NS6122 OpenLDI to Dual 6.4Gbps HSMT Automotive Serializer

Introduction

The NS6122 serializer chip is compliant to Automotive Wired High-Speed Media Transmission (HSMT) standard. Pairing with a compatible HSMT deserializer, the NS6122 is used for transmission of forward video and bidirectional audio and control data for automotive displays applications. The NS6122 converts a single-oLDI (single-pixel mode) or dual-oLDI (dual-pixel mode) input to HSMT output, and transmits the output to the paired deserializer over a single or dual HSMT links. Each HSMT link operates at a fixed data rate up to 6.4Gbps in the forward direction and 100Mbps in the backward direction. The NS6122 supports 16-meter Coaxial cable or 10-meter STP cable. The NS6122 is AEC-Q100 Grade 2 certified with automotive temperature range of -40℃ to +105℃, and compliant with ISO 10605 and IEC 61000-4-2 ESD standards.

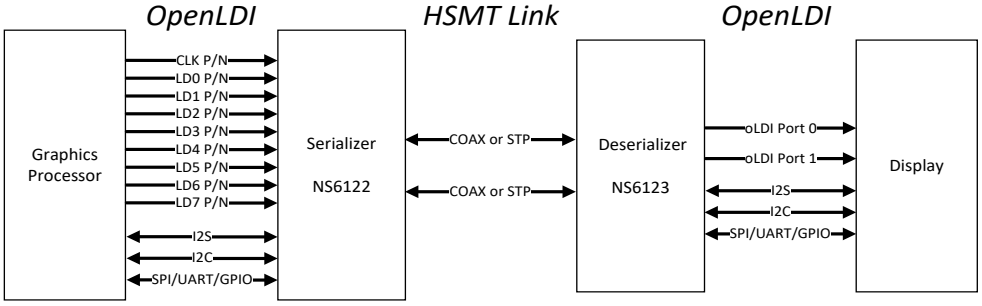
The NS6122 is ISO 26262 ASIL-B certified and supports I2C and SPI control ports, flexible GPIO with trigger mode, constant latency mode and oversample mode, tunneled UART, forward and backward audio channels, a built-in ADC, temperature sensor, and an extensive set of diagnostics for functional safety.

Applications

- High-resolution Automotive Navigation System
- Central Information Display (CID)
- Digital Instrument Clusters
- Rear Seat Entertainment (RSE)
- Head Units and HMI Modules
- Rear View and Side Mirror Displays

Features

- Single-oLDI or dual-oLDI input port
  - Configurable 18/24-bit RGB
  - Maximum pixel clock 170MHz (single-oLDI) or 340MHz (dual-oLDI)
  - Supports superframe unpacking capability
- HSMT link for system and power flexibility
  - Supports two HSMT links
  - 2.0, 3.2, 4.0, or 6.4Gbps forward-link rates per link
  - 100Mbps backward-link rate per link
- Robust communication in automotive environment
  - Backward channel adaptive equalization
  - RS-FEC for protection of forward video and bidirectional control data
  - Retransmission
  - Backward channel eye timing margin monitor for continuous link margin diagnosis
- Digital audio with I2S and TDM interface
  - Supports forward-direction 7.1 HD audio and up to 192kHz sample rate
  - Supports backward-direction 8 channels at 48kHz sample rate or 2 channels at 192kHz sample rate
- Supports bulk and tunneling modes I2C (master up to 833Kbps, slave up to 1Mbps)
- Supports SPI (master/slave up to 50Mbps), UART (Tx/Rx), GPIO, and interrupt for touch-screen and other use cases
- Functional safety
  - AEC Q100 Grade-2 and ISO 26262 ASIL-B
  - CRC protection of control-channel data (I2C, SPI)
  - Video data error correction and retransmission
- Video watermark and test pattern generation
- Supports line fault detection and voltage monitor
- Programmble spread spectrum for EMI reduction
- 9mm x 9mm 64-pin QFN package



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