**I / O P O R T S**

**Note that the PIC24FV16KM204 family devices do not support Peripheral Pin Select features.**

All port pins have three registers directly associated with their operation as digital I/O.

1. TRISx: The Data Direction register (TRISx) determines whether the pin is an input or an output. If the Data Direction register bit is a ‘ 1 ’, then the pin is an input. All port pins are defined as inputs after a Reset.

2. LATx: Reads from the Data Latch register (LATx), read the latch. Writes to the latch, write the latch.

3. PORTx: Reads from the port (PORTx), read the port pins; writes to the port pins, write the latch.

11.1.1 OPEN-DRAIN CONFIGURATION

In addition to the PORT, LAT and TRIS registers for data control, each port pin can also be individually configured for either digital or open-drain output. This is controlled by the Open-Drain Control register, ODCx, associated with each port. Setting any of the bits configures the corresponding pin to act as an open-drain output. The maximum open-drain voltage allowed is the same as the maximum VIH specification.

11.2 Configuring Analog Port Pins

The use of the ANSx and TRISx registers controls the operation of the A/D port pins. The port pins that are desired as analog inputs must have their corresponding TRISx bit set (input). If the TRISx bit is cleared (output), the digital output level (VOH or VOL) will be converted.

When reading the PORTx register, all pins configured as analog input channels will read as cleared (a low level). Analog levels on any pin that is defined as a digital input (including the ANx pins) may cause the input buffer to consume current that exceeds the device specifications.

11.2.1 ANALOG SELECTION REGISTER

I/O pins with shared analog functionality, such as A/D inputs and comparator inputs, must have their digital inputs shut off when analog functionality is used. Note that analog functionality includes an analog voltage being applied to the pin externally.

To allow for analog control, the ANSx registers are provided. There is one ANSx register for each port (ANSA, ANSB and ANSC). Within each ANSx register, there is a bit for each pin that shares analog functionality with the digital I/O functionality.

If a particular pin does not have an analog function, that bit is unimplemented. See Register 11-1 to Register 11-3 for implementation.