Design test preparation

**Initial**

1. Solder all connectors, test points, vias and protection diode D1(VB20100C).

**Power Supplies:**

1. Start by soldering the in\_TRACO1, out\_TRACO1(TMA 1212S), voltage regulator J1(LD1117) and their LEDS(DS1-4).
2. Solder resistors for the LEDs and decoupling capacitors for the power supplies.
3. Now apply 5V to J3-6(+) and J3-4&5(GND) and check that TST6(GND) and TST13(+) got 5V.
4. Apply 12 V to connector “1”. Check that TST9(+) and TST1(GND) have 12V now. There should be 12V at TST10(+) and TST3(GND) which is the highvoltage-highside input. Also at TST11(+) and TST4(GND) there should be 12V which is highvoltage-highside output. At TST12(+) and TST5(5) we should measure 5V this is 5V highvoltage sensors.
5. All the LEDs should now be turned on.

**Drivers**

1. Solder the optocoupler at Opto1-4(ACPL-W70L) and the drivers at Drv1-4(NCP81074A).
2. Solder resistors R6-R17 and decoupling capacitors C7-C11.
3. Apply a PWM signal at J2-1(PWM1). 5V with duty-cycle at 50%.
4. Measure the input signal at the optocoupler between TST14(+) and TST6(GND). Measure the ouput from the driver between TST18(+) and TST3(GND).
5. Apply a PWM signal at J2-2(PWM2). 5V with duty-cycle at 50%.
6. Measure the input signal at the optocoupler between TST15(+) and TST6(GND). Measure the ouput from the driver between TST19(+) and TST3(GND).
7. Apply a PWM signal at J2-3(PWM3). 5V with duty-cycle at 50%.
8. Measure the input signal at the optocoupler between TST16(+) and TST6(GND). Measure the ouput from the driver between TST20(+) and TST3(GND).
9. Apply a PWM signal at J2-4(PWM4). 5V with duty-cycle at 50%.
10. Measure the input signal at the optocoupler between TST17(+) and TST6(GND). Measure the ouput from the driver between TST21(+) and TST3(GND).

**Sensors**

1. Solder voltage sensors U1-U2(ACPL-C870), current sensor(ACS723) and amplifier U3(LMC6484).
2. Solder resistors R18-R32, capacitors C15-C22, Zener diodes Dz1-2(BZX84C4).
3. Connect jumper between pin J4-2 and J4-3.
4. Apply 10V to the input of the converter. Measure the output signal from the voltage sensor between TSTxx(+) and TST6(GND). For 10V input this should be 1.03V.
5. Apply 10V to the output of the converter. Measure the output signal from the voltage sensor between TSTxx(+) and TST6(GND). For 10V input this should be 434mV.
6. Attach a resistive load at at the output. Connect 10V to the input of the converter, and 5V at J2-2 and J2-4(+) with J3-4 as GND. Measure the current through the resistor and compare with the voltage measured between TSTxx(+) and TST6(GND). This should be done with different resistances to validate the A-V conversion in the sensor.

**Power circuit**

1. Solder MOSFET M1-M4(IPB200N15).
2. Solder resistors R33-R36, capacitors C23-C31 and inductor L1.