ACE715C

High Efficiency 1.2MHz 30V Boost LED Driver

Description

ACE715C 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.

ACE715C is available in SOT23-6 package that is PB free.

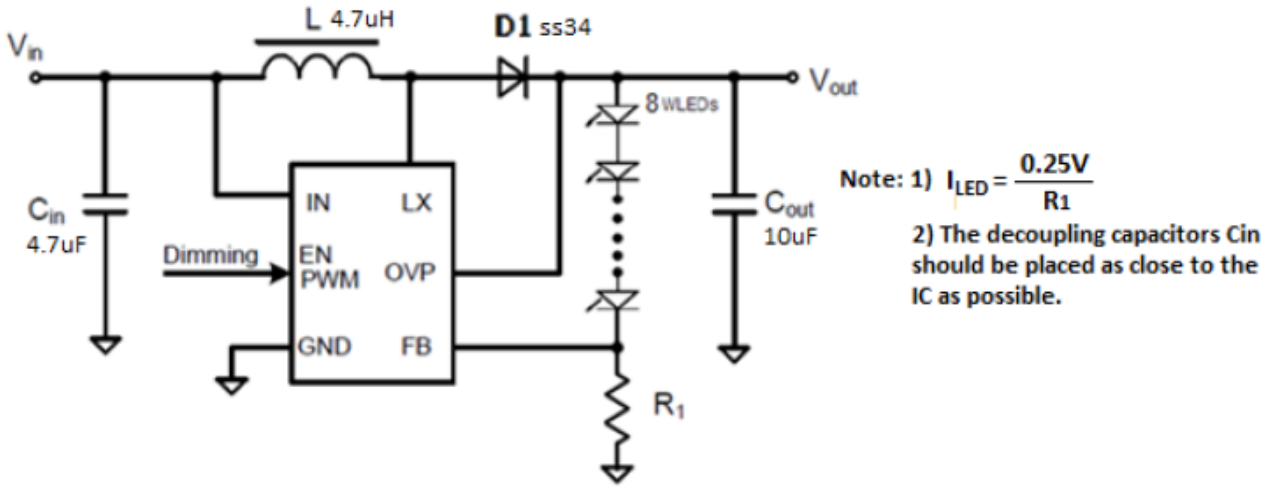
Features

- 2.5V to 5.5V Input Voltage
- Drivers up to 8 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 SOT23-6 Package

Application

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

Typical Application

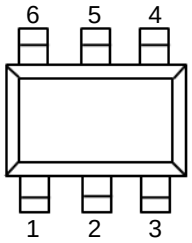


Absolute Maximum Ratings

Parameter		Max
IN, EN Pin Voltage		-0.3V to 6V
SW Pin Voltage		-0.3V to 30V
All Other Pin Voltage		-0.3V to 6V
Junction Temperature (TJ)		150°C
Ambient Temperature (TA)		-40°C to 85°C
Power Dissipation	SOT23-6	600mW
Thermal Resistance (θ_{JA})		250°C /W
Thermal Resistance (θ_{JC})		130°C /W
Storage Temperature (Ts)		-65°C to 150°C
Lead Temperature & Time		260°C, 10Sec

Packaging Type

SOT-23-6



Pin No.	Symbol	Description
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.
3	FB	Feedback Input. The FB voltage is 0.25V. Connect a resistor divider to FB.
4	EN	Chip enable, but a PWM signal with various duty cycle can directly sent to EN pin to achieve the backlight dimming.
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	Power Supply. Must be locally bypassed.

Ordering Information

ACE715CXX + H

- Halogen - free
- Pb - free
- GM : SOT-23-6

Recommended Work Conditions

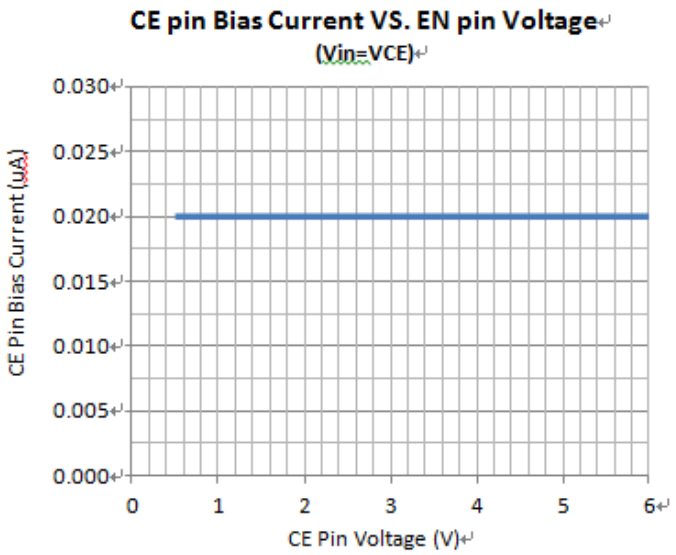
Parameter	Value
Input Voltage Range	2.5V to 5.5V
Output Voltage Range	VIN to 30V
Operating Junction Temperature(Tj)	-40°C –125°C

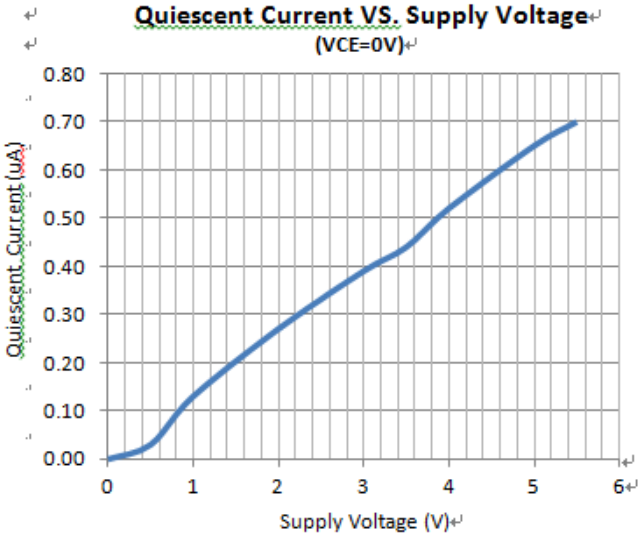
Electrical Characteristics

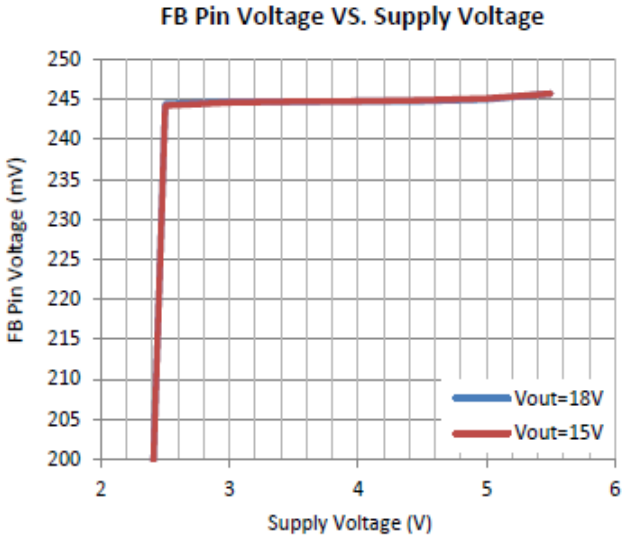
(T_A=25℃, V_{IN}=3V, V_{CE}=3V, unless otherwise noted)

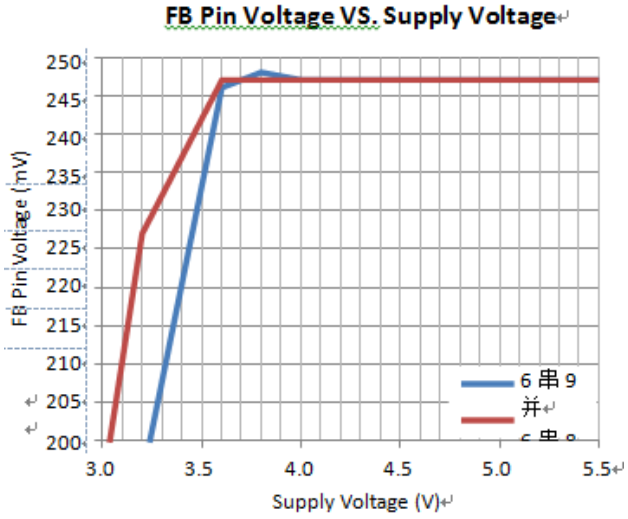
Parameter	Symbol	Conditions	Min	Typ	Max	Units
V_{IN}	Operating Input Voltage		2.5		5.5	V
V_{FB}	Feedback Voltage		237	250	263	mV
I_{FB}	FB input Bias Current		-50	-10		nA
	SW Leakage	V_{SW}=20V			1	uA
I_Q	Quiescent Current	V_{FB}=0.2V, Switch		0.15	0.3	mA
		V_{EN}=0V		0.1	1	uA
F_{SW}	Oscillator Frequency			1.2		MHz
D_{MAX}	Maximum Duty Cycle			90		%
V_{EN}	EN Threshold			1		V
V_{OVP}	OVP Threshold			28		V
	SW On-Resistance			400	650	mΩ
I_{LIMIT}	Current Limit	V_{IN}=4V, Duty Cycle = 50%		1.6		A
	Thermal Shutdown			160		°C

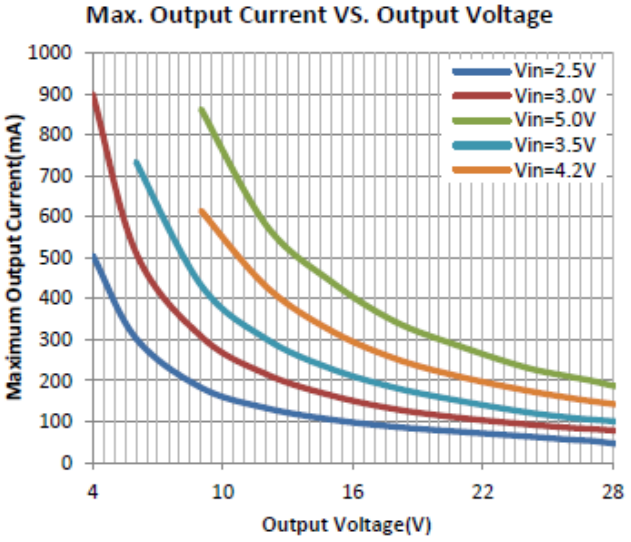
Typical Performance Characteristics

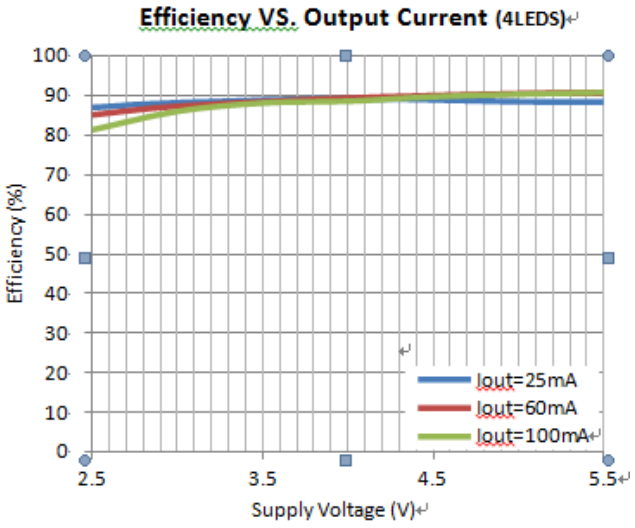






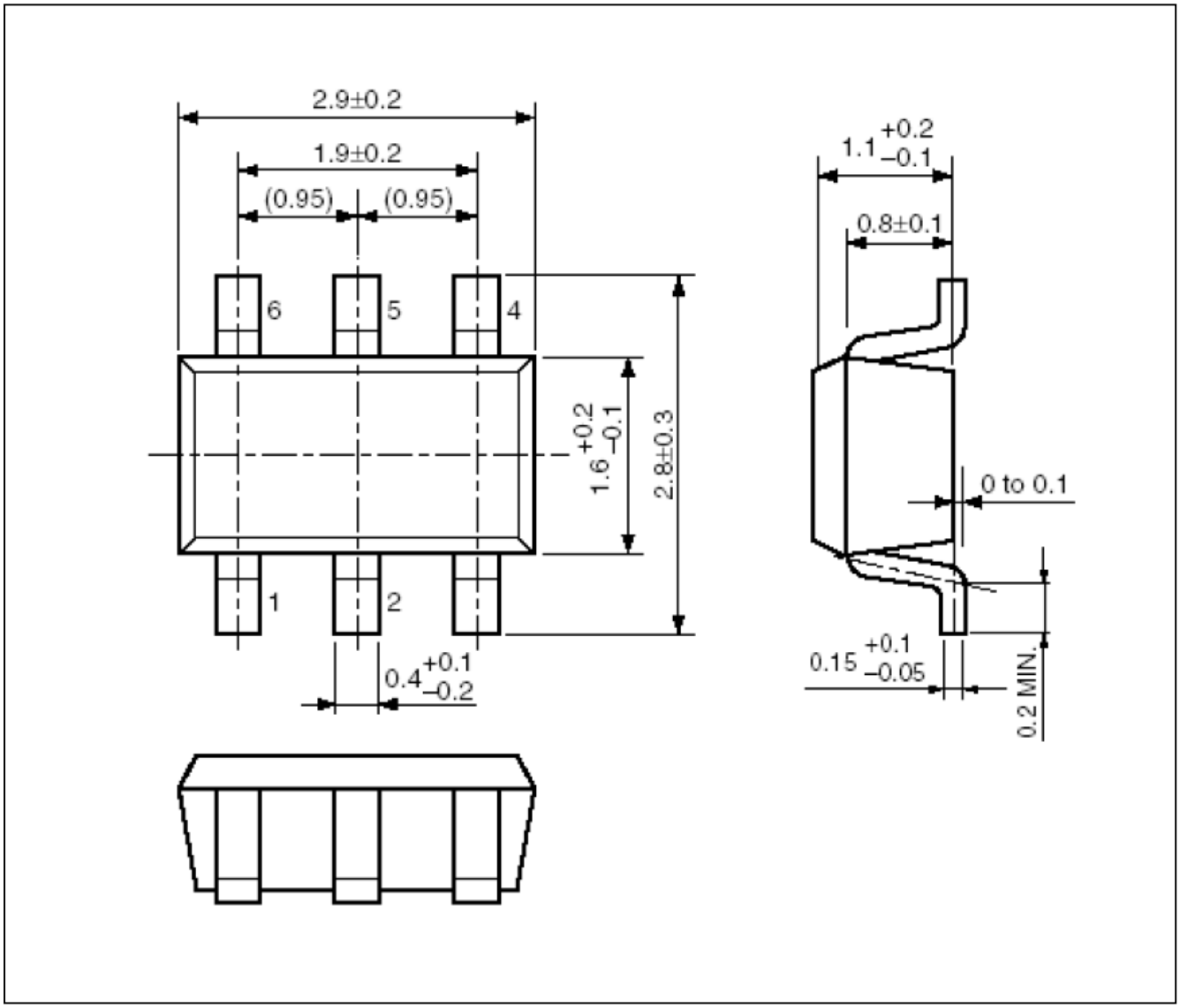






Packing Information

SOT-23-6



Notes

ACE does not assume any responsibility for use as critical components in life support devices or systems without the express written approval of the president and general counsel of ACE Electronics Co., LTD. As sued herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and shoes failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user.
2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.