



# New Product Announcement

## PI3DPX8121A

### 13.5Gbps, eDP 1.4/DP 2.1, 2-to-1 Active/Linear ReDriver Mux Supports Embedded DP Panels with Separate GPU

The PI3DPX8121A is a four-channel 2-to-1 active mux switch whose 13.5Gbps data rate supports 4-lane eDP 1.4/DP 1.4 and the new DP 2.1 standards. It also switches the AUX and HPD sideband signals.

To compensate the insertion loss along the channel connection, its maximum equalizer gain controls are +10.2dB for DP 2.1 and +7.6dB for eDP 1.4/DP 1.4.

The PI3DPX8121A's non-blocking mode supports the Link Training Transparent PHY Repeater (LTPR) data path type. It optimizes the overall channel link adjustment conducted by the system transmitter and receiver, improving the overall signal integrity.

Continuous Time Linear Equalization (CTLE) is implemented at the ReDriver™ inputs, reducing ISI jitter and compensating channel loss. Programmable flat-gain and adjustable linearity aid in opening the eye diagram.

With a supply voltage of 3.3V, the device operates within the -40°C to +85°C temperature range.

The PI3DPX8121A is available in the W-QFN5090-60 (5mm x 9mm, 0.4mm pitch) (ZL60) package.

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### The DIODES Advantage

The PI3DPX8121A 2:1 active mux improves signal integrity of high-speed eDP 1.4 and DP 2.1 UHBR13.5 signals.

- **Up to 13.5Gbps Data Rate on Each Channel with Aggregated 54Gbps Bandwidth**  
Provides full support for eDP 1.4 and DisplayPort™ 2.1 (UHBR13.5)
- **2-to-1 Active Mux Configuration, Including AUX and HPD Signals, Set by Pin Strapping**  
Simplifies PCB layout and reduces BOM cost
- **Selectable Quad-Level Equalizer Gain, Flat Gain, and Output Swing Linearity Controlled by Pin Strap**  
Extends PCB trace lengths while reducing signal latency
- **Transparent and Ultra-Low Latency Linear ReDriver Channels**  
Improves signal integrity and system-compatibility designs

### Applications

- Laptop and desktop PCs
- Gaming laptops
- Workstation and server systems
- Docking, KVM, and PC peripherals
- Display monitors

### Typical Application Circuit



### DisplayPort 2.1 Mux/DeMux ReDriver Portfolio

| Part Number                 | Operating Voltage | Channels | Protocols       | Data Rate | Mux Config | AUX/HPD Mux | Max Output Swing | Programming Interface | Operating Temperature | Package              |
|-----------------------------|-------------------|----------|-----------------|-----------|------------|-------------|------------------|-----------------------|-----------------------|----------------------|
|                             | V                 |          |                 | Gbps      |            |             | mV               |                       | °C                    |                      |
| <a href="#">PI3DPX8121A</a> | 3.3               | 4        | DP 2.1, eDP 1.4 | 13.5      | 2:1 Mux    | Yes         | 1,200            | Pin Strap             | -40 to +85            | W-QFN5090-60 (ZL60)  |
| <a href="#">PI3DPX8121</a>  | 3.3               | 4        | DP 2.1          | 13.5      | 2:1 Mux    | No          | 1,200            | Pin Strap             | -40 to +85            | W-QFN3060-40 (ZLD40) |
| <a href="#">PI3DPX8112</a>  | 3.3               | 4        | DP 2.1          | 13.5      | 1:2 Demux  | No          | 1,200            | Pin Strap             | -40 to +85            | W-QFN3060-40 (ZLD40) |

### Ordering Information

| Orderable Part Number           | Compliance (Only Automotive Supports PPAP) | Package                          | Package Code | Moisture Sensitivity | Packing  |                 |
|---------------------------------|--|----------------------------------|--------------|----------------------|----------|-----------------|
|                                 |  |                                  |              |                      | Quantity | Carrier         |
| <a href="#">PI3DPX8121AZLEX</a> | <a href="#">Standard</a>                   | W-QFN5090-60 (5mm x 9mm x 0.8mm) | ZL60         | MSL-1                | 3,500    | 13" Tape & Reel |