THCV226

V-by-One® HS High-speed Video Data Receiver

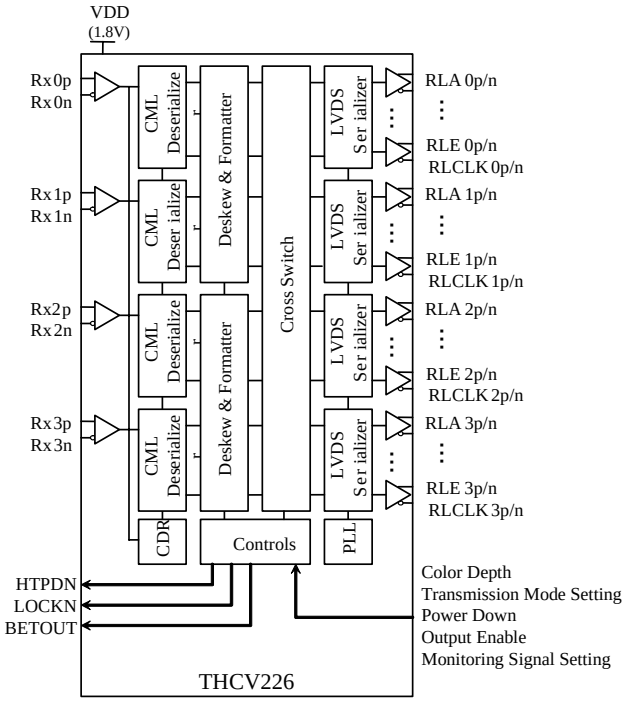
General Description

THCV226 is designed to support video data transmission between the host and display. This chip can receive 32bit video data and 3bit control data via four differential pairs of V-by-One® HS lanes. This chip in TQFP package supports the video data transmission up to 1080p/10b/120Hz. The maximum serial data rate is 3.4Gbps/lane.

Features

- Normal / High-speed LVDS output selectable
- 1.8V single power supply
- Color depth selectable: 8/10 bits
- Crossing / Distribution mode selectable
- Monitoring signal function
- 1.8V LVTTL I/O interface
- Package: 128pin 0.4mm-pitch TQFP (16mm x 16mm)
- Wide frequency range
- AC coupling for CML inputs
- CDR requires no external frequency reference
- Spread Spectrum Clocking Tolerant up to 30kHz/±0.5%(center spread)
- V-by-One® HS standard compliant
- PLL requires no external components
- Power down / Output enable mode

Block Diagram



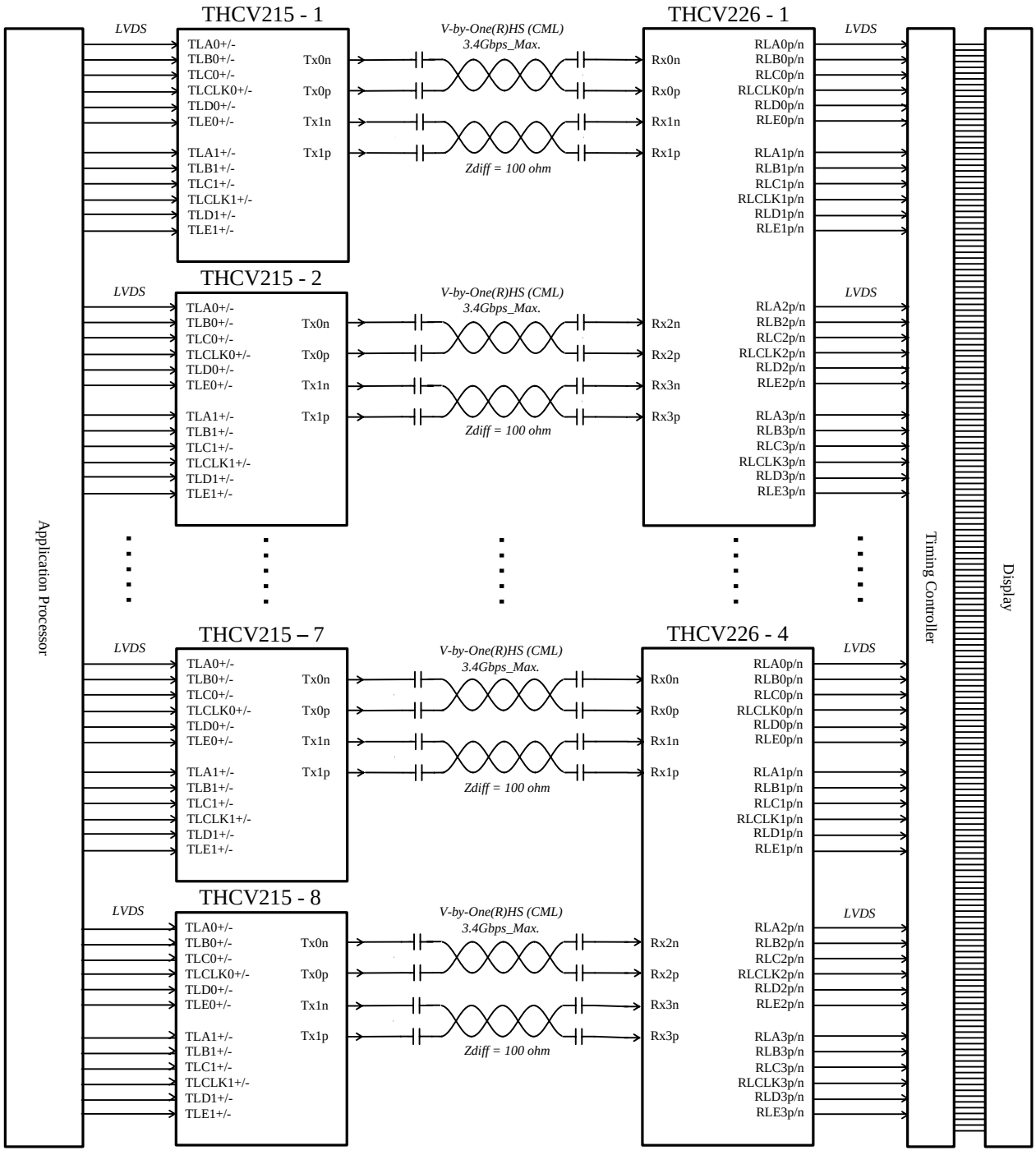
■ Data Transmission Rate of CML Input

Color Depth	Normal Speed LVDS Mode	High-Speed LVDS Mode
8bit	1.2 to 2.7Gbps	1.2 to 2.36Gbps
10bit	1.6 to 3.4Gbps	1.6 to 3.14Gbps

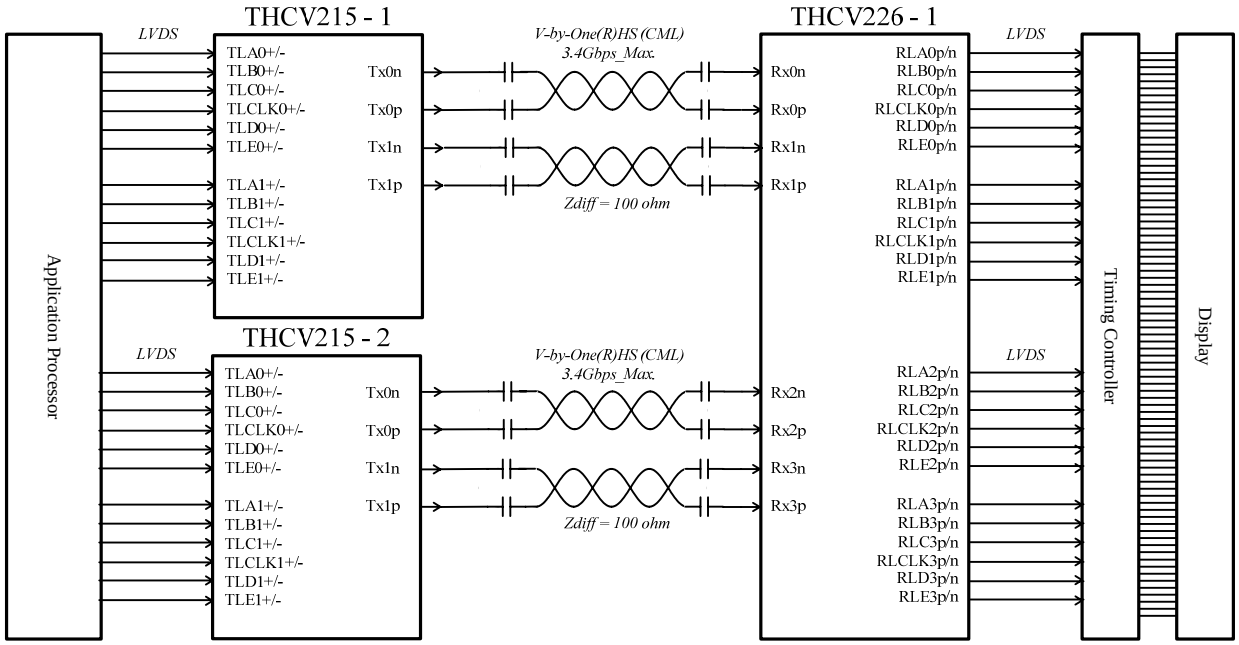
■ Clock Frequency of LVDS Output

Color Depth	Normal Speed LVDS Mode	High-Speed LVDS Mode
8bit	40 to 90MHz	80 to 157MHz
10bit	40 to 85MHz	80 to 157MHz

System Diagram Examples of Video Transmission Lines



Example for 4K2K120Hz TV Application



Example for FHD120Hz TV Application

Transmission Mode

The crossing or distribution mode can be selected by option pins. Please refer to the below table about selections.

THCV226 Transmission Mode	
Normal LVDS Mode THCV226 V-by-One® HS 10bit Mode : up to 3.4Gbps 8bit Mode : up to 2.7Gbps Rx0n/p Rx1n/p Rx2n/p Rx3n/p RLy0n/p RLy1n/p RLy2n/p RLy3n/p LVDS 10bit Mode : up to 85MHz 8bit Mode : up to 90MHz	**High-speed LVDS Mode** THCV226 V-by-One® HS 10bit Mode : up to 3.14Gbps 8bit Mode : up to 2.36Gbps Rx0n/p Rx1n/p Rx2n/p Rx3n/p RLy0n/p RLy1n/p RLy2n/p RLy3n/p HSLVDS 10bit Mode : up to 157MHz 8bit Mode : up to 157MHz
Normal LVDS with Crossing Mode THCV226 V-by-One® HS 10bit Mode : up to 3.4Gbps 8bit Mode : up to 2.7Gbps Rx0n/p Rx1n/p Rx2n/p Rx3n/p RLy0n/p RLy1n/p RLy2n/p RLy3n/p LVDS 10bit Mode : up to 85MHz 8bit Mode : up to 90MHz	**High-speed LVDS with Crossing Mode** THCV226 V-by-One® HS 10bit Mode : up to 3.14Gbps 8bit Mode : up to 2.36Gbps Rx0n/p Rx1n/p Rx2n/p Rx3n/p RLy0n/p RLy1n/p RLy2n/p RLy3n/p HSLVDS 10bit Mode : up to 157MHz 8bit Mode : up to 157MHz
Normal LVDS with Distribution Mode 1 THCV226 V-by-One® HS 10bit Mode : up to 3.4Gbps 8bit Mode : up to 2.7Gbps Rx0n/p Rx1n/p Rx2n/p Rx3n/p RLy0n/p RLy1n/p RLy2n/p RLy3n/p LVDS 10bit Mode : up to 85MHz 8bit Mode : up to 90MHz	**High-speed LVDS with Distribution Mode 1** THCV226 V-by-One® HS 10bit Mode : up to 3.14Gbps 8bit Mode : up to 2.36Gbps Rx0n/p Rx1n/p Rx2n/p Rx3n/p RLy0n/p RLy1n/p RLy2n/p RLy3n/p HSLVDS 10bit Mode : up to 157MHz 8bit Mode : up to 157MHz
Normal LVDS with Distribution Mode 2 THCV226 V-by-One® HS 10bit Mode : up to 3.4Gbps 8bit Mode : up to 2.7Gbps Rx0n/p Rx1n/p Rx2n/p Rx3n/p RLy0n/p RLy1n/p RLy2n/p RLy3n/p LVDS 10bit Mode : up to 85MHz 8bit Mode : up to 90MHz	**High-speed LVDS with Distribution Mode 2** THCV226 V-by-One® HS 10bit Mode : up to 3.14Gbps 8bit Mode : up to 2.36Gbps Rx0n/p Rx1n/p Rx2n/p Rx3n/p RLy0n/p RLy1n/p RLy2n/p RLy3n/p HSLVDS 10bit Mode : up to 157MHz 8bit Mode : up to 157MHz

Notices and Requests

1. The product specifications described in this material are subject to change without prior notice.
2. The circuit diagrams described in this material are examples of the application which may not always apply to the customer's design. We are not responsible for possible errors and omissions in this material. Please note if errors or omissions should be found in this material, we may not be able to correct them immediately.
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6. Despite our utmost efforts to improve the quality and reliability of the product, faults will occur with a certain small probability, which is inevitable to a semi-conductor product. Therefore, you are encouraged to have sufficiently redundant or error preventive design applied to the use of the product so as not to have our product cause any social or public damage.
7. Please note that this product is not designed to be radiation/proof.
8. Customers are asked, if required, to judge by themselves if this product falls under the category of strategic goods under the Foreign Exchange and Foreign Trade Control Law.

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