



**THE DATASHEET OF  
TDA9981AHL/15/C181**





English



## TDA9981AHL

HDMI transmitter up to 150 MHz pixel rate with 3 x 8-bit video inputs and 4 x I<sup>2</sup>S-bus with S/PDIF

The TDA9981A is an HDMI transmitter (which also supports DVI) that enables a 3 x 8-bit RGB or YC<sub>B</sub>C<sub>R</sub> video stream (with a pixel rate up to 150 MHz for the TDA9981AHL/15 version), up to 4 I<sup>2</sup>S-bus audio streams (with an audio sampling rate up to 192 kHz) and the additional information required by all the HDMI 1.2a standards.

In order to be compatible with most applications, the TDA9981A integrates a full programmable input formatter and color space conversion block. The video input formats accepted are YC<sub>B</sub>C<sub>R</sub>4 : 4 : 4 (up to 3 x 8-bit), YC<sub>B</sub>C<sub>R</sub>4 : 2 : 2 semi-planar (up to 2 x 12-bit), YC<sub>B</sub>C<sub>R</sub>4 : 2 : 2 compliant with ITU656 and ITU656-like (up to 1 x 12-bit).

For ITU656-like formats, double edges are supported so that data can be sampled on rising and falling edges.

The TDA9981A also includes a HDCP 1.1-compliant cipher block. The HDCP key set is stored internally in a One Time Programmable (OTP) non-volatile memory for maximum security.

The device can be controlled via an I<sup>2</sup>C-bus interface.

### Features and benefits

- 3 x 8-bit video data input bus, CMOS and LV-TTL compatible
- Horizontal synchronization, vertical synchronization and Data Enable (DE) inputs or VREF, HREF and FREF could be used for input data synchronization
- Pixel rate clock input can be made active on one or both edges (selectable by I<sup>2</sup>C-bus)
- The TDA9981A has 4 I<sup>2</sup>S-bus audio input channels and 1 S/PDIF channel; audio sampling rate up to 192 kHz
- 250 MHz to 1.50 GHz HDMI transmitter operation
- Programmable input formatter and upsampler/interpolator allows input of any of the 4 : 4 : 4, 4 : 2 : 2 semi-planar, 4 : 2 : 2 ITU656 and ITU656-like formats
- Programmable color space converter:
  - RGB to YC<sub>B</sub>C<sub>R</sub>
  - YC<sub>B</sub>C<sub>R</sub> to RGB
- Deals with multiple levels of HDCP receivers and repeaters
- Internal SHA-1 calculation
- Controllable via I<sup>2</sup>C-bus
- Low power dissipation
- 1.8 V and 3.3 V power supplies
- Power-down mode
- Hard reset

### Applications

- DVD players and recorders
- Set-Top Box (STB)
- AV receivers and amplifiers (repeater)
- Camcorders
- Digital still cameras
- Media players
- PVRs
- Media centers PCs, graphics add-in boards, notebook PCs
- Switches


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