

General Description

AS2702 (SAP4.1) is a new generation AS-Interface slave device, which supports AS-Interface bus systems with up to 62 slave modules.

Each slave module is equipped with an AS2702 device, which interfaces the module to the unshielded 2-wire ASInterface bus for serial bidirectional data communication and power extraction.

Data communication over the AS-Interface takes place in master slave fashion, which foresees that all slave devices AS2702 connected to the bus are sequentially and cyclicly addressed by a single, central master unit. Data on the ASInterface bus are Manchester encoded and can be found as sin2-pulses with a Vpp of between 3V and 8V on top of the bus' DC voltage of nominally 30V.

AS2702 regulates the nominal DC bus voltage of 30V internally down to 5V to supply it's internal circuitry including a 16 x 8-bits EEPROM, as well as down to a nominal supply level 24V with a max. loading of 35mA for the actuators and sensors connected to it at the field side.

Each slave device AS2702 may interface to up to 4 sensors or 3 actuators. An AS-Interface bus system based on AS2702 may hence link as many as 248 sensors and 186 actuators to a single master unit.

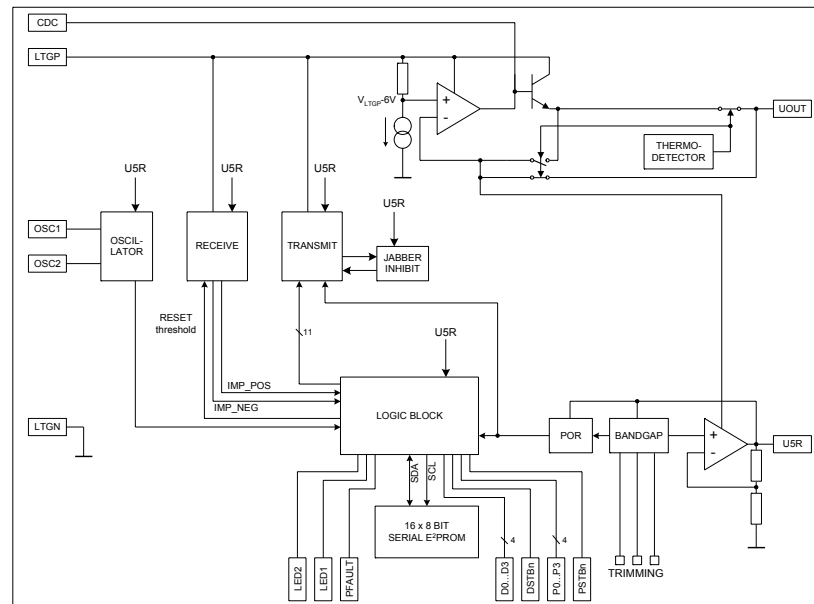
Slave device AS2702 (SAP4.1) is system compatible with predecessor device AS2701A (ISA3+): slave modules equipped with AS2702 (SAP4.1) will run in existing AS-Interface bus systems based on AS2701A (ISA3+).

The AS-Interface concept is well established as a standardized digital bus system for industrial automation.

Key Features

- Interface device to connect actuators and sensors to an AS-Interface bus
- Flexible system solution offering 2 package options:
 - SOIC 20 for full functionality;
 - SOIC 16 for applications not requiring the parameter port
- DC power extraction from the AS-Interface bus
- Serial bidir. data communication with the bus
- Data communication watchdog
- 4-bit bidir. data port plus strobe to poll the sensors and control the actuators connected
- 4-bit parameter port plus strobe to provide settings to the sensors and actuators
- 24V power supply for the sensors and actuators
- Periphery fault input to signal hardware failure of the sensors and actuators
- Integrated 16 x 8-bit EEPROM to store (5+1)-bit slave address and settings
- 2 LED outputs to optically flag slave unit operation status
- Operating temperature Ta:
 - 25°C ... + 85°C
- Operating supply voltage/bus DC voltage:
 - typ. 30V
- Operating current (osc. on, outputs idle):
 - ≤ 6mA
- Supply for sensors/actuators:
 - typ. 24V, ≤ 35mA

Block Diagram



POWER MANAGEMENT
 MOBILE ENTERTAINMENT
 AUDIO
 SENSORS & SENSOR INTERFACES
 INTERFACES
 FlexRay/Automotive Bus Systems
 RF PRODUCTS
 DATA CONVERTERS

General Description

The AS8221 FlexRay™ Standard Transceiver is a high-speed transceiver for fault tolerant and high speed applications in the stringent automotive environment. Conforming to the FlexRay™ Electrical Physical Layer Specification, the AS8221 is the interface between the FlexRay™ Communication Controller and the twisted pair copper bus wiring.

The AS8221 with its power Supply Interface (battery voltage, supply voltage, digital input- output voltage and two inhibit output pins) together with its implemented Wake-Up Detector makes this device to an power management system for automotive applications. Very low power consumption especially during the Sleep mode ensures maximum durability of the battery.

An extended diagnostic interface, offers advanced bus-failure detection capabilities with the intelligent combination of bus-current measurement and logical comparators. A thermal sensor circuit with an integral shutdown mechanism prevents damage to the device in extreme temperature conditions. The symmetrical transient control for the high and low-side driver for both the Bus-Minus and Bus-Plus line allows an ideal balance of communications over different network topologies, with excellent EMC performance.

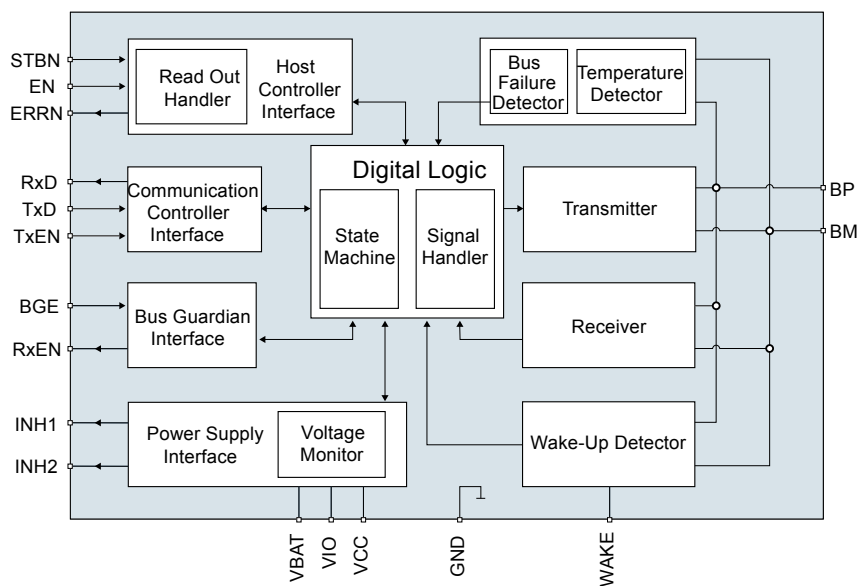
Key Features

- Compliant with FlexRay™ Electrical Physical Layer Specification
- Data transfer up to 10Mbps
- Supports 12, 24V systems with low sleep current
- Excellent EMC performances
- High common mode range ensure excellent EMI
- Interface with optional bus guardian for bus supervision
- Automatic thermal shutdown protection
- Integrated power management system
 - Two INH pins for the external voltage regulators control
 - Local wake-up input
 - Remote wake-up capability via FlexRay™ bus in sleep mode
- Supports 2.5, 3, 3.3, 5V microcontrollers and automatically adapts to interface levels
- No disturbance of the bus lines when un-powered
- Protection against damage due to short circuit conditions on the bus (positive and negative battery voltage)
- Operating ambient temperature range -40°C to +125°C
- RoHS compliant

Applications

- FlexRay™ systems
- High speed bus systems
- Backbone bus
- Automotive gateways
- Safety critical applications
- X-by-wire systems
- Bus topologies with active stars

Block Diagram



General Description

The AS8444 is a complete and fully protected PWM DC motor driver/controller, which could be implemented by interfacing a low cost 8-bit μP and a high-side N-channel power FET switch.

It is an advanced PWM DC motor controller subsystem with an excellent EMC behavior targeted especially for high current automotive applications. The optimization of the EMC behavior of the entire module without external components makes it easier to implement in harsh environments.

The programmability of parameters and functions allows the adaptation of the AS8444 to a wide range of applications. So the system can act either as a motor current or motor speed or motor voltage regulator. Also a full diagnosis of motor failures and power FET failures, over temperature and over/under voltage can be formed by programmable failure handling procedures using the motor characteristic and the real time measured motor current, motor speed and battery voltage.

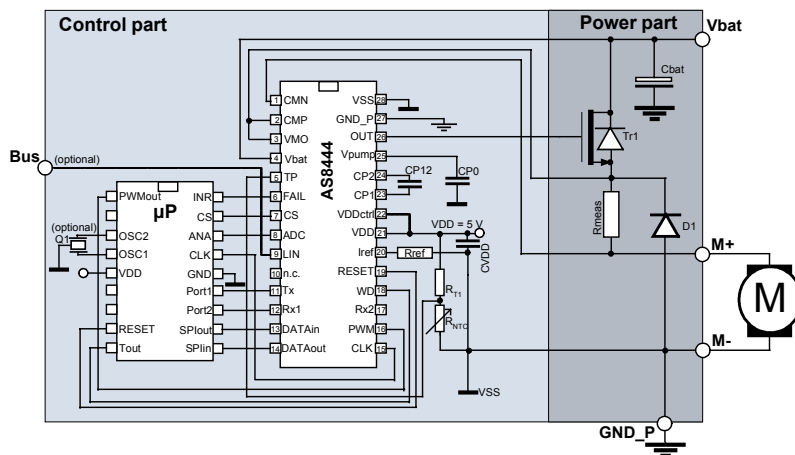
To simplify the application of this motor regulator in complex systems (e.g. automotive environment) the circuit is endowed with a LIN bus interface.

There are two versions of this chip AS8444 and AS8446. The only difference between the AS8444 and the AS8446 is the start up behavior after system wake up or battery connection.

Key Features

- Programmable PWM DC motor driver / controller with μP interface (three wire interface)
- Programmable functions and parameters for motor current, voltage and speed regulation
- Single voltage supply in the range $V_{\text{BAT}} = 6.0\text{V}$ to 30V ($V_{\text{BAT,max}} = 40\text{V}$)
- Total power efficiency up to 96 %

Block Diagram



- Low RF emission within the whole frequency range due to an integrated special EMC compliant driver
- No EMC filters required
- Driver fulfils EMC level 5 (CISPR 25)
- Dynamically self-adjusting slew rate regulated switching technology
- Fully protected by programmable failure handling procedures via μP
- Fast over current and over / under voltage detection and protection, battery voltage monitoring
- External and on chip temperature detection and protection
- Motor current and speed measurement with a shunt resistor and capability of trimming the chip for an external shunt value
- LIN bus interface
- Programmable parameters:
 - EMC compliant driver functions
 - Over current, over / under voltage threshold values
 - Motor failure threshold levels
 - Motor current measurement range
 - Trimming for the current measurement shunt
 - PWM frequency, charge pump monitor
- Charge pump to control high side drivers
- Integrated 5V power supply for external components (μP , etc.)
- Standby and wake-up capability
- Sleep / wake-up mode system controlled by the μP and the LIN bus
- SOIC-28 package

Applications

- Fan cooler
- Air conditioning
- Fuel pumps
- Water and oil pumps
- General purpose DC motor regulators