

## 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, I<sup>2</sup>C-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, I<sup>2</sup>C, 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 (10µF).

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.



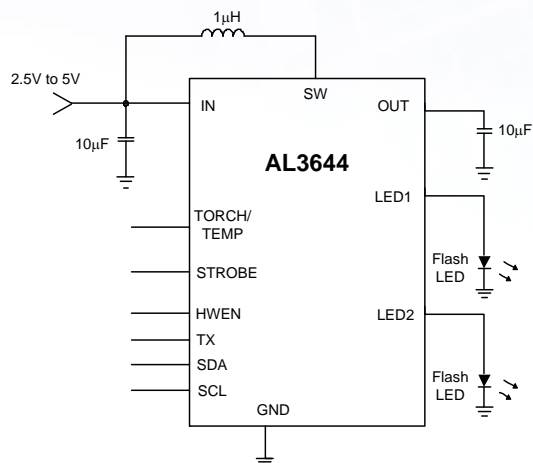
### DIODES Advantage

- **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 I<sup>2</sup>C-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

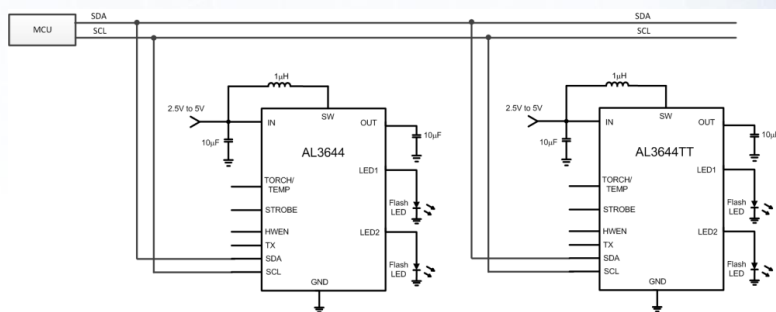
### Applications

- 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 Torch Current / CH	Max Flash Current / CH	Current Accuracy	Efficiency	Operating Temp Range	Output Current Levels	Boost Inductor OCP	OVP	I <sup>2</sup> C Interface	Package
	V	V		mA	mA	%	%	°C					
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