Parade Technologies

DisplayPort™ & HDMI™ / DVI™ DE-MULTIPLEXER

PS8122

KEY FEATURES

DisplayPort (DP) Source De-multiplexer

- **Compliant with DisplayPort 1.1 specification for 1.62 and 2.7 Gbps**
- **Programmable receiver equalization to compensate PCB and/or connector losses**
- **Integrated termination of 50-ohm**
- **Low Intra-pair and Inter-pair skews**
- **Support DisplayPort all 4 levels of output and all 4 levels of pre-emphasis**
- **Support Mixed HDMI/DVI and DisplayPort Source Demultiplexing**
- **Local I2C control for flexible feature selection and host interface**

HDMI/DVI Source De-multiplexer

- **Compliant with HDMI 1.3a specification up to 2.25 Gbps**
- **Programmable equalization and transmitter pre-emphasis to compensate PCB and/or connector losses**
- **Integrated termination of 50-ohm +/-10%**
- **Low Intra-pair and Inter-pair skews**
- **Built-in DDC active buffer with 5 V tolerance**
- **Local I2C Control for flexible feature selection and host interface**

General

- **Single 3.3 V Power Supply**
- **48-pin 7x7mm^2 QFN RoHS Package**
- **0°C to 70°C Operating Temperature Range**
- **Direct DC or AC Coupling Receiving Capable**
- **ESD: Human Body Mode at 8 kV, Machine Mode at 600 V, and Charged Device Mode at 3 kV**
- **Typical 500 mW power consumption**

APPLICATIONS

- **PC Motherboard / Graphics Card**
- **Docking Station**
- **Digital Set-Top-Box**
- **1-to-2 DP & HDMI/DVI Switch Box**

GENERAL DESCRIPTION

PS8122 integrates 1-to-2 DP & HDMI/DVI De-multiplexer to simplify system level design and reduce system level cost for applications requiring single DP or HDMI/DVI input and dual outputs device in personal computing system and other emerging digital appliances.

PS8122 supports two control modes: simplified Pin Control Mode and local I2C Control Mode. Using I2C Control Mode, one can access all the registers, configure the chip and program the features.

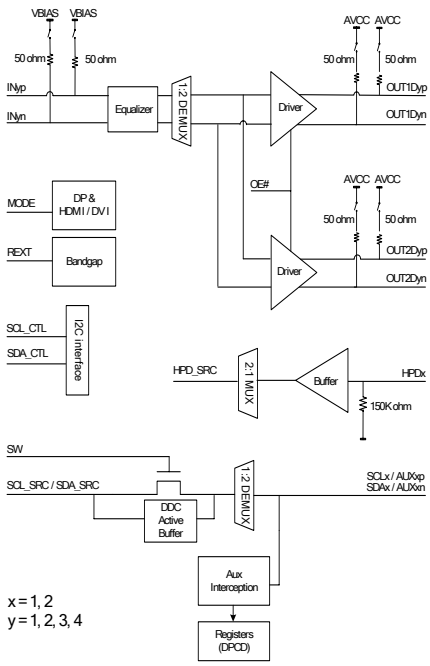
A precision resistor is connected from REXT pin to ground for output swing control and for termination resistor calibration. The output is at high impedance when OE# is set at logic high.

Different levels of receiver equalization and transmitter pre-emphasis can be set in I2C Control Mode to compensate different PCB trace losses.

A single pin MODE is used to configure PS8122 as a DP de-multiplexer or HDMI/DVI de-multiplexer.

Rev.0

FUNCTIONAL BLOCK DIAGRAM



DP Source De-multiplexer (DP source or Dual Mode DP source)

DP source de-multiplexer can be applied for DP only source or Dual Mode DP source. Receiver inputs are terminated with integrated active 50 ohm pull-down resistors connected to GND.

For DP only source de-multiplexer, PS8122 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. At the same time, PS8122 can program the receiving equalization to maintain high quality signal repeating. PS8122 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 signal.

For Dual Mode DP & HDMI/DVI de-multiplexer, register CONFIG [7:6] is used to select either DP source repeater or AC-coupled TMDS source level shifter per VESA DisplayPort InterOp Guidelines on each output port. For AC-coupled TMDS source level shifter, the DDC active buffer can be enabled to isolate DDC loading capacitance.

HDMI/DVI Source De-multiplexer

Receiver inputs are terminated with integrated active 50 ohm resistors. The DDC channel is a bidirectional passive switch in default and 5 V tolerant. DDC active buffer can be enabled to reduce DDC loading capacitance in I2C Control Mode. The DDC active buffer can also function as a level shifter. Programmable receiving equalization and driver pre-emphasis help to improve the output quality and help to pass the HDMI compliance testing.

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