

PI3HDX12411

12Gbps 4-Channel HDMI 2.1 Hybrid ReDriver with DDC Listener

Description

The PI3HDX12411 is a 3.3V quad-channel hybrid ReDriver™ supporting HDMI 2.1 up to 12Gbps and back compatible with HDMI1.4/2.0. For HDMI1.4 application, the ReDriver is configured as a limited ReDriver, where the ReDriver differential output swing is defined by the ReDriver swing setting, to ensure the HDMI compliant levels at the receptacle. For HDMI 2.0/2.1, the ReDriver is configured as a linear ReDriver, where the ReDriver differential output swing is directly proportional to the received signal, to ensure the ReDriver is function as a trace canceller. The linear ReDriver mode is also inherently transparent to link training signals.

The PI3HDX12411 input signals could be either AC or DC coupled, which can eliminate the need for additional level shifter components from the data channels.

The PI3HDX12411 is equipped with I²C programmability for operation mode, channel power down, flat gain, equalization, and output swing settings. It supports 5V to 3.3V level shifting for HDMI hot plug detection pins.

The device can support dual-mode DisplayPort (DP++) level shift application for HDMI TMDS output signals.

Application(s)

- Laptops and Desktop PCs
- Gaming Consoles
- DTV and Set-top-Boxes
- Docking Station and Peripherals

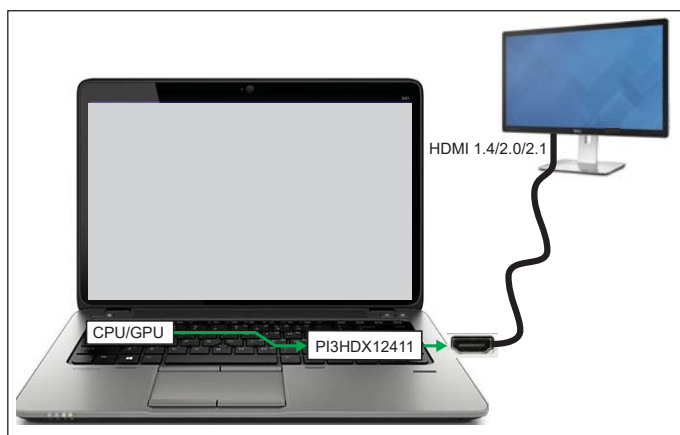


Figure 1. HDMI 2.1 ReDriver or Level Shifter

Features

- Supports Up to 12Gbps Signals with Non-Blocking Linear ReDriver via I²C or Pin Control Settings
- Compliant to HDMI 1.4/2.0/2.1 and DisplayPort Dual-Mode V1.1 Standard
- Wide EQ Tuning Range from 5.0dB to 13dB at 6GHz
- Hybrid Redriving Mode to Ensure HDMI Compliant Levels at the Receptacle
- Integrated DDC Listener for HDMI FRL/TMDS and Speed Detection
- Auto Selects the Following Settings for Power and SI Optimization
 - TX Slew Rate
 - TX Impedance
 - EQ/FG/SW/N1SW Setting
- Supports Back Current Leakage Free (Ioff)
- Hot Plug Detection with 5V to 3.3V or 1.8V Level Shifting
- Pin Mode or I²C Selectable Device Programming
- I²C Slave Supporting Fast-Mode Plus Transfer Up to 1Mbps
- Global Settings
 - Equalization, Flat Gain, Output Swing (SW), Output -1dB linearity Swing (N1SW) and Slew Rate
 - Output Termination and Operation Mode
 - Lane Swap
- Independent Settings
 - Force Individual Channel to Power Down
- Far-End Receiver Detection for TX DC Coupling Mode
- 800mW Typical Power Dissipation with a Maximus Output Swing
- Single 3.3V (±5%) Power Supply
- Operating Temperature Range: -40°C to +85°C
- Packaging (Pb-free & Green):
 - 46-pin, 4.5mm x6.5mm, WQFN(ZL)
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](mailto:contact@diodes.com) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>

Ordering Information

Orderable Part Number	Package Code	Package Description
PI3HDX12411ZLEX	ZL	46-Contact, W-QFN4565-46 (WQFN)

Notes:

- E = Pb-free and Green
- X suffix = Tape/Reel

Notes:

1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.