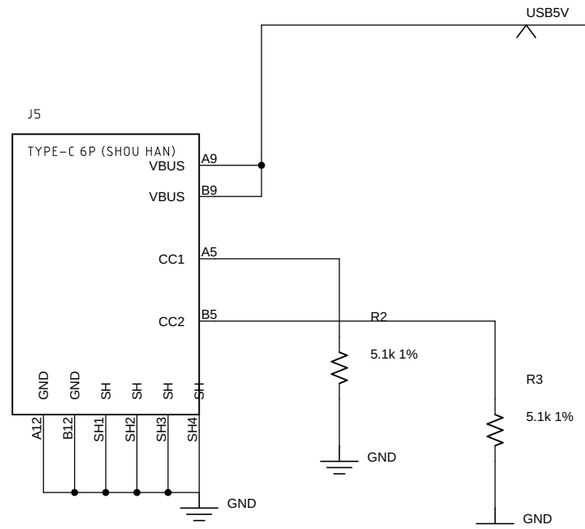
# SCOUT / CARRIER C

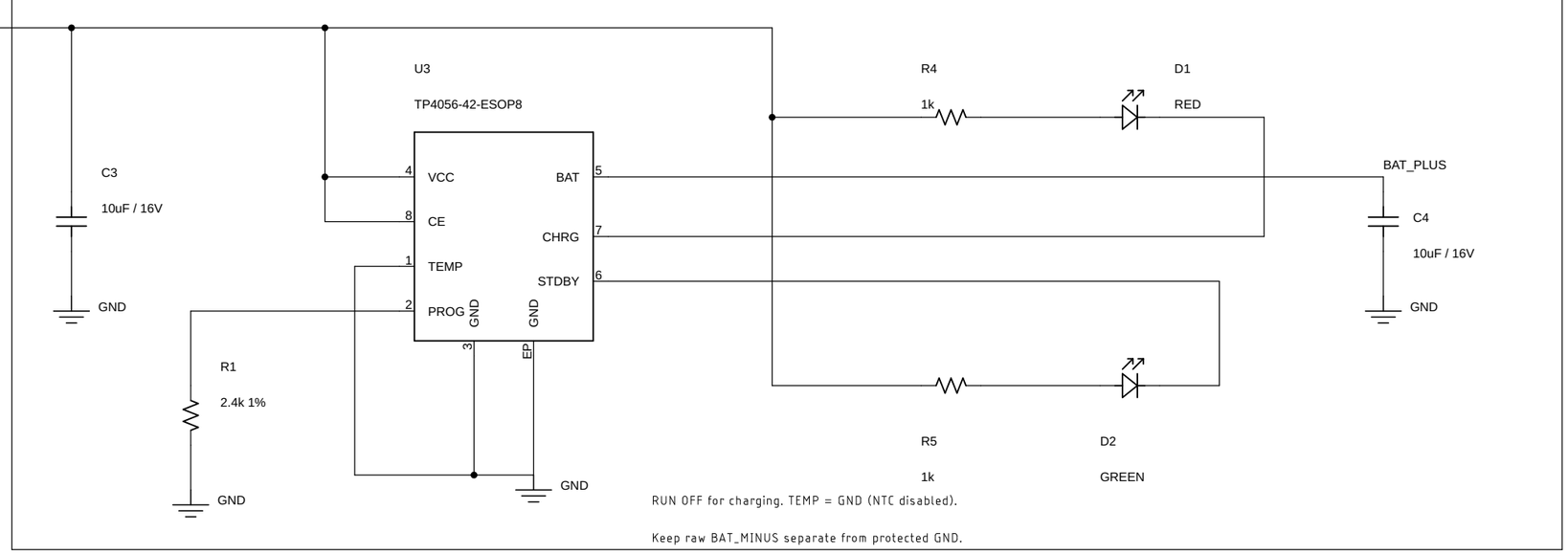
## CHARGING & CELL PROTECTION

Single 4.2 V Li-ion cell / 500 mA nominal charge / separate cell and protected return

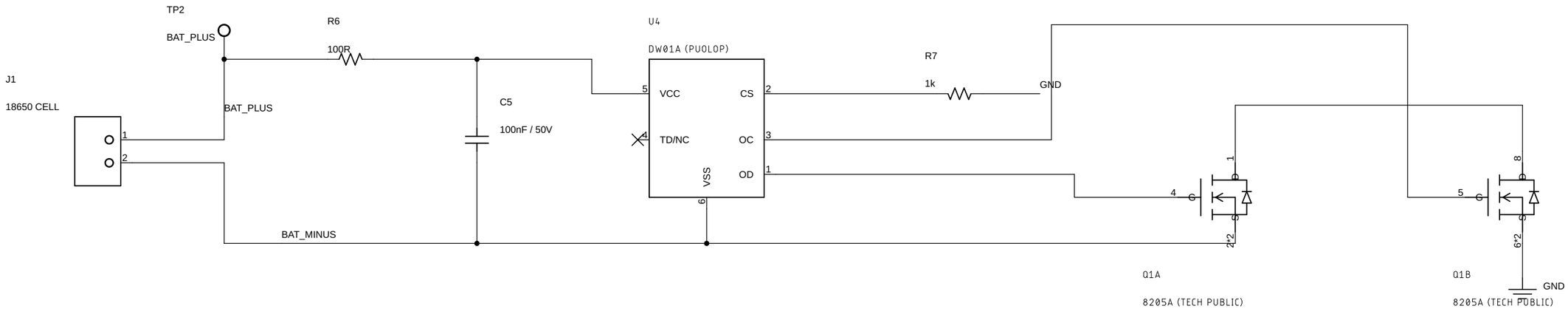
### 01 / USB-C POWER INPUT




### 02 / CHARGER & STATUS




### 03 / CELL PROTECTION

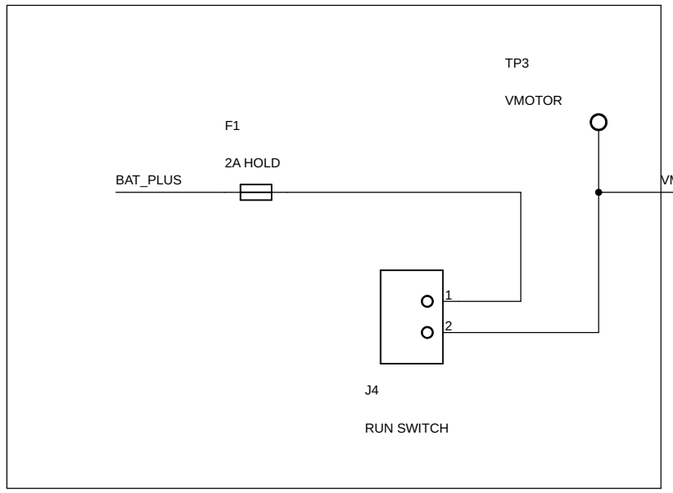


# SCOUT / CARRIER C

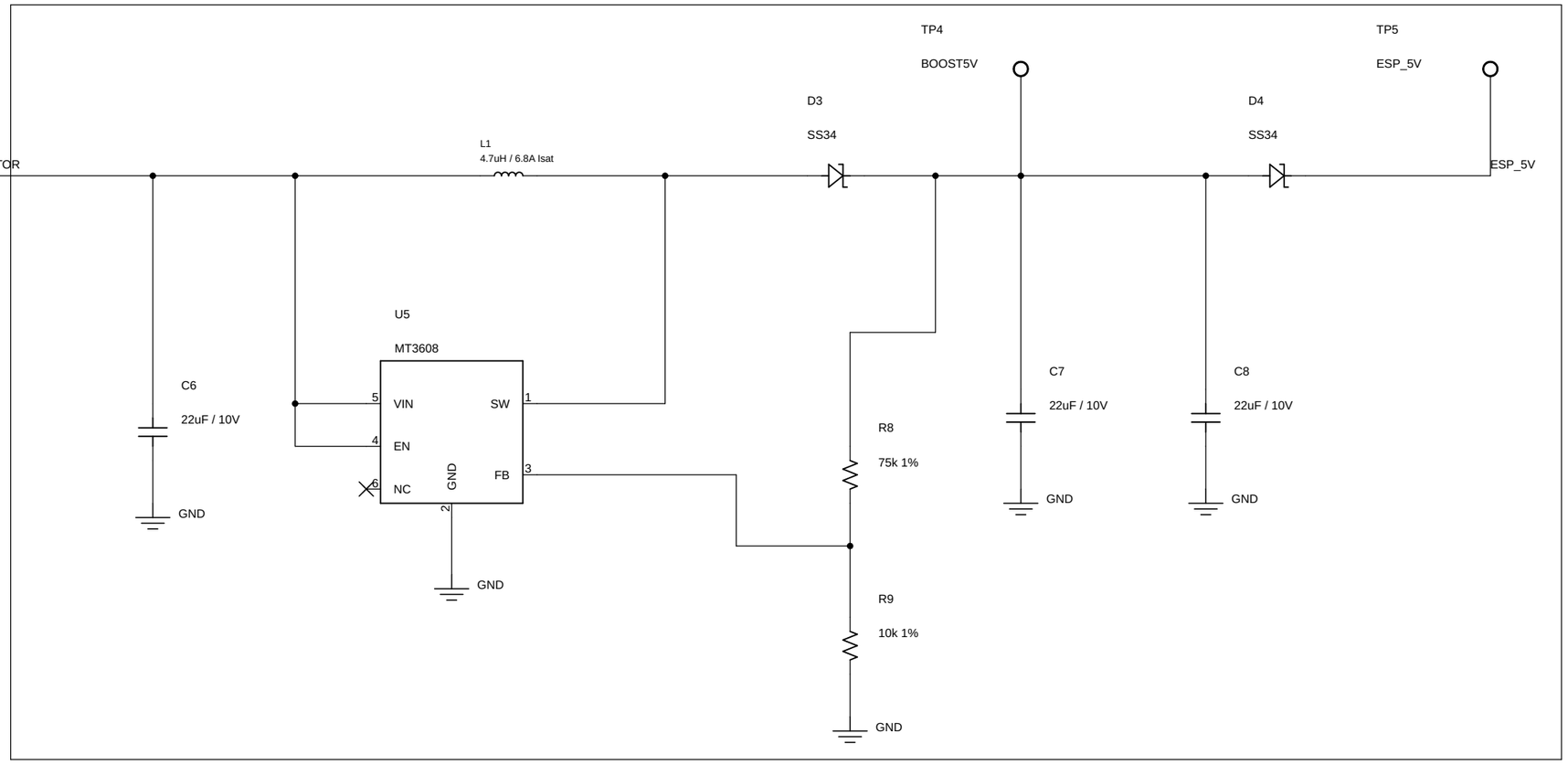
## SWITCHED POWER & 5 V BOOST

Motor rail follows the cell; the boost supplies only the SuperMini / no charge-and-run load sharing

### 04 / FUSE & RUN SWITCH




### 05 / COMPACT BOOST POWER STAGE




### DESIGN INTENT & TEST POINTS

5.10 V nominal = 0.6 x (1 + 75k / 10k). D4 blocks USB backfeed into BOOST5V.

Place L1, U5, D3 and output ceramics as one tight loop. Keep FB away from SW and motor traces.

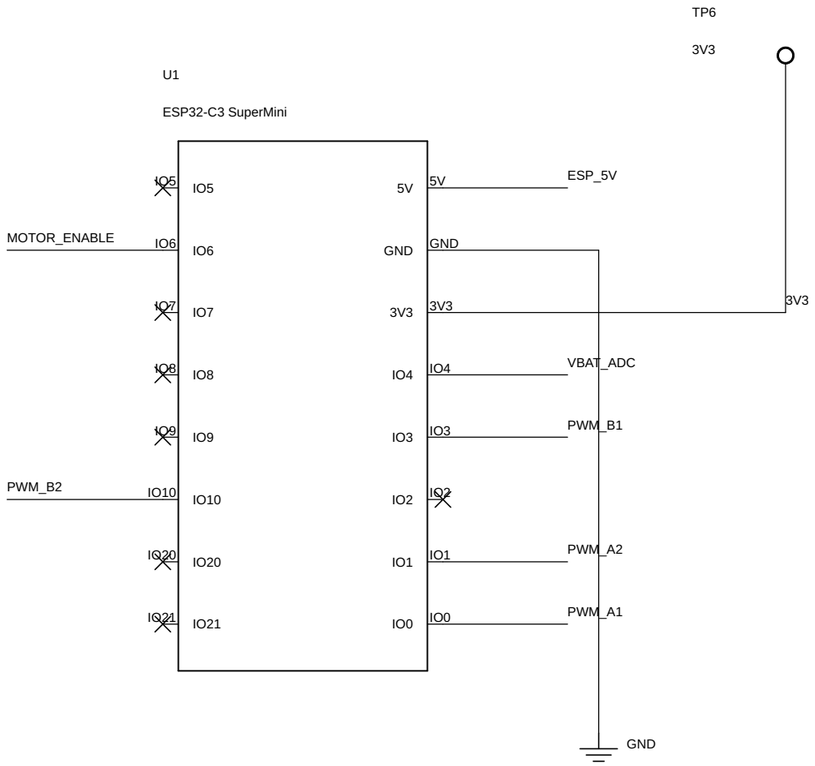
Target 500 mA logic supply; verify startup and ripple with the actual SuperMini. RUN OFF for programming.

# SCOUT / CARRIER C

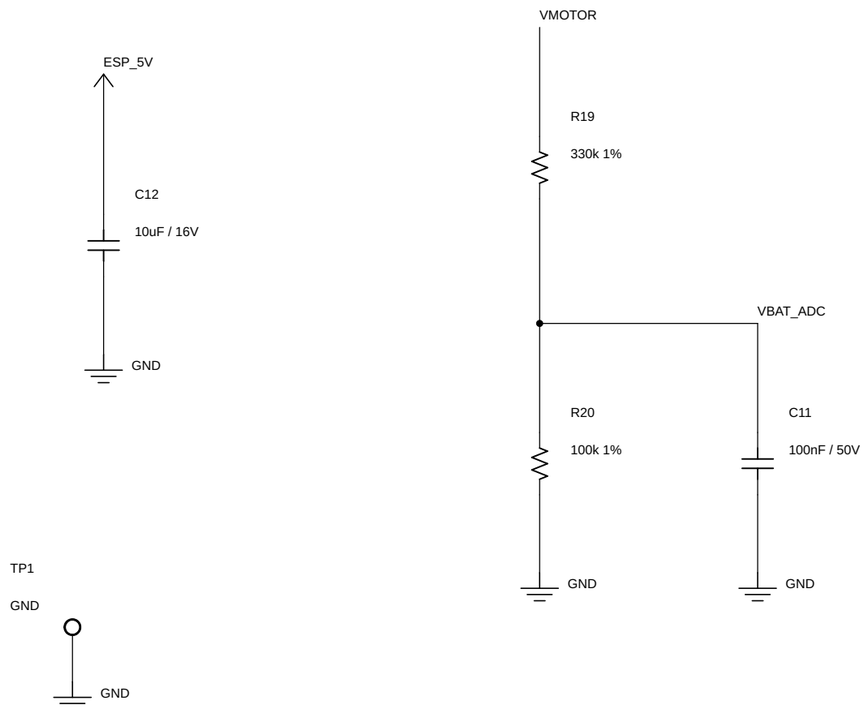
## CONTROLLER & BATTERY SENSING

ESP32-C3 SuperMini is a solder-on module / flags continue on motor-interface sheet 4

### 06 / SUPERMINI MODULE




### 07 / SUPPLY BYPASS & ADC FILTER




### FIRMWARE & ASSEMBLY NOTES

GPIO0 / GPIO1 = left motor PWM. GPIO3 / GPIO10 = right motor PWM. GPIO6 = active-HIGH MOTOR_ENABLE.

Initialize MOTOR_ENABLE LOW, configure PWM outputs LOW, then enable. GPIO4 measures VMOTOR through 330k / 100k.

ADC scale: VMOTOR = ADC voltage x 4.30 (nominal). 4.2 V cell gives about 0.977 V at ADC.

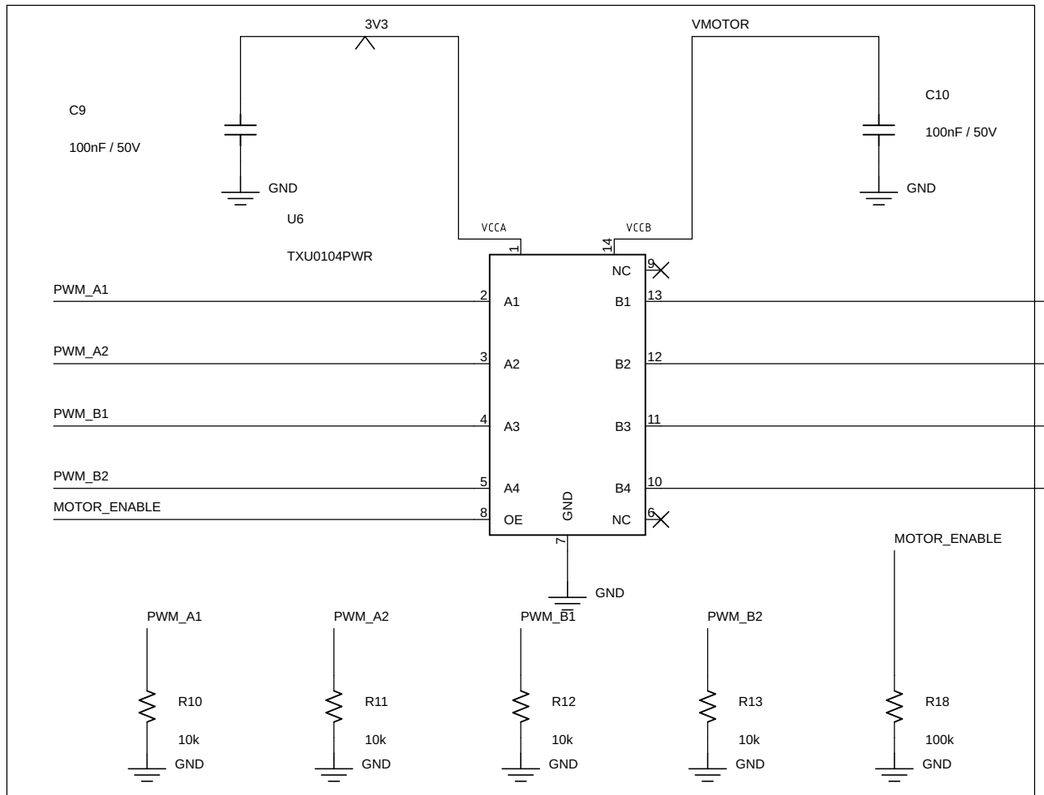
U1 footprint: 2 x 8 pins, 2.54 mm pitch, 15.24 mm row spacing. Verify the actual clone and keep its antenna area clear.

# SCOUT / CARRIER C

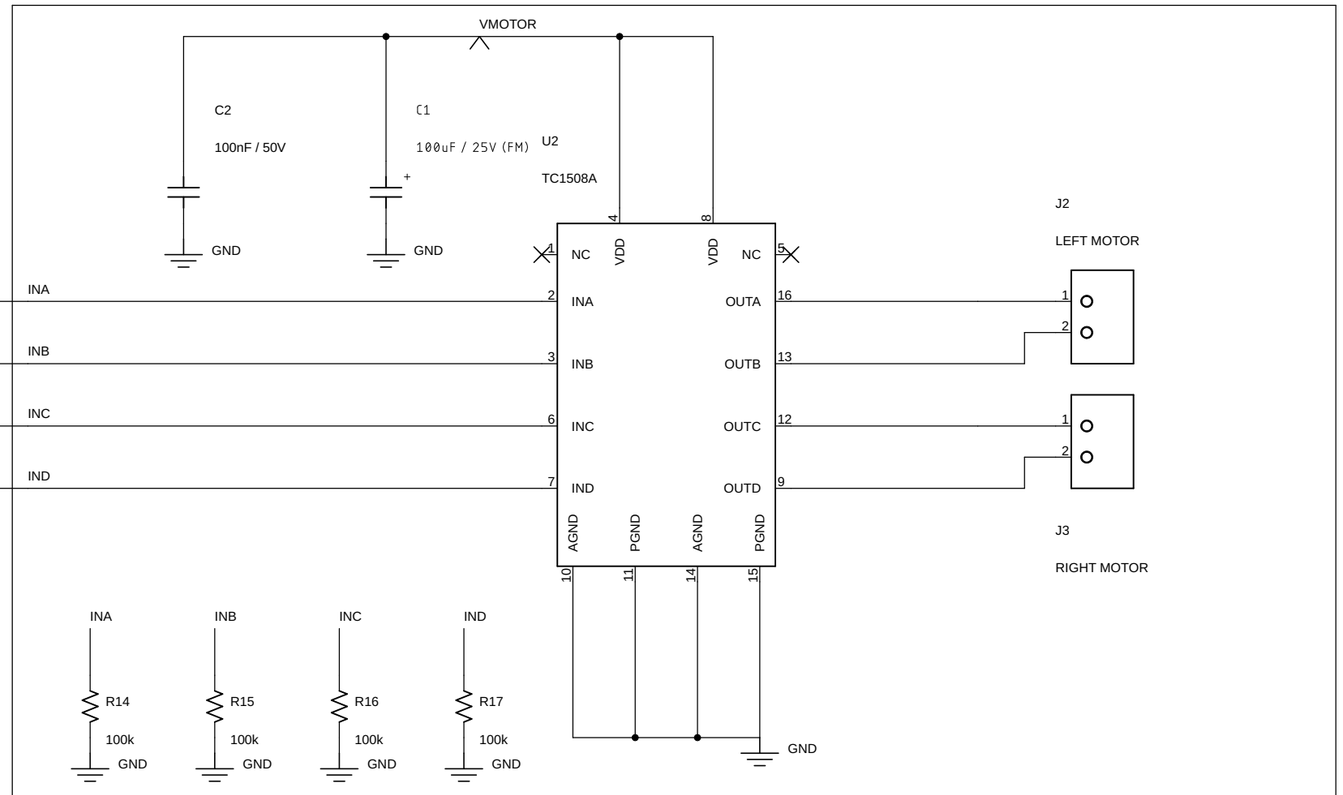
## MOTOR INTERFACE & DUAL H-BRIDGE

Power-safe level translator / default-disabled outputs / two brushed N20 motors

### 08 / POWER-SAFE GPIO INTERFACE




### 09 / DUAL MOTOR DRIVER




### POWER & CONTROL NOTES

TC1508A inputs must stay between GND and VMOTOR. TXU0104 isolates the unpowered motor domain.

C2 belongs beside both VDD pins; C1 supplies local motor transients. C9/C10 bypass the two translator supplies.

INA/INB or INC/IND: 00 = coast, 10/01 = opposite directions, 11 = brake. Motor stall current and heat need bench validation.