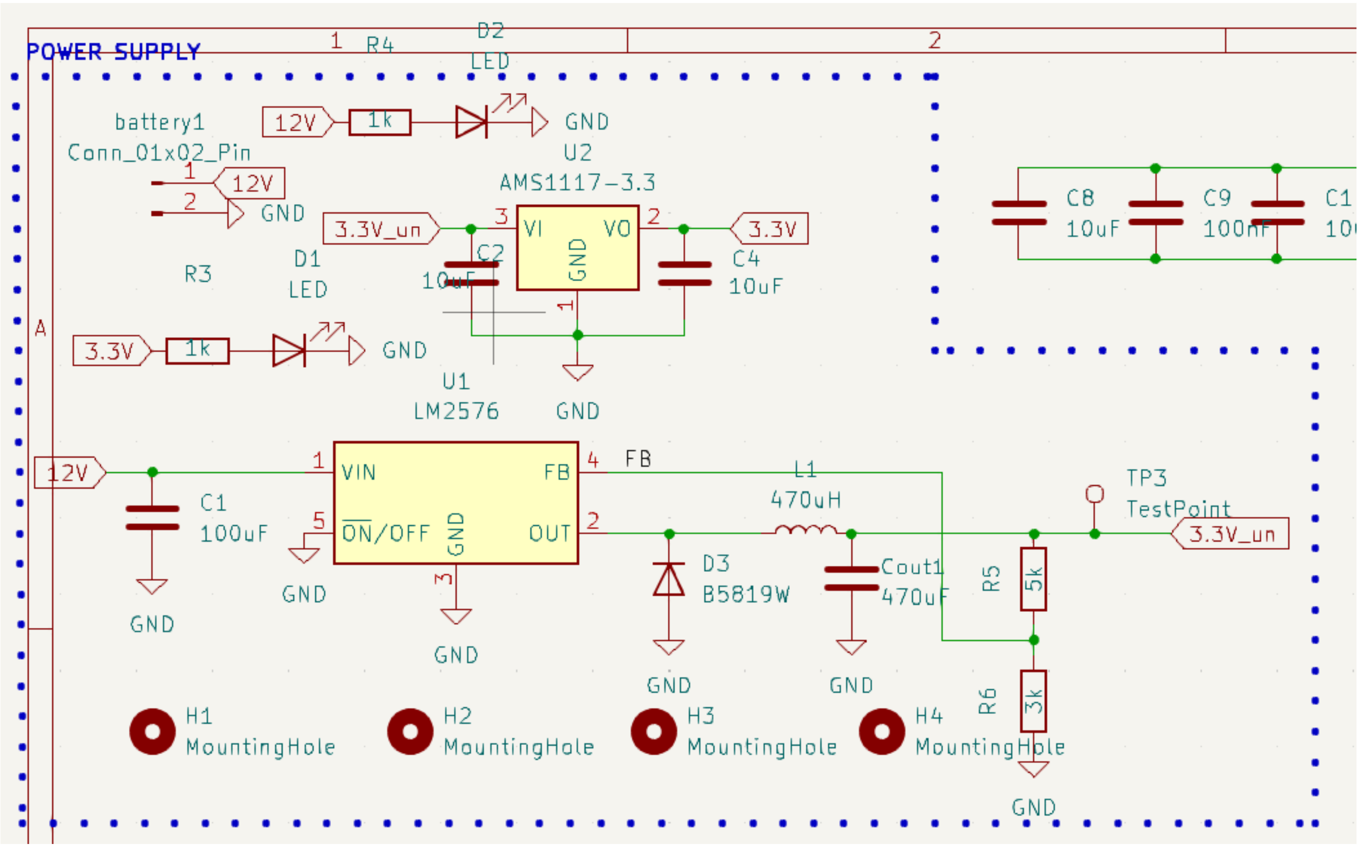
Buck converter issue

Schematic

This is the power supply

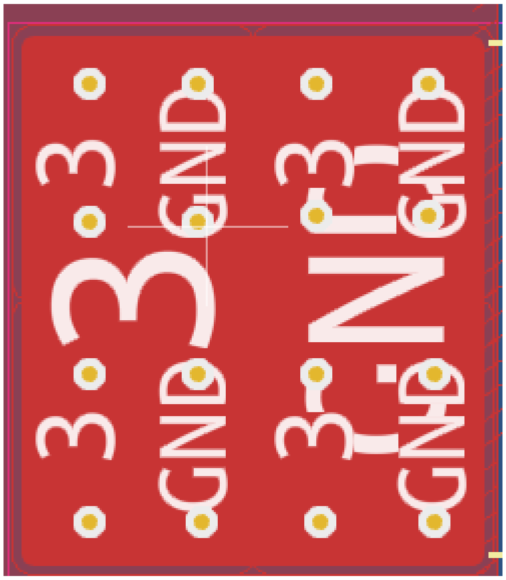


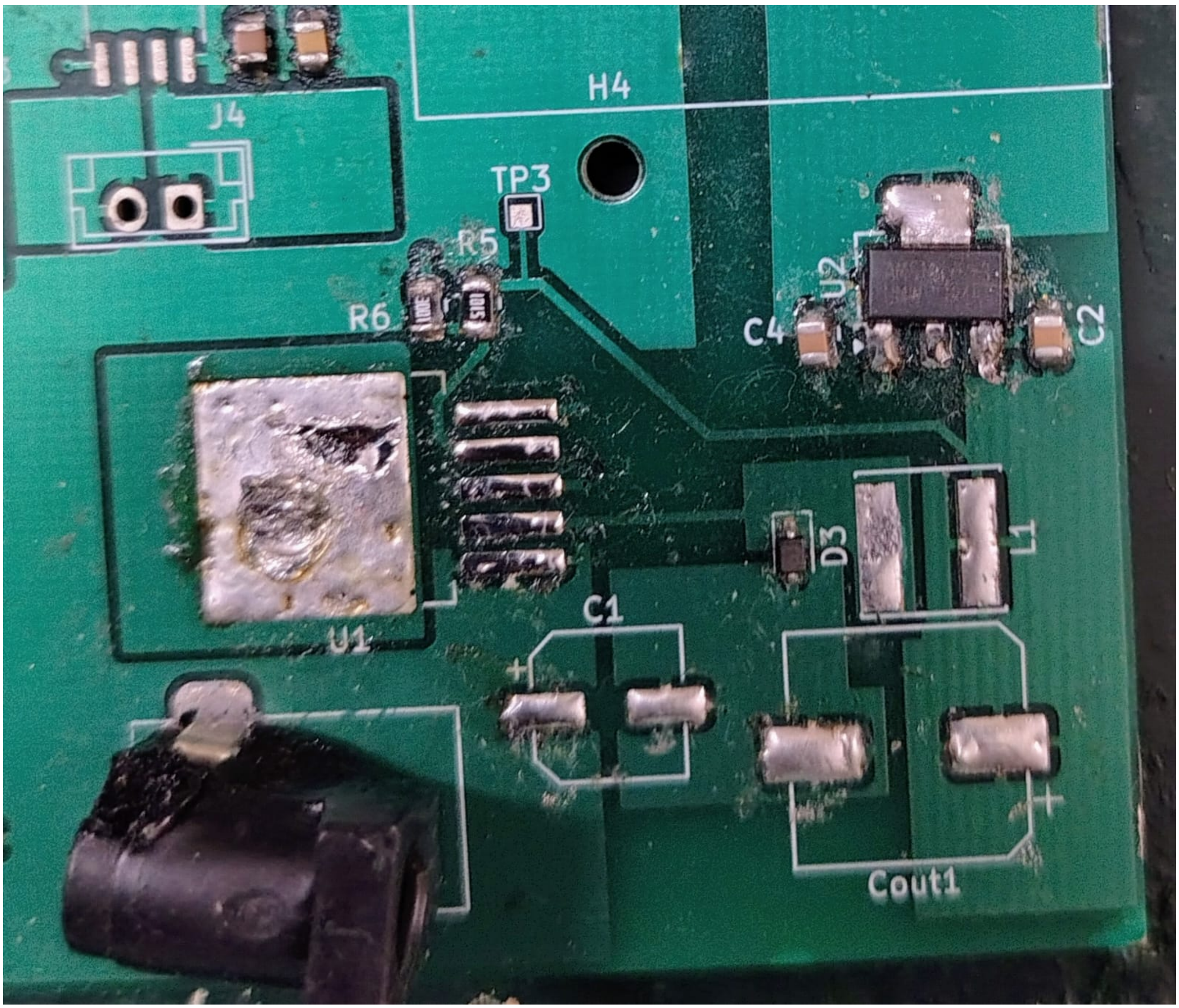
Input capacitor- 100uF

I am not sure which of these issue could be the root cause of my DC-DC step down converter not working so I will list them one by one

1. Soldering at a higher temperature

I have soldered the buck converter, with a hot air gun at a temperature of 350 degree celsius for roughly 30 seconds-1 minute, I have resorted to such high temperatures, because a considerable amount of solder had to be melted before placing the IC on the PCB





The issue

Maybe the exposure to such temperature(350 deg C) could have caused the IC, to not work at all, because I was getting no input at the feedback pin

`The following screenshot is taken from the datasheet`

ABSOLUTE MAXIMUM RATINGS (Note 1)

CHARACTERISTIC	SYMBOL	MIN	MAX	UNIT
Maximum Supply Voltage	V_{IN}	-	45	V
$\overline{ON}$/OFF Pin Input Voltage	-	−0.3	V_{IN}	V
Output Voltage to Ground	-	−0.8	-	V
Power Dissipation	P_D	-	Internally Limited	W
ESD Rating, HBM	-	2000	-	V
Maximum Junction Temperature	T_J	-	150	°C
Storage Temperature	T_{STG}	−65	150	°C

Note 1. Stresses beyond those listed under *Absolute Maximum Ratings* may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated under *Recommended Operating Conditions* is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

2. Using LTSpice model of TI instead of HTC korea to simulate

Maybe this is a big blunder considering that I have bought an HTC LM2576 regulator and I am uisng the TI LTSpice model(due to lack of response of HTCKorea to send the model).

I thought that the general characteristics would be the same, and maybe there would be a few slight variations in the ripple current

3. I have not tested the IC before soldering

I did not do any sort of **time domain analysis**, as I do not know how to build the test circuit, nor is there any test circuit provided by HTC Korea, TI has a thorough documentation on how to test their LM2576, but again since they are different companies, I didn't want to use their test circuit for HTC Korea LM2576

4. Did not follow the recommended output capacitor value

I know this is a big issue, in terms of output ripple voltage.

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According to the datasheet calculations the output capcitor value should be
102uF
```

but, since there was little to no output voltage on the AMS1117 3.3V IC, I had used an NI-DAQ oscilloscope to measure the output voltage but I was not able to get any significant output.

5. RMS ripple current rating of the input capacitor

I have used a 100uF input capacitor as recomendded by the datasheet
The datasheet recommends the RMS ripple current rating of the capacitor to be greater than `1.2 × (tON/T) × ILOAD` . I have not looked into ripple current rating of the capacitor, because datasheet did not specify anything about ripple current

```
RMS ripple current= 1.2 × (tON/T) × ILOAD where
tON/T = VOUT/VIN for a buck regulator
```

I selected the catch diode properly with a reverse voltage rating of 1.2 times greater than the maximum load current.

Input capacitor
Need: `RMS ripple current= 1.2 × (tON/T) × ILOAD`
Have: don't know the RMS ripple current rating

Inductor:
Need: inductor must not operate beyond its maximum-rated current,

Inductor info: