

## PARTS LIST:

### 2-SWITCH FLYBACK CONVERTER

IC GATE DRIVER	- UCC27714D
Q1, Q2	- FGAF40N60UFTU (IGBT)
SH	- IRG4IBC10UDPBF
POWER SUPPLY	- MB120S18KO1 (Qty 2 in Parallel), Output Voltage-Channel 1: 18 VDC
	- Number of Outputs: 1 Output , Output Power: 120 W
	- Input Voltage: 80 VAC to 264 VAC, Output Current-Channel 1: 6.6 A
	<b>- TOTAL SUPPLY--18VDC, 240 WATTS, 13.2 DCA</b>

### MOST CURRENT READINGS:

#### RESISTANCE:

Rboot = 6.79R,      Rbias = 5.42R,      Q1 Rg = 4.82R,      Q2 Rg = 10.1R      SH Rg = 4.77R

#### CAPACITORS:

Cboot 10Uf,      Cbias 10Uf

#### VOLTAGES:

Vboot = 16V,      Vbias = 15.6

“FIGURE 1 – 2-SWITCH FLYBACK CONVERTER SWCHEMATIC” show the components used in this design which is a very simple design, so I thought. SomQ1 closes but Q2of the values have changed so I listed them for accuracy of the drawing. Since my last post I have popped many a IGBT and of course destroyed many IC Driver chips. It just seems that no matter what I do I cannot seem to get the IGBT’s to completely close. Sometimes Q1 partially closes but then Q2 remains open and it causes a high current loop which kills the IGBT and usually the UCC27714 IC Driver.

So I decided to lower the HV supply down to 30 volts just to see if it will work for more than one second. After several attempts I was able to keep the circuit flowing for five minutes, then no signal, the IC Driver had quit working. I am had a bad six weeks. So hence, I am writing to the masters for help.

I personally think I have some very good Gate Signals, but I need you to let me know if they are good. I paralleled my supply to make sure I have enough amps to cover the sudden current rise that the gate requires. Q2 has a higher Rg value than Q1 due to some ringing.

Vboot and Vbias both take just under 10ms to charge from zero to 16 volt.

I NEED YOUR ADVICE/HELP.

QUESTION 1 : What is required to fully close this IGBT?

QUESTION 2 : Before applying HV to the IGBT, is there a test that can be performed by applying the gate signal and be able to tell if the IGBT is closing all the way, to tell if the IGBT might be partially closing, RESISTANCE, DRAIN SOURCE, etc.

QUESTION 3 : Looking at Figure 1, is there any portion of the design that you would change and why.

I look forward to your expert advice, any design modifications and suggestions.

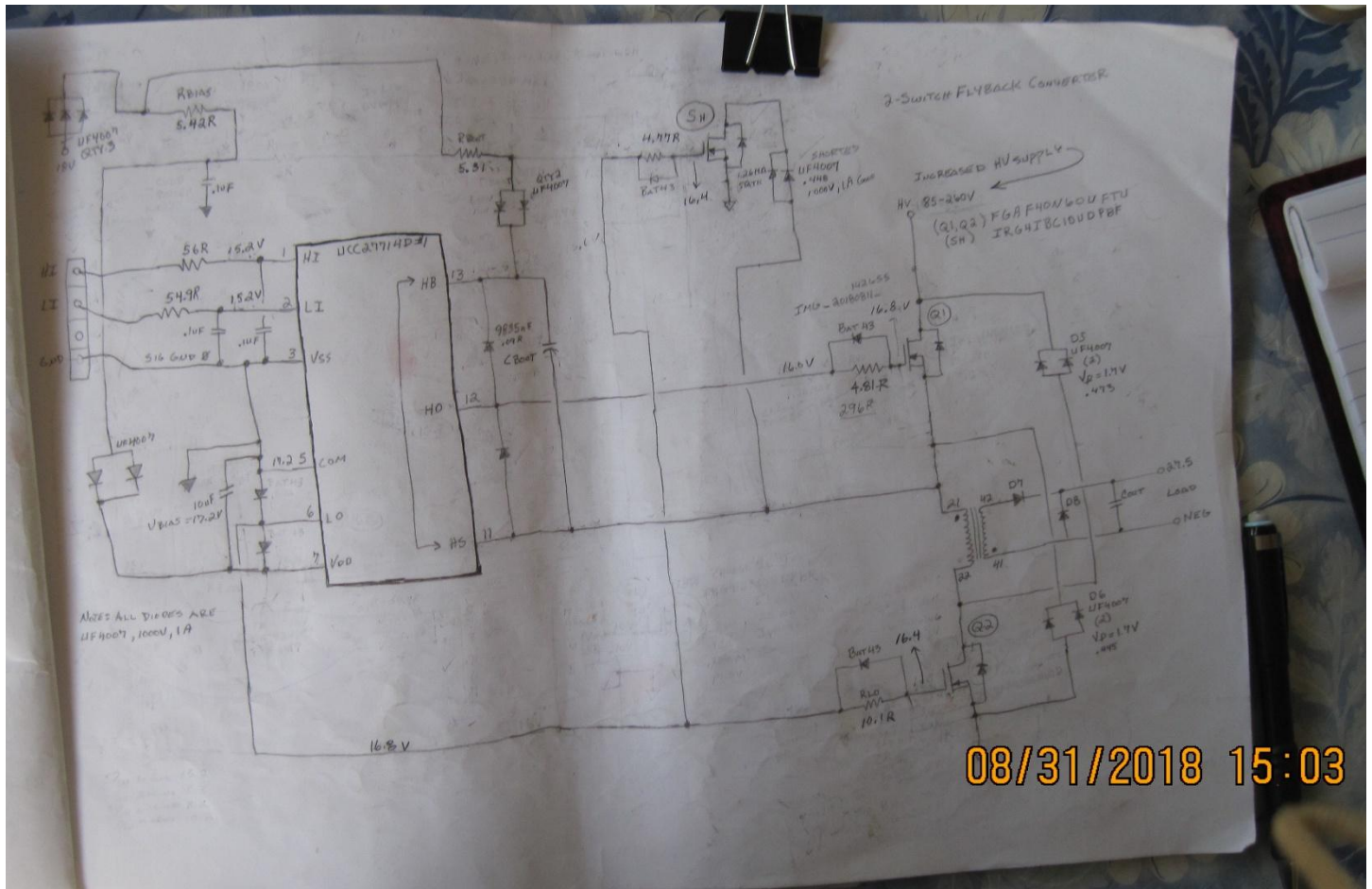


FIGURE 1 – 2-SWITCH FLYBACK CONVERTER SCHEMATIC

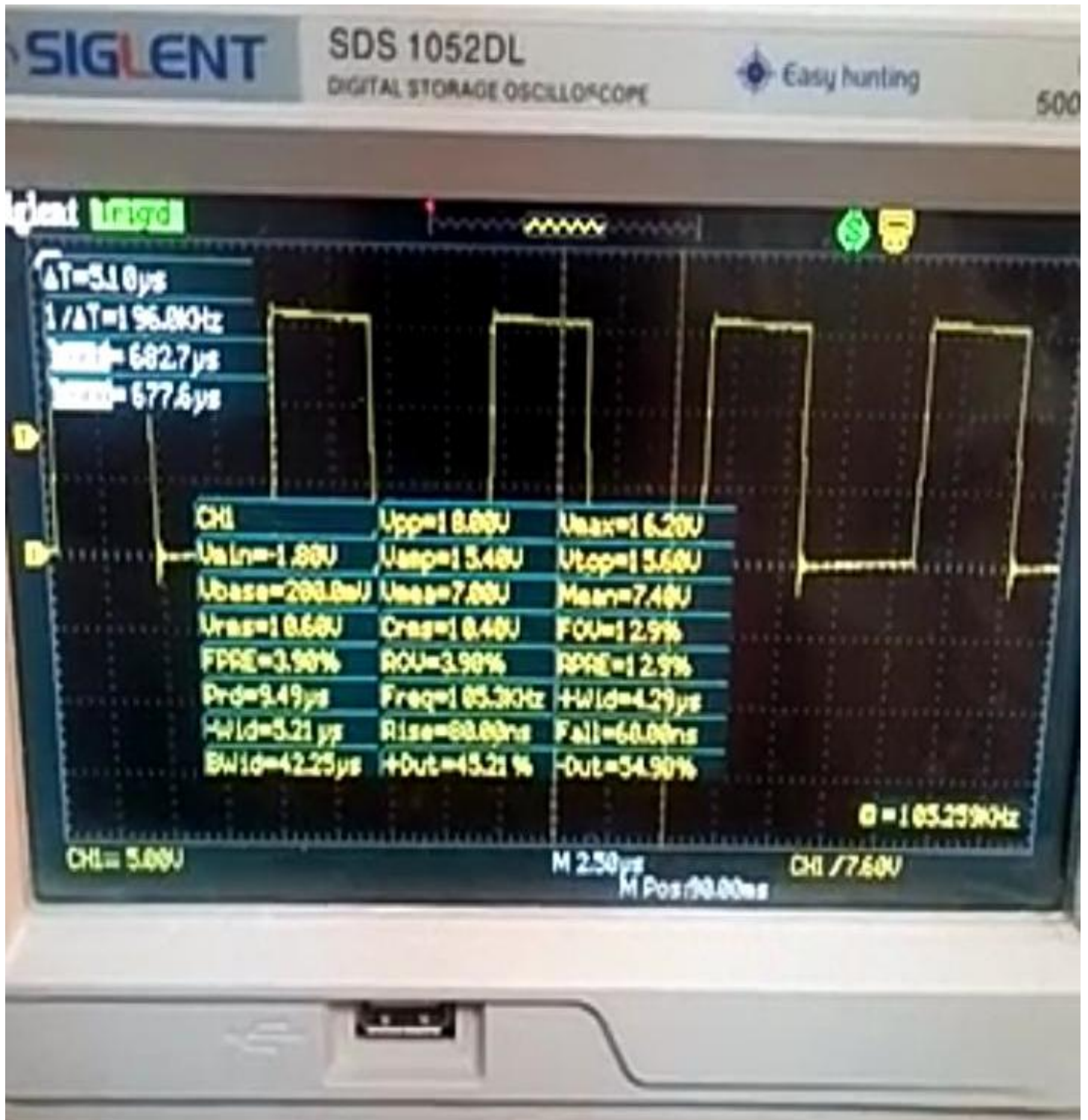


FIGURE 2 – Q1 GATE SIGNAL



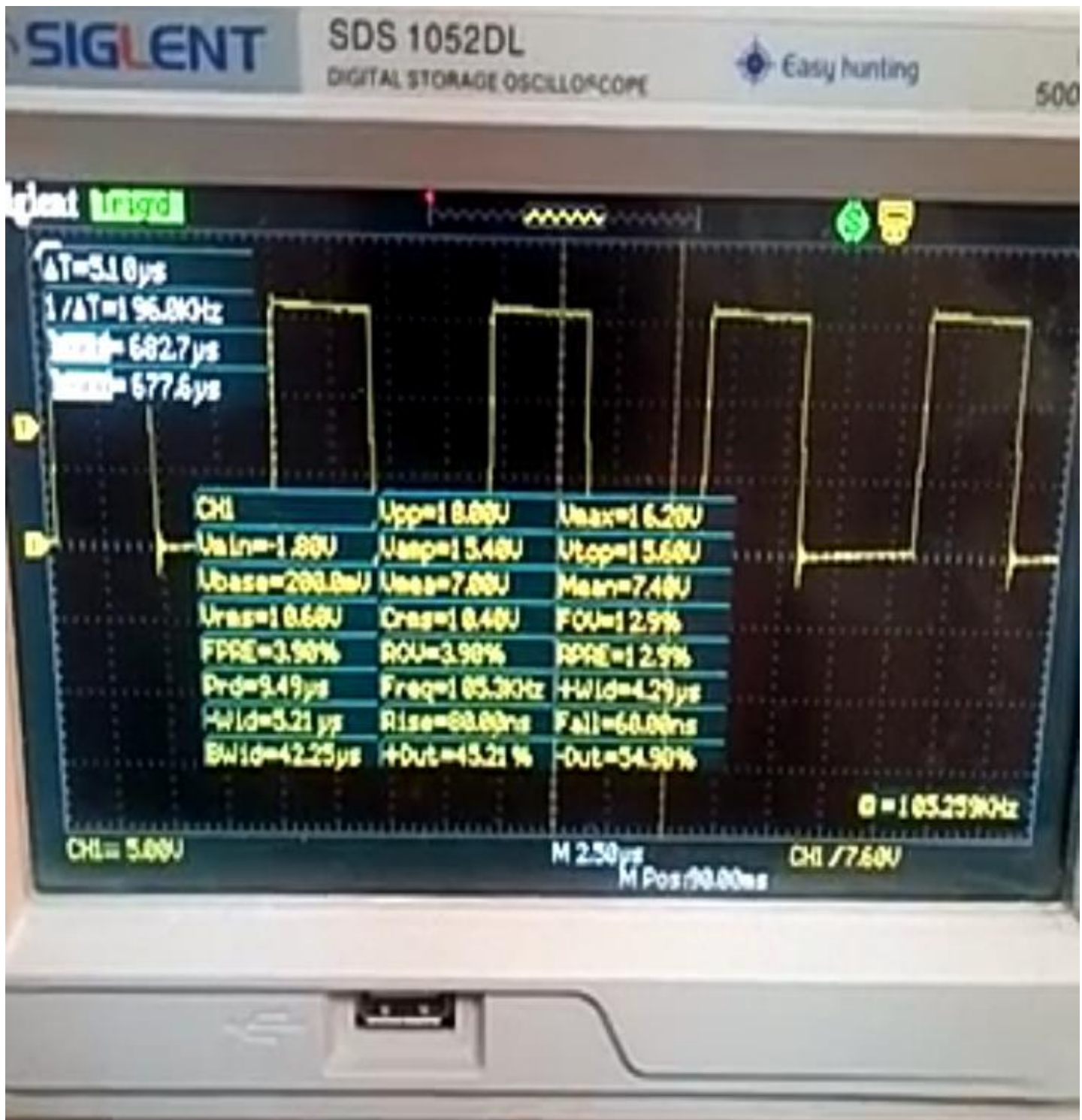


FIGURE 3 – Q2 GATE SIGNAL

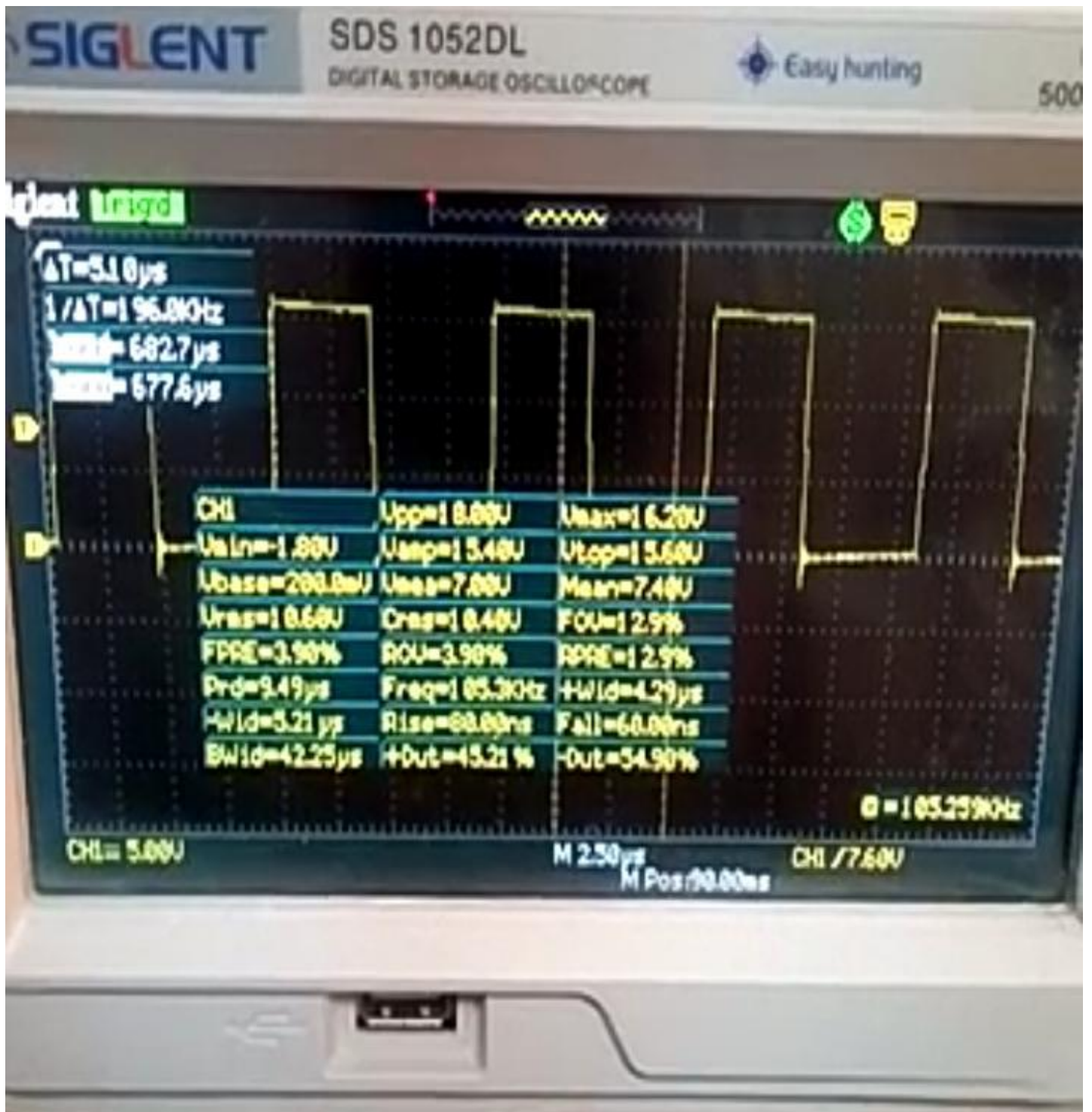


FIGURE 4 – SH GATE SIGNAL