

The Clock Circuit of the Microchip 18F Family

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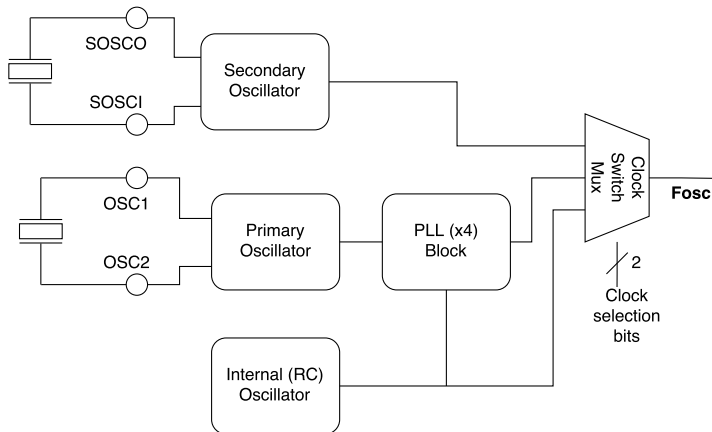
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The Clock Sources

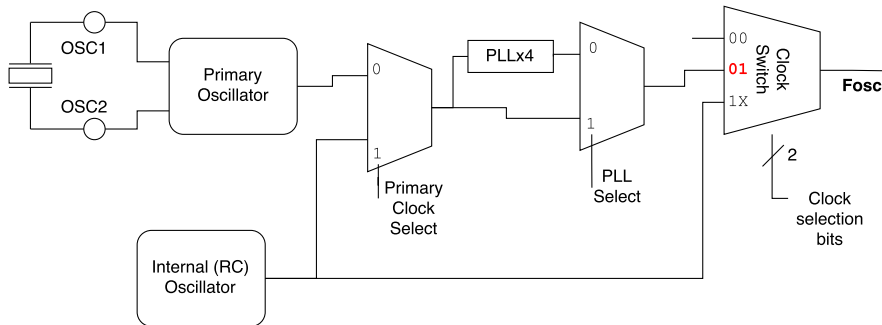
The Microchip 18F Family microcontrollers support three source of **main clock**:

- An **Internal RC oscillator**, with a range of prefixed selectable frequencies
- A **Primary oscillator**, driven by an external quartz crystal
- A **Secondary oscillator**, driven by an external quartz crystal
- Both RC and Primary oscillators frequency can be “**multiplied by 4**” by means of a special circuit called **PLL-Phase Locked Loop**
- The desired clock can be selected by programming the bits of **clock switch multiplexer**

The Clock Circuit

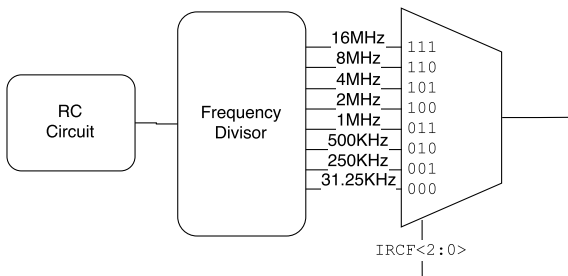


The Primary Clock



- The **Primary Clock** can be driven by:
 - The **Primary oscillator**
 - The **RC oscillator**
- Optionally the frequency can be multiplied by 4 by using the PLL

The Internal Oscillator



- The **Internal Oscillator** is circuit based on a “RC” electric network
- It is not based on crystals so it can be not-so-precise
- Its basic frequency is 16 MHz, but it can be divided by a frequency-divisor circuit
- Therefore the frequency to be used can be selected by means of **IRCF** bits of the **OSCCON** register

Example: A software flasher with clock change

```
main()
{
    long counter = 0;
    TRISBbits.TRISB0 = 0;
    OSCCONbits.IRCF = 0b110;
    // select 8 MHz of INTOSC, but we have the PLL so
    // FOSC = INTOSC*4 = 32MHz
    for (;;) {
        ++counter;
        if (counter == 200000) {
            counter = 0;
            LATBbits.LATB0 = !LATBbits.LATB0;
        }
    }
}
```

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