General Description

The ACP2727 is an inductor-based DC/DC boost converter designed to drive LED arrays. 2A switching current allows ACP2727 to be used in different 7' to 10' LCD panel backlights (3*13 LED arrays typically).

A constant frequency 1MHz PWM control scheme is employed in this IC, which means tiny external components can be used. Specifically, 1mm tall 15μH inductor and 10μF output capacitor for the typical application is sufficient.

The over output voltage protection is equipped in ACP2727, which protects the IC under open load condition. The ACP2727 includes soft-start, current limit and OTSD to protect the circuit.
The ACP2727 is available in standard SOT-23-6.

Features

- VIN Operating Range : 3V to 30V
- Low 200mV Feedback Voltage
- Cycle by Cycle Current Limit: 2A
- 20KHz to 1MHz Wide PWM Dimming
- Internal Soft Start
- Over Voltage Protection
- Over Temperature Protection
- Small SOT23-6 Packages
- RoHS Compliant and Halogen Free

Application

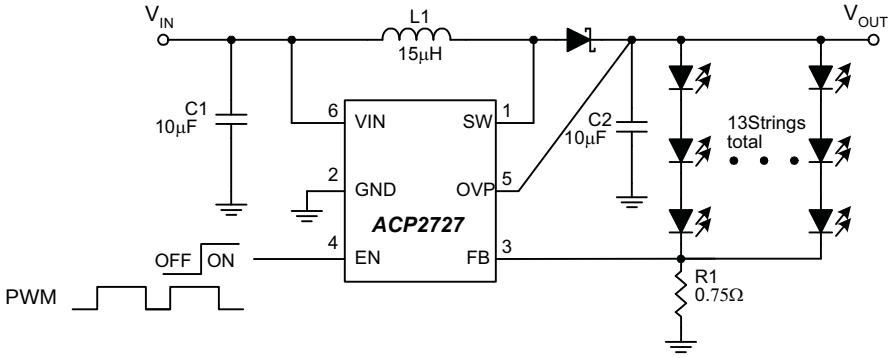
- 7'-10' LED Panel Backlight
- Portable DVD/TV
- GPS
- Digital Photo Frame

Ordering and Marking Information

Standard Part NO.	VFB	Package	Packing	Min. Quantity	RoHS
ACP2727-200CTRAL	200mV	SOT23-6	Tape&Reel	3000PCS	Pb Free

Remark: for marking information,please see sample or contact our sales for more detail infomation.

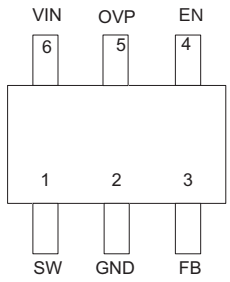
Typical Application Circuit



Circuit for driving 39 WLEDs

Pin Configuration and Description

Pin Configuration

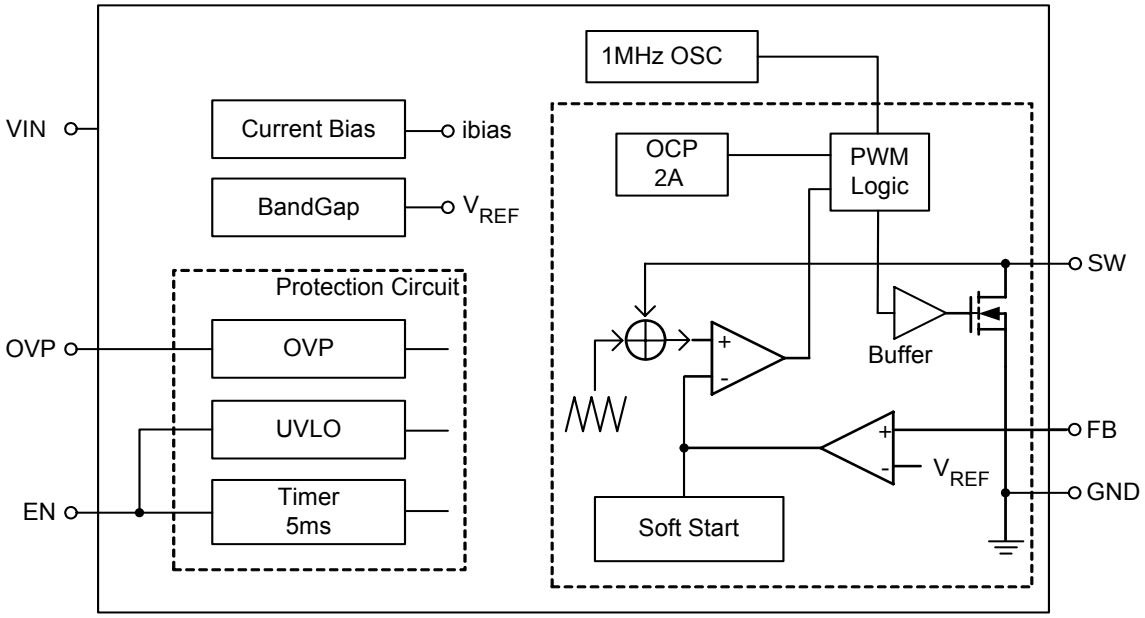


Pin Description

Pin#	Symbol	Function
1	SW	Switching Pin.
2	GND	Ground Pin. The exposed pad must be soldered to a large PCB and connected to GND for maximum power dissipation.
3	FB	Feedback Pin, put a resistor to GND to setting the current.
4	EN	Enable and Dimming Control Pin. (*note1)
5	OVP	Over-voltage Protection Input Pin. Connect to the output directly. On OVP condition, the output voltage will be clamped
6	VIN	Input Supply.

Note1: Connect to a high input to enable the IC or a low input to disable the IC.

Function Block



Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Input Voltage	V_{IN}	-0.3 to 32	V
SW Voltage	V_{SW}	-0.3 to 36	V
FB Voltage	V_{FB}	-0.3 to 4	V
EN Voltage	V_{EN}	-0.3 to 32	V
Thermal Resistance (Junction to Ambient, No Heat Sink)	θ_{JA}	170	℃/W
Junction Temperature	T_J	-40-150	℃
Storage Temperature Range	T_{STG}	-65 to 150	℃
Operating Temperature Range	T_{OP}	-40-85	℃
Lead Temperature (Soldering, 10sec)	T_{LEAD}	260	℃
ESD (Machine Model)		600	V
ESD (Human Body Model)		4000	V

Electrical Characteristics

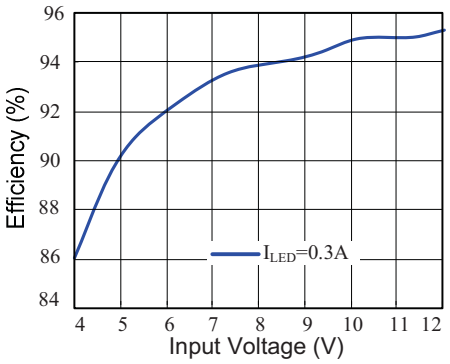
(V_{IN}=3.6V, T_A=25°C, unless otherwise specified.)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Operating Voltage	VIN		3		30	V
Feedback Voltage (Note 2)	V_{FB}	I_{OUT}=20mA, T_A=-40℃ to 85℃	196	200	204	mV
FB Pin Bias Current	I_{FB}			35	100	nA
Quiescent Current	I_Q	V_{FB}=0.3V, no switching		0.1	0.7	mA
Shutdown Quiescent Current	I_{SHDN}	V_{EN}=0V		10	16	μA
Switching Frequency	f			1.0		MHz
Maximum Duty Cycle	D_{MAX}			90		%
Switch Current Limit	I_{LIMIT}	D=60%	2.0			A
Switch V_{CE} Saturation Voltage	V_{CESAT}	I_{SW}=0.6A		300		mV
EN Pin Voltage	V_{EN}	Active high	1.5			V
		Active low			0.4	
OVP Voltage	V_{OVP}			30		V
Soft-start Time	tSS			100		ns
Thermal Shutdown	T_{OTSD}			150		℃

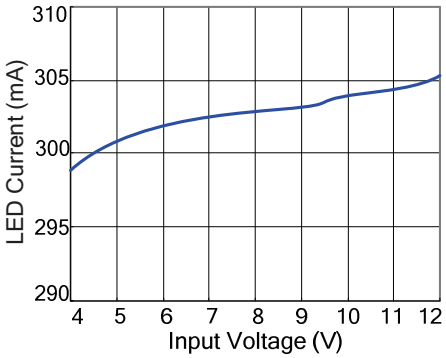
Typical Operating Characteristics

(WLED forward voltage (V_{IN})=5V at I_F=300mA, unless otherwise noted.)

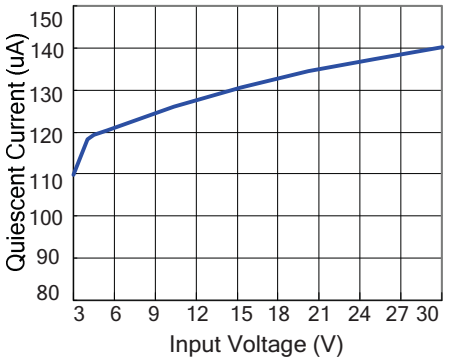
Efficiency vs. Input Voltage



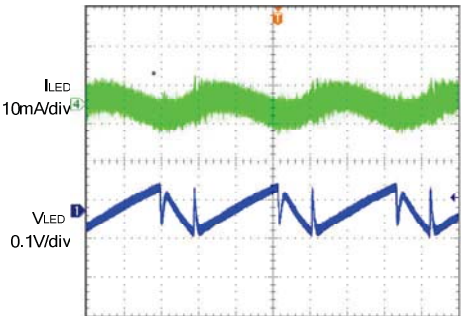
LED Current vs. Input Voltage



Quiescent Current vs. Input Voltage

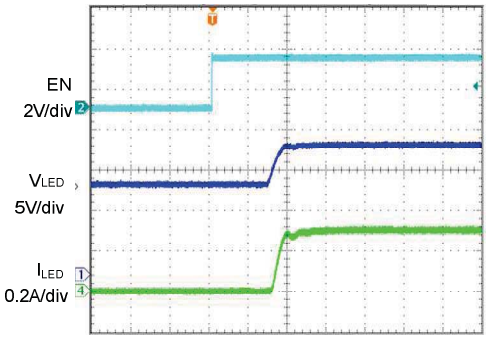


LED Current Pripple



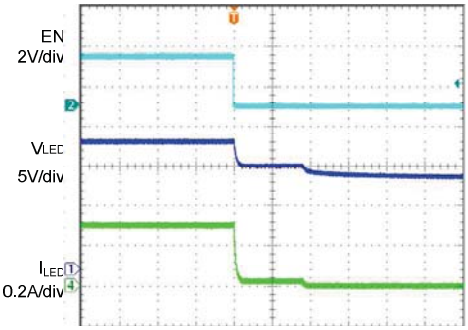
Time (200ns/div)

Startup from Enable



Time (100us/div)

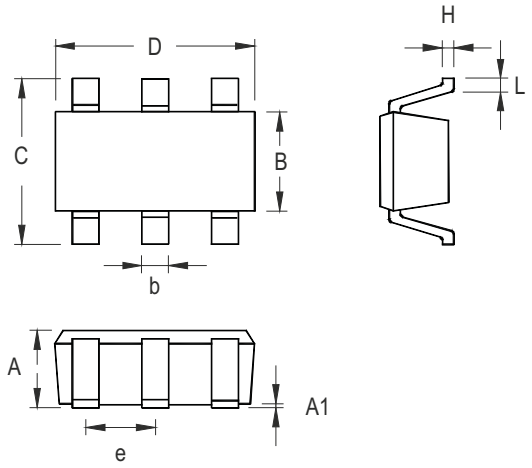
Shutdown from Enable



Time (1ms/div)

Package Information

SOT23-6



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

SOT-23-6 Surface Mount Package