Appendix 2

Technical Specification of LPC 2378

LPC2378

The LPC2378 microcontroller is based on a 16-bit/32-bit ARM7TDMI-S CPU with real-time emulation that combines the microcontroller with 512kB of embedded high-speed flash memory. A 128-bit wide memory interface and unique accelerator architecture enable 32-bit code execution at the maximum clock rate. For critical performance in interrupt service routines and DSP algorithms, this increases performance up to 30% over Thumb mode. For critical code size applications, the alternative 16-bit Thumb mode reduces code by more than 30% with minimal performance penalty. The LPC2378 is ideal for multi-purpose serial communication applications. It incorporates 10/100 Ethernet Media Access Controller (MAC), USB full speed device with 4kB of endpoint RAM, four UARTs, two CAN channels, an SPI interface, two Synchronous Serial Ports (SSP), three I2C interfaces, an I2S interface, and an External Memory Controller (EMC). This blend of serial communications interfaces combined with an on-chip 4 MHz internal oscillator, SRAM of 32kB, 16kB SRAM for Ethernet, 8kB SRAM for USB and general purpose use, together with 2kB battery powered SRAM make this device very well suited for communication gateways and protocol converters. Various 32-bit timers, an improved 10-bit ADC, 10-bit DAC, PWM unit, a CAN control unit, and up to 104 fast GPIO lines with up to 50 edges and up to four level sensitive external interrupt pins make these microcontrollers particularly suitable for industrial control and medical systems.
The Main Features of LPC2378

- 16-bit/32-bit ARM7TDMI-S microcontroller in a tiny LQFP144 package.
- 32kB of SRAM and 512kB on-chip flash program memory. 16kB SRAM for Ethernet interface can be used as SRAM.
- It provides In-System Programming (ISP) and In-Application Programming (IAP) capabilities.
- 10-bit ADC with input multiplexing among 8 pins.
- Four general purpose timers/counters with 8 capture inputs and 10 compare outputs.
- Advanced Vectored Interrupt Controller (VIC), supporting up to 32 vectored interrupts.
- EMC provides support for static devices such as flash and SRAM as well as off-chip memory mapped peripherals.
- USB 2.0 full-speed device with on-chip PHY and associated DMA controller.
- Multiple serial interfaces including Four UARTS, two SSP controllers, three I²C bus, and CAN controller with two channels.
- Real-Time Clock (RTC) with separate power pin, clock source can be the RTC oscillator or the APB clock.
- The WDT (Watch Dog Timer) can be clocked from the internal RC oscillator, the RTC oscillator, or the APB clock.
Figure A.2 Architecture of LPC 2378