



# HDMI® 1.4 Transmitter

Featuring 3D over HDMI, HDMI Ethernet Channel, Audio Return Channel, Content Type Bits, CEC and support for 48-bit Deep Color

The SiI9334 is an advanced HDMI transmitter incorporating 48-bit Deep Color® video and comprehensive support for HDMI 1.4 features. Transform the home theater experience with 3D video and enable new IP content with HDMI Ethernet Channel. Audio Return Channel provides sink to source digital audio signal transmission to replace S/PDIF cables.

Video source devices are evolving to deliver 3D video and IP content and services. Bringing 3D video to the home enhances the consumer home theater experience while HDMI Ethernet Channel enables new applications to run over TCP/IP, UPnP, and LiquidHD™ protocols. Both combine to create a new personal entertainment experience.

The Silicon Image family of transmitters enable OEMs to differentiate with innovative features offering consumers real value. The SiI9334 transmitter receives inputs from the video processor, audio and Ethernet, providing the flexibility to introduce features as the market demands.

The SiI9334 supports the advanced HDMI 1.4 features: 3D over HDMI, 100Mb/sec Ethernet data flow, S/PDIF audio return channel, and Content Type bits. The SiI9334 introduces 48-bit Deep Color at 1080p/30Hz, providing

crystal clear image quality to enhance the viewing experience.

The SiI9334 also supports x.v.Color, which increases the number of available colors by 1.8 times compared to the standard RGB color space. Built-in High-bandwidth Digital Content Protection (HDCP) encryption engine secures the digital link for transmission of valuable high-definition video and audio. Integrated HDMI compliant Consumer Electronics Control (CEC) hardware and API reduce BOM cost and development time. The SiI9334 supports HD lossless audio formats such as Dolby® True HD and DTS-HD™. Super Audio CD, DVD Audio and multi-channel audio at 192kHz and stereo audio are also supported.

This feature set is matched by the SiI9389 HDMI port processor for display devices.

## SiI9334

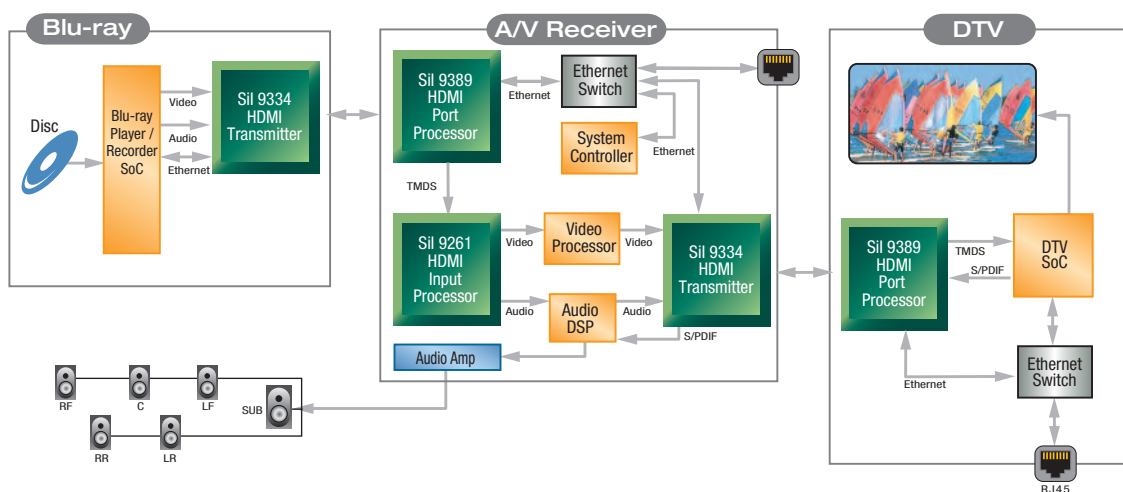
### Applications

- Blu-ray & DVD players and recorders
- AV Receivers
- Set-top Boxes
- Video Game Consoles
- PVRs and DVRs

### Key Features

- 3D over HDMI
- HDMI Ethernet Channel @ 100Mb/s
- Audio Return Channel over HDMI cable with S/PDIF output
- Content Type Bits
- 48-bit Deep Color
- 225MHz HDMI Transmitter

SiI9334 Typical Application Diagram



# Sil9334 Features

## Sil9334 Starter Kit (CP9334HDMI)

Contents include:

### Hardware

- CP9334 source board
- HDMI cable with HEAC support

### Software

- Simon transmitter software tool

### Documentation

- User's guide
- Schematics
- Bill of materials (BOM)

### Industry-Standard Compliance

- HDMI 1.4
- DVI 1.0
- EIA/CEA-861D
- HDCP 1.2

### HDMI Features

- 3D over HDMI
  - Frame Packing Structure
    - 1080p @ 24 Hz
    - 1080i @ 50/60 Hz
    - 720p @ 50/60 Hz
- Bi-directional HDMI Ethernet Channel
- Audio Return Channel
- Content Type bits transmission
- Integrated Consumer Electronics Control
- Integrated HDMI TMDS core running at 225MHz

### Network Connectivity

- 100Mbps bi-directional data link

### Digital Video

- 48-bit color depth at up to 1080p @ 30Hz
- 36-bit color depth at up to 1080p @ 60Hz
- Flexible video interface supports DVD and HD MPEG decoders:
  - 24/30/36/48-bit RGB/YCbCr 4:4:4
  - 16/20/24/30/36-bit YCbCr 4:2:2
  - 8/10/12-bit YCbCr 4:2:2 (ITU-R BT.601 & BT.656)
- Integrated YCbCr to RGB conversion

- 4:2:2 to 4:4:4 up-converter
- Programmable Data Enable (DE) generator
- 18-bit internal video processing and 18-bit to 16/12/10/8-bit dither

### Digital Audio

- Audio return channel with S/PDIF output
- Supports Dolby® True HD and DTS-HD up to 24Mb/s through 4xI2S inputs
- DVD-Audio support through four I2S inputs
- 8-pin interface to Direct Stream Digital (DSD) Super Audio CD (SACD)
- Supports 2-channel audio at 192kHz and 8-channel audio at 192kHz
- Supports IEC60958 2-channel PCM or IEC61937 compressed audio

### System Operation

- Register-programmable via I2C interface

### Content Protection

- Integrated HDCP cipher engine
- Built-in HDCP BIST
- Pre-programmed HDCP keys

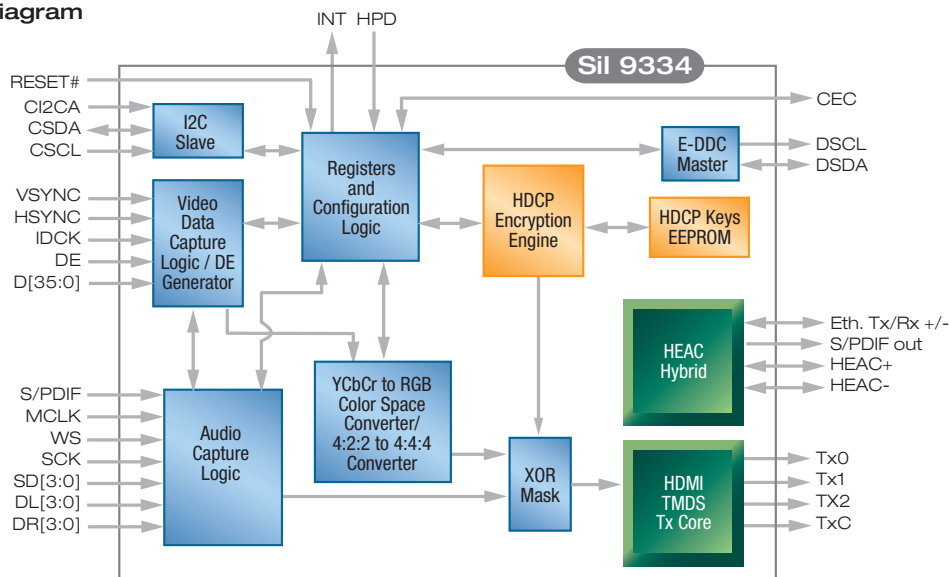
### Power Management

- <1.0W power consumption

### Package

- 100-pin TQFP

Sil9334 Circuit Diagram



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Part Number: Sil9334CTU

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