

OS81118

MOST150 INIC with USB 2.0 Device Port

Summary

Microchip's OS81118 is the latest member of the MOST150 Intelligent Network Interface Controller (INIC) family that can be seamlessly incorporated into today's MOST150 systems.

With its USB 2.0 high-speed device port, the OS81118 provides all of the capabilities to create a system for in-car mobile and Wi-Fi® connectivity applications on the MOST150 network. Furthermore, the OS81118 enables an easy implementation of the most up-to-date multi-core SoCs to the MOST® network.

In addition to the optical physical layer (oPHY) interface, the OS81118 provides a coax physical layer (cPhy). With its integrated coaxial transceiver, the OS81118 enables a lower cost MOST network physical layer; therefore the OS81118 is not only suited for cost-efficient infotainment solutions but also for Advanced Driver Assistance Systems (ADAS) networking.

Features

- 150 Mbps/s MOST network bandwidth
- Intelligent Network Interface Controller architecture that provides a complete network interface on a single chip
- Supports low-cost LED/POF-based optical physical layer and coax physical layer
 - LVDS interfaces for FOTs
 - Integrated coaxial transceiver* supports dual-simplex as well as full-duplex communication
- Supports state-of-the-art industry standard streaming and packet formats
 - Synchronous audio streams (PCM)
 - Isochronous audio/video streams such as (MPEG, H-264)
 - Ethernet packets for TCP/IP-based applications
 - On-chip IEEE MAC controller
 - MOST high packets for lean file transfer to small microcontrollers with small memory
 - Clock distribution over the network
- Flexible management of available bandwidth
- Embedded MOST network management
 - Network protection mode
 - Hardware and application watchdog timer
 - Intelligent muting

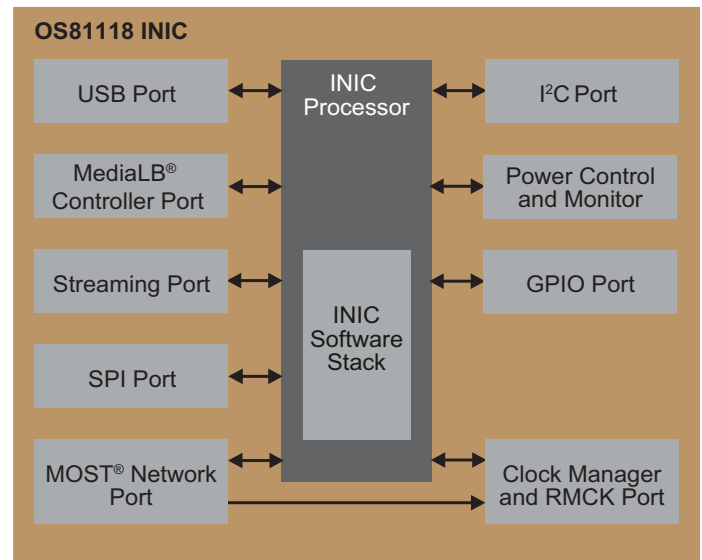


Figure 1: OS81118 Block Diagram

- Provides remote control mode capability
- MOST Technology Linux® Driver available
- Universal Serial Bus (USB) Port supports high-speed USB 2.0 upstream data transfers using either
 - USB 2.0 physical layer
 - High-Speed Inter-Chip (HSIC) physical layer
- Powerful MediaLB controller
 - High-speed differential mode
 - Legacy single-ended mode
- Two configurable streaming ports
 - Two serial data pins per port
 - Capable of routing streaming data in industry standard formats
 - Sequential mode with max. 512xFs on each of the four streaming port pins available
- Operating voltages: 1.2 V** /1.8 V/3.3 V
- 72-pin QFN (1.0 × 1.0 mm)
 - Lead-free, RoHS-compliant package
 - Wettable flanks
- Temperature range (ambient): -40°C to +85°C

*Not available on all product variants.

**Required only when the HSIC interface is used.



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Applications

In-Car Mobile and Wi-Fi Connectivity

The OS81118, in combination with a 3G/Long Term Evolution (LTE) and Wi-Fi module, can be used to create a system that allows for in-car mobile and Wi-Fi connectivity. The 3G/LTE and Wi-Fi module connects to the USB Port of the OS81118, which is able to process all data types required to implement this system.

In the application diagram below, (Figure 2) the 3G/LTE and Wi-Fi module receives IP data over an external antenna. The data is forwarded over USB to the OS81118, which connects to the MOST network.

While the IP data is transmitted over the MOST Ethernet Channel, Voice-Over IP (VOIP) data is transferred over the MOST Quality of Service (QoS) IP channels. Control data, required to setup the behavior of a MOST device, is handled over the MOST Control Channel. Since different communication paths are used to separate IP data from control data, the requirements for in-car security and safety can be fulfilled; even if IP data is impaired from outside the car, control data communication inside the car on the MOST network will not be affected.

Head Unit, Rear-Seat Entertainment systems, and peripheral devices, including cellphones and tablets, which are connected to the MOST network can send and/or receive IP data for applications such as internet radio, e-mail, social networking, games, navigation, and local services.

Depending on the requirements given by the cable harness and the positioning of the device, either the optical physical layer or coax physical layer can be used.

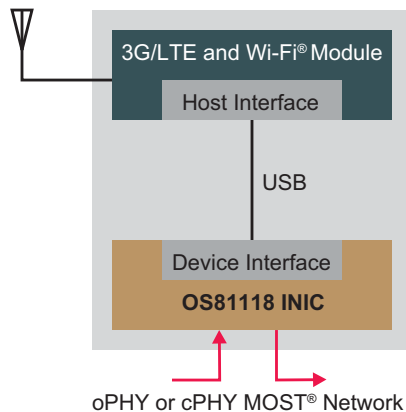


Figure 2: In-Car Mobile and Wi-Fi Connectivity

Development of Head Unit Designs Based on the Latest Multi-Core Consumer SoC

The OS81118, with its USB port, is an ideal solution which provides a high level of flexibility for designers creating Head Units. The most up-to-date multi-core SoCs, which have USB interfaces, but may not have standard automotive interfaces, can now be incorporated into the Head Unit design when matched with an OS81118.

Automotive and MOST device specific functionality, as provided by the MOST NetServices, can be implemented on the Vehicle Central Processing Unit (VCPU). Either MediaLB or I²C can be used as the communication interface between the VCPU and the OS81118.

Multimedia-specific applications such as audio, video, and IP all run on the SoC. To maximize efficiency, the SoC utilizes the USB Port for IP and isochronous data transfer with the MOST network, whereas the OS81118 Streaming Port (I²S™) is utilized for low-latency audio transfers between SoC or Tuner IC/DSP and the MOST network.

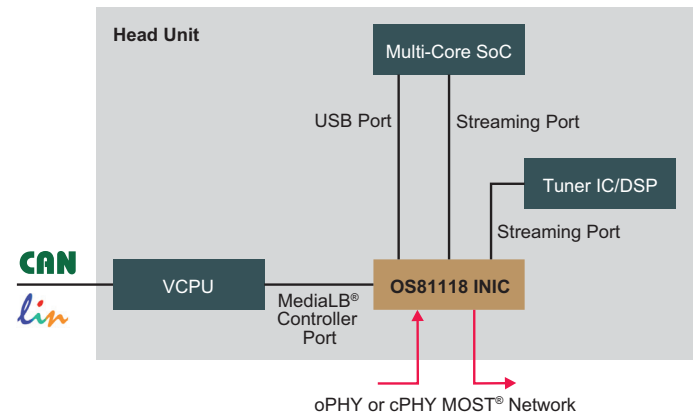


Figure 3: Head Unit Design



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