

# VastLane™ HDMI Transmitter

High-definition video and audio solution for add-in graphics cards

Silicon Image's SiI1932 VastLane transmitter interfaces seamlessly to a variety of PC graphics sources to support DVI and HDMI™ displays with resolutions up to UXGA or 1080p. The built-in High-bandwidth Digital Content Protection (HDCP) engine secures the digital link for transmission of valuable HD video and audio. These transmitters are pre-programmed with unique HDCP keys, providing state-of-the-art security while reducing manufacturing complexity and cost.

The SiI1932 transmitter is designed to generate 25-165 MHz HDMI output. The SiI1932 interfaces to a variety of industry-leading GPUs with integrated TMDS® transmitters by accepting a TMDS input. The SiI1932 also has a variety of audio interface ports (S/PDIF, or HDAudio) and is capable of supporting the DVD Audio standard, as well as other digital audio formats consisting of up to eight channels at 192 kHz when using the HD-Audio port.

This latest family of VastLane transmitters brings a comprehensive suite of solutions that enable PC

platforms to offer new levels of multimedia performance with access to premium HD video and audio content. Each product is compliant with HDCP 1.2 and supports repeaters by implementing on-chip Secure Hash Algorithm (SHA-1) logic and provides convenient and secure on-chip, pre-programmed HDCP keys. Applications that require even more performance can utilize the SiI1932CNU-3, which offers blazing-fast performance of up to 340 MHz or 10.2 Gbps. The SiI1932-3 supports high resolution displays including 1440p and WQXGA.

## SiI1932

### Applications

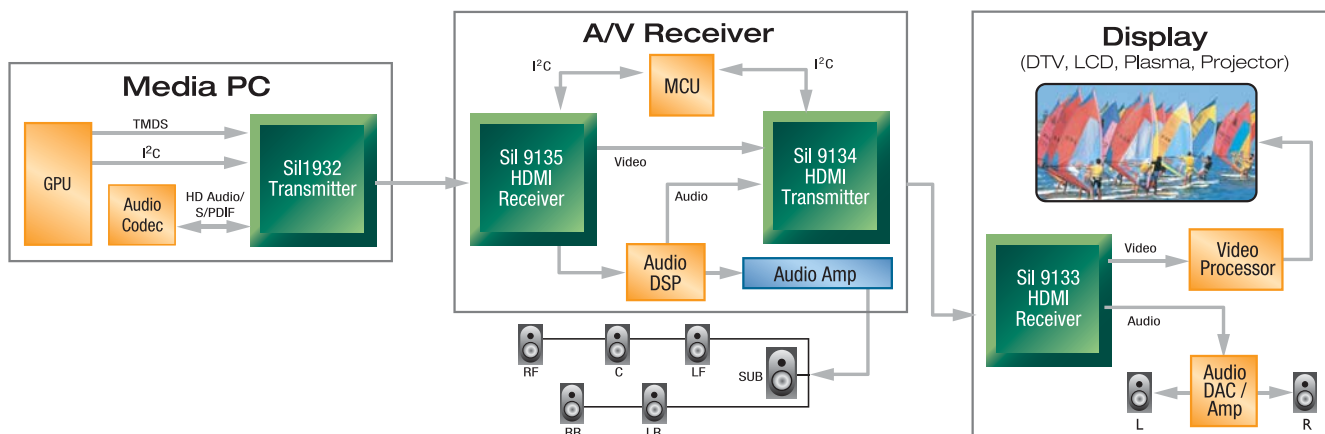
- Add-In Graphics Cards
- ADD2 Expansion Cards

### Key Features

- Compatible with HDMI 1.2 specification
- Supports 1080p resolution at 60Hz
- Built-in HDCP encryption engine



SiI1932 System Diagram



# Sil1932 Features

## Sil1932 Starter Kit (CP1932HDMI)

Contents include:

### Hardware

- Sil1932 add-in graphics card
- For graphics card with DVI connector output
- Requires available S/PDIF or HD-Audio interconnection from motherboard or sound card
- HD-Audio requires customer's driver

### Documentation

- User's Guide
- Schematics
- Bill of Materials (BOM)

### Industry-Standard Compliance

- DVI 1.0
- HDMI 1.2
- EIA/CEA-861B
- HDCP 1.2

### Digital Video Inputs

- TMDS (0.25-1.65 GHz)

### Digital Video Outputs

- Integrated VastLane core supporting cables over 10 meters
- HDMI output:
  - 25-165 MHz - SiI1932CNU
  - 25-340 MHz - SiI1932CNU-3
- Supports DTV (480i -1080p) and PC (VGA-UXGA) resolutions
- Integrated RGB  $\longleftrightarrow$  YCbCr conversion
- 4:4:4  $\longleftrightarrow$  4:2:2 converter

### Digital Audio

- Supports 8 channels at 192 kHz (including DVD-Audio) through HD-Audio input
- Supports IEC60958 2-channel PCM or IEC61937 compressed audio (Dolby® Digital, DTS, etc.)
- Industry-standard HD-Audio, S/PDIF inputs

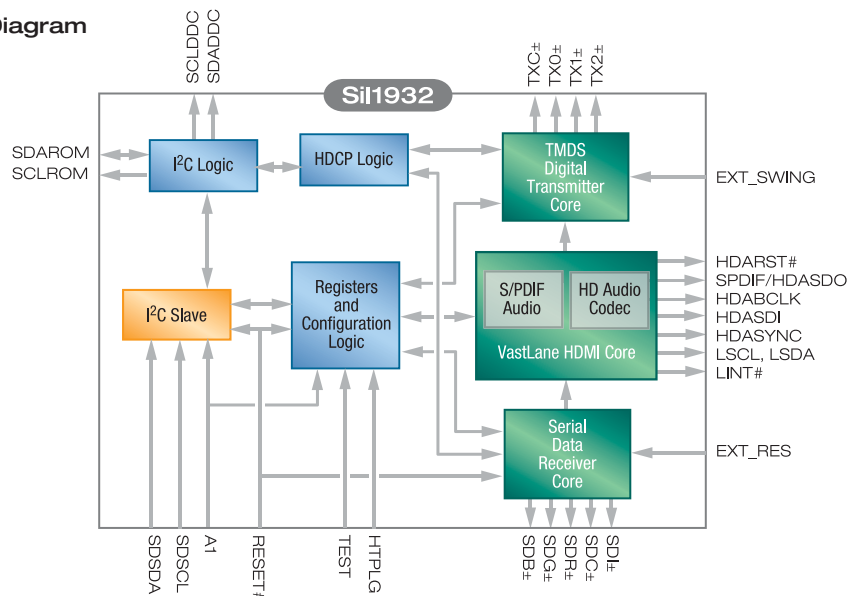
### Content Protection

- Integrated HDCP cipher engine
- HDCP repeater function support with on-chip SHA-1 logic for high security
- Pre-programmed HDCP keys
  - Simplify manufacturing process
  - Most secure solution available
  - Lower system, manufacturing costs
- Encrypts both video and audio

### System Operation

- Advanced technology for synchronizing video and audio streams without direct communication between graphics and audio drivers
- Optional external microcontroller support for future enhancements
- 64-pin QFN package
- Flexible interrupt registers with interrupt pin
- Monitor-detection support through hot plug and receiver detection power management
- Low-power 1.8V core operation
- Low-power standby mode
- Flexible power-down modes

Sil1932 Circuit Diagram



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