Datasheet Brief
KTD2061/58/59/60

For full datasheet, click **HERE**. For Eval Kit, click **HERE**.

36-Channel RGB LED Drivers with I²C Control

Features

- Drives up to 36 LEDs (12 RGBs)
- Multiplexed LED Current Driver Outputs
  - Only 12 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
- 36 Independent Exponential Fade-Engines
  - Ultra-Smooth 3072-Step Fade Resolution
  - 3-bit Programmable Fade Rate
  - Dramatically Reduces Software Complexity
- Patented[1] 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 KTD2061/58/59/60 are fully programmable current regulators for up to 12 RGB LED modules (36 LEDs total). The devices are ideally powered from a supply rail in the 3V to 5V nominal range. Three 4-wire buses are multiplexed to reduce the pin-count and PCB traces to the LEDs.

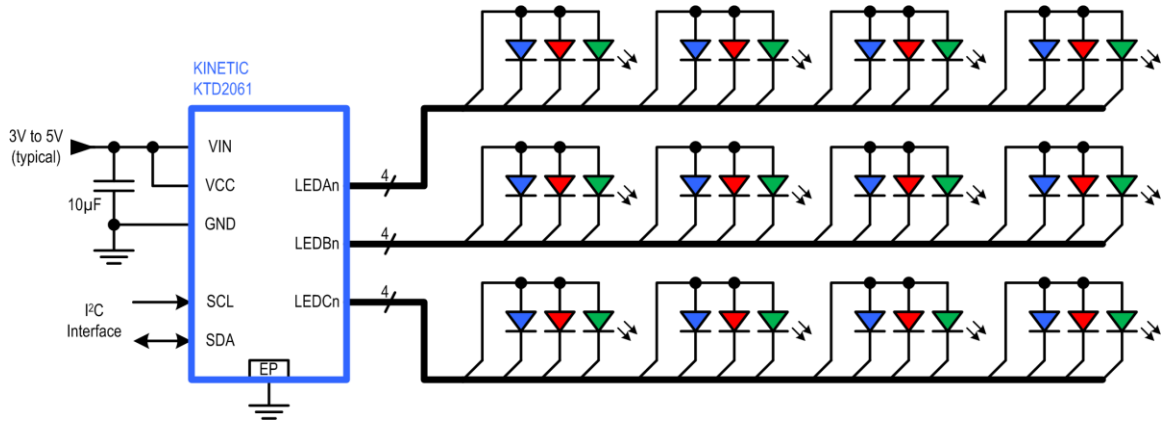
The I²C control interface is used to set the LED color palette and then dynamically select the on/off status and color of each RGB module. For applications requiring more RGBs on one I²C bus, the KTD2061/58/59/60 have different slave addresses.

36 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 KTD2061/58/59/60 are packaged in RoHS and Green compliant 3mm x 3mm UQFN packages with 0.58mm maximum height.

Typical Application



1. US Patent 8,482,216 B1

Ordering Information

Part Number	Default I²C Slave Address[2]	Marking[3]	Operating Temperature	Package
KTD2061EUAC-TR	0x68 Primary Option	NCYWZ aabbccc	-40°C to +85°C	UQFN33-20
KTD2058EUAC-TR	0x69 Secondary Option	OEYWZ aabbccc	-40°C to +85°C	UQFN33-20
KTD2059EUAC-TR	0x6A	OFYWZ aabbccc	-40°C to +85°C	UQFN33-20
KTD2060EUAC-TR	0x6B	OCYWZ aabbccc	-40°C to +85°C	UQFN33-20

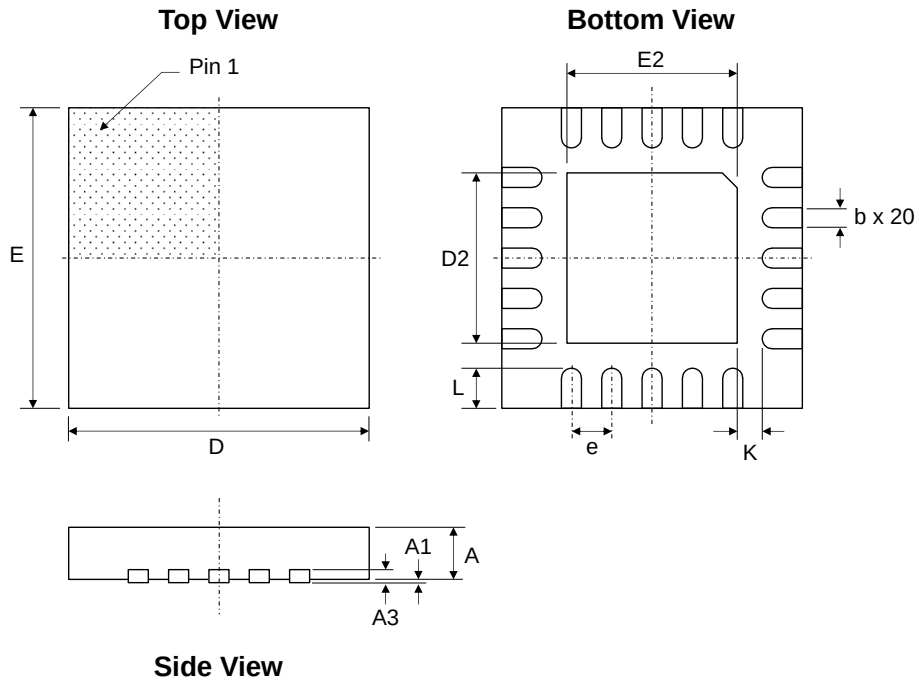
Part Number	Description	Package
KTD2061EUAC-EV1	KTD2061 EVAL Kit	UQFN33-20

2 Alternative I2C slave addresses are available should more than 36 channels be used in the same system. “Primary Option” and “Secondary Option” means the device is stocked for the majority of customers.

3. YW = Fab Date Code, Z = Serial Number, aabbccc = Assembly Date Code.

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