For full manual, click **HERE**.

KTD2061 Evaluation Kit & Software Brief

Brief Description

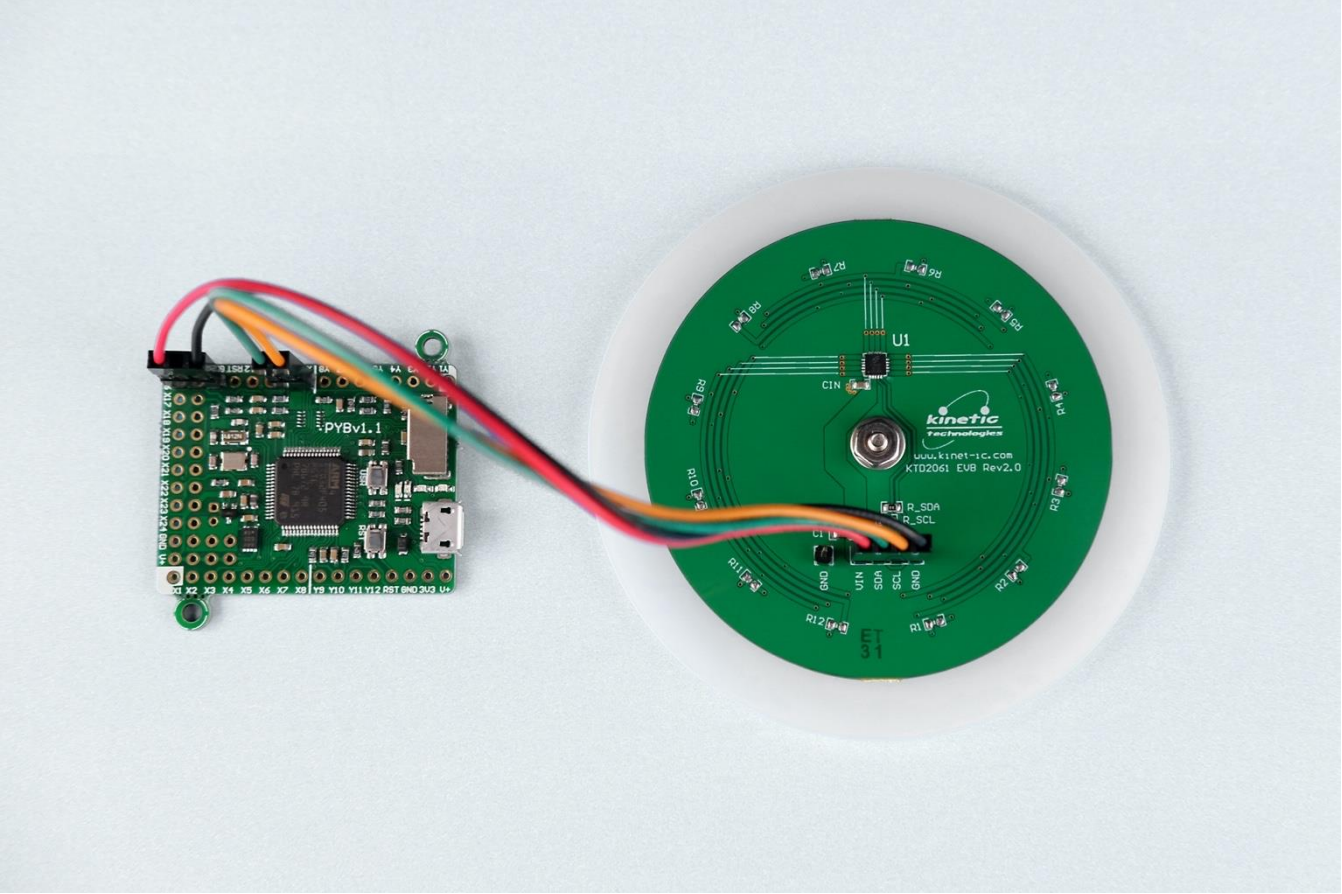
The KTD2061 Evaluation (EVAL) Kit is used to demonstrate and evaluate the KTD2061 functionality, performance, and PCB layout. Additionally, the EVAL Kit is a convenient tool for software development of RGB LED lighting patterns and animations. The kit includes a fully assembled and tested PCB with the KTD2061 IC installed, a white plastic light diffuser, a wiring harness, and a MicroPython pyboard v1.1 with pre-loaded demo software. Twelve RGB modules (36 LEDs total) are mounted on the back side of the PCB and shine into the diffuser that blends their light output and reduces human-eye fatigue.

This EVAL Kit is also used to evaluate the KTD2058/59/60 36-channel RGB LED drivers, and the KTD2064A/B 24-channel RGB LED drivers.

Ordering Information

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

EVAL Kit Photo



EVAL Kit Physical Contents

Item #	Description	Quantity		
		Included	Downloadable	User-Supplied
1	KTD2061 EVB Rev2.0 fully assembled printed circuit board	1		
2	White plastic light diffuser	1		
3	#4-40 flathead screw + washer + nut	1		
4	Wire harness	1		
5	MicroPython pyboard v1.1	1		
6	Micro-USB cable	1		
7	Anti-static bag	1		
8	EVAL Kit box	1		
9	Quick-Start Guide printout	1		
10	Demo software (pre-loaded on pyboard)	1	1	
11	EVAL Kit Manual		1	
12	USB 5V/1A power source			1

User-Supplied Equipment

Required Equipment

1. 5V/1A USB VBUS Power Source – either an AC wall adapter, battery power bank, or an available USB port from a computer.

Optional Equipment

1. Computer with USB port – for software development using a text editor, and to copy/paste/save the software (filename = main.py) from the editor to the MicroPython pyboard.
2. 5V/1A Adjustable Power Supply – for testing with variable input voltage.
3. Digital Multimeter – to measure input voltage, input current, or LED current.
4. Oscilloscope – to observe the multiplexed output waveforms.

Recommended Operating Conditions

Symbol	Description	Value	Units
VBUS	USB VBUS Voltage	4.5 to 5.5	V
V_{IN}	Input Voltage	3 to 5.5	V
I_{IN}	Input Current	0 to 1	A

Quick-Start Guide

Follow the below quick-start steps in sequence to ensure a safe and successful power-up of the EVAL Kit.

1. Carefully remove the EVAL Kit PCB, MicroPython pyboard, and wiring harness from the anti-static bag.
2. The wiring harness should already be connected. Check for connection integrity. Look at the silkscreen on the backside of the pyboard for SCL and SDA indication.
    a. **Red is V+/VIN**
    b. **Black is GND**
    c. **Orange is SCL**
    d. **Green is SDA**
3. Carefully connect a Micro-USB cable to the MicroPython pyboard.
4. Connect the other end of the Micro-USB cable to a USB 5V/1A power source (user-supplied). You may use an AC wall adapter, battery power bank, or an available USB port from a computer.
5. When power is applied, the demo software first executes 3 test patterns:
    a. All 12 RGB modules turn white for 5 seconds.
    b. Each RGB takes its turn showing blue, one at a time, and then repeats with green.
    c. The RGB modules show a multi-color palette for 5 seconds.
6. After the initial test patterns, the demo software loops a 7-minute demonstration endlessly until power is removed.
7. When desired, remove power by pulling the AC wall adapter from the AC outlet, or by disconnecting the USB cable from the USB power source.
8. Optionally, to read the demo software, use a Micro-USB cable to connect the MicroPython pyboard to an available USB port on a computer.
    a. It connects as a USB flash drive. Open the file “main.py” with a text editor, such as freeware Atom.io (www.atom.io), which is optimized for software development.
    b. Before editing the software, it is recommended to save an unedited copy of main.py on the computer. There is limited storage space on the MicroPython pyboard.
    c. When saving an edited (or unedited) version of main.py to the MicroPython pyboard, wait until all the small LEDs on the pyboard stop flashing before resetting or removing power. It takes a few seconds for the file to transfer, save, and compile on the pyboard. The newly compiled code executes after resetting the pyboard or after removing and restoring power.
9. Request the full KTD2061 EVAL Kit Manual from https://www.kinet-ic.com/evk/KTD2061

Electrical Schematic

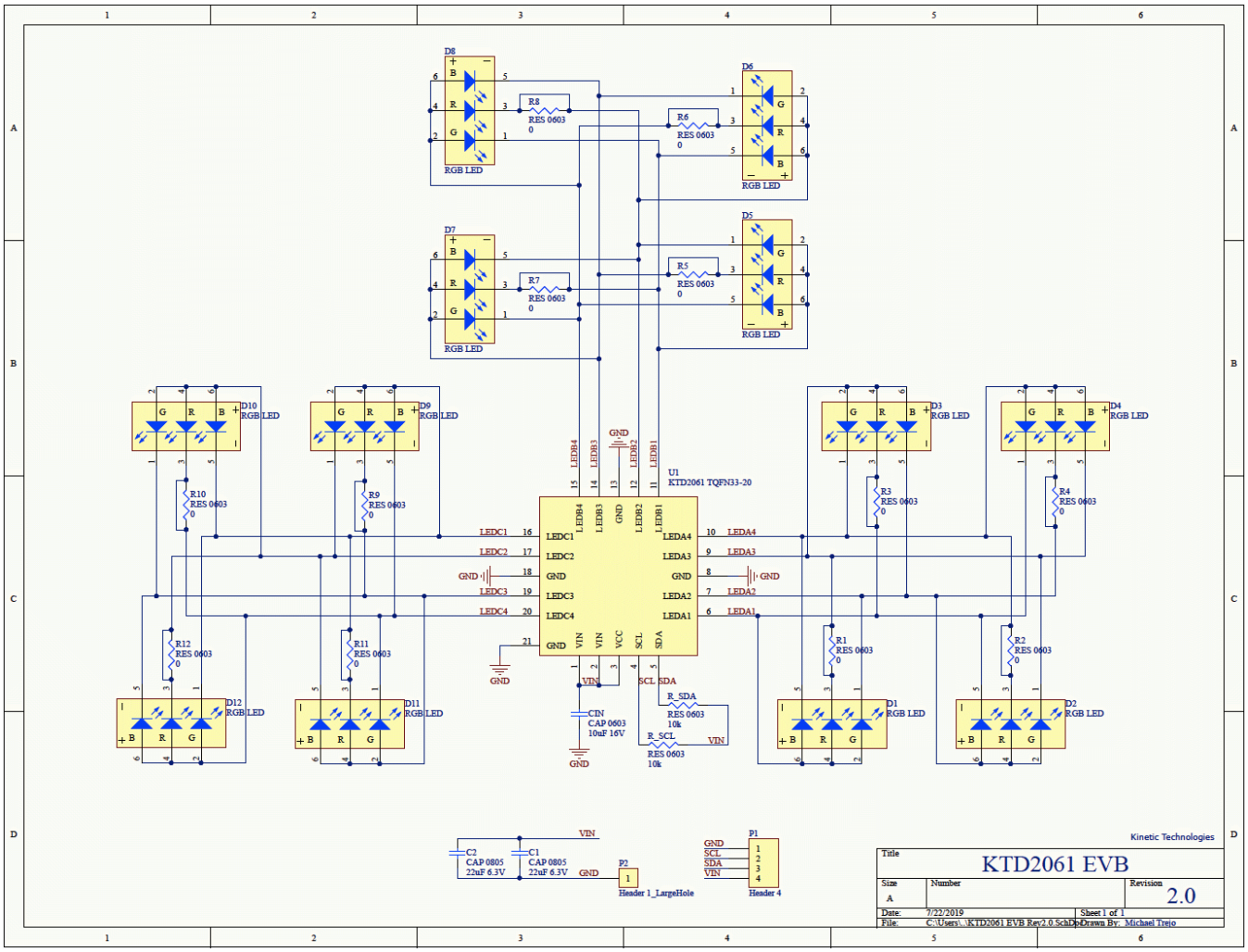


Figure 1. KTD2061 EVB Rev2.0 Electrical Schematic

Bill of Materials (BOM)

Item	Qty	Ref	Description	Package
1	1	U1	Kinetic Technologies KTD2061EUAC RGB LED Driver	TQFN33-20
2	12	D1 - D12	Everlight 19-337C/RSBHGHC-A88/4T RGB LED	SMD-6L
3	2	C1, C2	22µF 6.3V X5R SMD Capacitor	0805
4	1	CIN	10µF 16V X5R SMD Capacitor	0603
5	12	R1 – R12	Do Not Populate (0Ω via PCB trace short)	0603
6	2	R_SDA, R_SCL	10kΩ SMD Resistor	0603
7	1	P1	1-pin Header	--
8	1	P2	1x4-pin Header	--

Printed Circuit Board (PCB)

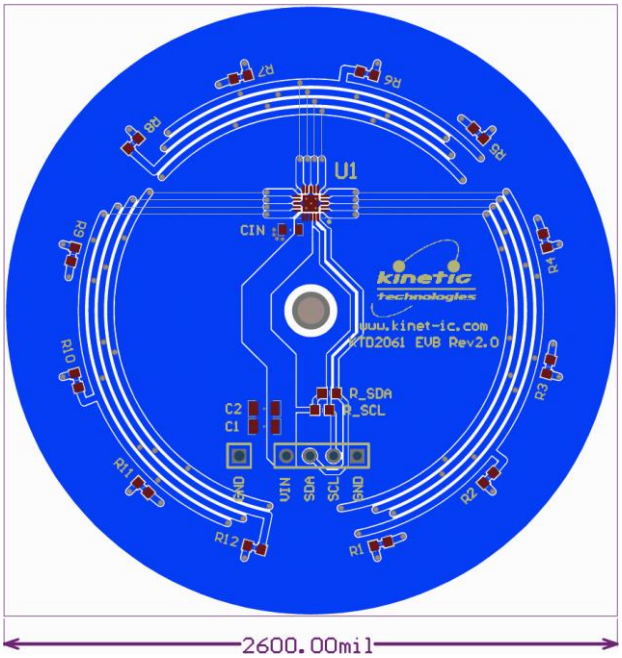


Figure 2. PCB Layout Top View

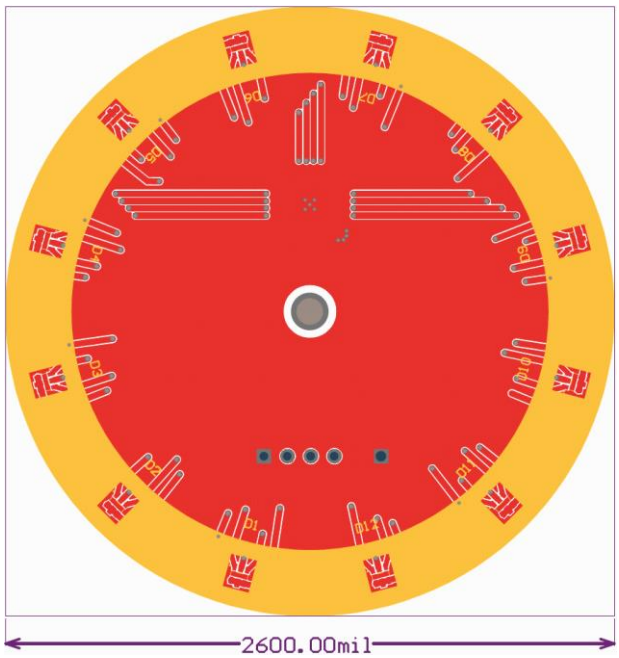


Figure 3. PCB Layout Bottom View

MicroPython pyboard v1.1

Per the description at https://store.micropython.org/product/PYBv1.1:

> The pyboard is a compact and powerful electronics development board that runs MicroPython. It connects to your PC over USB, giving you a USB flash drive to save your Python scripts, and a serial Python prompt (a REPL) for instant programming. It requires a micro USB cable and works with Windows, Mac and Linux. MicroPython is a complete re-write of the Python (version 3.4) programming language so that it fits and runs on a microcontroller. It includes many optimizations so that it runs efficiently and uses very little RAM. MicroPython runs bare-metal on the pyboard and essentially gives you a Python operating system. The built-in pyb module contains functions and classes to control the peripherals available on the board, such as UART, I^2C, SPI, ADC and DAC.
>
> The pyboard has a small, built-in filesystem which lives in part of the flash memory of the microcontroller. It also has an SD card slot if you want to extend the available storage. When you connect the pyboard to your PC, it appears as a USB flash storage device, and you can access (mount) the internal filesystem and the SD card this way. If you copy a Python script to the filesystem and call it "main.py", then the board will execute this script when it starts up. In this way, you can run scripts without being connected to a PC.

The MicroPython pyboard v1.1 is manufactured and available for purchase from multiple international sources. The pyboard included with the KTD2061 EVAL Kit is pre-loaded with demo software (file "main.py"). Optionally, to read the demo software, use a Micro-USB cable to connect the MicroPython pyboard to an available USB port on a computer.

1. It connects as a USB flash drive. Open the file "main.py" with a text editor, such as freeware Atom.io (www.atom.io), which is optimized for software development.
2. Before editing the software, it is recommended to save an unedited copy of main.py on the computer. There is limited storage space on the MicroPython pyboard.
3. When saving an edited (or unedited) version of main.py to the MicroPython pyboard, wait until all the small LEDs on the pyboard stop flashing before resetting or removing power. It takes a few seconds for the file to transfer, save, and compile on the pyboard. The newly compiled code executes after resetting the pyboard or after removing and restoring power.

Wire Harness

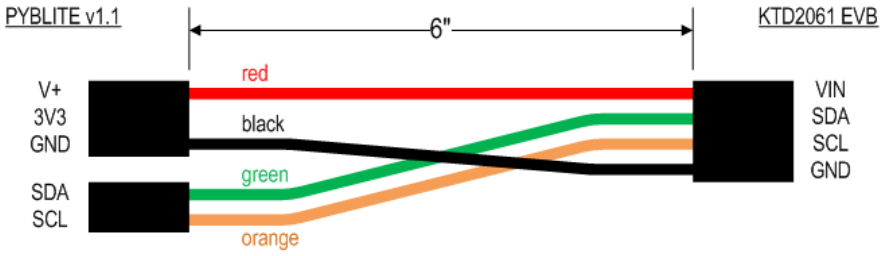


Figure 4. Wire Harness to connect the MicroPython pyboard v1.1 to the KTD2061 EVB Rev2.0

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