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LJTick-LVDigitallO Datasheet

LJTick-LVDigitalIO Stock: In Stock Price: \$19.00



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LJTick-LVDigitalIO Overview

The <u>LJTick-LVDigitalIO</u> (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 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.



Vout: This voltage can be selected to be either 3.3V, 2.5V, or 1.8V with the slide switch. Figure 1: LJTick-LVDigitallO Figure 2: LJTick-LVDigitallO with U3-GND: Same as LabJack ground (GND)!

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 | | 40 | | 80 | °C |
| Temperature | | -40 | | | |
| Output Drive | | | 100 | | m۸ |
| Current | | | 100 | | ШA |
| | | | | | |
| 1.8V Logic | | | | | |
| Voltage | | | | | |
| Vout Output | | | 1.8 | | v |
| Voltage | | | 1.0 | | v |
| Vout Current | | | 300 | | mA |
| Rise time | | | 180 | | ns |
| Fall time | | | 580 | | ns |
| Max | No load, 50% duty cycle | | 1 | | MHz |
| Recommended | | | | | |
| Frequency | | | | | |
| | | | | | |

| Logic High | | 1.78 | V | |
|---------------------------------------|-------------------------------------|------|-----|--|
| 2.5V Logic | | | | |
| Voltage | | | | |
| Vout Output | | 2.5 | v | |
| Voltage | | 2.0 | v | |
| Vout Current | | 300 | mA | |
| Rise time | | 560 | na | |
| Fall time | | 640 | na | |
| Max | No lood E0% | | | |
| Recommended | duty avala | 1 | MHz | |
| Frequency | auty cycle | | | |
| Logic High | | 2.46 | V | |
| | | | | |
| 3.3V Logic | | | | |
| Voltage | | | | |
| Vout Output | | 2.2 | v | |
| Voltage | | 3.5 | v | |
| Vout Current | | 300 | mA | |
| Rise time | | 2 | ns | |
| Fall time | | 800 | ns | |
| Max | No load 50% | | | |
| Recommended | duty avela | 1 | MHz | |
| Frequency (1) | auty cycle | | | |
| 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) <u>AP2127K-1.8TRG1 datasheet</u>

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.

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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:

- 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