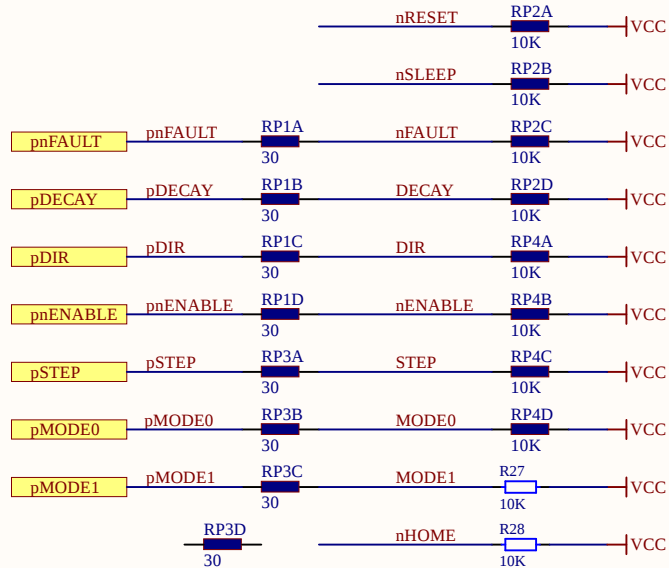
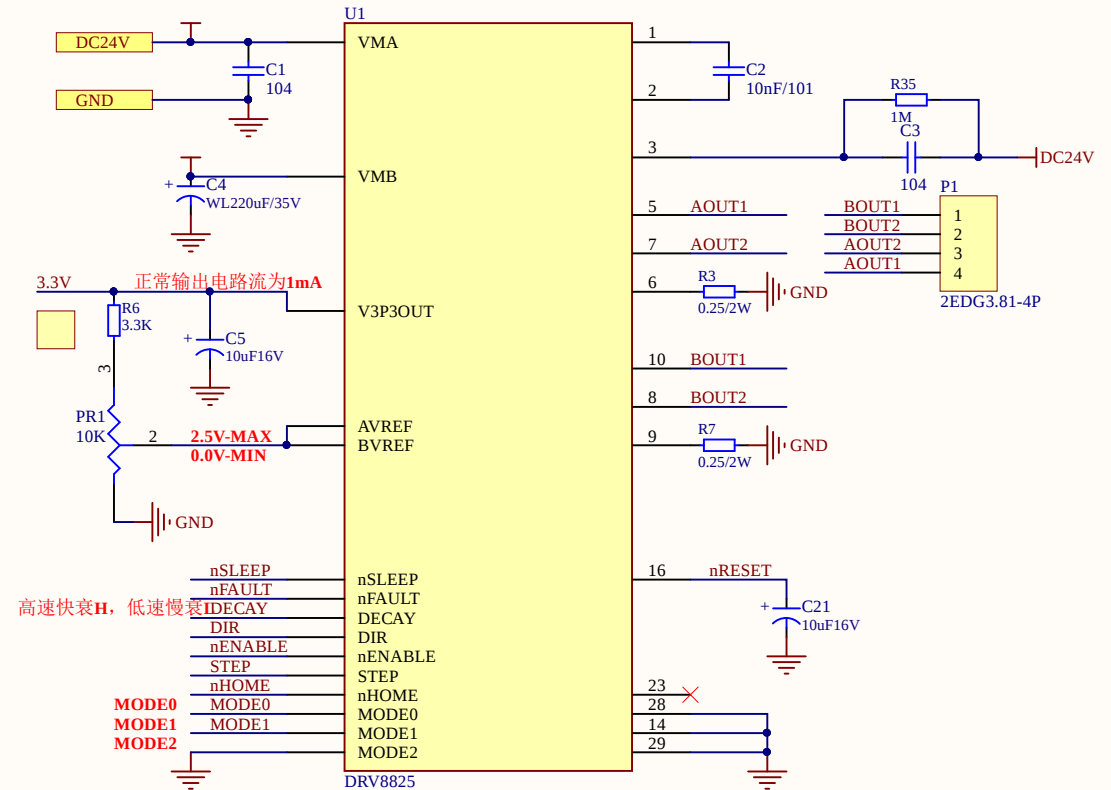


Table 2. Stepping Format

| MODE2 | MODE1 | MODE0 | STEP MODE                                       |
|-------|-------|-------|-------------------------------------------------|
| 0     | 0     | 0     | Full step (2-phase excitation) with 71% current |
| 0     | 0     | 1     | 1/2 step (1-2 phase excitation)                 |
| 0     | 1     | 0     | 1/4 step (W1-2 phase excitation)                |
| 0     | 1     | 1     | 8 microsteps / step                             |
| 1     | 0     | 0     | 16 microsteps / step                            |
| 1     | 0     | 1     | 32 microsteps / step                            |
| 1     | 1     | 0     | 32 microsteps / step                            |
| 1     | 1     | 1     | 32 microsteps / step                            |



实际应用只需要保留全步和半步即可。

制板时PCB铜厚应为2oz

### Current Regulation

The current through the motor windings is regulated by a fixed-frequency PWM current regulation, or current chopping. When an H-bridge is enabled, current rises through the winding at a rate dependent on the DC voltage and inductance of the winding. Once the current hits the current chopping threshold, the bridge disables the current until the beginning of the next PWM cycle.

In stepping motors, current regulation is used to vary the current in the two windings in a semi-sinusoidal fashion to provide smooth motion.

The PWM chopping current is set by a comparator which compares the voltage across a current sense resistor connected to the xISEN pins, multiplied by a factor of 5, with a reference voltage. The reference voltage is input from the xVREF pins.

The full-scale (100%) chopping current is calculated in Equation 1.

$$I_{CHOP} = \frac{V_{REFx}}{5 \cdot R_{ISENSE}}$$

(1)

Example:

If a 0.25-Ω sense resistor is used and the VREFx pin is 2.5 V, the full-scale (100%) chopping current will be 2.5 V / (5 x 0.25 Ω) = 2 A.

The reference voltage is scaled by an internal DAC that allows fractional stepping of a bipolar stepper motor, as described in the microstepping indexer section below.