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 ICC’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

TARGET MARKETS

§ 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

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
PCI Express® Gen 4 and Gen 5 Card Edge Connectors

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.
- AFCI
  - GS–12–1406 PCI Express® group of connectors

TARGET MARKETS/APPLICATIONS
- Desktop PCs
- Servers
- Workstations
- Notebook PCs
PCI Express® Gen 4 and Gen 5 Card Edge Connectors

SI PERFORMANCE

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

![Graph showing SI performance](image)

**PART NUMBERS**

<table>
<thead>
<tr>
<th>Description</th>
<th>Performance</th>
<th>Termination</th>
<th>Position</th>
<th>Part Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCIe Gen 5</td>
<td>32GT/s</td>
<td>Straddle mount</td>
<td>36, 64, 98, 164 pos</td>
<td>10156206*</td>
</tr>
<tr>
<td>PCIe Gen 5</td>
<td>32GT/s</td>
<td>Vertical SMT</td>
<td>36, 64, 98, 164 pos</td>
<td>10146070*</td>
</tr>
<tr>
<td>PCIe Gen 4</td>
<td>16GT/s</td>
<td>Vertical SMT</td>
<td>36, 64, 98, 164 pos</td>
<td>10146065*</td>
</tr>
<tr>
<td>PCIe Gen 4</td>
<td>16GT/s</td>
<td>Vertical SMT ULP</td>
<td>36, 64, 98, 164 pos</td>
<td>10146788*</td>
</tr>
<tr>
<td>PCIe Gen 4</td>
<td>16GT/s</td>
<td>Vertical SMT high rise</td>
<td>36, 64, 98, 164 pos</td>
<td>10153927*</td>
</tr>
<tr>
<td>PCIe Gen 4</td>
<td>16GT/s</td>
<td>Vertical SMT</td>
<td>230, 280 pos</td>
<td>10139595*</td>
</tr>
<tr>
<td>PCIe Gen 4</td>
<td>16GT/s</td>
<td>Vertical SMT with latch</td>
<td>36, 64, 98, 164 pos</td>
<td>10147430*</td>
</tr>
<tr>
<td>PCIe Gen 4</td>
<td>16GT/s</td>
<td>Vertical SMT open wall</td>
<td>36, 64, 98, 164 pos</td>
<td>10146067*</td>
</tr>
<tr>
<td>PCIe Gen 4</td>
<td>16GT/s</td>
<td>Vertical PF</td>
<td>36, 64, 98, 164 pos</td>
<td>10145445*</td>
</tr>
<tr>
<td>PCIe Gen 4</td>
<td>16GT/s</td>
<td>Vertical PTH</td>
<td>36, 64, 98, 164 pos</td>
<td>10142333*</td>
</tr>
<tr>
<td>PCIe Gen 4</td>
<td>16GT/s</td>
<td>Vertical PTH with latch</td>
<td>36, 64, 98, 164 pos</td>
<td>10152821*</td>
</tr>
<tr>
<td>PCIe Gen 4</td>
<td>16GT/s</td>
<td>Vertical PTH open wall</td>
<td>36, 64, 98, 164 pos</td>
<td>10148195*</td>
</tr>
<tr>
<td>PCIe Gen 4</td>
<td>16GT/s</td>
<td>Straddle mount</td>
<td>36, 64, 98, 164 pos</td>
<td>10146027*</td>
</tr>
<tr>
<td>PCIe Gen 4</td>
<td>16GT/s</td>
<td>Right angle SMT</td>
<td>36, 64, 98, 164 pos</td>
<td>10151422*</td>
</tr>
</tbody>
</table>

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