

**PI3HDX12311**

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

## Description

The PI3HDX12311 is a 3.3V quad-channel Hybrid ReDriver™ supporting HDMI 2.1 Fixed Rate Link (FRL) up to 12Gbps, TMDS up to 6Gbps. 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 HDMI2.0 and HDMI 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.

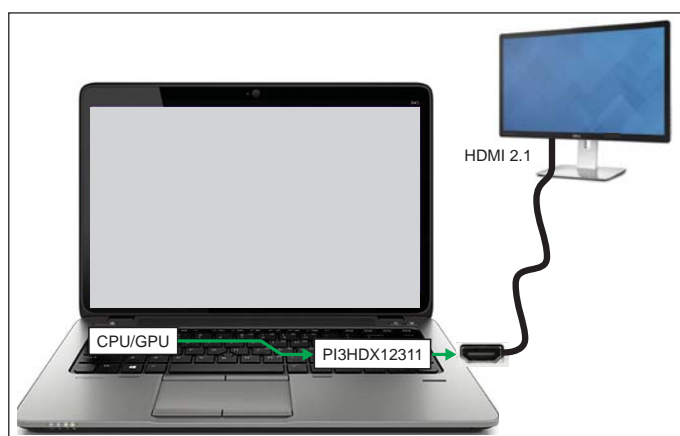
The PI3HDX12311 ReDriver input and outputs signals could be either AC or DC coupled or mixed, which can eliminate the need for additional level shifter components from the data channels.

The PI3HDX12311 is equipped with pin mode control for operation mode, Equalization, Flat Gain, Output Swing (SW), and Output -1dB linearity Swing (N1SW).

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 Commercial Display Panel
- Docking Station and Peripherals
- KVM and HDMI Active Cable



**Figure 1. HDMI 2.1 ReDriver or Level Shifter**

## Features

- Supports Up to 12Gbps Signals with Non-Blocking Linear ReDriver via Pin Control Settings
- Compliant to HDMI 1.4/2.0/2.1 and DisplayPort Dual-Mode V1.1 Standard
- Wide EQ Tuning Range from 5.6dB to 12.7dB 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
  - Pre-Defined EQ/SW/N1SW/FG
- Supports Back Current Leakage Free (Ioff)
- Far-end Receiver Detection for TX DC Coupling Mode
- 726mW Typical Power Dissipation with a Maximus Output Swing
- Single 3.3V (±5%) Power Supply
- Operating Temperature Range: -40°C to +70°C
- Packaging (Pb-free & Green):
  - Tiny 32-pin X1QFN, 2.85 x 4.5 mm (0.4 mm pitch)
- 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](https://www.diodes.com/quality/product-definitions/) or your local Diodes representative.

## Ordering Information

Orderable Part Number	Package Code	Package Description
PI3HDX12311XEAEX	XEA	32-contact, X1-QFN2845-32

### 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.