3.3V, Quad-Channel, Hybrid ReDrivers from Diodes Incorporated Enable HDMI 2.1 Signal Integrity for High-Resolution Video Transmission

Plano, Texas – August 5, 2025 – Diodes Incorporated (Nasdaq: DIOD) today introduces two 3.3V, quad-channel, hybrid ReDrivers™ with integrated display data channel (DDC) listeners designed to enhance signal integrity for HDMI applications and simplify system designs. The PI3HDX12311 caters to high bandwidth applications up to 12Gbps for HDMI 2.1 fixed rate link (FRL) and transition-minimized differential signaling (TMDS) up to 6Gbps. The PI3HDX6311 supports HDMI 2.0 at 6Gbps. The devices also support DisplayPort™ Dual-Mode (DP++) V1.1 level shifting.

The products act as an intermediary between a source (like a CPU or GPU) and a sink (like a display), compensating for signal degradation over transmission lines. The devices are suitable for applications in laptop and desktop PCs, docking stations, peripheral devices, gaming consoles, DTV and commercial display panels, and HDMI active cables.

Both are hybrid devices that operate in either limited or linear mode. For HDMI 1.4 applications, the devices operate as limited ReDrivers, where the differential output swing is pre-defined by the swing setting to ensure HDMI-compliant levels at the receptacle. In contrast, for HDMI 2.0 and 2.1 applications, they function as linear ReDrivers, where the output swing is directly proportional to the received signal, effectively acting as a trace canceller. This linear mode is inherently transparent to the link training signals, and for the PI3HDX12311, enables 8K DTV video resolution and data rates up to 48Gbps (12Gbps per channel).

The devices allow for AC or DC coupling of the input and output signals, or a mixture of both, with short-circuit detection in DC coupled mode. Both devices also utilize pin-strapping control for operation mode, equalization, flat-gain, output swing, and output -1dB linearity swing. The devices share features like auto selection of TX settings, I_{OFF} support, and far-end receiver detection.

To minimize power consumption, the PI3HDX12311 and PI3HDX6311 monitor the hot-plug-detect (HPD) pin in the connector to control power consumption and enter a low-power state if the HPD is low for more than 2ms. Their DDC listeners function similarly by snooping the HDMI Forum Vendor Specific Data Block (HF-VSDB) and monitoring the same Status and Control Data Channel Structure (SCDCS) offset registers.

The PI3HDX12311 and PI3HDX6311 are available in the tiny 32-pin X1-QFN2845 package, occupying a 2.85mm x 4.5mm PCB area, and operate across the -40°C to +70°C temperature range with 726mW (typ.) power dissipation. The hybrid ReDrivers are available at $0.99 [PI3HDX12311] and $0.77 [PI3HDX6311] in 3,500-piece quantities.

About Diodes Incorporated
Diodes Incorporated (Nasdaq: DIOD), a Standard and Poor's SmallCap 600 and Russell 3000 Index company, delivers high-quality semiconductor products to the world's leading companies in the automotive, industrial, computing, consumer electronics, and communications markets. We leverage our expanded product portfolio of analog and discrete power solutions combined with leading-edge packaging technology to meet customers' needs. Our broad range of application-specific products and solutions-focused sales, coupled with global operations including engineering, testing, manufacturing, and customer service, enable us to be a premier provider for high-volume, high-growth markets. For more information, visit www.diodes.com.

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