

3.4 Gbps HDMI™ equalizer for TrueHD

Active 3-to-1 HDMI 1.3/DVI switch



The STDVE003A is **STMicroelectronics'** most recent addition to the HDMI signal switch family, and features an integrated 3:1 HDMI equalizer. The world's first 3.4 Gbps active HDMI switch, this device supports Dolby® TrueHD displays offering the highest resolutions and 16-bit deep color (1080 p). The STDVE003A is compatible with the latest HDMI 1.3 standard, as well as the DVI 1.0, HDCP and I²C specifications. The device performs signal conditioning with a robust equalization scheme that allows signal recovery from long, lossy cables at data rates up to 3.4 Gbps. In addition to the equalization, the chip includes a HDP switch and a DDC buffer that eliminates any potential errors during EDID read from long capacitive cables. The STDVE003A's pin-out is compatible with the most common HDMI switches currently on the market as well as being convenient for flow-through PCB design and compatible with the most common HDMI switches available in the market today.

Key benefits

- 3:1 equalizer for HDMI
- Recovers signals of long (>20 m) and lossy cables
- Complies with DVI 1.0, HDMI 1.3, I²C and HDCP standards
- High bandwidth supports high data rate (3.4 Gbps)
- Integrated I²C buffer for DDC EDID reading
- Integrated HPD switch
- Selectable 50Ω input termination
- Simple logic interface eases device control by software
- Hardware-enabled flexible power modes
- Passes HDMI ATC tests for compliance
- Eliminates need for redundant HDMI receiver and other discrete ICs
- Increases HDMI port connectivity
- Supports TrueHD display resolutions (1080 p – 16-bit) and UXGA PC resolutions (1600 * 1200)
- Easy PCB mounting; pin-out compliant with competition

Main applications

- High-end displays for both analog and digital HDTV
- TV (LCD, plasma, projection, DLP)
- Projectors
- AV receivers
- Notebooks
- PC motherboards
- PC graphic cards
- PC monitors
- Set-top boxes
- DVD-R

To perform efficient HDMI/DVI switching even in applications where long cables are used, ST has developed the STDVE003A active switch. This device features 3-to-1 high-bandwidth signal conditioning and integrates a sophisticated equalizer with a gain boost scheme. It is designed for high-performance TMDS (Transition Minimized Differential Signaling) data transfers on LCD/plasma TVs where multiple HDMI/DVI input ports are required. Since it is configured as a 3:1 MUX (i.e. 3-input sources from which only one is selected to be channeled to the output), it allows TV designers to design TV with up to three HDMI input ports while using just a single-channel HDMI receiver chip.

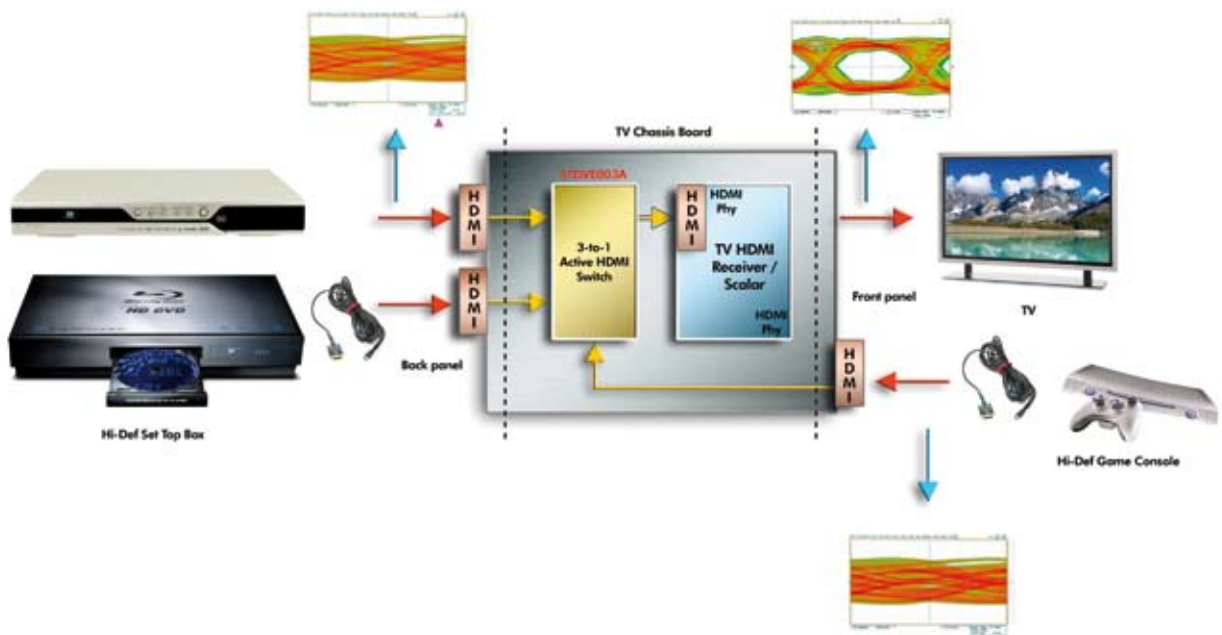
The STDVE003A includes input termination, a differential receiver, equalizer, gain stages and output drivers to allow signal recovery both in amplitude and jitter at the maximum data rate of 3.4 Gbps, even after long lossy cables.

The switch has been tested and proven to support DVI/HDMI TMDS signal switching at maximum data rates, complying fully with the HDMI ATC specification.

In addition to the TMDS path, the switch incorporates a buffer for the I²C bus in order to allow error-free EDID reading. The I²C pull-up resistors can be pulled to 3.3 V or 5 V by supplying the appropriate power to the DDC power supply pins of the IC.

Other benefits include support for high video resolutions (1080 p = 1920 x 1080 with 16-bit deep color support), which is possible due to ST's advanced technology. The switch's design, as well as the choice of package, pitch and pinout allow one to increase HDMI port connectivity without worrying about backend design or PCB routing.

Demo-boards with application notes are now available.



Part number	Data rate	Features	V _{cc} [V]	Order code	Package
STDVE003A	3.4 Gbps	High speed TMDS signal equalization; integrates I ² C buffer for DDC; includes Hot Plug Detect (HPD) Switch; pin-out for flow-through PCB layout with pin-out compatible to competition;	3.0 - 3.6 Optional 5 V for DDC	STDVE003ABTR	TQFP-80 (pitch = 0.5 mm)
STDVE103A	3.4 Gbps	Same as above; drop-in replacement of competition with superior performance	3.0 - 3.6 Optional 5 V for DDC	STDVE103ABTR	TQFP64-64 (pitch = 0.5 mm)



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Full product information at www.st.com

Order code: FLSTDVE1107

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