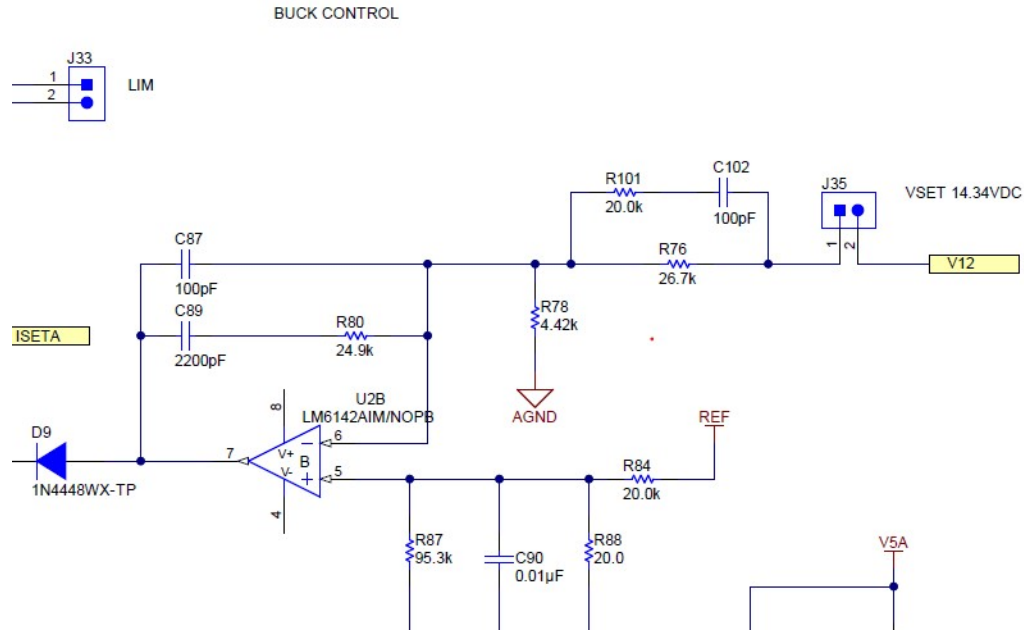


Title-LM5170EVM-BIDIR Queries

1.Analog voltage loop control_(Buck control)



Setup:

To test Buck Operation. Voltage at HV port is 24V and electronic load at LV Port (expected output 14.35V).

Obervation:

1. Analog loop resistors refer above analog loop schematic R76 and R78 are set as per calculator that voltage at output is set 14.35 , howevr we get output voltage 19V.
(Measured value at ISETA=1.736V)

When the Input voltage at HV port is 24V , (between 23V to 29V DC), The output measured at LV port is not stable , fluctaute arround 1V. for output voltage refer fig 3

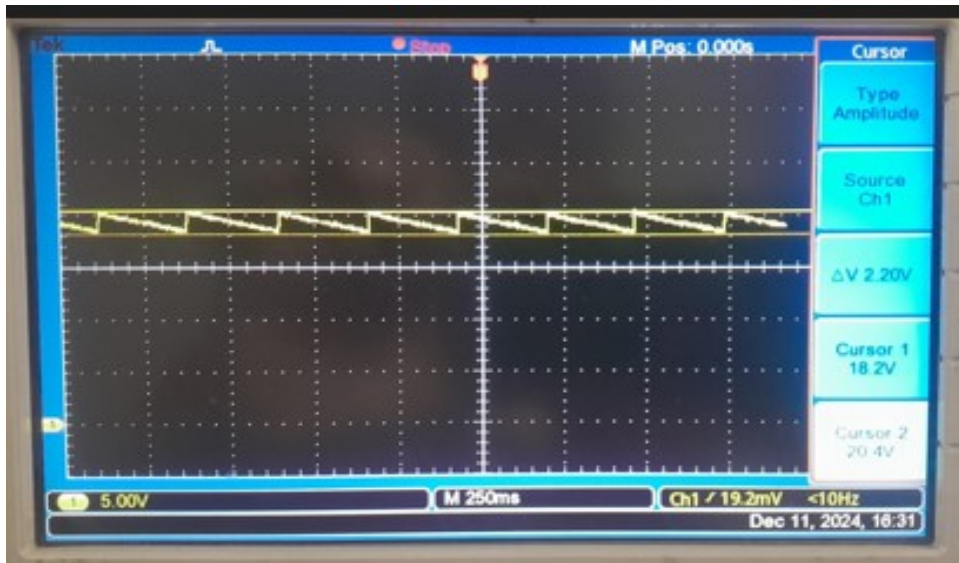


Fig3. When the Input voltage at HV port is 24V , output variation 18.5V+/-0.5V

Observe same output till 26V.

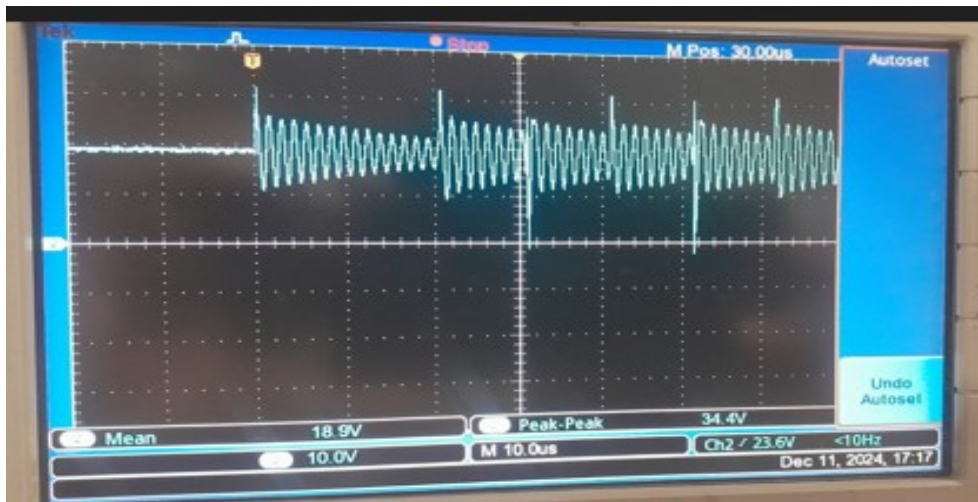


Fig5.Scope plot for H01 when HV-PS=24V

2. When the Input voltage at HV port is 20V or 20V , Output voltage is stable 18V .

For above setup , please refer below waveforms.

HV-PS=22V, LV-Port= 17.97V (Stable output voltage).

HV-PS=21V, LV-Port= 18.02V (Stable output voltage).

HV-PS=20V, LV-Port= 17.63V (Stable output voltage).

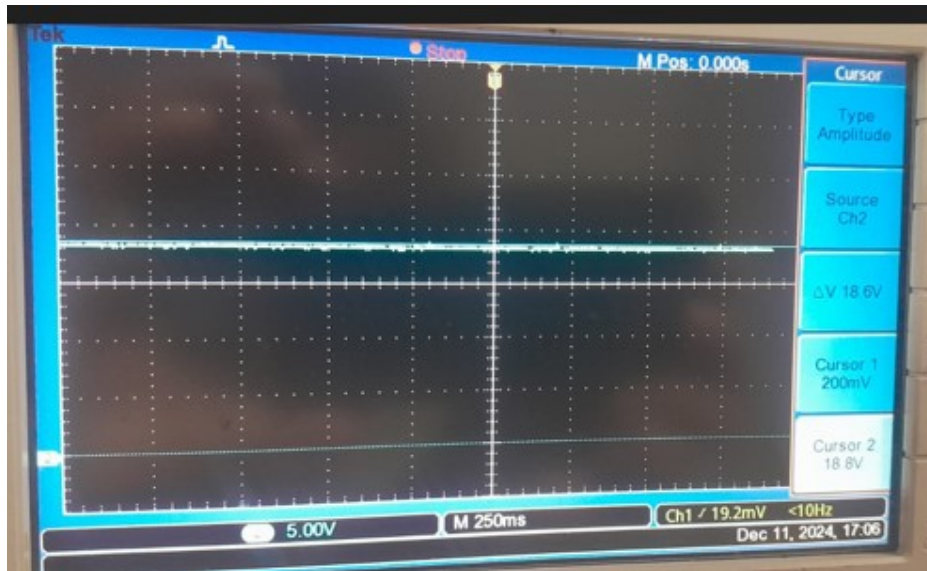
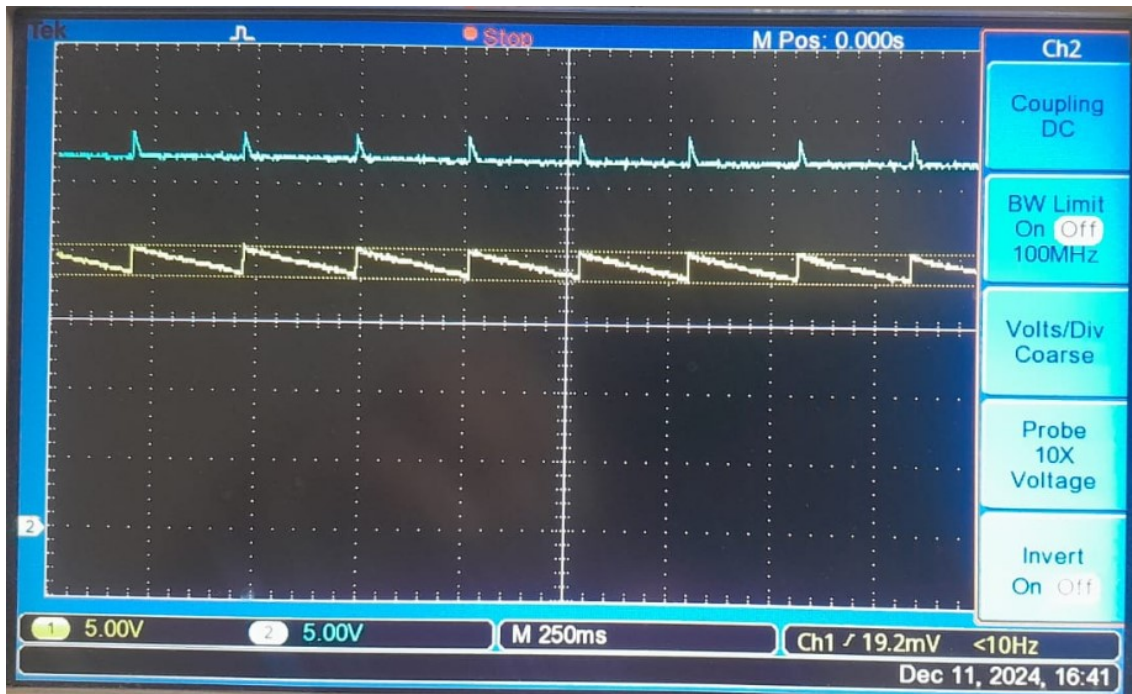


Fig4. Stable Voltage. At LV-Port when HV input 22V



Fig6. Scope plot for H01 when input HV-PS=22V

Fig6. Voltage across BRKS w.r.t GND and BRKG w.r.t when HV-PS=24V



BRKS-Scope channel 1 (Yellow)

BRKG-Scope channel 2 (blue)

3. what should be the Electrical voltage level of UVLO pin.

Refer schematic of LM5170 EVM for the HV-PS (V48) the voltage at UVLO pin is 15.979V, will this damage UVLO pin since Max absolute rating is 7V for this pin.

EN1, EN2, DIR, IOOUT1, IOOUT2, IPK, ISETA, ISETD, nFAULT, OSC, OVPA, OVPB, SYNCIN, SYNCOUT, <u>UVLO</u> , to AGND	-0.3	7
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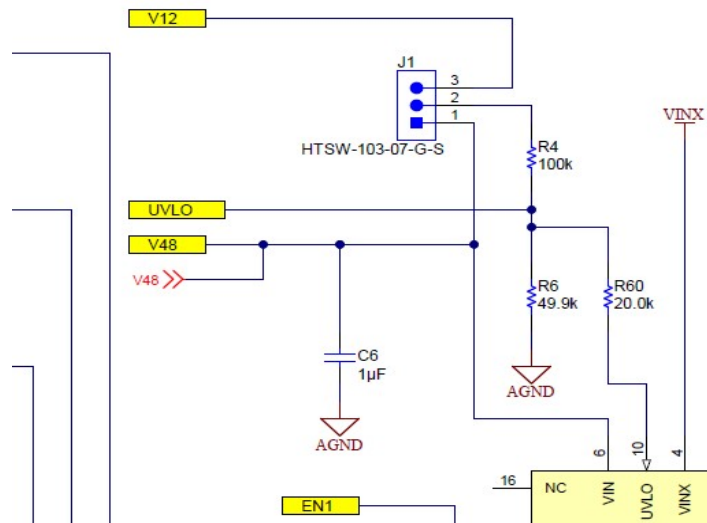


Fig1.Vtg divider used for UVLO in EVM

Using calculator , we calculate the value for R4 and R6 , for input voltage min 21V nominal 24V and max voltage 29V DC.

We use 24V at HV-PS so we adjust the voltage divider and get UVLO as 5.95V.

R4=30k, R6=10k

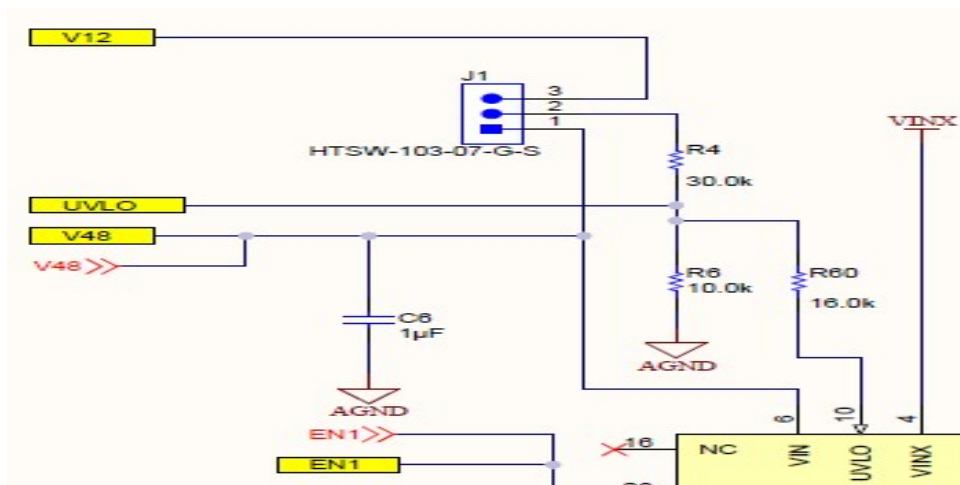


Fig2. UVLO measure 5.95 When 24V apply at HV port

As we increase the Vin the voltage at UVLO pin is increased and goes beyond 7V , will this damage UVLO pin?