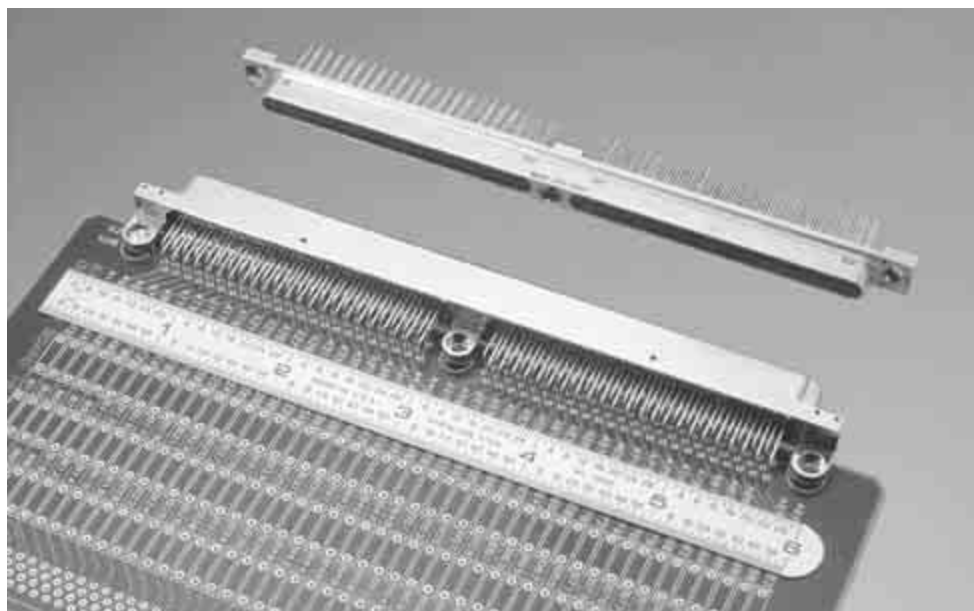


MICRODOT MCEM Series Metal Shell Edgeboard Connectors

Metal Shell Edge Board Connectors

- Meets MIL-DTL-55302 performance requirements
- Layouts 128 and 184 are QPL to slash sheets 120, 121, 122 and 123
- Connectors are available in 40, 44, 80, 110, 128, 152, and 184 positions
- Utilizes low force twist pins and our low force sockets. Mating forces in the 3 to 4 oz. [.83 to 1.11N] range per contact are typical with low force pin and low force socket
- Designed for surface mounting and through-the-board mounting
- Available termination
 - Mother board (pin side) — cactus bend
 - Daughter board (socket side) — coke bottle, right-angle bend to “A” or “B” side
 - Solder pots, and variety of other wire terminations for pin and socket connectors available at customer’s request
- Two hexagonal polarizing keys (per MIL-DTL-55302 slash sheet 124) are provided. Jackscrew hardware is available. For programmable keying/jacking modifications consult Tyco Electronics



In addition to the plastic versions of the 2 piece edgeboard connectors, a metal shell assembly is designed and tooled. The metal shells are made of aluminum alloy per QQ-A-591. The insert material is Diallyl phthalate, Polyphenylene sulfide (RYTON) or Liquid Crystal Polymer (LCP). The techni-

cal and performance data is essentially the same as that shown for the MCDM Series on page 103. These are rugged, durable connectors and are ideal for use in areas of high density packaging and where frequent connect and disconnects are required. Designed initially for applications in airborne data recorders,

computers and associated equipment in navigational systems. The mother board connector can be ordered to fit any pattern on the circuit board. The units can also be provided with contacts on .100 [2.54] spacing which results in .100 [2.54] grid pattern.

Performance Data

Electrical

Contact Resistance — The average mated contact resistance is 4 milliohms, with a maximum value of 8 milliohms. The average resistance value at 100 microvolts is 4.8 milliohms.

Dielectric Withstanding Voltage — 800 VAC RMS at sea level (600 for solder pots); 200 VAC RMS at 70,000 feet [21,336m] (150 for solder pots).

Durability — Less than the maximum allowable, 8 milliohms after 500 mating cycles.

Insulation Resistance — Greater than 5,000 megohms at room ambient temperature.

Maximum Current Carrying Capacity — No. 24 contact 3 amperes.

Mechanical

Contact Engaging & Separation Forces — 5.0 oz. max. [1.39N] (eng.), 0.5 oz. min. [.14N] (sep.).

Environmental

Temperature Range — -67°F to 302°F [-55°C to +150°C] for Diallyl Phthalate; -67°F to 257°F [-55°C to +125°C] for Polyphenylene Sulfide.

Vibration — No discontinuity in excess of 1 μ sec. during twelve 20 minute sweeps from 10 to 2000 CPS at .06 double amplitude or 20 G forces, whichever is less.

Materials and Finish

Shells — High grade aluminum alloy, electroless nickel plated per AMS 2404.

Insulator — Diallyl Phthalate per MIL-M-14, Type SDG-F (for 128 & 184); Polyphenylene Sulfide per MIL-M-24519 or ASTM D4067 (for 40, 44, 80, 110 & 152), or Liquid Crystal Polymer per ASTM D5138.

Contacts

Pin (low force) — beryllium and OFHC copper, gold plated.

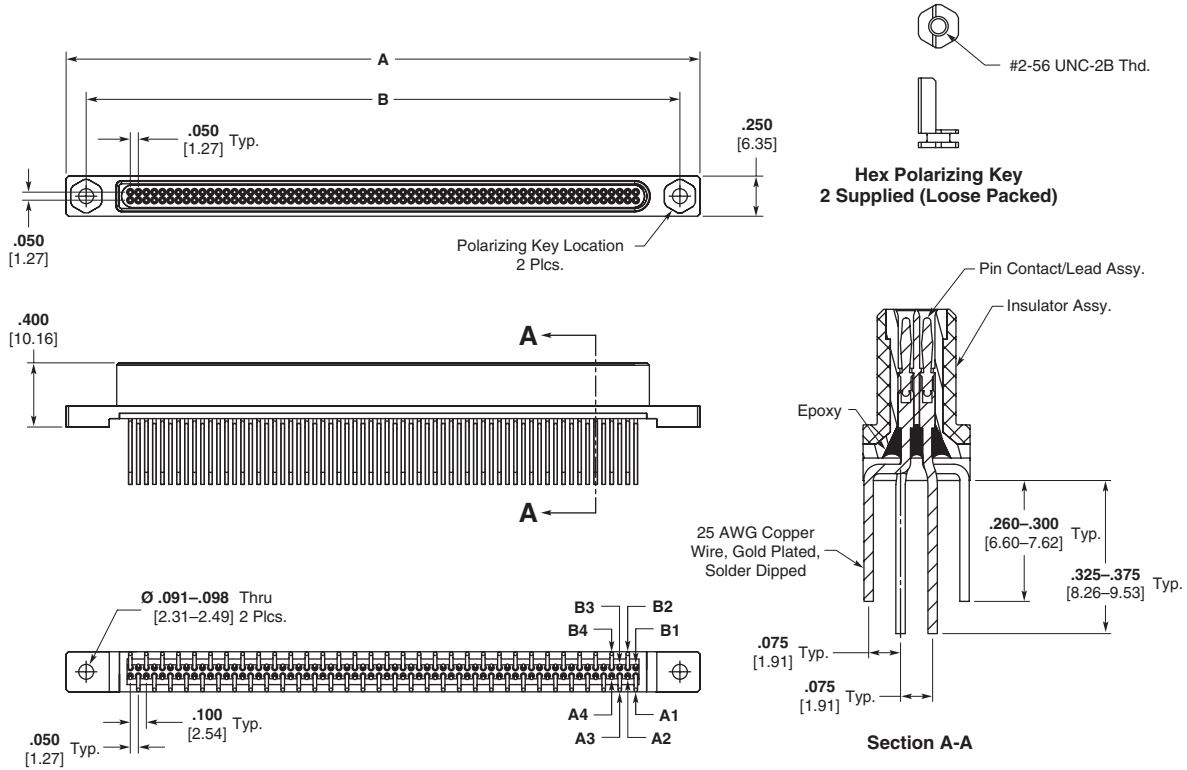
Socket (low force) — Copper alloy, gold plated.

Hardware — Corrosion resistant stainless steel passivated.

RYTON is a trademark of Chevron Chemical Company LLC.

MICRODOT MCEM Series Metal Shell Edgeboard Connectors (Continued)

Mother Board (Pin Side)
40, 44, 80, 110 & 128 Positions



Dimensions for .062 [1.57] PC Board

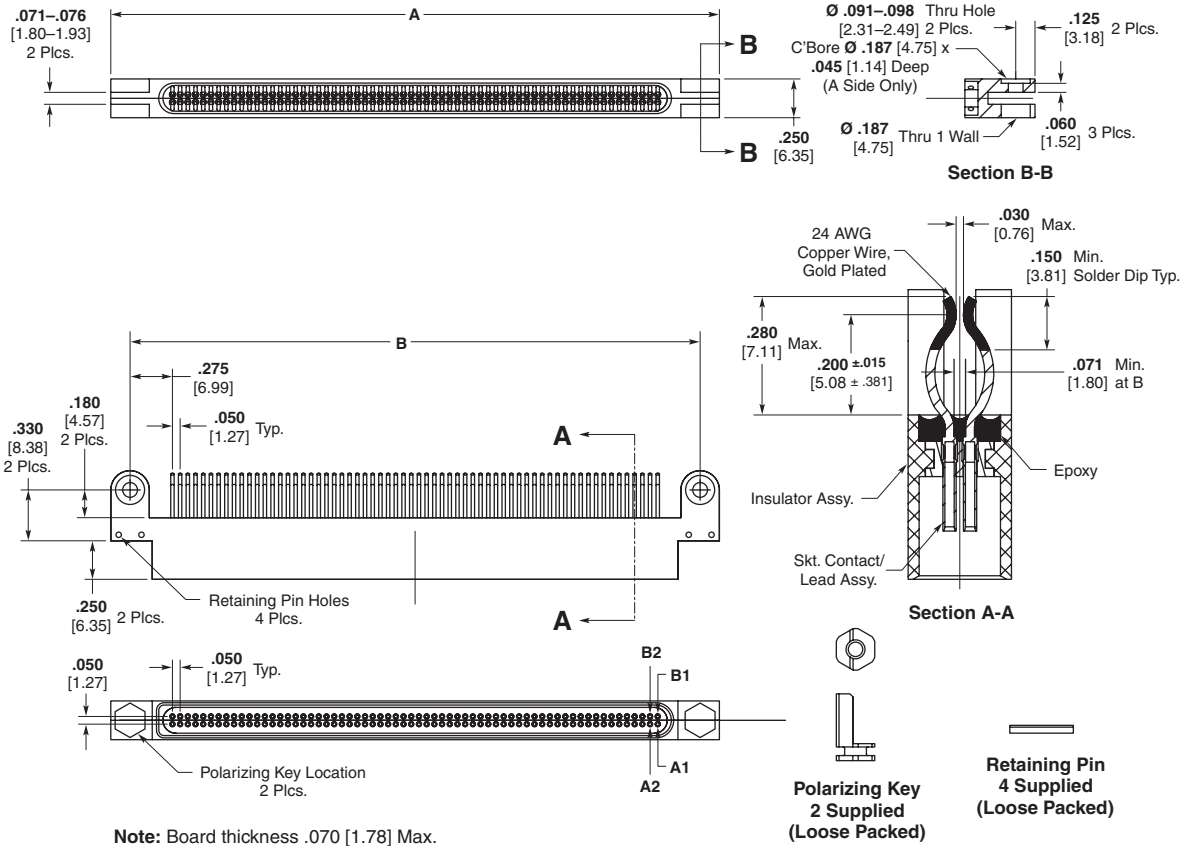
No. of Contacts	A ± .010 [± .254]	B ± .005 [± .127]
40	1.750 44.45	1.500 38.10
44	1.850 46.99	1.600 40.64
80	2.750 69.85	2.500 63.50
110	3.500 88.90	3.250 82.55
128	3.950 100.33	3.700 93.98

Note: For PC Boards of different widths, consult Tyco Electronics.

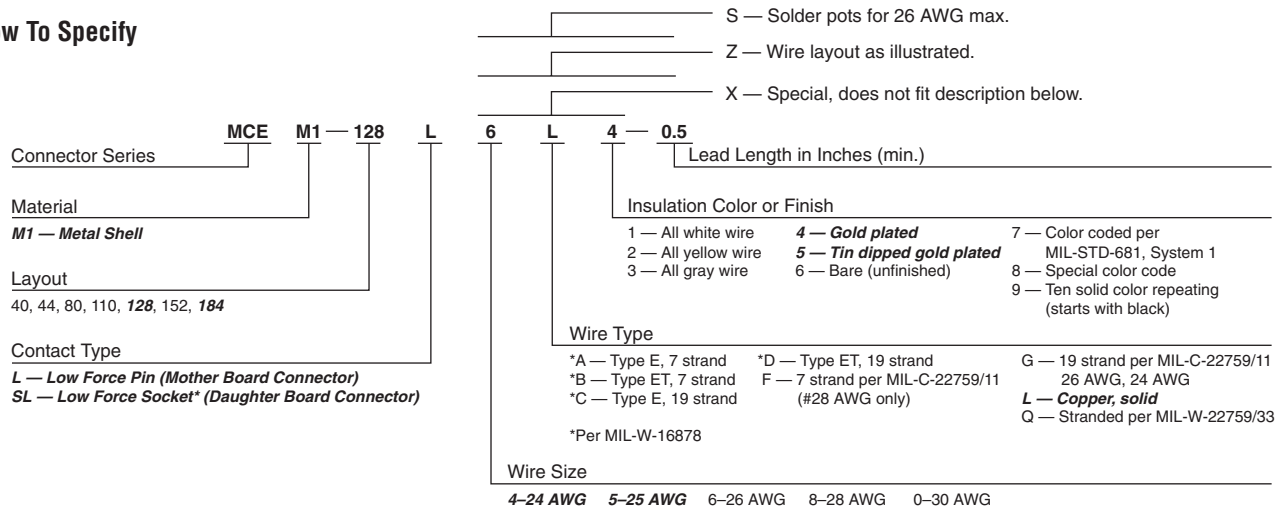
Items in bold italic are qualified to MIL-DTL-55302.
 Configuration shown is per MIL-DTL-55302/120.

MICRODOT MCEM Series Metal Shell Edgeboard Connectors (Continued)

**Daughter Board
(Socket Side)**
40, 44, 80, 110 & 128 Positions



How To Specify

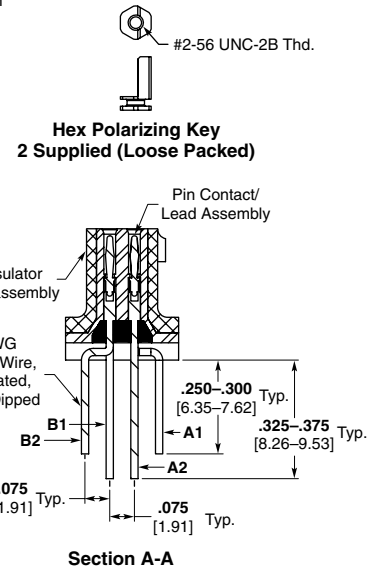
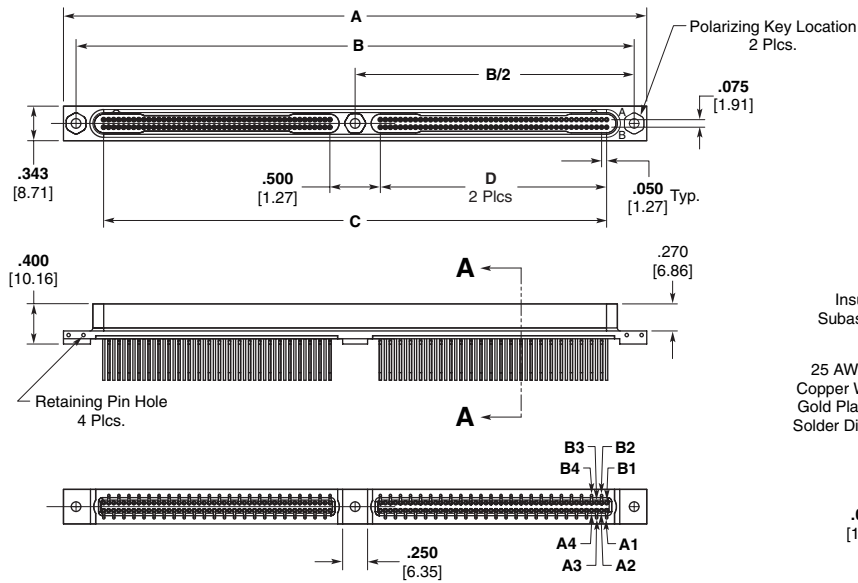


Items in bold italic are qualified to MIL-DTL-55302. Configuration shown is per MIL-DTL-55302/121.

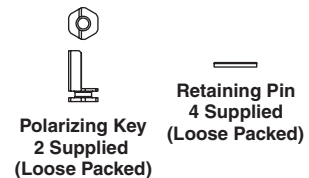
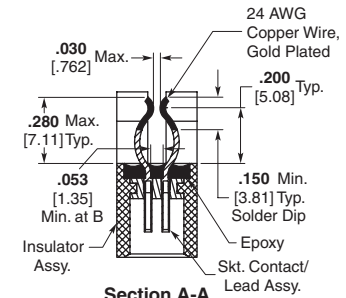
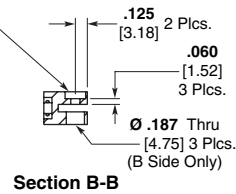
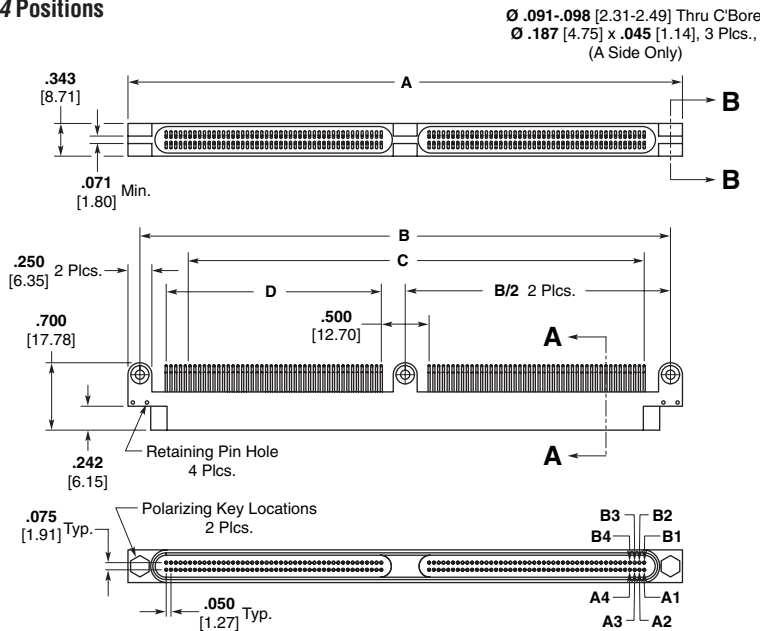
Polarization — Hexagonal hardware is supplied with connector.
Mounting — Standard mounting holes are shown. Consult Tyco Electronics for modifications.

MICRODOT MCEM Series Metal Shell Edgeboard Connectors (Continued)

Mother Board (Pin Side)
152 & 184 Positions



Daughter Board (Socket Side)
152 & 184 Positions

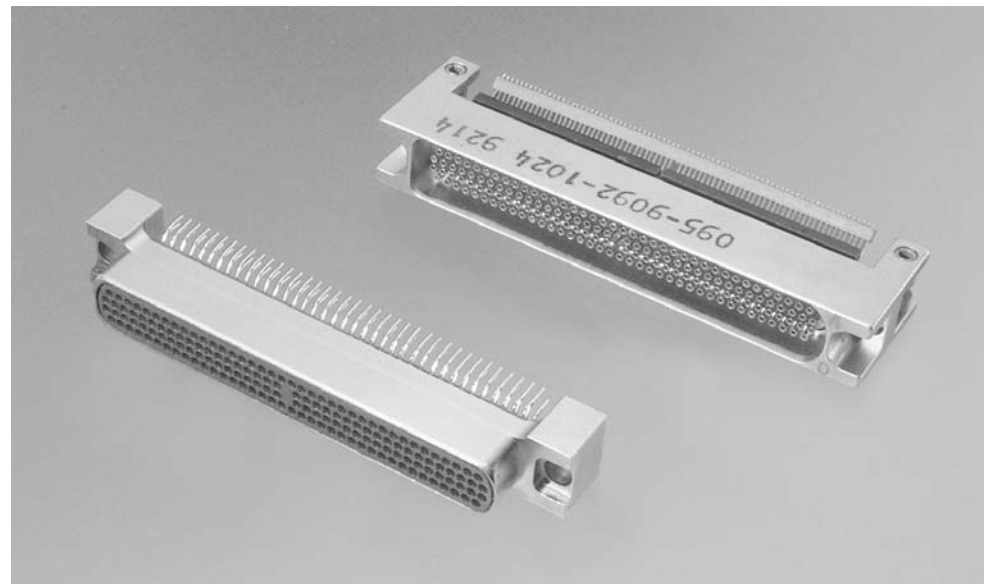


No. of Contacts	A ± .010 [± .254]	B ± .005 [± .127]	C Basic	D Basic
152	4.550 115.57	4.300 109.22	4.750 120.65	1.850 46.99
184	5.800 147.32	5.550 140.97	5.000 127.00	2.250 57.15

MICRODOT High Density Standard Module (HDSM) Connectors

Features

- Designed for surface mounting on both daughter board and mother board for increased circuit density
- Basic design offers 38, 78, 120, 152, 200, 304, and 400 contact designs
- High reliability twist pin and socket per MIL-DTL-83513 and MIL-DTL-55302
- Connector permits lateral movement of daughter board to accommodate clamping of the heatsink
- Plated through-hole mounting available
- Available with flying leads
- Extender card option available
- Typical mating force for 304 contacts is 38 pounds
- Designed to withstand vapor phase soldering
- Two rotatable (six position) polarizing keys are provided accommodating 36 possible combinations
- Jackscrew hardware available; consult Tyco Electronics
- Different modular inserts may be specified to include coax (Pixi/Con), fiber optic or other special contacts
- Inserts may be partially or fully loaded and installed in the connector shell in various configurations



The MICRODOT HDSM connector is designed for 4 row .050 [1.27] pitch density with a special low force twist pin that meets all requirements of MIL-DTL-55302 and MIL-DTL-83513. This high density connector allows the use of construction to double the packaging density with surface mount capability.

Performance Data Summary

Electrical

Contacts — Pin 24 AWG twist pin, Socket #24 AWG, Wire range 24 AWG to 32 AWG solid and stranded.

Contact Resistance (voltage drop) — 25 millivolts max. at 3 amps, 25° ± 3° C.

Current Rating — 3 amps max. per contact

Dielectric Withstanding Voltage — Volts RMS 60 Hz at room ambient: 600 V for solder pots at sea level. 150 V for solder pots at 70,000 ft. [21,336m]. 500 V for wire terminations at sea level. 200 V for wire terminations at 70,000 ft.

Insulation Resistance — 5,000 megohms min. at room ambient.

Magnetic Permeability — 2 μm max.

Mechanical

Contact Spacing — .050 [1.27] centers

Contact Engagement & Separation — 5.0 oz max. [1.39N] (eng.) 0.5 oz. min. [.14N] 3.5 oz. typ. [.97N] (sep.) force.

Materials and Finishes

Contacts — Copper alloy plated with .000050 [0.00127] gold over copper flash per MIL-G-45204, Type II.

Metal Shell —
Insulator — Liquid Crystal Polymer (LCP) per ASTM D5138 or Polyphenylene Sulfide per MIL-M-24519 or ASTM D4067

Body Shell — Aluminum alloy plated Nickel, electroless per MIL-C-26074.

Environmental

Temperature Range — -67°F to 257°F [-55° C to +125° C].

Vibration — No discontinuity in excess of 1 micro sec. when tested in accordance with MIL-STD-1344, Method 2005, test Condition IV.

Insulator Retention — Inserts will withstand a 50 lb. per square inch load in either direction.

Shock — No discontinuity in excess of 1 micro sec. when tested in accordance with MIL-STD-1344, Method 2004, test Condition E.

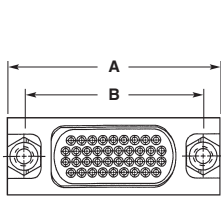
Durability — No mechanical or electrical defects detrimental to the function of the connectors after 500 cycles of mating and unmating. (Caution: Mating force increases during durability cycling may be noted).

Humidity — After exposure to humidity as specified by MIL-STD-1344, Method 1002, Type II, IR shall be 1 megohm min. immediately following step 7a of Method 1002 and 1000 megohms min. after 24 hours of conditioning per Method 1002.

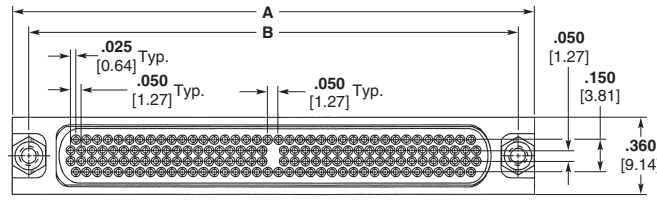
Salt Spray — Connectors shall meet the performance requirements of contact resistance, mating and unmating forces, and contact retention after being subjected to the 48-hour 5% solution salt spray test per MIL-STD-1344, Method 1001, Condition B.

Crimp Termination Tensile Strength — Unassembled contacts with crimped stranded wire terminations will not pull out of contacts when the following axial loads are applied: 24 AWG, 5 lbs., 26 AWG, 4 lbs., 28 AWG, 3 lbs.

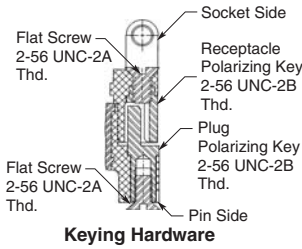
MICRODOT High Density Standard Module (HDSM) Connectors (Continued)



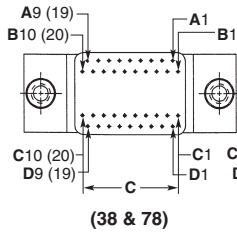
38 & 78 Position Plug



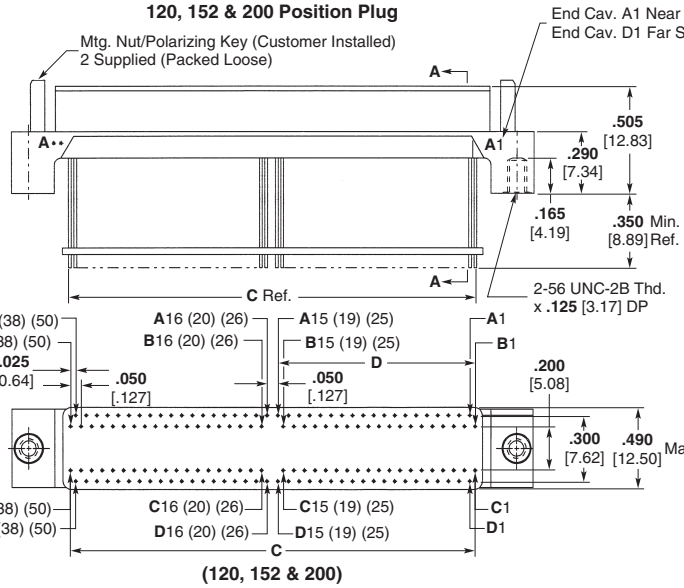
120, 152 & 200 Position Plug



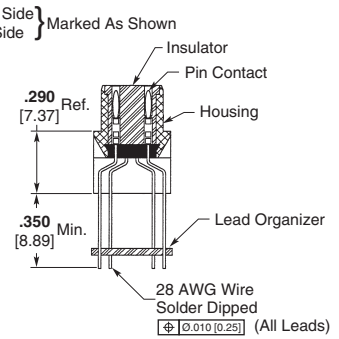
Keying Hardware



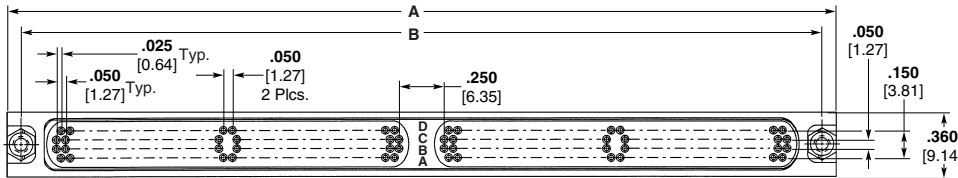
(38 & 78)



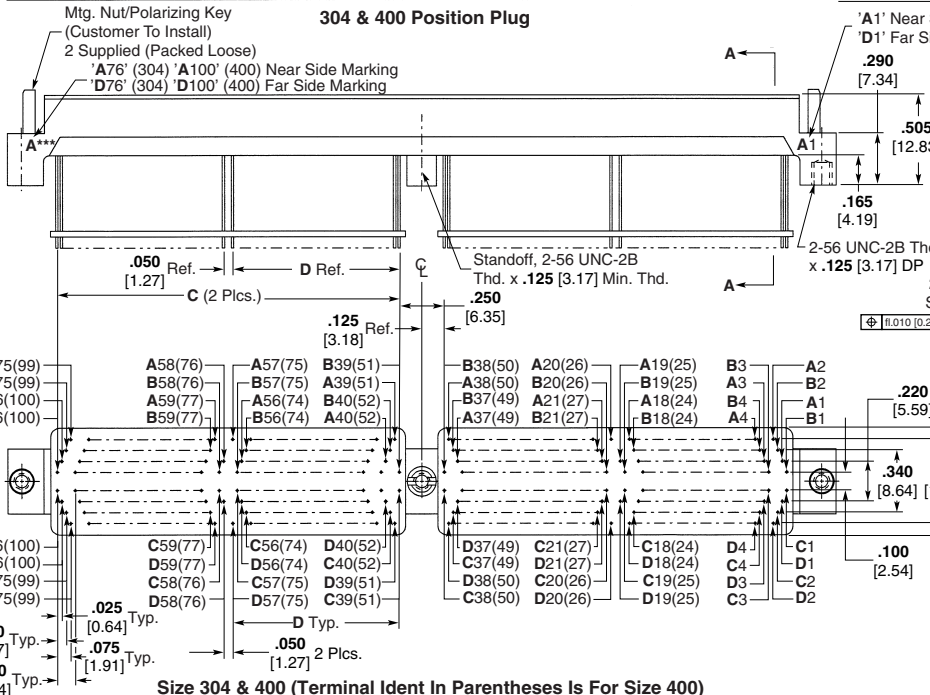
(120, 152 & 200)



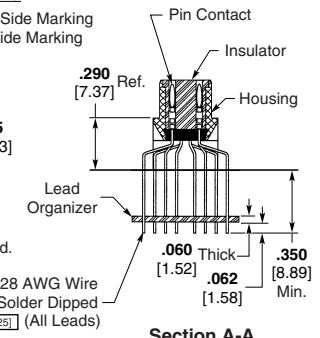
Section A-A



304 & 400 Position Plug

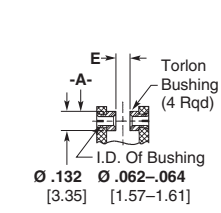
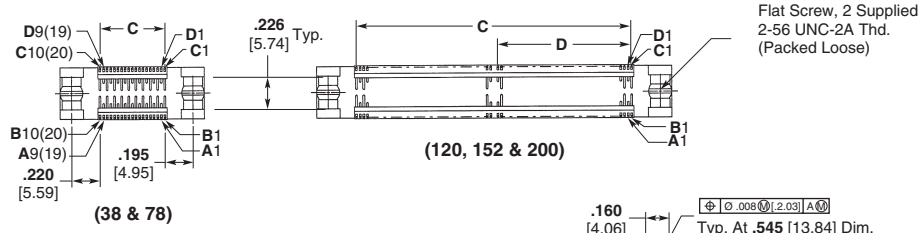


Size 304 & 400 (Terminal Ident In Parentheses Is For Size 400)

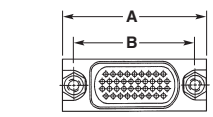


Section A-A

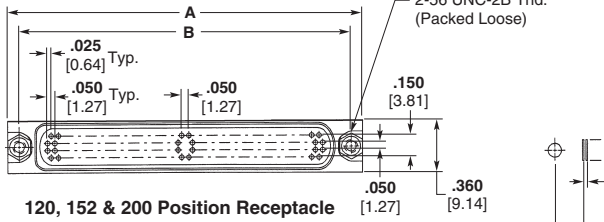
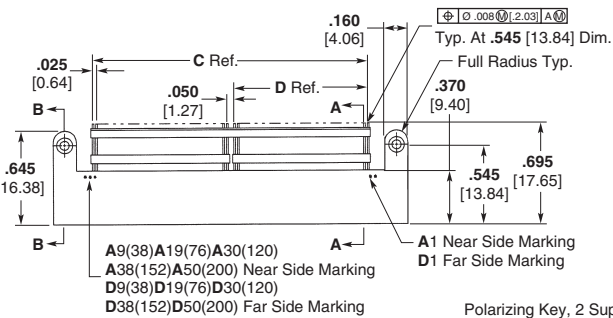
MICRODOT High Density Standard Module (HDSM) Connectors (Continued)



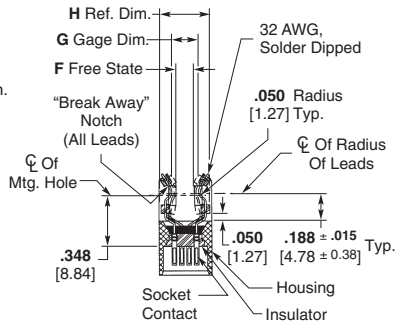
Section B-B



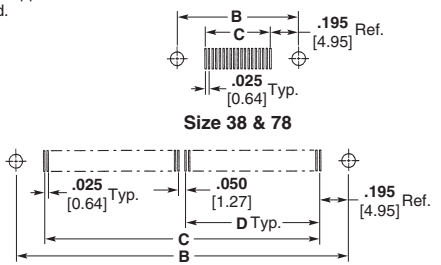
38 & 78 Position Receptacle



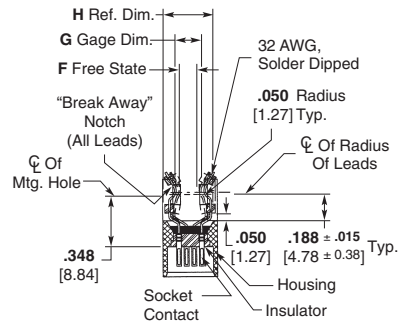
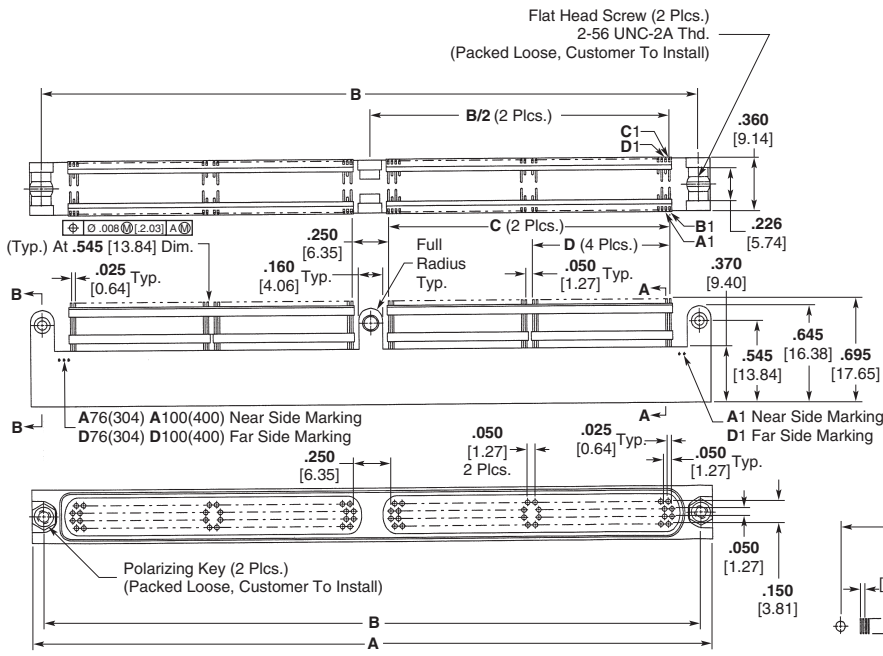
120, 152 & 200 Position Receptacle



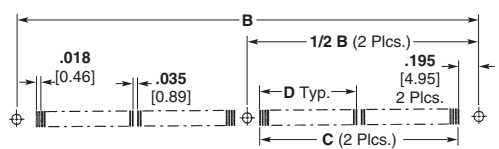
Section A-A



**Size 38 & 78
Size 120, 152 & 200
Recommended PCB Footprint Pattern**



Section A-A



**Size 304 & 400
Recommended PCB Footprint Pattern**

MICRODOT High Density Standard Module (HDSM) Connectors (Continued)

No. of Cavities	A Dim.	B Dim.	C Dim.	D Dim.
Single Bay				
38	1.000 25.40	.840 21.34	.450 11.43	—
78	1.500 38.10	1.340 34.04	.950 24.13	—
120	2.050 52.07	1.890 48.01	1.500 38.10	.725 18.42
152	2.450 62.23	2.290 58.17	1.900 48.26	.925 23.50
200	3.050 77.47	2.890 73.41	2.500 63.50	1.225 31.12
Double Bay				
304	4.600 116.84	4.440 112.78	1.900 48.26	.925 23.50
400	5.800 147.32	5.640 143.26	2.500 63.50	1.225 31.12

How To Specify

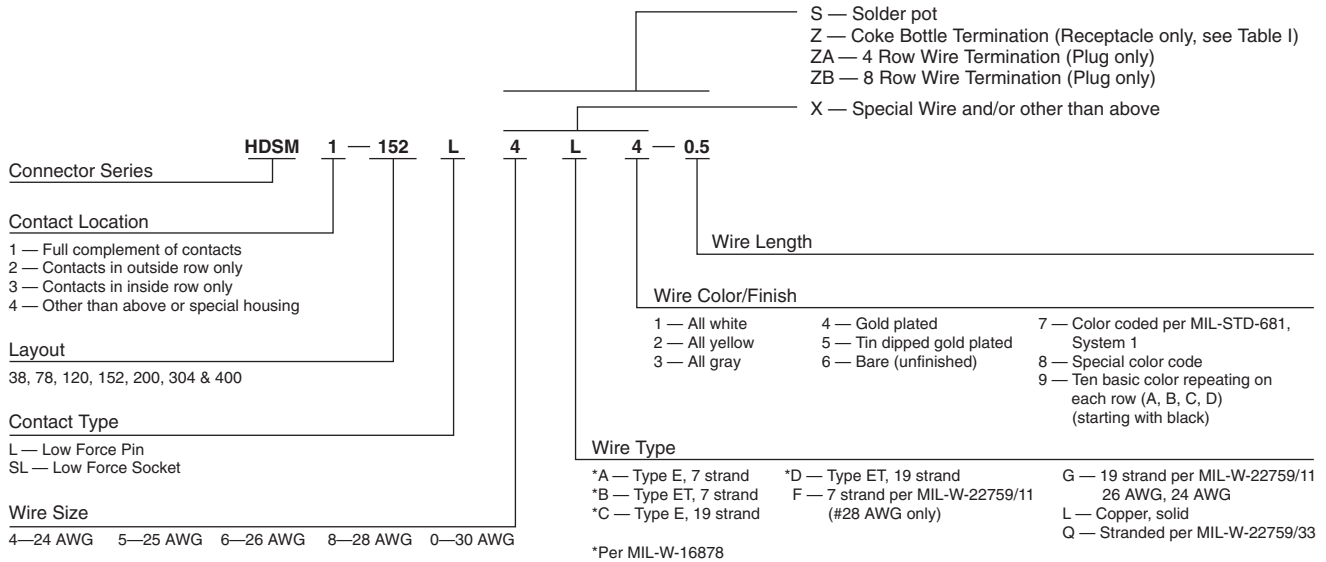


Table I

Dash No.	Gap Between Bushing "E"	F Dim.	G Dim.	H Dim. (Ref.)
1	.100 2.54	.120 3.05	.180 4.57	.330 8.38
2	.093 2.36	.060 1.52	.150 3.81	.330 8.38
3	.118 2.99	.235 5.97	.260 6.60	.483 12.27
4	.145 3.68	.120 3.05	.180 4.57	.330 8.38