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Understanding Embedded - Microprocessors

Embedded microprocessors are specialized computing chips designed to perform specific tasks within an embedded system. Unlike general-purpose microprocessors found in personal computers, embedded microprocessors are tailored for dedicated functions within larger systems, offering optimized performance, efficiency, and reliability. These microprocessors are integral to the operation of countless electronic devices, providing the computational power necessary for controlling processes, handling data, and managing communications.

Applications of Embedded - Microprocessors

Embedded microprocessors are utilized across a broad spectrum of applications, making them indispensable in

Details	
Product Status	Not For New Designs
Core Processor	Rabbit 6000
Number of Cores/Bus Width	1 Core, 8-Bit
Speed	200MHz
Co-Processors/DSP	-
RAM Controllers	-
Graphics Acceleration	No
Display & Interface Controllers	-
Ethernet	10/100Mbps (1)
SATA	-
USB	USB 2.0 (1)
Voltage - I/O	1.2V, 3.3V
Operating Temperature	-40°C ~ 85°C (TA)
Security Features	-
Package / Case	292-LFBGA
Supplier Device Package	292-BGA (17x17)
Purchase URL	https://www.e-xfl.com/product-detail/digi-international/16051220

Rabbit® 6000

Communications and Control Processor

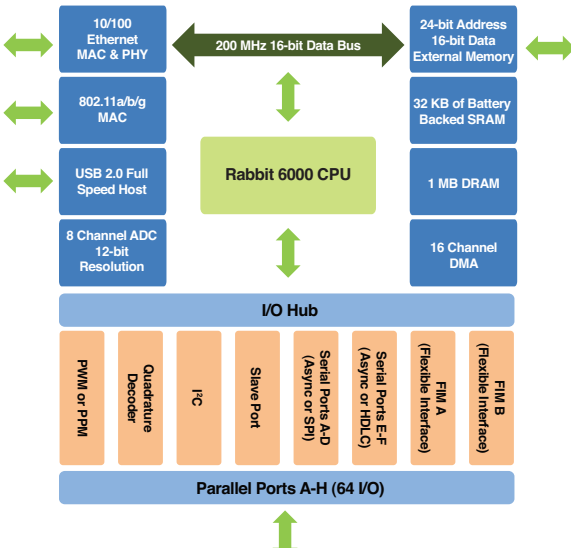
A System-on-Chip ideal for industrial designs requiring multiple connectivity options. On-board features include Wi-Fi, USB and Ethernet.

Overview

The Rabbit 6000 raises the industry standard as the first wireless processor providing a rich set of industrial embedded control features. It is the perfect complement to future hardware designs, such as our award winning single-board computer (SBC) products that provide low-cost PLC functionality. Running at 200 MHz, the Rabbit 6000 is optimized for embedded control systems requiring high performance without sacrificing costs.

The integrated hardware and software environment with processor specific libraries allows for programmable features such as I/O and peripherals to dramatically reduce development costs and time to market. The Rabbit 6000 eliminates the dependency on external components, thus increasing product longevity.

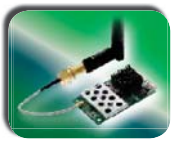
Block Diagram



Features/Benefits

- Clock speed up to 200 MHz
- On-board 802.11 a/b/g and 10/100 Ethernet
- 64 I/O and up to 6 serial ports (4 as SPI)
- 1 MB internal DRAM and 32K battery backable SRAM
- USB 2.0 full speed host
- 12-bit A/D converter samples up to 1Megasamples/s
- Ideal for industrial motor control
- Integrated hardware and software environment
- Easily add an HMI as well as CANbus protocol support with the on-board FIMs
- 4 PWM channels, 4 PPM channels

Complete Solutions


Modules


SBCs


Development Kits

Dynamic C®

Supported Software Platforms

Specifications | Rabbit® 6000

Features	
Package	292-ball BGA
Package Size	17 mm x 17 mm x 1.3 mm
Operating Voltage	1.2VDC core, 3.3V DC I/O ring
Operating Current	372 µA/MHz @ 1.2V / 3.3V (Wi-Fi and Ethernet Disabled)
Operating Temperature	-40° C to +85° C
Maximum Clock Speed	200 MHz
Digital I/O	64+ (arranged in eight 8-bit ports)
Network Interfaces	10/100Base-T, 802.11a/b/g Wi-Fi
Serial Ports	6 CMOS-compatible
Baud Rate	Clock speed / 8 max. asynchronous
I²C	1
Address Bus	24-bit
Data Bus	8/16-bit
Timers	Ten 8-bit, one 10-bit with 2 match registers, and one 16-bit with 8 match registers
Real-Time Clock	Yes, battery-backable
RTC Oscillator Circuitry	External
Watchdog Timer/Supervisor	Yes
Clock Modes	1x, 2x, /2, /3, /4, /6, /8
Power-Down Modes	Sleepy (32 kHz), Ultra Sleepy (16, 8, 2 kHz)
External I/O	8 or 16-bit data, 8 address lines
A/D Converters	12-bit, eight multiplexed channels, up to 1 megasamples/s 10-bit, 2 synchronous channels, up to 40 megasamples/s 10-bit, single channel, up to 1 megasample/s (Wi-Fi disabled)
D/A Converters	10-bit, 2 synchronous channels, up to 80 megasamples/s (Wi-Fi Disabled)

Software

The Dynamic C® integrated development environment reduces the time and effort to write real-time software for embedded systems that use a Rabbit microprocessor, enabling easy development of a wide range of applications.

Rabbit integrates editing, compiling, linking, loading and debugging into a single development environment as one function. There are no compatibility issues when moving from one stage to another. Once the design is complete, you can debug it on the target hardware and see how your code works. Because it is a dialect of C, the Dynamic C language has all the statements and constructions of traditional C, plus extensions that make it easier to write reliable, real-time multi-tasking software. The Dynamic C integrated development environment allows for easy hardware migration, moving from a single-board computer to chip level production.

Dynamic C also includes highly useful software components that can add functionality and value to your applications. This functionality includes web server capability, filing system, remote firmware updates, and wired and wireless security. Compatible software components are listed below.

Rabbit Program Update
Allows for remote firmware updates from anywhere in the world using an Internet connection

Wi-Fi Authentication
Provides strongest Wi-Fi security available via WPA-2 and 802.11i

RabbitWeb
Easily create web interfaces to monitor and control embedded applications

You can purchase with confidence knowing that Digi is always available to serve you with expert technical support and our industry leading warranty. For detailed information visit www.digi.com/support

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