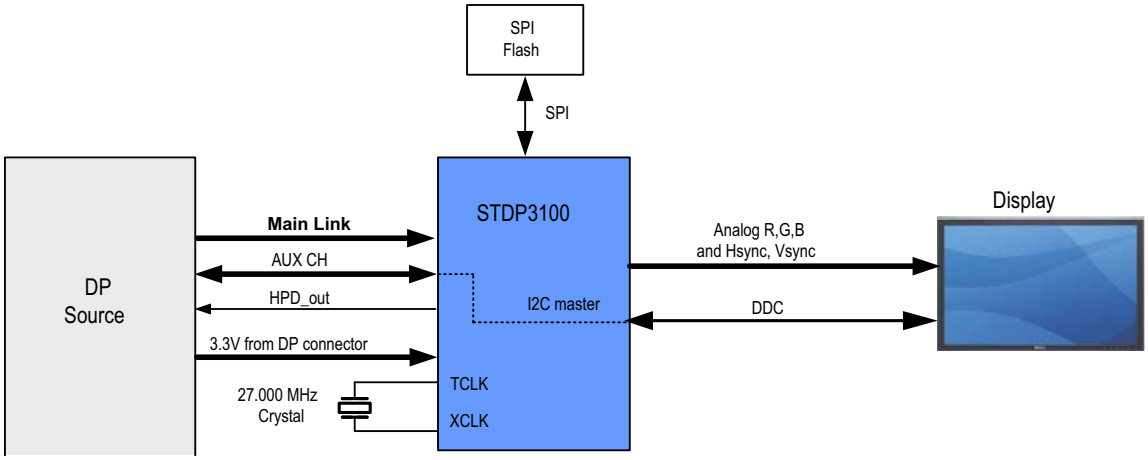
1. Description

STDP3100 is a DisplayPort to VGA signal format converter for interfacing next generation DisplayPort based PC and notebook computers with conventional VGA displays, such as CRT, LCD monitors, and projectors. DisplayPort offers a unified, scalable, and cost effective interface for embedded and external display applications. As desktop and notebook PCs are increasingly transitioning from conventional analog type interfaces to DisplayPort, STDP3100 facilitates the transition by offering seamless connectivity between new DisplayPort PC and notebooks and the installed base VGA monitors and projectors. STDP3100 is a highly integrated converter featuring a DisplayPort receiver, video DAC, clock form generator, test pattern generator, and sink detection block. In addition, STDP3100 includes EDID and MCCS pass-through features, forming a fully transparent operation between the PC and display. Active power consumption of this device is as low as 400mW, and thus it can be powered by the DisplayPort source when used in dongle application. The device has a built in sink detection feature that determines the active and standby state. The device enters into standby (low power) state whenever the VGA cable is disconnected and returns to normal operation when the cable is connected back.

STDP3100 supports video resolutions from VGA through WUXGA. The input DisplayPort interface consists of two main lanes, AUX channel, and HPD signal that maps directly to a standard DisplayPort connector via two layers PCB. The output interface consists of analog R, G, B video, Hsync, Vsync, and DDC signals. Analog video signal amplitude ranges from 0 to 700mV from a 10 bit video DAC with maximum sampling frequency of 162 MHz. The VGA output signal interface conforms to the VSIS standards with separate Hsync and Vsync control signals. The DDC_SDA and DDC_CLK signals are driven from an I2C master, which controls I2C traffic between the DisplayPort AUX channel and external slave device.

MegaChips offers STDP3100 designers kit with complete reference hardware and firmware.

Figure 1. System diagram



2. Benefits

- Production-proven DisplayPort receiver from the DisplayPort leader
- Comprehensive feature set for DisplayPort to VGA dongle and for notebook embedded application
- Proven interoperability with DisplayPort sources from all major graphics vendors
- Cost savings due to optimized BOM, low power, low EMI, and small form factor
- DisplayPort CTS compliant

3. Feature attributes

- Production-proven DisplayPort receiver from the DisplayPort leader
- Comprehensive feature set for DisplayPort to VGA dongle and for notebook embedded application
- Proven interoperability with DisplayPort sources from all major graphics vendors
- Cost savings due to optimized BOM, low power, low EMI, and small form factor
- DisplayPort CTS compliant
- DisplayPort 1.2a compliant receiver offering 5.4 Gbps bandwidth over 2 lanes
- Integrated triple 10-bit, 162 MHz video DAC for analog VGA signal output
- Supports up to 1080p, 1920 x 1200 reduced blanking video resolution
- EDID and MCCS pass-through from PC source to display
- Spread Spectrum (de-spreading) for EMI reduction
- Automatic sink detection
- Low power standby mode operation initiated based on sink detection status
- SPI interface with external Serial Flash for storing firmware and system configuration data for customization purposes
- Optional two-wire host interface for device configuration using external controller
- UART interface for chip debug and development purposes
- ISP over DP AUX channel
- General purpose I/O pins for system usage
- Powered from DisplayPort source
- 3.3 V IO, 1.2 V Core
- 64-pin LQFP (10 x 10 mm) package

4. Ordering information

Table 1. Order codes

Part number	Description
STDP3100-AB	64-pin LQFP (10 x 10 mm) lead free

5. Revision history

Table 2. Document revision history

Date	Revision	Changes
04-Nov-2008	A	Initial release.
15-Jan-2013	B	Updated all instances of DisplayPort 1.1a to DisplayPort 1.2a.
16-May-2014	C	Updated to comply with MegaChips documentation style/formatting.
15-Sep-2014	D	Updated footers and added copyright information to last page.

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