

PCI Express® Gen 4 and Gen 5 Card Edge Connectors

EXTEND DIFFERENTIAL SIGNALING TO 16GT/s AND 32GT/s FOR NEXT-GENERATION SYSTEMS

PCIe® Gen 4 and Gen 5 connectors outperform industry standards PCIe® 4.0 and 5.0 (proposed) that require higher speed performance. The optimized series supports backwards mating and is footprint compatible with PCIe 3/2/1.

These 1.00mm pitch, vertical and right angle card edge connectors enable all generations of PCI Express® signaling in desktop PCs, workstations, and servers. The connector designs support 2.5GT/s (Gen 1), 5.0GT/s (Gen 2), 8.0GT/s (Gen 3) and the recent upgrade to 16GT/s (Gen 4), even further to 32GT/s (Gen 5) per differential signal pair.

Amphenol's expansive range of vertical PCIe® Gen 4 and Gen 5 connectors will include options for surface mount (SMT), through hole solder, press-fit (PF) and straddle mount terminations.

- Backward mating and footprint compatible
- Higher speed performance without altering footprint
- Wide range of positions available
- Optional ridge feature according to customer preference

FEATURES

- A variety of termination types are available
- Aside from X1, X4, X8, X16 standard links as per PCI-SIG CEM specification, X24, X32 are also available
- Backward mating and footprint compatible
- Capable to support up to 32GT/s without altering design
- RoHS compliant
- Low-halogen material



TARGET MARKETS



BENEFITS

- Able to meet different customer soldering requirements
- Provides excellent performance and additional options for extreme bandwidth application
- Outperform Gen 4/5 specification, but also backward compatible to Gen 1/2/3 specification, with the exception of Gen 5 straddle mount
- Customers can upgrade directly to next-generation systems without additional cost in system redesign
- Meets environmental, health and safety requirements
- Meets next-generation requirements

TECHNICAL INFORMATION

MATERIAL

- Contact Base Metal: Copper alloy
- Contact Area Finish: Gold over nickel
- Solder Area Finish: Tin over nickel
- Housing Material: High-temperature thermoplastic (UL94V-0) for reflow soldering or thermoplastic (UL94V-0) for wave soldering. Color: Black or off-white
- Metal Board Locks: Copper alloy
- Board Locks Finish: Tin over nickel

ELECTRICAL PERFORMANCE

- Contact Resistance: 30mΩ max. initially with 10mΩ max. change after environmental exposures
- Current Rating: 1.1A min. per pin for the 8 power pins and 8 nearest ground pins
- Signal Integrity Summary
- The part series shown on this datasheet support PCI Express® high speed electrical requirements for 2.5Gb/s (PCIe® Gen 1), 5.0Gb/s (PCIe® Gen 2), 8.0Gb/s (PCIe® Gen 3), 16.0Gb/s (PCIe® Gen 4) and 32.0Gb/s (PCIe® Gen 5) with the exception of those part series specifically noted as PCIe® Gen 1 in the part number tables.

MECHANICAL PERFORMANCE

- Durability Rating: 50 cycles min.
- PCB Insertion Force: 1.15 N max. per contact pair
- PCB Removal Force: 0.15 N min. per contact pair

PACKAGING

- Hard or Soft Tray

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

APPROVALS & CERTIFICATION

- CSA

SPECIFICATIONS

- Industry
 - PCI Express® Card Electromechanical Specification
 - PCI Express® Module Electromechanical Specification
- For more information on the applicable PCI-SIG specifications, visit www.pcisig.com.
- AFCE
 - GS-12-1406 PCI Express® group of connectors

TARGET MARKETS/APPLICATIONS



Desktop PCs
Servers
Workstations

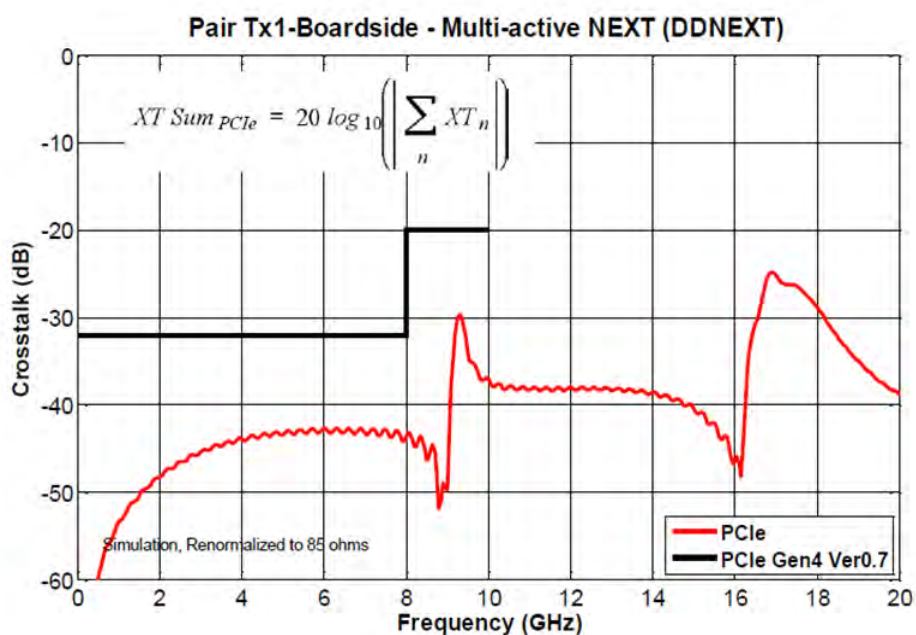


Desktop PCs
Notebook PCs

PCI Express® Gen 4 and Gen 5 Card Edge Connectors

SI PERFORMANCE

Vertical PCIe® Gen 4 SI simulation performance @ 16GT/s



PART NUMBERS

| Description | Performance | Termination | Position | Part Numbers |
|-------------|-------------|-------------------------|---------------------|--------------|
| PCIe Gen 5 | 32GT/s | Vertical SMT | 36, 64, 98, 164 pos | 10146070* |
| PCIe Gen 4 | 16GT/s | Vertical SMT | 36, 64, 98, 164 pos | 10146065* |
| PCIe Gen 4 | 16GT/s | Vertical SMT ULP | 36, 64, 98, 164 pos | 10146788* |
| PCIe Gen 4 | 16GT/s | Vertical SMT high rise | 36, 64, 98, 164 pos | 10153927* |
| PCIe Gen 4 | 16GT/s | Vertical SMT | 230, 280 pos | 10139595* |
| PCIe Gen 4 | 16GT/s | Vertical SMT with latch | 36, 64, 98, 164 pos | 10147430* |
| PCIe Gen 4 | 16GT/s | Vertical SMT open wall | 36, 64, 98, 164 pos | 10146067* |
| PCIe Gen 4 | 16GT/s | Vertical PF | 36, 64, 98, 164 pos | 10145445* |
| PCIe Gen 4 | 16GT/s | Vertical PTH | 36, 64, 98, 164 pos | 10142333* |
| PCIe Gen 4 | 16GT/s | Vertical PTH with latch | 36, 64, 98, 164 pos | 10152821* |
| PCIe Gen 4 | 16GT/s | Vertical PTH open wall | 36, 64, 98, 164 pos | 10148195* |
| PCIe Gen 4 | 16GT/s | Straddle mount | 36, 64, 98, 164 pos | 10146027* |
| PCIe Gen 4 | 16GT/s | Right angle SMT | 36, 64, 98, 164 pos | 10151422* |

* denotes base part number. Please contact Amphenol CS for complete part numbers.

► PCI Express® Gen 4 and Gen 5 Card Edge Connectors

| Description | Performance | Termination | Position | Part Numbers |
|-------------|-------------|---|--------------------|--------------|
| PCIe® Gen 4 | 16Gb/s | Vertical SMT | 36, 64, 98, 164pos | 10146065 |
| PCIe® Gen 4 | 16Gb/s | Vertical SMT ULP | 36, 64, 98, 164pos | 10146788 |
| PCIe® Gen 4 | 16Gb/s | Vertical SMT high rise (4.2mm seating) | 36, 64, 98, 164pos | 10155372 |
| PCIe® Gen 4 | 16Gb/s | Vertical SMT high rise (5.3mm seating height) | 36, 64, 98, 164pos | 10156545 |
| PCIe® Gen 4 | 16Gb/s | Vertical SMT | 230, 280pos | 10139595 |
| PCIe® Gen 4 | 16Gb/s | Vertical SMT with locked latch | 36, 64, 98, 164pos | 10147430 |
| PCIe® Gen 4 | 16Gb/s | Vertical SMT with side latch | 36, 64, 98, 164pos | 10150775 |
| PCIe® Gen 4 | 16Gb/s | Vertical SMT with mirror side latch | 36, 64, 98, 164pos | 10156202 |
| PCIe® Gen 4 | 16Gb/s | Vertical SMT open wall | 36, 64, 98, 164pos | 10146067 |
| PCIe® Gen 4 | 16Gb/s | Vertical SMT without ridges | 36, 64, 98, 164pos | 10146507 |
| PCIe® Gen 4 | 16Gb/s | Vertical SMT with blade hold down | 36, 64, 98, 164pos | 10144661 |
| PCIe® Gen 5 | 32Gb/s | Vertical SMT | 36, 64, 98, 164pos | 10146070 |
| PCIe® Gen 5 | 32Gb/s | Vertical SMT with locked latch | 36, 64, 98, 164pos | 10152083 |
| PCIe® Gen 5 | 32Gb/s | Vertical SMT with open side wall | 36, 64, 98, 164pos | 10146069 |
| PCIe® Gen 5 | 32Gb/s | Vertical SMT with blade hold down | 36, 64, 98, 164pos | 10157072 |
| PCIe® Gen 5 | 32Gb/s | Vertical SMT without ridges | 36, 64, 98, 164pos | 10152832 |
| PCIe® Gen 5 | 32Gb/s | Vertical SMT with side latch | 36, 64, 98, 164pos | 10155214 |
| PCIe® Gen 4 | 16Gb/s | Vertical PF | 36, 64, 98, 164pos | 10145445 |
| PCIe® Gen 4 | 16Gb/s | Vertical PTH | 36, 64, 98, 164pos | 10142333 |
| PCIe® Gen 4 | 16Gb/s | Vertical PTH with latch | 36, 64, 98, 164pos | 10152821 |
| PCIe® Gen 4 | 16Gb/s | Vertical PTH open wall | 36, 64, 98, 164pos | 10148195 |
| PCIe® Gen 4 | 16Gb/s | Vertical PTH with locked latch | 36, 64, 98, 164pos | 10152821 |
| PCIe® Gen 4 | 16Gb/s | Vertical PTH without ridges | 36, 64, 98, 164pos | 10154552 |
| PCIe® Gen 4 | 16Gb/s | Vertical PTH 98Pin populated into 164pin housing | 98pos | 10148197 |
| PCIe® Gen 4 | 16Gb/s | Straddle mount (non-offset, 1.57/2.0/2.36/2.54mm PCB) | 36, 64, 98, 164pos | 10146027 |
| PCIe® Gen 4 | 16Gb/s | Straddle mount without mounting ears and key (non-offset, 1.57/2.0/2.36/2.54mm PCB) | 36, 64, 98, 164pos | 10156221 |
| PCIe® Gen 4 | 16Gb/s | Right-Angle SMT (5.8mm seating) | 36, 64, 98, 164pos | 10151422 |
| PCIe® Gen 4 | 16Gb/s | Right-Angle PTH (10.12mm seating) | 98pos | 10159072 |
| PCIe® Gen 5 | 32Gb/s | Straddle mount (non-offset, 1.57mm PCB) | 36, 64, 98, 164pos | 10163106 |
| PCIe® Gen 5 | 32Gb/s | Vertical SMT | 36, 64, 98, 164pos | 10165696 |
| PCIe® Gen 5 | 32Gb/s | Vertical SMT | 36, 64, 98, 164pos | 10169770 |

* denotes base part number. Please contact Amphenol CS for complete part numbers.

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