

High Efficiency Synchronous Boost Converter With Dual Independent 2A Current Sources

■ General Description

The OCP81375 is a dual LED flash driver that provides a high level of adjustability within a small solution size. The OCP81375 utilizes a 2-MHz or 4-MHz fixed-frequency synchronous boost converter to provide power to the dual 2A constant current LED sources. The total LED current the OCP81375 boost can deliver is 2A ($I_{LED1} + I_{LED2}$). The dual 128 level current sources provide the flexibility to adjust the current ratios between LED1 and LED2 with each driver capable of delivering a maximum of 2A. An adaptive regulation method ensures the current sources remain in regulation and maximizes efficiency.

Features of the OCP81375 are controlled via an I²C-compatible interface. These features include: hardware flash and hardware torch pins (STROBE and TORCH/TEMP), a TX interrupt, and an NTC thermistor monitor. The device offers independently programmable currents in each output leg to drive the LEDs in a Flash or Movie Mode (Torch) condition.

The 2-MHz or 4-MHz switching frequency options, over voltage protection (OVP), and adjustable current limit allow for the use of tiny, low-profile inductors and (10- μ F) ceramic capacitors. The device operates over a -40°C to 85°C ambient temperature range.

● Features

- 2A Total Allowed LED Current During Operation
- Dual Independent LED Current Source Programmability
- Accurate and Programmable LED Current Range from 3.90mA to 2A
- Optimized Flash LED Current During Low Battery Conditions (IVFM)
- Grounded Cathode LED Operation for Improved Thermal Management
- Small Solution Size:<16mm²
- Hardware Strobe Enable (STROBE)
- Synchronization Input for RF Power Amplifier Pulse Events (TX)
- Hardware Torch Enable (TORCH/TEMP)
- Remote NTC Monitoring (TORCH/TEMP)
- 400-kHz I²C-Compatible Interface
-OCP81375(I²C Address=0x63)

● Applications

- Camera Phone White LED Flash



■ Pin Configuration

WLCSP-12B (Top View)

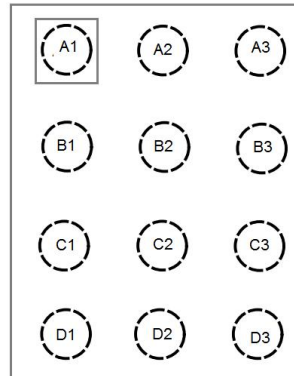


Figure 1, Pin Assignments of OCP81375

| Pin Name | Pin No. | I/O | Pin Function |
|------------|-----------|-----|--|
| | WLCSP-12B | | |
| GND | A1 | P | Ground |
| IN | A2 | I | Input voltage connection. Connect IN to the input supply and bypass to GND with a 10 μ F or larger ceramic capacitor. |
| SDA | A3 | I/O | Serial data input/output in the I ² C Mode on OCP81375. |
| SW | B1 | P | Drain Connection for Internal NMOS and Synchronous PMOS Switches. |
| STROBE | B2 | I/O | Active high hardware flash enable. Drive STROBE high to turn on Flash pulse. Internal pulldown resistor 300k Ω between STROBE and GND |
| SCL | B3 | I/O | Serial clock input for OCP81375 |
| OUT | C1 | O | Step-up DC/DC Converter Output. Connect a 10 μ F ceramic capacitor between this terminal and GND. |
| HWEN | C2 | I | Active high enable pin. High = Standby, Low = Shutdown/Reset. Internal pulldown resistor of 300k Ω between HWEN and GND. |
| TORCH/TEMP | C3 | I | Torch terminal input or threshold detector for NTC temperature sensing and current scale back. |
| LED2 | D1 | O | High-side current source output for flash LED. |
| TX | D2 | I | Configurable dual polarity power amplifier synchronization input. Internal pulldown resistor of 300k Ω between TX and GND. |
| LED1 | D3 | O | High-side current source output for flash LED. |

■ Typical Application Circuit

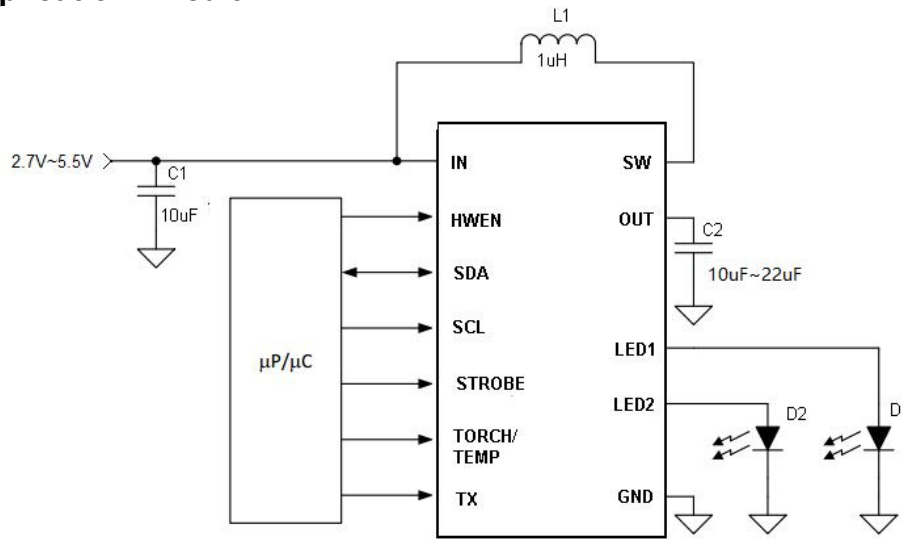


Figure 2, Typical Application Circuit of OCP81375

■ Block Diagram

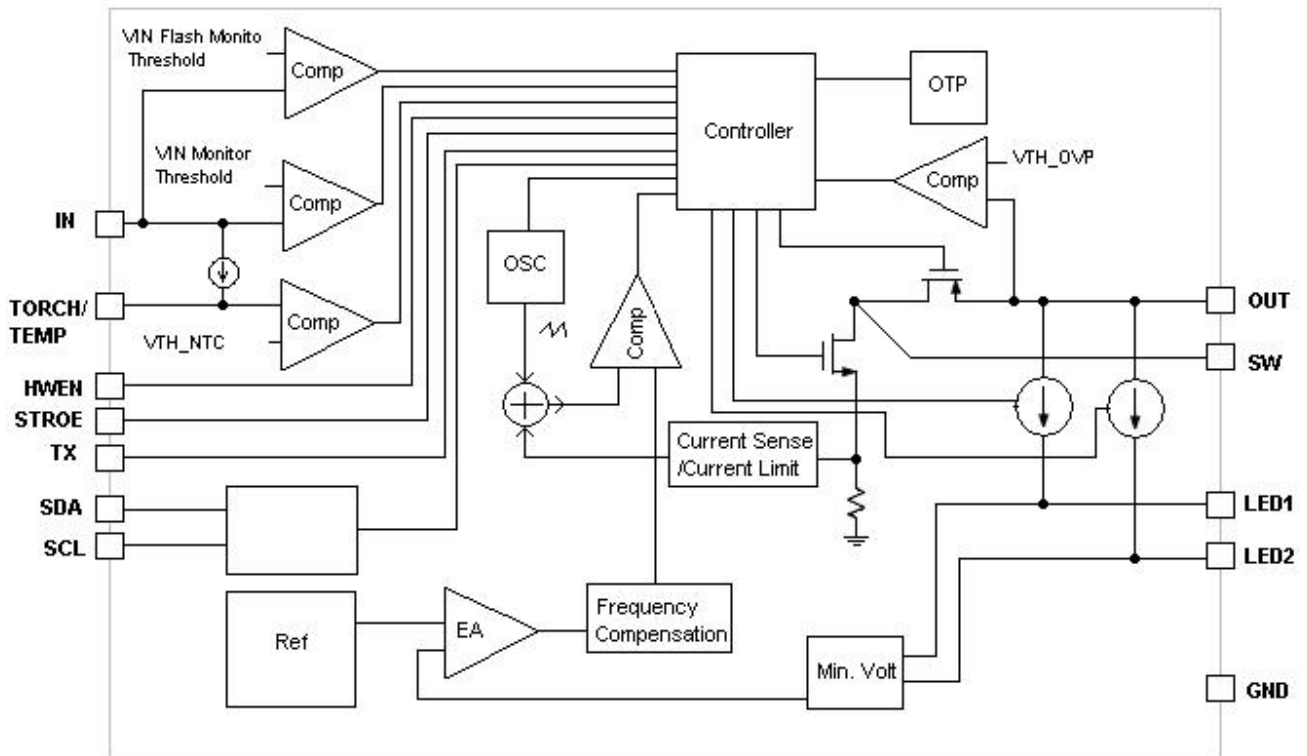


Figure 3, Block Diagram of OCP81375