A Product Line of
Diodes Incorporated

PI3HDX6311

6Gbps 4-Channel HDMI 2.0 Hybrid ReDriver with DDC Listener

Description

The PI3HDX6311 is a 4-differential channel ReDriver™ that supports multiple data rates. This device offers programmable equalization, output swing, and flat gain through pin strapping. With its ability to reduce inter-symbol interference, the PI3HDX6311 optimizes performance over a range of physical mediums.

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, 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 PI3HDX6311 is transparent to link training signals, and its input and output signals can be AC or DC-coupled or mixed, eliminating the need for additional level shifter components for data channels. The integrated equalization circuitry provides signal integrity flexibility before the ReDriver, while the integrated linear amplifier/buffer circuitry offers flexibility after the ReDriver. This device can also support HDMI2.0 compliant output signals for dual-mode DisplayPort level shift applications.

Application(s)

- Laptops and Desktop PCs
- Gaming Consoles
- DTV and Commercial Display Panel
- Docking Station and Peripherals
- KVM and HDMI Active Cable

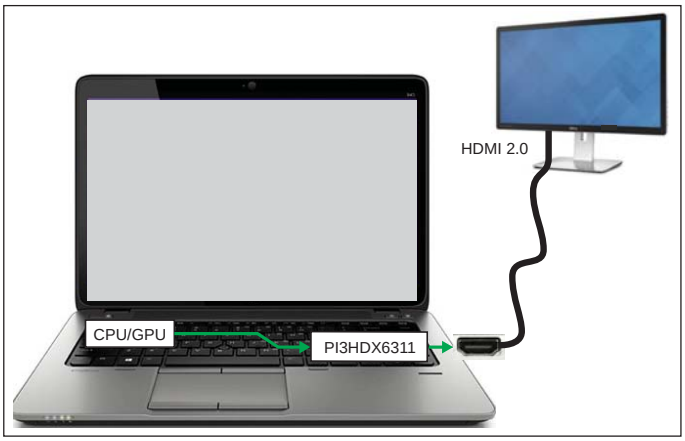

Figure 1. HDMI 2.0 ReDriver or Level Shifter

Features

- Supports Up to 6Gbps Signals with Non-Blocking Linear ReDriver via Pin Control Settings
- Compliant to HDMI1.4/2.0 and DisplayPort Dual-Mode V1.1 Standard
- Wide EQ Tuning Range from 2.2dB to 8.3dB at 3GHz
- Hybrid Redriving Mode to Ensure HDMI Compliant Levels at the Receptacle
- Transparent to Link Training, Rate, and Coding
- Supports Back Current Leakage Free (Ioff)
- Integrated DDC Listener for HDMI 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
- Far-end Receiver Detection for TX DC Coupling Mode
- 726mW Typical Power Dissipation with a Maximus Output Swing
- Supply Voltage: 3.3V ± 0.3V
- 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 or your local Diodes representative. https://www.diodes.com/quality/product-definitions/

Ordering Information

Orderable Part Number	Package Code	Package Description
PI3HDX6311XEAEX	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.