

NS6139 Dual 12.8Gbps HSMT to Dual eDP Automotive Deserializer

Introduction

The NS6139 deserializer chip is compliant to Automotive Wired High-Speed Media Transmission (HSMT) standard. Pairing with a compatible HSMT serializer, the NS6139 is used for transmission of forward video and bidirectional audio and control data for automotive display applications. The NS6139 receives the HSMT input over a single or dual HSMT links and converts the input to DP/eDP formatted output. Each HSMT link operates at a fixed data rate up to 12.8Gbps in the forward direction and 100Mbps in the backward direction. The NS6139 supports 15 meters Coaxial cable or 8 meters Shielded Twisted Pair (STP) cable at 12.8Gbps. The NS6139 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 NS6139 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

- Dual DisplayPort/Embedded DisplayPort output ports
 - 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 per lane
 - Hot Plug Detect and AUX Channel (1Mbps)
 - Supports 4K@60Hz video resolution
 - Supports video synchronization and splitting
- 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 per link
- Robust communication in automotive environment
 - Forward channel adaptive equalization
 - RS-FEC for protection of forward video and bidirectional control data
 - Video data error correction and retransmission
 - Advanced DSP continuously tracking changes in cable, connector, PCB and other channel characteristics over time and temperature
- 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
- Supports image enhancement features
- Video watermark and test pattern generation
- Logic and memory BIST
- Supports line fault detection and voltage monitor
- 9mm x 9mm 76-pin QFN package

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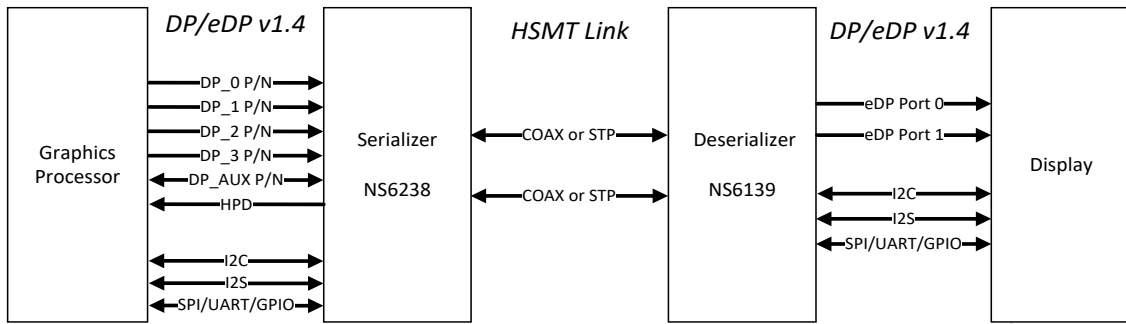


Figure 1. Application Example

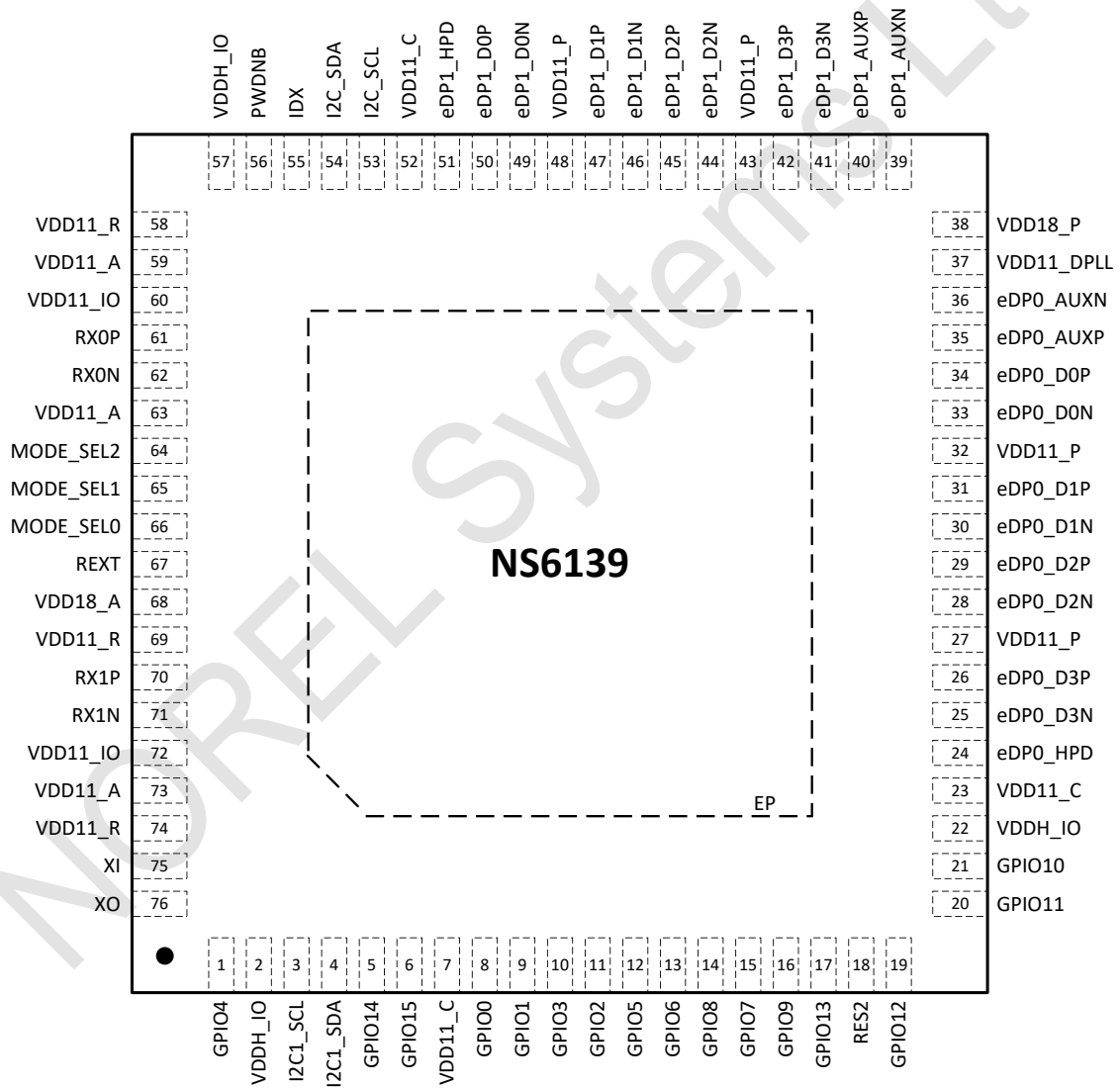


Figure 2. NS6139 Pinout