

High-Performance Flash Driver for Dual- and Quad-Channel Applications

The AL3644 is a dual-channel, 1.5A constant-current LED flash driver with a high-speed, I²C-compatible interface. It has the ability to combine two devices (with different device identification addresses) to drive four LEDs up to 6A for quad-channel applications.

Independently programmable, I²C, 128-step current sources drive the LEDs in a flash or movie mode (torch) condition. This provides large flexibility to adjust the current ratios between them. The AL3644 supports flash and hardware torch pins (STROBE and TORCH/TEMP), a TX interrupt, and allows instant access to override the preset registers back to the desired state. The TORCH/TEMP pin can also be used for external NTC thermistor function.

A 2MHz or 4MHz switching frequency allows the use of tiny, low-profile inductors and ceramic capacitors (10 μ F).

Overvoltage protection (OVP) and adjustable current limit provides a robust and reliable solution. The device operates over a -40°C to +85°C ambient temperature range.



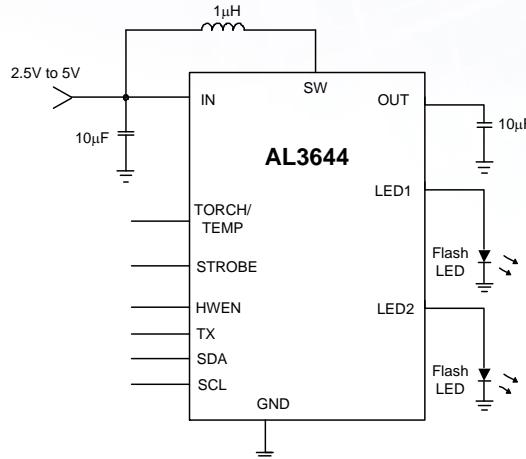
DIODES Advantage

- **Dual Independent 1.5A LED Current Source Capability**
Highly capable for driving two LEDs in camera flash applications
- **Dual-, Quad-Channel Applications**
Dual - single device (AL3644)
Quad - connected (AL3644 and AL3644TT)
- **400kHz I²C-Compatible Interface**
Simplified and better system design
- **Adaptive Switching Regulation Maximizes Efficiency**
>85% efficiency in torch mode (at 100mA) and flash mode (at 1A to 1.5A) gives optimized flash LED current during low-battery conditions
- **Accurate and 128-Level Programmable LED Current**
High resolution and flexible, independent adjustment of LED1 and LED2 current.
- **Small-Solution Size with Low-BOM Count**
Highly integrated synchronous boost convertor with 2MHz/4MHz high-switching frequency minimizes external components' size

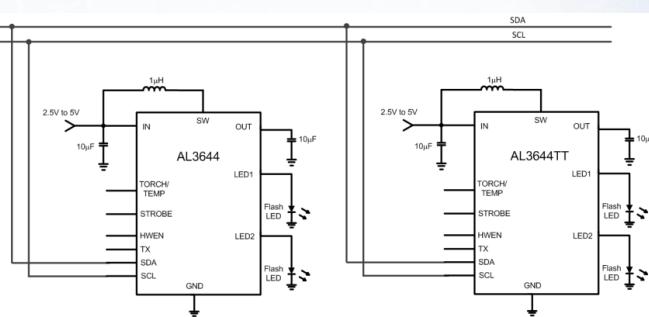
Applications

- Smartphone White LED Flash
- Wearable Devices

Typical Application Circuit



Quad Channel Connection



Device address 0x63: Device ID 0x02 (AL3644) and 0x04 (AL3644TT)

Product Portfolio

| Part Number | Min. Input Voltage | Max Input Voltage | Channels | Max Current / CH | Max Torch Current / CH | Current Accuracy | Efficiency | Operating Temp Range | Output Current Levels | Boost Inductor OCP | OVP | I ² C Interface | Package |
|----------------|--------------------|-------------------|----------|------------------|------------------------|------------------|------------|----------------------|-----------------------|--------------------|-------|----------------------------|--------------|
| | | | | | | | | | | | | | |
| AL3644CH12-7 | 2.5 | 5 | 2 | 90 | 1500 | 7 | >85 | -40 ~ +85 | 128 | 1.9A 2.8A* | 4.75V | Yes | U-WLB1713-12 |
| AL3644TTCH12-7 | 2.5 | 5 | 2 | 180 | 1500 | 7 | >85 | -40 ~ +85 | 128 | 1.9A 2.8A* | 4.75V | Yes | U-WLB1713-12 |

*Default Value

Ordering Information

| Part Number | Package | 7" Tape and Reel | |
|----------------|--------------|------------------|--------------------|
| | | Quantity | Part Number Suffix |
| AL3644CH12-7 | U-WLB1713-12 | 3000/Tape & Reel | -7 |
| AL3644TTCH12-7 | U-WLB1713-12 | 3000/Tape & Reel | -7 |