

Enabling faster  
in-vehicle networks

## SJA1105/T Five-port Automotive Ethernet Switch Series

The five-port automotive Ethernet switch SJA1105 series can be used in gateway applications, body domain controllers gateway applications and body domain controllers, or for interconnecting multiple ECUs in a daisy chain. Audio video bridging (AVB) support. The audio-video bridging support (AVB) feature fully leverages infotainment and advanced driver assistance systems.

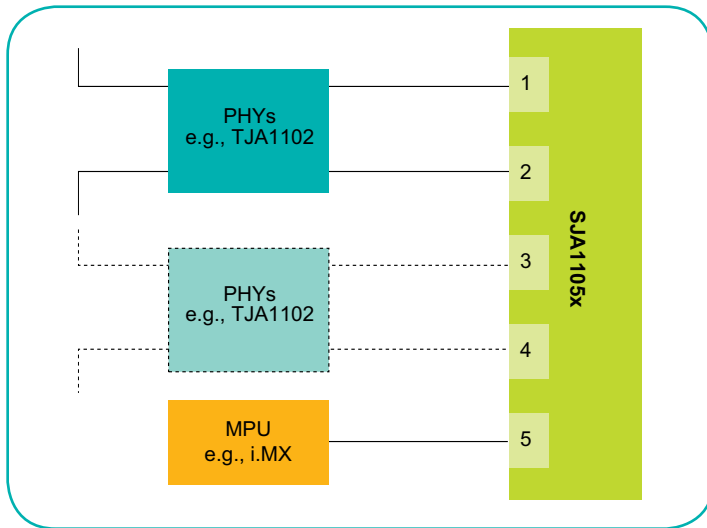
### SJA1105 AND SJA1105T SERIES FEATURES AND BENEFITS

The SJA1105 and SJA1105T IEEE® 802.3-compliant automotive Ethernet switch comes in two pin-compatible variants. Each of the switch's five ports can be individually configured to operate in MII, RMII and RGMII modes. The SJA1105EL supports Ethernet and AVB and includes additional functionality to support Deterministic Ethernet and Time-Sensitive Networking (TSN) and AVB. It also includes additional functionality to support deterministic Ethernet and time-sensitive networking (TSN).

Feature	SJA1105	SJA1105T	Benefit
Flexible ECU design with five individually configurable ports, each capable of running at 10/100/1000 Mbit/s	Y	Y	Supports any type of Ethernet PHY such as 100BASE-T1, 1000BASE-T1 and 1000BASE-TX Facilitates PHY-less connectivity, e.g., switch acting as on-board intra-processor communication hub Enables a scalable and cost-efficient ECU design with up to four cascaded switches controlled by a single external host
Full support for audio/video bridging (AVB) and IEEE® 1588v2 standards	Y	Y	Includes native support of the key hardware features that enable the implementation of a fully synchronized network for lip-synched playback of audio and video streams on different nodes of the network Includes data-transmission scheduling for TSN networks
IEEE 802.1X port-based authentication and denial of service protection	Y	Y	Enables provision to implement authentication of the nodes connected to the network and to limit the data generated by one or more connected devices
Traffic mirroring and flexible VLAN manipulation	Y	Y	Aids in the implementation of powerful network debugging and diagnose mechanisms, including replication of traffic for diagnosis purposes and labelling of such traffic via dedicated VLAN tags
Deterministic Ethernet	N	Y	Makes strong partitioning of the network bandwidth between different traffic classes possible so that the delays and jitter of critical flows are independent from the load of the network Enables the definition of tight control loops based on Ethernet Provides for safe support of critical and non-critical traffic on the same network



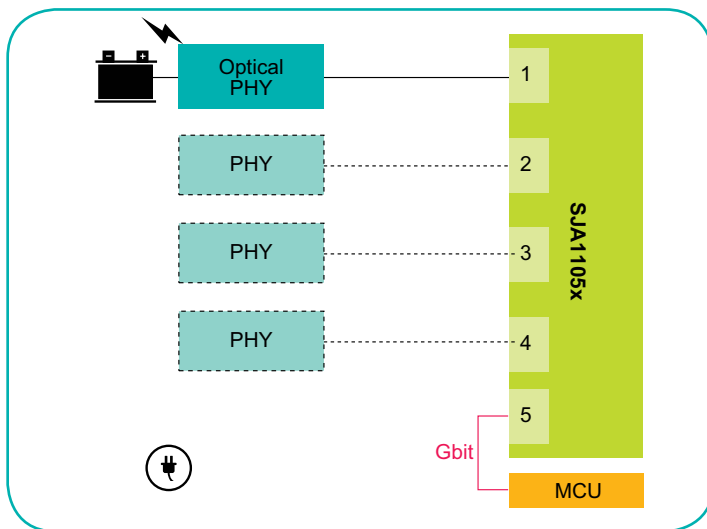
## SJA1105/SJA1105T ETHERNET SWITCH USE CASES



### HEAD UNIT

The PHY-less automotive Ethernet switch has a low port count and offers a low bill of materials (BOM) and high degree of system flexibility to automotive Tier-1 and OEMs.

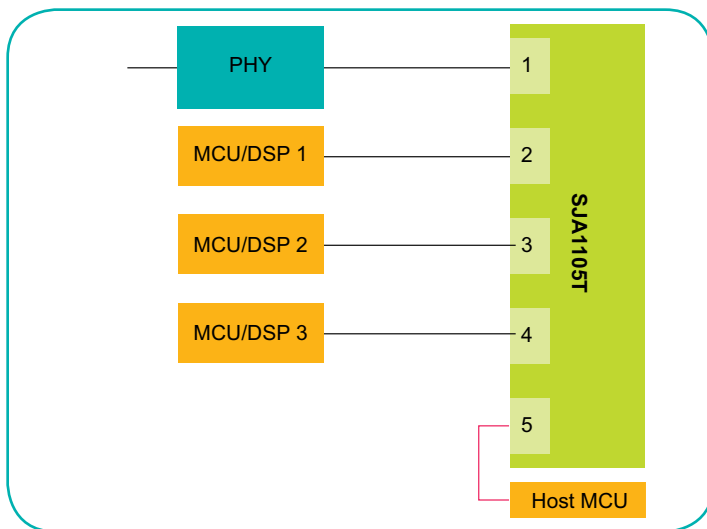
The head unit can have between 2-4 Ethernet ports to connect to different related units: head unit, instrument cluster, telematics, central gateway.



### BATTERY MANAGEMENT

Each of the MII/RMII/RGMII ports of the SJA1105 series automotive Ethernet switch can operate at 10, 100 and 1000 Mbit/s speed and connect to a variety of PHYs.

In an electrical vehicle, the battery management unit operates at high voltage and requires a significantly higher data rate than the traditional bus network. Optical PHY is a solution to meet the automotive EMC and bandwidth requirement.



### DATA FUSION BOX/ETHERNET BACKBONE

The SJA1105 series automotive Ethernet switch has full AVB hardware specifications and supports IEEE 802.1Q and IEEE 802.1AS (gPTP). In addition, the SJA1105T variant supports the time-aware shaping IEEE 802.1Qbv and per-stream policing IEEE 802.1Qci\* pre-standard.

In a distributed car network, central ECUs need to exchange data or configuration with each other within a critical time frame. The SJA1105T switch can build a time-sensitive network (TSN) and connects MCUs directly.