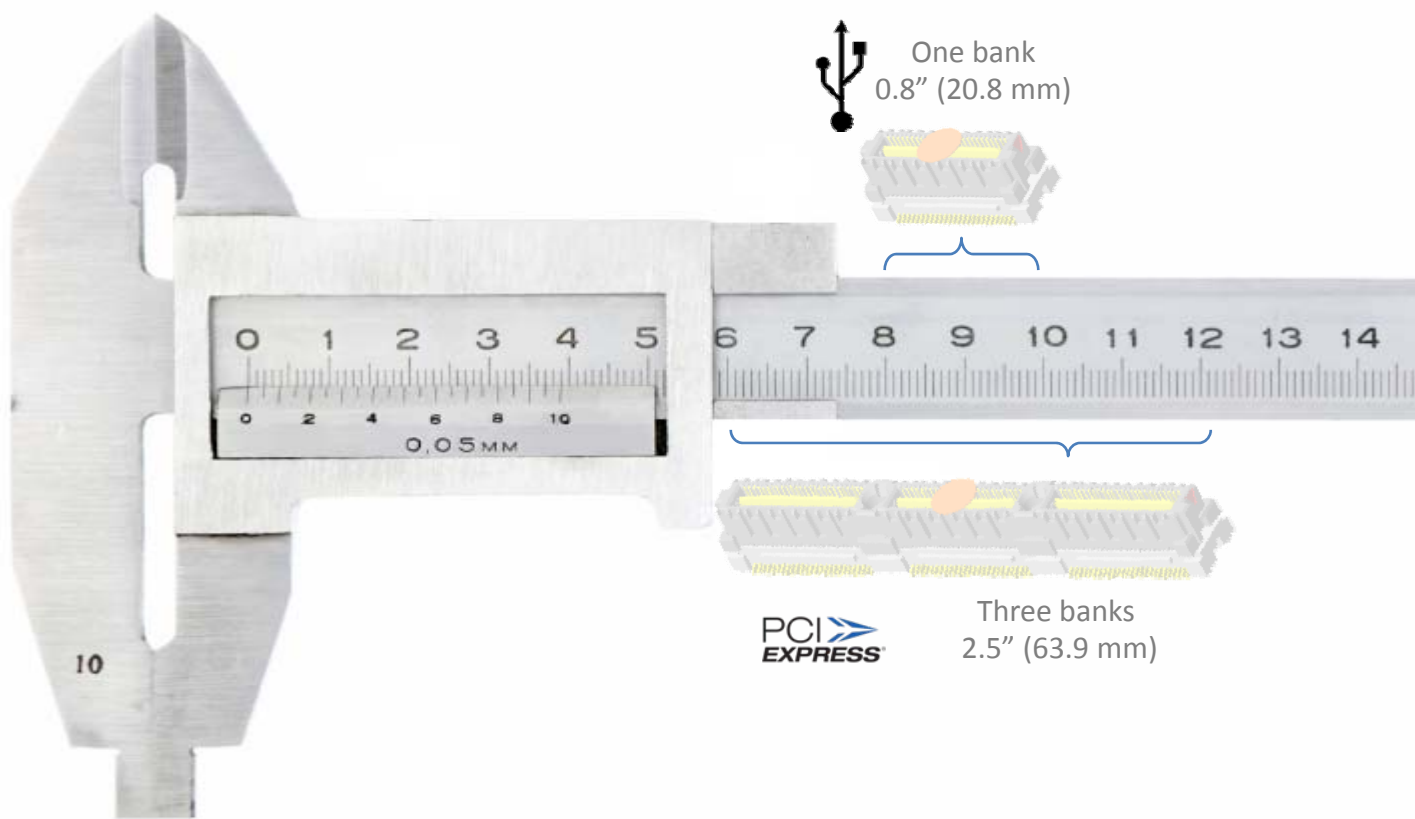
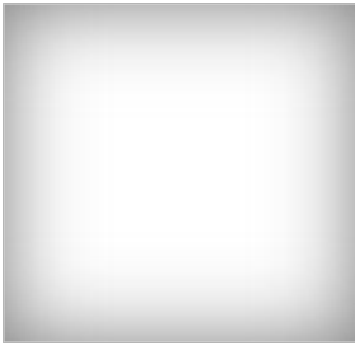


smallest connector footprint



Actual size

smallest form factors



- 1/4-size 104™ Form Factor
- 1/2-size 104 Form Factor
- Full-size 104 Form Factor



Actual size

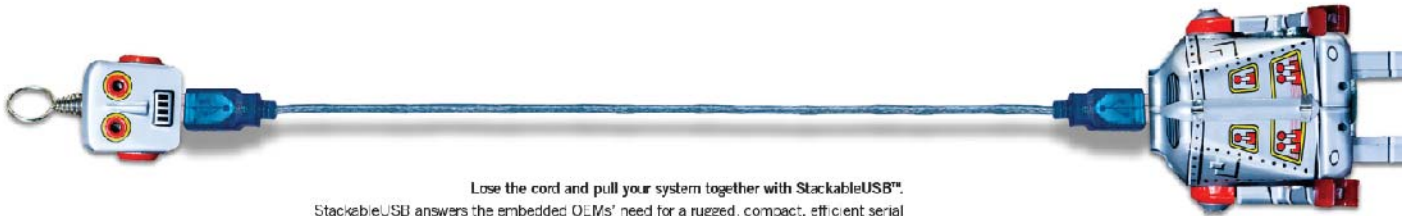
most **cost effective**



On average, USB provides clients a cost savings of 30-60%. This savings is a combination of chip cost, board material, connector real estate, and more.

as **Seen** in

Stretching to make your embedded USB connections?



Lose the cord and pull your system together with StackableUSB®. StackableUSB answers the embedded OEMs' need for a rugged, compact, efficient serial bus by providing one that is exclusively USB. With 8 USB ports in the stack, USB boards can plug together top side - bottom side - or both. StackableUSB simplifies I/O boards, once again making it easy enough to design 1/4-size, 1/2-size, and full-size 104's yourself. Visit www.StackableUSB.org and join today!



Experience the Advantages of **StackableUSB™**

Maximum I/O Support:

8 USB peripherals up AND/OR
8 USB peripherals down

Maximum Reliability:

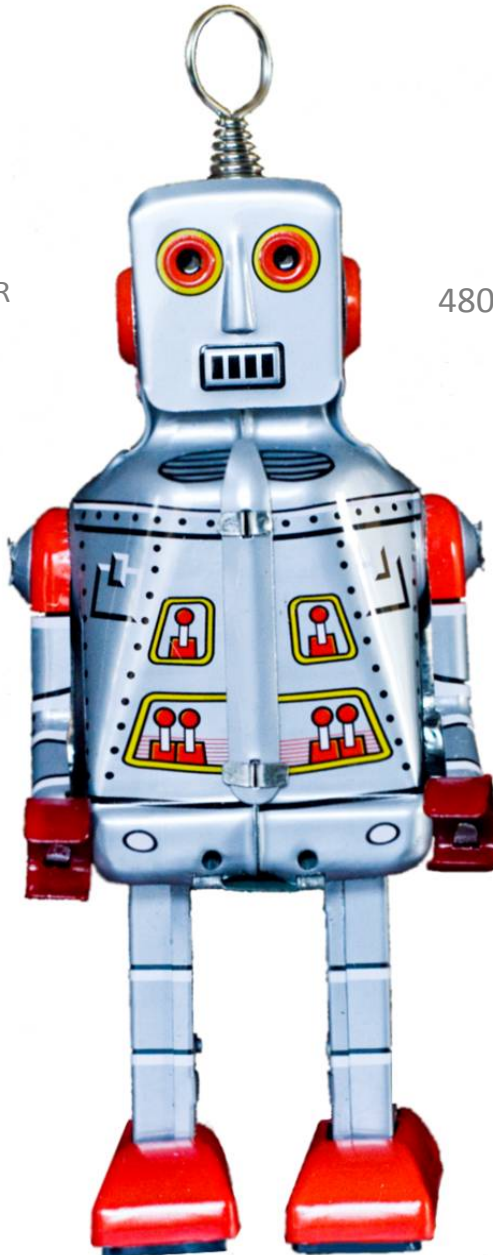
Rugged, reliable differential
connectors

Easy Implementation:

Design yourself

Space Efficient:

¼-size 104 boards available



Maximum Speed:

480Mb/s at high-speed to
1.5Mb/s at low-speed

Maximum Power:

Up to 0.9375A per
peripheral card

Cost Effective:

Requires less board space

Automatic Detection:

Plug-and-Play capability



StackableUSB

Question & Answer

1. What is **StackableUSB™**?

It is a mechanical and electrical specification for board to board communication via USB. The standard maintains point-to-point connections and star topology with routing connections up and down the stack.
2. Why did we design **StackableUSB**?

For the past 16 years PC/104 (ISA) has been the benchmark for stackable embedded systems, but moving forward the ISA technology is fading. Since 2007 no CPU chipset released supports ISA. USB is the natural successor. USB is currently available in almost every chipset: microcontroller, ARM processor, and Pentium processor. Additionally, it is on the roadmap for these chip sets for years to come. It makes a perfect board to board bus interface since it is simple to use, has available software, and a long life ahead of it. (See StackableUSB Advantages sheet.)
3. What makes **StackableUSB** unique?

It eliminates the need for the plug/cable interconnect scheme. StackableUSB defines mating connectors so boards can be securely connected together without the need for cables while preserving and enhancing the advantages of USB control and communication.
4. What markets and applications will use **StackableUSB**?

StackableUSB opens up opportunities in the embedded market place. These areas include sensor applications, industrial control systems, embedded mobile, hand-held, military, medical, security, and remote communications applications.
5. How many modules can be placed on a **StackableUSB** bus?



StackableUSB is capable of routing eight differential USB pairs on the top and/or on the bottom of the stack.
6. Is there a special alignment or slot scheme for **StackableUSB** modules?

The top and bottom stacking connectors are small and near the corner edge of the board.
7. Are the **StackableUSB** connectors available now and if so from whom and what size are they?

The connector is available from Samtec. It is known as a Q2 connector with 15.24mm board-to-board spacing. It is suited for USB 1.0 and 2.0.
8. Are there reliability reports on the performance of the **StackableUSB** connector?

Yes. Samtec has done reliability testing for the connector in simulations that measure the electrical characteristics required for USB. Data sheets report the results of their testing.

the **best** replacement to ISA & PC/104

Connector Footprint Size †	Protocols Supported	Stacking I/O Board Compatibility	Stackability	Time to Market	Theoretical Calculated Maximum Bandwidth/Throughput	Form Factor Compatibility	I/O Chip-Support Availability	Hardware Cost	
W: 0.395" (10.00mm) L: 3.220" (8.20mm)	ISA	x86 Pentium® ARM™	Stacks Up & Down	Quickest	ISA 8 MB/s	PC/104 Form Factor EPIC™	Most	Low	PC/104 <small>Benchmark for 8- and 16-bit control applications</small>
W: 0.296" (7.26mm) L: 0.820" (20.83mm)	USB (10) I²C SPI	Pentium® ARM™ Microcontrollers <i>(Host Capable)</i>	Stacks Up & Down <i>(5 up/5 down)</i>	Quickest <i>(Plug & Play Approach)</i>	USB 2.0 60 MB/s	¼-size (104™) ½-size (104™) 104™ Form Factor EPIC™ Form Factor	Many	Low	 StackableUSB™
W: 0.296" (7.26mm) L: 1.660" (42.17mm)	USB (3) I²C SPI LPC x1 PCIe (2) x4 PCIe (1)	Pentium® 4	Stacks Up Only	Some System Integration	4x PCIe 1,000 MB/s	104™ Form Factor EPIC™ Form Factor	Few	Mid	 Express104™
W: 0.296" (7.26mm) L: 2.515" (63.88mm)	I²C x1 PCIe (4) x16 PCIe (1)	Pentium® 4	Stacks Up & Down	Serious System Integration	16x PCIe 4,000 MB/s	104™ Form Factor EPIC™ Form Factor	Least	High	PCIe/104™

† Refer to Diagram



USB and the embedded world

USB is the leading **HOST** choice:

ATOM, Pentium, ARM,
Microcontrollers, PIC32, PIC24

USB is the leading **CLIENT** choice:

Control, Mass Storage, and
Communication... (Microchip,
Delkin Devices, Trimble,...)

USB is the leading **SOFTWARE** choice:

Linux, Windows CE, Windows XP,
Mentor Graphics, DDC-I,
Microcontroller tool chains,...

USB is the **ENERGY EFFICIENT/GREEN** choice:

Least power consumption (<5 W),
Best matched throughput (60 MB/s),
Smallest connector footprint (0.8")