

## VastLane™ HDMI Transmitter

**HD solution for cameras, portable media players, portable internet devices, mobile phones and mobile electronics**

Silicon Image brings another exciting high-definition interface to the mobile electronics market. Building on the industry leading SiI9030 discrete HDMI transmitter, the VastLane SiI9024 is an ultra low-power HDMI transmitter designed for power-sensitive handheld consumer electronics devices such as portable media players, personal internet devices, cameras, mobile phones, and other portable electronic devices.

HDMI is the established digital interface that brought the highest quality digital audio and video experience to millions of consumer home entertainment systems. Consumers are also using mobile devices to carry captured, downloaded, and purchased content. The SiI9024 with integrated HDCP engine and HDCP keys enables consumers to share those precious memories and valued content in a secure, all digital, high-definition format on an HDTV.

The SiI9024 is one of the first HDMI transmitters from Silicon Image specifically designed to meet the low power and small form factor needs of the mobile market. In order to fit into the tight constraints of today's highly integrated mobile electronics, the SiI9024 is available in tiny 4mm x 4mm (0.4 ball pitch) or 6mm x 6mm (0.5mm ball pitch) chip scale BGA pack-

ages. The SiI9024 does not scrimp on performance. It supports resolutions from standard definition 480i/p and 576i/p all the way to high-definition 720p, 1080i, and 1080p, the highest resolution supported by HDTVs today.

Silicon Image HDMI products are designed according to the requirements of the market segments and are compliant with the latest version of the industry leading HDMI standard for those market segments. The SiI9024 transmitter is no exception—it is fully compliant with the HDMI 1.2a standard. In addition, all Silicon Image HDMI hardware and software solutions are developed and verified according to the latest HDMI Compliance Test Specification (CTS) and SimplayHD HDCP interoperability compliance requirements.

## SiI9024

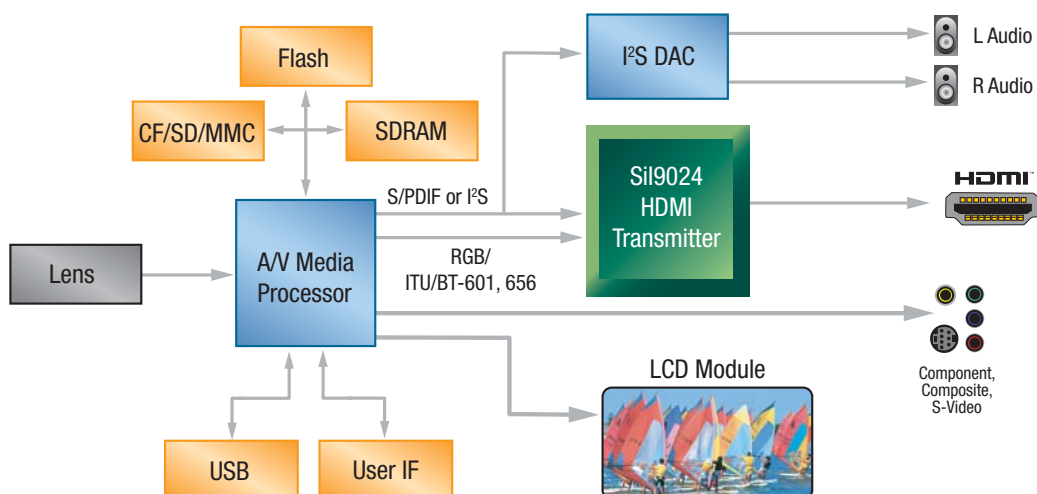
### Applications

- Portable Media Players
- Personal Internet Devices
- Mobile Phones
- Cameras

### Key Features

- HDMI 1.2a and DVI 1.0 compliant
- HDCP 1.2 with integrated HDCP Engine and Key
- Supports up to 1080p & UXGA
- Ultra low-power
- Integrated CEC functions

### SiI9024 Typical Application



**HDMI™**  
HIGH-DEFINITION MULTIMEDIA INTERFACE

# Sil9024 Features

## Sil9024 Software & Documentation

### Software

- Sil9024 firmware
- PC based diagnostic tool

### Documentation

- Programmer's Reference
- Application Notes
- Datasheet

### Compliance

- HDMI 1.2a
- DVI 1.0
- Simplay HD
- HDCP 1.2

### Digital Video

- Integrated TMDS core
- DTV resolution support - 480i/576i/480p/576p/720p/1080i/1080p
- PC resolution support - VGA/XGA/SXGA/WSXGA/UXGA
- Flexible interface to HD MPEG decoders:
  - 12/24-bit RGB YCbCr 4:4:4
  - 16/20/24-bit YCbCr 4:2:2
  - 8/10/12-bit YCbCr 4:2:2 (ITU-R BT.601 & BT.656)
- Integrated YCbCr → RGB conversion
- 4:2:2 → 4:4:4 up-converter
- Programmable Data Enable (DE) generator

### Digital Audio

- DVD-Audio support thru 4xPS inputs
- Supports 2-channel 192kHz or 8-channel 96kHz
- Supports IEC60958 2-ch PCM or IEC61937 compressed audio (Dolby Digital, DTS, etc.)
- Industry-standard S/PDIF input
- Integrated MCLK generator

### Consumer Electronic Control (CEC)

- Dedicated CEC signals
- Integrated hardware arbitration logic reduces local CPU overhead

### System Operation

- Simplified API programming through Transmitter Programming Interface (TPI) and CEC Programming Interface (CPI)
- Programmable DDC controller simplifies system design
- Flexible interrupt registers with interrupt pin
- Monitor detection supported through hot plug and receiver sense

### Content Protection

- Integrated HDCP cipher engine
- Pre-programmed HDCP keys
- Encrypts both video and audio

### Power Management

- 1.2V, 1.8V and 3.3V cores provide low-power operation
- Flexible power-down modes

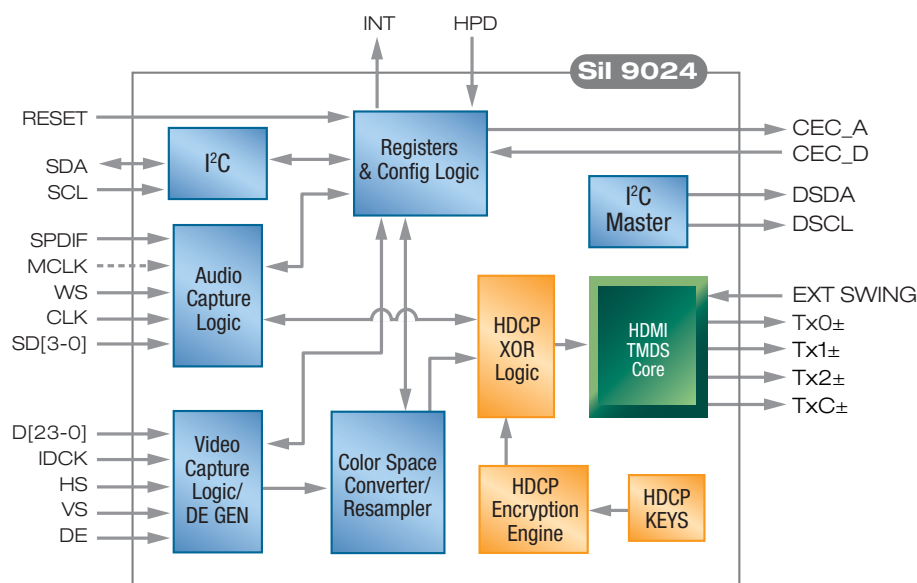
### Available Packages

- 81-ball BGA (4mm x 4mm, 0.4mm ball pitch)
- 84-ball BGA (6mm x 6mm, 0.5mm ball pitch)

### Operating Range

- -20C° to +85C° extended temperature support

Sil9024 Circuit Diagram



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