

Optimized all Hardware Edge Node, 10BASE-T1S Ethernet to the Edge Bus (E²B) Transceiver

FEATURES

- ▶ 10BASE-T1S IEEE 802.3-2022 compliant PHY with support for PLCA and an integrated MAC
- ▶ 10BASE-T1S PHY operating modes
 - ▶ Point-to-point half-duplex (≥ 15 m)
 - ▶ Multidrop configuration half-duplex (≥ 25 m, ≥ 8 nodes)
- ▶ PLCA features: PLCA coordinator, burst mode, precedence mode, and multiple PLCA IDs
- ▶ MAC Features
 - ▶ AD3300 only: OPEN Alliance 10BASE-T1x MAC-PHY serial interface
 - ▶ AD3300 only: Transmit priority queues
 - ▶ 16 MAC address filters
- ▶ IEEE 802.1AS / IEEE 1588 support for TSN using the gPTP combined with sensor timestamping and actuator synchronization
- ▶ Low Complexity Ethernet Engine
 - ▶ Provides a deterministic, low-latency data path between 10BASE-T1S to the SAIF
 - ▶ 12 SAIF pins support simultaneous operation of several common sensor/actuator interface standards and functions, including SPI, I²C, UART, PWM, GPIO, Flexible I/O, and bridge to LIN
 - ▶ SMC enables periodic read and write functions on all interfaces
 - ▶ AD3300 supports dual mode: MAC-PHY and LCE operation simultaneously
- ▶ AD3304/5 only: Bridge to ISELED and ILaS
- ▶ OPEN Alliance features sleep/wake-up, topology discovery, and advanced diagnostics
 - ▶ Enable output pin (EN) to power down the regulated supply inputs in sleep mode
 - ▶ Support for local (WAKE input pin) and network (wake-up pulse) wake
- ▶ Suitable for 12 V, 24 V, 48 V automotive electrical systems or operating from 5 V levels only
- ▶ Detection capability for over voltage and under voltage events when monitoring the VBAT pin
- ▶ General-purpose ADC
- ▶ SSC for handling fault conditions
- ▶ Low-current 3.3 V LDO using the LVDD pin as an output
- ▶ Compatible with power delivery over data cable
- ▶ Provides robust EMC/EMI performance
 - ▶ Low cost bus interface network with no external ESD components required
 - ▶ Enhanced noise immunity providing additional performance for noisy environments
- ▶ Low power consumption: maximum current of 50 mA in functional modes of operation and 40 μA in sleep mode
- ▶ 1.8 V to 3.3 V I/O logic levels with support for 5 V inputs
- ▶ -40°C to +150°C junction temperature range
- ▶ Small package: 4 mm x 4 mm 24-lead LFCSP (QFN) package
- ▶ AEC-Q100 qualified for automotive applications

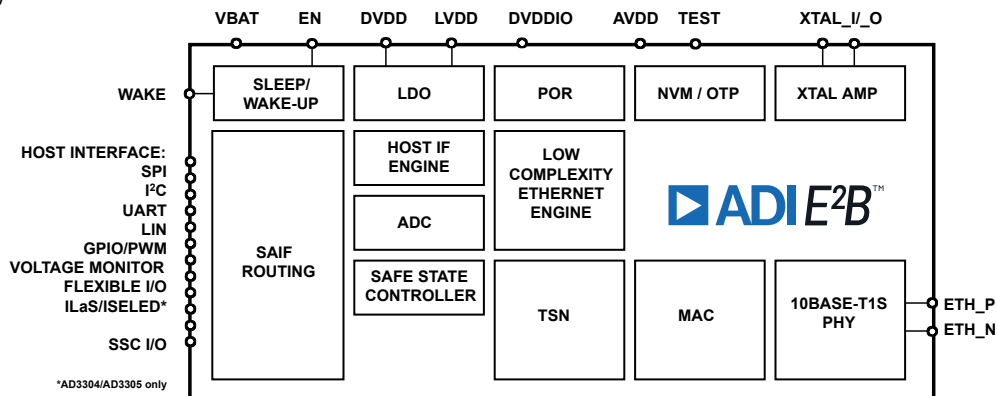


Figure 1. AD3301/4/5 Functional Block Diagram

Optimized all Hardware Edge Node, 10BASE-T1S Ethernet to the Edge Bus (E²B) Transceiver

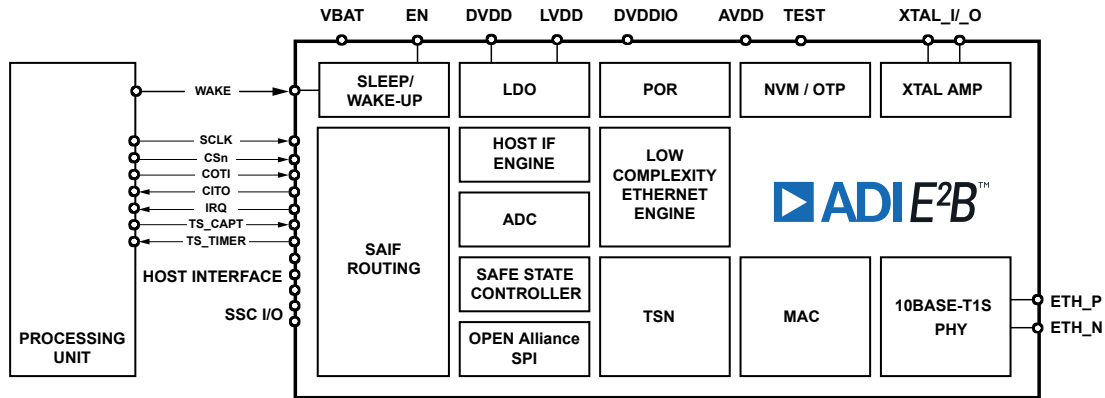


Figure 2. AD3300 Functional Block Diagram (Dual mode)

E²B and the E²B logo are trademarks of Analog Devices, Inc.

APPLICATIONS

- ▶ Automotive internal and external lighting
- ▶ Automotive body and chassis domain control
- ▶ Automotive sensor and actuator networking
- ▶ Automotive Ethernet based zonal architectures
- ▶ Automotive in-vehicle networking

For more information about the AD3300/AD3301/AD3304/AD3305, contact your local Analog Devices, Inc. representative, sales office at analog.com/sales or contact e2b.support@analog.com.

NOTES