

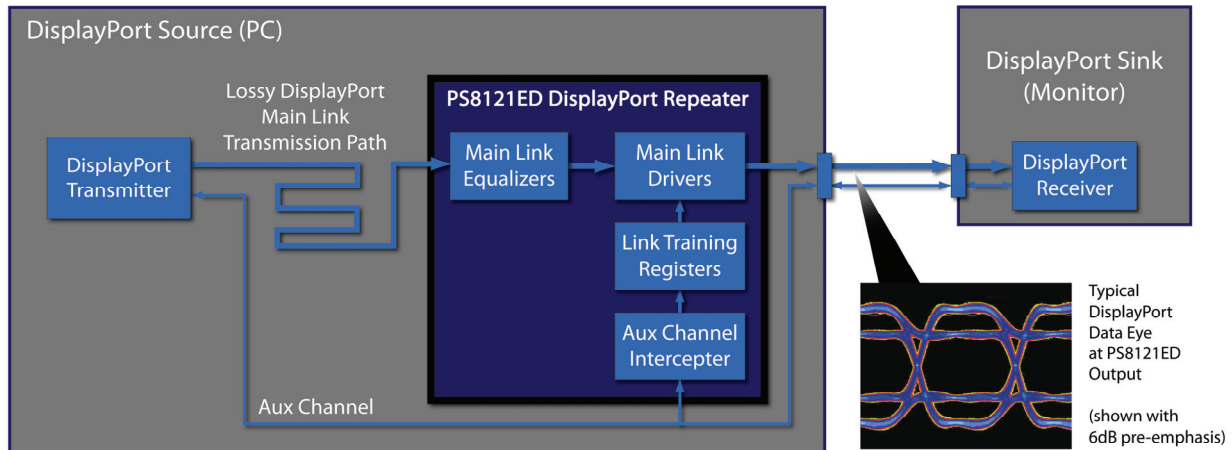


# PS8121ED DisplayPort™ Repeater

## DisplayPort Signal Conditioner for Source Outputs

### Product Brief

# PS8121ED



### KEY FEATURES

- Fully compliant to the VESA DisplayPort™ 1.1a Specification
- Serves as a repeater within a DisplayPort Dual Mode Source device or docking station
- Improves signal quality at the system DisplayPort output receptacle
- Programmable input equalizer compensates for PCB and/or internal connector losses
- Supports DisplayPort link training by adjusting output amplitude and pre-emphasis based on intercepted Aux Channel commands (patent pending)
- All four levels of output amplitude and pre-emphasis supported
- Supports 1, 2 or 4 lane operation at 1.62 or 2.7 Gbps link rate
- Low Intra-pair and Inter-pair skew
- Pin-selectable device configuration, or optional I2C control for full feature flexibility
- Single 3.3 V Power Supply
- 48-pin QFN RoHS Package
- 0°C to 85°C Operating Temperature Range
- ESD: Human Body Mode at 8 kV, Machine Mode at 400 V, and Charged Device Mode at 2 kV

### APPLICATIONS

- PC Motherboard / Graphics Card
- Docking Station
- 1-to-1 DP Repeater

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### GENERAL DESCRIPTION

PS8121ED is a 1-to-1 DisplayPort™ (DP) Repeater designed to be used in a DisplayPort Source device. In application, it is placed near the DisplayPort output receptacle to provide a low distortion DisplayPort output signal. The PS8121ED removes distortion from the internally distributed DisplayPort signal caused by system PCB traces and internal connectors. It can be used in a notebook docking station, for example, where the DisplayPort signal originating from within the notebook PC can become distorted as it passes through the docking station connector and extra PCB traces. It can also be used on a PC motherboards where long traces exist between the integrated graphics controller and DisplayPort receptacle. By removing distortion that would otherwise be passed through the DisplayPort output receptacle, system interoperability and standard compliance is greatly improved.

To remove signal distortion, the PS8121ED includes an advanced equalizer for each DP main link input. Equalizer performance can be optimized for a given system configuration. Received data is regenerated by the PS8121ED that serves as a clean signal source to drive the DP output receptacle.

To support DisplayPort link training, the PS8121ED includes a unique "Aux Channel Interceptor™" circuit. During link training between the Source and Sink systems, the PS8121ED monitors the DP Aux Channel and provides the main link signal amplitude and pre-emphasis requested by the DP sink (patent pending). All four levels of main link output amplitude are supported, as are all four levels of pre-emphasis. This also eliminates the requirement of the originating DP source transmitter to support multiple amplitude and pre-emphasis requirements, enabling simplified chip design. Lane count and link rate are also set through the Aux Channel interception.

The PS8121ED supports both DP and Dual-Mode Source device applications. A Cable Adapter (CA) Detect input is included for Dual-Mode detection.

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Rev. 0 Aug 2008