



KEY FEATURES

DisplayPort (DP) Source Repeater

- Compliant with DisplayPort 1.1 specification for both 1.62 and 2.7 Gbps
- Programmable receiving equalization to compensate PCB and/or connector losses
- Integrated 50-ohm termination
- Low Intra-pair and Inter-pair skews
- Support full DisplayPort link training
- Support DisplayPort all 4 levels of output and all 4 levels of pre-emphasis
- Support Dual Mode DP & HDMI/DVI Source
- Local I2C control for flexible feature selection and host interface

HDMI/DVI Source Level Shifter

- Compliant with HDMI 1.3a specification up to 2.25 Gbps
- Programmable receiver equalization to compensate PCB and/or connector losses
- Integrated termination of 50-ohm
- Low Intra-pair and Inter-pair skews
- Built-in optional DDC active buffer and passive switch with 5 V tolerance
- Support HDMI & DVI source selection for HDMI cable adaptor or DVI cable adaptor application for Dual Mode DisplayPort Source
- Local I2C Control for flexible feature selection and host interface

General

- Single 3.3 V Power Supply, 48-pin QFN RoHS Package
- 0°C to 70°C Operating Temperature Range
- AC Coupling Receiving Capable
- ESD: Human Body Mode at 8 kV, Machine Mode at 600 V, and Charged Device Mode at 2 kV

APPLICATIONS

- PC Motherboard / Graphics card
- Docking Station
- DP to HDMI/DVI cable adaptor
- Digital Set-Top-Box
- 1-to-1 DP Repeater

GENERAL DESCRIPTION

PS8121E integrates 1-to-1 DP Repeater & HDMI/DVI Level Shifter to simplify system level design and reduce system level cost for applications requiring single DP or HDMI/DVI input and single output device in personal computing system and other emerging digital appliances.

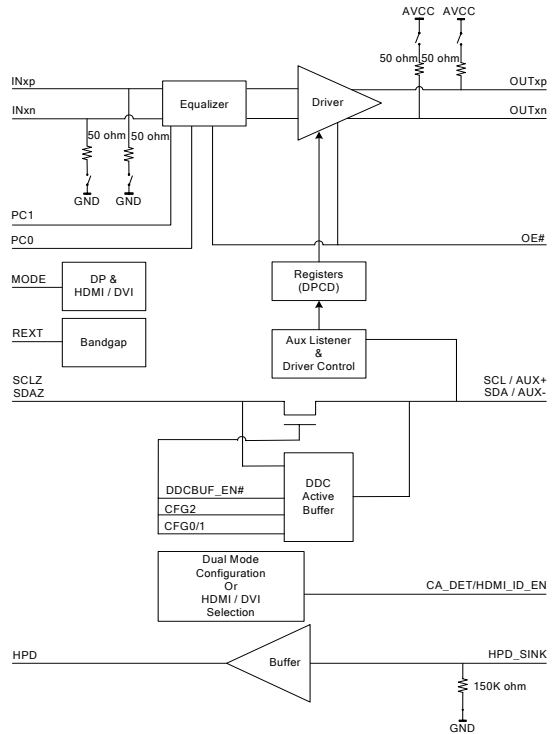
PS8121E can be configured as DP source repeater or HDMI/DVI source level shifter by MODE pin. Different level receiving equalizations can be set either by pin or by local control I2C to compensate different PCB traces losses.

A precision resistor is connected from REXT pin to ground for output swing control. Input and output are at high impedance when OE# is set at logic high.

Rev.0

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FUNCTIONAL BLOCK DIAGRAM



DP Source Repeater (DP only source or Dual Mode DP source)

For DP only source repeater, PS8121E AUX Channel is a passive “listener” to intercept the DP training information of DP AUX channel and to adjust the lane count, output levels and pre-emphasis levels accordingly. PS8121E can also program the receiving equalization to maintain high quality signal repeating. PS8121E does not involve in any handshaking interactions of the AUX channel. It is purely a relay of the main link data with reshaped high-quality signaling.

For Dual Mode DP & HDMI/DVI source repeater, the CA_DET pin is used to select either DP signaling or AC-coupled TMDs signaling per VESA DisplayPort InterOp Guidelines. The output driver is a CML driver with 50 ohm source terminations.

HDMI/DVI Source Level Shifter

The DDC channel can be enabled by DDCBUF_EN# pin and can be configured either as DDC passive switch or DDC active buffer by CFG2 pin. The configuration selection pins CFG0/CFG1 provide the flexibility of adjusting the output voltage level of SCLZ/SDAZ to optimize noise margins.

The HDMI_ID_EN pin is used to configure PS8121E either as HDMI source level shifter for HDMI cable adaptor or as DVI source level shifter for DVI cable adaptor. In Pin Control Mode, if pin HDMI_ID_EN = HIGH, 16 bytes HDMI ID data could be read by source device from PS8121E internal ROM at I2C address 0x80h, and then source device would send HDMI signal; If pin HDMI_ID_EN = LOW, source device will send DVI signal.

Date of release: Dec. 2007

530 Lakeside Dr. Suite 230, Sunnyvale, CA 94085, U.S.A.
TEL: 408-329-5540 FAX: 408-329-5541

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