I²C Programmable RGB LED Driver with AutoBlinQ™

Features

- Ultra low dropout regulated 3-channel current sinks
  - ▸ 40mV typ. at 10mA per channel
- Programmable LED setting by I²C compatible interface
- Individual channel control
  - ▸ On/Off Interval Time Control
  - ▸ Dimming Up/Down Time
  - ▸ RGB LED Color Control
- 191 current level setting
  - ▸ 24mA max, 0.125mA step
  - ▸ ±5% current matching at max current
- AutoBlinQ LED1 (D1 pin) mode
  - ▸ Blinking period: 2s
  - ▸ Current setting: 8mA
- No noise, non-pulsating LED current
- Fast, smooth start-up
- VIN Range: 2.7V to 5.5V
- 0.1 µA Shutdown Current
- Pb-free Package: UTDFN-8 1.5x1.5mm
- -40°C to +85°C Temperature Range

Applications

- RGB indicator LEDs
- Mobile Phones and Handheld Devices
- Digital Cameras

Brief Description

The KTD2037/2037B is a fully programmable, constant current RGB LED driver with a flexible control interface. The device is ideally powered from one-cell lithium-ion/polymer, 3-cell NiCd/NiMH/Alkaline batteries, or systems with 3.3V or 5V supplies. It provides three independent programmable constant current sinks without requiring any external components.

With an on-chip timing control unit, LED blink rate, fade-in and fade-out are user-adjustable resulting in unique color lighting patterns.

Ten internal registers are programmed via the I²C control interface with a built-in decoder allowing individual control of the LED channels' On/Off state and current level. A total of 191 current levels are available for each channel from 0.125mA to 24mA with a 0.125mA step.

An AutoBlinQ mode automatically turns on and off LED1 (on D1 pin) at 8mA every 2s after EN pin goes high. In this mode, a phone with a discharged battery connected to a charger can have LED1 blink to notify that the battery is charging.

In shutdown mode, the quiescent current is reduced to less than 1µA.

The device is available in a low profile 8-pin 1.5mm x 1.5mm x 0.5mm Ultra-Thin DFN package. The package is Pb-free and RoHS compliant.

Ordering Information

Part Number	IOUT max Per channel	I²C Input Active	Marking[1]	Operating Temperature	Package
KTD2037EWE-TR	24mA	EN = High or Low	IJYYZ	-40°C to +85°C	UTDFN-8 1.5x1.5
KTD2037BEWE-TR	24mA	EN = High	HWYYZ	-40°C to +85°C	UTDFN-8 1.5x1.5

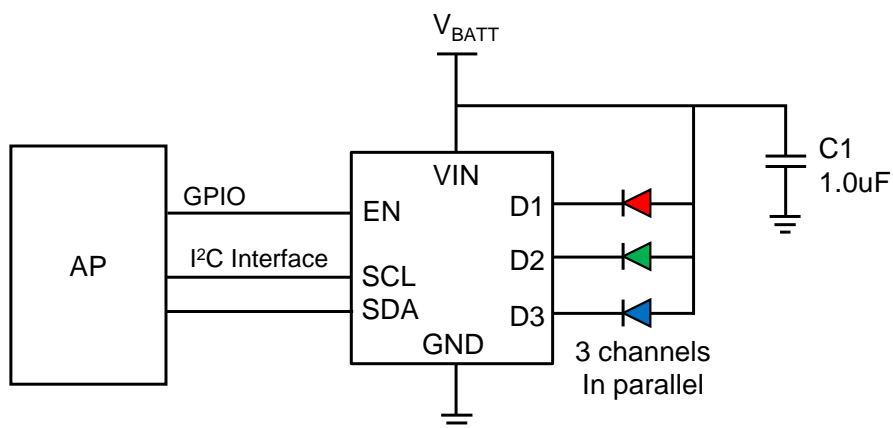1. "YYZ" is the date code and assembly code.

Typical Application

Figure 1. Typical Application Circuit