

PCIe® M.2 Gen 3 and Gen 4 Card Edge Connectors

HIGH DENSITY HIGH PERFORMANCE CONNECTOR

Amphenol's PCIe® M.2 Gen 3 and Gen 4 connectors provide 67 contacts on 0.50mm pitch. It occupies less board space, offers more connector height options and supports higher data rates compared to PCIe® Mini Card connector. It is designed for PCIe® 3.0, USB 3.0 and SATA 3.0 applications, making it suitable for tablets, laptops and low profile storage and server applications. PCIe® M.2 connectors also support higher data rate transmission with both single and double-sided modules.

- Various connector height and keying options
- Accepts angled insertion of add-in module cards
- Some product options support both angled and straight insertion
- Provide both right angle and vertical orientation M.2 connectors

FEATURES

- Card edge connector with 67 contacts on a 0.50mm pitch
- Compliant with PCIe® 3.0, USB 3.0 and SATA 3.0
- 75 positions with 8 connector key options
- Available in various connector height
- Supports both single and double-sided modules
- Upgradable to Gen 4 (16Gb/s)
- Provides both right-angle and vertical orientations
- Vertical M.2 supports 5,000 mating cycles
- Offers dual port M.2 and supports straight insertion z height of 2.00mm



TARGET MARKETS



BENEFITS

- Fully compliant with PCI-SIG PCIe® M.2 specification
- Serves multiple high speed peripheral applications
- Design flexibility
- Options to reduce overall height
- Enables higher data rates
- Supports higher speeds with backward compatibility to Gen 3
- Allows for application flexibility
- Higher durability
- Saves mother board space in X axis and Z axis respectively

TECHNICAL INFORMATION

MATERIAL

- Contact: Copper alloy with gold plating sufficient to meet all mechanical and environmental requirements
- Contact Finish: Must be compatible with lead-free soldering process
- Housing: Complies with UL 94 V-0. Must be compatible with lead-free soldering process

ELECTRICAL PERFORMANCE

- Low Level Contact Resistance: EIA-364-23, 55mΩ max. (initial) per contact, *20mΩ max. change allowed
- Insulation Resistance: EIA-364-21, * $>5 \times 108\Omega$ at 500V DC
- Dielectric Withstanding Voltage: EIA-364-20, * $>300V$ AC (RMS) at sea level
- Current Rating: *0.5A/Power contact (continuous), * The temperature rise above ambient shall not exceed 30°C, * The ambient condition is still air at 25°C, * EIA-364-70 Method 2
- Voltage Rating: 50V AC per contact

MECHANICAL PERFORMANCE

- Durability:
 - Normal M.2: 25-60 mating cycles
 - M.2 with 30Au: Can meet 5000 mating cycles
- MPN: MDT-350-X-XX-001VT

ENVIRONMENTAL

- Durability: EIA-364-9; *Option 1 - 25 Cycles, *Option 2 - 60 Cycles, Upon completion of cycles the sample must meet all visual and electrical performance requirements
- Insertion Force: 20N (2.04
- KgF, 1 Newton = 1 Kg* m/s²) max., EIA-364-13, Method A
- Shock: * 250 G (notebook) and 285 G (tablet), *at 2 ms half sine, *on all six (6) axis
- Vibration: EIA-364-1000 Test group 3, EIA-364-28
- Operating Temperature: -40°C to +80°C
- Environmental Test Methodology: EIA-364-1000 Test group 1, 2, 3, 4
- Useful Field Life: Three (3) years

SPECIFICATIONS

- Amphenol Product Specification:
 - GS-12-1142
 - GS-12-1195
 - GS-12-1248

PACKAGING

- Tape & Reel

TOOLING INFORMATION

- Tooled Up

TARGET MARKETS/APPLICATIONS



Wireless



Laptop
Tablet



Storage

PART NUMBERS

| Description | Height (mm) | Data rate | Orientation | Key Options | Part Numbers |
|------------------|-------------|-----------|-------------|-------------|-------------------------|
| M.2 Gen 3 | 1.8 | 8Gb/s | Right Angle | A | MDT180A0X001 |
| M.2 Gen 3 | 1.8 | 8Gb/s | Right Angle | B | MDT180B0X001 |
| M.2 Gen 3 | 1.8 | 8Gb/s | Right Angle | E | MDT180E0X001 |
| M.2 Gen 3 | 1.8 | 8Gb/s | Right Angle | M | MDT180M0X001 |
| M.2 Gen 3 125pin | 1.9 | 8Gb/s | Right Angle | - | MDT190XXXXXX |
| M.2 Gen 3 | 3.2 | 8Gb/s | Right Angle | A | MDT320A0X001 |
| M.2 Gen 3 | 3.2 | 8Gb/s | Right Angle | B | MDT320B0X001 |
| M.2 Gen 3 | 3.2 | 8Gb/s | Right Angle | E | MDT320E0X001 |
| M.2 Gen 3 | 3.2 | 8Gb/s | Right Angle | M | MDT320M0X001 |
| M.2 Gen 3 | 4.2 | 8Gb/s | Right Angle | A | MDT420A0X002 |
| M.2 Gen 3 | 4.2 | 8Gb/s | Right Angle | B | MDT420B0X002 |
| M.2 Gen 3 | 4.2 | 8Gb/s | Right Angle | E | MDT420E0X002 |
| M.2 Gen 3 | 4.2 | 8Gb/s | Right Angle | M | 10130616 & MDT420M0X002 |
| M.2 Gen 3 | 5.5 | 8Gb/s | Right Angle | M | 10128798-00XRLF |
| M.2 Gen 3 | 8.5 | 8Gb/s | Right Angle | B | 10128796-00XRLF |
| M.2 Gen 3 | 8.5 | 8Gb/s | Right Angle | E | 10128797-00XRLF |
| M.2 Gen 3 | 8.5 | 8Gb/s | Right Angle | M | 10131758-00XRLF |
| M.2 Gen 3 | - | 8Gb/s | Orthogonal | M | MDT214XXXXXX |
| M.2 Stand off | Various | - | - | - | MDTXXXSTD001 |
| M.2 Screw | - | - | - | - | MDTSCW001 |
| M.2 Gen 3 | - | 8Gb/s | Vertical | M | MDT350M0X001VT |
| M.2 Gen 3 | 2 | 8Gb/s | Right Angle | M | G633B0670X2XEU |
| M.2 Gen 4 | 1.5 | 16Gb/s | Right Angle | B | MDT150B0X002 |
| M.2 Gen 4 | 2.75 | 16Gb/s | Right Angle | A | MDT275A0X004 |
| M.2 Gen 4 | 2.75 | 16Gb/s | Right Angle | B | MDT275B0X004 |
| M.2 Gen 4 | 2.75 | 16Gb/s | Right Angle | E | MDT275E0X004 |
| M.2 Gen 4 | 2.75 | 16Gb/s | Right Angle | M | MDT275M0X004 |
| M.2 Gen 4 | 3 | 16Gb/s | Right Angle | E | 10159155-M0XRHLF |
| M.2 Gen 4 | 3 | 16Gb/s | Right Angle | M | 10159155-M0XRHLF |
| M.2 Gen 4 | 3.2 | 16Gb/s | Right Angle | A | MDT320A0X004 |
| M.2 Gen 4 | 3.2 | 16Gb/s | Right Angle | B | MDT320B0X004 |
| M.2 Gen 4 | 3.2 | 16Gb/s | Right Angle | E | MDT320E0X004 |
| M.2 Gen 4 | 3.2 | 16Gb/s | Right Angle | M | MDT320M0X004 |
| M.2 Gen 4 | 4.2 | 16Gb/s | Right Angle | A | MDT420A0X003 |
| M.2 Gen 4 | 4.2 | 16Gb/s | Right Angle | B | MDT420B0X003 |

PART NUMBERS

| Description | Height (mm) | Data rate | Orientation | Key Options | Part Numbers |
|-----------------------------|-------------|-----------|-------------|-------------|-------------------|
| M.2 Gen 4 | 4.2 | 16Gb/s | Right Angle | E | MDT420E0X003 |
| M.2 Gen 4 | 4.2 | 16Gb/s | Right Angle | M | MDT420M0X003 |
| M.2 Gen 4_1A Per Pin | 4.2 | 16Gb/s | Right Angle | M | 10157930-00XRLF |
| M.2 Gen 4 | 5.8 | 16Gb/s | Right Angle | A | MDT580A0X003 |
| M.2 Gen 4 | 5.8 | 16Gb/s | Right Angle | B | MDT580B0X003 |
| M.2 Gen 4 | 5.8 | 16Gb/s | Right Angle | E | MDT580E0X003 |
| M.2 Gen 4 | 5.8 | 16Gb/s | Right Angle | M | MDT580M0X003 |
| M.2 Gen 4 | 6.7 | 16Gb/s | Right Angle | A | MDT670A0X412 |
| M.2 Gen 4 | 6.7 | 16Gb/s | Right Angle | B | MDT670B0X412 |
| M.2 Gen 4 | 6.7 | 16Gb/s | Right Angle | M | MDT670M0X412 |
| Dual Port M.2 Gen 4 | 6.7 | 16Gb/s | Right Angle | M | MDT670M0X210 |
| Metal Shielded M.2 Gen 4 | 2 | 16Gb/s | Right Angle | M | MDT200M0X003 |
| M.2 Gen 4 High mating cycle | 8.35 | 16Gb/s | Right Angle | M | MDT835M01411 |
| M.2 Gen 4 | 8.5 | 16Gb/s | Right Angle | M | 10154478-067RXXLF |
| M.2 Gen 4 | - | 16Gb/s | Vertical | A | MDT350A01401VT |
| M.2 Gen 4 | - | 16Gb/s | Vertical | B | MDT350B01401VT |
| M.2 Gen 4 | - | 16Gb/s | Vertical | E | MDT350E01401VT |
| M.2 Gen 4 | - | 16Gb/s | Vertical | M | MDT350M01401VT |

*X denotes various plating options: Au Flash/15u" Au/30u" Au

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