↗ Microcontroller with LIN Transceiver, 5V Regulator, and Watchdog
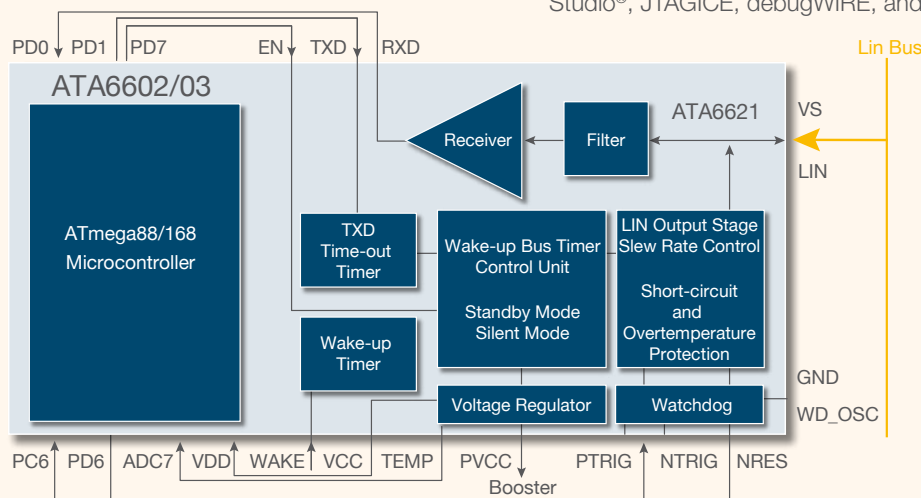## ATA6602, ATA6603

The ATA6602/ATA6603 are single-package dual-chip circuits for LIN-bus slave and master node applications. They support highly integrated solutions for in-vehicle LIN networks. The LIN-system-basis-chip (LIN-SBC) consists of a LIN transceiver, which complies with the LIN specification; a voltage regulator; and a window watchdog. The second chip used in the ATA6602 and ATA6603 is from Atmel®'s series of AVR® 8-bit microcontrollers with advanced RISC architecture. An ATmega88 microcontroller is used in the ATA6602, while an ATmega168 is used in the ATA6603. The LIN-SBC and the microcontroller are mounted in a small QFN48 package. This dual-chip combination makes it possible to develop inexpensive, simple, yet powerful master and slave nodes for use in LIN-bus systems.

Features

- Single-package Fully Integrated AVR 8-bit Microcontroller with LIN Transceiver, 5V Regulator, and Watchdog
- Supply Voltage up to 40V
- Operating Voltage from 5V to 18V
- Temperature Range for T_{case} −40°C to +125°C
- Same Features as the Stand-alone AVR ATmega88/168:
  - LIN-capable UART
  - 8-channel 10-bit ADC
  - 8 kByte (ATA6602) or 16 kByte (ATA6603) Flash Memory for Application Program
  - 512 Byte EEPROM and 1 kByte SRAM

Benefits

- Small Single-package Solution – QFN48, 7 mm x 7 mm
- Small PCB Size with Fewer Soldering Inspections
- Silent Mode Supplies the Microcontroller in Sleep Mode Operation for e.g., Switch Scanning or LED Flashing Facilitating a Very Low Current Consumption
- Wake-up Capability via LIN-bus or WAKE Pin
- Boosting of the Voltage Regulator's Current Capacity Possible with an External NPN Transistor
- 60V Load Dump Protection at LIN Pin
- High ESD Level at LIN-bus Pin and Supply VS Pin
- Supported by AVR Development Tools AVR Studio®, JTAGICE, debugWIRE, and STK®500

Applications

- Various Automotive Applications in Body Control, Safety, and Powertrain Areas
- Industrial Applications, e.g., Networking
- LIN-nodes for Sensor Applications, Steering Wheel Locks, and Control Panels like Electrical Seat Adjustment, Overhead/Roof Station, or Climate Control

Tools

Atmel provides the cost-effective development boards, ATA6602-EK and ATA6603-EK, to assist in the development of a LIN network. The development boards are designed to give designers a quick start with the IC and to allow prototyping and testing of new designs. There are a number of placeholders on the boards, which offer designers the chance to modify certain parameters.

Furthermore, a LIN2.0 ANSI C software library for LIN slave nodes is available. ActiveX® components, also provided by Atmel, can be used to create a simple PC program to emulate the LIN master node. Testing and building LIN networks is both easy and inexpensive with Atmel's hardware and software tools. The software tools can be downloaded online at http://www.atmel.com/products/Auto (go to Tools & Software).

Ordering Information

Extended Part Number	Package	Remarks
ATA6602N-PLQW	QFN48, 7 mm x 7 mm	4k Tape & Reel, Pb-free
ATA6603N-PLQW	QFN48, 7 mm x 7 mm	4k Tape & Reel, Pb-free

LIN Family Overview

Part Number	Type	Features	Supply/ Operating Voltage (V)	Load-dump Protection at LIN Pin (V)	Modes	Package	Tools
ATA6661	Standalone LIN Transceiver	LIN Interface	40/18[1)	60	Pre-normal Mode, Normal Mode, Sleep Mode	SO8	Datasheet, Appnote, Software, Development Board
ATA6662	Standalone LIN Transceiver	LIN Interface	40/27	40	Pre-normal Mode, Normal Mode, Sleep Mode	SO8	Datasheet, Appnote, Software, Development Board
ATA6620	System Basis Chip (SBC)	LIN Interface + Voltage Regulator	40/18[1)	60	Pre-normal Mode, Normal Mode, Sleep Mode, Silent Mode	SO8	Datasheet, Appnote, Software, Development Board
ATA6621	System Basis Chip (SBC)	LIN Interface + Voltage Regulator + Watchdog	40/18[1)	60	Pre-normal Mode, Normal Mode, Sleep Mode, Silent Mode	QFN20	Datasheet, Appnote, Software, Development Board
ATA6602/03	System MCM ATA6621 + µC (AVR)	LIN Interface + Voltage Regulator + Watchdog + AVR (ATmega88/168)	40/18[1)	60	Pre-normal Mode, Normal Mode, Sleep Mode, Silent Mode	QFN48	Datasheet, Appnote, Software, Development Board, Standard AVR Tools

[1)] For 40V application please also refer to the application note available at http://www.atmel.com/dyn/resources/prod_documents/doc4938.pdf

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