

Flash LED Driver IC

High Efficiency Synchronous Boost Converter, Fixed 1.2A Flash LED Drivers with PWM Dimming



AS6591

● General Description

The AS6591 is a 3MHz fixed frequency synchronous boost converter, fixed 1.2A flash current output LED driver with PWM dimming function, for distance dimming camera flash LED application and fixed 200mA movie mode applications using high-current white LED in all single cell Li-ion powered products. An adaptive regulation method ensures the current for the LED remains in regulation and maximizes efficiency.

Two simple logic control inputs (ENM and ENF) enable and disable flash and movie mode operation of the AS6591. The movie-mode and flash-mode current levels are internally fixed.

For flash mode, a default timer 800mS can be used either to terminate a flash event or as a safety flash timer. The real LED current at flash mode and movie/torch mode can be programmed by external PWM signal at ENM pin.

The AS6591 integrate an intelligent flash current control mode: during flash current turn-on the input voltage falls below the flash mode VIN Monitor threshold, the flash current is stopped at the level that the current ramp had risen to, at the time of the VIN Flash Monitor events.

The AS6591 contain a thermal management system to protect the device; a internal over-voltage protection (OVP) circuitry prevents damaged to the AS6591 from open LED or open circuit conditions; and a cycle-by-cycle current limit prevents damage to the AS6591. Built-in circuitry prevents excessive inrush current during start-up. The shutdown feature reduces quiescent current to less than 1.0 μ A.

The 3MHz switching frequency allow for the use of tiny, low profile (0.22 μ H or 0.47 μ H) inductors and 4.7 μ F ceramic capacitors. The device is available in 6-pin 2mmX2mm DFN and 10-pin 3mmX3mm DFN packages and is rated over the -40°C to 85°C.

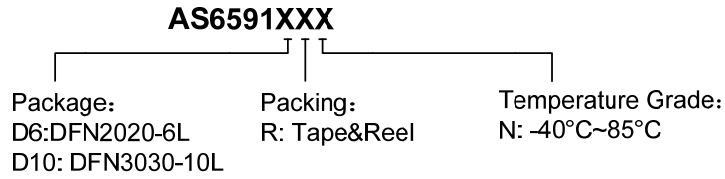
● Features

- Input Voltage Range : 2.7V to 5.0V
- No Need External Set Resistors
- Power On Flash Mode Spurious Triggering Suppress
- Up to 3.0MHz Switching Frequency for Smaller Inductor Using
- Output Current Soft-Start
- Optimize Flash Current During Low Battery
- Intelligent Flash Current Control
- Drives up to Fixed 1.2A Output Current
- High Efficiency PWM Boost Converter
- Up to 97% Efficiency with Small Inductor
- Under Voltage Lock-Out
- Over-Temperature Protection
- Over Voltage (Open LED) Protection
- LED Short Circuit Protection
- Flash Mode and Movie/Torch Mode LED Current can be Programmed via PWM Signal at ENM pin
- PWM Dimming Frequency: 1kHz to 1MHz
- 800mS Flash Timer Control
- Cycle by Cycle Current Limit
- Separate Hardware Flash and Movie Enable
- Internally Set Fixed Flash/Movie Currents
 - Flash Mode Current: 1.2A
 - Movie Mode Current: 0.2A
- Small Solution Size
- Less than 1 μ A Shutdown Current
- RoHS and Green Compliant
- DFN2020-6L and DFN3030-10L Packages
- -40°C to +85 °C Temperature Range

● Applications

- Camera Flashes and Movies
- Cell Phones or Smart Phones
- PDAs and Digital Camera
- White LED Biasing
- Mobile Handsets
- Tablet PCs and Laptops / Netbooks
- Camcorder Video Light (Movie Light)

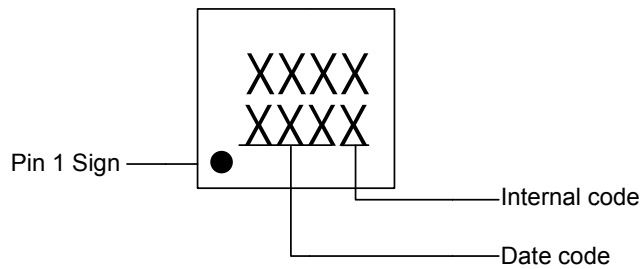
■ **Ordering Information**



Part Number	Driver Capability	Package Type	Package Qty	Temperature	Eco Plan	Lead
AS6591D6RN	1.2A	DFN2020-6L	7-in reel 3000pcs/reel	-40~85°C	Green	Cu
AS6591D10RN	1.2A	DFN3030-10L	13-in reel 3000pcs/reel	-40~85°C	Green	Cu

■ **Marking Information**

DFN2020-6L/DFN3030-10L



■ **Typical Application Circuit**

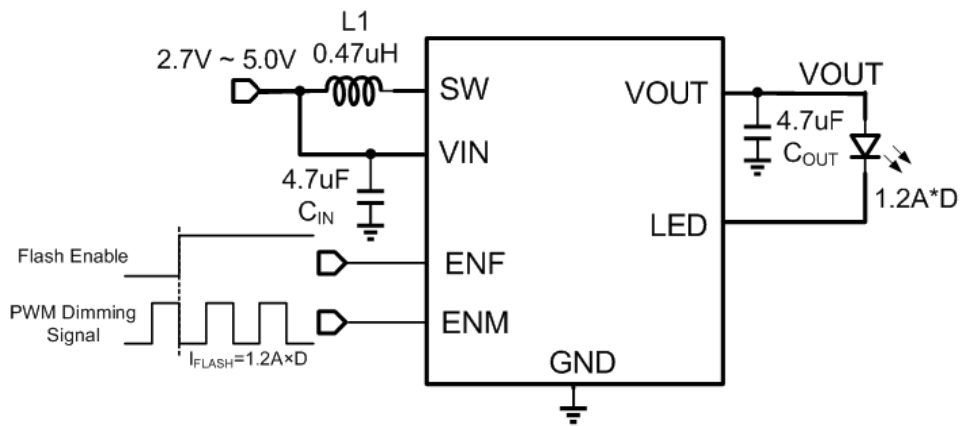
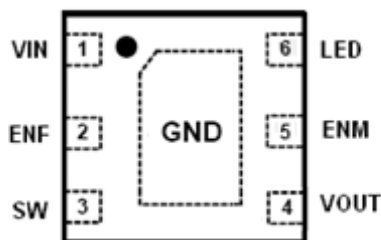


Figure 1, Flash Dimming Typical Application Circuit of AS6591

■ **Pin Configuration**

DFN2020-6L (Top View)



DFN3030-10L (Top View)

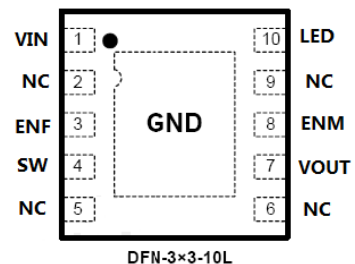
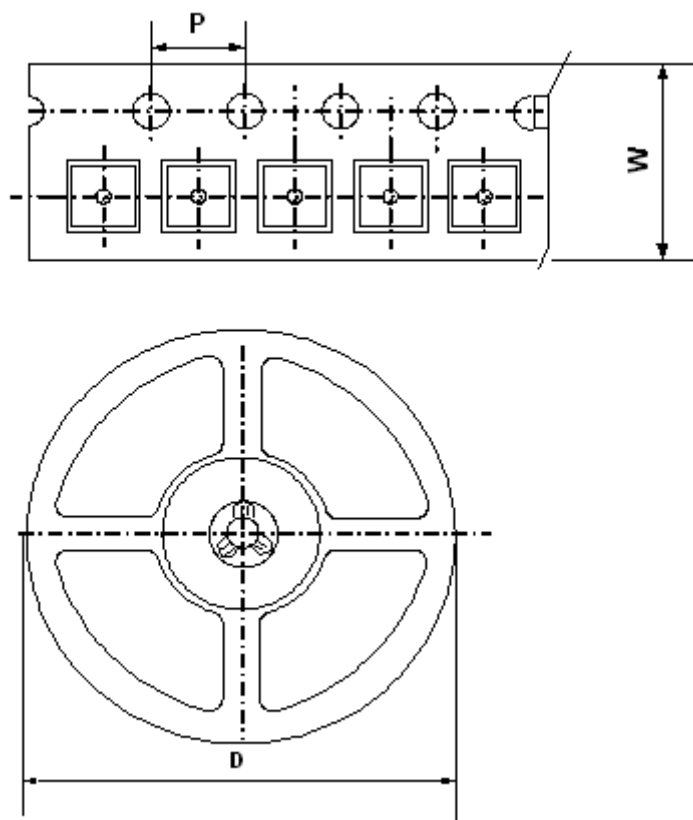


Figure 2, Pin Assignments of AS6591

■ Packing Information



Package Type	Carrier Width(W)	Pitch(P)	Reel Size(D)	Packing Minimum
DFN2020-6L	8.0±0.1 mm	4.0±0.1 mm	180±1 mm	3000pcs
DFN3030-10L	12.0±0.1 mm	4.0±0.1 mm	330±1 mm	3000pcs

Note: Carrier Tape Dimension, Reel Size and Packing Minimum