

24-Channel RGB LED Driver with I²C Control

Features

- Drives up to 24 LEDs (8 RGBs)
- Multiplexed LED Current Driver Outputs
 - ▶ Only 8 PCB Traces to the LEDs
 - ▶ 23kHz MUX Frequency Prevents Audio Noise
- 14 Million Colors
 - ▶ LED Current: 125µA to 24mA in 125µA Steps
 - ▶ Night-Mode: 8µA to 1.5mA in 8µA Steps
 - ▶ 5% Max. Current Accuracy & Matching
- 24 Independent Exponential Fade-Engines
 - ▶ Ultra-Smooth 3072-Step Fade Resolution
 - ▶ 3-bit Programmable Fade Rate
 - ▶ Dramatically Reduces Software Complexity
- Patented¹ BrightExtend™ Technology
 - ▶ Maintains Color-Accuracy and PSRR for Battery-Powered Applications with Low Vin
- Proprietary CoolExtend™ Technology
 - ▶ 2-bit Programmable Max. Die-Temp Regulation
- 0.4µA Automatic Shutdown (Standby) Current
- 1MHz I²C Interface with Multiple Slave Addresses
- 2.5V to 5.5V Operating Supply Voltage Range
- -40°C to 85°C Operating Temperature Range
- 20 pin UQFN 3x3mm (0.4mm pitch)
- RoHS and Green Compliant

Applications

- AI Smart Speakers, Bluetooth / WiFi Loudspeakers
- Automotive Panel, Accent and Mood Lighting
- IoT, Gaming PC/Keyboards/Controllers/VR, Robots

Brief Description

The KTD2064 is a fully programmable current regulator for up to 8 RGB LED modules (24 LEDs total). The device is ideally powered from a supply rail in the 3V to 5V nominal range. Two 4-wire buses are multiplexed to reduce the pin-count and PCB traces to the LEDs.

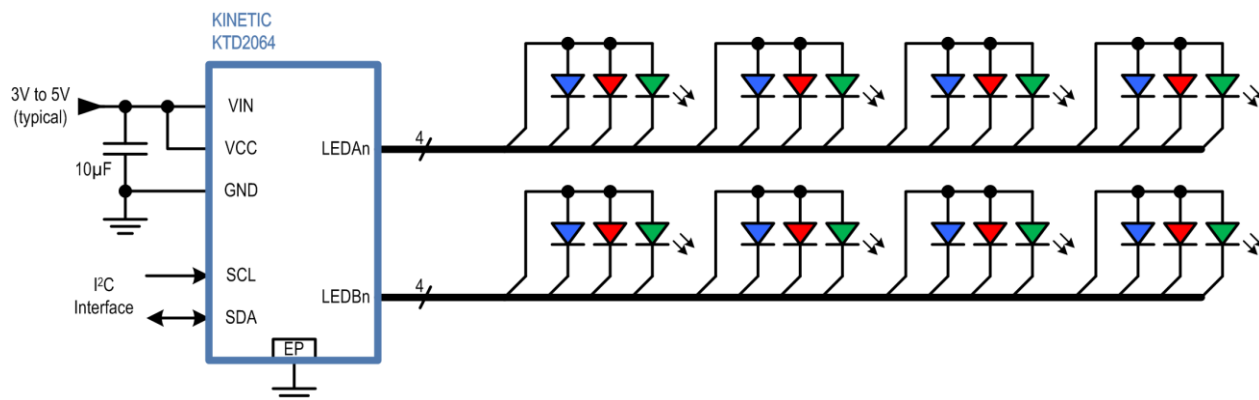
The I²C control interface is used to set the LED color palette and then dynamically select the on/off status and color of each RGB module. For applications requiring more RGBs, see the KTD2061/58/59/60.

24 independent fade-up/down engines are integrated for independent ramping of each LED's current during on/off, brightness, and color transitions without software burden. The exponential current ramps provide visually pleasing fades with eight I²C programmable fade-rate settings. 3072-step fade resolution ensures ultra-smooth visual effects.

BrightExtend™ optionally reduces dropout when the input voltage is too low for the forward voltage of the LEDs, enabling battery-powered applications. Programmable CoolExtend™ prevents excessive heat by regulating die temperature when the input voltage, current settings, and/or ambient temperature are high.

The KTD2064 is packaged in RoHS and Green compliant 3mm x 3mm, ultra-thin, 20-pin UQFN package.

Typical Application



1. US Patent 8,482,216 B1

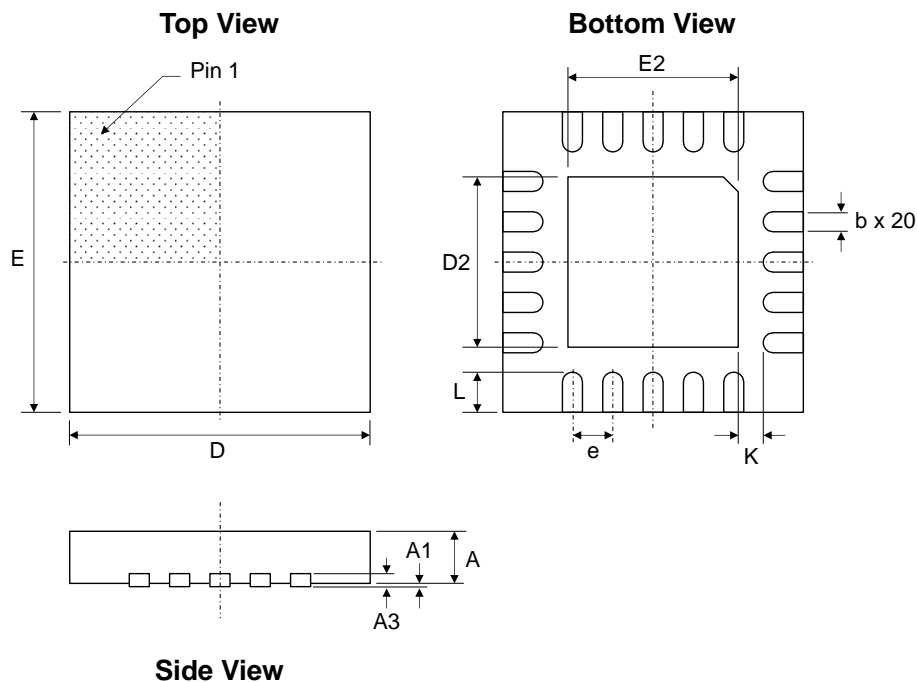
Ordering Information

Part Number	I ² C Slave Address	Marking ²	Operating Temperature	Package
KTD2064AEUAC-TR	0x6C default	NRYWZ	-40°C to +85°C	UQFN33-20
KTD2064BEUAC-TR	0x6D alternate	PMYWZ	-40°C to +85°C	UQFN33-20

2. YW = Date Code, Z = Serial Number.

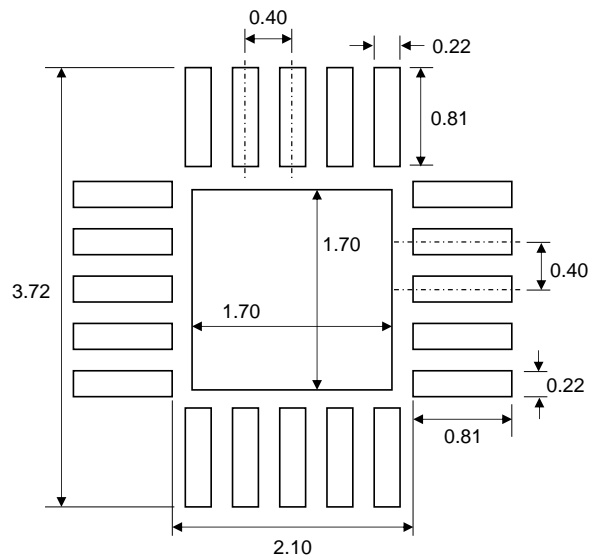
Packaging Information

UQFN33-20 (3.00mm x 3.00mm x 0.52mm)



Dimension	mm		
	Min.	Typ.	Max.
A	0.45	0.52	0.58
A1	0.00	0.02	0.05
A3	0.127 REF		
b	0.13	0.19	0.25
D	2.90	3.00	3.10
D2	1.65	1.70	1.75
E	2.90	3.00	3.10
E2	1.65	1.70	1.75
e	0.40 BSC		
L	0.35	0.40	0.45
K	0.20	0.25	0.30

Recommended Footprint



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Mouser Electronics

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