

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
- Upgradeable 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 Stacked M.2



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
 - VT M.2 MDT400M01001VT: Can meet 5000 mating cycles

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	-	8Gb/s	Vertical	M	MDT400M03001VT
M.2 Gen 3(High mating cycle)	-	8Gb/s	Vertical	M	MDT400M01001VT
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
Stacked M.2 Gen 4	10.85	16Gb/s	Right Angle	M	10166503-00XRHLF

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