



New Product Announcement

PI3USB3031

6.5GHz Double-Pole-Triple-Throw Mux/DeMux with OVT for USB 2.0 and MHL Switching in Portable Applications

The PI3USB3031 is a double-pole-triple-throw multiplexer/demultiplexer supporting differential dual- and single-ended channel switching in high-performance PC and smartphone applications.

With its 6.5GHz bandwidth and low 50ps propagation delay, the PI3USB3031 ensures excellent signal integrity with full eye diagram opening. It passes USB 2.0, MHL (Mobile High-Definition Link), and Mobility DisplayPort™ (MyDP) differential signals. It also supports 2-channel, 1:3 mux functions for single-ended signal applications.

The PI3USB3031 boasts a low 28μA current consumption, a wide supply voltage range of 1.8V to 5.5V, and supports 1.8V logic on control pins.

In power-down mode, it minimizes its leakage current and disconnects the data channels. The I/O pins can withstand Overvoltage Tolerance (OVT) of up to 5.5V without external components. This enables the PI3USB3031 to provide a robust USB 2.0 port solution.

The PI3USB3031 is available in the tiny W-QFN1818-12 and X2-QFN1616-12 packages.



The DIODES Advantage

The PI3USB3031, with its high bandwidth and low propagation delays, supports the multiplexing of one USB 2.0 input to three USB 2.0 signals.

- **Wide 6.5GHz Bandwidth**
Reduces high signal frequency attenuation of USB 2.0 and MHL signals, maintaining excellent signal integrity and maximizing eye diagram
- **Double-Pole-Triple-Throw Multiplexer/Demultiplexer**
Provides cost effective 3:1 multiplexing of USB 2.0 paths or two single-ended channels
- **Low On-Capacitance**
Reduces signal delay and distortion when high-frequency signals pass through a switch or multiplexer
- **Low 28μA Current Consumption**
Enables low battery current draw in portable systems
- **Power-Off State with Minimal Leakage Current**
Improves reliability and provides a safe solution for circuit design needs

Applications

- Smartphones
- USB-C® applications
- Tablets
- PCs
- Servers
- Networking systems

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The diagram illustrates the PI3USB3031 chip's connections. On the left, a USB Connector provides VBUS, D+, D-, ID, and GND signals. A Battery Charger provides V_{BAT}. The chip, labeled PI3USB3031, has VCC and GND pins. It features two USB 2.0 ports (USB1 and USB2) and two MHL ports. Each USB port has USB_D+ and USB_D- signals. The MHL ports have MHL+ and MHL- signals. The chip also has two UART/I2C ports (GPO1 and GPO2). Callouts indicate that the USB 2.0 and MHL ports support USB 2/2ch single-end signals (UART/I2C...).

Part Number	Configuration	Rail To Rail	Operating Voltage	-3dB Bandwidth	Isolation (@240MHz)	USB Channel Crosstalk (@240MHz)	Packages
			V	GHz	dB	dB	
PI3USB3031	Differential 1:3 Mux/Demux	Yes	1.8 to 5.5	6.5	-38	-45	W-QFN1818-12 (ZN12), X2-QFN1616-12 (XUA12)

Orderable Part Numbers	Compliance (Only Automotive Supports PPAP)	Package	Moisture Sensitivity	Packing	
				Quantity	Carrier
PI3USB3031ZNEX	Standard	W-QFN1818-12 (ZN12)	MSL-1	3,000	7" Tape & Reel
PI3USB3031XUAEX	Standard	X2-QFN1616-12 (XUA12)	MSL-1	3,500	7" Tape & Reel