High Efficiency Synchronous Boost Converter With Dual Independent 1.5A Current Sources

General Description

The OCP8137 is a dual LED flash driver that provides a high level of adjustability within a small solution size. The OCP8137 utilizes a 2-MHz or 4-MHz fixed-frequency synchronous boost converter to provide power to the dual 1.5A constant current LED sources. The total LED current the OCP8137 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 (ex: I_{LED1}= 1.5A and I_{LED2}= 0.5A, I_{LED1}= 0.5A and I_{LED2}= 1.5A, or a current configuration with a current less than 1.5A, I_{LED1}= 1.0A and I_{LED2}=1.0A). An adaptive regulation method ensures the current sources remain in regulation and maximizes efficiency.

Features of the OCP8137 are controlled via an I^2C-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, overvoltage protection (OVP), and adjustable current limit allow for the use of tiny, low-profile inductors and (10-µF) ceramic capacitors. The device operates over a –40°C to 85°C ambient temperature range.

Features

- 2 A Total Allowed LED Current During Operation
- Dual Independent LED Current Source Programmability
- Accurate and Programmable LED Current Range from 1.46mA to 1.5A
- Optimized Flash LED Current During Low Battery Conditions (IVFM)
- Grounded Cathode LED Operation for Improved Thermal Management
- Small Solution Size:<16mm^2
- 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 I^2C-Compatible Interface
  - OCP8137 (I^2C Address=0x63)

Applications

- Camera Phone White LED Flash

■ Pin Configuration

WLCSP-12B (Top View)

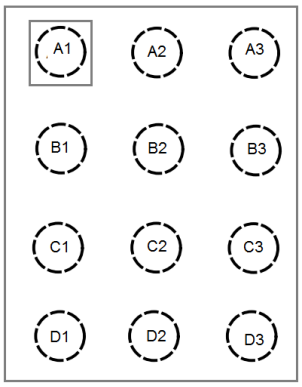


Figure 1, Pin Assignments of OCP8137

Pin Name	Pin No. WLCSP-12B	I/O	Pin Function
GND	A1	P	Ground
IN	A2	P	Input voltage connection. Connect IN to the input supply and bypass to GND with a 10μF or larger ceramic capacitor.
SDA	A3	I/O	Serial data input/output in the I²C Mode on OCP8137.
SW	B1	P	Drain Connection for Internal NMOS and Synchronous PMOS Switches.
STROBE	B2	I	Drain connection for internal NMOS and Synchronous PMOS Switches.
SCL	B3	I	Serial clock input for OCP8137
OUT	C1	O	Step-up DC/DC Converter Output. Connect a 10μF ceramic capacitor between this terminal and GND.
HWEN	C2	I	Active high enable pin. High = Standby, Low = Shutdown/Reset. Internal pull down resistor of 300kΩ between HWEN and GND.
TORCH/TEMP	C3	I/O	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 pull down resistor of 300kΩ between TX and GND.
LED1	D3	O	High-side current source output for flash LED.

■ Typical Application Circuit

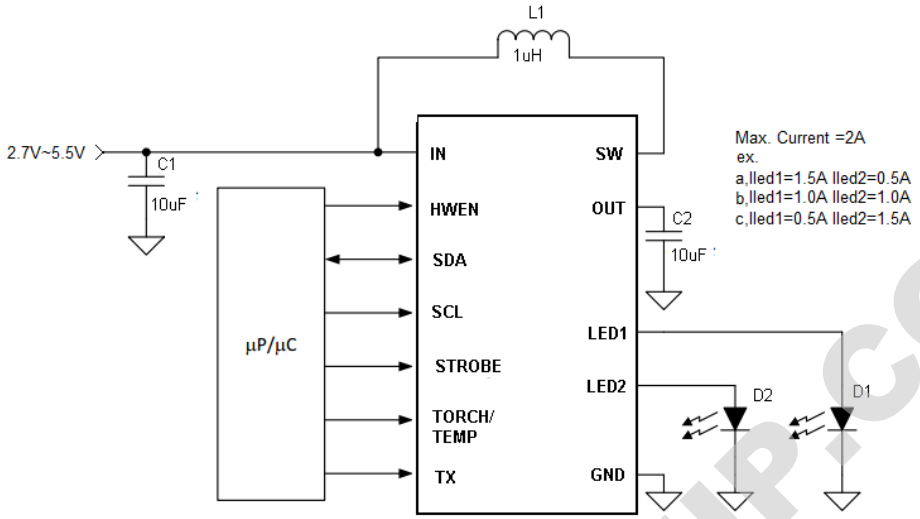
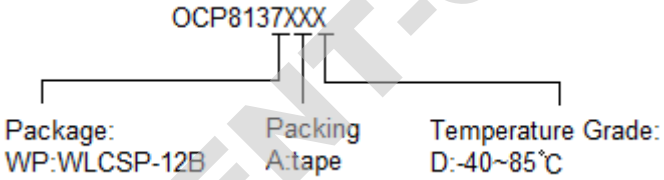


Figure 2, Typical Application Circuit of OCP8137

■ Ordering Information



Part Number	Driver Capability	Package Type	Package Qty	Temperature	Eco Plan	Lead/Ball Finish
OCP8137WPAD	2A	WLCSP-12B	7-in reel 3000pcs/reel	-40～85℃	Green	Cu Sn

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