WLED Driver with 1~2 Cells Input

REV: 00a

General Description

The LD7291 is a high efficiency WLED driver to drive maximum 3 WLEDs from single or 2 battery cells. By using the proprietary topology, the LD7291 can operate under as low as 0.85V to fully utilize the energy of battery.

The LD7291 only needs 4 external passive components to provide the solution for driving maximum 3 WLEDs in a very small PCB size. Furthermore, the 3 WLEDs can achieve very good current matching without any extra current /brightness control circuit. All the above functions are integrated in a tiny SOT-26 package. The LD7291 is the ideal solution for battery-powered LED driving applications.

† Patent pending

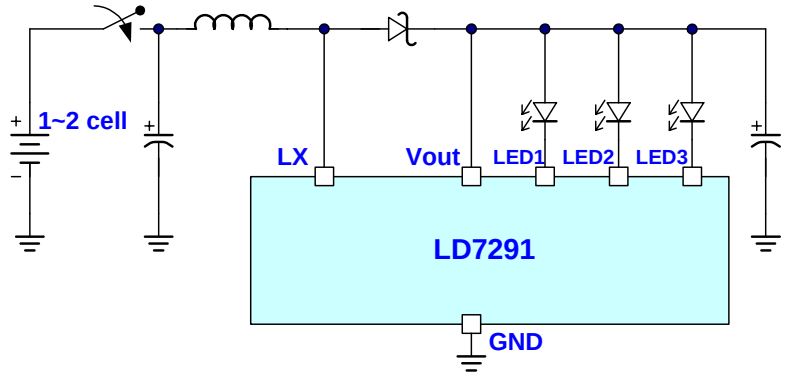
Features

- Very few external components
- Low ripple and low noise
- Low start-up voltage, 0.85V at 1mA
- Direct drive maximum 3 WLEDs
- High efficiency

Applications

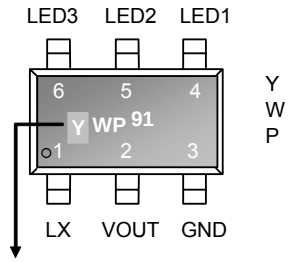
- WLED Flashlight
- WLED Torch
- Backlight Module of Hand-held Device
- Constant Current Source

Typical Application



Pin Configuration

SOT-26 (TOP VIEW)



Y : Year code
W : Week code
P : LD72..
(Product family code)

Ordering Information

Part number	Package	Top Mark	Shipping
LD7291 PL	SOT-26	YWP/91	3000 /tape & reel

The LD7291PL is ROHS compliant.

Pin Descriptions

PIN	NAME	FUNCTION
1	LX	Switching Pin
2	VOUT	Output voltage
3	GND	Ground
4	LED1	LED connection pin
5	LED2	LED connection pin
6	LED3	LED connection pin

Absolute Maximum Ratings

VOUT Pin Voltage	6.5V
LX Pin Voltage	-0.3 ~6.5V
LX Pin Current	500mA
Operating Temperature Range	-30°C~85°C
Operating Junction Temperature	150°C
Storage Temperature Range	-55°C to 125°C
Package thermal resistance (SOT-26)	250°C/W
Lead temperature (PB-free SOT-26, Soldering, 10sec)	260°C
ESD Level (Human Body Model)	2KV

Caution:

Stresses beyond the ratings specified in "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress only rating and operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied.

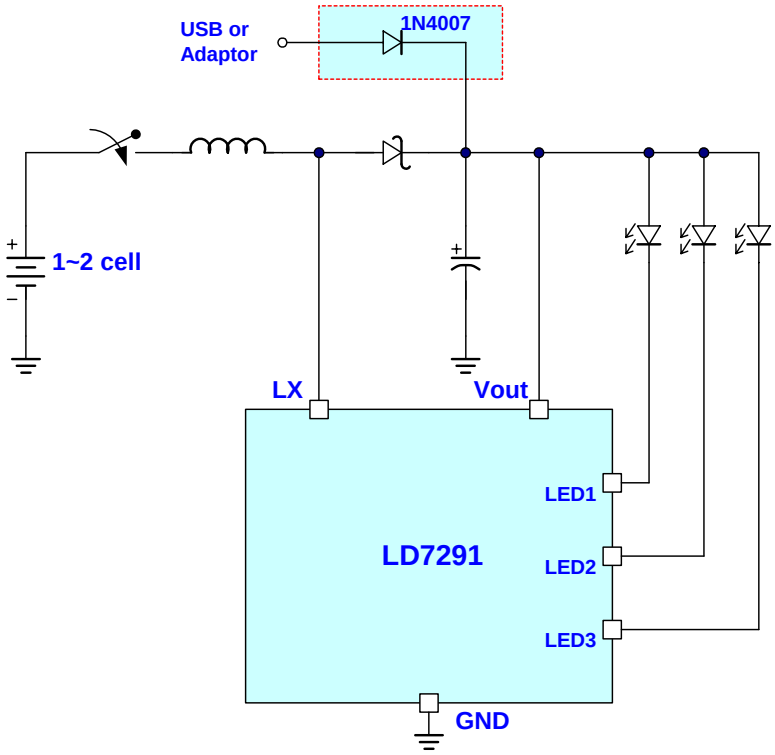
Electrical Characteristics

(T_A = +25°C unless otherwise stated, V_{IN}=3.0V)

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Input Voltage					
Input Voltage				3.6	V
Startup Voltage	I_{OUT}=1mA,Vin=0 → 2V		0.85	1	V
Hold-on Voltage	I_{OUT}=1mA,Vin=2 → 0V	0.7			V
LED Current					
LED Current			18		mA
LED Current Matching		-10		10	%
Oscillator					
Frequency		150	210	270	KHz

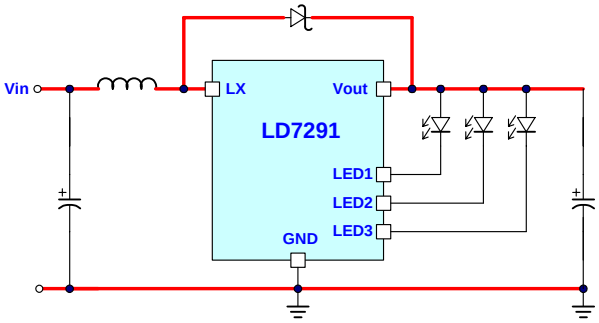
Application Information

1. Dual Input (Battery & USB) Application Circuit



2. PCB Layout Guideline

1. Switching node such as LX should be routed away from LED1, LED2 and LED3 pin.
2. The PCB traces carrying high current path (red line) should be made as short and wide as possible.
3. Return path of LED1, LED2 and LED3 pin should be made as short as possible.

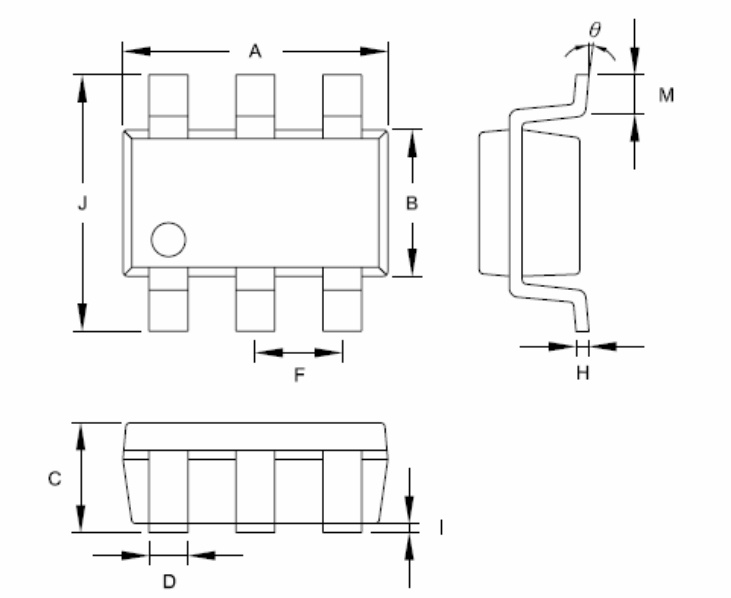


3. Caution: Avoid Wrong VIN Polarity

Users should avoid to apply negative V_{IN} to prevent the LD7291 from damage.

Package Information

SOT-26



Symbol	Dimension in Millimeters		Dimensions in Inches	
	Min	Max	Min	Max
A	2.692	3.099	0.106	0.122
B	1.397	1.803	0.055	0.071
C	-------	1.450	-------	0.058
D	0.300	0.550	0.012	0.022
F	0.838	1.041	0.033	0.041
H	0.080	0.254	0.003	0.010
I	0.050	0.150	0.002	0.006
J	2.600	3.000	0.102	0.118
M	0.300	0.600	0.012	0.024
θ	0°	10°	0°	10°

Important Notice

Leadtrend Technology Corp. reserves the right to make changes or corrections to its products at any time without notice. Customers should verify the datasheets are current and complete before placing order.

Revision History

Rev.	Date	Change Notice
00	2/7/07	Original Specification.
00a	5/1707	Revision: Marking Description