Product Clip

Standard Linear and Logic

DVI/HDMI Video Switch Products

TS3DV416 and TS3DV520

Digital Video

High definition television is becoming more popular in many households today. This is driving the need for high definition connections from multiple sources. The end consumer may need to switch between a DVD player, set top box, or game console, each providing a high definition signal. A method of connecting these sources is either through DVI or HDMI.

Digital Visual Interface (DVI) has been popular in the computing segment for a number of years. The interface consists mainly of three differential data lines and one differential clock. Each data line has a data rate of up to 1.65Gbps, while the differential clock can run up to 165MHz. This gives an overall throughput of 4.95 Gbps, which is ideal for digital video.

High Definition Multimedia Interface (HDMI) has been gaining popularity in the consumer segment. Based on the the same differential signaling scheme, HDMI also incorporates digital audio that is encoded into the one of the differential channels. With a smaller connector it is ideal for consumer applications.

TI Digital Video Switching Solution

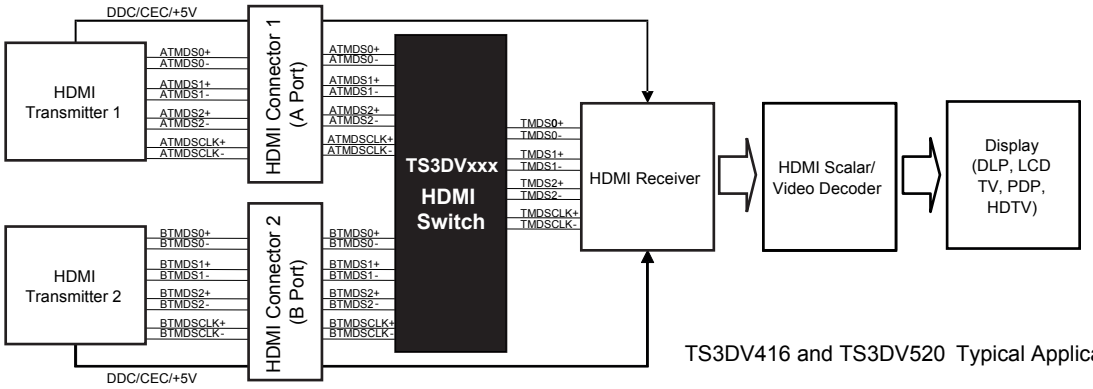
TI offers several cost effective switching solutions that can be implemented to switch between two DVI/HDMI inputs. The TS3DVxxx series offer of video switches the bandwidth necessary to pass these high speed differential signals. The signals can be routed from each input to a single DVI/HDMI receiver within the system.

Features

- Compatible with HDMI v1.2a (type A) and DVI 1.0 High-Speed Digital Interface
- Wide Bandwidth of over 1.65Gbps, 165 MHz Speed Operation
- Serial Data Stream at 10x Pixel Clock Rate
- Supports all video formats up to 1080p and SXGA (1280x1024 at 75 Hz)
- Total raw capacity 4.95Gbps (single link)
- HDCP compatible
- Low Crosstalk
- Low Bit-to-Bit Skew
- Low and Flat ON-State Resistance for the industry leading initial insertion loss
- Low Input/Output Capacitance for very high overall bandwidth
- I_{OFF} sets the I/Os in high impedance mode when V_{DD}=0

Typical Application Environments

- HDTV applications (DLP, DTV, LCD, PDP, CRT)
- Set Top Box
- Docking Stations

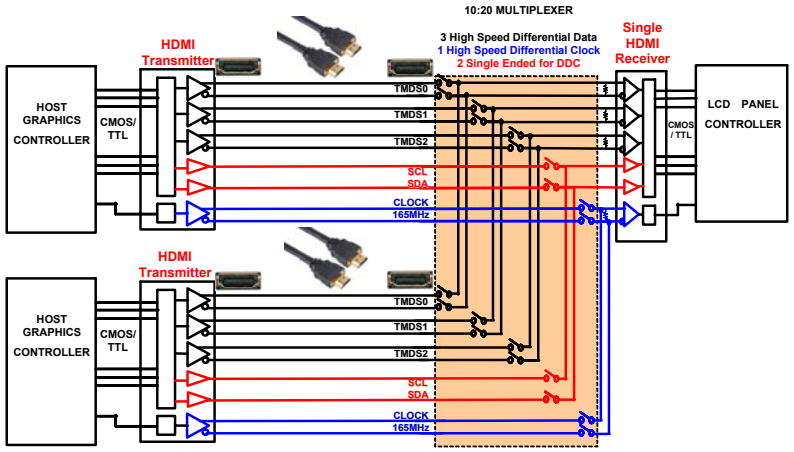


TS3DV416 and TS3DV520 Typical Application

DVI/HDMI Applications

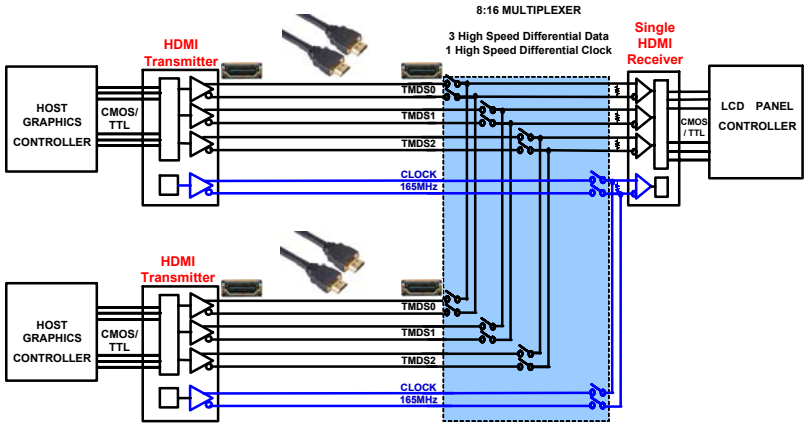
TS3DV520

The TS3DV520 is a four channel differential multiplexer/demultiplexer, plus two single ended channels. The differential channels are connected to the high speed differential data and clock. The two single ended channels are then connected to the DDC (data display channel). The DDC is used for configuration and status exchange between the source and sink.



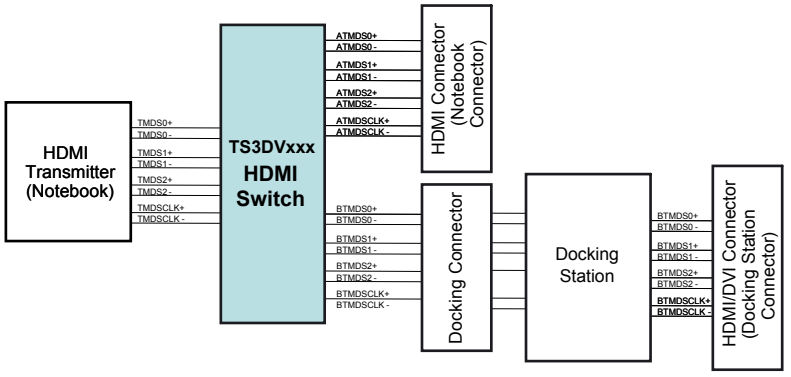
TS3DV416

The TS3DV416 is a 4 channel differential multiplexer/demultiplexer. It is connected in the same manner as the TS3DV520. However, for the DDC channel, it is recommended to use the SN74CBT3257C. This provides an overall cost effective solution.



Other applications

The TS3DVxxx series is a bidirectional switch. Not only can it be used for switching between two sinks, but also can be used for switching between two sources. Shown is a docking station application, where the laptop has a single HDMI transmitter connected through our switch. One port is connected to an HDMI port on the laptop. However, when the system is docked, the TS3DVxxx re-routes the HDMI signals to the connector on the docking station.



Typical eye diagram after HDMI signal is transmitted through the TS3DVxxx device