Rabbit RIO®

Programmable I/O Chip

Key Features

- Up to 40 MHz clock
- Multiple communication interfaces including SPI, parallel and RabbitNet™
- 8 independent functional channels with 4 ports each
- Each functional channel can be configured as:
    - Bi-directional I/O
    - PWM or PPM outputs
    - TRIAC signal generators
    - Input capture (pulse length and frequency)
    - Counter (event or timers)
    - Quadrature decode peripheral
- Up to 38 digital I/O lines
- Global or channel sync input to coordinate outputs
- Interrupt request pin
- RoHS compliant

Design Advantages:

- Add I/O and specialty features to an existing design
- Processor interface using a clocked serial port
- Use multiple Rabbit RIO devices for large I/O applications
- Ideal for motion control using PWM and quadrature decoders

Applications

- Industrial control and automation
- Instrumentation

Rabbit RIO - Increase I/O and Functionality

The Rabbit RIO chip is a versatile companion device with a powerful feature set developed to enhance any microcontroller design. The Rabbit RIO device offers both I/O expansion and specialty features to off-load the microcontroller and reduce design time and risk for embedded applications. The Rabbit RIO will easily interface with any processor that has an available clocked serial port.

The Rabbit RIO device offers 38 digital I/O lines with eight independent functional channels you can configure as:

- Bi-directional I/O
- PWM or PPM outputs
- TRIAC signal generators
- Input capture (pulse length and frequency)
- Counter (event or timers)

The Rabbit RIO communicates with a microprocessor in either a serial mode via the SPI and RabbitNet (http://www.rabbit.com/documentation/docs/manuals/RabbitNet/) protocols, or in a parallel mode. The multiple communication modes allow the Rabbit RIO to be a part of a wide variety of systems that use any one of these communication methods. Grouped into eight channels of four ports, each channel can be separately configured

RABBIT™

to several specialty features, including PWM (pulse width modulation), PPM (pulse position modulation), event counters, quadrature encoders, and input capture. The main clock can be used directly by each channel, or pre-scaled down to a lower frequency if desired.

There is no programming necessary to use the Rabbit RIO. The configuration of the Rabbit RIO is accomplished by simply writing data to the configuration registers on start time.

Configuring the Rabbit RIO to support RabbitNet provides Rabbit users a simple and efficient means for connecting multiple RabbitNet expansion cards to their Rabbit system. The Rabbit RIO can support a RabbitNet hub connecting up to seven downstream devices. The Rabbit RIO allows the seven downstream devices to provide an additional seven connections, supporting a total of 49 devices to be connected to the master device.
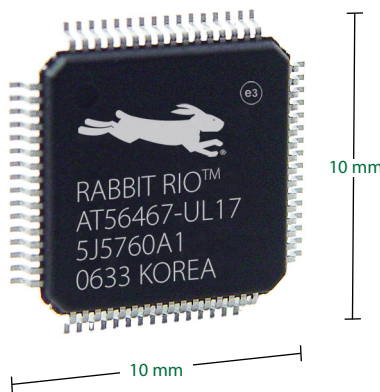
See for Yourself

The Rabbot RIO Programmable I/O Kit is designed to demonstrate how to expand an embedded control system design by adding additional I/O lines, PWM, and other I/O functions. The kit provides a Prototyping Board with a Rabbit RIO chip already installed and configurable header locations to allow you to develop your own application using the Dynamic C function calls and sample programs included with the kit.

The sample programs included with the Rabbit RIO Programmable I/O Kit can serve as a template for your application.

Application Kit Features

- RCM4110 RabbitCore® module
- Rabbit RIO Prototyping Board
- AC adapter, programming cable and parts for use with the Prototyping Board
- Complete Dynamic C software CD and supplemental CD with sample programs and reference information related to the Rabbit RIO Programmable I/O Kit

Rabbit RIO® Expansion Chip Specifications	
Features	RIO Expansion Chip
Clock Speed	Up to 40 MHz
Operating Voltage	3.0 – 3.6 V DC
Maximum I/O Input Voltage	5.0 V DC (3.3 V DC typ.)
Core Current	22.1184 MHz, @ 31.3 mA, 25° C
I/O Ring	22.1184 MHz, @ 1.1 mA, 25° C
Output Drive	8 mA
Communication Interfaces	SPI, 8-bit parallel, RabbitNet
Fixed Digital Inputs	4
Configurable I/O	8 independent channels, each with 4 ports: • Up to 32 bi-directional I/O lines • Up to 32 PWM outputs • Up to 16 PPM outputs • Up to 32 TRIAC signal generators • Up to 8 input capture peripherals • Up to 8 counters • Up to 8 quadrature decode peripherals
RabbitNet	Up to 7 RabbitNet ports
Package Type	64-pin TQFP 10 mm × 10 mm × 1.4 mm
RoHS Compliant	Yes
Pricing	
Price (qty. 1/1K/10K) Part Number	$5.00 / $3.75 / $3.00 20-668-0030
Price (2-Pack) Part Number	$10 20-101-1187
Application Kit Part Number	$299 101-1147 (all regions)

10 mm

10 mm

Rabbit RIO Programmable I/O Application Kit