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

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

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 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
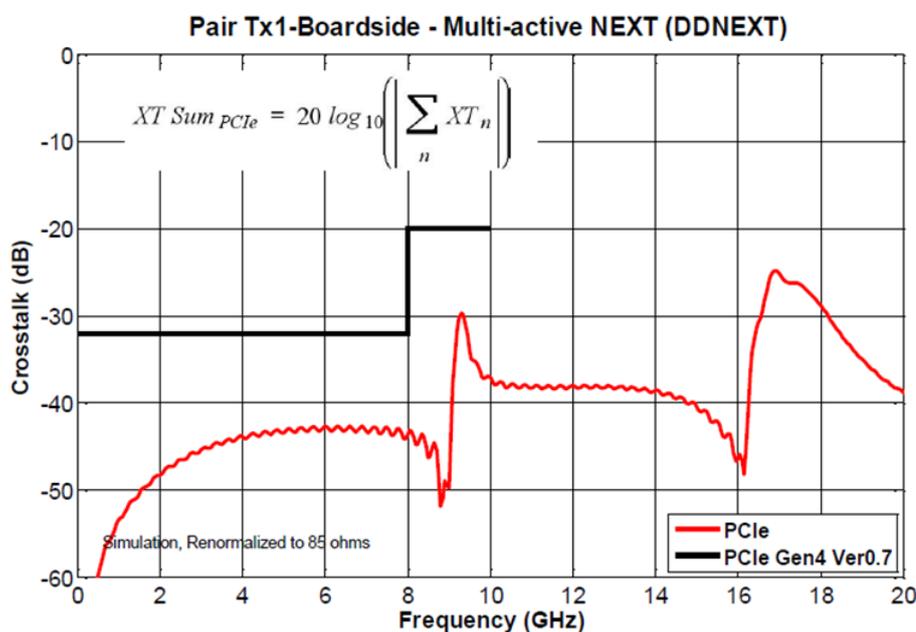
Desktop PCs
Servers
Workstations

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

Pair Tx1-Boardside - Multi-active NEXT (DDNEXT)

$$XT\ Sum_{PCIe} = 20\ log_{10}\left(\left|\sum_{n} XT_n\right|\right)$$

PART NUMBERS

Description	Performance	Termination	Position	Part Numbers
PCIe Gen 5	32GT/s	Straddle mount	36, 64, 98, 164 pos	10156206*
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 ICC for complete part numbers.

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