

1.0MHz, 2A Synchronous Step-Down(Buck) LED Driver

Datasheet Brief

PRELIMINARY DATASHEET

GENERAL DESCRIPTION

The **FH2121B** is a constant frequency, current mode PWM step-down (buck) LED driver with 2.0A output current and 1.0MHz switch frequency.

The device integrates a main switch and a synchronous rectifier for high efficiency without an external Schottky diode.

This device offers two operation modes, PWM control and PFM Mode switching control, which allows a high efficiency over the wider range of the LED current. The feedback voltage is 0.1V typically.

The device also integrates many protection features included input OVP, cycle-by-cycle current limit, over temperature protection.

APPLICATIONS

- LED Drivers
- Industrial Lighting
- Digital Still and Video Cameras

TYPICAL APPILICATION

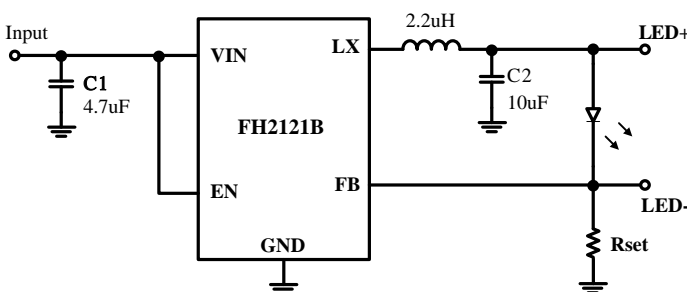


Figure 1. Typical application

Note: $I_{LED} = 100mV / R_{SET}$

KEY FEATURES

- 1.0MHz Constant Frequency Operation
- Up to 2.0A LED Current
- No Schottky Diode Required
- Input Voltage Range: 2.5V to 5.5V
- Feedback Voltage as Low as 0.1V
- 100% Duty Cycle in Dropout
- Low Quiescent Current: 50µA
- Short Circuit Protection
- Thermal Fault Protection
- Input over voltage protection (OVP)
- Shutdown Current < 1.0µA

Package Type

- 5-Pin SOT-23-5L

Device Information ⁽¹⁾

PART NUMBER	PACKAGE	BODY SIZE (NOM)
FH2121B	SOT-23 (5)	2.90mm x 1.60mm

For all available packages, see the orderable addendum at the end of the datasheet.

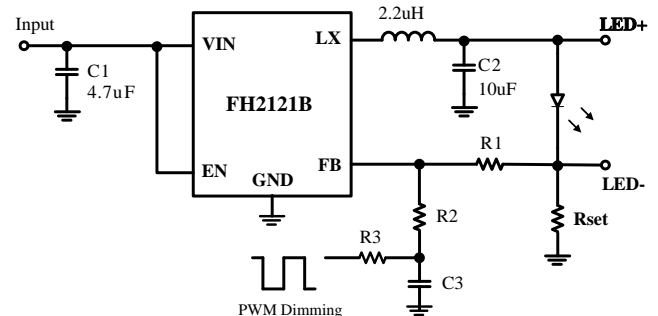
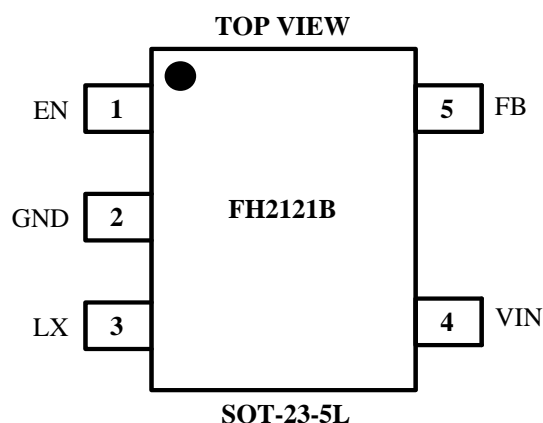


Figure 2. Typical application circuits with PWM dimming signal

PIN CONFIGURATION

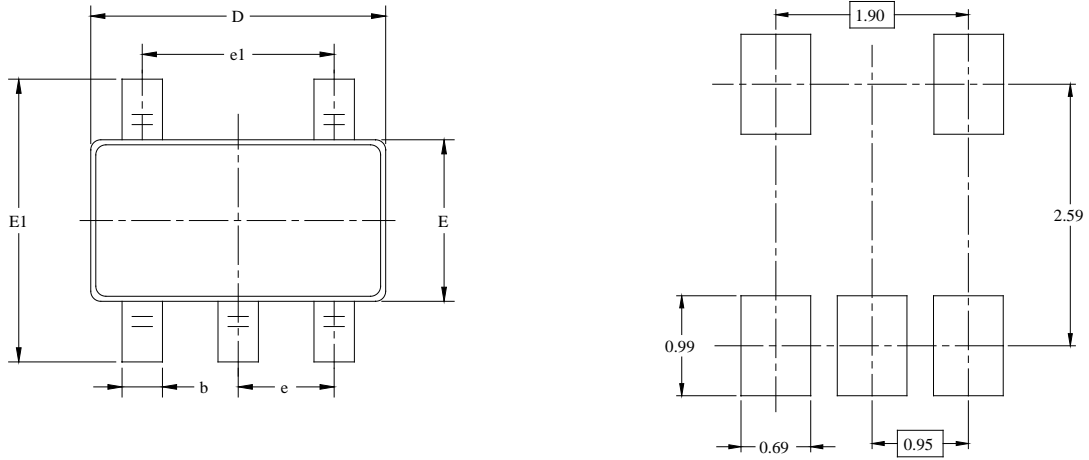


PIN FUNCTIONS

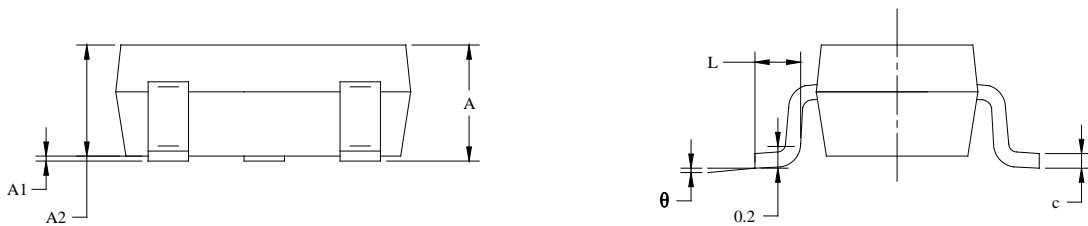
Pin	Name	Function
1	EN (CE)	Chip Enable Pin. Drive EN above 1.5V to turn on the part. Drive EN below 0.4V to turn it off. Do not leave EN floating.
2	GND	Ground Pin
3	LX	Power Switch Output. It is the switch node connection to Inductor.
4	VIN	Power Supply Input. Must be closely decoupled to GND with a 10 μ F or greater ceramic capacitor.
5	FB	Feedback Pin. A resistor connected between FB to GND is used to program LED current.

Package Information

- 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	1.900BSC		0.075 BSC	
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

ORDERING INFORMATION

Part Number	Input Voltage	Features	Operating Temperature	Package Type	Top Mark	SPQ
FH2121BM5	2.5V ~ 5.5V	<ul style="list-style-type: none"> • DC/DC Step-down LED driver • Output current: 2.0A • Frequency: 1.0MHz • 100% Duty cycle in dropout • V_{FB}: 0.1V 	-40°C to +85°C	SOT-23-5L	** <u>YLL</u>	3000EA/Reel

Note:

- **FH2121B** 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.
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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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