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Figure 6.1 draws the I/O port structure for the LM4F120H5QR and TM4C123GH6PM. These microcontrollers are used on the EK-LM4F120XL and EK-TM4C123GXL LaunchPads. Pins on the LM3S family have two possibilities: digital I/O or an alternative function. However, pins on the LM4F/TM4C family can be assigned to as many as eight different I/O functions. Pins can be configured for digital I/O, analog input, timer I/O, or serial I/O. For example PA0 can be digital I/O or serial input. There are two buses used for I/O. The digital I/O ports are connected to both the advanced peripheral bus and the advanced high-performance bus. Because of the multiple buses, the microcontroller can perform I/O bus cycles simultaneous with instruction fetches from flash ROM. The LM4F120H5QR has eight UART ports, four SSI ports, four I2C ports, two 12-bit ADCs, twelve timers, a CAN port, and a USB interface. The TM4C123GH6PM adds up to 16 PWM outputs. There are 43 I/O lines. There are twelve ADC inputs; each ADC can convert up to 1M samples per second. Table 6.1 lists the regular and alternate names of the port pins.

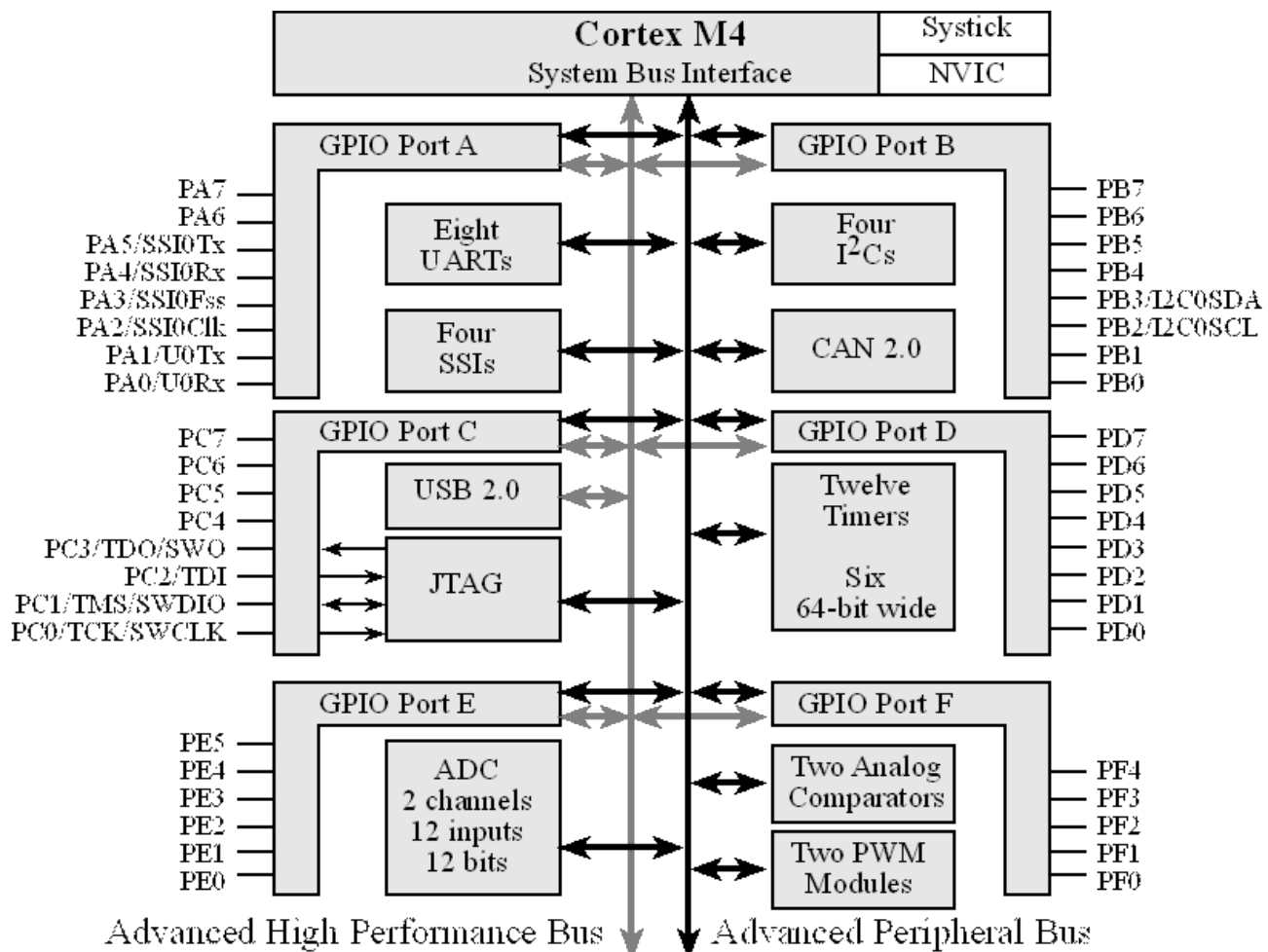


Figure 6.1. I/O port pins for the LM4F120H5QR / TM4C123GH6PM microcontrollers.



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