

INICnet™ Technology Intelligent Network Interface Controllers

Enabling Low-Latency Audio/Speech/Voice Usecases in Ethernet-Based Systems

Summary

OS8121x is a product family of highly integrated Intelligent Network Interface Controllers (INIC) which can be used to realize an INICnet™ technology based 50 Mbit/s automotive networks with an unshielded twisted pair (UTP) copper wire. This technology can coexist with automotive Ethernet to seamlessly interface Internet Protocol (IP)-based data communications across vehicle domains, while providing efficient transport of audio, video, control and packet data. The product family provides cost effective INICs that meet the emerging automotive audio/speech/voice applications specific requirements.



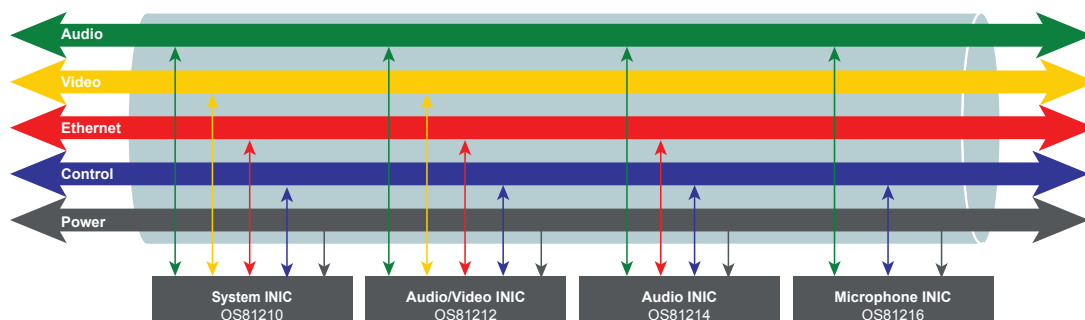
Features

- 50 Mbit/s synchronous network interface with early audio
 - Embedded network management functions
 - Network protection and fallback modes
 - Hardware and application watchdog timer
 - Intelligent muting
 - Network diagnostics
- Flexible and dynamic management of available bandwidth over various data types such as audio, video, control and packet data
- Ethernet channel supporting IEEE MAC addressing and transfer of native Ethernet packets on various protocol (TCP, UDP, SOME/IP..)
- Universal Serial Bus (USB) 2.0 port for high-speed data transfers
- Media Local Bus (MediaLB®) Port
- I²C Control Port inner chip message exchange
- SPI Port supports asynchronous and control packets
- Streaming Port supports fixed latency, synchronous data exchange for a variety of serial audio formats including Time-Division Multiplexing (TDM) and Pulse Density Modulation (PDM)

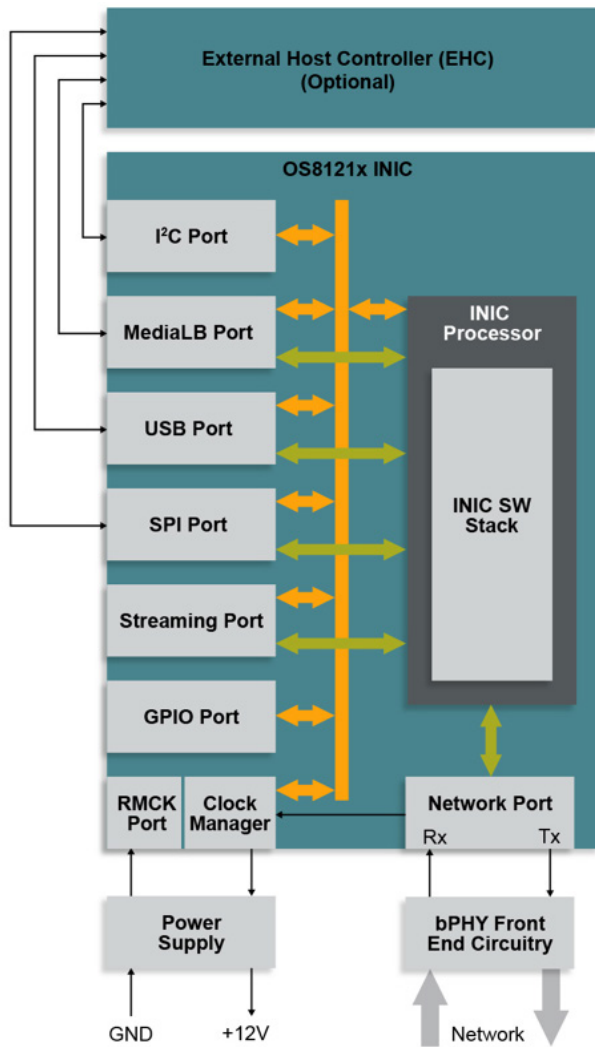
- General Purpose I/O (GPIO) port
- Remote control and configuration for operation without a local EHC
 - I²C (master) message tunneling
 - GPIO port control
- Operating voltages 3.3V/1.8V (and 1.2V for HSIC)
- Temperature range*: -40°C to 125°C

Applications

- In-Car Communication (ICC)
- Personal communication zones
- Multi virtual personal assistants
- Active noise cancellation
- Far-end noise cancellation
- Engine sound synthesis
- Infotainment
- Sound systems
- Emergency response systems (eCall, ERA GLONASS, E911)
- Microphone and speaker arrays
- Diagnostics/SW download/(F)OTA
- Tunneling of low-speed interfaces (CAN/CANFD, SPI, I²C, UART)



*Junction temperature



The OS8121x family is supported by a rich development tool ecosystem that will simplify your development effort and shorten your design time to get your products to market faster.

Development Tools

Unified Centralized Network Stack (UNICENS) – a free-of-charge network management software, reduces software complexity and simplifies system verification for an infotainment system linked by INICnet technology.

MPLAB® Network Creator – a unique software tool allows graphical configuration of INICs and the network connections. It supports the entire workflow from modeling the INICnet network, defining INIC properties, defining sources, sinks and their connections.

INICnet Sniffer – hardware tool to sniff and monitor all the data on the network.

INICkit – hardware tool which can be handy to change/re-store factory default INIC configuration, apply INIC SW Stack patches, diagnose INIC run time behavior.

A variety of evaluation boards (both with and without a processor) are available to enable easy prototype and pre-developmental activities.

For more information on technology, boards and tools visit www.microchip.com/inicnet www.k2l.de

Product	Pin	Package	Size	Applications Interfaces	Typical End Equipment/Applications
OS81210	64	QFN	9 mm × 9 mm	USB2.0, MediaLB®, SPI, I²C, I²S/TDM/PDM	<ul style="list-style-type: none"> • Head Unit • Smart Antenna • Telematic-Box
OS81212	56	QFN	8 mm × 8 mm	MediaLB, SPI, I²C, Dual I²S/TDM/PDM	<ul style="list-style-type: none"> • Amplifier • Booster • Drives, Decks
OS81214	48	QFN	7 mm × 7 mm	SPI, I²C, I²S/TDM/PDM	<ul style="list-style-type: none"> • Slim Amplifier • Booster • Drives, Decks
OS81216	48	QFN	7 mm × 7 mm	I²C, I²S/TDM/PDM	<ul style="list-style-type: none"> • Microphones • Microphone Clusters • Active Noise Cancellation (ANC) • Road Noise Cancellation (RNC) • Motor Noise Cancellation (MNC)