

9-Channel IR LED Driver with Buck Regulator and I²C Interface

Features

- 2.7V to 5.5V Input Voltage Operating Range
 - Nine High-Precision Current Sinks
 - ▶ LED Current Up to 32mA per Channel
 - ▶ $\pm 1\%$ Typical Current Matching
 - ▶ $\pm 2\%$ Typical Current Accuracy at 32mA
 - ▶ 6-bit Current Dimming Control with I²C
 - ▶ Independent On/Off Control
 - ▶ Supports both Independent and Global Dimming
 - High Efficiency Buck Regulator
 - ▶ Integrated 200m Ω / 100m Ω High / Low-Side FET
 - ▶ Adaptive On-Time Control with default 1MHz Switching Frequency, with factory programmable 1.5MHz, 2MHz, and 2.5MHz options.
 - ▶ Adaptive VOUT Control Based on the Headroom Voltages of the LED Current Sinks.
 - ▶ Selectable Auto-Skip Mode or Forced-PWM mode at Light Loads
 - 140 μ A Typical No-Load Supply Current
 - Open-Drain $\overline{\text{FAULT}}$ Signal Output and Fault Reset
 - Extensive Fault Diagnostics
 - -40°C - 85°C Operating Ambient Temperature Range
- Small UQFN-20 (3mm x 3mm) Package

Applications

- IR LED Drivers
- Video Door Bells
- Security Cameras
- IRIS Recognition Cameras

Brief Description

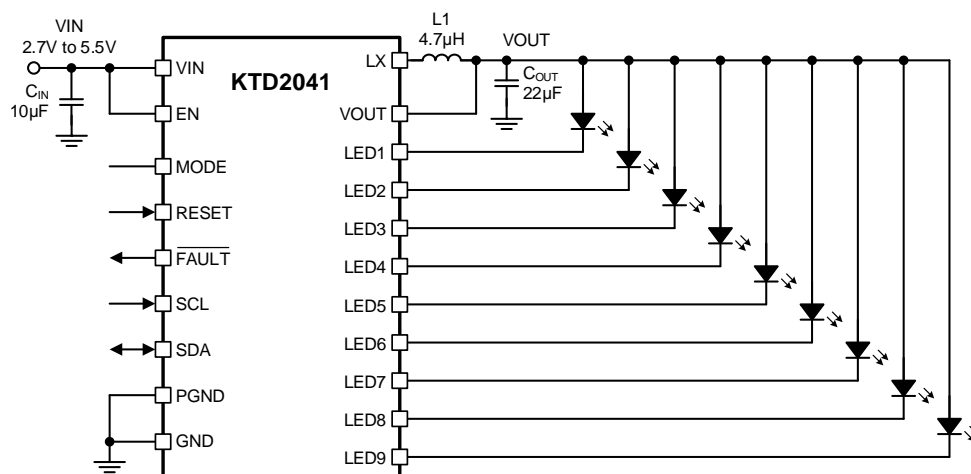
The KTD2041 is an ideal power solution for IR LED driver with an integrated buck regulator. It has 9 high-precision current sinks that can be independently controlled via I²C interface.

The buck regulator has an input voltage operating range from 2.7V to 5.5V to accommodate 1-cell lithium-ion batteries or 5V voltage rail. It has adaptive output voltage control based on the headroom voltages of the LED current sinks to minimize the power consumption. It has integrated high-side and low-side power FET. The buck regulator features advanced adaptive On-Time control with 1MHz switching frequency, which minimizes external component counts and allows the use of a very small inductor and capacitor.

The KTD2041 has 9 built-in current sinks, which features independent On/Off control and 6-bit independent current dimming via I²C interface. The KTD2041 has extensive built-in protection features including cycle-by-cycle current limit, input undervoltage Lockout (UVLO), output over-voltage protection, LED fault (open or short) protection and thermal shutdown protection.

The KTD2041 is available in a RoHS and Green compliant 3mm x 3mm UQFN package.

Typical Application



Ordering Information

Part Number	Marking ¹	Operating Temperature	Package
KTD2041EUAC-TR	XXYYZ	-40°C to +85°C	UQFN33-20

1. XX = Device ID Code, YWZ = Date and Assembly Code.

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