

## Mobility DisplayPort (MyDP) transmitter

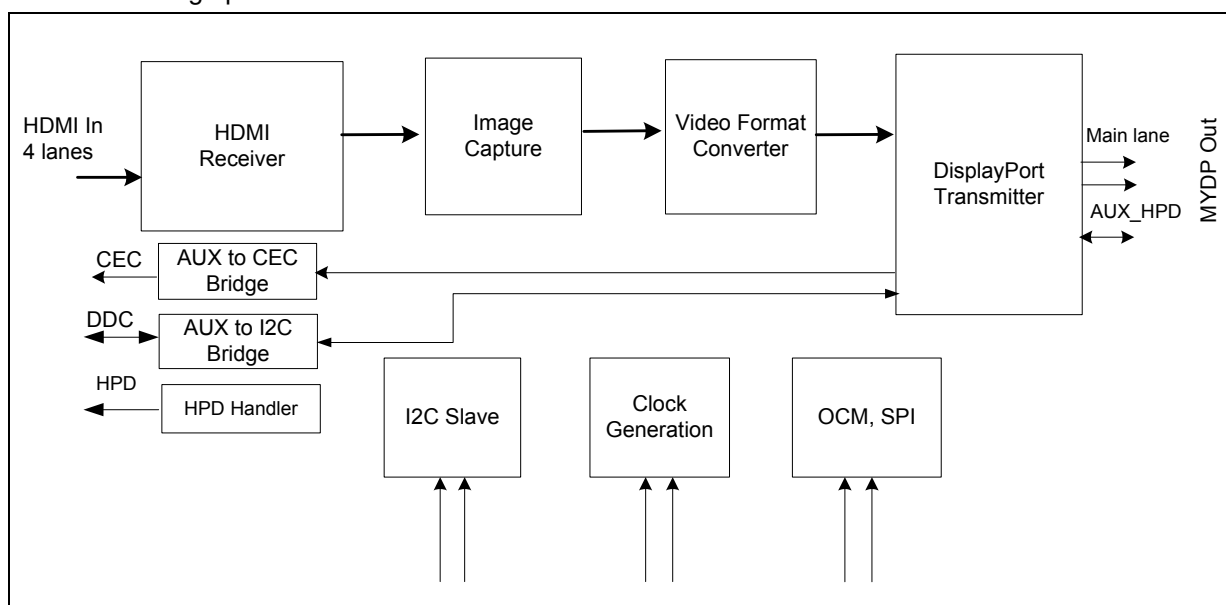
Data brief

### Features

- Mobility DisplayPort® (MyDP) transmitter
  - Link rate HBR2/HBR/RBR
  - 1 lane
  - AUX\_HPD single-ended AC coupled signal, 1 Mbps
- HDMI 1.4 receiver
  - Max data rate up to 2.97 Gbps/data pair
  - Color depth 24, 18 bits per pixel
  - 3D video timings (1920 x 1080 @ 30 Hz stereo)
  - CEC
- HDCP repeater with embedded keys
- I2C to AUX\_HPD bridge for EDID access
- CEC message protocol handler
- Spread spectrum on MyDP interface for EMI reduction
- Bandwidth
  - Video resolution up to 1920 x 1080 @ 60 Hz
  - Audio 7.1 Ch up to 192 kHz sample rate
- Low power operation
- Package
  - 81 BGA (5 x 5 mm)
- Power supply voltages
  - 3.3 V I/O; 1.2 V core

### Applications

- Smart phones, tablets, cameras, other portable media devices



# 1 Description

The STDP2530 is a Mobility DisplayPort transmitter with an HDMI input that facilitates streaming FHD 60 Hz video and audio from MyDP enabled smart phones and tablets over a standard 5-pin connector. The STDP2530 is a VESA Mobility DisplayPort (MyDP) standard compliant device, implementing a single lane DisplayPort output and AUX\_HPD signal. The input comprises an HDMI port with four differential signal pairs, CEC, and HPD signal. The MyDP standard is a digital audio-video interconnect based on the VESA DisplayPort standard for a mobile source device capable of streaming uncompressed audio and video. It uses the existing standard 5-pin connector commonly used for charging the portable mobile devices to stream the audio-video to an external display.

The STDP2530 uses ST's latest generation DisplayPort transmitter technology that supports a single AV stream at HBR2 speed, a data rate of 5.4 Gbps per lane. The HDMI 1.4 receiver in STDP2530 is based on advanced high-speed TMDS technology supporting link rate up to 2.97 Gbps and the stereo 3D formats. In mobile applications, this device can receive up to 1080p 60 Hz video at 24 bits per pixel color and audio up to 8-channel at 192 Kb sample rate from the Application Processor Engine (APE) and converts into MyDP output over one lane for external display. This device also complies with the HDCP 1.3 content protection scheme with an embedded key option for secure transmission of premium digital AV content.

The AUX\_HPD is a single-ended sideband channel used for low-speed data exchange with the MyDP converters or MyDP compliant sinks. The AUX\_HPD data transfer rate is 1 Mbps, which is quite adequate for handling I2C and CEC protocols from the downstream sink. The AUX\_HPD channel is also used for monitoring sink requests and DPCD read-write access.

The AUX-to-I2C translator in the STDP2530 bridges I2C communication between APE with the external display. Similarly, the AUX-to-CEC translator handles CEC message transfer from the sink to the APE. This device has an on-chip microcontroller with SPI and I2C host interfaces for system configuration purposes. The STDP2530 implements a sink detection and monitoring feature that automatically puts the device into low power operation whenever the sink is disconnected.

## 2 Application overview

Figure 1. STDP2530 mobile application: interfacing with HDMI TV via MyDP to HDMI adapter

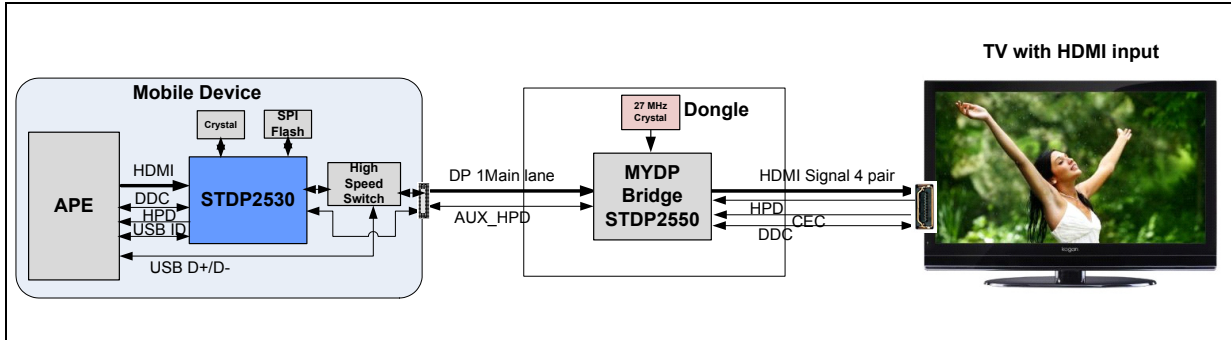
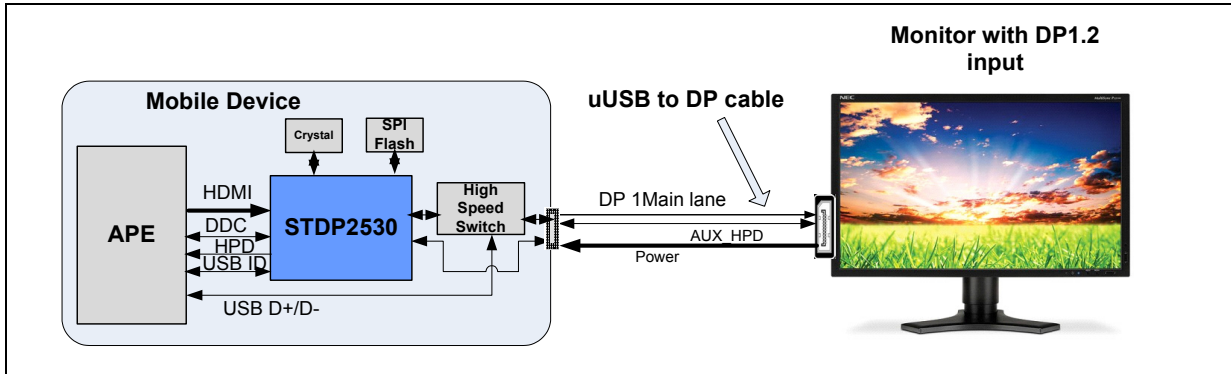


Figure 2. STDP2530 in mobile application: direct interface to DP 1.2 based monitor via passive cable



## 3 Feature attributes

### 3.1 Output interface

- Mobility DisplayPort
- Main link configuration (SST format only)
  - HBR2/HBR/RBR link rate
  - 1 lane
- AUX\_HPD: 1 Mbps Manchester transaction format
  - I2C over AUX\_HPD
  - CEC over AUX\_HPD
- Pixel bit depth: 24 bpp, 18 bpp
- Color format: RGB
- Audio: Up to 192 Kb samples/sec, 8 Ch/sample, 24 bits/Ch

### 3.2 Input interface

- HDMI standard Ver.1.4 compliant
- Link rate: 2.97 Gbps/data pair max
- Pixel bit depth: 24 bpp, 18 bpp
- Color format: RGB
- Audio: Up to 192 Kb samples/sec, 8 Ch/sample, 24 bits/Ch
- DDC master port
- HPD monitoring

### 3.3 Supported video timings

- 1920 x 1080 (FHD) 60 Hz: 24 bits/pixel
- 1920 x 1080 (FHD) 30 Hz stereo 3D

### 3.4 Supported audio timings

- Up to 8-Ch LPCM; word length up to 64 x Fs; bit depth up to 32 bits, sample rate up to 192 kHz

### 3.5 Control channel interfaces

- AUX\_HPD, I2C host interface, SPI (optional), and UART (UART for test/debug purposes only)

### 3.6 HDCP 1.3 support

- Key sets for HDMI RX and MyDP TX integrated in one-time programmable ROM (OTP)
- Standalone HDCP repeater capability

### 3.7 Package

- 81 BGA (5 x 5 mm), 0.5 ball pitch

### 3.8 Power supply voltages

- 3.3 V I/O; 1.2 V core

### 3.9 ESD

- 2 KV HBM, 500 V CDM

## 4 Ordering information

**Table 1. Order codes**

Part number	Description
STDP2530	81 BGA (5 x 5 mm)

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: [www.st.com](http://www.st.com). ECOPACK® is an ST trademark.

## 5 Revision history

Table 2. Document revision history

Date	Revision	Changes
08-Oct-2012	1	Initial release.

**Please Read Carefully:**

Information in this document is provided solely in connection with ST products. STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, modifications or improvements, to this document, and the products and services described herein at any time, without notice.

All ST products are sold pursuant to ST's terms and conditions of sale.

Purchasers are solely responsible for the choice, selection and use of the ST products and services described herein, and ST assumes no liability whatsoever relating to the choice, selection or use of the ST products and services described herein.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted under this document. If any part of this document refers to any third party products or services it shall not be deemed a license grant by ST for the use of such third party products or services, or any intellectual property contained therein or considered as a warranty covering the use in any manner whatsoever of such third party products or services or any intellectual property contained therein.

**UNLESS OTHERWISE SET FORTH IN ST'S TERMS AND CONDITIONS OF SALE ST DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY WITH RESPECT TO THE USE AND/OR SALE OF ST PRODUCTS INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION), OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT.**

**UNLESS EXPRESSLY APPROVED IN WRITING BY TWO AUTHORIZED ST REPRESENTATIVES, ST PRODUCTS ARE NOT RECOMMENDED, AUTHORIZED OR WARRANTED FOR USE IN MILITARY, AIR CRAFT, SPACE, LIFE SAVING, OR LIFE SUSTAINING APPLICATIONS, NOR IN PRODUCTS OR SYSTEMS WHERE FAILURE OR MALFUNCTION MAY RESULT IN PERSONAL INJURY, DEATH, OR SEVERE PROPERTY OR ENVIRONMENTAL DAMAGE. ST PRODUCTS WHICH ARE NOT SPECIFIED AS "AUTOMOTIVE GRADE" MAY ONLY BE USED IN AUTOMOTIVE APPLICATIONS AT USER'S OWN RISK.**

Resale of ST products with provisions different from the statements and/or technical features set forth in this document shall immediately void any warranty granted by ST for the ST product or service described herein and shall not create or extend in any manner whatsoever, any liability of ST.

ST and the ST logo are trademarks or registered trademarks of ST in various countries.

Information in this document supersedes and replaces all information previously supplied.

The ST logo is a registered trademark of STMicroelectronics. All other names are the property of their respective owners.

© 2012 STMicroelectronics - All rights reserved

STMicroelectronics group of companies

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Philippines - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America

[www.st.com](http://www.st.com)