PREFACE

In order to organize the data we collect, I am going to be organizing PNG screenshots and CSV files into folders based on the day they were collected. Organization can be time consuming and confusing, so to hopefully mitigate both of those outcomes, I am going to describe my (hopefully simple) method here.

1. All data files will be named “scope\_x” with x being an integer starting from 0.
2. All zero and even files will be used for the PNG images, and odd files will be used for CSV tables.
3. No matter how tempting, do not rename any files. This is to help keep organization simple.
4. During each recording session, the dependent variable and its accompanying data files should be logged as soon as they are taken. Do not wait until later, or else there may be issues with pairing due to short-term memory loss.
5. Each day data is recorded, a new folder titled “MMDDYY” must be created inside of the “test\_data” folder, and all data recorded that day is to be moved into that folder.
6. This word document is to be updated with the logged data after every recording session, in a new section with a centered header titles “MM/DD/YY” in 24pt font.
7. A backup of all data is to be made each day and shoved into my “FYRE” folder.
8. Also, I (Jet) have the right to amend this at any time muahahaha.
9. HIGHER RL GIVES MORE CONSISTENT RESULTS

02/29/24

Today we logged some data for the HCPL0701 and the 6N138, using the standard MNO-02 circuit with a 1kΩ pull-up resistor (RL). We also made some optimizations to the debounce circuit I created last week, by increasing the capacitor (C) to 1µF, and decreasing R1 to 560Ω.

SCOPES

(0, 1) – Preliminary tests using the HCPL0701.

(2 – 7) – Three tests for the 6N138.

(8 – 13) – Three tests for the HCPL0701. (ALL TOO LOW)

(14, 15) – Test for the HCPL0701.

(16, 17) – Test for the 6N138/

NOTES:

I noticed that as I performed more tests, the average change in X was decreasing. This was verified by comparing tests 2 and 8 to tests 16 and 14, respectively. I suspect this has something to do with the voltage reading at the top right of the oscilloscope. I wish to redo these tests to get a more consistent result.

These initial readings show a greater performance from the HCPL0701, which aligns with the data shee

2Volt intervals, 1.5V trigger voltage, normal acquisition

(0 – 5) – HCPL0701

(6 – 11) – 6N138

ts.

03/14/2024

(0 – 5) – HCPL 270ohm

(6 – 11) – HCPL 1kohm

(12 – 17) – HCPL 10kohm

(18 – 23) – 6N138 270ohm

(24 – 29) – 6N138 1kohm

(30 – 35) – 6N138 10kohm

(36 – 41) – VO0631T 270ohm (FAST but INCONSISTENT)

(42 – 47) – VO0631T 1kohm (FAST but INCONSISTENT)

(48 – 53) – VO0631T 10kohm

(54 - 55) – VO0631T EXTRAS

(56 – 63) – TLP2301 270ohm (IGNORE 59 and 60)

(64 – 69) – TLP2301 1kohm

(70 – 75) – TLP2301 10kohm

(76 – 81) – FODM611 270ohm

(82 – 87) – FODM611 1kohm

(88 – 93) – FODM611 10kohm

(94 – 99) – H11L3M 270ohm

(100 – 105) – H11L3M 1kohm

(106 – 111) – H11L3M 10kohm (By far the easiest to measure! Remeasures were almost completely unnecessary and were consistent)

Following the guide Wes sent, I calculated the approximate rise time of our test system to be 6.1\*10^-9, by following the equation set in the PDF, replacing 0.338 with 0.35 (A more general figure I found support for online), using 70mhz for the oscilloscope rise time, and estimating 100mhz for the probe (A common number). For the scope of our project, this rise time seems to be negligible. The fastest test result I found was 470 ns, and when account for the error in our system, that result gets adjusted to 469.9 ns. I think it would be easiest for us to round the results to the nearest whole number.