



Self-Adapting USB 2.0 Signal Conditioner Saves Power and Simplifies System Design

The PI5USB212 is a USB 2.0 signal conditioner that is used to boost signals and insert pre-emphasis, which compensates the ISI signal loss in the channels. It can be used in USB host or device applications, supporting USB 2.0, OTG 2.0, and BC 1.2.

The device extends the reach of USB 2.0 cables and can be positioned far from the USB PHY or the connector. Its boost/pre-emphasis and receiver sensitivity levels are configured through pin-strapping or I2C mode.

The PI5USB212 automatically detects when no USB attachment is present and saves energy by reducing its supply current to 0.7mA, and 13µA when disabled via the RSTN disable pin. Device-attach and high-speed-handshake success are also detected and reported.

The PI5USB212 is available in the X2-QFN1616-12 package, occupying only 1.6mm x 1.6mm.



The DIODES Advantage

The PI5USB212 compensates ISI signal loss in USB 2.0 channels, extending cable lengths to 5m.

- **Wide 2.3V to 5.5V Supply Voltage Range with USB Port 5.5V Tolerance**
Operates across all standard USB voltage rails
- **Boost/Pre-Emphasis Level and Receiver Sensitivity Programming through Pin-Strapping or I2C**
Provides easy signal integrity tuning
- **Supports Long 5m Cables**
Extends the reach of USB cables even at 480Mbps
- **Compatible with USB 2.0, OTG 2.0, and BC 1.2**
Enables full compatibility with USB 2.0 applications
- **Very Small Footprint: X2-QFN1616-12**
Caters to space-constrained portable applications

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Applications

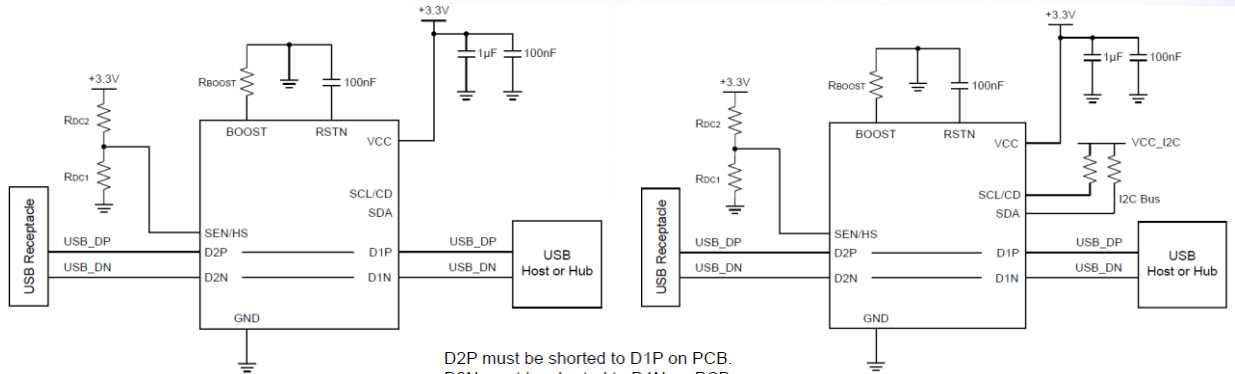
USB 2.0 signal path applications in:

- Notebooks
- PCs
- Docking stations
- Cable extenders
- TVs
- Monitors

Typical Application

PIN-Strap Mode

I2C Mode



USB Signal Conditioner Portfolio

Part Number	Supply Voltage	Differential Channels	Ports	Compatibility	Programming Interface	Package
	V					
PI5USB212	2.3 to 5.5	1	1	USB 2.0, OTG 2.0, BC 1.2	Pin Strap/I2C	X2-QFN1616-12 (XUA12)

Ordering Information

Orderable Part Number	Compliance (Only Automotive Supports PPAP)	Package Code	Package	Moisture Sensitivity	Packing	
					Quantity	Carrier
PI5USB212XUAEX*	Standard	XUA12	X2-QFN1616-12 (1.6mm x 1.6mm)	MSL-1	3,500	7" Tape & Reel
PI5USB212XUAEX-7R**	Standard	XUA12	X2-QFN1616-12 (1.6mm x 1.6mm)	MSL-1	3,500	7" Tape & Reel

* Pin 1 location in top left-hand corner of tape cavity

** Pin 1 location in top right-hand corner of tape cavity