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:

- Simple add-on chip to add I/O and specialty features to an existing design
- Compatible with any processor design that has an available clocked serial port
- Multiple chips can be used together to develop mega I/O applications
- PWM and quadrature decoders well suited for motion control
- Perfect chip to add functionality without costly processor platform changes

Applications

- Industrial Control
- Automation
- Motion Control
- Instrumentation

Rabbit I/O – Dynamic Peripheral Chip

The RIO (Rabbit I/O) is a versatile programmable I/O chip, featuring I/O expansion and specialty features compatible with any processor that has an available clocked serial port. Since the RIO is part of the Rabbit Semiconductor® family of devices, Dynamic C® library and sample programs are available to quickly integrate the RIO into Rabbit® systems. Additionally, ANSI C and assembly-level sample programs are available to assist integrating the RIO into any programming environment.

The RIO can operate up to 40 MHz, is powered by 3.3 V, and the I/O is 5 V-tolerant. RIO is available in a 64-pin 0 mm × 10 mm × 1.4 mm TQFP, making its small footprint and low profile ideal for embedded applications.

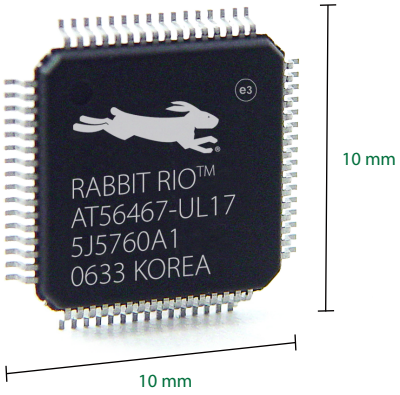
RIO can be controlled through a parallel interface, SPI, as well as the RabbitNet expansion protocol. Multiple communication interfaces ensure the RIO can be a part of a wide variety of systems. Selection of the communication mode occurs during power up. In parallel mode, the RIO communicates using an 8-bit data, 5-bit address bus. In serial mode, the parallel data lines are freed to be used as general purpose I/O.

Grouped into 8 channels of 4 ports,

each channel can be separately configured 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 RIO. The configuration of the RIO is accomplished by simply writing data to the configuration registers on start time.

Configuring the RIO to support RabbitNet provides Rabbit users a simple and efficient means for connecting multiple RabbitNet expansion cards to their Rabbit system. The RIO can support a RabbitNet hub connecting up to 7 downstream devices. Providing support for two levels of hub allows a master device to control up to 49 devices total.



RIO™ Expansion Chip Specifications	
Features	RIO Expansion Chip
Package Type	64-pin TQFP 10 mm × 10 mm × 1.4 mm
Clock Speed	Up to 40 MHz
Operating Voltage	3.0 – 3.6 V DC (5 V tolerant)
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 independant 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
RoHS Compliant	Yes
Pricing	
Price (qty. 1/1K/10K) Part Number	$5.00 / $3.75 / $3.00 20-668-0030
Application Kit Part Number	$299 101-1147 (all regions)

RIO Programmable I/O Application Kit

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