# Rabbit 2000™
Microprocessor

The Rabbit 2000 is a high-performance 8-bit microprocessor designed expressly to power embedded systems. Its extensive integrated feature set and glueless architecture facilitate rapid hardware design, and its C-friendly instruction set permits efficient development of complex applications. For embedded systems, the Rabbit 2000 out-performs most 16 and some 32-bit processors without losing the efficiency of an 8-bit architecture.

With clock speeds of up to 30 MHz and numerous on-chip peripherals including memory and I/O control signals for glueless interface, four serial ports, over forty digital I/O pins, 8 and 10-bit timer systems, watchdog timer, real-time clock and flexible clocking options, the Rabbit 2000 packs a hardware punch that system designers will appreciate. Our Dynamic C® development environment provides an integrated C compiler with debugger and linker for efficient and powerful applications development.

Design Advantages:

- 8-Bit Architecture — high-performance architecture with integrated peripherals permit efficient and cost effective hardware design
- Enhanced Instruction Set —brings new power and speed to 8-bit systems with numerous one-byte opcodes and 16-bit logical, arithmetic, and data transfer instructions
- Exceptional Math Performance —based on highly optimized math libraries
- Dynamic C Development Environment —for real-time development and debugging of Rabbit-based systems using C or Assembly language
- TCP/IP Connectivity —hardware and software package provides a convenient and cost-effective solution for remotely accessing, programming and debugging Rabbit-based systems over intranets or the Internet
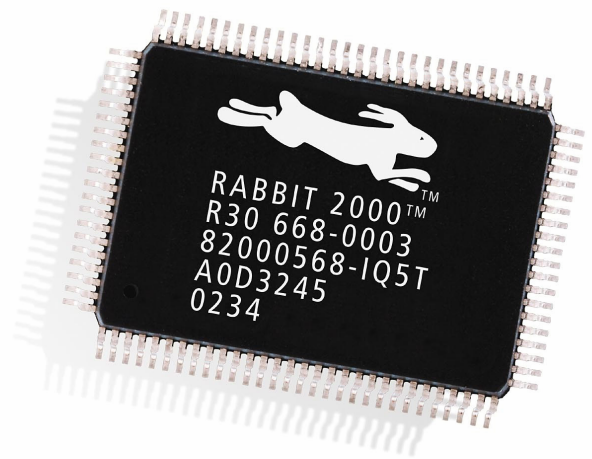
Feature List:

- On-board slave port allows the Rabbit to be configured as an intelligent peripheral device.
- Control of clock speed by software allows dynamic trading of power vs. speed.
- Excellent math performance with 16 x 16 multiply in 12 clocks.
- Three levels of interrupt priority allow fast response to real-time events.
- 40 parallel I/O lines.
- Five 8-bit timers and one 10-bit timer with two match registers
- Battery-backable time/date clock
- Watchdog

Designers familiar with the HD64180 or Z180 will be completely at ease with the Rabbit 2000. While it runs three times faster, it shares a similar architecture. For example, using new fetch and store instructions, 16-bit variables can be fetched from a location at an offset from the stack pointer in only nine clocks. New instructions perform calls, returns, and jumps over a full megabyte of address space.

The 16-bit shifts and 12-clock 16 x 16 bit multiply significantly improve math performance. Floating point addition or multiplication requires only 11 microseconds with a 29.5 MHz clock speed.

Development Software

The Rabbit 2000 microprocessor is ready for immediate software development. User programs are created using Z-World's Dynamic C®, a C-language environment that includes a compiler, editor, and debugger. Programs can be compiled and executed using the Dynamic C software and a serial programming cable. No in-circuit emulator is required.

Programming the Rabbit 2000

The Rabbit 2000 is programmed using the industry-proven Dynamic C® software development system-an integrated C compiler, editor, loader, and debugger created specifically for Rabbit-based systems. Developing software with Dynamic C is easy. Users can write, compile, and test both C and Assembly code without leaving the Dynamic C development environment, and no costly in-circuit emulators are required.

Full TCP/IP stack with source code is provided royalty free in Dynamic C and with our Development Kits. TCP/IP support includes PPP and SNMP, socket-level TCP and UDP, FTP, TFTP, HTTP (w/ SSI and CGI), DHCP, SMTP, POP3, and PING.

Rabbit 2000 Features and Specifications	
Packaging	100-pin PQFP
Package Size	24 x 18 x 3 mm
Operating Voltage	5.5 V
Operating Current	4 mA/MHz @ 5.5 V
Operating Temp	-40° to +80°C
Maximum Clock Speed	30 Mhz
Digital I/O	40 (arranged in five 8-bit ports)
Serial Ports	4 CMOS-compatible
Baud Rate	Clock speed/32 max asynchronous
Address Bus	20-bit
Data Bus	8-bit
Timers	Five 8-bit and one 10-bit with 2 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)
Auxiliary I/O Bus	None

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