Prelab4

2024年3月16日 星期六　　22:35

$h = 10 \rightarrow even \rightarrow use\ CCP2$

$10 \bmod 8 = 2 \rightarrow use\ AN2$

$A = 2.49V$

$\omega = \frac{3}{37}\pi$

$f = \frac{\pi}{12}$

$\therefore V = 2.49 \cos\left(\frac{3}{37}2\pi \times 10 + \frac{\pi}{12}\right) + 2.49$

$= 4.98\ V$

1.

$$d = \frac{V_o}{V_{in}} = \frac{4.98V}{5V} = 0.9960$$

For maximum resolution, PR2=255, prescaler =1, $F_{osc} = 8MHz$

$$d = \frac{L}{4 \times (PR2+1)}$$

$\therefore L = 0.996 \times 4 \times 256 = 1019.88 \approx 1020 = 1111\ 1111\ 00$

$\therefore$ PR2 = 1111 1111

OSCCON = 0111 0000

CCPR2L = 1111 1111

CCP2CON = 0000 1100

2.

$$d' = \frac{L}{4 \times (PR2+1)} = \frac{1020}{1024} = 0.996094$$

error = 0.996094 - 0.996 = 0.0094 %

$V_{error} = 5 \times 0.0094\% = 0.047\%$