

# PI3DBS12412A

## 3.3V, 10-12Gbps 2-Lane 2:1 Mux/De-Mux Switch

### Features

- 4 Differential Channel, 2:1 Mux/DeMux
- Up to 12Gbps data rate for SAS 3.0 Application
- Compatible with Thunderbolt signaling, 10.3125Gbps
- 10Gbps Ethernet, USB 3.1
- Bi-directional operation
- 3dB Bandwidth: 11.3 GHz
- Low Bit-to-Bit Skew, 1ps typ
- Low channel-to-channel skew, 7ps typ
- Low insertion loss:
  - 1.4dB@5 GHz, -1.5dB@6 GHz
- Return loss:
  - 19.3dB@5 GHz, -17.3dB@6 GHz
- Low Crosstalk: -30.5dB@6 GHz
- Low Off Isolation: -17.1dB@6 GHz
- Low power consumption -400µA typ
- Supply Voltage 3.3V
- Industrial Temperature Range: -40oC to 85oC
- ESD – 2KV Human Body Model (HBM)
- Packaging (Pb-free & Green):
  - 42-contact, TQFN (ZH42), 3.5x9mm
  - 40-contact, TQFN (ZL40), 3x6mm

### Ordering Information

Part Number	Package	Description
PI3DBS12412AZHEX	ZH	42-Contact, Very Thin Quad Flat No-Lead (TQFN)
PI3DBS12412AZLEX	ZL	40-Contact, 3x6mm (TQFN)

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

### Description

The PI3DBS12412A is an 8 to 4 differential channel multiplexer/demultiplexer switch. This solution can switch multiple signal types up to data rate of 12Gbps. Using a unique design technique, Diodes has been able to minimize the impedance of the switch such that the attenuation observed through the switch is minimal. The unique design technique also offers a layout targeted for Thunderbolt & SAS 3.0 signals, which minimizes the channel to channel skew as well as channel to channel crosstalk as required by high speed signals.

### Applications

Routing high speed differential signals such as Thunderbolt, 10 Gigabit Ethernet, PCI-Express 3.0, SAS 3.0, and USB 3.1.

### Block Diagram

