

### FEATURES

#### General

- Low-power HDMI™/DVI transmitter ideal for portable applications
- CEC controller and buffer reduces system overhead.
- Compatible with HDMI v1.3, DVI v1.0, and HDCP 1.3
- Supports xvYCC functionality
- Single 1.8V power supply
- Video/audio inputs accept logic levels from 1.8V to 3.3V

#### Digital video

- 80 MHz operation supports all video resolutions from 480i to 1080i
- Programmable two-way color space converter
- Supports RGB, YCbCr, DDR
- Supports ITU656 based embedded syncs
- Auto input video format timing detection (CEA-861D)

#### Digital audio

- Supports standard S/PDIF for stereo LPCM or compressed audio up to 192 kHz
- 8-channel uncompressed LPCM I<sup>2</sup>S audio up to 192 kHz

#### Special features for easy system design

- On-chip MPU with I<sup>2</sup>C® master to perform HDCP operations and EDID reading operations
- 5 V tolerant I<sup>2</sup>C and HPD I/Os, no extra device needed
- No audio master clock needed for supporting S/PDIF and I<sup>2</sup>S
- On-chip MPU reports HDMI events through interrupts and registers

### APPLICATIONS

- Digital video cameras,
- Digital still cameras
- Personal media players
- Cellular handsets
- DVD players and recorders
- Digital set-top boxes
- A/V receivers
- HDMI repeater

### GENERAL DESCRIPTION

The ADV7520NK is an 80 MHz, high definition multimedia interface (HDMI) v1.3 transmitter. It supports HDTV formats up to 1080i and 720p, and computer graphic resolutions up to XGA (1024 x 768 @ 75 Hz). The ADV7520NK allows the secure transmission of protected content as specified by the HDCP v1.3 protocol when HDCP keys are implemented externally.

### FUNCTIONAL BLOCK DIAGRAM

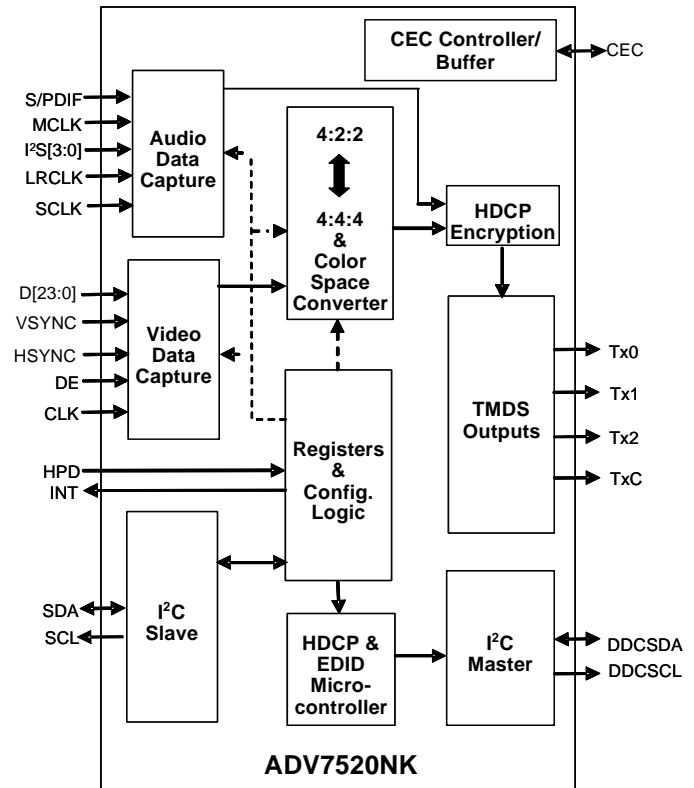


Figure 1.

The ADV7520NK supports both S/PDIF and 8-channel I<sup>2</sup>S audio. Its high fidelity 8-channel I<sup>2</sup>S can transmit either stereo or 7.1 surround audio at 192 kHz. The S/PDIF can carry stereo LPCM audio or compressed audio including Dolby® Digital and DTS®.

The ADV7520NK helps to reduce system design complexity and cost by incorporating such features as an internal MPU for HDCP operations, an I<sup>2</sup>C master for EDID reading, a single 1.8V power supply and 5 V tolerance on I<sup>2</sup>C and hot plug detect pins.

Fabricated in an advanced CMOS process, the ADV7520NK is available in a space saving, 76-ball, CSP\_BGA surface-mount package. This package is RoHS compliant and specified to operate from -25°C to +85°C.

#### Rev. PrB

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**REVISION HISTORY**

## APPLICATIONS

### DESIGN RESOURCES

Analog Devices, Inc. evaluation kits, reference design schematics, and other support documentation are available under NDA from flatpanel\_apps@analog.com.

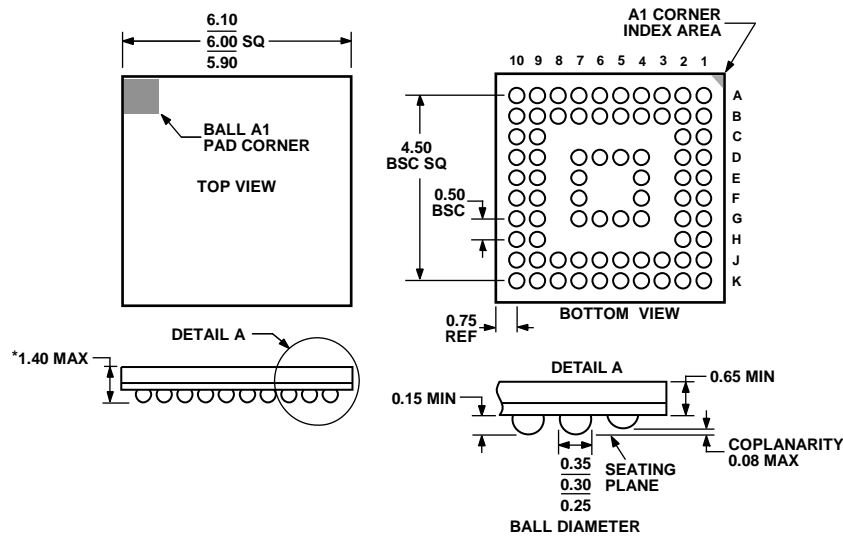
Other resources include:

*EIA/CEA-861D* that describes audio and video infoframes as well as the E-EDID structure for HDMI. It is available from Consumer Electronics Association (CEA).

The *HDMI v1.3*, a defining document for HDMI Version 1.3, and the *HDMI Compliance Test Specification Version 1.3* are available from HDMI Licensing, LLC.

The *HDCP v1.3* is the defining document for HDCP Version 1.3. available from Digital Content Protection, LLC.

OUTLINE DIMENSIONS



\*COMPLIANT TO JEDEC STANDARDS MO-225 WITH THE EXCEPTION TO PACKAGE HEIGHT.

Figure 2. 76-Ball Chip Scale Package Ball Grid Array [CSP\_BGA]  
6 mm × 6 mm × 1.4 mm  
(BC-76)  
Dimensions shown in millimeters

018807-A

ORDERING GUIDE

Model	Temp. Range	Package Description	Package Option
ADV7520NKBBCZ-80 <sup>1</sup>	-25°C to +85°C	76-Ball Chip Scale Package Ball Grid Array [CSP_BGA]	BC-76
ADV7520NKBBCZRL-80	-25°C to +85°C	76-Ball Chip Scale Package Ball Grid Array [CSP_BGA]	BC-76
ADV7520NK/PCBZ		Evaluation Board	

<sup>1</sup> All packages are RoHS compliant

**NOTES**