NS6312 Dual MIPI CSI-2 to Single 6.4Gbps HSMT Automotive Serializer

Introduction

The NS6312 Serializer chip is compliant to Automotive Wired High-Speed Media Transmission (HSMT) standard. Pairing with a compatible HSMT deserializer, the NS6312 is used for transmission of forward video and bidirectional audio and control data for automotive camera applications. The NS6312 converts dual MIPI CSI-2 inputs to serial HSMT output, and transmits the output to the paired deserializer over a single HSMT link. The HSMT link operates at a data rate up to 6.4Gbps in the forward direction, and 100Mbps in the backward direction. The NS6312 supports Power-over-Cable (PoC) operation over 16 meters Coaxial cable or 10 meters Shielded Twisted Pair (STP) cable, with multiple inline connectors. The NS6312 is ISO 26262 ASIL-B and AEC-Q100 Grade 2 certified with automotive temperature range of -40 ℃ to +105 ℃.
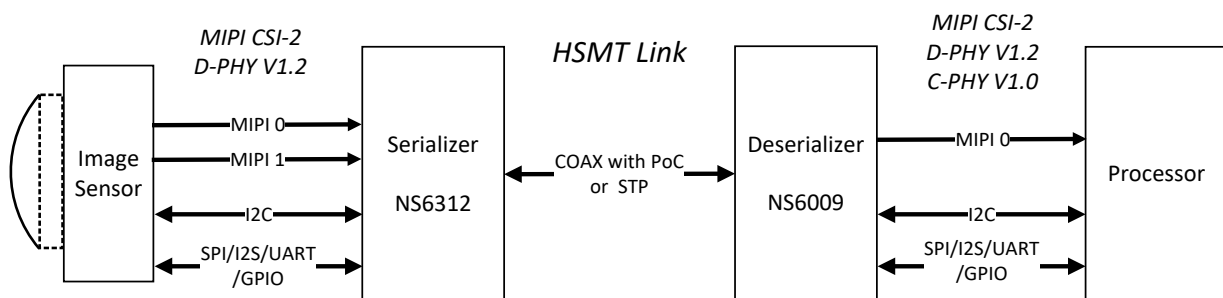
The NS6312 supports I2C and SPI control ports, flexible GPIO with trigger mode, constant latency mode and oversample mode, tunneled UART, forward and backward audio channels, a built-in ADC, temperature sensor, and an extensive set of diagnostics for functional safety.

Applications

- High-Definition 12MP Camera Systems
- Advanced Driver Assistance Systems (ADAS)
- Front Vision Camera Systems (FVC)
- Surround View Systems (SVS)
- Driver Monitor Systems (DMS)
- Automatic Parking Assist (APA)

Features

- HSMT link for system and power flexibility
  - 2.0, 3.2, 4.0, or 6.4Gbps forward-link rates in NRZ mode
  - 100Mbps backward-link rate to allow small POC inductor
- Robust communication in automotive environment
  - RS-FEC for protection of forward video and bidirectional control-channel data
  - Retransmission
  - Backward channel adaptive equalization
  - Backward channel eye timing margin monitor for continuous link margin diagnosis
- Single or dual MIPI CSI-2 inputs
  - RAW8/10/12/14/16/20/24, RGB888, YUV422 8/10-bit
  - 16 virtual channels
  - D-PHY V1.2, up to four lanes per port and up to 2.5Gbps per lane
- Supports bulk and tunneling modes I2C (master up to 833Kbps, slave up to 1Mbps)
- Supports SPI (master/slave up to 50Mbps), UART (Tx/Rx), and GPIO
- Functional safety
  - ISO 26262 ASIL-B certified
  - CRC protection of control data overI2C and SPI
  - Video data error correction and retransmission
- Video watermark insertion and detection
- Video test pattern generation
- Supports line fault detection and voltage monitor
- Generates reference clock for image sensor synchronizing to back channel clock
- Generates frame sync singal to image sensor
- Programmable spread spectrum for EMI reduction
- 7mm x 7mm 48-pin QFN package