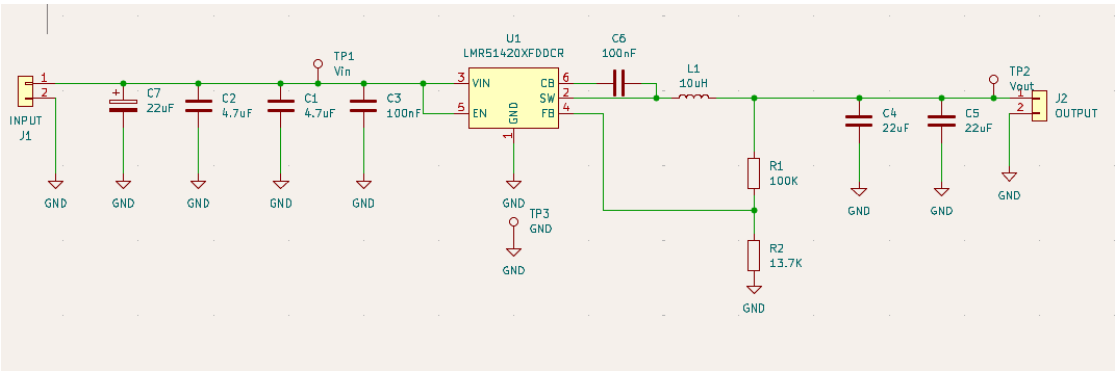
Schematic



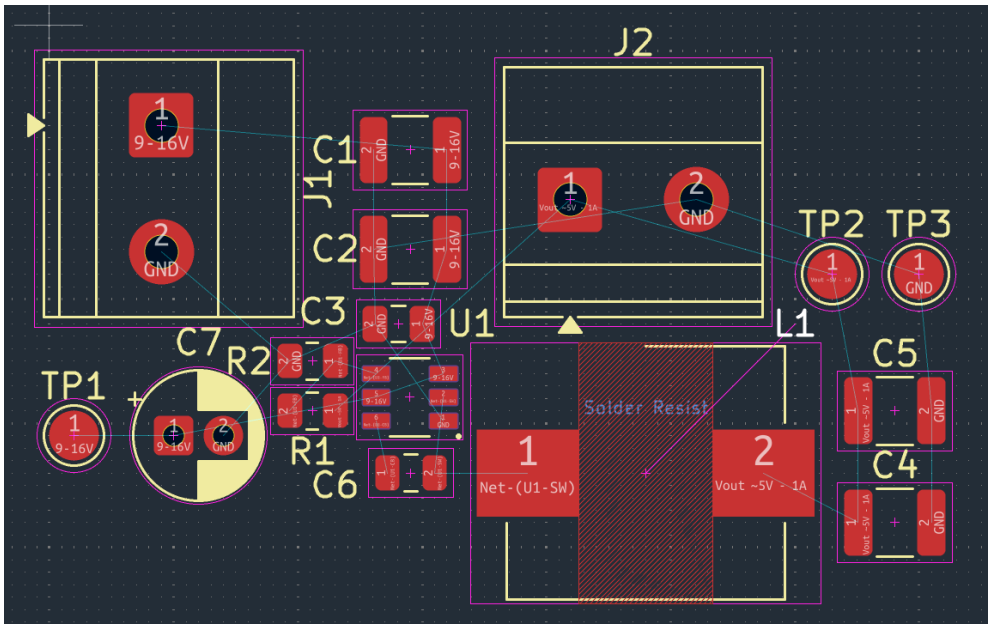
Input capacitors: C1–C3 provide local ceramic input bypassing near the regulator. C7 adds bulk capacitance to help support input-current transients.

Footprints

Symbol : Footprint Assignments

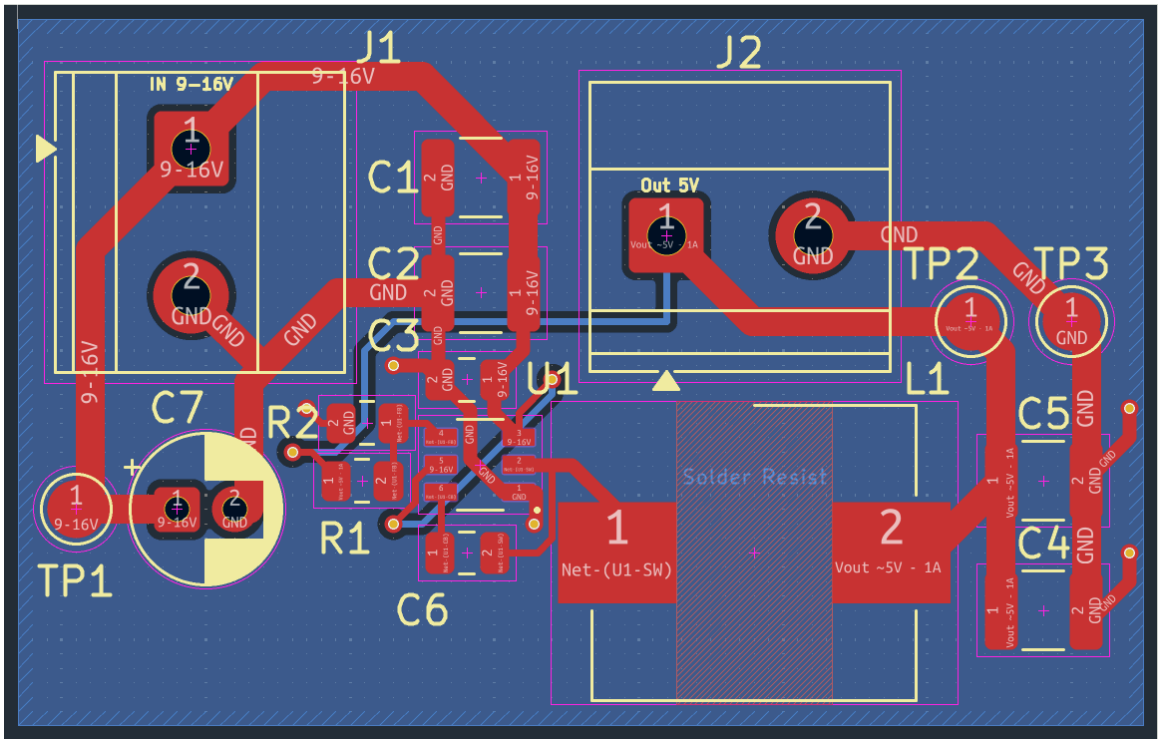
1	C1	4.7uF	Capacitor_SMD:C_1210_3225Metric
2	C2	4.7uF	Capacitor_SMD:C_1210_3225Metric
3	C3	100nF	Capacitor_SMD:C_0805_2012Metric
4	C4	22uF	Capacitor_SMD:C_1210_3225Metric
5	C5	22uF	Capacitor_SMD:C_1210_3225Metric
6	C6	100nF	Capacitor_SMD:C_0805_2012Metric
7	C7	22uF	Capacitor_THT:CP_Radial_D5.0mm_P2.00mm
8	J1	INPUT	TerminalBlock_Phoenix:TerminalBlock_Phoenix_MKDS-1,5-2-5.08_1x02_P5.08mm_Horizontal
9	J2	OUTPUT	TerminalBlock_Phoenix:TerminalBlock_Phoenix_MKDS-1,5-2-5.08_1x02_P5.08mm_Horizontal
10	L1	10uH	Buck_Project:L_Wurth_WE-LHMI-1040
11	R1	100K	Resistor_SMD:R_0805_2012Metric
12	R2	13.7K	Resistor_SMD:R_0805_2012Metric
13	TP1	Vin	TestPoint:TestPoint_Pad_D2.0mm
14	TP2	Vout	TestPoint:TestPoint_Pad_D2.0mm
15	TP3	GND	TestPoint:TestPoint_Pad_D2.0mm
16	U1	LMR51420XFDDCR	Buck_Project:SOT-23-6_TI_DDC0006A

Overall schematic prior to traces

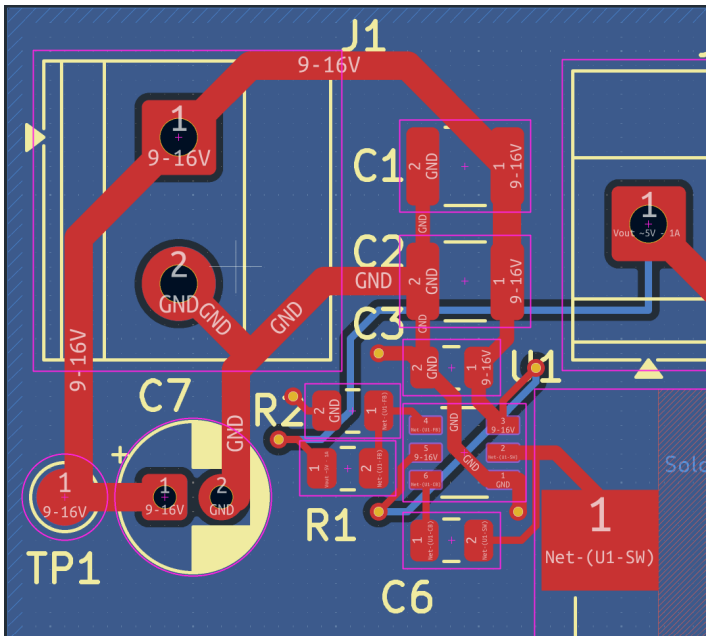


TP1, TP2, and TP3 provide access to VIN, VOUT, and GND during testing. These are bare copper pads, so they require no installed components.

Traces - Overall Schematic

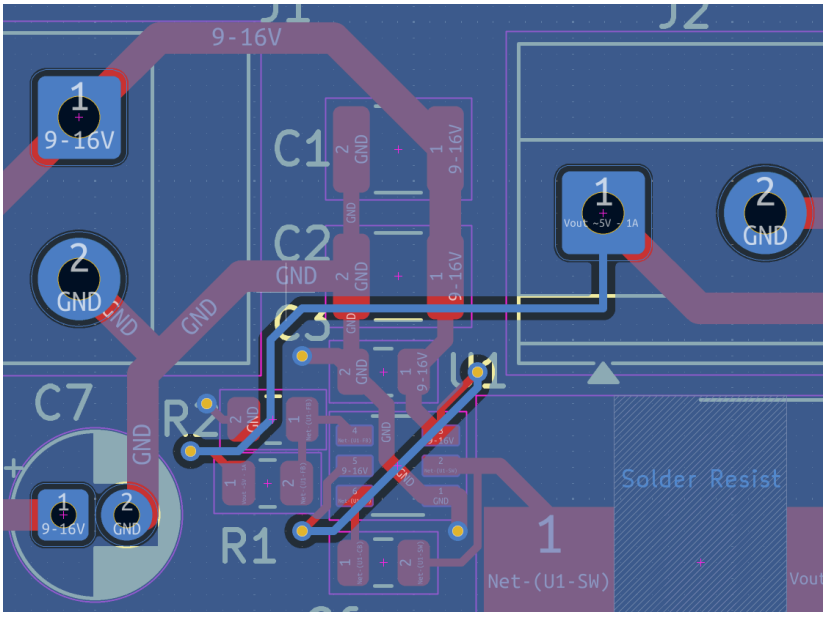


Wider traces are used for the main power connections to reduce resistance and voltage drop. Narrower traces accommodate the low-current feedback and enable connections.



The ground connection between **C3 Pad 2 and U1 Pad 1** is necessary because that connection specifically contains fast switching currents so having a consistent return current path is important.

The connection between **U1 pad 2 and L1 pad 1** is kept short to limit parasitic inductance and the area of switching copper.



Connections from **R1 Pad 1 to J2 Pad 1** and **U1 Pad 5 to U1 Pad 3** are done through layer B.cu to prioritize shorter current loops

DRC reported zero violations, unconnected items, and schematic mismatches for the enabled checks. Gerber and drill exports were also reviewed. Output regulation, ripple, efficiency, and temperature rise will be evaluated after assembly.