Enhanced Performance HDMI®/DVI Level Shifter with Inverting HPD

PTN3360ABS

Archived

This page contains information on a product that is no longer manufactured (discontinued). Specifications and information herein are available for historical reference only.

Last Updated: Aug 4, 2026

The PTN3360A is a high-speed level shifter device which converts four lanes of low-swing AC-coupled differential input signals to DVI v1.0 and HDMI® v1.3a compliant open-drain current-steering differential output signals, up to 2.5 Gbit/s per lane. Each of these lanes provides a level-shifting differential buffer to translate from low-swing AC-coupled differential signaling on the source side, to TMDS-type DC-coupled differential current-mode signaling terminated into 50 to 3.3 V on the sink side. Additionally, the PTN3360A provides a single-ended active buffer for voltage translation of the HPD signal from 5 V on the sink side to 1.1 V on the source side and provides a channel for level shifting of the DDC channel (consisting of a clock and a data line) between 3.3 V source-side and 5 V sink-side. The DDC channel is implemented using pass-gate technology providing level shifting as well as disablement (isolation between source and sink) of the clock and data lines.

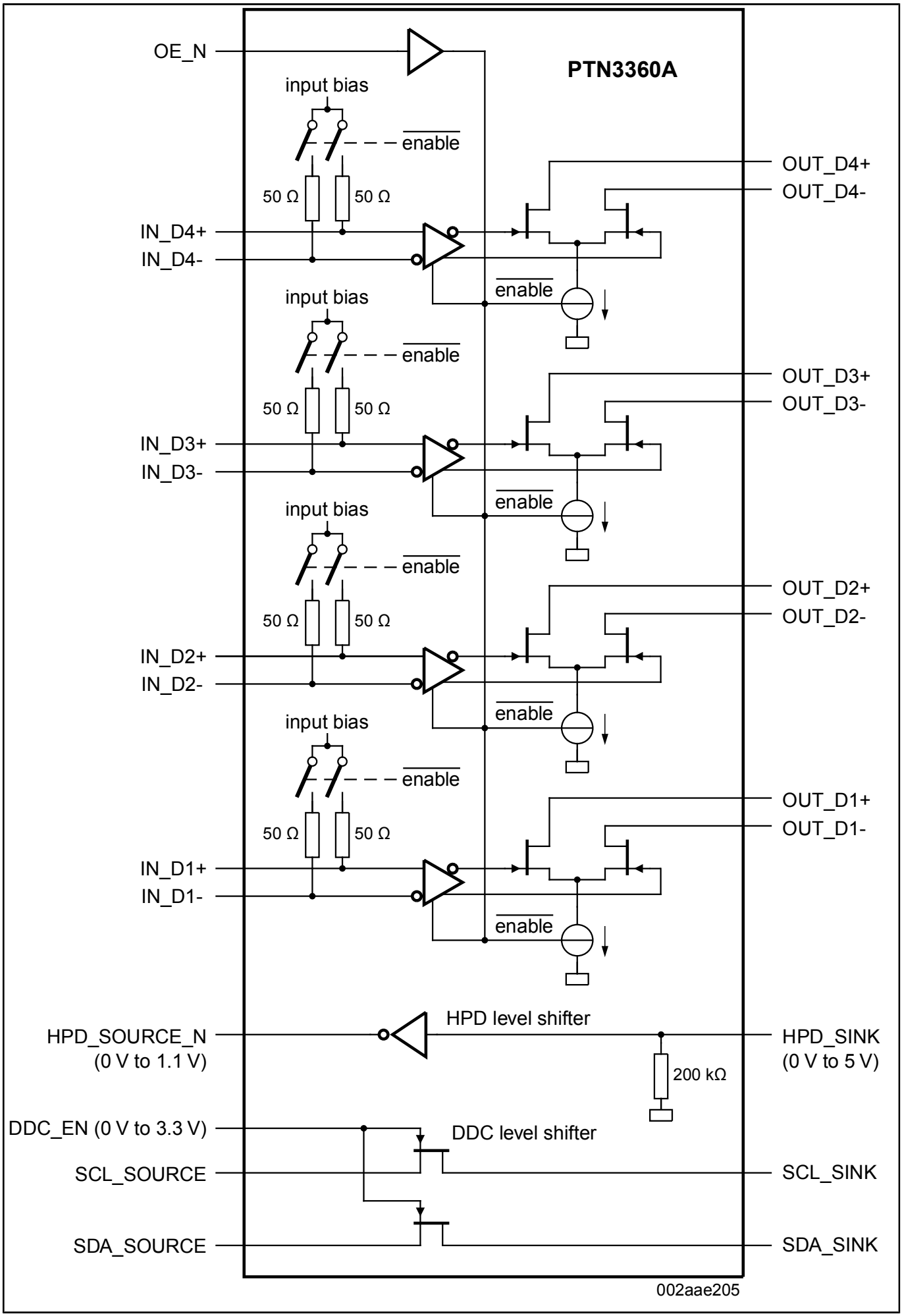
The low-swing AC-coupled differential input signals to the PTN3360A typically come from a display source with multi-mode I/O, which supports multiple display standards, e.g., DisplayPort, HDMI and DVI. While the input differential signals are configured to carry DVI or HDMI coded data, they do not comply with the electrical requirements of the DVI v1.0 or HDMI v1.3a specification. By using PTN3360A, chip set vendors are able to implement such reconfigurable I/Os on multi-mode display source devices, allowing the support of multiple display standards while keeping the number of chip set I/O pins low.

The PTN3360A main high-speed differential lanes feature low-swing self-biasing differential inputs which are compliant to the electrical specifications of DisplayPort Standard v1.1and/or PCI Express Standard v1.1, and open-drain current-steering differential outputs compliant to DVI v1.0 and HDMI v1.3a electrical specifications. The I²C-bus channel level-translates the DDC signals between 3.3 V (source) and 5.0 V (sink).

The PTN3360A is a fully featured HDMI as well as DVI level shifter. It is functionally equivalent to PTN3300A but provides higher speed performance and higher ESD robustness. The PTN3360A is also equivalent to PTN3360B with the exception that PTN3360A provides inverting level shifting on the HPD channel.

PTN3360A is powered from a single 3.3 V power supply consuming a small amount of power (120 mW typ.) and is offered in a 48-terminal HVQFN48 package.

PTN3360A Block Diagram


PTN3360A
OE_N
input bias
enable
50 Ω
50 Ω
IN_D4+
IN_D4-
OUT_D4+
OUT_D4-
IN_D3+
IN_D3-
OUT_D3+
OUT_D3-
IN_D2+
IN_D2-
OUT_D2+
OUT_D2-
IN_D1+
IN_D1-
OUT_D1+
OUT_D1-
HPD level shifter
HPD_SOURCE_N
(0 V to 1.1 V)
HPD_SINK
(0 V to 5 V)
200 kΩ
DDC_EN (0 V to 3.3 V)
DDC level shifter
SCL_SOURCE
SCL_SINK
SDA_SOURCE
SDA_SINK
002aae205

View additional information for Enhanced Performance HDMI®/DVI Level Shifter with Inverting HPD.

Note: The information on this document is subject to change without notice.

www.nxp.com
NXP and the NXP logo are trademarks of NXP B.V. All other product or service names are the property of their respective owners. The related technology may be protected by any or all of patents, copyrights, designs and trade secrets. All rights reserved. © 2026 NXP B.V.