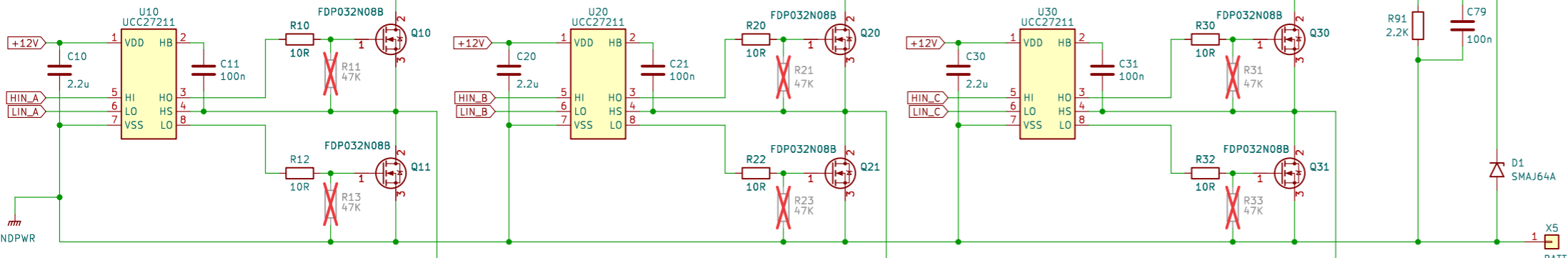
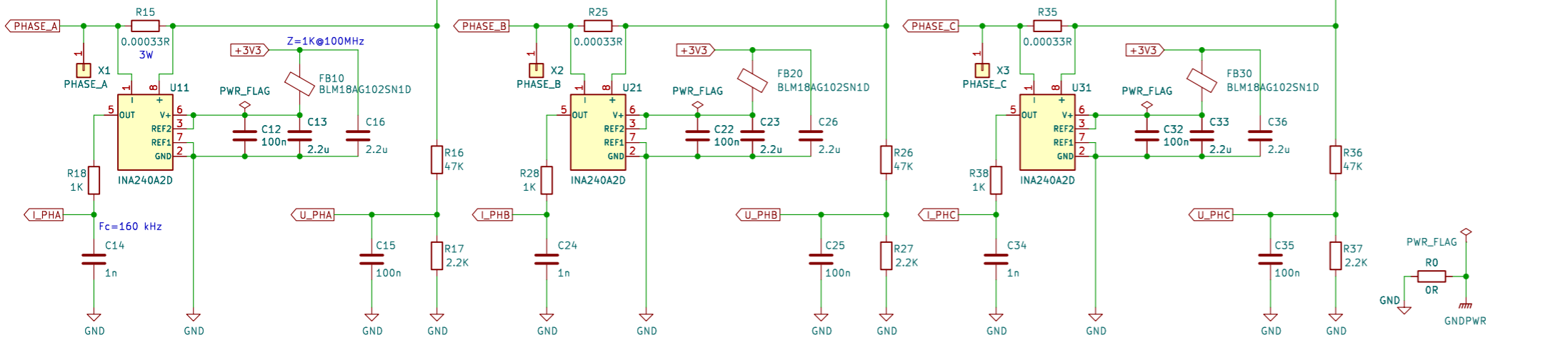


MOSFET & DRIVERS

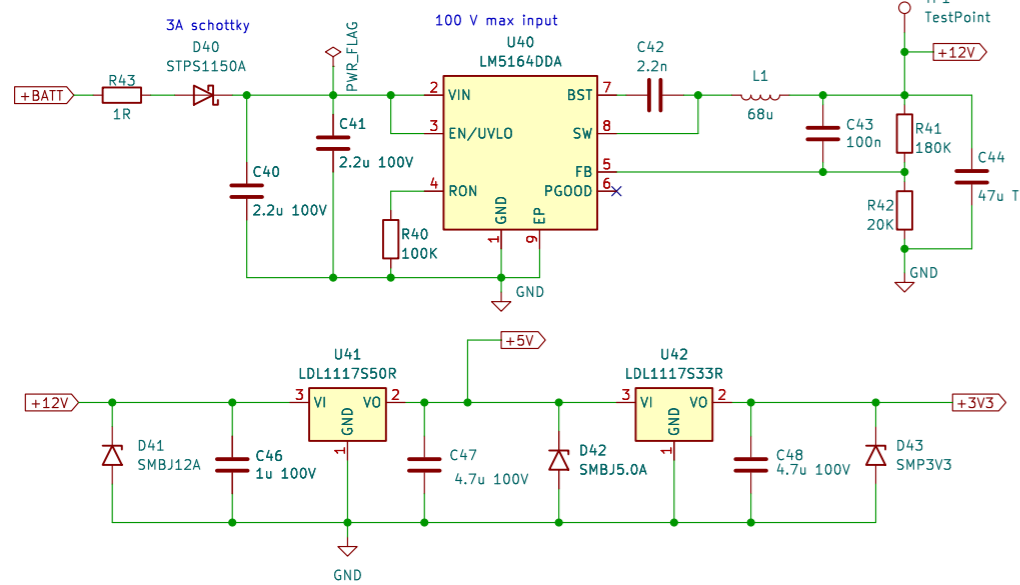
$R_{gtot} = R_{gate} + R_{ext} + R_{driver}$
 $R_{gtot} = 2.3 + 10 + 0.9 = 13.2 \text{ Ohms}$
 $C_{iss} = 8.245 \text{ nF}$
 $RC = 13.2 * 8.245 = 108.9 \text{ ns}$
 Optimal Dead time must be set to 4 times RC (=430 ns)



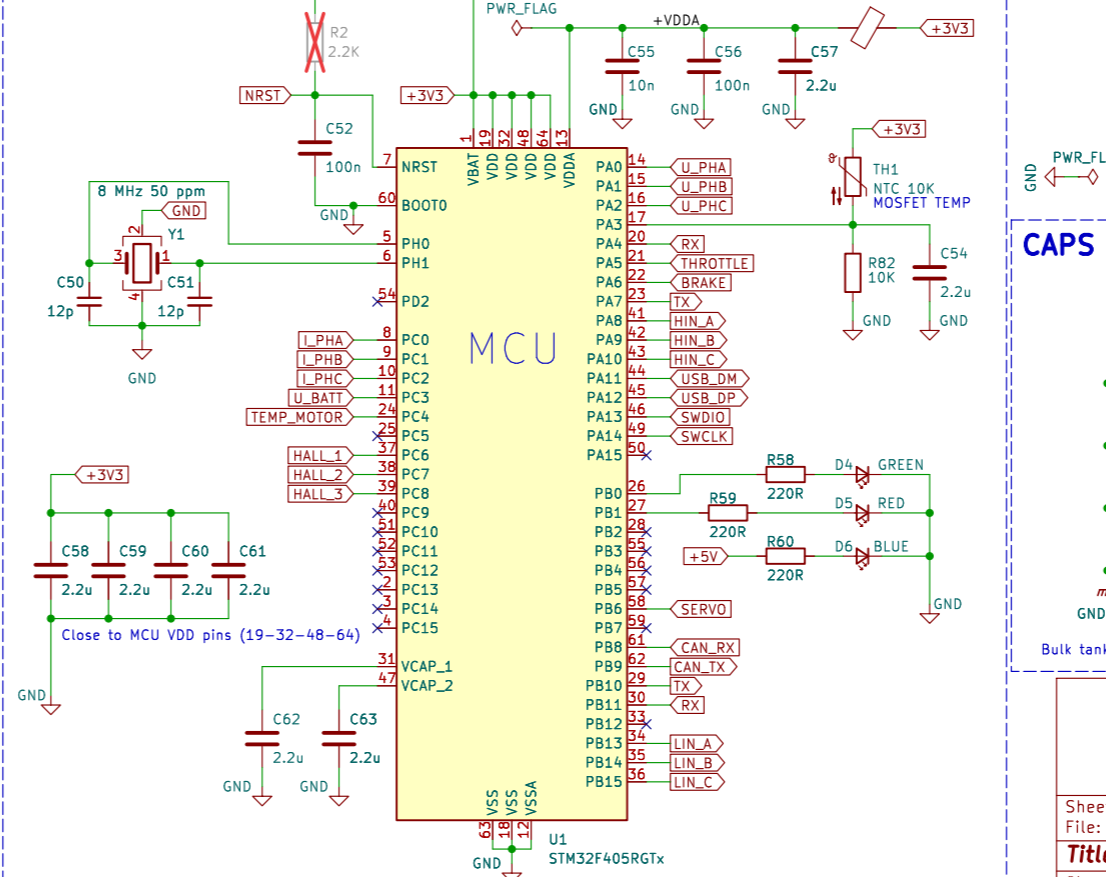
PHASE CURRENT & VOLTAGE SENSING



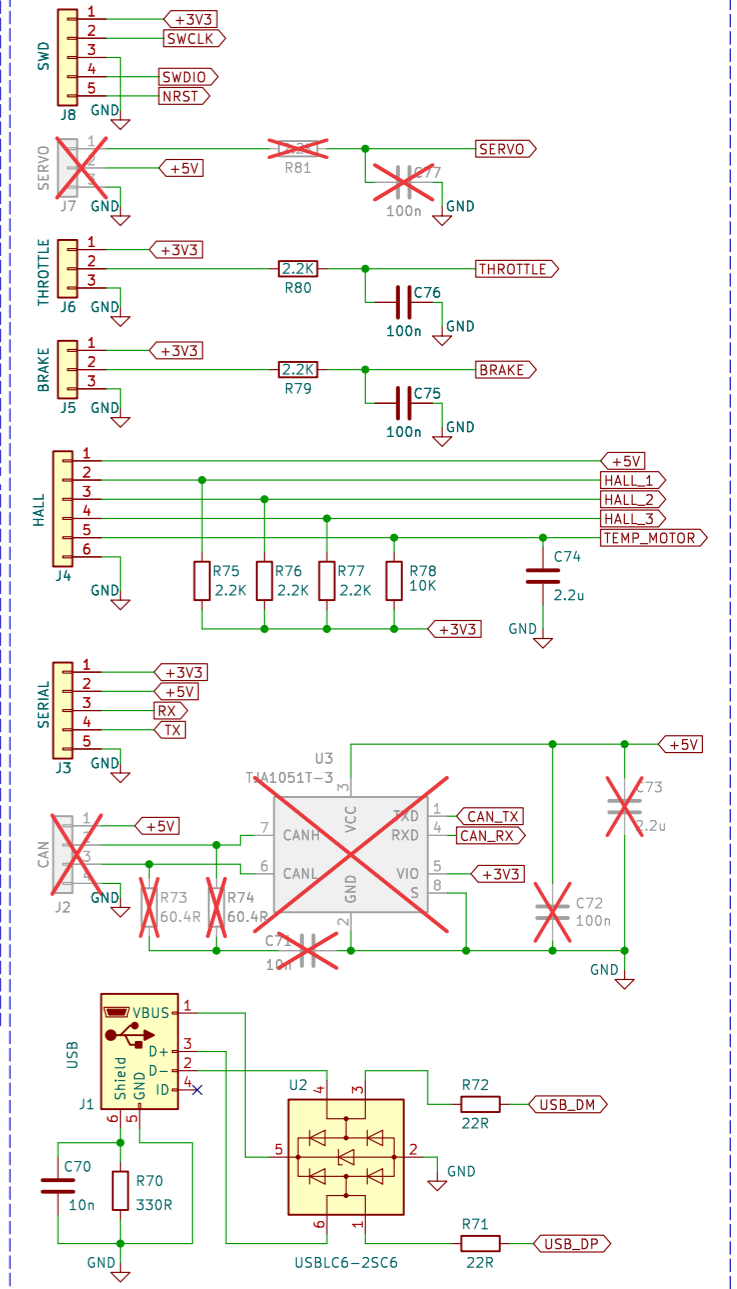
STEP DOWN POWER SUPPLY



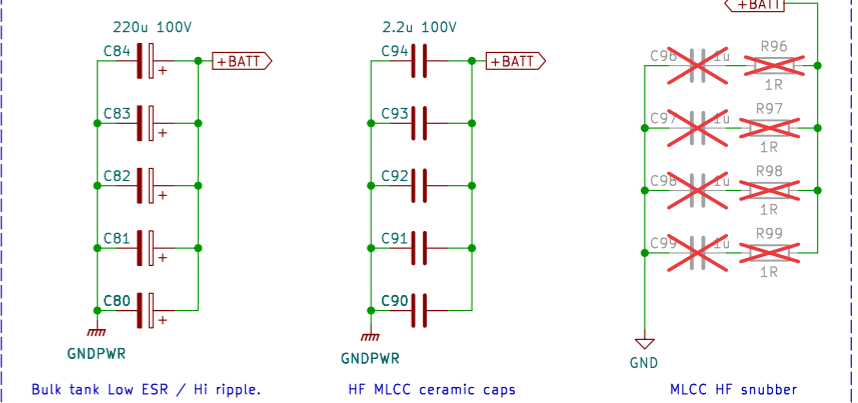
MCU



INTERFACING



CAPS



PROJECT	Batt Cells	Iphase (A)	Type	Phase current sense			Voltage sense			Power Mosfets (values are for a single FET)				Capacitors								
				Gain (V/V)	Shunt (mΩ)	Filter (KΩ/nF)	R1 (KΩ)	R2 (KΩ)	U _{3V3} (V)	Reference	Qty	Vds (V)	Id (A)	Rds(on) (mΩ)	C _{iss} (nF)	Q _{gate} (nC)	DC Tank (μF)	HF MLCC (μF)				
MINI4	12s	20	IL	60	0.5	±55	0.1/4n7	39	2.2	61.7	103.3	NCEP60T20	6	80	200	1.2	266	80	2x330u	56x2.2u	100V	
CheapFocer 2	12s	35	LS	20	0.5	±165	1K/1n	39	2.2	103.3	73.7	FDP032N08B	6	80	211	3.3	294	111	5x220u	100V	5x2.2u	100V
YAFO_1450	14s	50	IL	50	0.33	±100	1K/1n	47	2.2	73.7	73.7	FDP032N08B	6	80	211	3.3	294	111	5x220u	100V	5x2.2u	100V
VESC 6.5	12s	80	IL	20	0.5	±165	1K/1n	39	2.2	61.7	103.3	IRF7749	6	60	345	1.1	15.6	183	4x330u	100V	8x4.7u	100V
A100S	16s	100	LS	20	0.5	±165	1K/1n	64	2.2	99.3	99.3	FDMS86180	12	100	151	3.2	184	60	2x68u	80V	6x0.1u	100V
MP2-ESC	14s	150	LS	?	0.5	?	0.15/1n	100	3.3	103.3	103.3	IPPO16N08NF25	18	80	196	1.65	144	170	16x470u	100V	22x4.7u	100V
BESC-G2	20s	400	LS	20	0.2	±412	2.2/0.27	150	3.2	156	156	IRF135B203	24	135	129	6.7	39	180	11x330u	100V	6x6.8u	MKT

Notes:
 IL= In Line sensing LS=Low Side sensing
 Batt Cells= Maximum number of Li-Ion elements for safe use
 Iphase= permanent RMS current per phase.