

RGB Buck-Boost Four-Channel LED Driver with Color Sequencing and Automatic White Balance

ISL97901

The ISL97901 is a highly efficient four channel, 1.5A sequential LED driver powered from a single-cell Li-ion battery, or regulated input voltage up to 5.5V. The ISL97901 incorporates an independent current controlled driving mechanism for each of the LED's to allow accurate brightness control.

The ISL97901 also utilizes a buck-boost converter to ensure optimum output voltage is maintained for a wide variety of LED forward voltages. The ISL97901's highly integrated and efficient power conversion core operates at well over 90% efficiency across a wide range of operating conditions. The power conversion core implements a proprietary algorithm that allows seamless transitions and glitch-free operation between the buck and the boost modes as the battery voltage drops during operation.

The ISL97901 provides I/O pins to interface with Intersil's optical sensor IC's for white balance control. White balance is achieved by closing the opto-electrical loop which allows for LED light output to get calibrated against preset target values. The ISL97901 can also be configured to run in an open-loop manner if real-time white balance control is not desired. In this case, the LED currents are set by the internal registers.

Related Literature

- [ISL58333](#) "Wide Optical Spectrum Photo Sensor IC"
- [ISL58344](#) "Quad Segment Photo Sensor IC"

Features

- Buck-Boost Based LED Driver
- RGB, RGGG or RGBW Color Sequencing
- Up to 1.5A Output Current
- Photo Detector Feedback Interface
- Dual Green LED Drive Support
- Closed-Loop White Balancing Dynamic Current Scaling
- Standby Current less than 70µA
- I²C Interface
- 150mV Feedback Voltage Reference for Current Regulation to Maximize Efficiency
- 2.5MHz Switching Frequency
- Programmable Output Voltage for each LED
- Dynamic Headroom Management
- Internal Current Setting Registers
- Ambient Temperature Range: 0°C to +70°C
- Pb-Free (RoHS Compliant)

Applications

- LED-Based Pico Projector In Mobile Phones
- Stand Alone Pico Projectors
- Tri-Stimulus Display Drivers
- Other Handheld Display Drivers

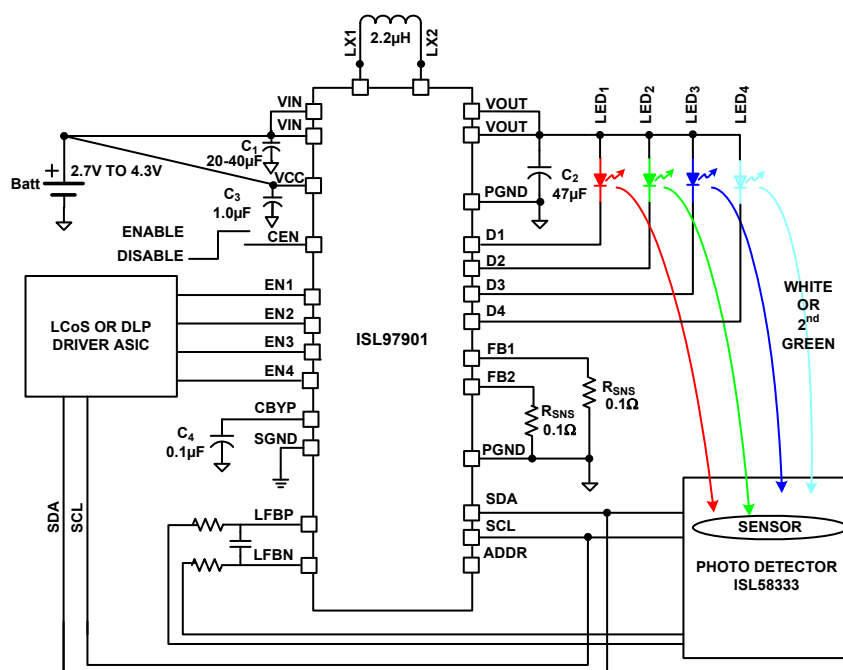


FIGURE 1. TYPICAL APPLICATION

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