

NS6238 Single DP/eDP to Dual 12.8Gbps HSMT Automotive Serializer

Introduction

The NS6238 serializer chip is compliant to Automotive Wired High-Speed Media Transmission (HSMT) standard. Pairing with a compatible HSMT deserializer, the NS6238 converts DisplayPort/eDP input to dual HSMT outputs for transmission of forward video and bidirectional audio and control data. Each HSMT link operates at a data rate up to 12.8Gbps in the forward direction and 100Mbps in the backward direction. The NS6238 supports 15 meters Coaxial cable or 8 meters Shielded Twisted Pair (STP) cable at 12.8Gbps. The NS6238 is AEC-Q100 Grade 2 certified with automotive temperature range of -40 °C to +105 °C, and meets ISO 10605 and IEC 61000-4-2 ESD requirements.

The NS6238 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.

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 DisplayPort input port
 - 24/30-bit RGB, and 16/20-bit YUV422
 - DP/eDP v1.4 compliant
 - 1/2/4-lane main link with up to 5.4Gbps/lane
 - Hot Plug Detect and AUX Channel (1Mbps)
 - Supports SST or four MST streams
 - Supports 4K@60Hz resolutions
 - Supports superframe unpacking to up to four video streams
- HSMT link for system and power flexibility
 - Supports two HSMT links
 - 2.0, 3.2, 4.0, or 6.4Gbps forward-link rates (NRZ)
 - 8.0, or 12.8Gbps forward-link rates (PAM4)
 - 100Mbps backward-link rate
- 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
- CRC protection of control data over I2C and SPI
- Video watermark and test pattern generation
- Supports line fault detection and voltage monitor
- Programmable spread spectrum for EMI reduction
- 9mm x 9mm 64-pin QFN package

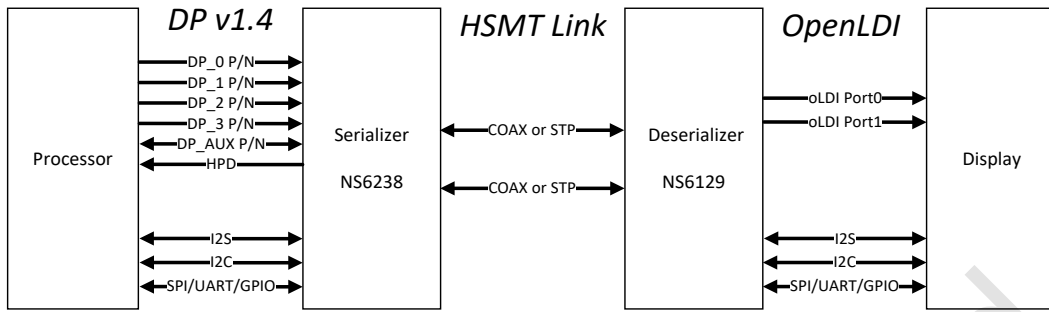


Figure 1. Application Example

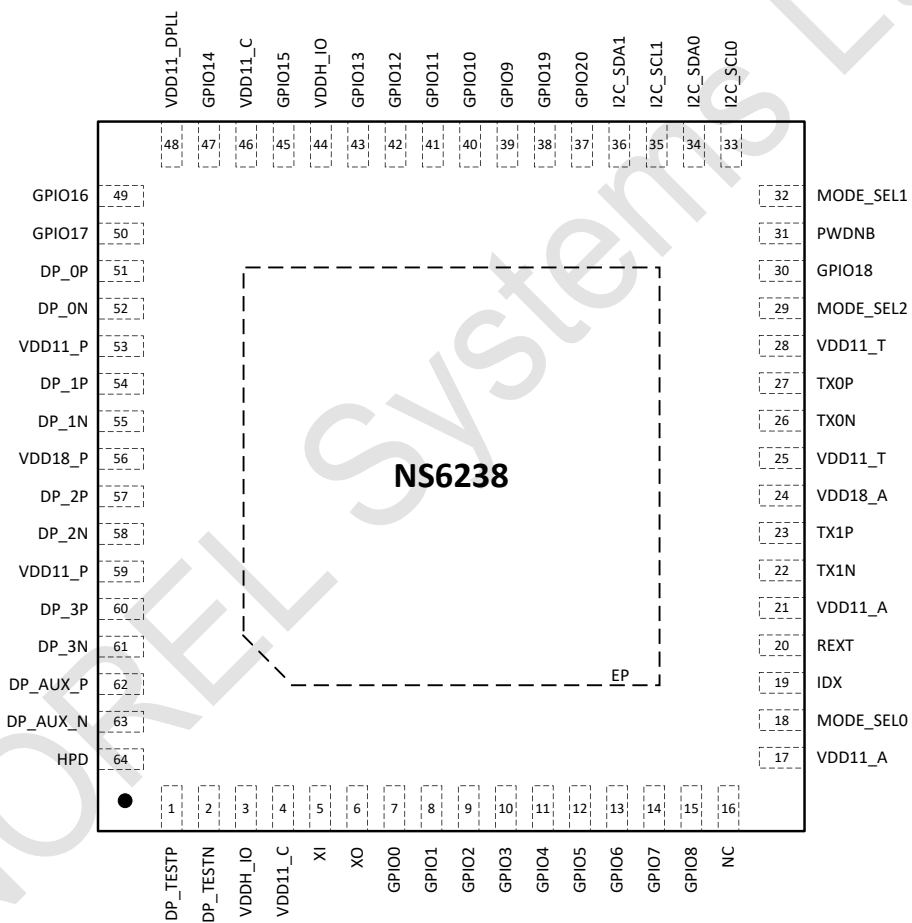


Figure 2. NS6238 Pinout