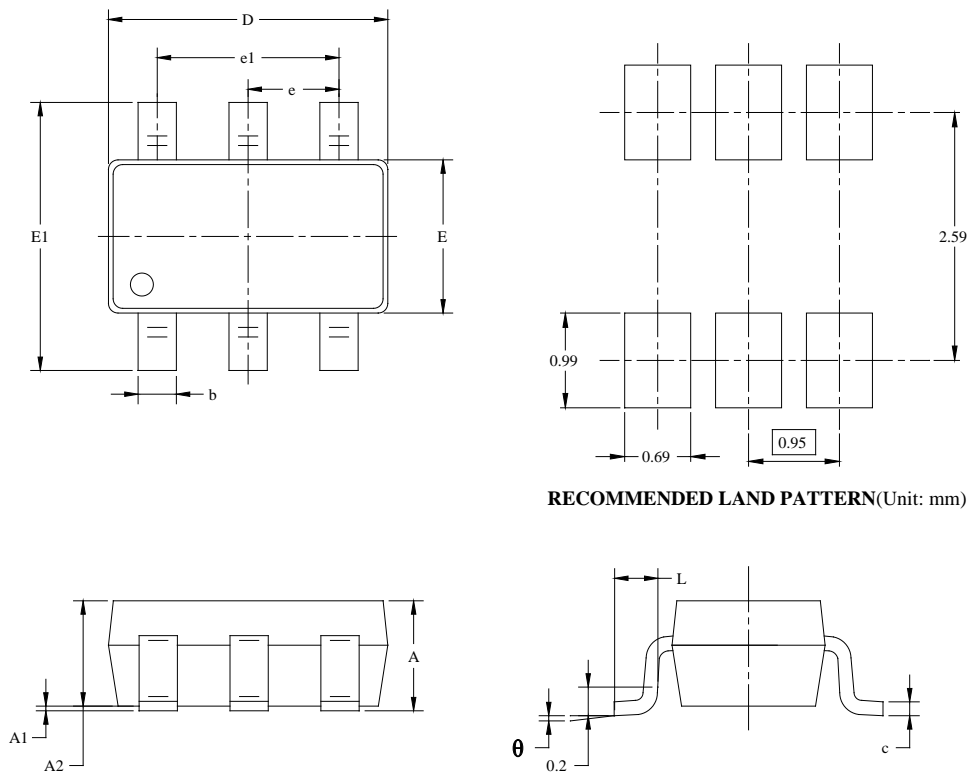


RECOMMENDED LAND PATTERN(Unit: mm)

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	1.90 0 BSC		0.075 BSC	
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

PACKAGE OUTLINE DIMENSIONS

SOT-23-6L

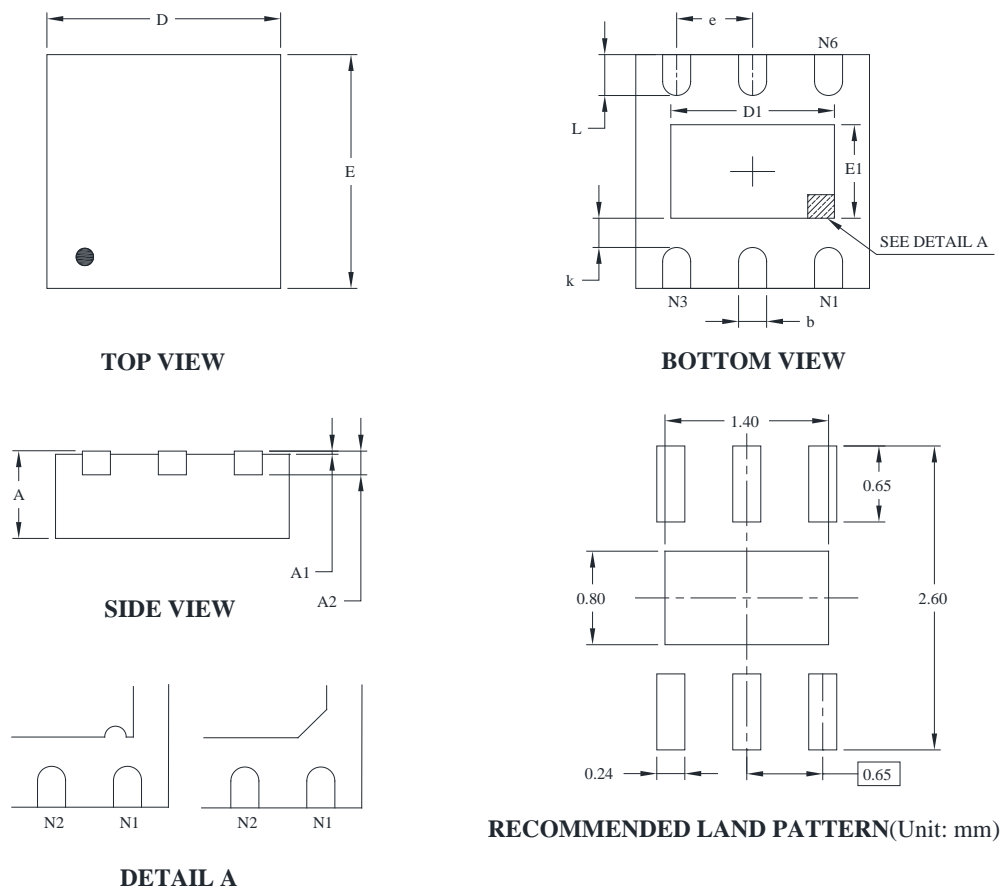


RECOMMENDED LAND PATTERN(Unit: mm)

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
$\theta$	0°	8°	0°	8°

## PACKAGE OUTLINE DIMENSIONS

## DFN-2×2-6L



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
FH2127AM5	2.5V ~ 5.5V	<ul style="list-style-type: none"> <li>• Boost(Step-up)</li> <li>• 96% Efficiency</li> <li>• VFB Voltage: 0.1V</li> <li>• Switching Frequency: 1.2MHz</li> </ul>	-40°C to 85°C	SOT-23-5L	Ka <u>YLL</u>	3000PCS/Reel
FH2127BM5	2.5V ~ 5.5V	<ul style="list-style-type: none"> <li>• Boost(Step-up)</li> <li>• 96% Efficiency</li> <li>• VFB Voltage: 0.2V</li> <li>• Switching Frequency: 1.2MHz</li> </ul>	-40°C to 85°C	SOT-23-5L	Kb <u>YLL</u>	3000PCS/Reel
FH2127CM5	2.5V ~ 5.5V	<ul style="list-style-type: none"> <li>• Boost(Step-up)</li> <li>• 96% Efficiency</li> <li>• VFB Voltage: 0.25V</li> <li>• Switching Frequency: 1.2MHz</li> </ul>	-40°C to 85°C	SOT-23-5L	Kc <u>YLL</u>	3000PCS/Reel
FH2127CM6	2.5V ~ 5.5V	<ul style="list-style-type: none"> <li>• Boost(Step-up)</li> <li>• 96% Efficiency</li> <li>• VFB Voltage: 0.25V</li> <li>• Switching Frequency: 1.2MHz</li> </ul>	-40°C to 85°C	SOT-23-6L	Kc <u>YLL</u>	3000PCS/Reel
FH2127CD6	2.5V ~ 5.5V	<ul style="list-style-type: none"> <li>• Boost(Step-up)</li> <li>• 96% Efficiency</li> <li>• VFB Voltage: 0.25V</li> <li>• Switching Frequency: 1.2MHz</li> </ul>	-40°C to 85°C	DFN2*2-6L	Kr <u>YLL</u>	3000PCS/Reel
FH2127DM5 (Ordering)	2.5V ~ 5.5V	<ul style="list-style-type: none"> <li>• Boost(Step-up)</li> <li>• 96% Efficiency</li> <li>• VFB Voltage: 0.30V</li> <li>• Switching Frequency: 1.2MHz</li> </ul>	-40°C to 85°C	SOT-23-5L	Kd <u>YLL</u>	3000PCS/Reel
FH2127EM5 (Ordering)	2.5V ~ 5.5V	<ul style="list-style-type: none"> <li>• Boost(Step-up)</li> <li>• 96% Efficiency</li> <li>• VFB Voltage: 0.60V</li> <li>• Switching Frequency: 1.2MHz</li> </ul>	-40°C to 85°C	SOT-23-5L	Ke <u>YLL</u>	3000PCS/Reel
FH2127ED6 (Ordering)	2.5V ~ 5.5V	<ul style="list-style-type: none"> <li>• Boost(Step-up)</li> <li>• 96% Efficiency</li> <li>• VFB Voltage: 0.60V</li> <li>• Switching Frequency: 1.2MHz</li> </ul>	-40°C to 85°C	DFN2*2-6L	Kq <u>YLL</u>	3000PCS/Reel

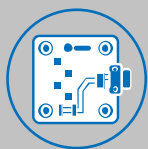
## Note:

- FH2127A/B/C/D/E 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.





[Evaluation Kit  
Available](#)



[Design  
Resources](#)

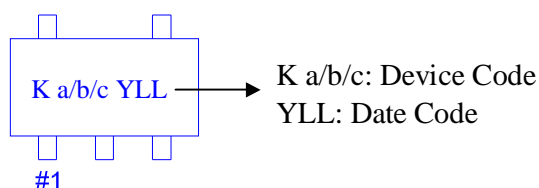


[Tools  
and Models](#)

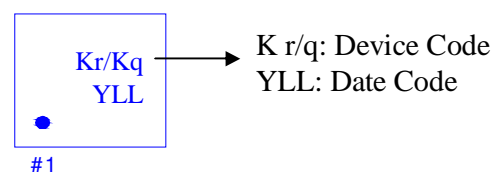


[Support](#)

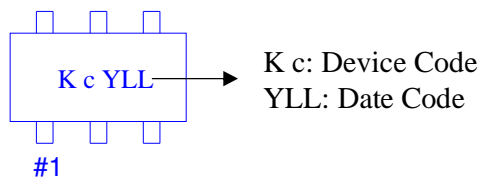
Device Name: SOT-23-5L



Device Name: DFN2x2-6L



Device Name: SOT-23-6L



#### 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.



Product  
Folder



Order  
Now



Technical  
Documents



Tools &  
Software



Support &  
Community

#### Note:

- The information described herein is subject to change without notice.
- ForDevices Inc. is not responsible for any problems caused by circuits or diagrams described herein whose related industrial properties, patents, or other rights belong to third parties. The application circuit examples explain typical applications of the products, and do not guarantee the success of any specific mass-production design.
- Use of the information described herein for other purposes and/or reproduction or copying without the express permission of ForDevices Inc. is strictly prohibited.
- The products described herein cannot be used as part of any device or equipment affecting the human body, such as exercise equipment, medical equipment, security systems, gas equipment, or any apparatus installed in airplanes and other vehicles, without prior written permission of ForDevices Inc.
- Although ForDevices Inc. exerts the greatest possible effort to ensure high quality and reliability, the failure or malfunction of semiconductor products may occur. The user of these products should therefore give thorough consideration to safety design, including redundancy, fire-prevention measures, and malfunction prevention, to prevent any accidents, fires, or community damage that may ensue.

▲ Update by Sep.2020