

## High Efficiency 1.2MHz, 30V BOOST LED Driver

### FEATURES

- 2.5V to 5.5V Input Voltage
- Drives up to 7 Series WLEDs
- Low 250mV Feedback Voltage
- 1.2MHz Fixed Switching Frequency
- Internal 1.6A Switch Current Limit
- Internal Compensation
- Thermal Shutdown
- Over Voltage Protection
- Dimming with wide Frequency Range
- Available in a 6-pin SOT-23 package

### APPLICATIONS

- Camera Flash White LED
- PDA LED back light
- Digital still cameras

### GENERAL DESCRIPTION

The EC3730 is a step-up converter designed for driving up to 7 series white LED's from a single cell Lithium Ion battery. Its low 250mV feedback voltage reduces power loss and improves efficiency.

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. Tiny package type provides the best solution for PCB space saving and total BOM cost.

### TYPICAL APPLICATION

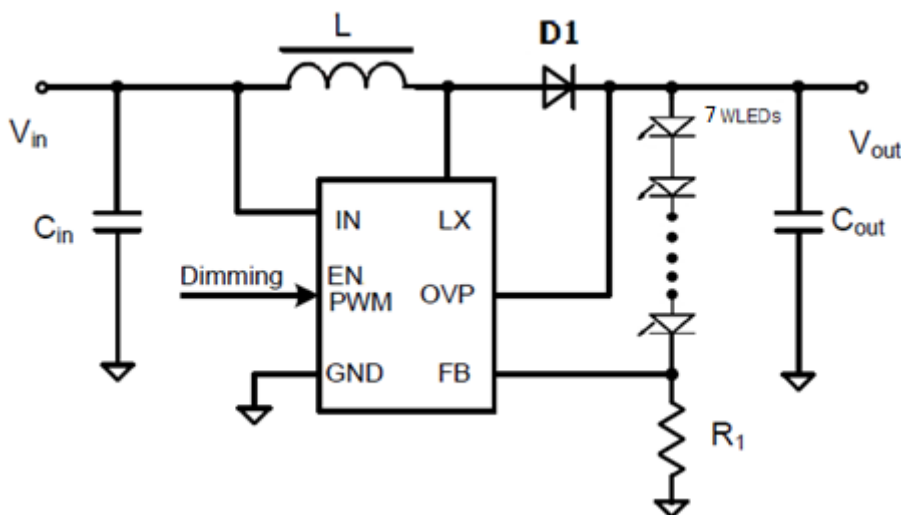
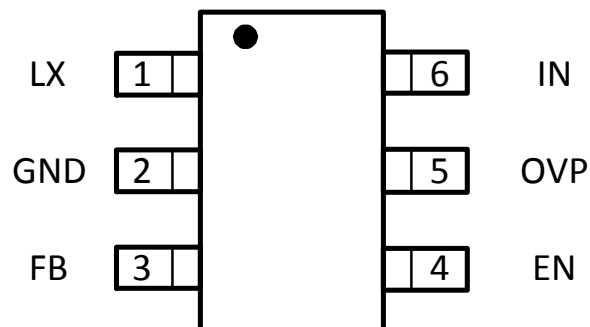


Figure1. Basic Application Circuit

## PACKAGE & PIN DESCRIPTION



PIN	NAME	FUNCTION
1	LX	Power Switch Output. LX is the drain of the internal MOSFET switch. Connect the power inductor and output rectifier to LX. LX can swing between GND and 30V.
2	GND	Ground Pin
3	FB	Feedback Input. The FB voltage is 0.25V. Connect a resistor divider to FB.
4	EN	Regulator On/Off Control Input. A high input at EN turns on the converter, and a low input turns it off. When not used, connect EN to the input supply for automatic startup.
5	OVP	Over Voltage Input. OV measures the output voltage for open circuit protection. Connect OV to the output at the top of the LED string
6	IN	Input Supply Pin. Must be locally bypassed.

**ABSOLUTE MAXIMUM RATINGS**

PARAMETER	ABSOLUTE MAXIMUM RATINGS	UNIT
$V_{IN}, V_{EN}$	-0.3 to 6	V
$V_{SW}$	-0.3 to 30	V
All Other Pins	-0.3 to 6	V
Continuous Power Dissipation( $T_A=+25^{\circ}\text{C}$ )	0.6	W
Junction Temperature	150	$^{\circ}\text{C}$
Operating Temperature Range	-40 to 85	
Lead Temperature	260	$^{\circ}\text{C}$
Storage Temperature	-65 to 150	$^{\circ}\text{C}$
Thermal Resistance $\theta_{JA}$	250	$^{\circ}\text{C}/\text{W}$
Thermal Resistance $\theta_{JC}$	130	$^{\circ}\text{C}/\text{W}$

**RECOMMENDED OPERATING CONDITIONS**

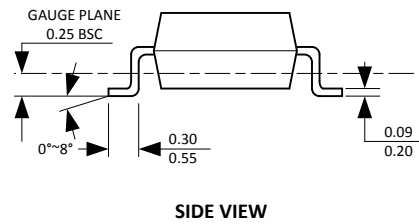
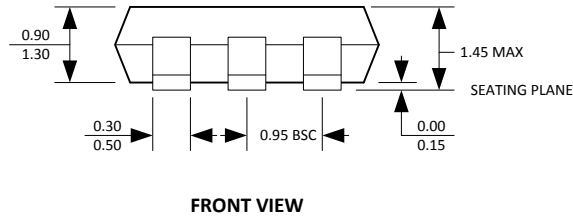
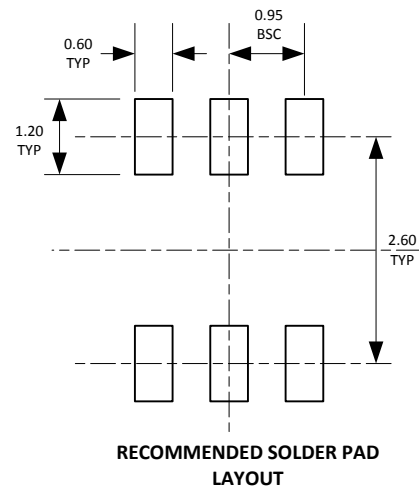
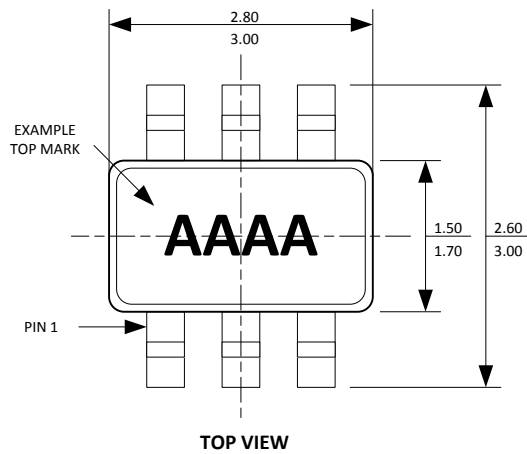
PARAMETER	RECOMMENDED	UNIT
Supply Voltage $V_{IN}$	2.5 to 5.5	V
Output Voltage $V_{OUT}$	$V_{IN}$ to 30	V
Operating Junction Temp.( $T_J$ )	-40 to 125	$^{\circ}\text{C}$

**ELECTRICAL CHARACTERISTICS**

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Current(Shutdown)	$I_{IN}$	$V_{EN}=0\text{V}$		0.1	1	$\mu\text{A}$
Quiescent Current		$V_{FB}=0.2\text{V}, \text{switch}$		0.15	0.3	mA
SW Leakage		$V_{SW} = 20\text{V}$			1	$\mu\text{A}$
SW On Resistance				400	650	m $\Omega$
Operating Input Voltage			2.5		5.5	V
Current Limit	$I_{LIMIT}$	$V_{IN}= 4\text{V}, \text{Duty cycle}=50\%$		1.6		A
Oscillator Frequency	$f_{SW}$			1.2		MHz
Maximum Duty Cycle	$D_{MAX}$			90		%
Feedback Voltage	$V_{FB}$		237	250	263	mV
FB Input Bias Current			-50	-10		nA
EN Threshold	$V_{EN}$			1		V
OVP Threshold	$V_{ovp}$	OVP Threshold		28		
Thermal Shutdown				160		$^{\circ}\text{C}$

## PACKAGE INFORMATION

### SOT23-6



- NOTE:
- 1.DIMENSIONS ARE IN MILLIMETERS.
  - 2.DRAWING NOT TO SCALE.
  - 3.DIMENSIONS ARE INCLUSIVE OF PLATING.
  - 4.DIMENSIONS ARE EXCLUSIVE OF MOLD FLASH AND METAL BURR.