



**THE DATASHEET OF  
10146065-123Z0LF**



# 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](http://www.pcisig.com).
- AFCE
  - GS-12-1406 PCI Express® group of connectors

## TARGET MARKETS/APPLICATIONS



Desktop PCs  
Servers  
Workstations

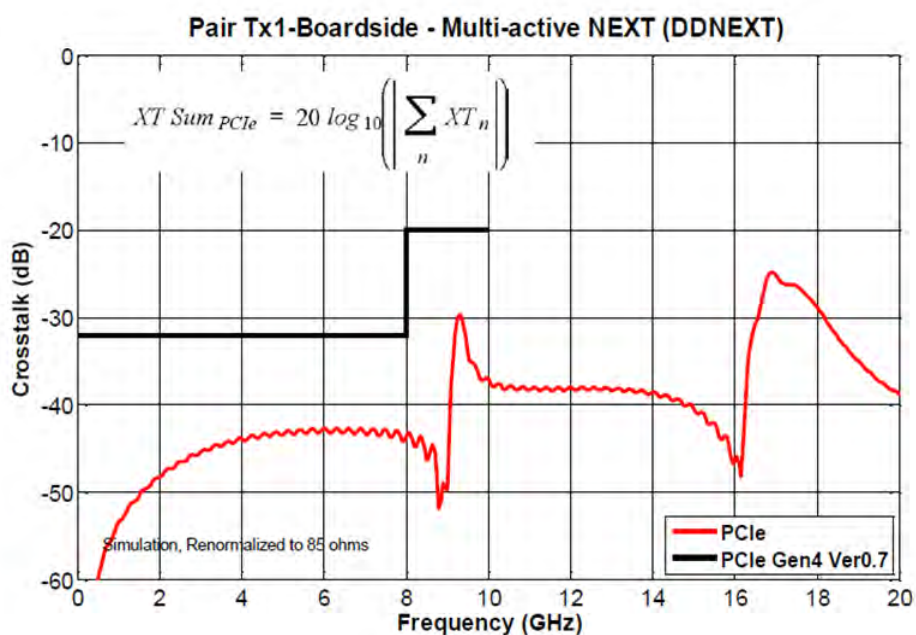


Desktop PCs  
Notebook PCs

## 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.

## Looking for pricing, stock, or lifecycle information?

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-  [View 10146065-123Z0LF on WIN SOURCE](#)
-  [Amphenol FCI Information](#)

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