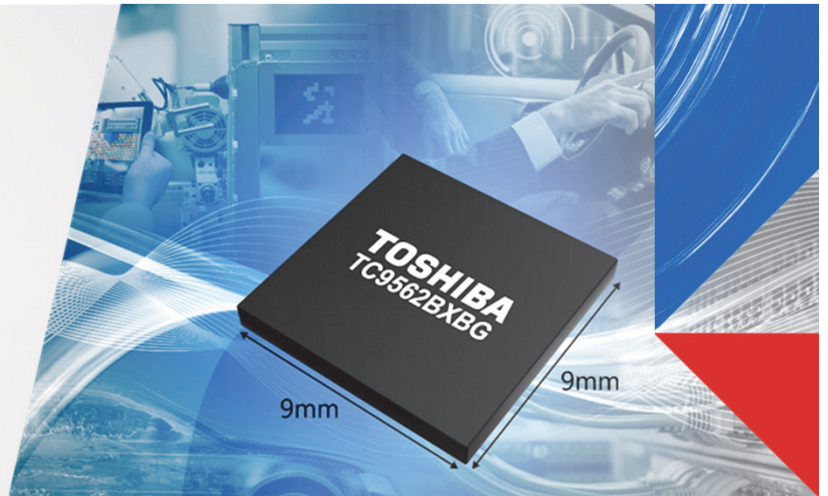


Ethernet-AVB/TSN Connectivity Solution



Delivers Performance and Flexibility

The latest member of Toshiba's Ethernet connectivity IC lineup provides advanced Ethernet capability for automotive and industrial applications. It enables deterministic real-time performance up to 1 Gbps Ethernet transfer rates and supports Time Sensitive Networking (TSN) protocol. The optimized hardware is complemented by a programmable ARM® Cortex®-M3 core which can be used to implement additional features off-loading the host CPU or to enable stand alone operation for customized audio endpoints.

Applications

- Automotive applications, e.g. telematics, IVI, ADAS, car audio systems
- Industrial applications, e.g. factory automation
- Professional AV

Features

- Free programmable on-chip Arm® Cortex® M3 core (187 MHz)
- PCIe Gen 2 (5GT/s)
- Ethernet (AVB/TSN support) 10/100M/1Gbps
- Supports IEEE 802.1AS, IEEE 802.1Qav, IEEE 802.1Qbv, IEEE 802.1Qbu and IEEE 802.3br
- Dedicated HW for traffic shaping
- SGMII, RGMII, RMII or MII interface
- Hardware support for IEEE1722-2016 audio format including media clock recovery
- I2S/TDM, Quad SPI, I2C, SPI & UART
- Automotive AEC-Q100 / IATF 16949

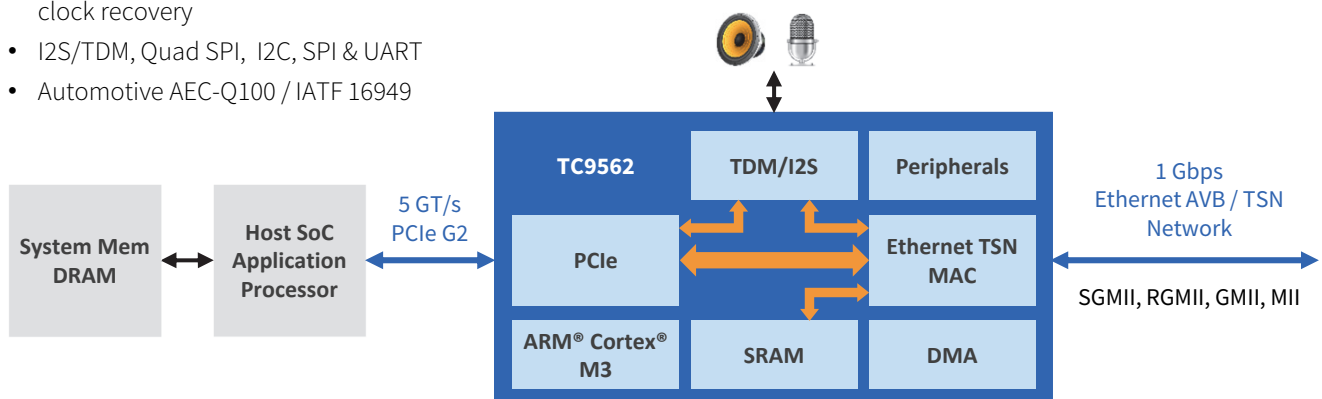
Advantages

- Stand-alone operation without host CPU
- Flexible PHY interface
- Low jitter time synchronization
- High quality multichannel audio
- Superior QoS performance including frame pre-emption
- Share multiple traffic types on the same wire

Benefits

It's not just a „PCIe to Ethernet bridge“!

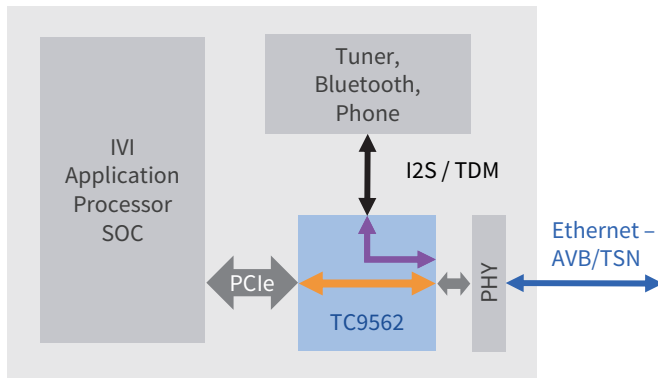
- Deterministic and bounded low-latency communication
- Full flexibility for the selection of Ethernet PHY types and switches
- Stand-alone audio endpoint applications without additional microcontroller
- Realisation of new Ethernet-AVB based car audio architectures
- Reduces cable harness



TC9562 Applications examples

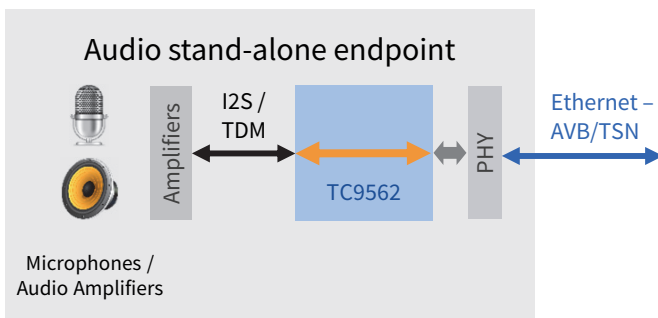
Automotive – realize new car audio architectures

Audio transfers into Ethernet-AVB parallel to PCIe host Ethernet traffic



- Audio in and out, transfer of audio into and from Ethernet-AVB without host load
- Audio-AVB traffic + standard / TSN traffic transfer on the same Ethernet wire.
- No separate audio cable harness needed, reduce cable harness cost in the car.
- Audio path between SoC and TDM port possible

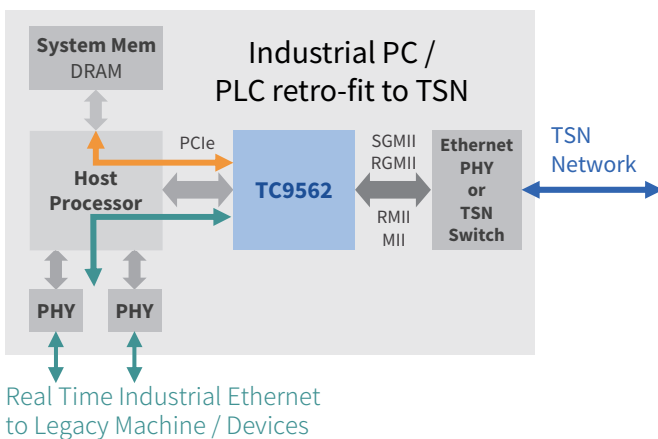
Standalone car audio amplifier, Ethernet-AVB connected



- TC9562 works stand-alone with integrated Arm® CPU
- Software library (source code) available for programming of individual audio solutions
- 4 x TDM/I2S data lines
- Up to 32 audio channels in TDM mode
- High quality audio: 16/20/24-bit, 32–192kHz
- Media clock recovery with own audio PLL
- Support for IEEE 1722-2016, IEC 61883-6 and AAF

Industrial automation – add TSN into existing solutions

Brownfield device adaptation to Greenfield TSN network



- PCIe for a direct communication between host and TSN MAC
- Preserves QoS for real-time legacy traffic in TSN networks
- Time synchronization
- Traffic shaping
- Time aware shaper with flexible queue management
- Frame pre-emption