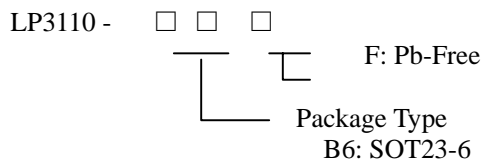


High Performance Regulated Charge Pump

General Description

The LP3110 is a high performance charge pump DC/DC converter that produces a regulated 5V output. No external inductor is required for operation. The operating voltage range is 2.6V to V_{out} . Internal soft-start circuitry effectively reduces the in-rush current both while start-up and mode change. The LP3110 features very low quiescent current, over current protection and short circuit protection. The LP3110 is available in SOT-23-6 package.

Order Information



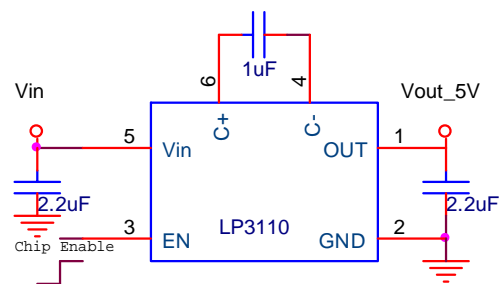
Applications

- ✧ LCD Panel
- ✧ Cellular and Smart mobile phone
- ✧ PDA/DSC
- ✧ Flash LED Driver

Features

- ✧ 2X Mode for Ultra-High Efficiency
- ✧ 2.8V to V_{out} Range Input Voltage
- ✧ Soft Start Function
- ✧ Built-In Short-Circuit Protection
- ✧ 1.2MHz Fixed frequency
- ✧ Built-in Thermal Protection
- ✧ Over Current Protection Function
- ✧ $I_q < 1\mu A$ in Shutdown
- ✧ SOT23-6 Package
- ✧ RoHS Compliant and 100% Lead (Pb)-Free

Typical Application Circuit



Marking Information

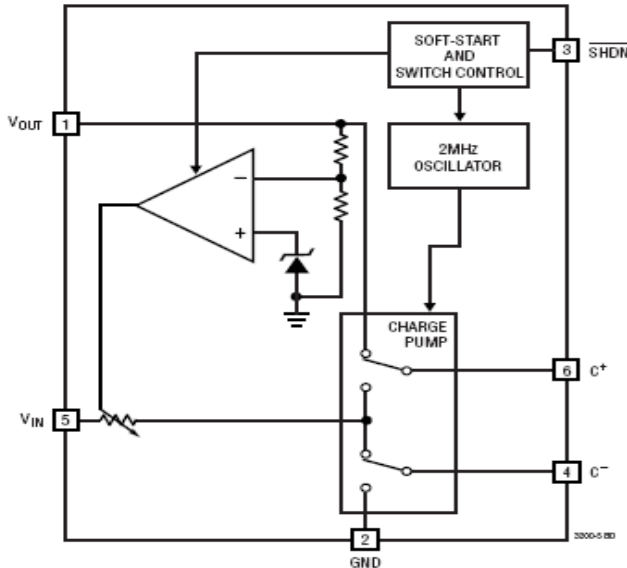
Please see website.

Functional Pin Description

Package Type	Pin Configurations
SOT23-6	(TOP VIEW)

PIN	NAME	DESCRIPTION
1	VOUT	Output Voltage
2	GND	Ground
3	EN	Chip Enable (Active High)
4	CN	Flying Capacitor Negative Terminal
5	VIN	Power Input Voltage
6	CP	Flying Capacitor Positive Terminal

Function Block Diagram



Absolute Maximum Ratings

- ✧ Input Voltage to GND (V_{IN}) ----- 6V
- ✧ EN to GND Voltage (V_{en}) ----- 0.3V to $V_{in}+0.3V$
- ✧ Maximum DC Output Current(I_{out}) ----- 150mA
- ✧ Operating Junction Temperature Range (T_j) ----- 40°C to 150°C
- ✧ Maximum Soldering Temperature (at leads, 1 0sec) ----- 260°C

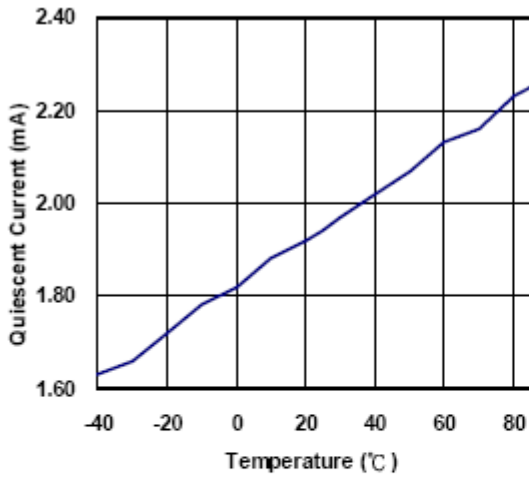
Electrical Characteristics

(Over recommended operating conditions unless specified otherwise) $V_{IN} = 3.6V, EN = High, T_A = 25^{\circ}C$)

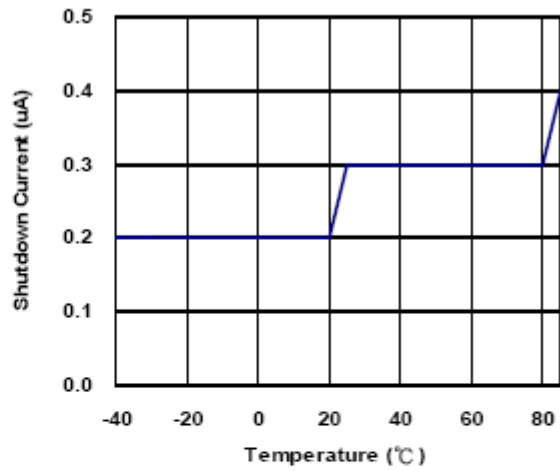
Symbol	Parameter	Conditions	LP3110			Unit
			Min.	Typ.	Max.	
V_{IN}	Input Voltage		2.8		Vout	V
V_{OUT}	Output Voltage Range			5		V
I_Q	Quiescent Current	No Load		150	450	μA
I_{SHDN}	Shutdown Current	EN = GND		1	5	μA
F_{OSC}	Oscillator Frequency		0.8	1.2	1.4	MHz
I_{SC}	Output short Circuit Current Limit	Vout < 0.5V	250	350	400	mA
$V_{EN(L)}$	Enable Threshold Low				0.4	V
$V_{EN(H)}$	Enable Threshold High		1.4			V
I_{EN}	Input Low Current	$V_{IN} = V_{EN} = 5.5V$	-1		1	μA

Typical Operating Characteristics

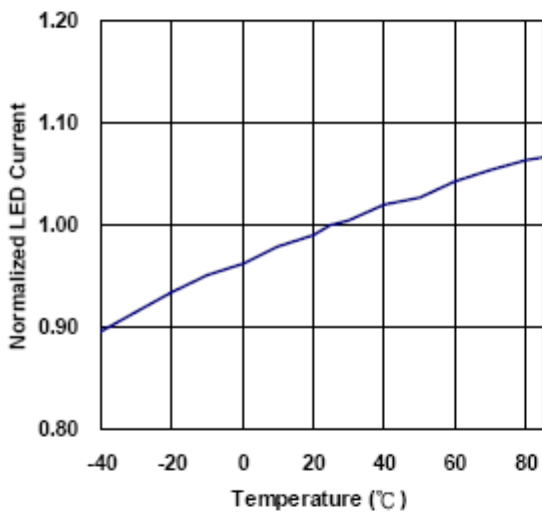
Quiescent Current vs. Temperature



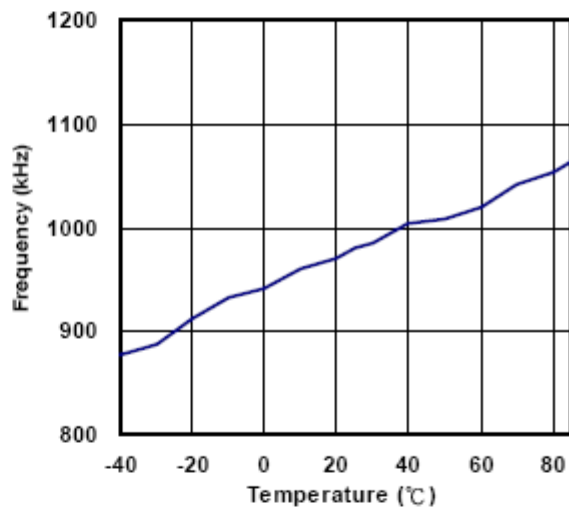
Shutdown Current vs. Temperature



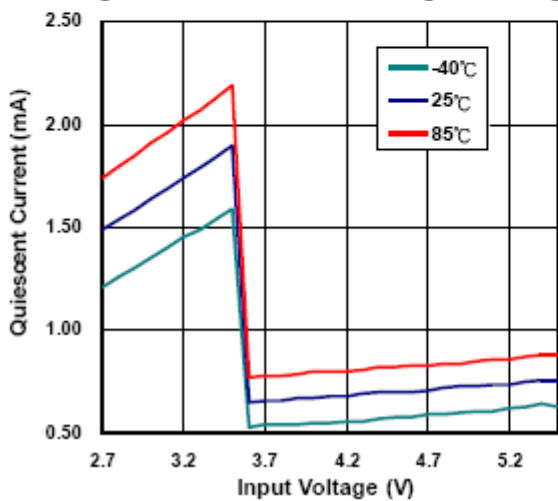
Normalized LED Current vs. Temperature



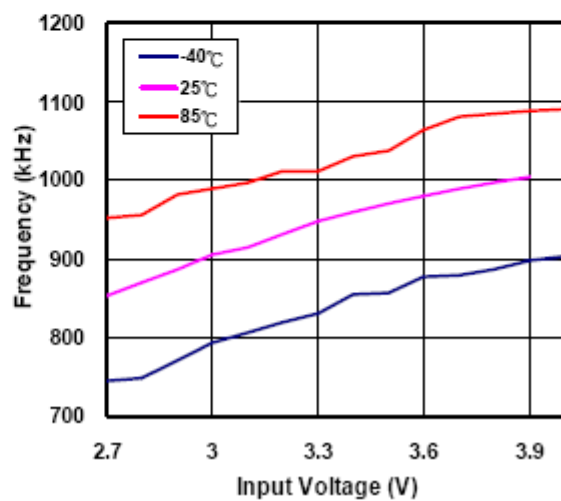
Frequency vs. Temperature



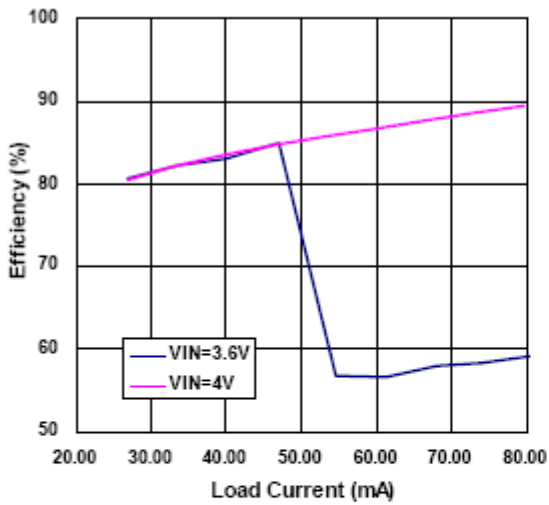
Quiescent Current vs. Input Voltage



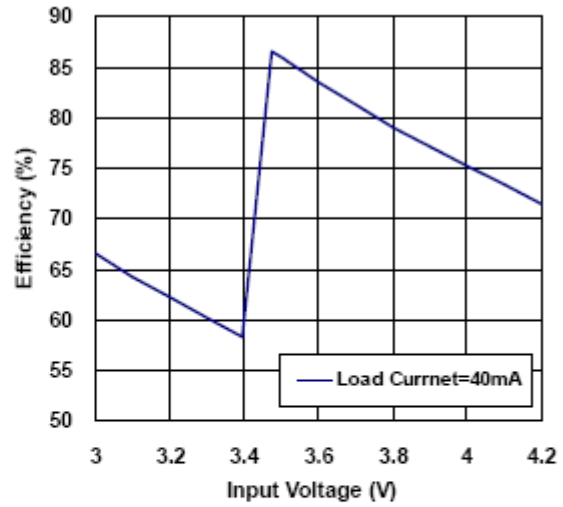
Frequency vs. Input Voltage



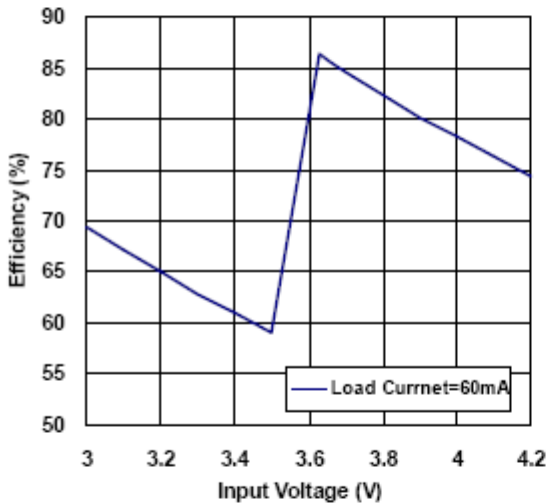
Efficiency vs. Load Current



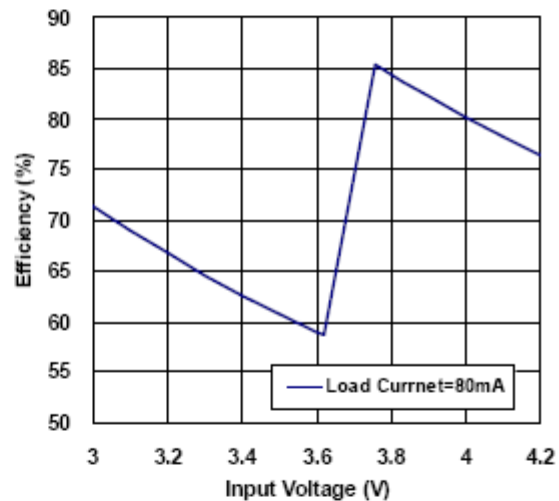
Efficiency vs. Input Voltage



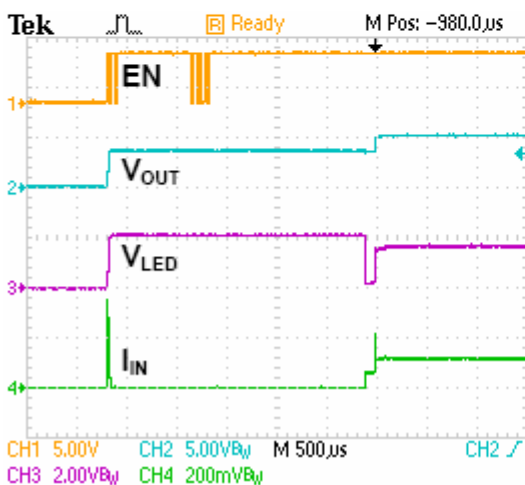
Efficiency vs. Input Voltage



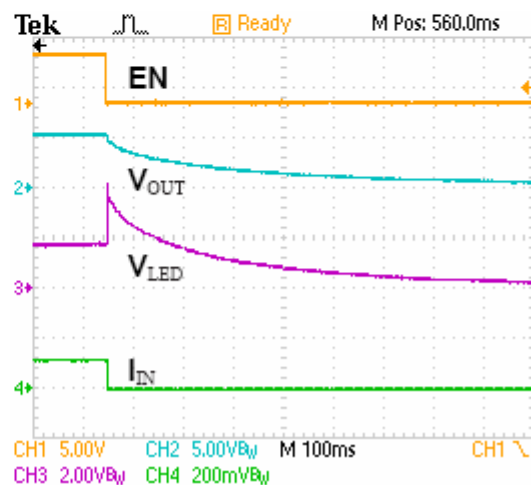
Efficiency vs. Input Voltage



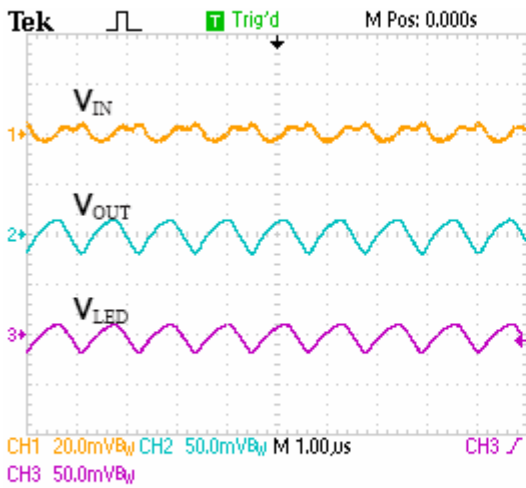
Enable Transient Response



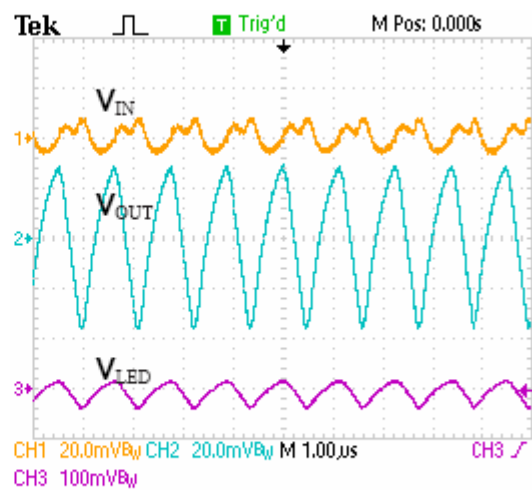
Shutdown Timeout



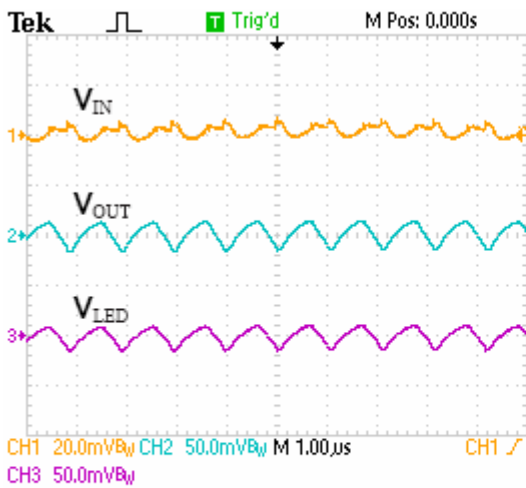
40mA Load at $V_{IN}=3V$



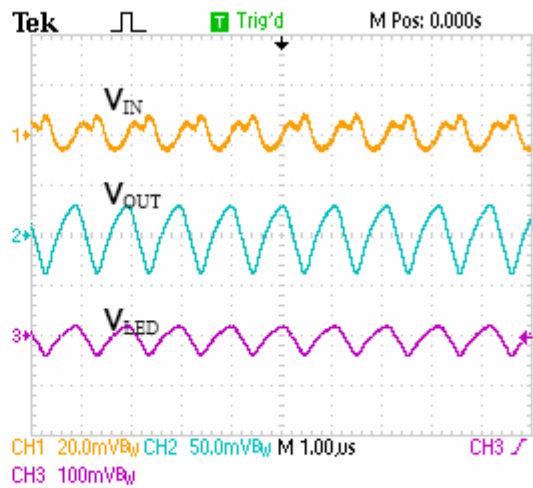
80mA Load at $V_{IN}=3V$



40mA Load at $V_{IN}=3.6V$



80mA Load at $V_{IN}=3.6V$



Application Information

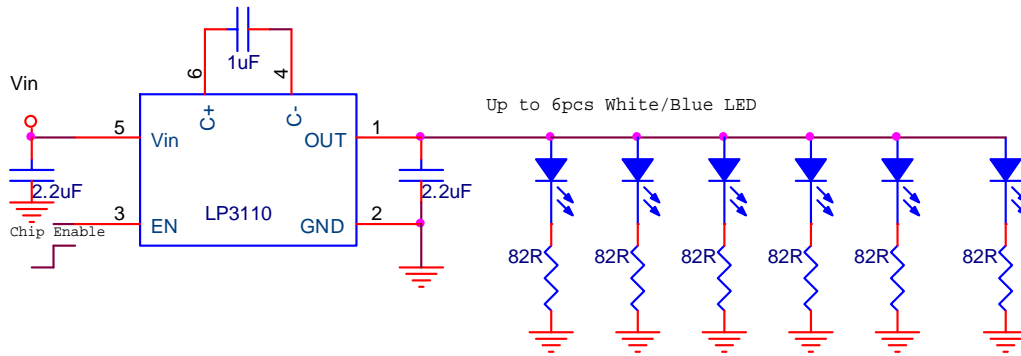


Figure2: Up to 6pcs White/Blue LED Driver from Li-Ion Battery Source

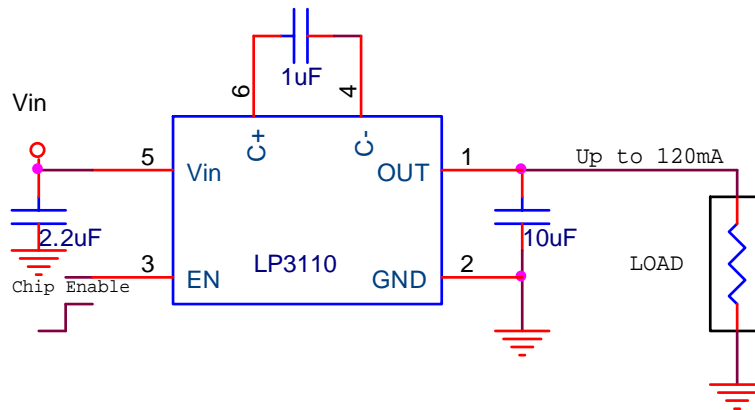


Figure3: Step-up to 5V with loading application from Li-Ion Battery Source

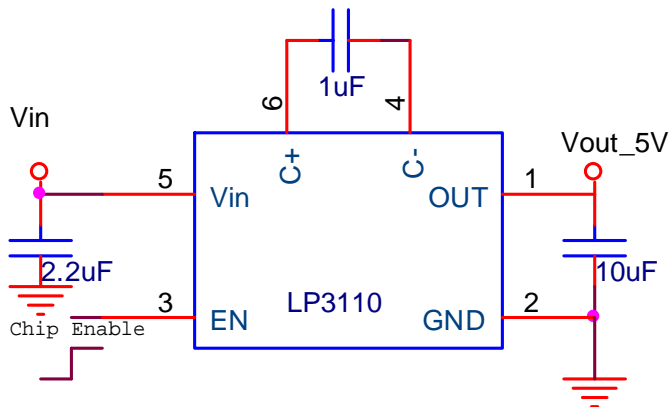


Figure4: Step-up to 5V with LCD Vbais application from Li-Ion Battery Source

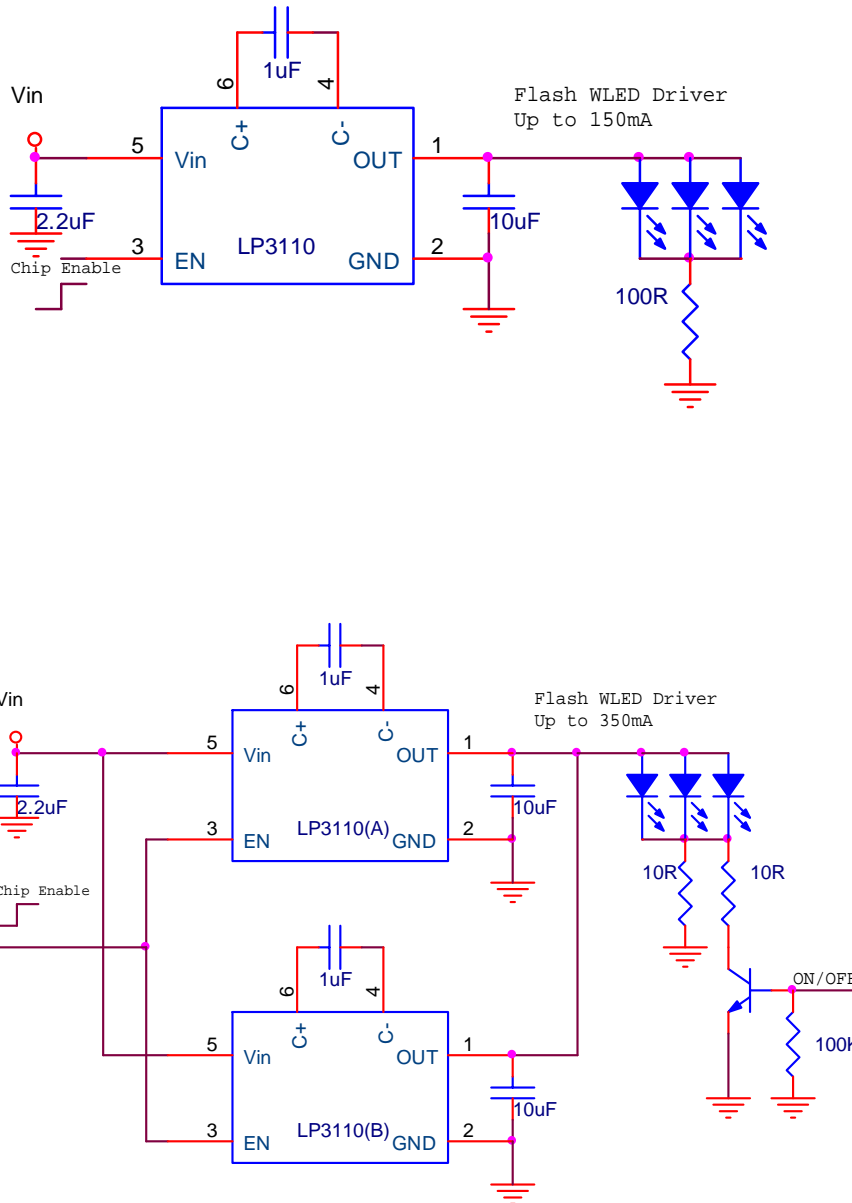
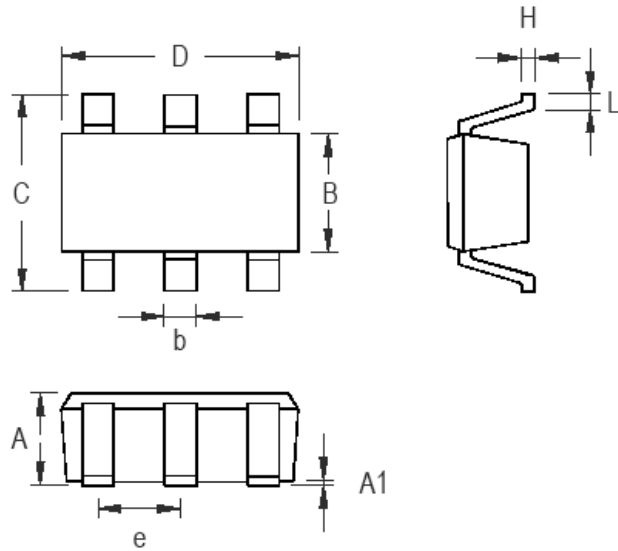


Figure6: Large Current Flash LED Driver from Li-Ion Battery Source

Packaging Information

SOT23-6 Package



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.889	1.295	0.031	0.051
A1	0.000	0.152	0.000	0.006
B	1.397	1.803	0.055	0.071
b	0.250	0.560	0.010	0.022
C	2.591	2.997	0.102	0.118
D	2.692	3.099	0.106	0.122
e	0.838	1.041	0.033	0.041
H	0.080	0.254	0.003	0.010
L	0.300	0.610	0.012	0.024