

Assignment 1

September 22, 2019

1 Assignment 1

1.Q: Create a memory map for Code and Peripheral address spaces of the MSP432P401R.

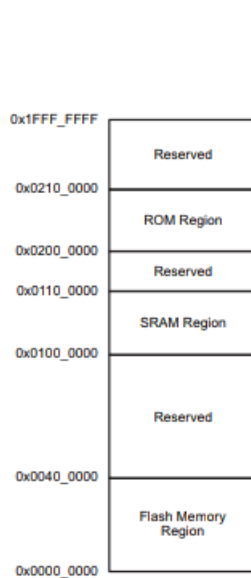


Figure 6-2. Code Zone Memory Map

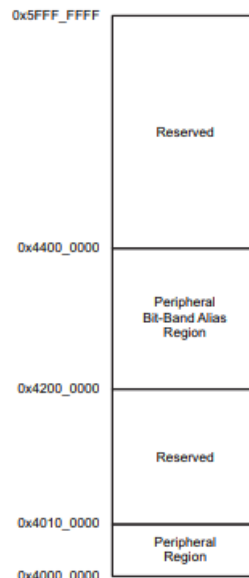


Figure 6-4. Peripheral Zone Memory Map

ref: chapter 6 of MDS

2.Q: How many internal oscillators does the MSP432 have?

The MSP432 has 5 oscillators found on page 123 of the MDS. The DCO, VLO, REFO, MODOSC, and SYSOSC.

ref: page 3 of MDS

3.Q: How many timers does the MSP432P401R have? What size are the timers?

The MSP432P401R has 7 different timers. Two timer32, four Timer_A(TA0-TA3), and one watchdog timer.

4.Q: What is the maximum sampling rate of the analog to digital converter on the MSP432P401R?

The maximum sampling rate of the ADC convert for the MSP432P401R is 25MHz and was found on page 65 of the MDS.

5.Q: What is the equation for determining the digital output of the analog to digital converter when operating in single-ended mode on the MSP432?

$$N_{ADC} = \frac{V_{R+} - V_{R-}}{16384}$$

ref: 845 of TRM

6.Q: Which register is the primary mechanism for changing power modes on the MSP432?

The register that primarily controls changing power modes is the PCMCTL0 register.

ref: 423 of TRM

7.Q: When the temperature goes up, does the general I/O output current from the MSP432 go up or down?

From looking at Figure 5.19, the red curve has a higher temperature and is at a lower current than the black curve with a lower temperature.

ref: page 61 of MDS

8.Q: The high drive I/O on the MSP432P401R produces more current by a factor of X. Estimate X according to the datasheet.

From comparing page 62 with 61 of the MDS, I conclude that the factor of increase of high-drive I/O increases the current by 6 rounded up.

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