Lab Entry – 2026-02-13

Metadata

- Date: 2026-02-13
- Project: Off Grid Solar Battery Charger
- Board / Rev: Raspberry Pi Pico 1
- Scope: Use High and low mosfets for the half bridge IC

Objective

Verify that two mosfets work. Verify that we can achieve a VGS voltage higher than 4V Try to get a better pwm output.

Setup

See 2-8-26-halfbridge-gatedriver-HIL-test

Measurements

Scope Captures

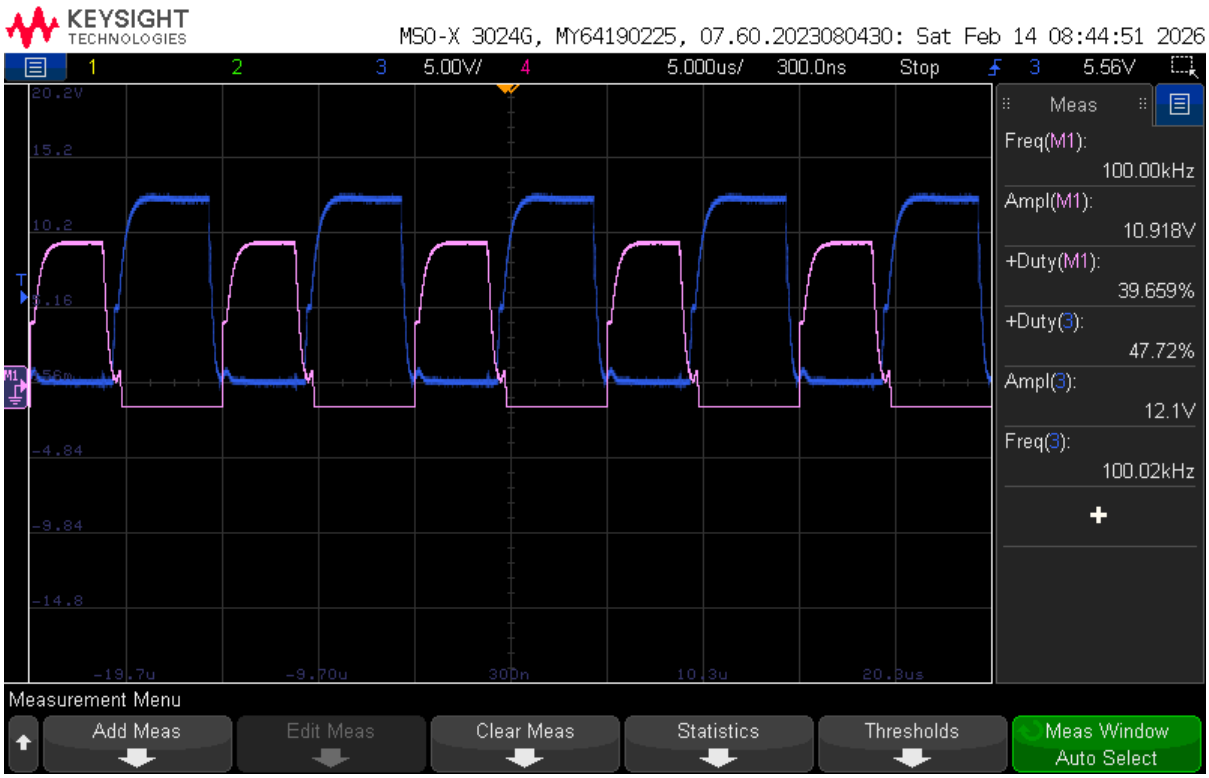

Figure 1: PWM VGS waveform. Pink is High side Mosfet. Blue is Lowside Mosfet.

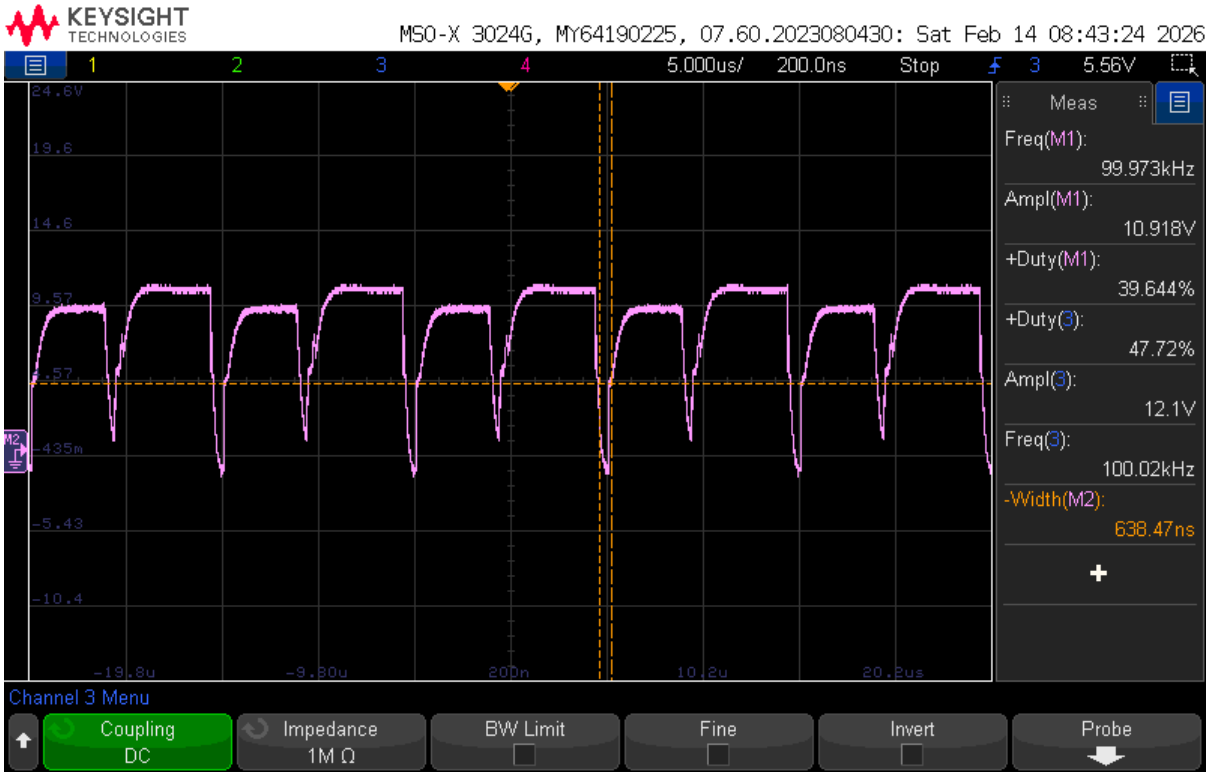

Figure 2: Add the two Waveforms from Figure 1. Measure the deadtime.

Observations

Looking at Figure 1, we can see that the highside mosfet still has rolled edges on the rising edge.

We also see that we are getting a higher VGS ouput, thus achieving the 8 mohm resistance.

Looking at Figure 2, we can see that we achieved a dead time of 638.47 ns.

Conclusions / Next Steps

This configuration works for most cases. However there are a few edge cases where the deadtmie is not achieved and we would create shoot through. Because of this and the waveform rising edge not looking anybetter, I will switch back to asynchrounos buck converter and stick to high side switching only.

Set up ADC on pico so we can achieve a fast current correction mode. Figure out resistor and shunt values to measure current and voltage out of the buck converter.