



**KEY FEATURES**

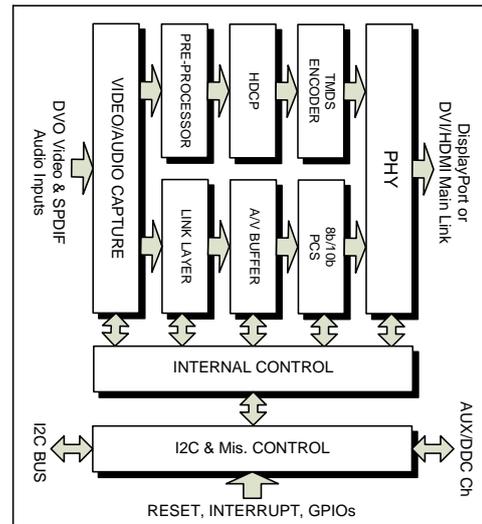
- Dual Output Modes: Direct drive DisplayPort Monitor, DVI Monitor, or DTV with HDMI input
- Auto Monitor type Detection through I2C or DisplayPort AUX channel
- Multiple Input Modes: SDR, DDR, ITU-R BT.656,
- Multiple Input Formats: RGB 6/8/10/12 bpc; YCbCr 422/444, 8/10 bit per component
- SPDIF Audio Input up to 8 channels, 192K Hz Sampling Rate
- Support IEC-60958 L-PCM or IEC-61937 Encoded/Compressed Audio Data Formats
- High Link Clock Rate: 2.7/1.62 Gbps in DisplayPort mode or up to 1.65 Gbps in DVI/HDMI mode
- Compliance with DisplayPort Physical Electrical Specification up to 2.7 Gbps
- Build Spread Spectrum on DisplayPort Physical Interface
- Compliance with TMDS Electrical Specification up to UXGA Resolution at 1.65 Gbps
- Support 4/2/1 lanes with Auto Lane Number Match and Link Clock Rate Configuration
- Programmable Driver Current and Pre-emphasis up to 4 levels
- Hot Plug/Unplug Detection through HPD pin
- Half Duplex Bi-directional AUX Channel for Link Services
- Secured Content Protection with HDCP on DVI/HDMI
- Embedded or Discrete serial flash key ROM
- 1.2V Core Power Supply, 3.3V I/O Power Supply, 100-pin TQFP RoHS Package
- Low power consumption, 600mW typical power at DisplayPort high-rate 2.7 Gbps
- Programmable on-chip spread-spectrum clock generation
- 5V tolerance for HPD, I2C, & CA\_DET#Control pins
- 0°C to 70°C Operating Temperature Range
- ESD Human Body Mode  $\geq 4$  kV, Compliant with JEDEC JESD22-A114-D standard

**APPLICATIONS**

- 3D Graphics Add-in Card
- All-in-one PC Motherboard
- External Digital Display for Notebook PC
- Notebook Docking Station

- Digital Set-Top-Box
- High Definition Media Player

**FUNCTIONAL BLOCK DIAGRAM**



**GENERAL DESCRIPTION**

The DisplayPort architecture and interface specification leverage matured technologies such as physical layer of PCI Express Bus, packet based transaction & quality of service of data communication, and advanced CMOS semiconductor process to address existing and future growth of digital display on PC & CE industries. The objective of DP501 DisplayPort transmitter product is to provide a scalable and interoperable digital display interface with optional content protection interface to address broad application in PC & CE devices.

The DP501 input port support versatile sources with various video and audio source formats from 3D graphics controllers, integrated north bridges and other multimedia content creation devices. The core engine of DP501 convert, packet, and serialize incoming media stream and output in either Displayport physical or TMDS signaling.

The DP501 support sink device hot plug/unplug by detection voltage level at hot plug input pin HPD. It also setup and configure main link services through secondary channel in either AUX or DDC channel for DP501 under DisplayPort mode or configure as DVI/HDMI mode respectively.

Rev.0

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