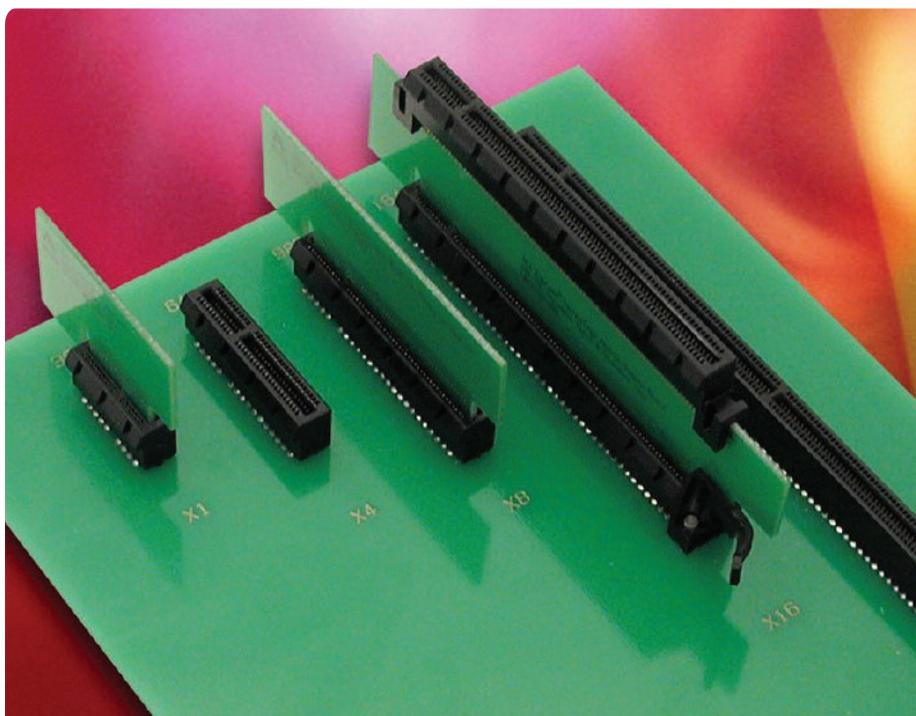


# PCI EXPRESS® CARD EDGE CONNECTORS

## DESCRIPTION

These 1.0mm pitch, vertical card edge connectors are used to implement PCI Express® architecture in desktop PCs, workstations, and servers. The base connector family offers one to 16 high-speed serial PCI Express Lanes. Each serial lane supports 2.5 Gb/s (per direction) in a 100Ω Gen1 system or 5.0 Gb/s in a Gen2 system with an 85Ω differential environment.

The base connector family supports x1, x4, x8, or x16 link widths to suit different bandwidth requirements. The 36-position, basic bandwidth (x1) version supports a single PCI Express Lane and could be used as the replacement for the PCI connector. The 164-position, high bandwidth version will support 16 PCI Express Lanes and will be used for applications that require higher bandwidth, such as graphics. The x4 and x8 connectors provide 64 and 98 contacts, respectively. All connectors support the PCI Express signal and power requirements, as well as auxiliary signals at the interface between system board and add-in card hardware. Staggering the edge fingers by 1.0mm on the add-in card provides sequential mating for hot plug capability.



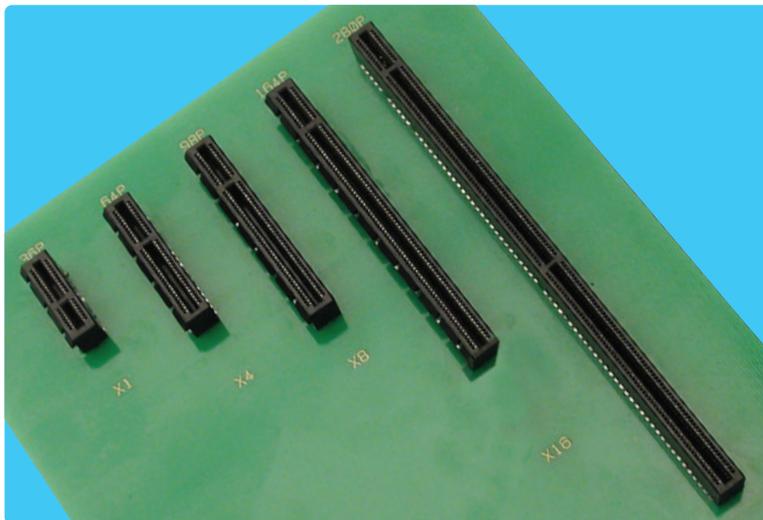
## FEATURES & BENEFITS

- Base connector range offers 1, 4, 8, or 16 serial PCI Express links to scale to different bandwidth requirements
- Options for through-hole solder, press-fit, surface-mount, or straddle-mount termination
- Straddle-mount connectors feature mounting ears for additional mechanical support and a molded post to assure proper alignment to the host PCB
- Options for rugged stand-alone retention mechanisms or a x16 connector with an integrated retention arm to retain graphics cards during shipping and handling
- Larger 200, 230 (x24), and 280-position vertical connectors accept server riser cards
- ExpressModule™ versions provide an expanded lead-in window for blind-mate server applications
- RoHS-compliant connector versions are available

## TARGET MARKETS / APPLICATIONS

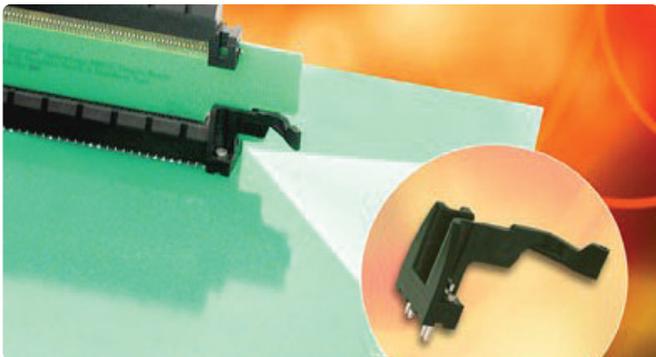
- Data
  - Desktop PCs
  - Servers
  - Workstations
- Industrial
  - SHB Express backplanes per PICMG 1.3 specification

PCI EXPRESS VERTICAL CARD EDGE CONNECTORS, THROUGH-HOLE SOLDER



Drawing Number	Description
10018783	36 (x1), 64 (x4), 98 (x8), and 164 (x16) contact positions, reflow solder compatible
10018784	36 (x1), 64 (x4), 98 (x8), and 164 (x16) contact positions, wave solder compatible
10036767	98 positions for x8 card but fits on x16 motherboard footprint
10054652	200 positions
10063960	230 positions (x24)
10027747	280 positions, keyed for 280-position riser card, without side ridge
10037901	280 positions, keyed for x8 card or 280-position riser card, without side ridge
10057596	280 positions, keyed for 280-position riser card
10066356	280 positions, keyed for 230-position (x24) or 280-position riser card
10073481	280 positions, keyed for x16 card or 280-position riser card, without side ridge

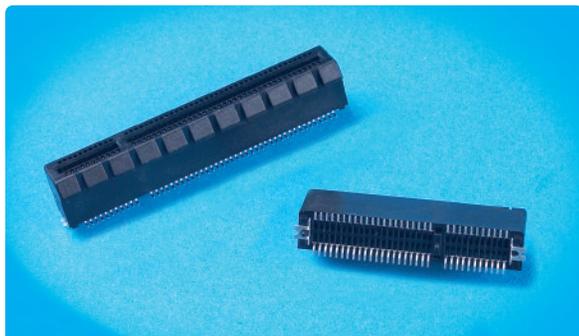
PCI EXPRESS GRAPHICS CARD RETENTION



Drawing Number	Description
10035591	stand-alone graphics card retention mechanism, black
10042618	stand-alone graphics card retention mechanism, green or blue
10046742	x16 connector with integrated retention arm

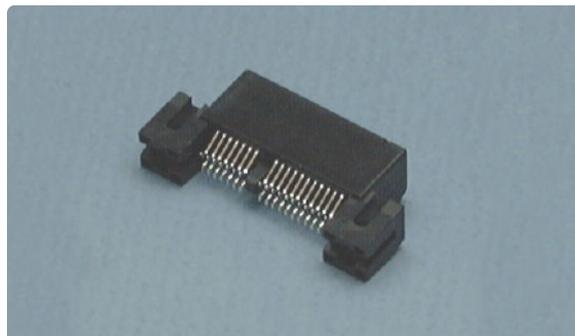
Additional information can be found at <http://www.fciconnect.com/pciexpress>

### PCI EXPRESS VERTICAL CARD EDGE CONNECTORS, SURFACE-MOUNT



Drawing Number	Description
10061913	x1, x4, x8 and x16 with molded orientation posts
10076266	x1, x4, x8 and x16 without molded orientation posts

### PCI EXPRESS STRADDLE-MOUNT CARD EDGE CONNECTORS



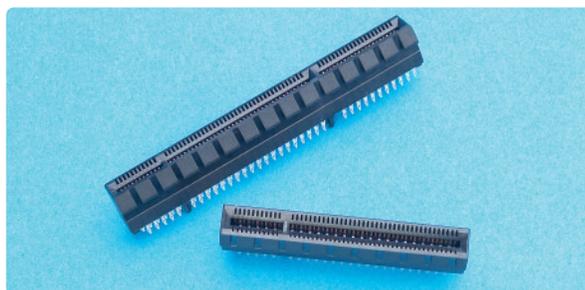
Drawing Number	Description
10025026	x1, x4, x8 and x16 for 1.57mm thick host PCB
10069690	x1, x4, x8 and x16 for 2.08 or 2.30mm thick host PCB

### PCI EXPRESS VERTICAL CARD EDGE CONNECTORS, PRESS-FIT



Drawing Number	Description
10039755	36 (x1), 64 (x4), 98 (x8), and 164 (x16) contact positions
10044013	280 positions, keyed for 280-position riser card, without side ridge

### EXPRESSMODULE VERTICAL CARD EDGE CONNECTORS



Drawing Number	Description
10055293	98-position (x8) ExpressModule connector, press-fit
10055295	140-position (x8 with storage extension) ExpressModule connector, press-fit
10073228	36 (x1), 64 (x4), 98 (x8), and 164 (x16) contact positions, ExpressModule type, surface-mount

Additional information can be found at <http://www.fciconnect.com/pciexpress>



## TECHNICAL INFORMATION

### MATERIALS

- Contact Base Metal: Copper alloy
- Contact Area Finish: Gold over nickel
- Solder Area Finish: Tin over nickel or tin-lead over nickel
- Housing Material: High-temperature thermoplastic (UL 94V-0) for reflow soldering or thermoplastic (UL 94V-0) for wave soldering. Color: black or off-white
- Metal Board Locks: Copper alloy
- Board Locks Finish: Tin over nickel or tin-lead over nickel

### ELECTRICAL PERFORMANCE

- Contact Resistance: 30 milliohms maximum initially with 10 milliohms maximum change after environmental exposures
- Current rating: 1.1A minimum per pin for the 8 power pins and 8 nearest ground pins
- Signal Integrity Summary
  - Gen1 (referenced to 100Ω differential impedance)
    - Insertion Loss: ≥ -1 dB up to 1.25 GHz
    - Return Loss: ≤ -12dB up to 1.3 GHz
    - NEXT: ≤ -32dB up to 1.25GHz
  - Gen2 (referenced to 85Ω differential impedance)
    - Insertion Loss: ≥ -0.5 dB up to 2.5 GHz
    - Return Loss: ≤ -15dB up to 3.0 GHz
    - NEXT: ≤ -32dB up to 2.5GHz
  - Gen2 performance supported by through-hole solder, surface-mount and straddle-mount versions

### MECHANICAL PERFORMANCE

- Durability rating: 50 cycles minimum
- PCB insertion force: 1.15N maximum per contact pair
- PCB removal force: 0.15N minimum per contact pair

### ENVIRONMENTAL

- EIA-364-1000.01. The test groups/sequences and durations are derived from the following requirements:
  - Durability (mating/unmating) rating of 50 cycles
  - Field temperature: 65 °C
  - Field life: seven years
  - Temperature Life (preconditioning): 92 hours at 105°C.
  - Temperature Life: 168 hours at 105°C.
  - Mixed Flowing Gas: 10 days

### SPECIFICATIONS

- Industry
  - PCI Express Card Electromechanical Specification
  - PCI Express Connector High Speed Electrical Test Procedure
  - PCI Express ExpressModule Electromechanical Specification
- FCI
  - GS-12-233 PCI Express Connector Product Specification
  - GS-12-319 PCI Express Press-Fit Connector Product Specification
  - GS-12-288 PCI Express Retention Mechanism Product Specification
  - GS-12-390 PCI Express Surface-Mount Connector Product Specification

### APPROVALS AND CERTIFICATIONS

- UL and CSA approvals for 10018783, 10025026, 10027747, 10039755 and 10044013. Pending for other drawing numbers.

Additional information can be found at <http://www.fciconnect.com/pciexpress>