



# POWER NAP™

USB Solutions for Sleep-and-Charge Design



## USB PowerNap™ Solutions For Notebook PC Applications.



### No OS needed to charge!

- Switch PC from host charger to dedicated charger once sleep-mode is enabled
- Dedicated charger support:
  - USB 1.0 & 1.1 charger spec
  - YD/T-1591 spec, and
  - Apple products (ie: iPhones & iPods)

New USB sleep-and-charge ports are the easiest way to charge smart phones, MP3 players or other portable electronics even when a laptop is in sleep mode. Pericom's USB switches and controllers make designing this feature so easy you could do it in *your* sleep! Pericom offers several USB switches that convert a host charger to a dedicated charger in a variety of mobile devices.

Pericom's all-in-one USB solution, the PI5USB56, detects the type of phone and then switches to the desired mode required for automatic charging. This USB controller can detect and support devices based on essential charger specifications including USB 1.0, USB1.1, YD/T-1591, as well as Apple based products, like the iPhone/iPod, and others, like the Palm Pre, that do not follow either of the aforementioned specifications. Pericom has tested and proven support for the following phone brands:

- Nokia
- Samsung
- LGE
- HTC
- YD/T-159 (China) phones
- RIM Blackberry (Curve 8300, Curve 8310, 8800, Storm, Pearl 7100)
- Apple products (iPhone 2G, iPhone 3G/3GS, iPod Shuffle, iPod Nano, iPod Touch)
- Palm Pre



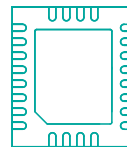
**TLLGA 10 - PI3USB221**  
1.50mm x 2.00mm



**TDFN 16 - PI3C3125**  
1.50mm x 3.30mm x 0.75mm



**UQFN 10 - PI3USB103**  
1.80mm x 1.40mm x 0.50mm



**TQFN 24 - PI5USB56**  
3.50mm x 4.00mm

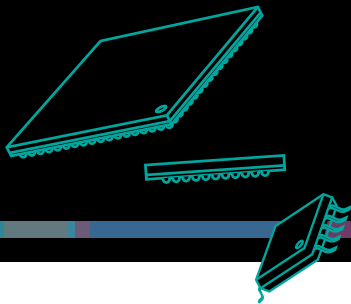
SEE DATASHEETS/DATA BRIEFS FOR ALL PACKAGE OPTIONS

PERICOM SOLUTION	Apple (iPod, iPhone) Requirement	USB 1.0 Charger Spec.	USB 1.1 (Proposed) Charger Spec.	YD/T-1591 Charger Spec.	Mode Adjustment Required	USB 2.0 Support	ESD Support per (IEC61000-4-2)	Avail.
PI3USB103/PI3USB221* (config. 1)	NO	YES	YES	YES	NO	High-speed & Full-speed	Level 2, ±4kV Contact	Now
PI3USB103/PI3USB221* (config. 2)	YES	NO	NO	NO	NO	High-speed & Full-speed	Level 2, ±4kV Contact	Now
PI3USB103/PI3USB221* + PI3C3125	YES	YES	YES	YES	YES	High-speed & Full-speed	Level 2, ±4kV Contact	Now
PI3USB56	YES	YES	YES	YES	NO	High-speed & Full-speed	Level 2, ±4kV Contact	Now

\* Increased ESD Support up to ±8kV contact per IEC61000-4-2

All trademarks are property of their respective owners





# USB 2.0 High Speed Signal Routing

## PI3USB103, PI3USB221 & PI5USB56 USB Charger Controller ICs

Handheld devices with large memory banks require a data transfer port in order to synchronize data with a personal computer - most commonly this is a USB port. Since space is at a premium, port minimization is often a design requirement. The USB port is often re-purposed as a charging port while still functioning as a data-transfer port; this dual functionality is even a mandated government standard in China. The USB port re-purposing trend drives the demand for notebook PC support for charging functions of battery powered mobile electronic devices like smart phones and MP3/MP4 players.

Until recently, notebook PCs provided only “host charger” functionality which requires a USB communication link throughout the charging state. This means the notebook must be powered on to provide charging functionality. Pericom’s USB-charger ICs enable notebook PCs to charge handheld devices thru a USB port by functioning as “dedicated chargers” by switching the “host charge” function to “dedicated charge” function when the notebook is in sleep mode. Within this mode, the USB controller can be completely shut off - the only requirement is that 5V be available on Vbus so that the mobile terminal can draw current.

To learn more about how Pericom ICs can switch up your notebook designs, contact us today, or visit us on the web at [www.pericom.com/usb](http://www.pericom.com/usb).

### PI3USB103/PI3USB221 Key Features

- USB 1.1, USB 2.0 full-speed, and USB 2.0 high-speed support
- Back-drive protection circuit
- High BW, -1,000MHz
- Can be used for sleep-and-charge functionality
  - Supports USB 1.0 & 1.1 charger spec
  - Supports YD/T-1591 charger spec
  - Supports Apple Products
- Vbus short protection on D+/D- pins
- Integrated ESD protection
  - up to +/-4kV contact - PI3USB103
  - up to +/-8kV contact - PI3USB221
- Packaging (Pb-free and Green)
  - 10-contact UQFN (1.4mm x 1.8mm)
  - 10-contact TQFN (1.3mm x 1.6mm)
  - 10-contact TDFN (3.0mm x 3.0mm)
  - 10-contact TLLGA (2.0mm x 1.5mm)

### PI5USB56 Key Features

- USB 1.1, USB 2.0 full-speed, and USB 2.0 high-speed support
- Back-drive protection circuit
- Beyond rail-to-rail switching
- Can be used for sleep-and-charge functionality
  - Supports USB 1.0 & 1.1 charger spec
  - Supports YD/T-1591 charger spec
  - Supports Apple products
  - Automatic detection and switching
  - Power supply of 5V (direct power from Vbus)
- Vbus short protection on D+/D-
- Integrated ESD protection up to ±4V contact per IEC61000-4-2 on data pins
- Packaging (Pb-free and Green)
  - 24-pin QSOP (Q)
  - 24-contact TQFN (ZK)

