NS6018D MIPI CSI-2 to 12.8Gbps HSMT Automotive Serializer

Introduction

The NS6018D Serializer chip is compliant to Automotive Wired High-Speed Media Transmission (HSMT) standard. Pairing with a compatible HSMT deserializer, the NS6018D is used for transmission of forward video and bidirectional audio and control data for automotive camera applications. The NS6018D converts a single MIPI CSI-2 input to 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 12.8Gbps in the forward direction, and 100Mbps in the backward direction. The NS6018D supports Power-over-Cable (PoC) operation over 15m Coaxial cable or 8m Shielded Twisted Pair (STP) cable, with multiple inline connectors. The NS6018D is ISO 26262 ASIL-B and AEC-Q100 Grade 2 certified with automotive temperature range of -40 ℃ to +105 ℃.

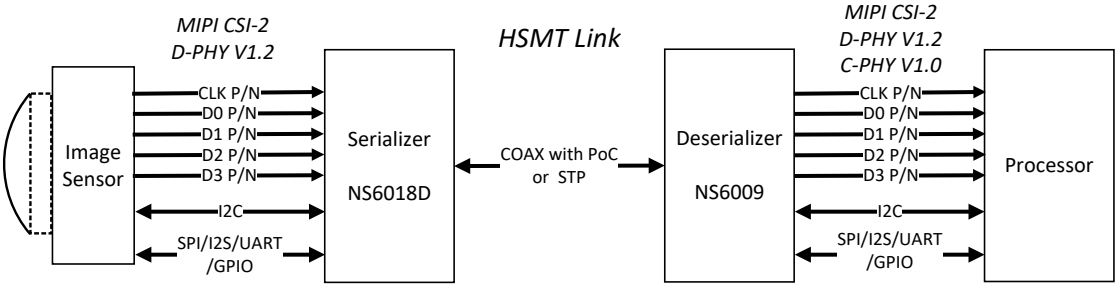
The NS6018D supports I2C and SPI control ports, flexible GPIO with trigger mode, constant latency mode and oversample mode, tunneled UART, forward and backward audio channels, a built-in ADC, temperature sensor, and an extensive set of diagnostics for functional safety.

Applications

- High-Definition 17MP 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
  - 2.0/3.2/4.0/6.4Gbps forward-link rates (NRZ)
  - 8.0/12.8Gbps forward-link rates (PAM4)
  - 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 four-lane MIPI CSI-2 input
  - RAW8/10/12/14/16/20/24, RGB888, YUV422 8/10-bit
  - 16 virtual channels
  - D-PHY V1.2 with 80Mbps-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
- 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
- ISO 26262 ASIL-B and AEC-Q100 Grade 2 certified
- CRC protection of control-channel data (I2C and SPI)
- Video data error correction and retransmission
- Video watermark and 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



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