



High Current and High Efficiency Backlight WLED Controller for Large LCD Panels

■ General Description

The OCP8128 is the LED driver controller IC which loads the constant current driver of LED driver for use in backlighting LCD display from 26" to 56"+ and other LED lighting applications with multiple strings of LEDs. OCP8128 is a high current and high efficiency backlight LED driver controller which provides 6-channel LED current sense inputs in an "OR" configuration for improved backlight reliability and efficiency. This allows the backlight to remain functioning in the event that any string is damaged during normal operation.

The operation frequency is user-defined with spread spectrum operation feature that minimizes system EMI during operation.

OCP8128 provides an internal PWM dimming function, where the PWM dimming signal is phase-shifted by 60 degree per channel when all 6-channels are connected. The proprietary feature significantly enhances the system performance during PWM dimming. The phase shift number for PWM dimming operation is selected by 2, 3, 4, 5 and 6 phase. The proprietary feature reduces output current ripple and improves the quality of the LCD display.

The OCP8128 also supports external PWM dimming and analog dimming control, providing the most flexible solution for LED display applications. The internal PWM frequency can be synchronized with an external pulse signal.

The OCP8128 provides the LED over-current protection (OCP), LED short-circuit protection (SCP), Power MOSFET over-current protection (OCP), LED open/short circuit, under-voltage lock-out (UVLO), a fault STATUS output, external synchronization function. The LPWM frequency can be synchronized to an external pulse signal.

OCP8128 integrated a balance current controller for each LED string. It results in high efficiency. The shutdown current of OCP8128 is approximately max. 2.0uA.

The OCP8128 is available in SOP-28L package, and it is RoHS compliant and 100% lead Pb free. Operating temperature range of the OCP8128 is from -40°C to 85°C.

■ Features

- 6-string in parallel
- Number of LEDs in series limited by external MOSFETs rating
- Integrated high efficiency switch mode current balance controller
- Spread Spectrum Feature on Operating Frequency
- Support Analog and External PWM Dimming
- Integrated user selectable 2, 3, 4, 5 and 6 phase-shift PWM dimming
- PWM dimming synchronized with external signal
- LED Short Circuit Protection
- User Defined Short Circuit Protection threshold
- Over-current Protection
- Wide Supply Voltage Range: 7.0V ~ 16V
- Under-voltage lock-out
- LED Fault STATUS output
- Integrated high frequency oscillator
- Low Standby current <2uA
- Thermal shutdown
- T_A= -40 ~ 85 °C
- Available in SOP-28L Package

■ Applications

- LCD White or RGB Backlighting
- LCD TVs
- Automotive and Infotainment Displays
- Battery Powered LED Lamps
- Other DC/DC LED Drivers
- General LED Lighting Applications
- General Purpose Constant Current Source
- Signage and Decorative LED Lighting

■ Pin Configuration

SOP-28L (Top View)

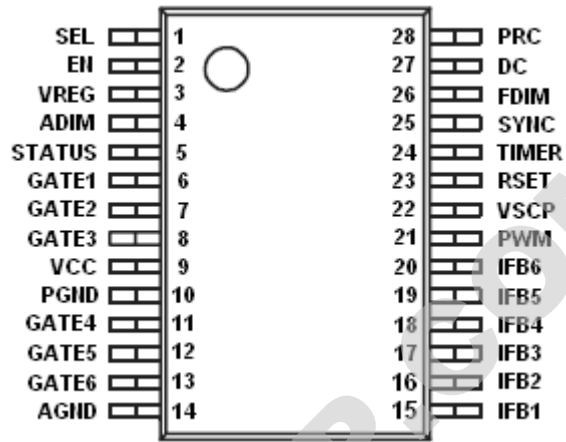
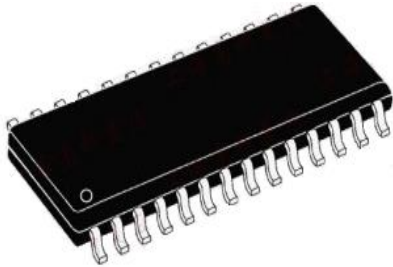


Figure 1, Pin Assignments of OCP8128

Pin Name	Pin No.	I/O	Pin Function
	SOP28L		
SEL	1	I	Internal PWM Synchronization ratio selection
EN	2	I	Enable Pin
VREG	3	I/O	Internal Regulator Output
ADIM	4	I	Analog Dimming Input
STATUS	5	O	LED Operation Status Output (open drain)
GATE1~3	6~8	O	External MOSFET(1~3) Gate Drive for String 1~3 LED Balance Current Control
VCC	9	P	Power Supply Input
PGND	10	P	Power Ground
GATE4~6	11~13	O	External MOSFET(4~6) Gate Drive for String 4~6 LED Balance Current Control
AGND	14	P	Analog Ground
IFB1~6	15~20	I	Set String 1~6 LED Current. Connect a sense resistor from this pin to AGND. The LED Current is programmed by $I_{LED} = V_{IFB} / (\text{Sense Resistance})$.
PWM	21	I	External PWM Dimming Signal Input
VSCP	22	I	Setting the Short Circuit Protection Threshold
RSET	23	I/O	Set the Operation Frequency Resistance Pin
TIMER	24	I/O	Protection Delay Timer
SYNC	25	I	PWM Synchronization Signal Input Pin
FDIM	26	I/O	Setting Resistor to set the internal dimming frequency
DC	27	I	DC Input Voltage for Internal PWM Duty Cycle Control
PRC	28	I/O	Low Pass Filter for internal PWM Synchronization

Typical Application Circuit

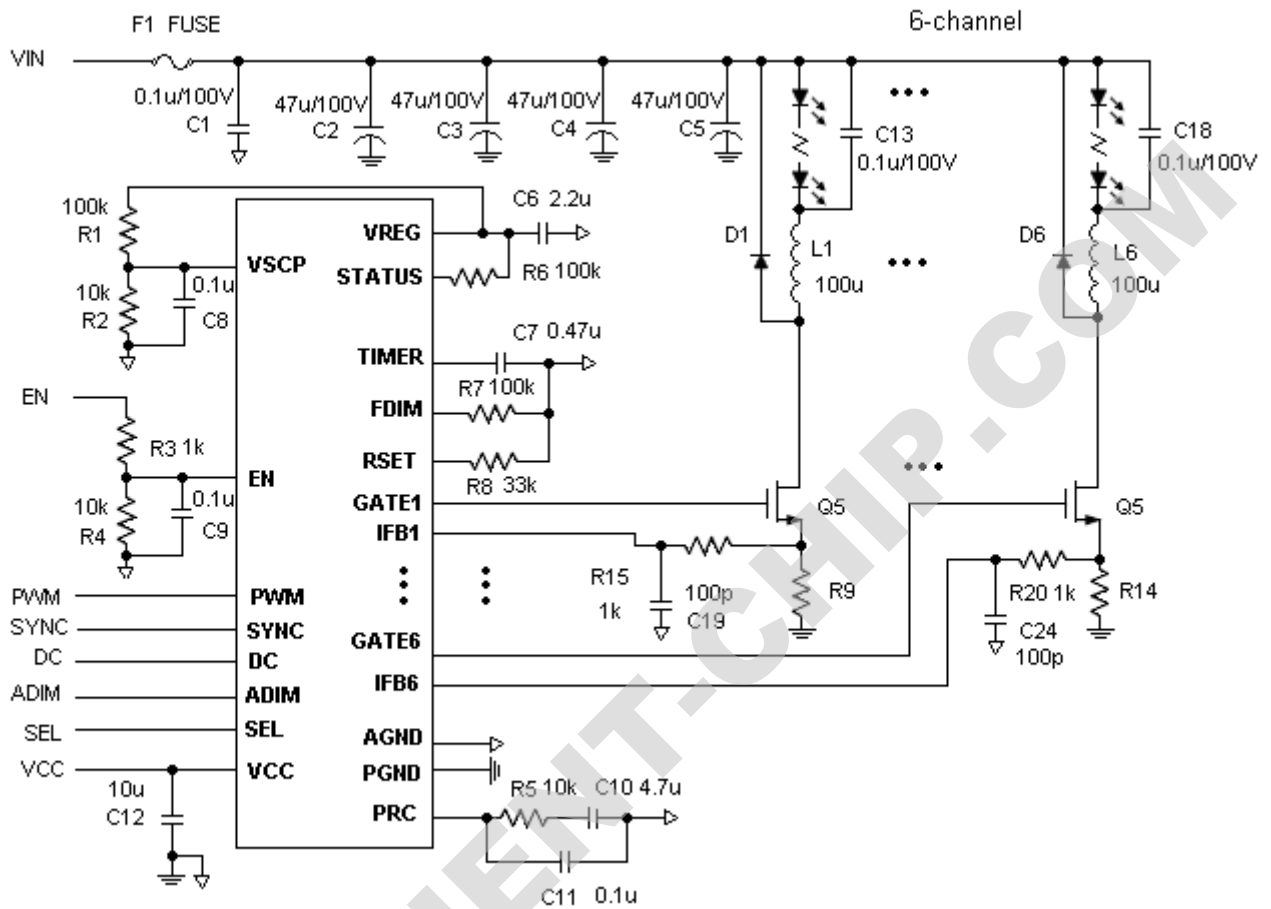


Figure 2, Typical Application Circuit of OCP8128

Ordering Information

OCP8128XXX

Package:
S: SOP-28L

Packing:
Blank: Tube or Bulk or Box
A: Tape & Reel

Temperature Grade:
D: -40~85°C

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