RCM3400 RabbitCore™

Analog Core ModuleWith 10/100Base-T Reference Design
Models RCM3400, RCM3410

The RCM3400 analog RabbitCore provides a known-good processor and analog input subsystem for OEMs to quickly integrate into custom designs. The RCM3400 features a low-EMI Rabbit 3000-based CPU subsystem running at 29.4 MHz, with 512K Flash / 512K SRAM or 256K Flash / 256K SRAM, 5 serial ports, and 8 channels of programmable gain analog input in an extremely small footprint (1.37" × 1.16" / 34 × 29 mm). The RCM3400 comes with a pre-assigned MAC I.D. to be Ethernet ready and the development board features 10/100Base-T Ethernet and can be used as a reference design in conjunction with Dynamic C's royalty-free TCP/IP software libraries. Extensive demo programs and software application templates make it easy to get the RCM3400 up and running in record time.

RabbitCores mount directly on a user-designed motherboard and can interface with all manner of CMOS-compatible digital devices. Two 34-pin connectors route 47 digital I/O (shared with serial ports), power, and other signals to the motherboard. Built-in low-EMI features, including a clock spectrum spreader, practically eliminate EMI problems, helping OEMs pass CE and regulatory RF emissions tests.

The RCM3400 is equipped with 5 V tolerant I/O, quadrature encoder inputs, PWM outputs, and pulse capture and measurement capabilities. The RCM3400 also features a battery-backable real-time clock, glueless memory and I/O interfacing, and low-power "sleepy" modes. A fully enabled 8-bit slave port permits easy master-slave interfacing with another processor-based system, and an alternate I/O bus can be configured for 8 data lines and 6 address lines (shared with parallel I/O).

Programmed with Dynamic C, the RCM3400 executes math, logic, and I/O exceptionally quickly. The Rabbit 3000 chip, RCM3400, and Dynamic C were designed in a complementary fashion for maximum performance and ease of use in embedded systems. Our industry-proven Dynamic C® development system is a C-language environment that includes an editor, compiler, and in-circuit debugger. User programs can be compiled, executed, and debugged using Dynamic C and a programming cable—no in-circuit emulator is required. An extensive library of drivers and sample programs is provided, including royalty-free TCP/IP stack with source code.

Features

- 3.3 V operation
- Powerful Rabbit 3000™ microprocessor
- Low-EMI (typically <10 dB µV/m @ 3 m)
- Up to 512K Flash / 512K SRAM
- 8 channel 12-bit A/D with programmable gain
- 47 digital I/O, alternate I/O bus
- 5 serial ports (IrDA, SDLC/HDLC, asynch, SPI)
- MAC ID installed

Design Advantages

- Ready-made platform for fast time-to-market
- Compact size simplifies integration
- Dynamic C® development environment for real-time development and debugging
- Exceptionally fast performance for math, logic, I/O
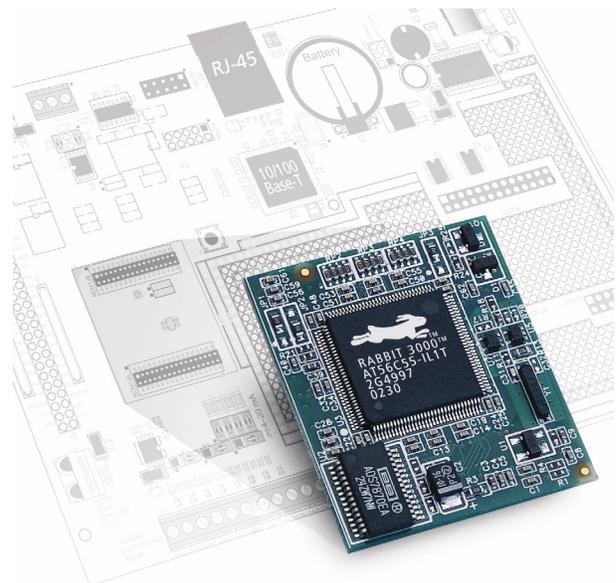
Actual Size
1.37" × 1.16 " × 0.31"
(34 × 29 × 22 mm)

www.rabbitsemiconductor.com

RabbitCore RCM3400 Specifications & Features

FEATURE	RCM3400	RCM3410
Microprocessor	Rabbit 3000 at 29.4 MHz	
EMI Reduction	Spectrum spreader for reduced EMI (radiated emissions)	
Flash	512K	256K
SRAM	512K	256K
Backup Battery	Connection for user-supplied battery (to support RTC and SRAM)	
Analog Inputs	8 channels single-ended (11-bit) or 4 channels differential (12-bit) Programmable gain 1, 2, 4, 5, 8, 10, 16, and 20 V/V.	
General-Purpose I/O	47 digital I/O ▪ 41 configurable I/O ▪ 3 fixed inputs ▪ 3 fixed outputs	
Additional Inputs	2 Startup Mode, Reset In, CONVERT	
Additional Outputs	Status, Reset Out, BVREF	
Auxiliary I/O Bus	8 data and 6 address (shared with I/O), I/O Read-Write	
Serial Ports	5 CMOS-compatible: ▪ 4 configurable as asynchronous (with IrDA), 3 as clocked serial (SPI), and 2 as SDLC/HDLC (with IrDA) ▪ 1 asynchronous serial port dedicated for programming ▪ Support for MIR/SIR IrDA transceiver	
Serial Rate	Max. asynchronous baud rate = CLK/8	
Slave Interface	Slave port permits use as master or intelligent peripheral with Rabbit-based or other master controller	
Real-Time Clock	Yes	
Timers	Ten 8-bit timers (6 cascadable from the first) and one 10-bit timer with 2 match registers	
Watchdog/Supervisor	Yes	
Pulse-Width Modulators	10-bit free-running counter and four pulse-width registers	
Input Capture	2-channel input capture can be used to time input signals from various port pins.	
Quadrature Decoder	2-channel quadrature decoder accepts inputs from external incremental encoder modules.	
Power	3.0–3.45 V DC @ 29.4MHz / 2.8–3.45 V DC @ 14.7 MHz 97 mA @ 3.3 V, 29.4 MHz / 57 mA @ 3.0 V, 14.7 MHz	
Operating Temp.	–40°C to +85°C	
Humidity	5–95%, noncondensing	
Connectors	Two 2 x 17 (1.27 mm pitch)	
Board Size	1.37" × 1.16 " × 0.31" (35 × 29 × 7.9 mm)	
Pricing (qty. 1/100/1000) Part Number	$79/59/49 101-0561	$59/49/39 101-0562
Development Kit Part Number	$399 U.S. 101-0587	Int'l 101-0588

Complete Development Kit includes:

- RCM3400 RabbitCore (512K Flash/512K SRAM)
- Development board with 10/100Base-T Ethernet and prototyping area
- AC adapter (U.S./Canada only)

- Dynamic C SE development system (not a trial version) and complete documentation on CD-ROM
- Serial cable for programming and debugging
- *Getting Started* manual