

### Brief Description

The SAP5S/SAP51 is a next-generation CMOS integrated circuit for AS-Interface networks. This low-level field bus AS-i (Actuator Sensor Interface) was designed for easy, safe, and cost-effective interconnection of sensors, actuators, and switches. It transports both power and data over the same two-wire unshielded cable.

The SAP5S/SAP51 is used as part of a master or slave node and functions as an interface to the physical bus. It provides the power supply, physical data transfer, and communication protocol handling. The SAP5S/SAP51 is fully compliant with the *AS-Interface Complete Specification V3.0*. It is function and pin compatible with the SAP4.1 (AS2702).

The SAP5S/SAP51 can be programmed by the user to operate in Standard Slave Mode, Safety Mode (SAP5S only), or Master Mode. The special AS-i Safety Mode (SAP5S only) assures short response times regarding security-related events.

All configuration data are stored in an internal EEPROM that can be easily programmed by a stationary or handheld programming device.

The SAP5S/SAP51 is optimized for harsh environments by its special burst protection circuitry and excellent electromagnetic compatibility.

### Features

- Compliant with the *AS-Interface Complete Specification V3.0*
- Universal application: slaves, masters, repeaters
- Integrated safety code generator (SAP5S only)
- On-chip electronic inductor: 55mA current drive capability
- Two LED outputs to support all *AS-Interface Complete Specification V3.0* status indication modes
- User programmable to operation in Standard Slave Mode, Safety Mode, or Master Mode
- Supports 5.33 and 16 MHz crystals by automatic frequency detection
- Data pre-processing functions
- Clock and communication watchdogs for high system security

### Benefits

- Cost savings due to integrated Safety Code Generator (SAP5S only)
- Special burst protection circuitry
- Excellent electromagnetic compatibility

### Physical Characteristics

- Operational temperature range: -25 to +85°C
- SOP16 and SOP20 package

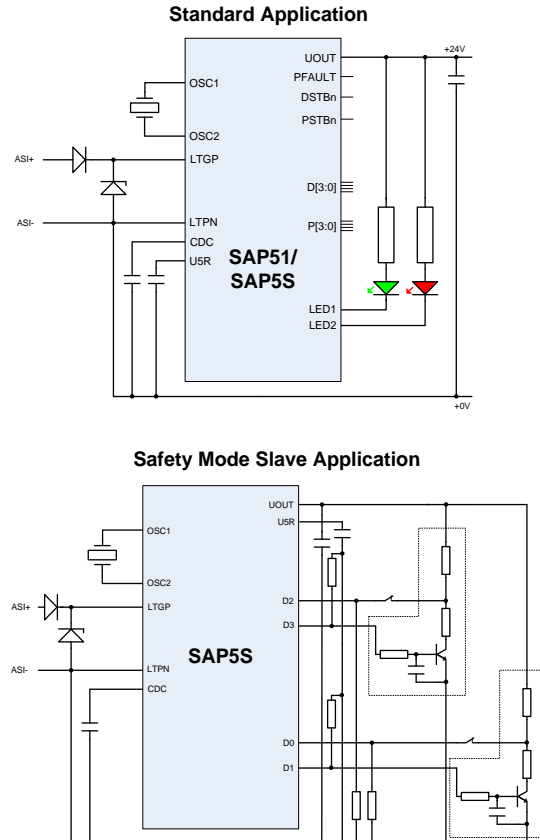
### Available Support

- IDT AS-Interface Programmer Kit USB
- IDT SAP5 Evaluation Board V2.0

### Related Products

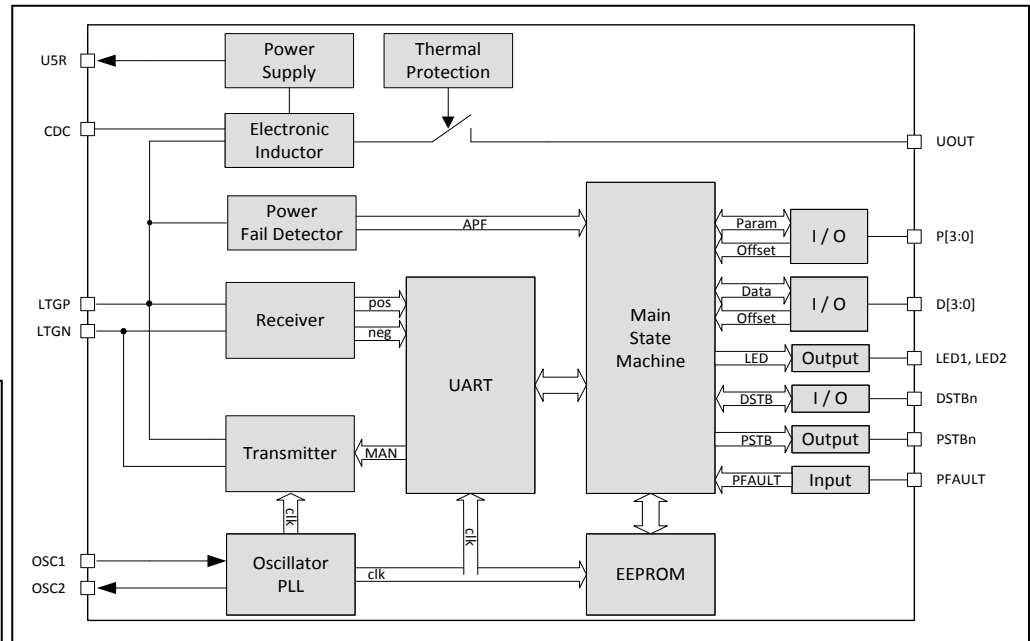
- ASI4U Universal AS-Interface IC

### SAP5S/SAP51 Basic Application Circuits



**SAP5S/SAP51  
Block Diagram**

- Typical Applications**
- AS-i Master Modules
  - AS-i Slave Modules
  - AS-i Safety Modules (SAP5S only)



**Ordering Information**

Ordering Code	Operating Temperature	Package Type	RoHS?	Packaging
SAP5SD-A-G1-T	-25°C to +85°C	SOP20 / 300 mil	Yes	Tubes (37 parts/tube)
SAP51D-A-G1-T				
SAP5SD-A-G1-R	-25°C to +85°C	SOP20 / 300 mil	Yes	Tape and Reel (1000 parts/reel)
SAP51D-A-G1-R				
SAP5SD-B-G1-T	-25°C to +85°C	SOP16 / 300 mil	Yes	Tubes (46 parts/tube)
SAP51D-B-G1-T				
SAP5SD-B-G1-R	-25°C to +85°C	SOP16 / 300 mil	Yes	Tape and Reel (1000 parts/reel)
SAP51D-B-G1-R				

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