Let me detail what I am trying to do. I am trying to design a PSFB converter snubber as shown in figure 1. The PSFB converter is switched at 50kHz, that means the frequency of v_L in the figure 1 (at the output of secondary side bridge rectifier, i.e before output inductor Lout) is 100kHz. So every 100kHz the capacitor Cs charges through the diode Ds. There is a buck converter whose control is such that if Vcs (voltage across Snubber capacitor Cs) reaches Vcmax then the switch Qsb turns on and when Vcs reaches Vcmin, then Qsb turns off. The voltage across Snubber capacitor Cs is as shown in figure 2. The frequency of the snubber buck converter is low as compared to the psfb converter. I would like to have a snubber buck converter to be around 6-8 kHz at the highest input voltage of 800V (input voltage range is 400V to 800V).

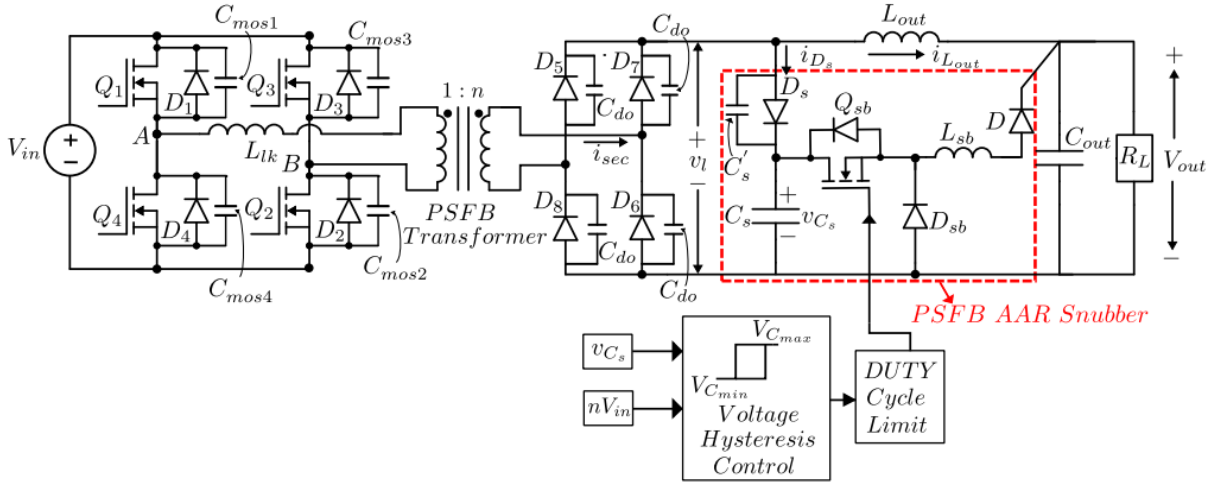

Figure 1 Psfb converter with snubber

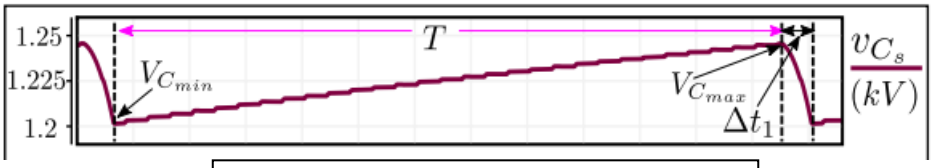

Figure 2 Voltage across snubber capacitor

So in order to realise this, I am using the OPA2192 (earlier I used OPA2228) to sense Vcs and nVin as shown in below figure 3

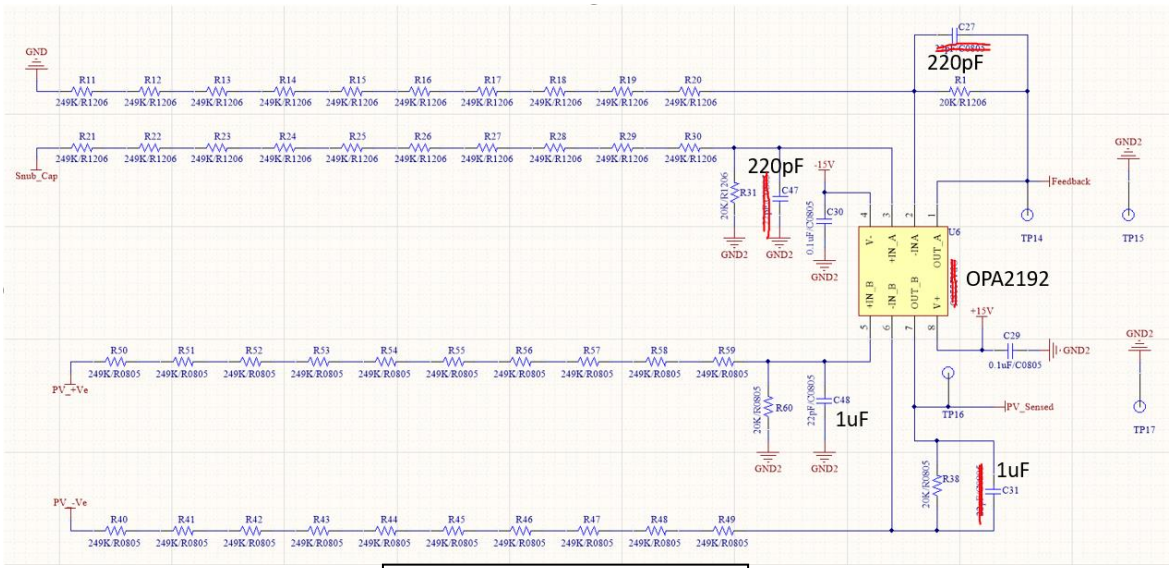

Figure 3 Voltage sensing

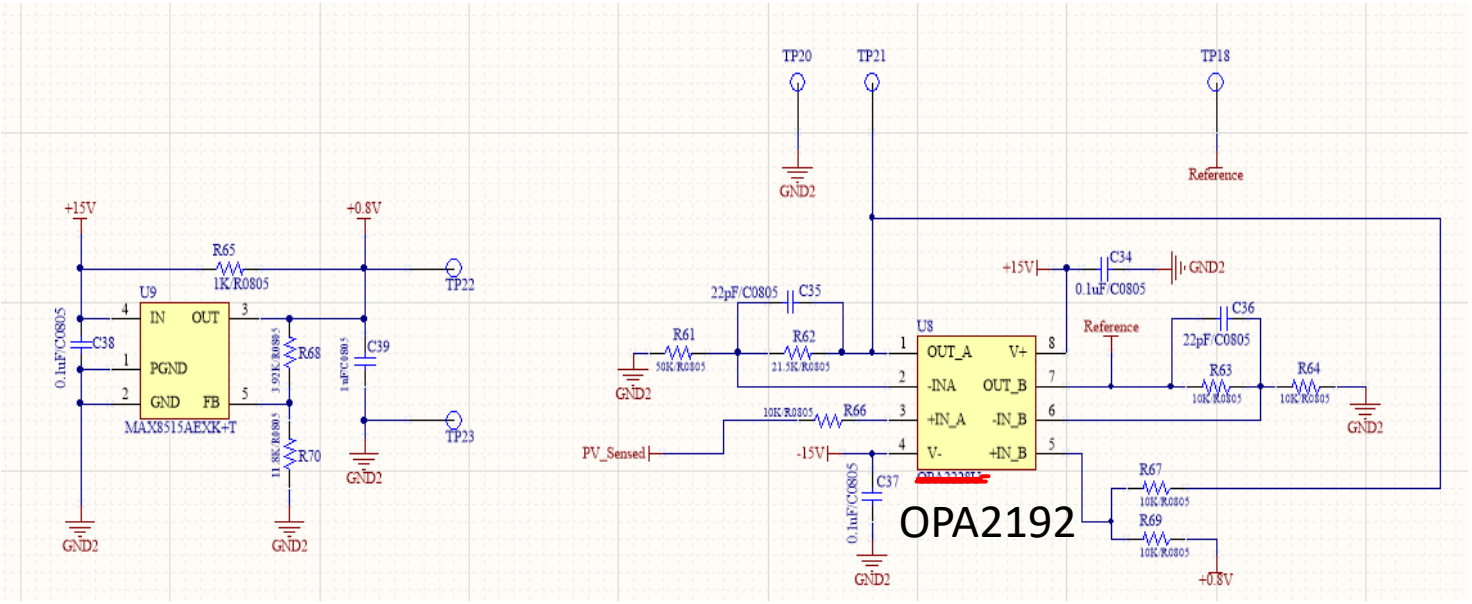

Figure 4 (input_voltage*Turns_ratio+0.8V)

The input PV voltage is sensed as shown in figure 3 (U6B). The output of U6B is given to U8A which gives (turns_ratio*Vin) (turns ratio is 1.43) and a voltage of 0.8V is added at U8B (as shown in figure 4). The output of U8B is given to the comparator U11 as shown in figure 5.

The output of U6A (which is the voltage across the snubber capacitor Cs) is also given to U11 as shown in figure 5. The output of U11 goes to a high side gate driver.

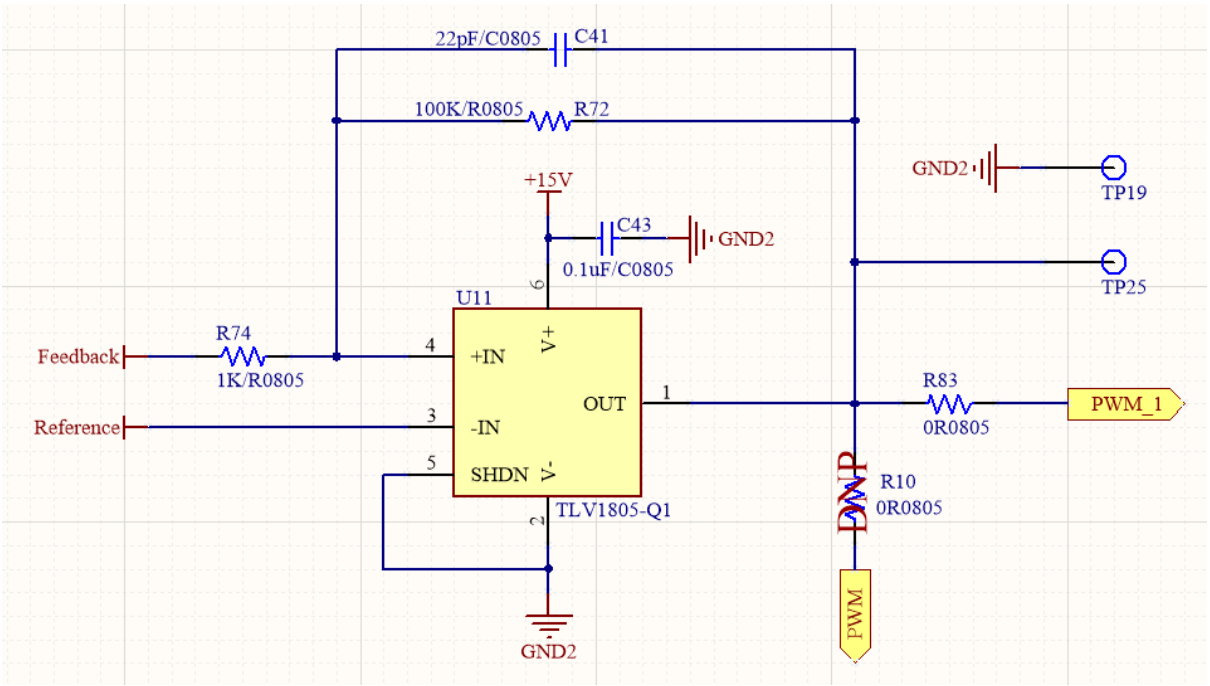

Figure 5 Voltage comparator

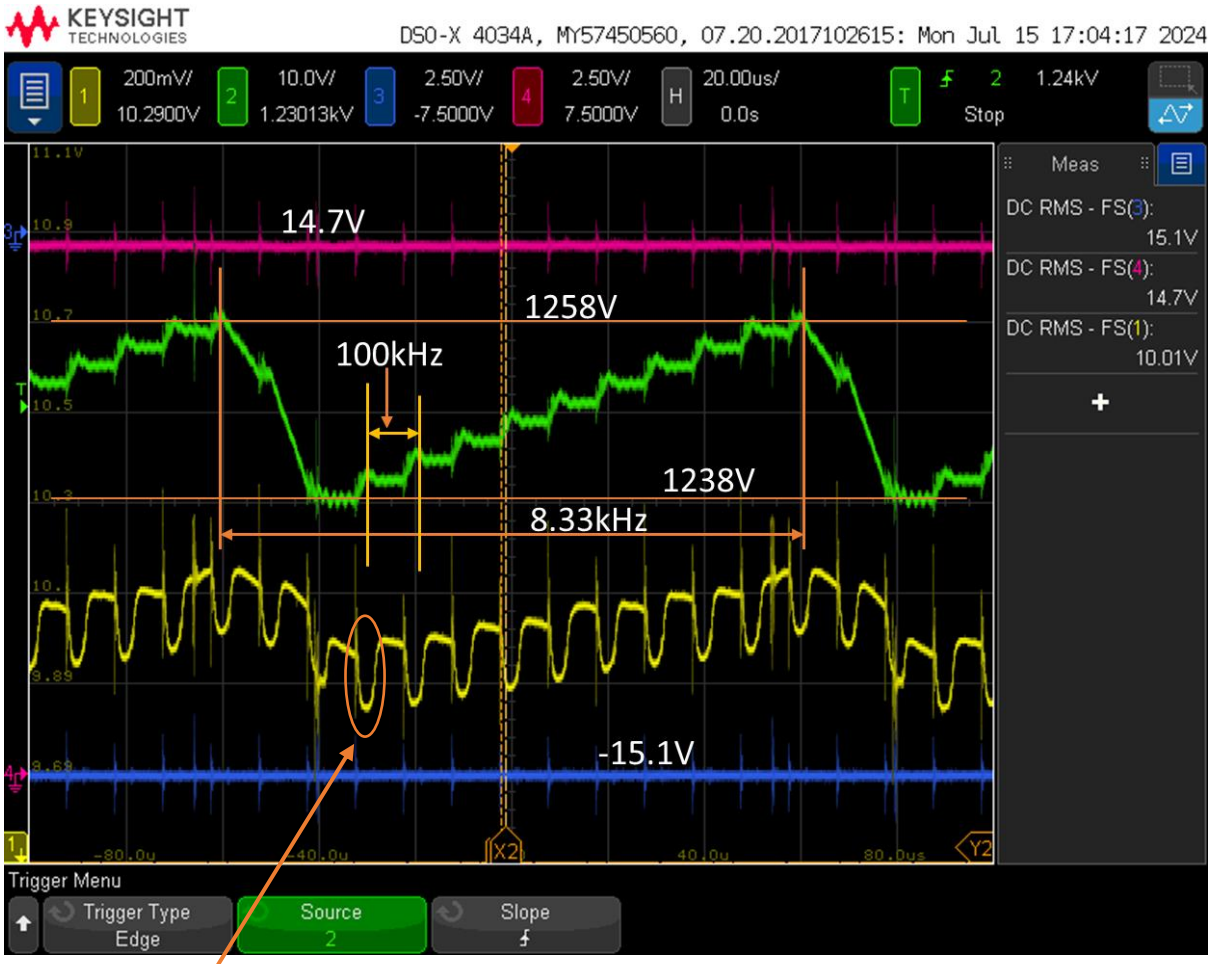

Figure 6: with opa2228

Output of the Opamp 2228 (U6A) goes low every time the snubber capacitor Cs charges.

CH1 – Opamp (U6A) Output (TP14 w.r.t TP15) (YELLOW)

CH2 – Input voltage to Opamp circuit (Snub_Cap w.r.t GND) (GREEN)

CH3 – -15 V supply to opamp U6 (BLUE)

CH4 – +15V supply to opamp U6 (YELLOW)

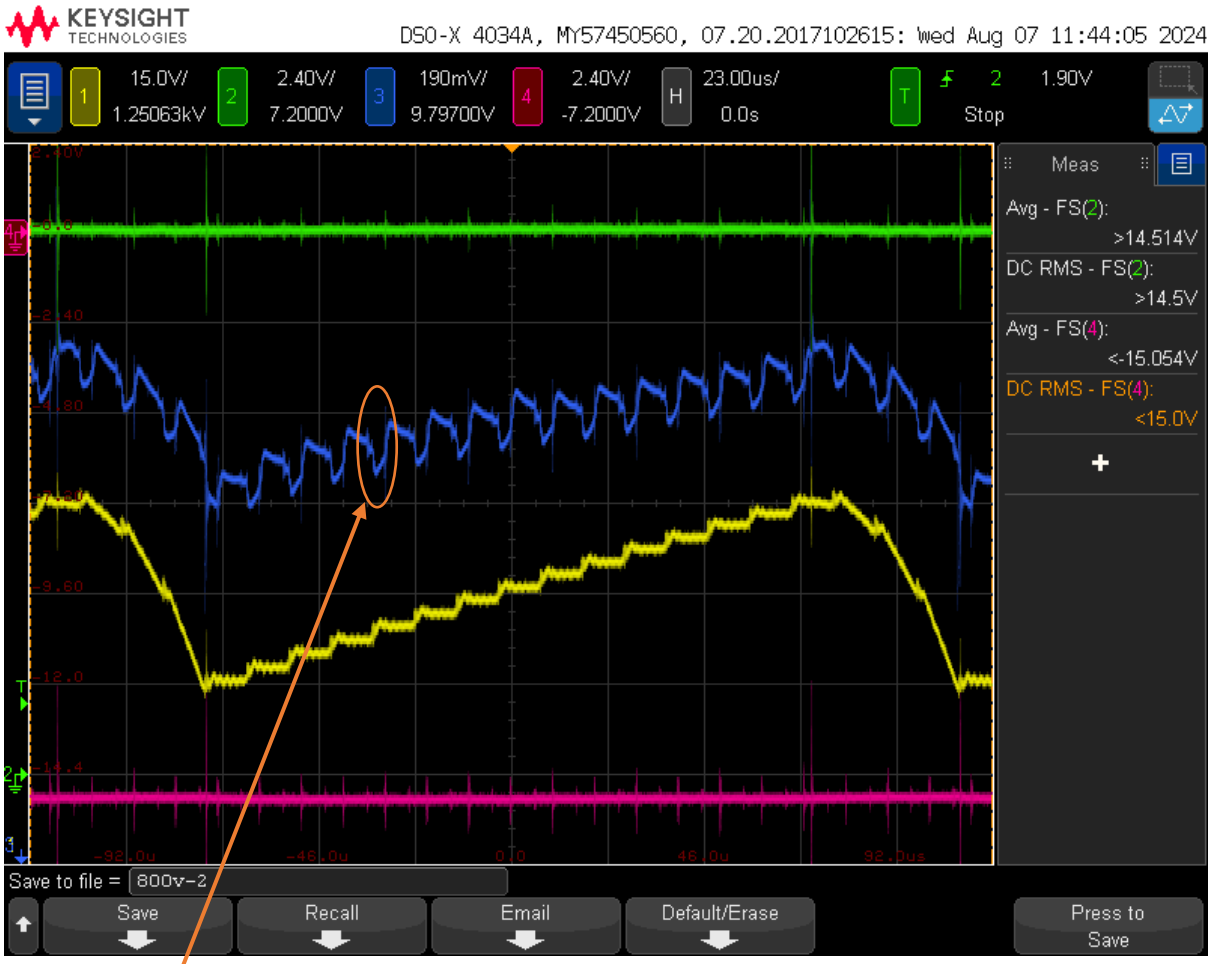

Figure 7: with opa2192

Output of the Opamp 2192 (U6A) goes low every time the snubber capacitor Cs charges.

CH1 – Input voltage to Differential amplifier Opamp circuit U6A (Snub_Cap w.r.t GND) (YELLOW)

CH2 – +15 V supply to opamp U6 (GREEN)

CH3 – Opamp (U6A) Output (TP14 w.r.t TP15) (BLUE)

CH4 – -15V supply to opamp U6 (PINK)

I have used 0.1uF (CL21B104KBCNNNC) and 1uF (CL21B105KBFNNNG) (one on top the other i.e in parallel) for the power supply capacitors to U6.

So I am not sure why the output of U6A goes low every time the snubber capacitor Cs charges (i.e at 100kHz). The input i.e capacitor voltage is increasing but at the same time the output of U6A goes

low and comes back as pointed out in figure 6 and figure 7. The simulation in the above comments doesn't show a dip in the voltage at 100kHz as the capacitor voltage charges at 100khz.