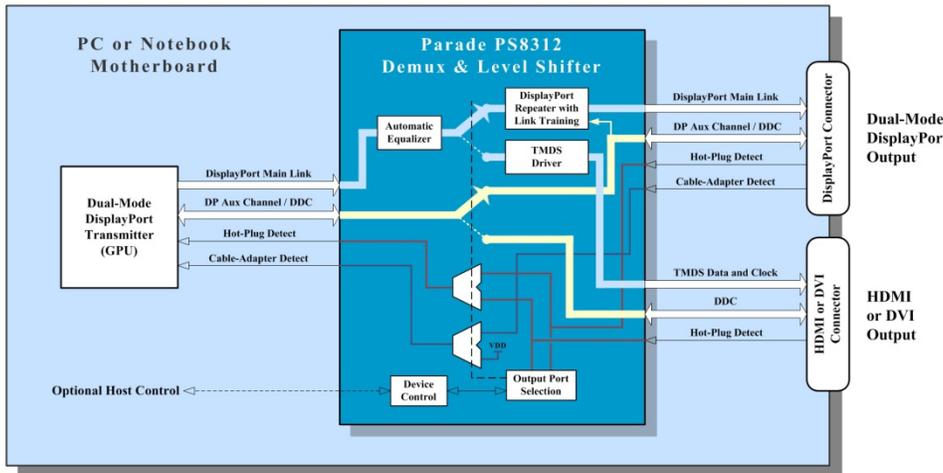




PS8312 DisplayPort™ Dual-Mode Demultiplexer with DP and TMS™ Outputs

Product Brief

PS8312



APPLICATIONS

- PC Motherboard / Graphics Card
- Docking Stations

GENERAL DESCRIPTION

The PS8312 DisplayPort Dual Mode Source 1:2 Demultiplexer accepts one DisplayPort input and provides one interface for a DisplayPort Dual Mode output, and another interface for a TMS output. The TMS output can directly support a DVI or HDMI interface and requires that the DisplayPort input device supports Dual Mode operation. The DisplayPort Dual Mode output also supports HDMI/DVI compatibility through the use of a down-stream, level-shifting cable

adapter (dongle) when the input DP Source is Dual Mode. The device optimizes signal integrity by equalizing the input signal and driving the DisplayPort output at the amplitude and pre-emphasis levels requested by the Sink during the Link Training process. For the TMS output port, an embedded level shifter converts the AC coupled TMS input signals to DC coupled HDMI or DVI output signals. Signal losses caused by the PCB traces between the DP source and PS8312 are removed by the device's self-adjusting input equalizer. Device operation and configuration can be controlled through pin settings or I2C bus control.

The PS8312 features optional automatic power management capability that powers down the device when no Sink devices are connected (no monitors plugged in). Upon a hot plug assertion (Sink device connected) the PS8312 will wake up. An automatic squelch function is also available which tri-states the output when no signals are detected at the input port.

The PS8312 implements automatic receiver equalization adjustment to compensate for PCB trace loss. This feature, together with the Auxiliary Channel link training operation, assures optimum signal integrity between the GPU Source and Display Sink system devices. This substantially increases overall system margin, facilitates the use of longer or marginal cables, and assures overall improved interoperability and reliability.

To support DP link training over the DP output port, the PS8312 implements an Auxiliary Channel (AUX CH) interception scheme to manage the PHY setting at the output port. The AUX CH interceptor in the PS8312 is a passive "listener" that intercepts the DP training information passing through the AUX CH channel. This intercepted data is used to adjust the lane count, output level, and pre-emphasis level of PS8312 DP output, and to manage the device's D3 power saving state.

KEY FEATURES

- Supports Dual Mode DisplayPort™ (DP) Demultiplexing to a Dual Mode DP and a TMS™ output
- Full HDMI™ or DVI interface support from the TMS output
- Compliant to VESA DisplayPort Standard version 1.1a for both 1.62 and 2.7 Gbps link rates.
- Compliant to VESA DisplayPort PHY Compliance Test Standard version 1.1.
- Compliant to HDMI 1.3a specification up to 2.25 Gbps
- Automatic receiver equalization adjustment to compensate for PCB and/or connector losses of the input signal
- Full link training support for 1, 2, or 4 lanes for the Dual Mode DP output
- Supports all 4 output amplitude and pre-emphasis levels for the Dual Mode DP output
- Source initiated power down control
- Extended features include automatic power down and automatic port switching
- Automatic squelch for fail-safe and power management
- Advanced TMS driver including EMI reduction and output pre-emphasis
- Low power consumption
- Local I2C control option
- Single 3.3 V power supply
- 56-pin QFN RoHS package
- 0° to 85 °C operating temperature range
- ESD: Human Body Mode to 8 kV

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Rev.0

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