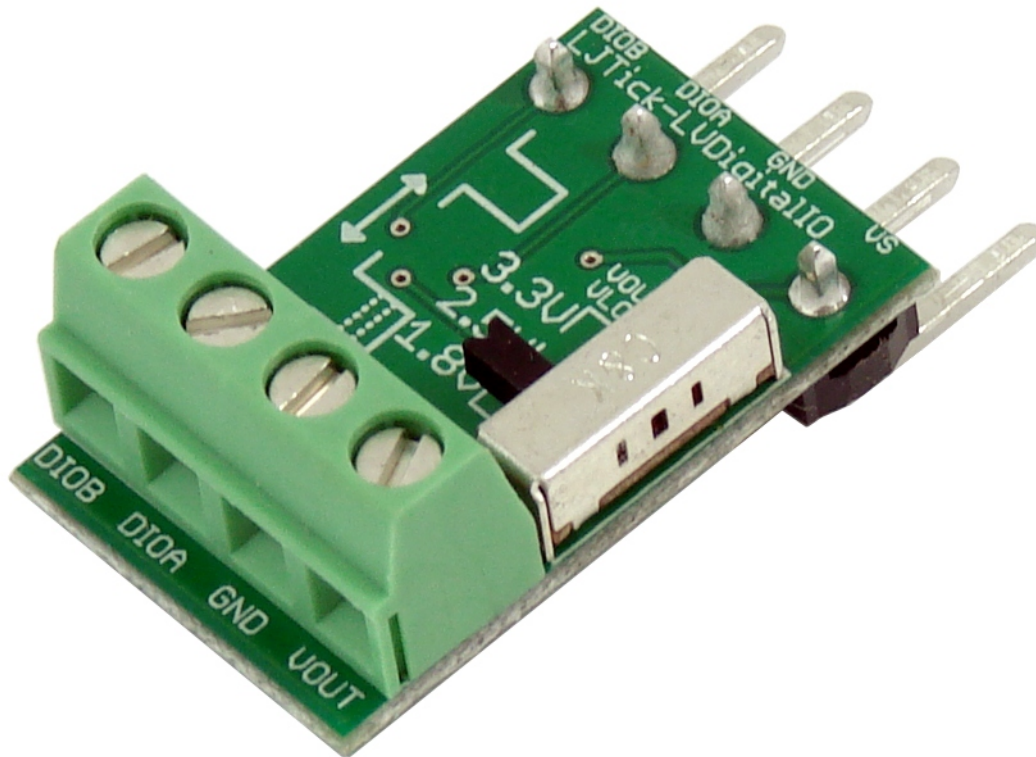


LJTick-LVDigitalIO Datasheet

[LJTick-LVDigitalIO](#)

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LJTick-LVDigitalIO Overview

The [LJTick-LVDigitalIO](#) (LJT-LVDIO) A bidirectional logic shifting board for converting 3.3V logic down to 2.5V or 1.8V. There is also a VOUT terminal which can source power at the selected voltage. Useful for users who have external boards that run on lower logic thresholds, or simply want a 3.3V, 2.5V, or 1.8V supply.

- Supports bi-directional communication
- Up to 800kHz
- 3.3V, 2.5V, or 1.8V
- VOUT terminal can source up to 200mA

Note: Advanced users may convert the 1.8V option to 5V by installing a jumper on R5, and removing or destroying the voltage regulator marked U3. Instructions for doing this can be found on the [modifying the LJTick-LVDigitalIO](#) page.

Common Applications

- Communicating with SPI, I2C, UART, 1-Wire, and other Digital IO sensors that require a supply voltage that is the same voltage as the logic level.



Screw Terminal Descriptions

Vout: This voltage can be selected to be either 3.3V, 2.5V, or 1.8V with the slide switch.

GND: Same as LabJack ground (GND).

Figure 1: LJTick-LVDigitalIO **Figure 2: LJTick-LVDigitalIO with U3-DIOA/DIOB:** These logic input and output lines can be configured to communicate with 3.3V, 2.5V, or 1.8V circuitry.

LJTick-LVDigitalIO Hardware Block Diagram

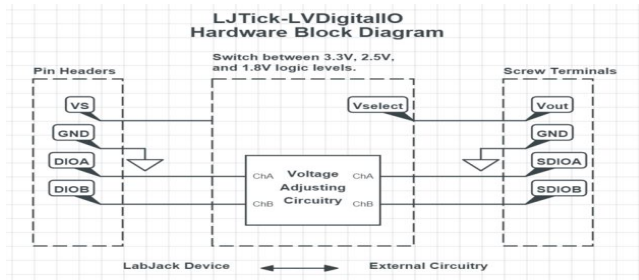


Figure 3: LJTick-LVDigitalIO Hardware Block Diagram

LJTick-LVDigitalIO Schematic

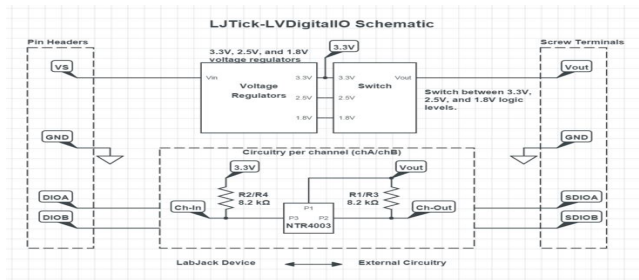


Figure 4: LJTick-LVDigitalIO Schematic

Specifications:

Parameter	Conditions	Min	Typical	Max	Units
Supply Voltage		3.6		5.25	V
Supply Current	No Load		0.2		mA
Operating Temperature		-40		80	°C
Output Drive Current			100		mA
1.8V Logic Voltage					
Vout Output Voltage			1.8		V
Vout Current			300		mA
Rise time			180		ns
Fall time			580		ns
Max Recommended Frequency	No load, 50% duty cycle		1		MHz
Logic High			1.78		V
2.5V Logic Voltage					
Vout Output			2.5		V

Voltage				
Vout Current		300		mA
Rise time		560		ns
Fall time		640		ns
Max Recommended Frequency	No load, 50% duty cycle	1		MHz
Logic High		2.46		V
3.3V Logic Voltage				
Vout Output Voltage		3.3		V
Vout Current		300		mA
Rise time		2		ns
Fall time		800		ns
Max Recommended Frequency (1)	No load, 50% duty cycle	1		MHz
Logic High		3.26		V
Logic High (Vmax) at max frequency	1MHz, no load, 50% duty cycle	3.1		V

(1) Frequencies higher than 350kHz will not produce the full logic high voltage.

For more specifications about the MOSFETs and voltage regulators used in the LJTick-LVDigitalIO look at the following datasheets:

- ON Semiconductor (Logic Level Shifters) [NTR4003N datasheet](#).
- Diodes Incorporated (3.3V Regulator) [AP2127K-3.3TRG1 datasheet](#)
- Richtek (2.5V Regulator) [RT9193 datasheet](#)
- Diodes Incorporated (1.8V Regulator) [AP2127K-1.8TRG1 datasheet](#)

File Attachment:

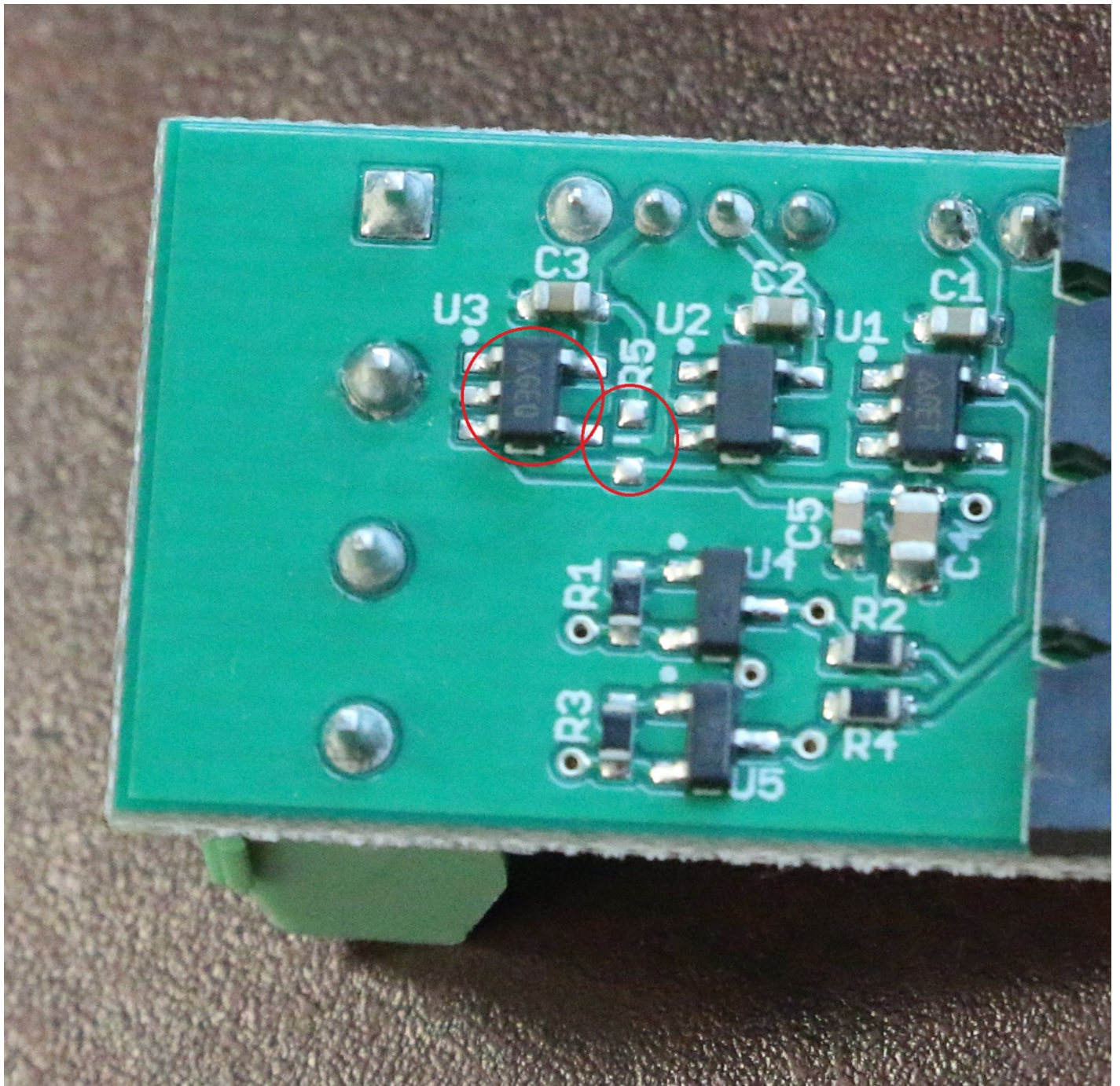
- [ON-Semiconductor-NTR4003N-Datasheet.PDF](#)
- [Diodes-Incorporated-AP2127-Datasheet.pdf](#)
- [Richtek-RT9193-Datasheet.pdf](#)

Modifying the LJTick-LVDigitalIO for 5V

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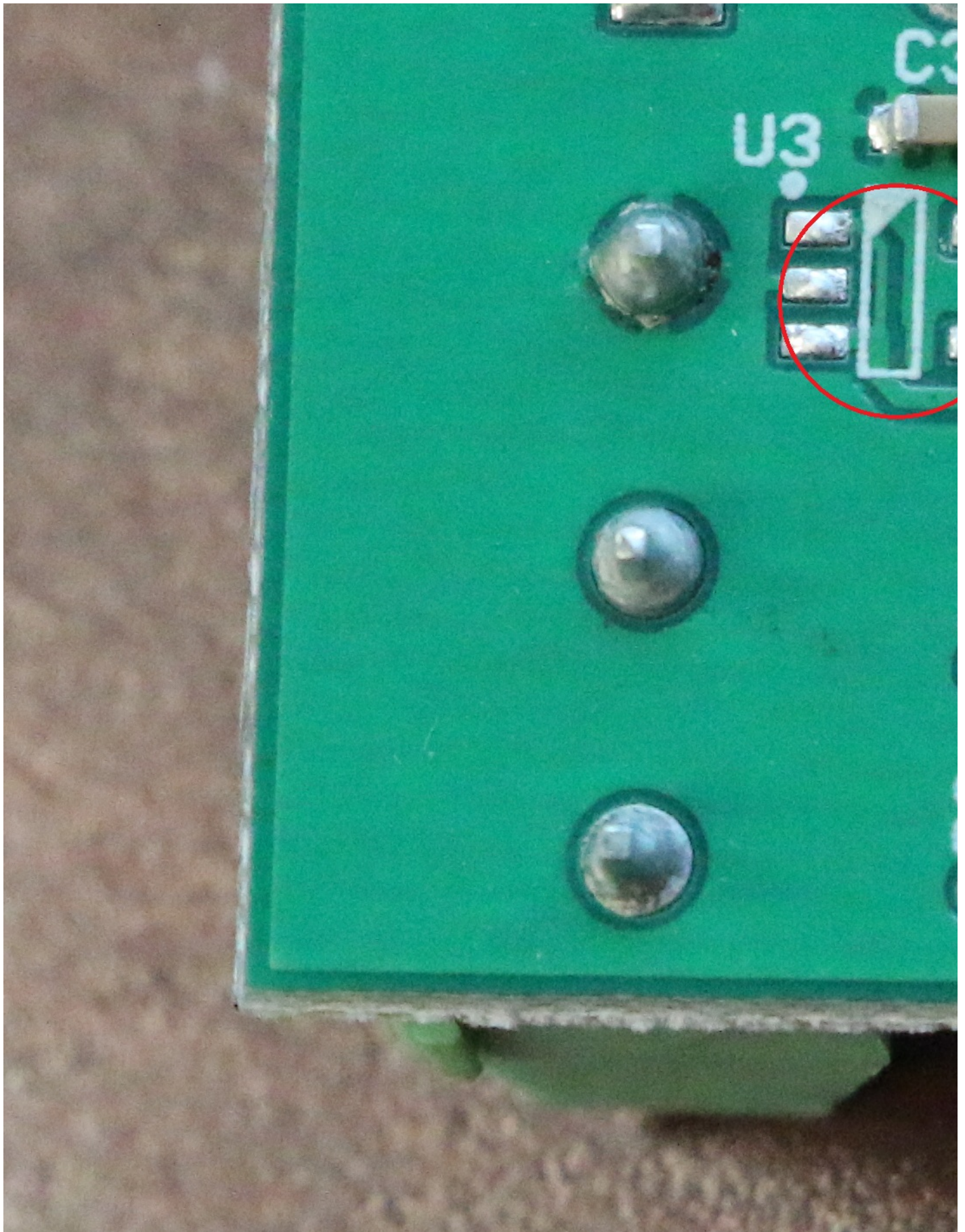
This is a short tutorial for how to modify a LJTick-LVDigitalIO accessory to change the 1.8V option to 5V. Larger versions of each image are linked and can be downloaded at the bottom of the page.

1. On the bottom side of the tick, locate the 1.8V regulator chip (U3) and the un-populated R5 resistor pad.

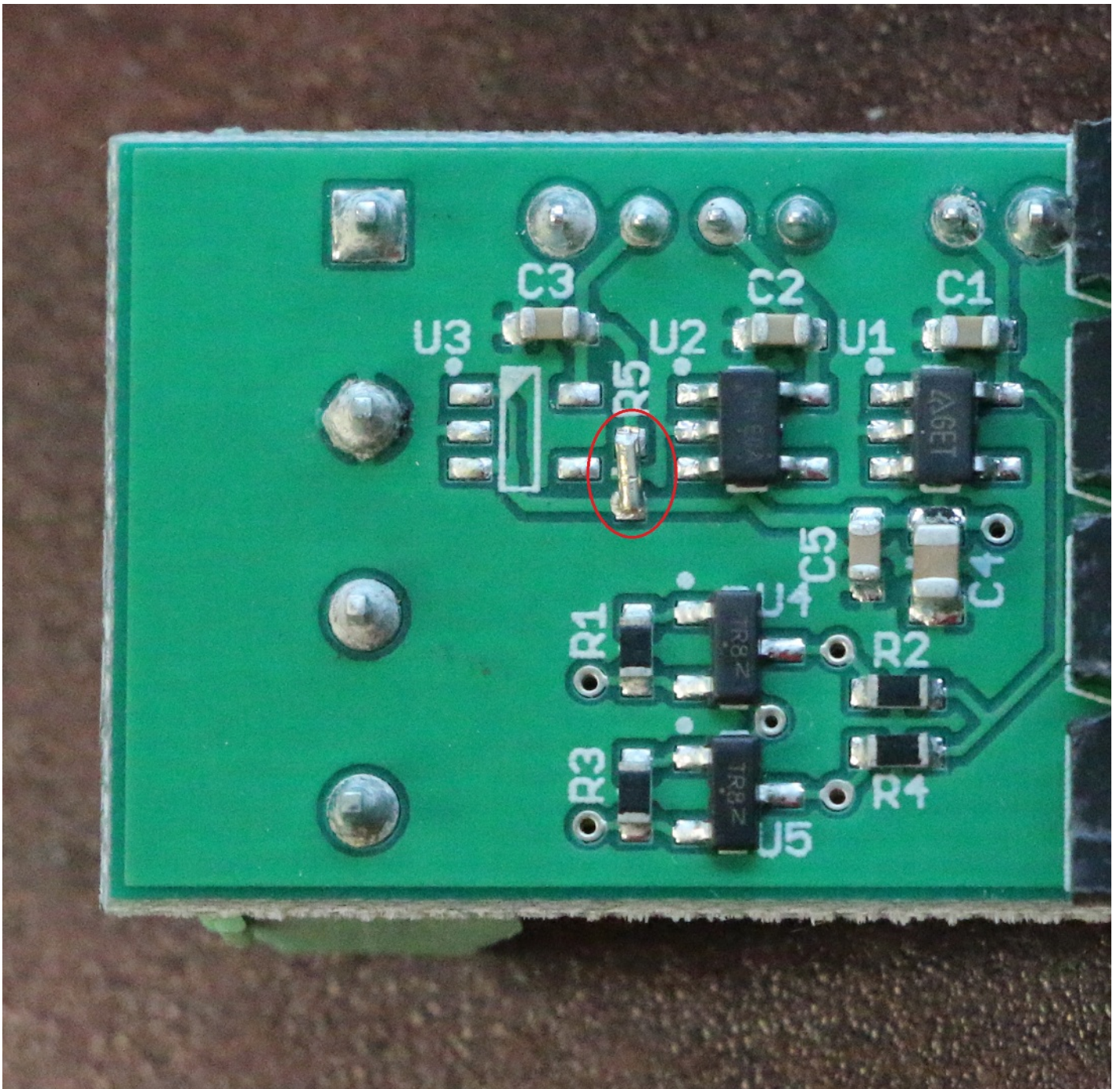


2. Remove the 1.8V regulator chip (U3) located on the bottom side of the tick.

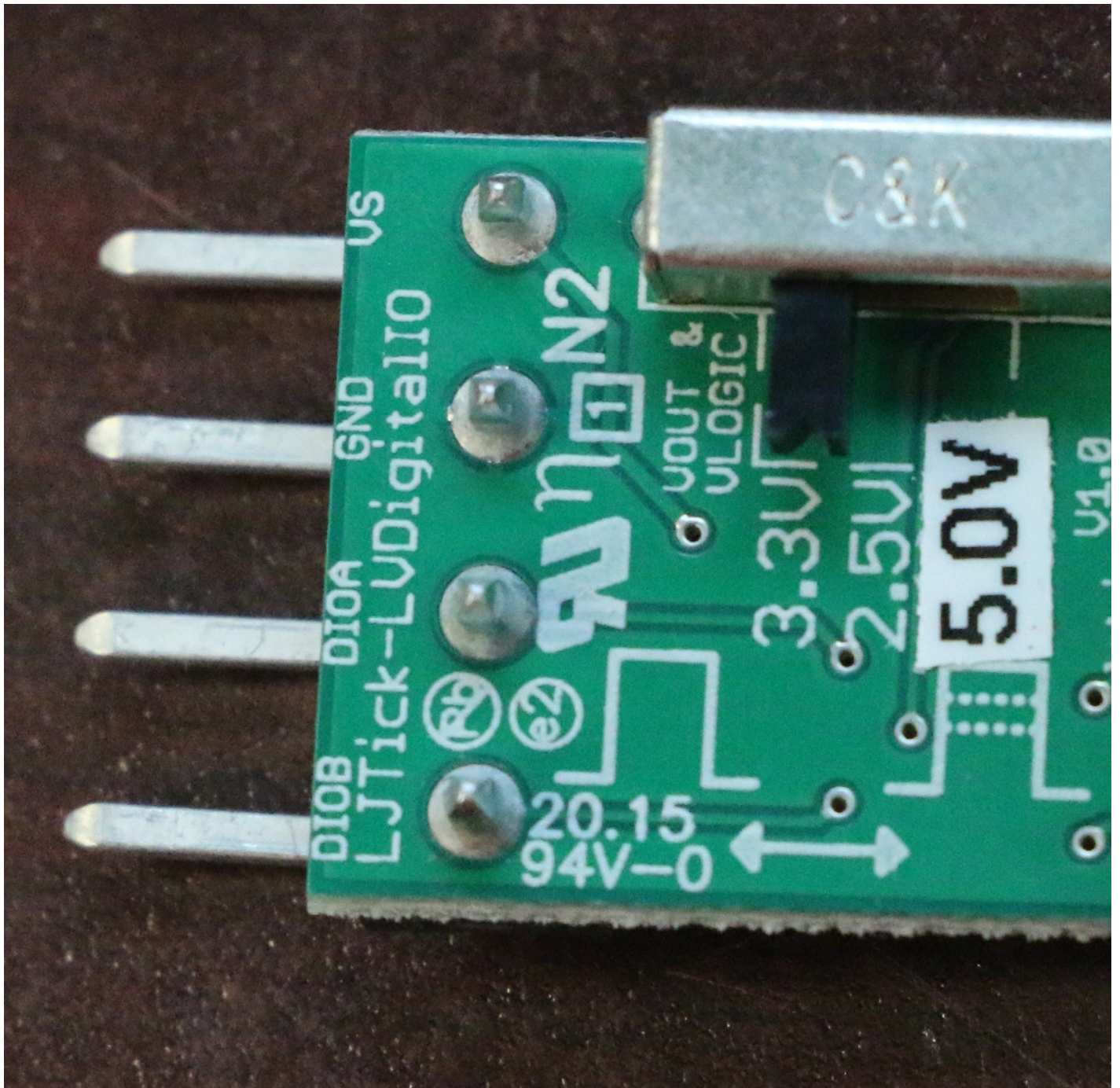




3. Add a 0 ohm resistor or a jumper wire.



4. Optionally re-label the 1.8V selection to say 5.0V.



File Attachment:

-  [1_Locate-U3-and-R5-sm.png](#)
-  [2_Remove-U3-sm.png](#)
-  [3_Add-jumper-wire-to-R5-sm.png](#)
-  [4_Re-Label-the-1.8V-to-5.0V-sm.png](#)
-  [2_Remove-U3.png](#)