

24V, 1.5A 3MHz Boost Converter

FEATURES

- Up to 24V Output Voltage
- Wide Operation Range: 2V to 6V
- Maximum 3MHz Operating Frequency
- PWM Dimming Control
- Shutdown Current <1uA
- Current Limit Cycle-by-Cycle
- Low Current Sense Threshold: 200mV
- 24V Over Output Voltage Protection
- Compact SOT23-6 Package

APPLICATIONS

- Compact Back Light Module
- Power Source for LED
- Constant Current Source

ORDERING INFORMATION

PART	PACKAGE PIN	TOP MARK
ETA3300S2G	SOT23-6	LEYW <div style="display: flex; align-items: center;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 10px; height: 10px; margin-right: 5px;"></div> Date Code </div> <div style="display: flex; align-items: center;"> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 10px; height: 10px; margin-right: 5px; margin-left: 10px;"></div> Product Number </div>

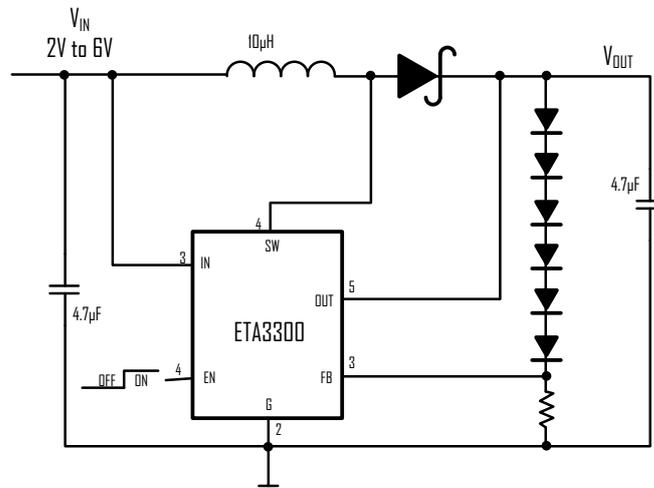
DESCRIPTION

The ETA3300 PFM step-up Converter drives white LEDs with a constant current to provide backlight in cell phones, PDAs, and other hand-held devices. It features allowing series connection of the white LEDs so that the LED currents are identical for uniform brightness. An enable input can be pulsed repeatedly to adjust LEDs brightness. The fast 500kHz to 3MHz operation frequency allows for smaller capacitor and inductor. Fault condition protection uses cycle-by cycle current limiting to sense maximum inductor current and over-voltage protection. The 0.2V low reference voltage minimized the power loss across the current sense resistor.

The converter can operate from 2V to 6V, and capable of delivering maximum 200mA output current at 4-LEDs application with 3V input voltage. Quiescent current drawn from power source is as low as 120uA. All of these features make ETA3300 be suitable for the portable devices, which are supplied by a single battery.

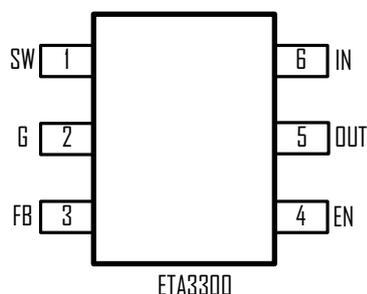
ETA3300 is available in SOT23-6 package that is PB free.

TYPICAL APPLICATION



PIN CONFIGURATIO

PIN DESCRIPTION



Pin No.	Name	Description
1	SW	Switching Pin
2	GND	Ground Pin
3	FB	Pin for Feedback Voltage
4	EN	Chip Enable Pin (Active with "H")
5	OUT	Over Voltage Protection
6	IN	Power Supply Pin

ELECTRICAL CHACACTERISTICS

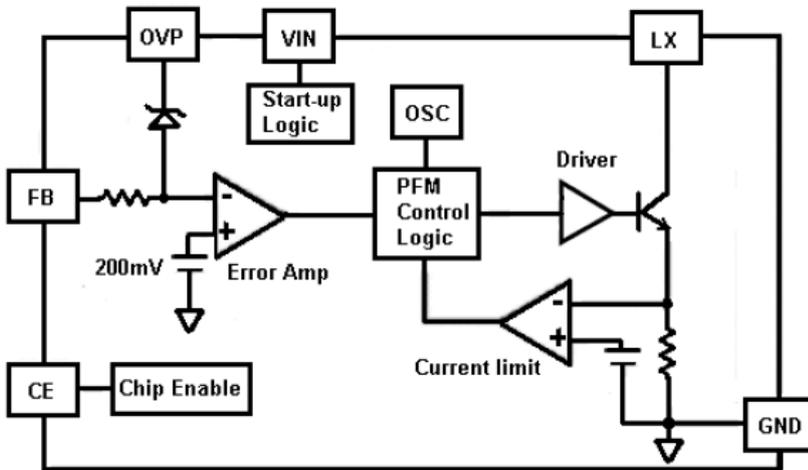
T_a=25°C, V_{IN}=3V, V_{CE}=3V, unless otherwise not

Sympl	Item	CONDITIONS	Min.	Typ.	Max	Unit
V _{IN}	Operating Input Voltage		2		6	V
V _{fb}	Feedback Voltage		0.190	0.200	0.210	V
I _{fb}	FB pin Bias Current		10	45	100	nA
I _q	Quiescent Current	V _{fb} =0.3V		93	120	μA
		V _{ce} =0V		0.4	1.0	μA
F _{oce_max}	Max. Switching Freq.	V _{fb} =0		2		MHz
I _{limit}	Switching Current limit			1.6		A
V _{cesat}	Switching V _{cesat}	I _{LX} =300mA		260		mV
I _{LX}	Switching pin leak cURRENT	V _{Ix} =5V		0.11		μA
V _{ceH}	CE Voltage High	V _{ce} = 0 to 3V		0.65		V
V _{ceL}	CE Voltage Low	V _{ce} = 3 to 0V		0.61		V
I _{ce}	CE pin Bias Current			18		μA
V _{ovp}	Over Voltage Protection			24		V

ABSOLUTE MAXIMUM RATING

Parameter	Value
Max Input Voltage	-0.3V to 8V
CE Pin Voltage	-0.3V to (V _{in} +0.3V)
Lx Pin Output Current	1.6A
Lx Pin Voltage	24V
Operating Junction Temperature (T _J)	125°C
Ambient Temperature (T _A)	-40°C to 85°C
Power Dissipation	SOT-23-6 250mW
Storage Temperature (T _s)	-40°C to 150°C
Lead Temperature & Time	260°C, 10Sec

BLOCK DIAGRAM



APPLICATION INFORMATION

Dimming Control

1. Using a PWM Signal to CE Pin

When adding the PWM signal to CE pin, the ETA3300 is turned on or off by the PWM signal, so the LEDs operate at either zero or full current. The average LED current increase proportionally with the duty cycle of the PWM signal. The frequency range of the PWM signal is from 1 kHz to 300kHz.

2. Using a DC Voltage

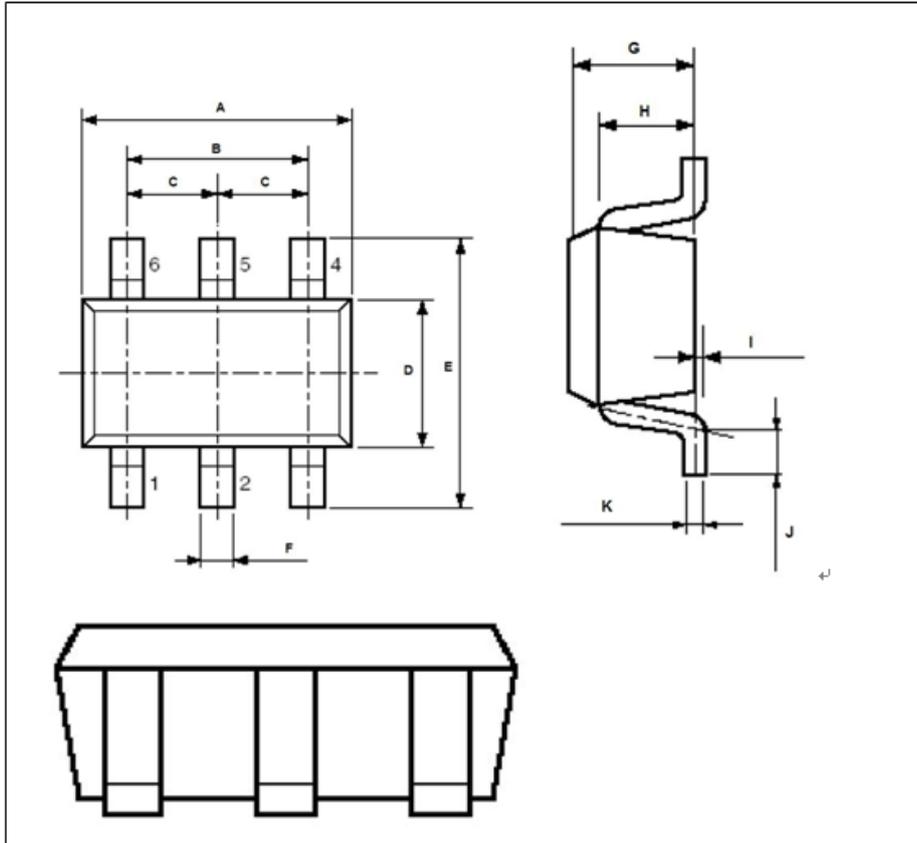
From the Figure 2, we can add a DC voltage to FB pin, we adjust the LED current by changing the DC voltage, which control the brightness, DC voltage range is from 0V to 2V.

3. Using a Filtered PWM Signal

The filtered PWM signal can be considered as an adjustable DC voltage. It can be used to replace the variable DC voltage source in dimming control. The circuit is shown in Figure 3

PACKAGE INFORMATION

SOT23-6 PACKAGE OUTLINE AND DIMENSION



SYMBL	MILLIMETER		
	MIN	NOM	MAX
A	2.7	2.9	3.1
B	1.7	1.9	2.1
C	--	0.95	--
D	1.5	1.6	1.8
E	2.5	2.8	3.1
F	0.2	0.4	0.5
G	1	1.1	1.3
H	0.7	0.8	0.9
I	0	--	0.1
J	0.2	--	--
K	0.1	0.15	0.25