

Inrush Current

Elior Bilow

ECEN 5730 – F '25 – CU Boulder

2025-10-13

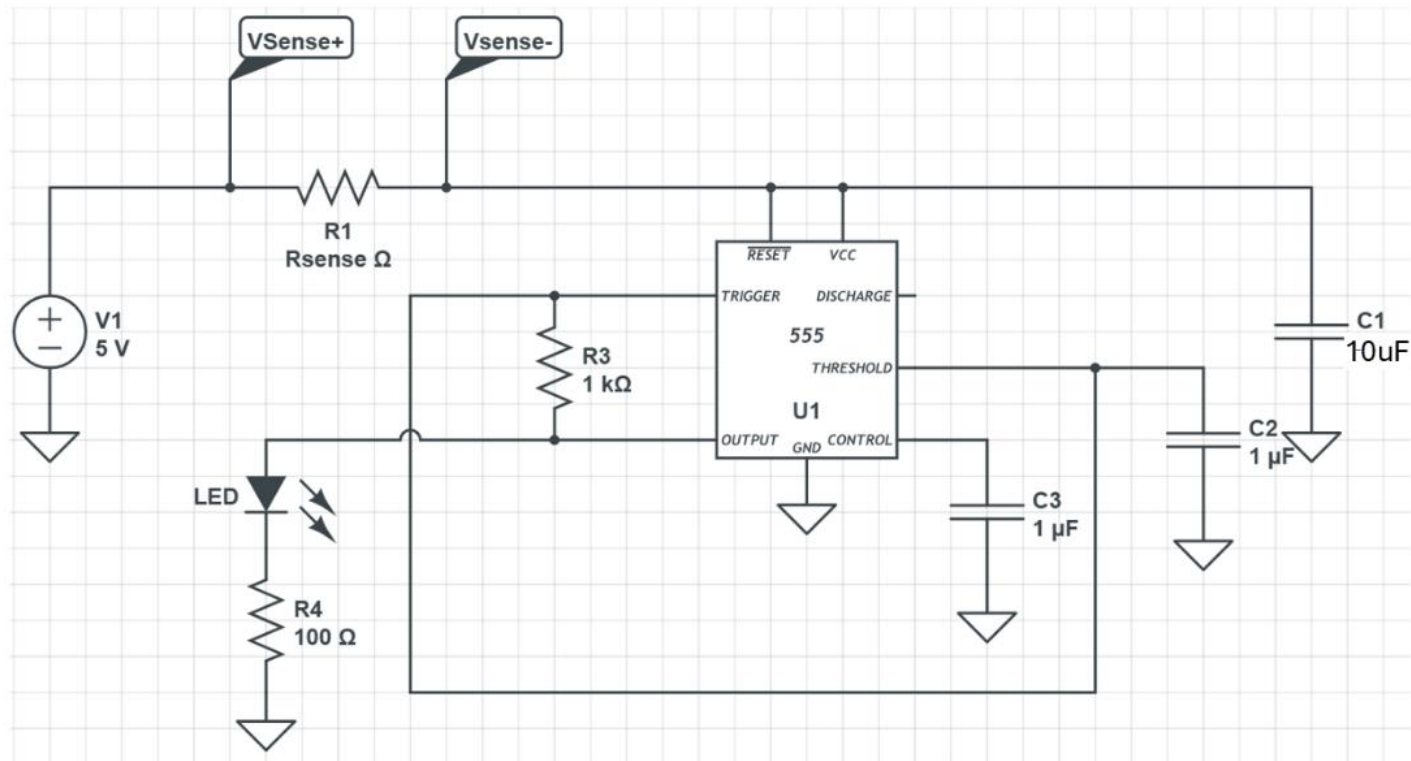


Figure 1: Test Circuit Diagram

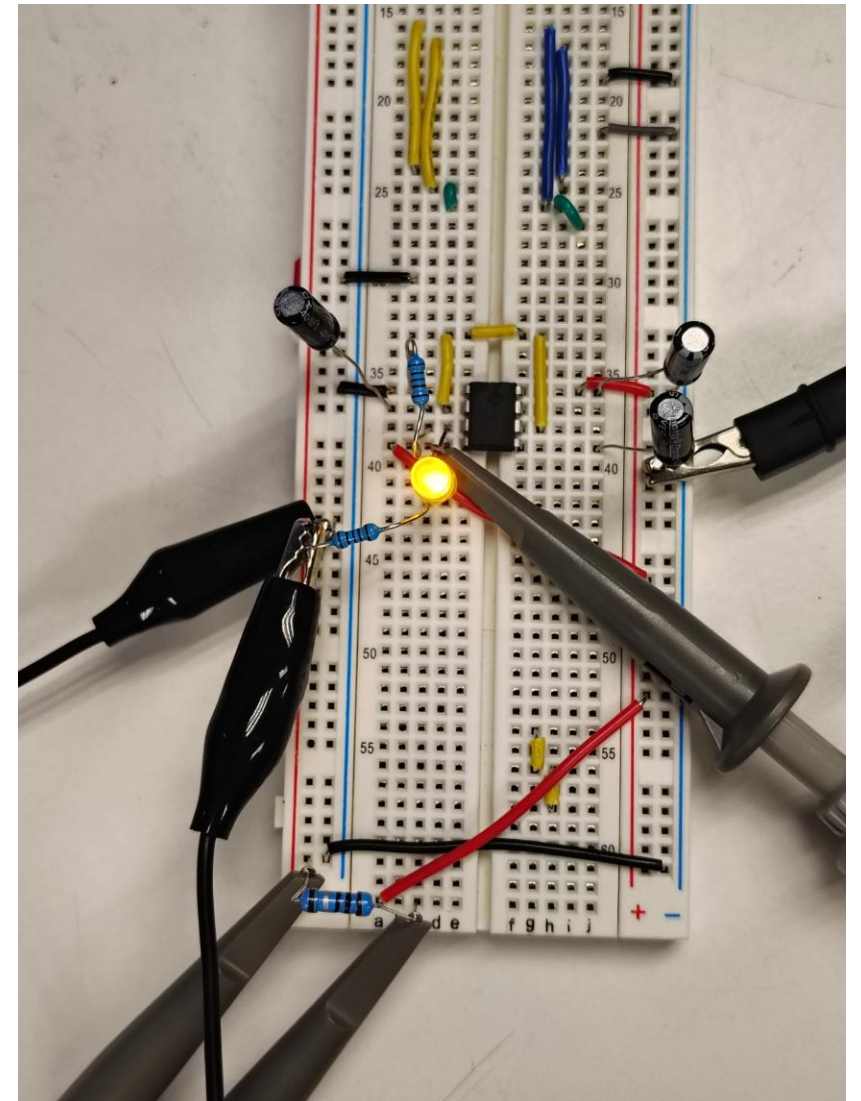


Figure 2: Built Test Circuit. Sense Resistor and Test Points in the Bottom Left. Trigger Probe on the Right.

Startup

- Inrush current during start-up was measured at .925 A (0.925 V across a 1ohm $\pm 1\%$ resistor).

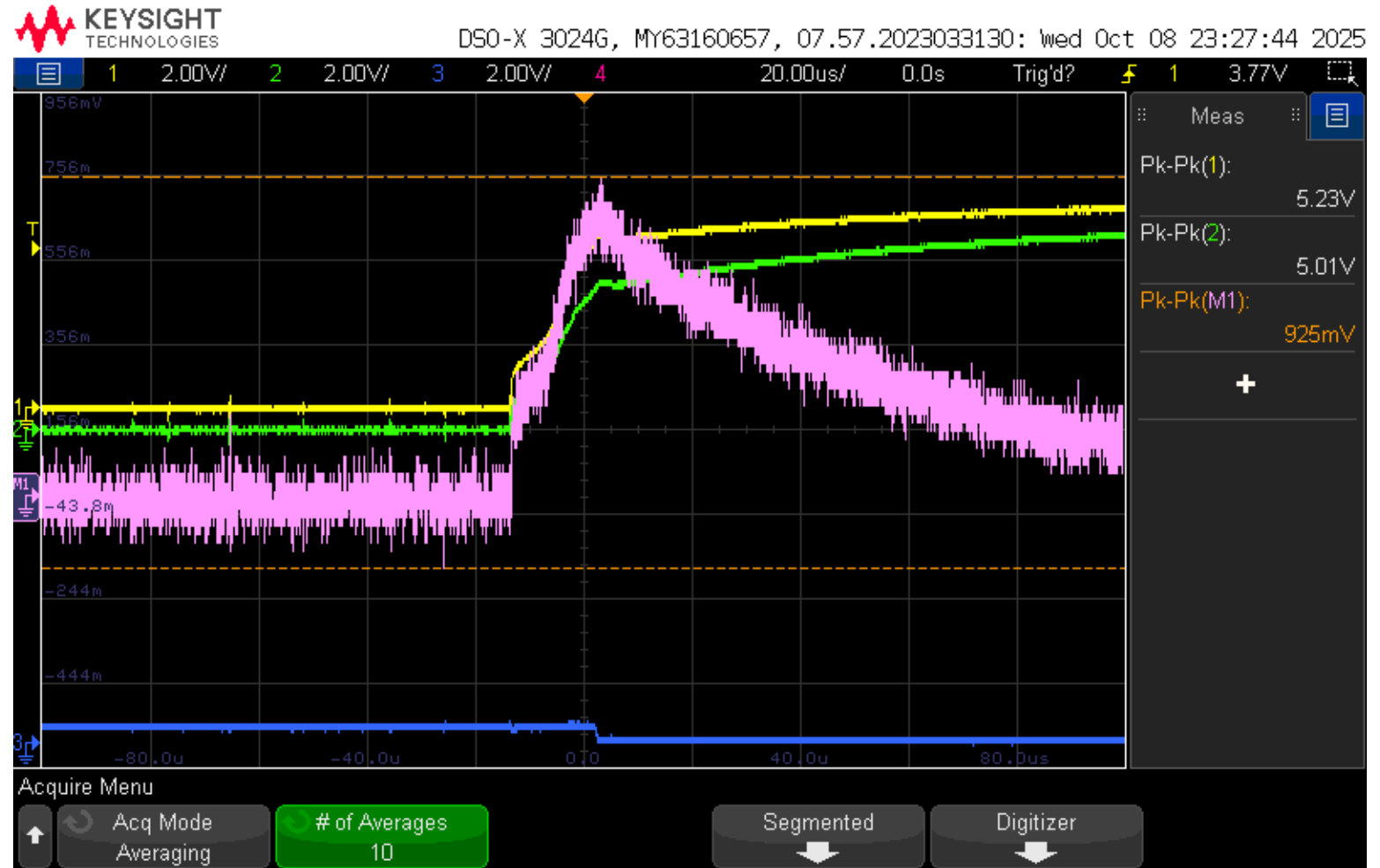


Figure 3: Inrush Current at Power-on, Single Acquisition

Steady-state

- Steady-state current while the LED was powered on was measured at 13.28 mA above baseline (LED off but system on). This is only 1.4% of the inrush current during startup.
- Measurement setup was the same as in the last slide.

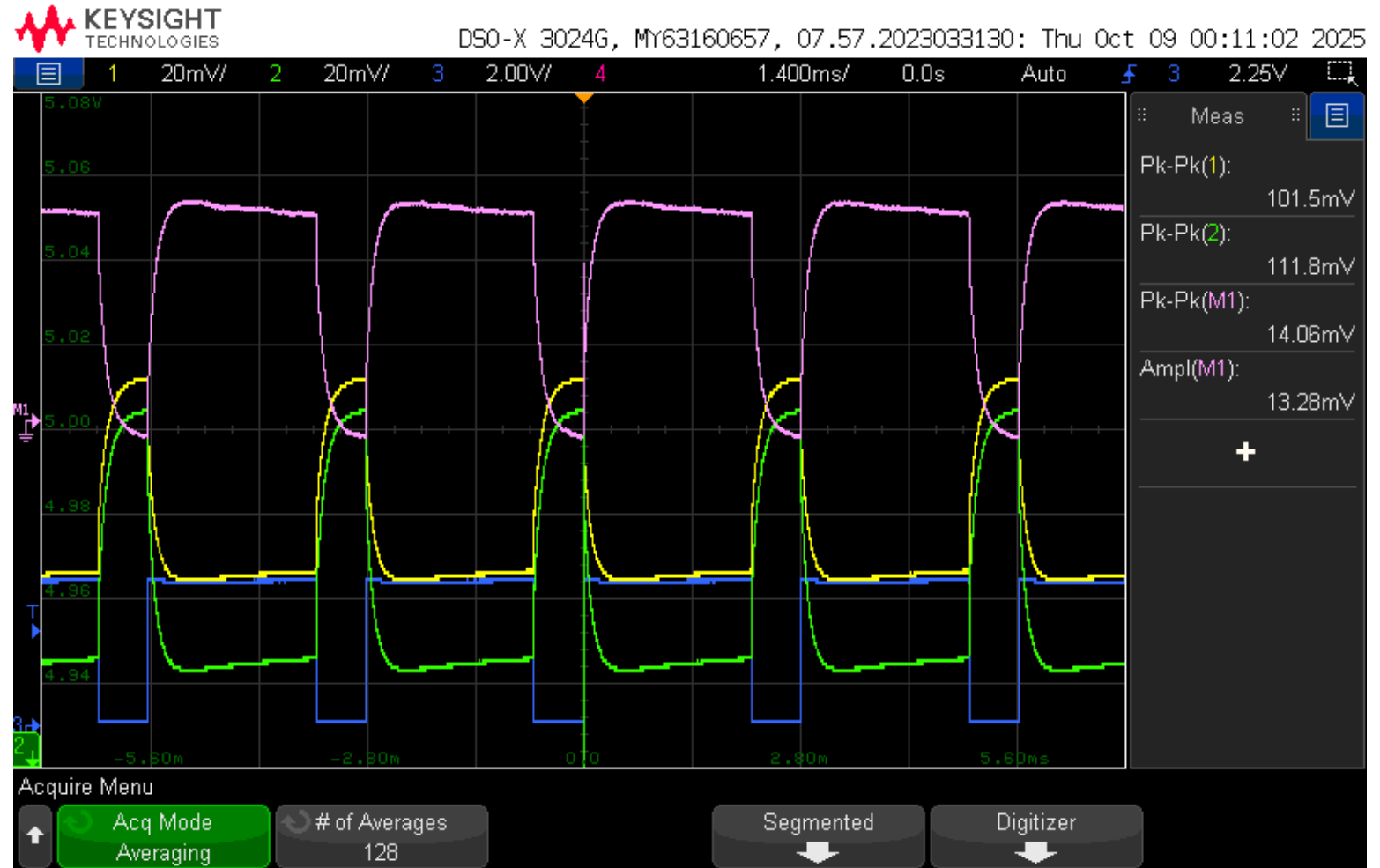


Figure 4: Steady-State Power Draw, Averaging Acquisition Mode (128 Averages)

Inrush Current after startup

- Inrush current after startup and whenever the LED was powered on was 0.1494 A, 16% less than the inrush current during startup, but still 11.25x more than the steady-state current draw with the LED powered on.
- Measurement setup was the same as in previous slides

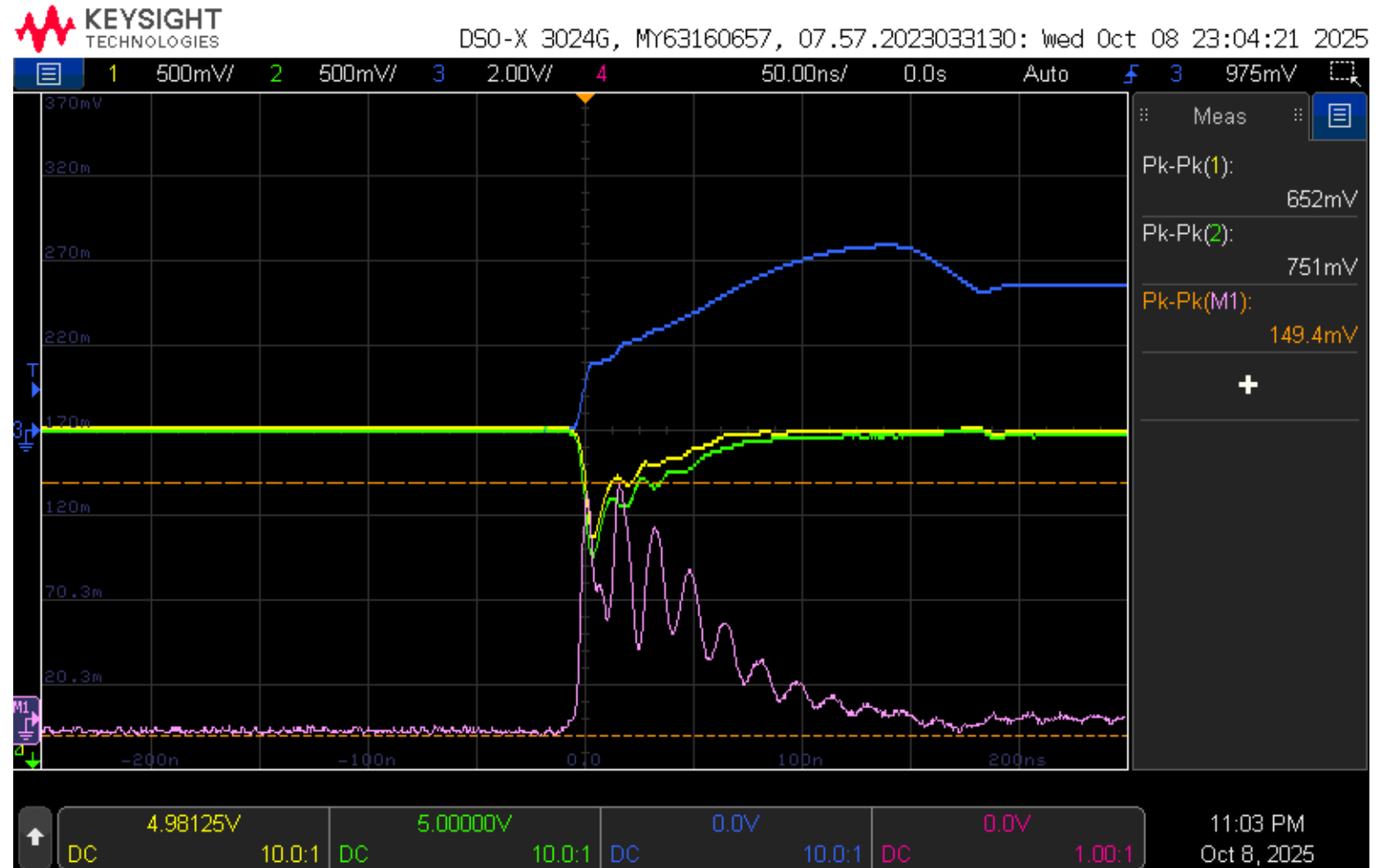


Figure 5: Inrush Current When LED is Turned On After Power-On, Averaging Acquisition Mode (128 Averages)