

# 1V STEP-UP WHITE LED DRIVER WITH A MINIMUM OF EXTERNAL COMPONENTS

**A8110**

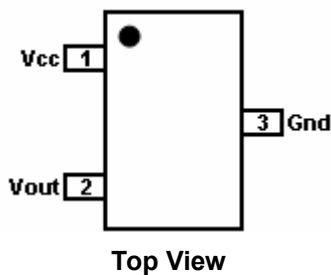
## Description

The A8110 is a single cell LED driver designed for applications where step-up voltage conversion from very low input voltage is required. These applications mainly operate from a single 1.5V or 1.2V battery cell. This circuit is ideal for driving single or multiple LEDs over a wide range of operating voltages with a minimum of external parts.

## Features

- Minimum Operating Voltage 0.95V
- 100mA Peak Output Current
- Minimal external components required
- Battery deep discharge protection

## Pin Description



Package SOT-23-3

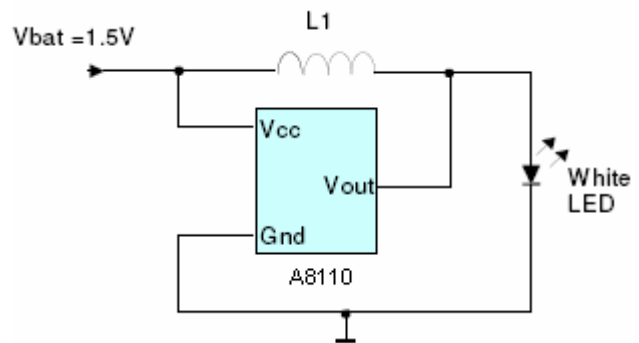
or COB (die size 1150x780) on request

PIN #	PIN Name	PIN Function
1	Vcc	Supply voltage
2	Vout	Output Voltage LED connection
3	Gnd	Ground Connection

## Application

- Small-sized LED torches
- LCD Displays
- LED Displays

### Typical Application



The inductance L1 can be varied between 10 and 22uH

### Approximate Battery Lifetime (one white LED connected)

Battery	Capacity	Lifetime	
		L1=22uH, LED mean current 12mA	L1=10uH, LED ,mean current 23mA
AA	1000 mAh	73	27
AAA	300 mAh	22	8

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**Absolute Maximum Ratings**

Parameter	Min	Typ	Max	Unit
Vcc	-0.3		8	V
Peak Output Current			300	mA
Operating Junction Temperature Range			125	°C
Storage Temperature Range	-55		150	°C
Electrostatic Discharge (ESD) Protection	2			kV

**Electrical Characteristics**

Vcc=1.5V, Ta=25°C, one LED connected, unless otherwise noted.

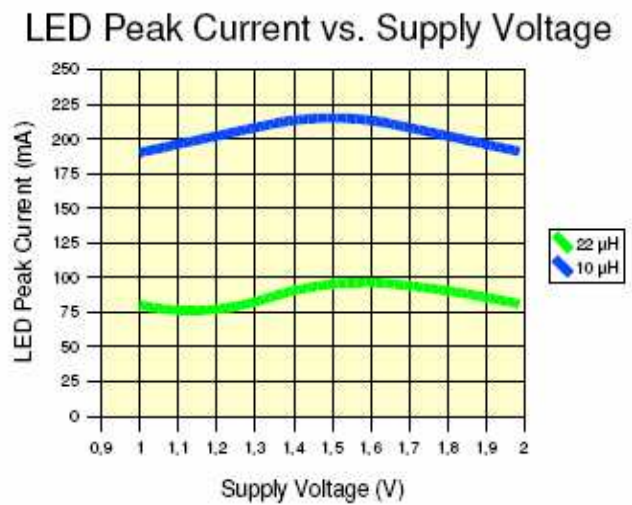
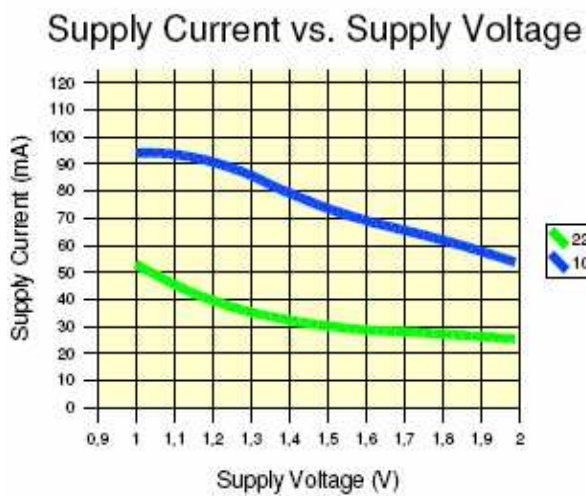
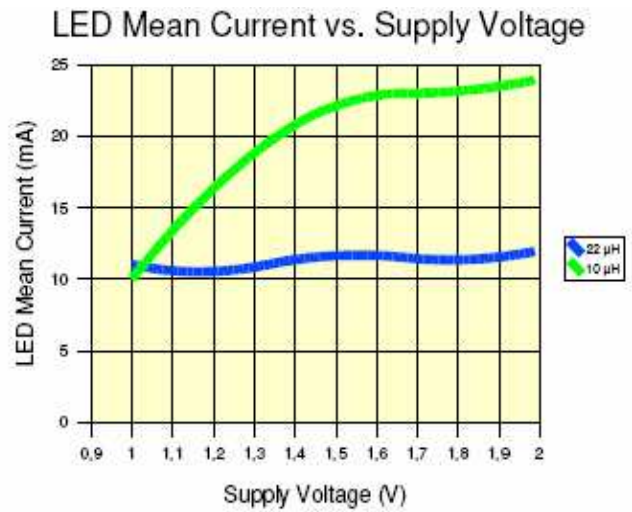
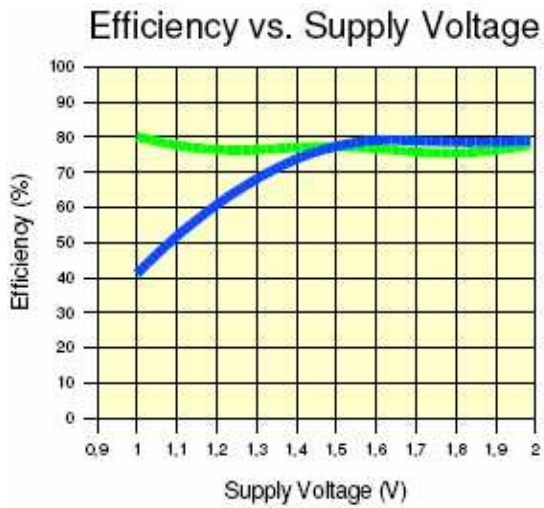
Parameter	Conditions	Min	Typ	Max	Unit
Supply voltage		0.95	1.5	2.0	V
LED Mean Current	L1=22uH		12		mA
Measured with L1 type LQH32CN Murata	L1=10uH		23		
Switching Frequency		300	500	600	kHz
Quiescent Supply Current	Vcc>950mV		4		mA
	Vcc=600mV		50		uA
	Vcc=400mV		10		uA
Efficiency			80		%
Vout		Vcc		16	V

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## Typical Characteristics

(Ta=23°C, one LED connected)

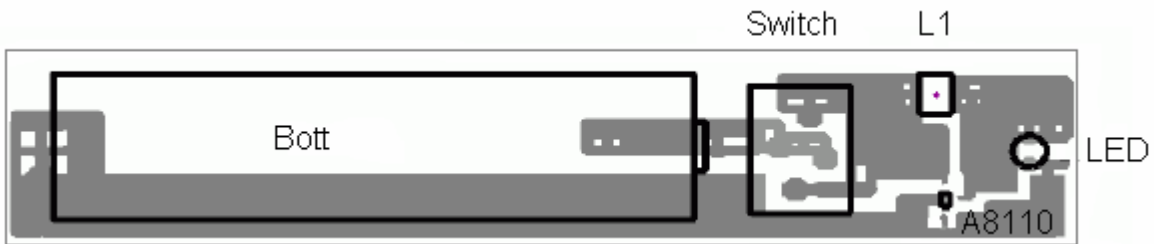
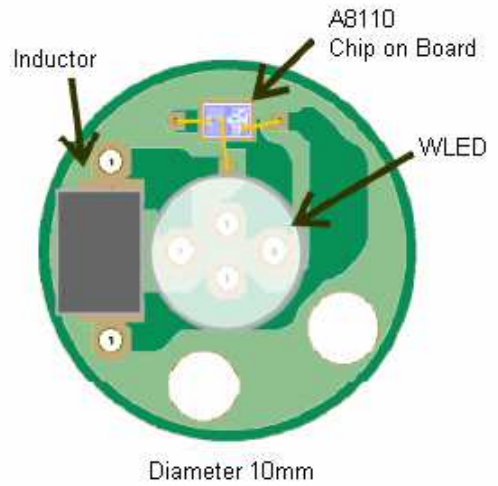
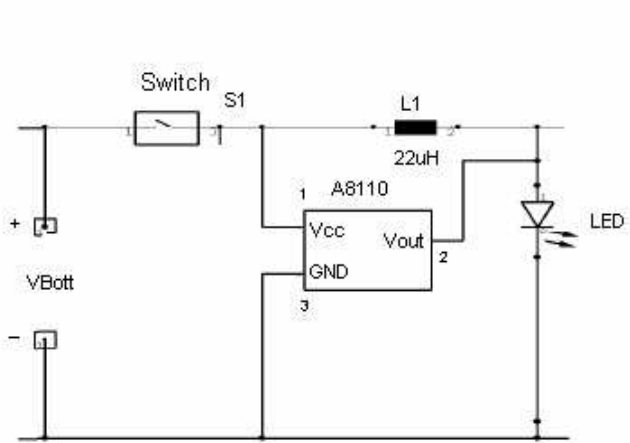


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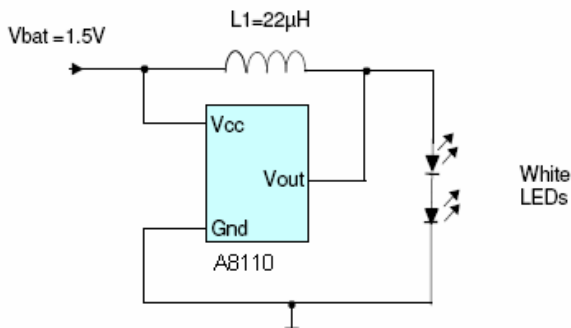
**A8110**

## Typical Applications

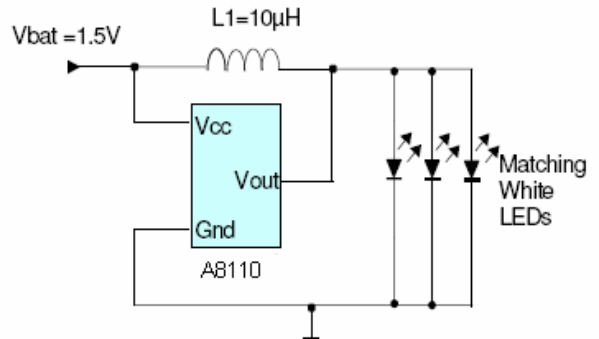
(Demo boards in chip on board technique)



### Connecting two LEDs in Series



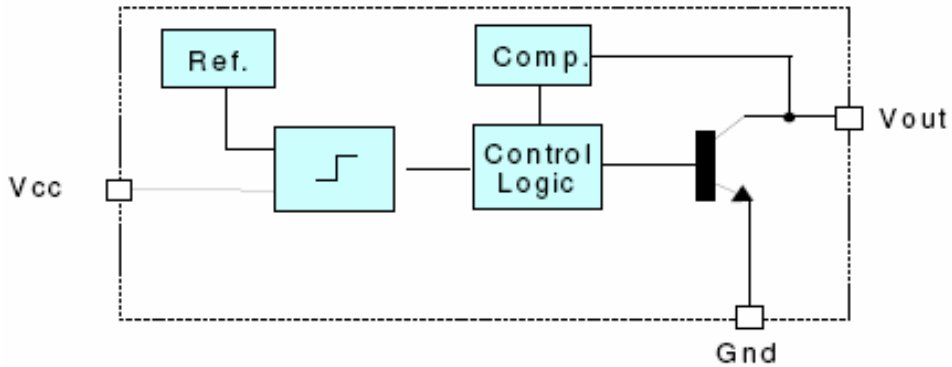
### Connecting three LEDs in Parallel



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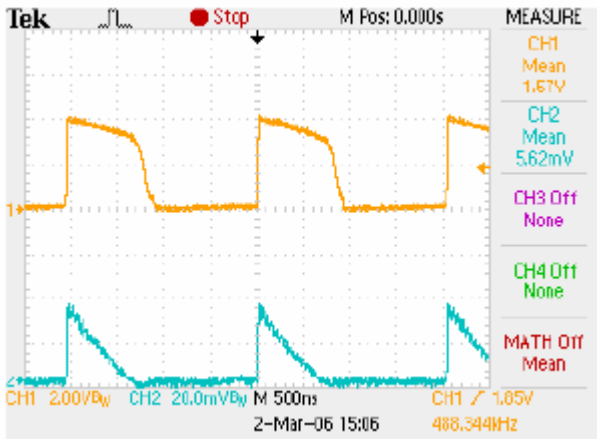
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## Block Diagram

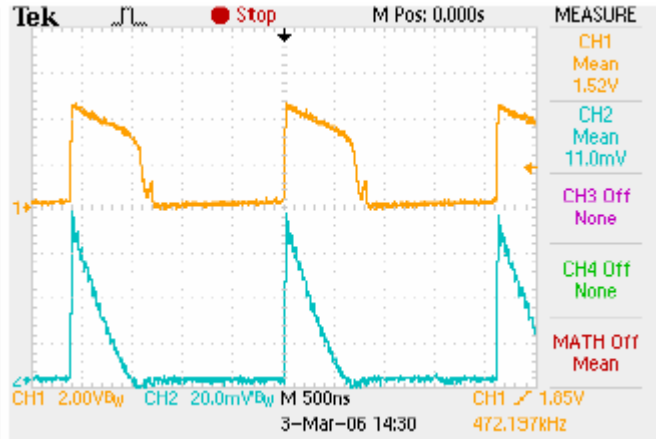


## Oscilloscope Displays

LED voltage (CH1) and LED current (CH2, over 0.5 Ohm resistor)



With L1=22uH



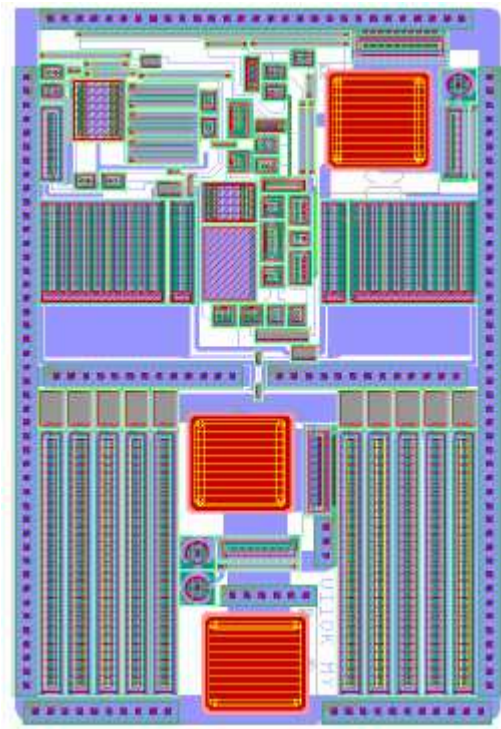
L1=10uH

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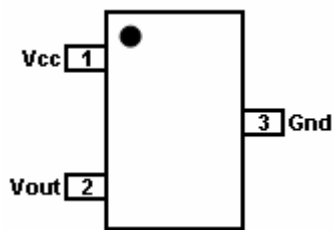
## Available Package

1) A8110 in die form (on request)



Chip Size: 1150um x 780 um

2) SOT-23



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