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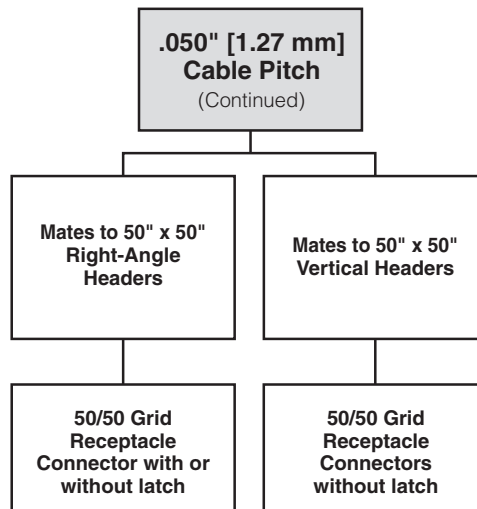
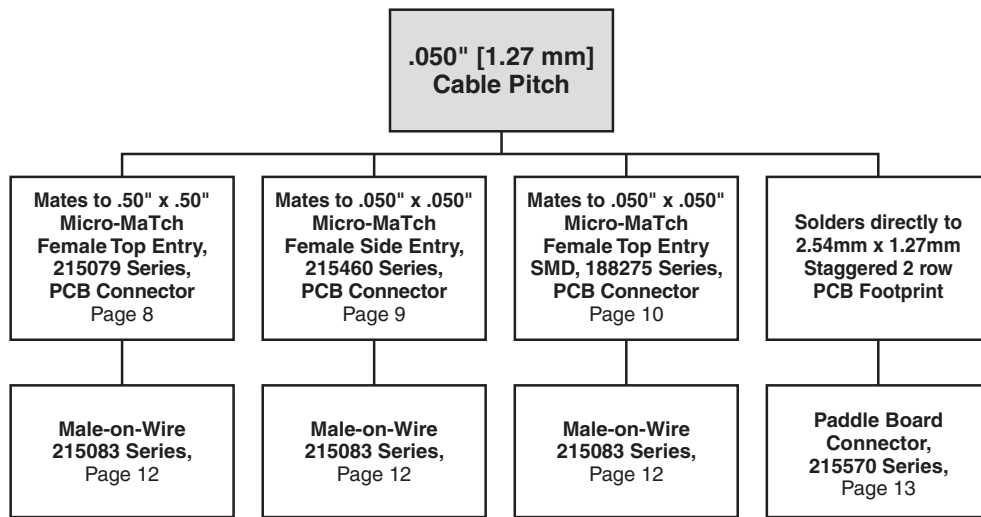
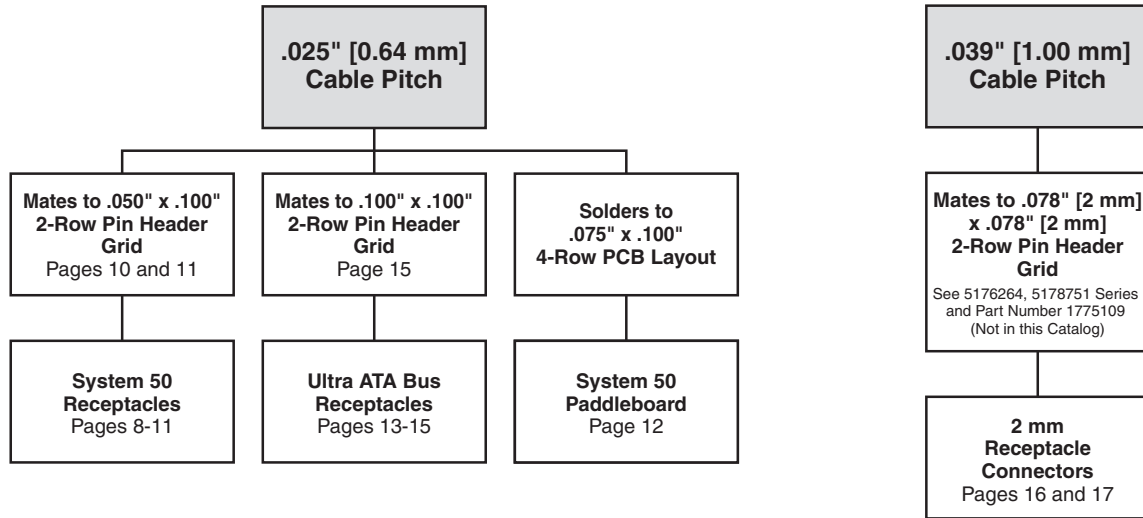


# Ribbon Cable Interconnect Solutions

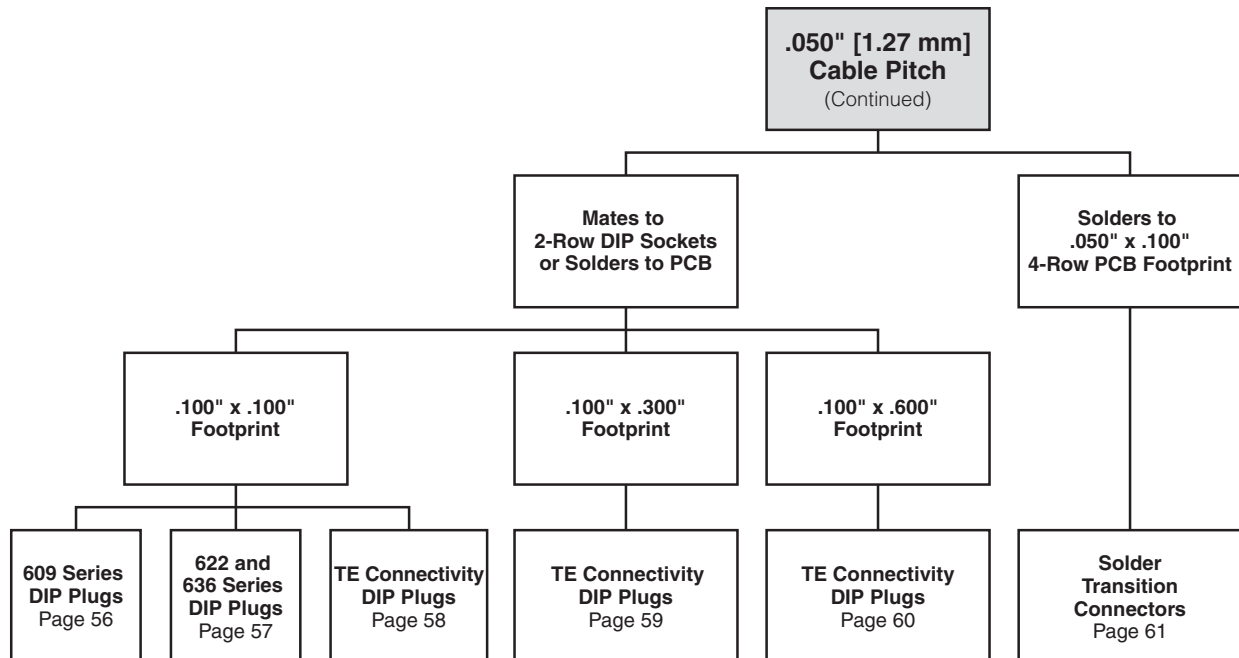
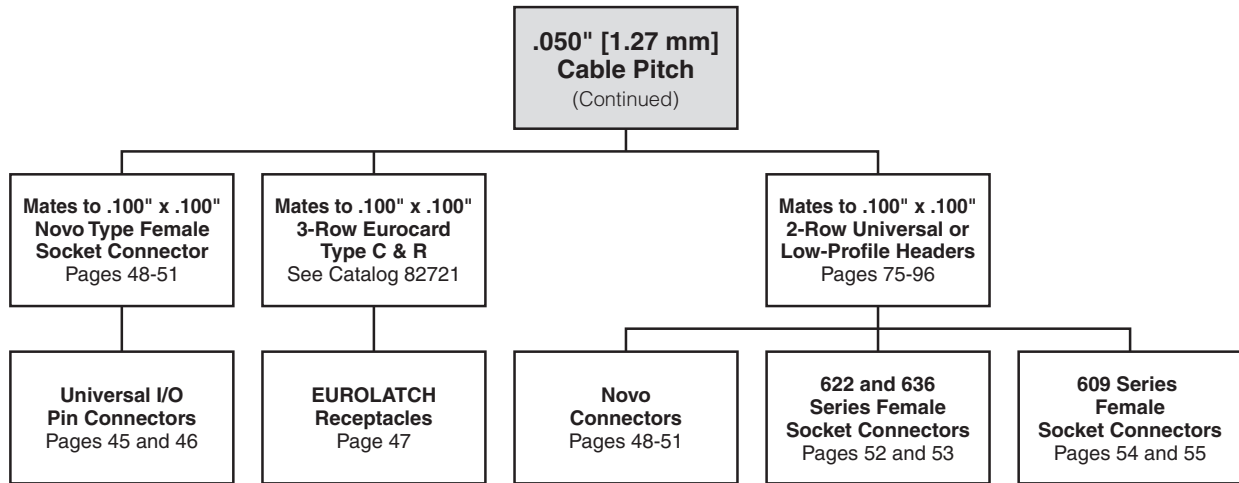
RoHS  
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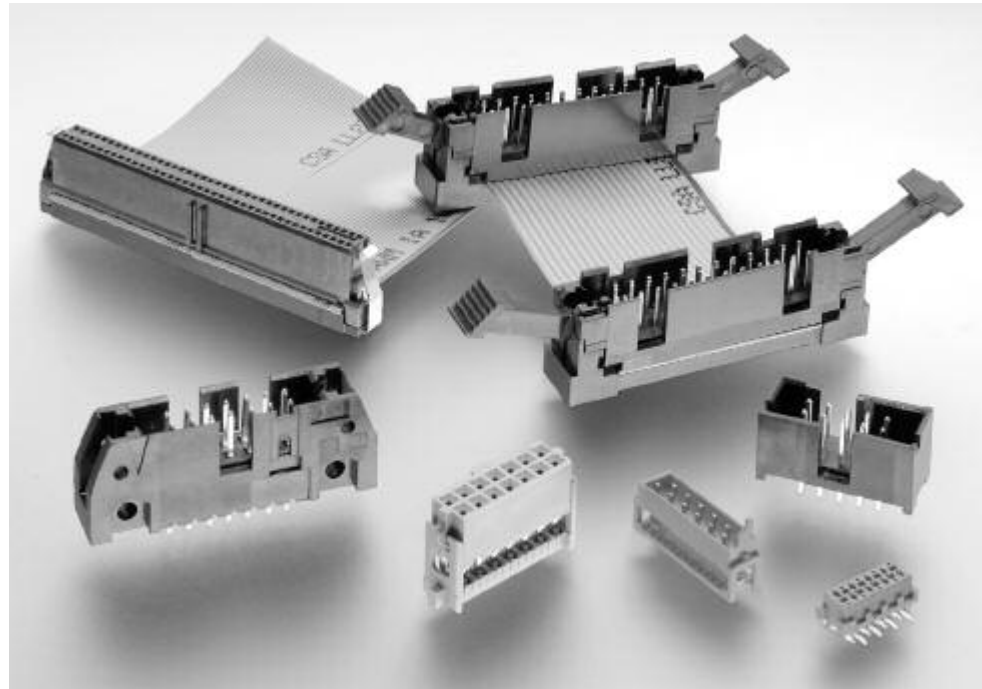
## Ribbon Cable Connector Selection Guide



**Ribbon Cable Connector Selection Guide** (Continued)



## Introduction



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- Ability to browse RoHS Compliant Products in our on-line catalog
- Downloadable Technical Data Customer Information Presentation
- More detailed information regarding the definitions used above
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Center

## Introduction (Continued)

**Mass termination capabilities of the ribbon cable connectors** have helped make ribbon cable, and particularly .050 [0.127] centerline cable, popular within the Electronics Industry. The ability to terminate up to 64 conductors simultaneously, without stripping or otherwise preparing the cable, presents obvious labor savings.

**Ribbon Cable Connectors** are wire-to-board devices used to make the transition between cable and pc board circuitry. They find heavy use within equipment to connect one board to another or one subsystem to another. The connectors are also used in input/output applications, connecting different pieces of equipment.

**Ribbon Cable Solutions** are available on three separate cable centerline spacings. They include:

### **.025 [0.64] Centerlines**

- System 50 receptacles
- System 50 paddleboards
- Pin headers

### **.039 [1.00] Centerlines**

- 2.0 mm receptacles
- Breakaway pin headers

### **.050 [1.27] Centerlines**

- 50/50 Grid connectors
- Micro-MaTch connectors
- Novo Receptacle connectors
- DIP plugs
- EUROLATCH receptacle connectors per DIN 41612 and IEC 603-2
- Pin Headers

**System 50 ribbon cable receptacles** will terminate cable on .025 [0.64] centerlines. They are available in select sizes from 20 thru 100-positions, and accept wire size range 30 AWG [0.05 mm<sup>2</sup>] solid or stranded wire and 32 AWG [0.03 mm<sup>2</sup>] stranded pvc insulated wire. Housing and cover are made of high temperature tolerant thermoplastic material, black, UL 94V-0 rated. A single mating beam, phosphor bronze contact provides the interconnect between the con-

ductor and the .015<sup>2</sup> [0.38<sup>2</sup>] posts on .050 x .100 [1.27 x 2.54] grid. Also available in paddleboard configurations.

### **2.0 mm [.079] ribbon cable receptacles**

feature contacts on a true 2.0 mm [.079 in.] mating grid for 1.0 mm [.039 in.] pitch ribbon cable. Select configurations are available between 8 and 50-positions. Receptacles feature insulation displacement contacts (IDC).

### **50/50 Grid connectors**

Although AMPMODU 50/50 Grid Vertical Headers and Receptacles are designed for parallel board-to-board stacking in high density applications, Right-angle board-to-board and cable-to-board applications are also possible since the vertical receptacles also mate with non-latching right-angle headers and the vertical headers also mate with non-latching cable connectors.

### **Micro-Match connectors**

Miniaturization and the trend towards higher density of electronic functions on a substrate led to the introduction of Micro-MaTch. The system offers a range of board and wire connectors, enabling a variety of wire-to-

board and board-to-board interconnections. Its design prevents the traditional failure mode in tin-plated connections, fretting corrosion. An additional positioning spring in the female part absorbs relative movements caused by vibrations and thermal expansion between male and female contacts. By preventing movements on the contact spot, a gas tight connection can be guaranteed under all circumstances.

### **Novo receptacles**

feature two rows of contacts on .100 x .100 [2.54 x 2.54] centers on selected sizes of 10 thru 64-positions and mate with .025 [0.64] square or round posts. The Novo tuning-fork contact offers a military-approved design, at an affordable cost. Polarization options include military, center and military, or dual bar.

### **DIP (Dual In-Line Package) plugs**

provide a permanent connection of ribbon cable to a pc board or mating to DIP sockets. Using the same centerline dimensions as DIP integrated circuits, DIP plugs offer space efficiency and a low profile of .253 [6.43].

## Need more information?

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- Technical Support
- Catalogs
- Technical Documents
- Product Samples
- TE Authorized Distributor Locations



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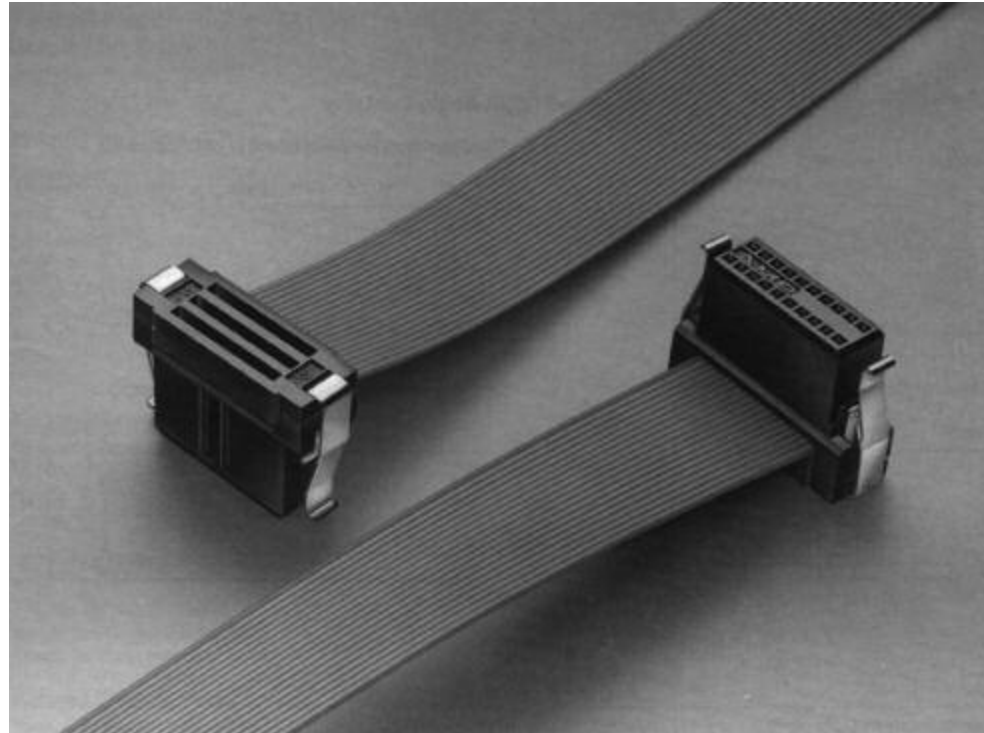
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## System 50 Cable-to-Board Connectors, .025 [0.64] Centerline Ribbon Cable

### Product Facts

- Preassembled housing and cover
- One-step termination
- End and daisy chain termination
- Positive end latching of connector to universal header
- Terminates 30 AWG [0.05 mm<sup>2</sup>] solid or stranded and 32 AWG [0.03 mm<sup>2</sup>] stranded .025 [0.64] centerline ribbon cable with PVC insulation
- Connectors are RoHS compliant
- Recognized under the Component Program of the Underwriters Laboratories, Inc. UL File No. E28476
- Certified by the Canadian Standards Association, File No. LR 7189



The System 50 Ribbon Cable connector is a receptacle connector that will terminate ribbon cable on .025 [0.64] centerlines. It is available in select sizes from 10 to 100 positions and will accommodate 30 AWG [0.05 mm<sup>2</sup>] solid or stranded and 32 AWG [0.03 mm<sup>2</sup>] stranded

conductors with PVC cable insulation.

The housing and cover are of a high temperature tolerant thermoplastic (black) with a UL 94V-0 rating. A phosphor bronze single mating beam contact provides the interconnect between the conductor and the .015 [0.38] square posts

on the .050 x .100 [1.27 x 2.54] grid. The contacts are plated with 30 gold duplex plating. The latching feature is located on the receptacle, not the header, and saves board space and eliminates future problems of "latch height compatibility."

## System 50 Cable-to-Board Connectors, .025 [0.64] Centerline Ribbon Cable (Continued)

### Double Row Receptacle



#### Material and Finish

**Housing** — Black thermoplastic, UL 94V-0 rated

**Latches** — Stainless steel

**Contacts** — Phosphor bronze, plated 30 microinch gold over nickel with tin in termination area

#### Related Product Data

**Mateable Connectors** — See AMP Catalog 82178  
See Part Numbers 104068 and 104069  
Series on pages 10 and 11

**Mates with Posts** — .015 [0.38] square, .125 [3.18] long, on .050 x .100 [1.27 x 2.54] grid

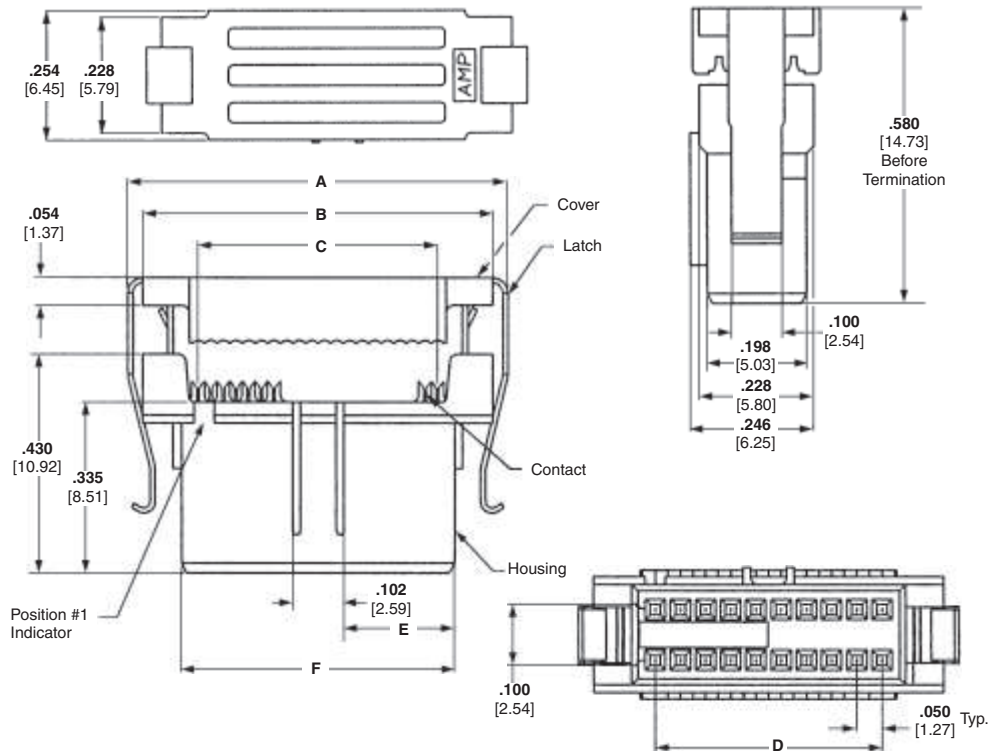
#### Technical Documents

**Product Specification**

108-1109

**Application Specification**

114-25029



No. of Pos.	Dimensions						Part Number
	A	B	C	D	E	F	
10	.510 12.95	.445 11.30	.225 5.72	.200 5.08	.096 2.44	.294 7.47	2-111196-5
14	.610 15.49	.545 13.84	.325 8.26	.300 7.62	.146 3.71	.394 10.01	2-111196-6
16	.660 16.76	.595 15.11	.375 9.52	.350 8.89	.171 4.34	.444 11.28	2-111196-7
20	.760 19.30	.695 17.65	.475 12.07	.450 11.43	.221 5.61	.544 13.82	1-111196-8
24	.860 20.32	.795 20.19	.575 14.61	.550 13.97	.271 6.88	.644 16.36	2-111196-8
26	.910 23.11	.845 21.46	.625 15.88	.600 15.24	.296 7.52	.694 17.63	2-111196-9
30	1.010 25.65	.945 24.00	.725 18.42	.700 17.78	.346 8.79	.794 20.17	1-111196-9
34	1.110 28.19	1.045 26.54	.825 20.96	.800 20.32	.396 10.06	.894 22.71	3-111196-0
40	1.260 32.00	1.195 30.35	.975 34.54	.950 24.13	.471 11.96	1.044 26.52	2-111196-0
44	1.360 34.54	1.295 32.89	1.075 27.31	1.050 26.67	.521 13.23	1.144 29.06	3-111196-1
50	1.510 38.35	1.445 36.70	1.225 31.12	1.200 30.48	.596 15.14	1.294 32.87	2-111196-1
60	1.760 44.70	1.695 43.05	1.475 37.47	1.450 36.83	.721 18.31	1.544 39.22	2-111196-2
64	1.860 47.24	1.795 45.59	1.575 40.00	1.550 39.37	.771 19.58	1.644 41.76	3-111196-2
68	1.960 49.78	1.895 48.13	1.675 42.55	1.650 41.91	.821 20.85	1.744 44.30	3-111196-4
72	2.060 52.32	1.995 50.67	1.775 45.08	1.750 44.45	.871 22.12	1.844 46.84	2-111196-3
80	2.260 57.40	2.195 55.75	1.975 50.17	1.950 49.53	.971 24.66	2.044 51.92	3-111196-3
100	2.760 70.10	2.695 68.45	2.475 62.87	2.450 62.23	1.221 31.01	2.544 64.62	2-111196-4

See Application Specification for termination tooling.

**Note:** All part numbers are RoHS compliant.

## System 50 Board-to-Board Connectors, Through-Hole Headers

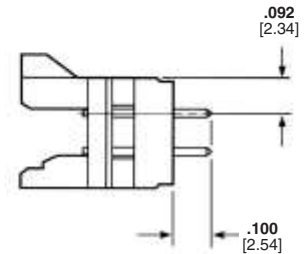
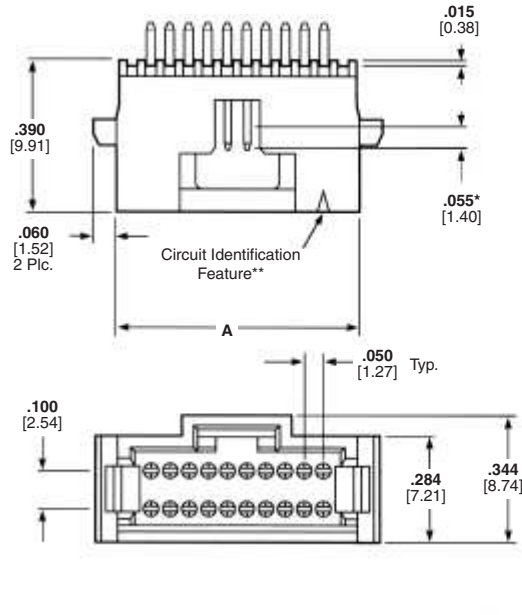
### Shrouded, Double Row Vertical



#### Material and Finish

**Housing** — Black thermoplastic, UL 94V-0 rated

**Contacts** — Copper alloy, plated .000030 [0.00076] gold in mating area, .000150 [0.00381] tin on solder posts, with entire contact underplated .000050 [0.00127] nickel



#### Related Product Data

**Mateable Receptacles** — page 9

#### Technical Documents

**Product Specification**  
108-1093

**Application Specification**  
114-25031

No. of Positions	Dim. A	Part Number
10	.380 9.65	5-104068-2
12	.430 10.92	5-104068-8
14	.480 12.19	5-104068-9
16	.530 13.46	6-104068-0
20	.630 16.00	5-104068-1
24	.730 18.54	6-104068-1
26	.780 19.81	6-104068-2
30	.880 22.35	5-104068-3

No. of Positions	Dim. A	Part Number
34	.980 24.89	6-104068-3
40	1.130 28.70	5-104068-4
44	1.230 31.24	6-104068-4
50	1.380 35.05	5-104068-5
60	1.630 41.40	5-104068-6
68	1.830 46.48	6-104068-8
72	1.930 49.02	6-104068-5
80	2.130 54.10	6-104068-6
100	2.630 66.80	6-104068-7

\*Point of measurement for gold thickness.

\*\*Circuit identification feature omitted on 8, 10, 12 and 14 position headers.

**Note:** All part numbers are RoHS compliant.

**System 50 Board-to-Board Connectors, Through-Hole Headers** (Continued)

**Shrouded, Double Row Right-Angle**



**Material and Finish**

**Housing** — Black thermoplastic, UL 94V-0 rated

**Contacts** — Copper alloy, plated .000030 [0.00076] gold in mating area, .000150 [0.00381] tin on solder posts, with entire contact underplated .000050 [0.00127] nickel

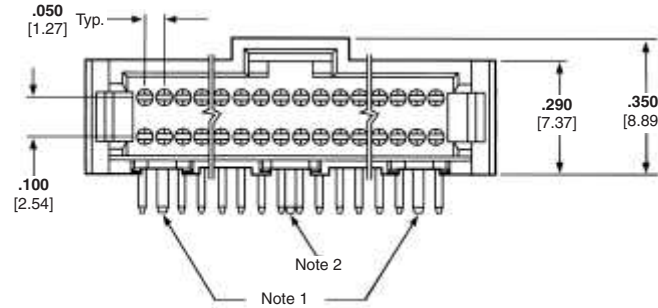
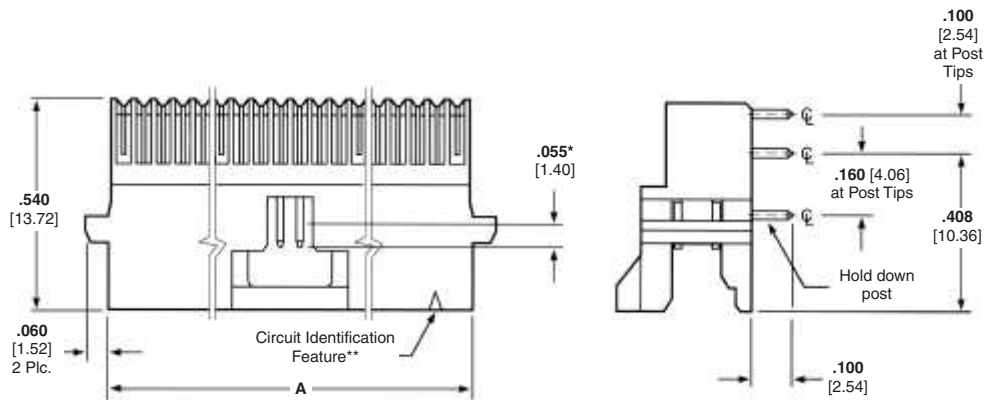
**Related Product Data**

**Mateable Receptacles** — page 9

**Technical Documents**

**Product Specification**  
108-1093

**Application Specification**  
114-25031



.025 [0.64] Centerline Ribbon Cable Connectors  
System 50 Board-to-Board Connectors

No. of Positions	Dim. A	Part Number
8	.330 8.38	5-104069-8
10	.380 9.65	5-104069-4
20	.630 16.00	5-104069-1
24	.730 18.54	6-104069-2
26	.780 19.81	6-104069-3
30	.880 22.35	5-104069-5
34	.980 24.89	6-104069-4

No. of Positions	Dim. A	Part Number
40	1.130 28.70	5-104069-6
50	1.380 35.05	5-104069-2
60	1.630 41.40	5-104069-7
68	1.830 46.80	6-104069-8
72	1.930 49.02	6-104069-6
80	2.130 54.10	5-104069-3
100	2.630 66.80	6-104069-7

\*Point of measurement for gold thickness.  
 \*\*Circuit identification feature omitted on 8, 10, 12 and 14 position headers.  
**Notes:** 1. Hold down posts located as shown for 16 through 100 position headers.  
 2. Hold down posts located as shown for 8 through 14 and 60 through 100 position headers.  
 3. All part numbers are RoHS compliant.



## System 50 Cable-to-Board Connectors, .025 [0.64] Centerline Ribbon Cable

### Paddleboard

#### Material and Finish

**Housing** — LCP thermoplastic, UL 94V-0 rated, black

**Cover** — Polyester, UL 94V-0 rated, black

**Contacts** — Phosphor bronze, plated .000100 [0.00245] min. tin over .000050 [0.00127] min. nickel underplating

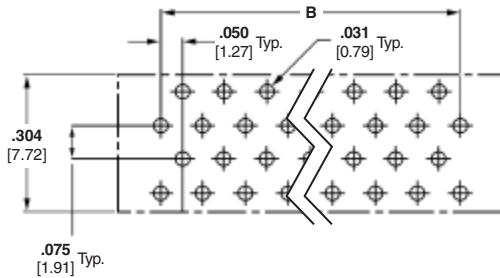
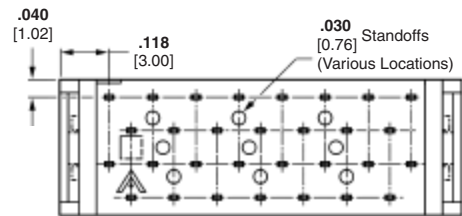
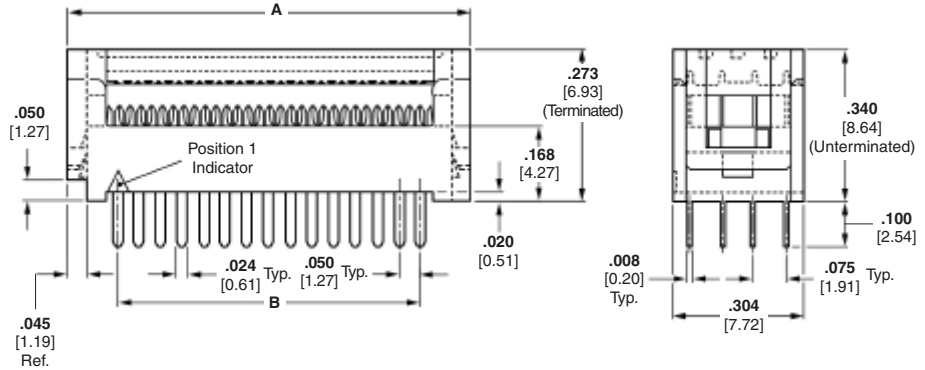
#### Technical Documents

##### Product Specification

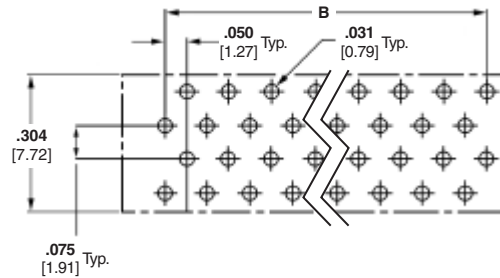
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##### Application Specification

114-25040



Printed Circuit Board Hole Layout #1



Printed Circuit Board Hole Layout #2

No. of Pos.	PCB Layout	Dimensions		Kinked Legs
		A	B	
10	1	.436 11.07	.200 5.08	5111595-1
14	1	.536 13.61	.300 7.62	5111595-2
16	2	.586 14.88	.350 8.89	5111595-3
20	2	.686 17.42	.450 11.43	5111595-4
24	2	.786 19.96	.550 13.97	5111595-5
26	1	.836 21.23	.600 15.24	5111595-6
28	2	.886 22.50	.650 16.51	2-5111595-0
30	1	.936 23.77	.700 17.78	5111595-7
34	1	1.036 26.31	.800 20.32	5111595-8
40	2	1.186 30.12	.950 24.13	5111595-9



No. of Pos.	PCB Layout	Dimensions		Kinked Legs
		A	B	
44	2	1.286 32.66	1.050 26.67	1-5111595-0
46	1	1.336 33.93	1.100 27.94	1-5111595-7
50	1	1.436 36.47	1.200 30.48	1-5111595-1
60	2	1.686 42.82	1.450 36.83	1-5111595-2
64	2	1.786 45.36	1.550 39.37	1-5111595-3
68	2	1.886 47.90	1.650 41.91	1-5111595-9
72	2	1.986 50.44	1.750 44.45	1-5111595-4
80	2	2.186 55.52	1.950 40.53	1-5111595-5
100	2	2.686 68.22	2.450 62.23	1-5111595-6

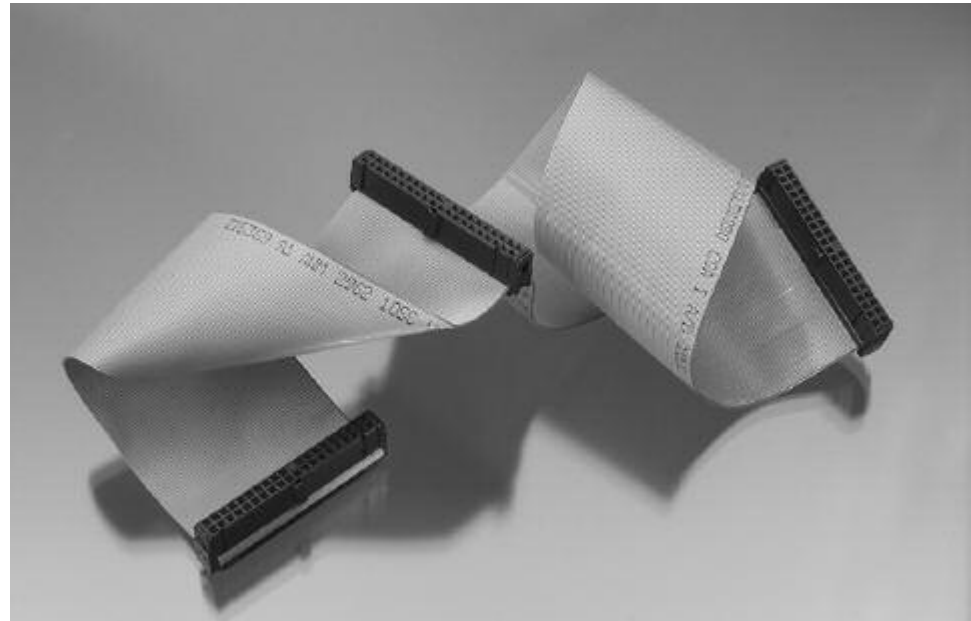
See Application Specification for termination tooling.

**Note:** All part numbers are RoHS compliant.

## Ultra ATA Bus Connectors, .025 [0.64] Centerline Ribbon Cable

### Product Facts

- IDC termination
- Backward compatible with current IDE Interfaces
- Improved signal integrity: 1 to 1 signal to ground ratio
- Improved crosstalk when compared to existing IDE Cable Assembly
- Color coded connectors for "System board," and "Master HDD" and "Slave HDD"
- Cable impedance 80 ohms
- Up to 3 connectors per cable assembly
- 15 microinches gold plating
- Recognized under the Component Program of the Underwriters Laboratories, Inc.  UL File No. E28476
- Certified by the Canadian Standards Association, File No. LR 7189 
- Terminates 30 AWG solid or stranded PVC insulated 80 conductor ribbon cable



Ultra ATA is the next generation IDE (Integrated Drive Electronics) bus. The current IDE bus has a maximum data transfer rate of about 16.5 MB/second. As the bus speeds and disk drive performances increase, the cable assembly between the motherboard and hard drive becomes a limiting factor in data transfer from the drive.

The Ultra ATA connector and cable assembly from TE provide the customer with improved electrical performance by creating a 1:1 signal-to-ground ratio. The connector design incorporates an IDC bus bar to common the 40 additional ground signals. The cable is .025" centerline PVC ribbon cable. The connector is fully backward compatible with existing 40-position headers with pin 20 removed on motherboards and disk drives.

The new connectors are color coded to identify:

1. system board connector
2. primary or master hard drive connector
3. slave drive connector

### Standard Issues

The Ultra ATA cable performance specification is part of the Small Form Factor Committee No. 8049. Compaq Computer and Western Digital are the major sponsors of the standard.

### Contacts Available:

- 80 position IDC contact terminations
- 40 signal contacts
- 40 ground terminations to special IDC bus bar

**Ultra ATA Bus Connectors, .025 [0.64] Centerline Ribbon Cable (Continued)**

**Related Product Data**

**Strain Relief** — Part Number 499252-1

**Mateable Headers** — page 15

**Material & Finish**

**Housing and Cover** — Thermoplastic, UL 94 V-0 rated, color per table

**Contacts** — Phosphor bronze, plated gold per table on mating end, .000050 [0.00127]min. tin in wire termination area, over .000050 [0.00127] min nickel on entire contact.

**Technical Documents**

**Product Specification**  
108-1740

**Application Specification**  
114-40056

See Application Specification for termination tooling.

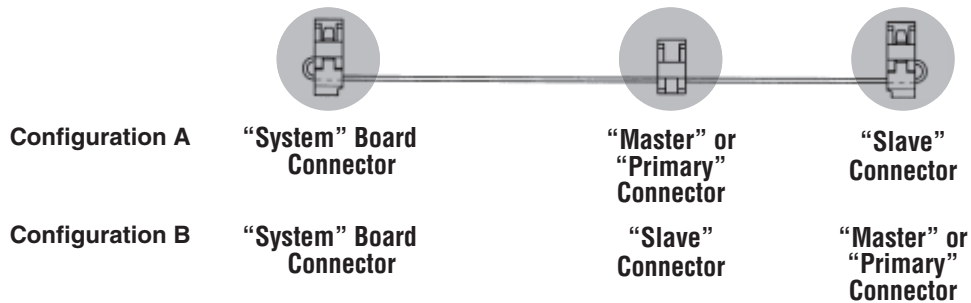
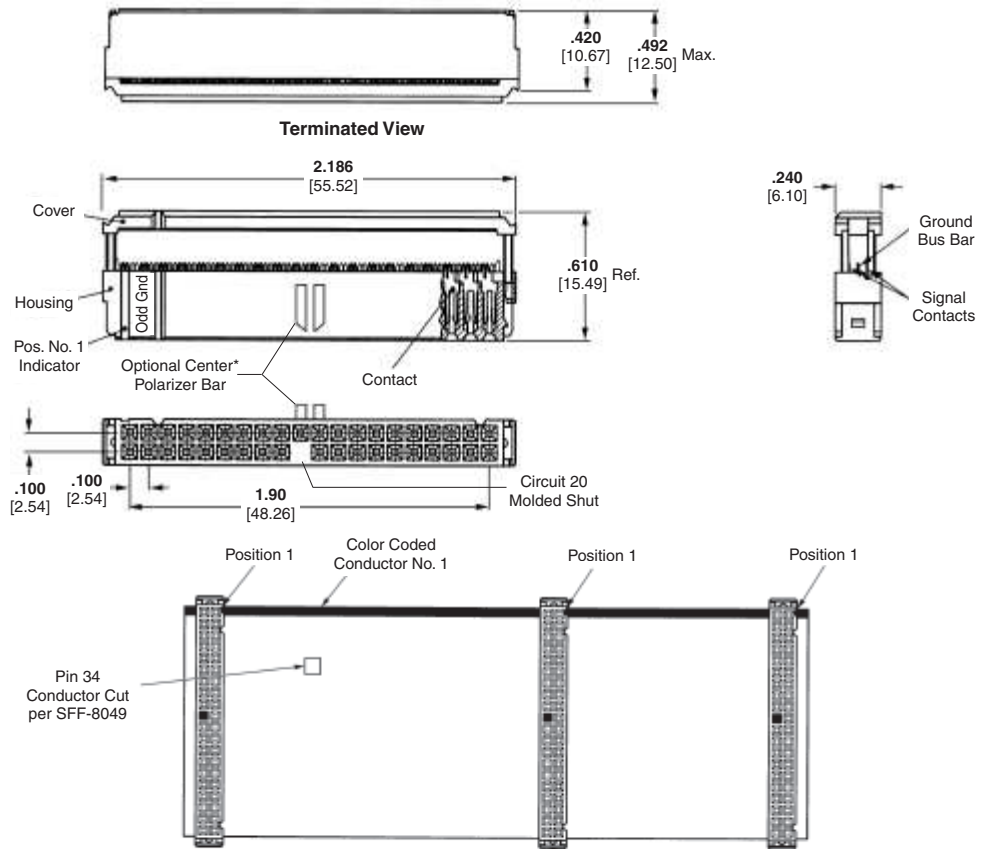
**Accessories**

**Strain Relief** — page 68

**Keying Plug** — page 64

**Pull Loops** — page 66

**Pull Tabs** — page 63



Connector Type	*Center & Military Polarized			Military Polarized		
	15µ" Gold	Housing Color	Cover Color	15µ" Gold	Housing Color	Cover Color
"System" Board	1658619-2	Blue	Black	1658618-2	Blue	Black
"Primary" or "Master"	1658619-1	Black	Black	1658618-1	Black	Black
"Slave"	1658619-3	Gray	Black	1658618-3	Gray	Black

**Notes:** 1. All connectors are "ODD GROUND" configuration, ie. all odd cable conductors are grounded. "EVEN GROUND" connectors are not available. See Customer Drawings for detailed electrical connection descriptions.  
2. All part numbers are RoHS compliant.

**Ultra ATA Bus Connectors, .025 [0.64] Centerline Ribbon Cable** (Continued)

**Ultra ATA  
Compatible Headers**

**Universal Headers — Pin 20 Omitted**

Post Type	Housing Material	Latch Type	Part Number	Contact Finish (Plating Code)	Solder Tail Length	Comments
Vertical	Nylon or PBT	Long	5111824-9	D	.110 2.79	
Vertical	Nylon or PBT	Short	6489700-1	B	.123 3.12	PP

**Legend:** PP — Polarization Peg

**Low Profile Headers — Pin 20 Omitted**

Post Type	Housing Material	Latch Type	Part Number	Contact Finish (Plating Code)	Solder Tail Length	Housing Color
Vertical	Nylon	None	1888188-1	A	.120 3.05	Black
Vertical	Nylon	None	1888188-2	B	.120 3.05	Black
Vertical	Nylon 6T	None	2-1734161-4	C	.122 3.10	Black
Vertical	Nylon 6T	None	2-1734161-5	C	.122 3.10	Blue
Vertical	Nylon	None	1734162-2	C	.110 2.79	Black
Vertical	Nylon	None	1734162-4	C	.110 2.79	Blue

**Plating Code A** — Duplex plated, gold flash on mating surfaces, .000100 [0.00254] min. tin on solder area, with entire post underplated .000050 [0.00127] min. nickel.

**Plating Code B** — Duplex plated, gold flash over palladium-nickel, .000015 [0.00038] min. total on mating surfaces, .000100 [0.00254] min. tin on solder area, with entire post underplated .000050 [0.00127] min. nickel **or** .000015 [0.00038] min. gold on mating surfaces, .000100 [0.00254] min. tin on solder area, with entire post underplated .000050 [0.00127] min. nickel.

**Plating Code C** — Gold flash over nickel underplate on entire post.

**Plating Code D** — Duplex plated, gold flash over palladium-nickel, .000030 [0.00076] min. total on mating surfaces, .000100 [0.00254] min. tin on solder area, with entire post underplated .000050 [0.00127] min. nickel **or** .000015 [0.00038] min. gold on mating surfaces, .000100 [0.00254] min. tin on solder area, with entire post underplated .000050 [0.00127] min. nickel.

**Note:** All part numbers are RoHS compliant.



## 2.0 mm [.079] Receptacle Connectors

### Product Facts

- True hard metric 2.0 x 2.0 [.079 x .079] mating grid for 1.0 [.039] pitch ribbon cable
- Wide selection of configurations, 8-50 positions
- Insulation displacement (IDC), beryllium copper contacts, duplex plated gold-over-nickel
- Top/bottom single beam contact orientation
- UL 94V-0 rated thermo-plastic components
- Assemblies are furnished preassembled with termination covers
- Optional polarization
- Optional strain relief available
- Connector assemblies packaged for ease of handling and protection
- Recognized under the Component Program of the Underwriters Laboratories, Inc. UL File No. E28476
- Certified by the Canadian Standards Association, File No. LR 7189

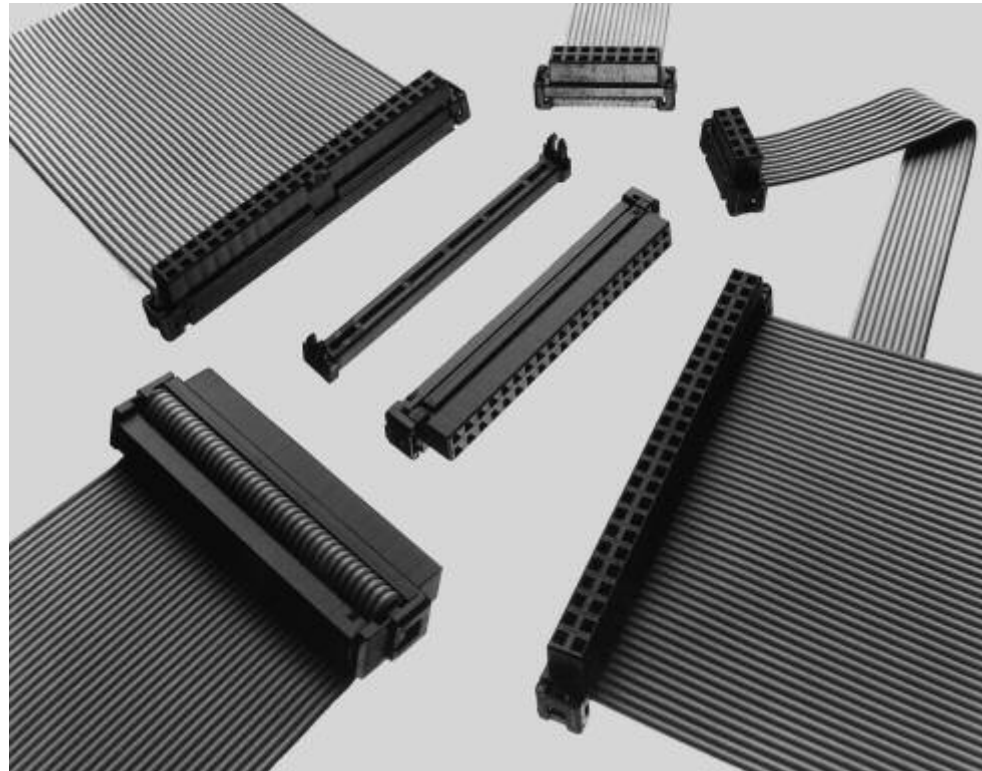


### Performance Data

- Durability** — 150 cycles
- Termination Resistance** — 25 milliohms max.
- Mating Force** — 1.67 N max. per contact
- Unmating Force** — 0.14 N min. per contact
- Operating Temperature** — -65°C to +105°C

### Technical Documents

- Product Specification**  
108-1372
- Application Specification**  
114-40038



The 2.0 [.079] receptacle connector family features contacts on a true 2.0 x 2.0 [.079 x .079] mating grid for 1.0 [.039] pitch 28 AWG ribbon cable. A variety of configurations are available from 8 through 50 positions. This small, compact connector is finding wide acceptance throughout the electronic industry, particularly in the smaller laptop and notebook type computers with 63.5 [2.5] drives. Other areas of application include point-of-sale terminals, fax machines, photocopiers, printers, consumer electronics, and other computer peripheral equipment.

These receptacles feature insulation displacement contacts (IDC) with a top/bottom single-beam contact orientation. Contacts are beryllium copper, duplex plated 0.00076 [.000030] gold

in the mating area and 0.00254 [.000100] min. tin on termination end, all over 0.00127 [.000050] nickel underplating. Contact mating area is 1.54 [.061] from the face of the housing and they accept 0.50mm [.0197] round or square posts.

Housings are made of UL 94V-0 rated polyester with optional center bar polarization. Complete assemblies are furnished preassembled with termination covers. The complete assembly presents a compact design only 5.2 [.203] wide over the termination cover by 4 [.157] deep by 4 [.157] wide mating end. Terminated height is 8.48 [.334]. Optional strain relief available. Assemblies are packaged for ease of handling and protection.

## 2.0 mm [.079] Receptacle Connectors, Non-Polarized and Center Polarized Bar

### Material and Finish

**Housing and Termination Cover** — UL 94V-0 rated polyester, black

**Contacts** — Beryllium copper, duplex plated 0.00076 [.000030] min. gold on mating end, 0.00013 [.000005] min. gold on termination end, all underplated 0.00127 [.000050] min. nickel

**Note:** Accepts 0.08-0.09mm<sup>2</sup> [28 AWG] ribbon cable, PVC insulated 1.00 [.039] pitch. See Application Specification for details.

### Technical Documents

**Product Specification**

108-1372

**Application Specification**

114-40038

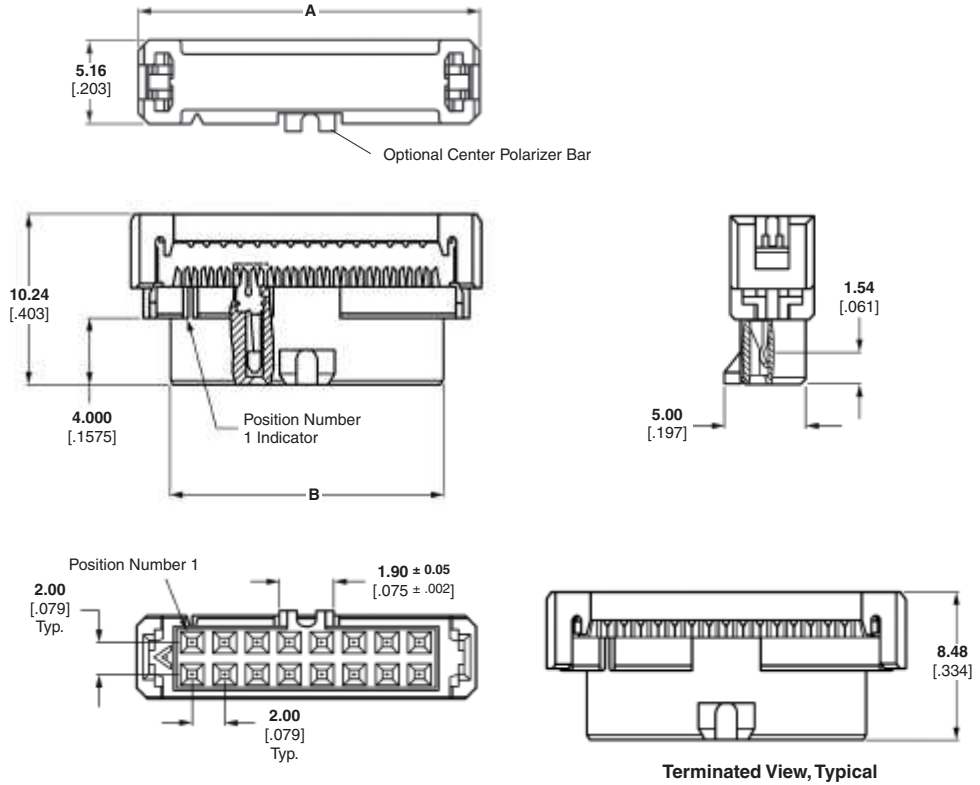
**Mateable Connectors** — pages 9 and 12, or see Application Specification for header requirements

### Accessories

**Pull Loops** — page 66

**Keying Plugs** — page 64

**Strain Relief** — page 68

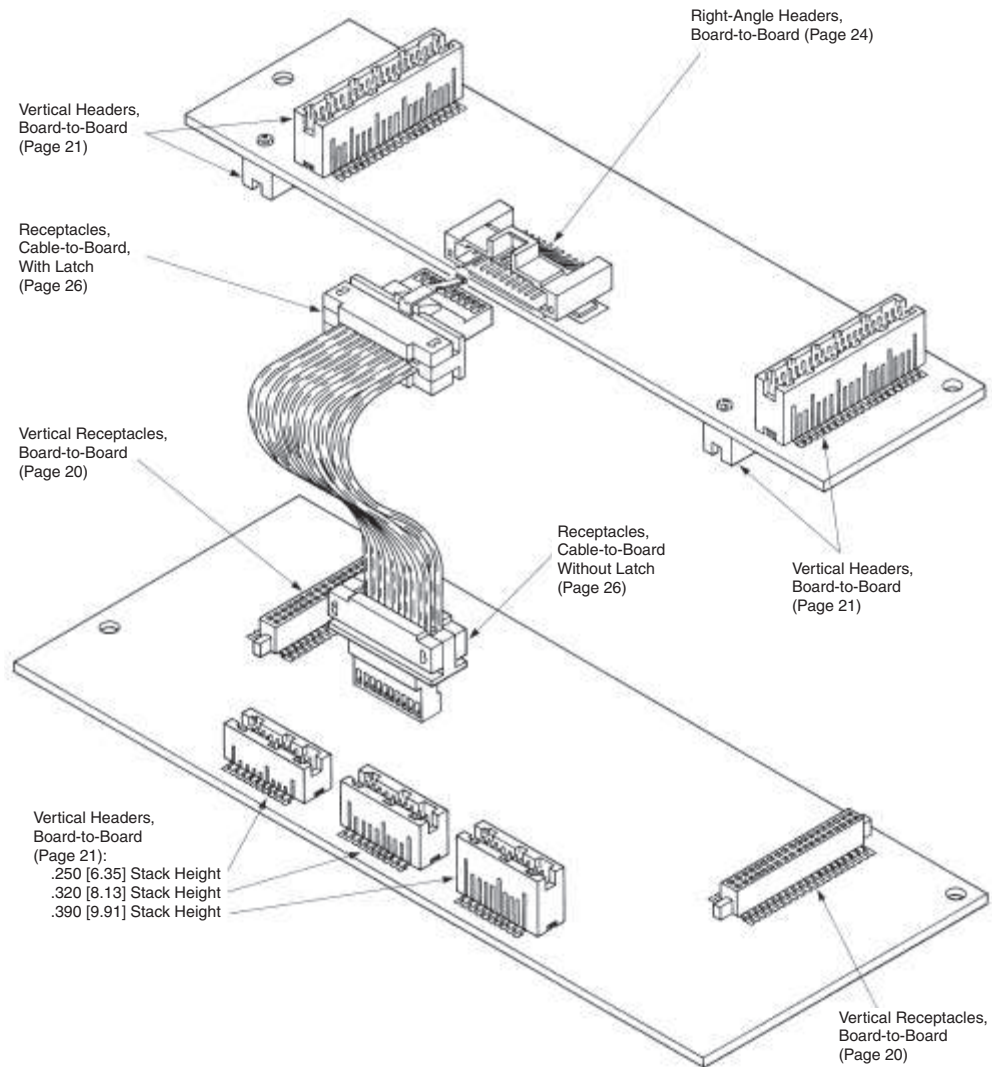


.039 [1.00] Centerline Ribbon Cable Connectors  
.079 [2.00] Receptacle Connectors

No. of Positions	Dimensions		Center Polarized	Non-Polarized
	A	B		
8	13.18 .519	8.41 .331	3-111623-0	2-111626-4
10	15.16 .597	10.41 .410	1-111623-8	1-111626-7
12	17.15 .675	12.40 .488	3-111623-1	—
14	19.18 .755	14.40 .567	1-111623-9	1-111626-8
16	21.18 .834	16.41 .646	2-111623-0	2-111626-5
20	25.17 .991	20.40 .803	2-111623-1	1-111626-9
22	27.18 1.070	22.40 .882	2-111623-9	—
24	29.18 1.149	24.41 .961	2-111623-7	2-111626-6
26	31.17 1.227	26.42 1.040	2-111623-2	2-111626-7
30	35.18 1.385	30.40 1.197	2-111623-3	—
34	39.17 1.542	34.42 1.355	2-111623-8	2-111626-0
40	45.19 1.779	40.41 1.591	2-111623-4	2-111626-1
44	49.17 1.936	44.40 1.748	2-111623-5	2-111626-2
50	55.17 2.172	50.39 1.984	2-111623-6	2-111626-3

**Note:** All part numbers are RoHS compliant.

## AMPMODU 50/50 Grid Connector System





**Produced under a Quality Management System certified to ISO 9001**

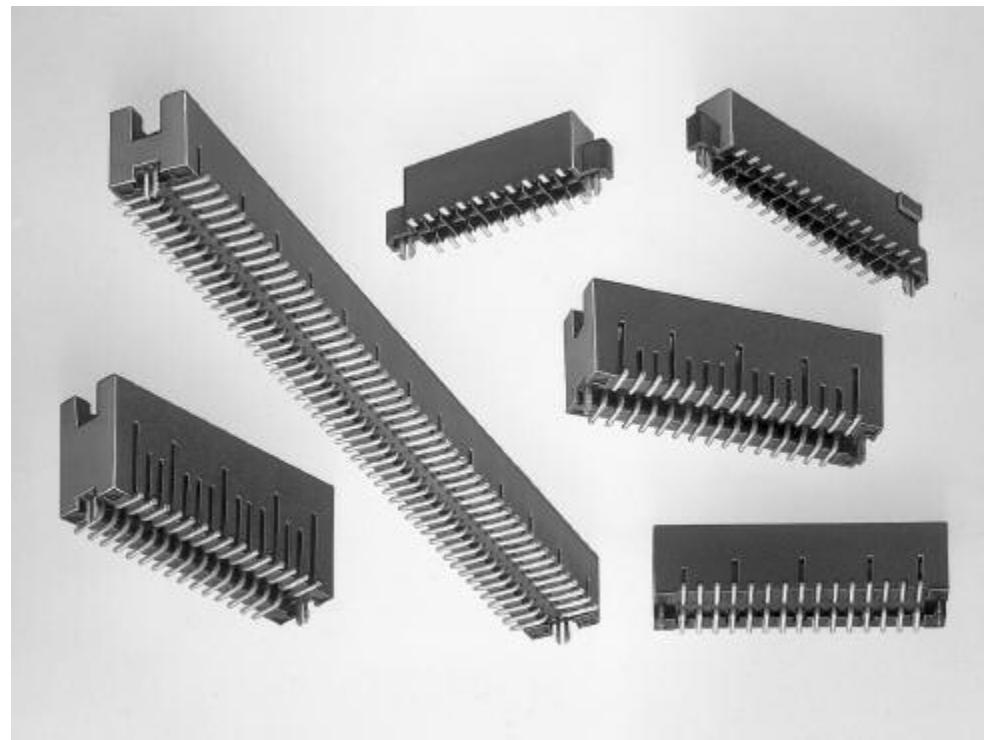
A copy of the certificate is available upon request.



## Board-to-Board Vertical Receptacles and Headers

### Product Facts

- Surface-mount products for parallel board-to-board applications, as well as right-angle board-to-board and cable-to-board applications
- High density .050 x .050 [1.27x1.27] centerline grid
- Three board-to-board stack heights: .250 [6.35], .320 [8.13] and .390 [9.91]
- Non-protrusive metallic holddowns
- Reliable dual beam receptacle contacts for redundant contact
- Duplex plated receptacle and post contacts; gold plated on mating areas, tin plated on tails
- Compatible with standard surface-mount processing (VPR and IR)
- Receptacle and header allow for drainage of processing fluids
- Tape and reel packaging available. Contact TE for details
- Polarized header and receptacle assemblies
- Sizes of 10, 20, 30, 40, 50, 60, 70, 80 and 100 positions
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476 
- Certified by Canadian Standards Association File No. LR7189 



AMPMODU 50/50 Grid Vertical Headers and Receptacles are designed for parallel board-to-board stacking in high density applications.

Right-angle board-to-board and cable-to-board applications are also possible, since the vertical receptacles also mate with non-latching right-angle headers (page 24) and the vertical headers also mate with non-latching cable connectors.

Available are double row, vertical shrouded headers and receptacles in sizes ranging from 10 through 100 positions (in 10 position increments).

Parallel board-to-board stack heights of .250 [6.35], .320 [8.13] and .390 [9.91] are achievable by selection of the appropriate header. The receptacle is the same for all three stack height headers.

Non-protrusive metallic holddowns are designed for use in .062 [1.57] or thicker

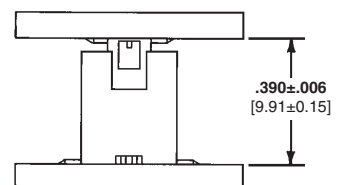
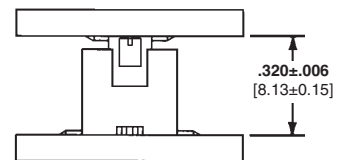
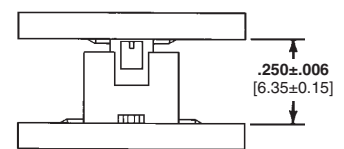
PC boards and allow surface mounting to both sides of the board. In addition to providing retention during processing, the holddowns are soldered during reflow and therefore provide long-term strain relief for the solder joints.

AMPMODU 50/50 Grid Vertical Headers and Receptacles are designed to be compatible with standard surface-mount processes; IR (infrared) and VPR (vapor phase reflow). The surface-mount connectors have been designed so that dimensioning, tolerances, referenced datums,

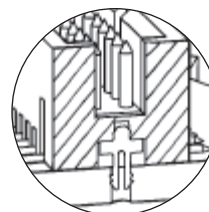
holddown characteristics and packaging methods result in a system that is compatible with robotic assembly.

The headers and receptacles feature polarization to prevent misalignment.

### Three Board Stack Heights



### Non-Protrusive Metallic Holddowns





## Board-to-Board Vertical Receptacles, Double Row, .050 x .050 [1.27 x 1.27] Centerline

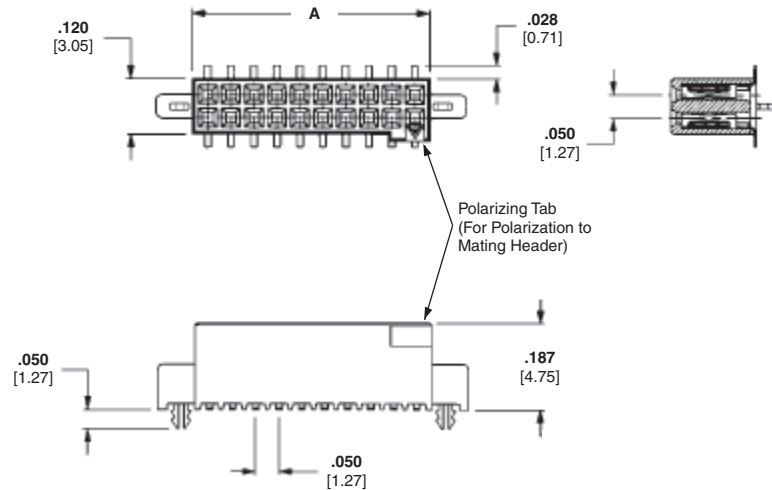


### Material and Finish

**Housing**—Glass-filled thermoplastic, black, 94V-0 rated

**Contacts**—Copper alloy; duplex plated .000030 [0.00076] gold in mating area, .000150 [0.00381] tin on solder tail, with entire contact underplated .000050 [0.00127] nickel

**Holddown**—Copper alloy; plated .000150 [0.00381] tin over .000050 [0.00127] nickel



### Related Product Data

**Mating Headers** — pages 21 and 24

**PC Board Layouts** — page 22

**Performance Specifications** — page 29

**Technical Documents** — page 29

**Product Specification** 108-1332

**Application Specification** 114-7010

**Packaging** — Tube or Tape and Reel

No. of Pos.	Dimension A	Receptacle Part Numbers		
		Tube	Tape and Reel*	No Hold Down w/Vacuum Cover
10	.266 [6.75]	5-104652-1	5-147384-1	5-147413-1
20	.516 [13.11]	5-104652-2	5-147384-2	5-147413-3
30	.766 [19.46]	5-104652-3	5-147384-3	5-147413-4
40	1.016 [25.81]	5-104652-4	5-147384-4	—
50	1.266 [32.16]	5-104652-5	5-147384-5	5-147413-2
60	1.516 [38.51]	5-104652-6	5-147384-6	—
70	1.766 [44.86]	5-104652-7	5-147384-7	—
80	2.016 [51.21]	5-104652-8	5-147384-8	—
100	2.516 [63.91]	6-104652-0	5-147384-9	—

\* Parts packaged in tape and reel have vacuum pick and place cover. See PC Board Layout on page 22.

**Note:** All part numbers are RoHS compliant.

## Board-to-Board Vertical Headers, Double Row, .050 x .050 [1.27 x 1.27] Centerline



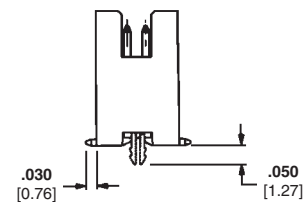
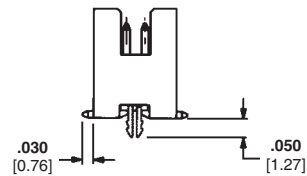
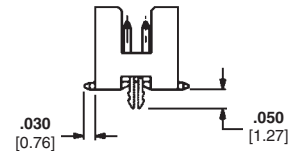
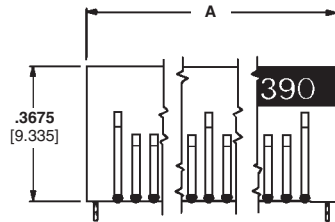
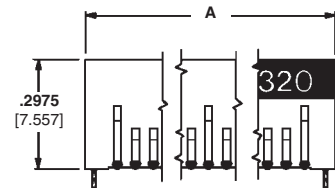
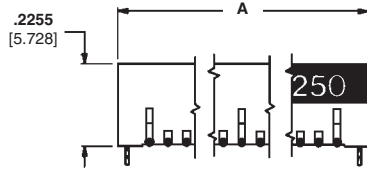
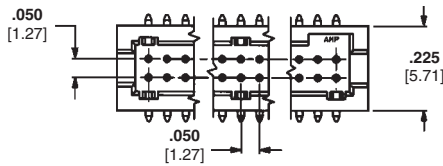
For .250 [6.35] Mated Height



For .320 [8.13] Mated Height



For .390 [9.91] Mated Height



### Material and Finish

**Housing**—Glass-filled thermoplastic, black, 94V-0 rated

**Contacts**—Copper alloy; duplex plated .000030 [0.00076] gold in mating area, .000150 [0.00381] tin on solder tail, with entire contact underplated .000050 [0.00127] nickel

**Holddown**—Copper alloy; plated .000150 [0.00381] tin over .000050 [0.00127] nickel

### Related Product Data

**Mating Receptacles** — pages 20 and 26 (without latch only)

**PC Board Layouts** — page 22

**Performance Specifications** — page 29

### Technical Documents — page 29

**Product Specification** 108-1332

**Application Specification** 114-7010

**Packaging** — Tube or Tape and Reel

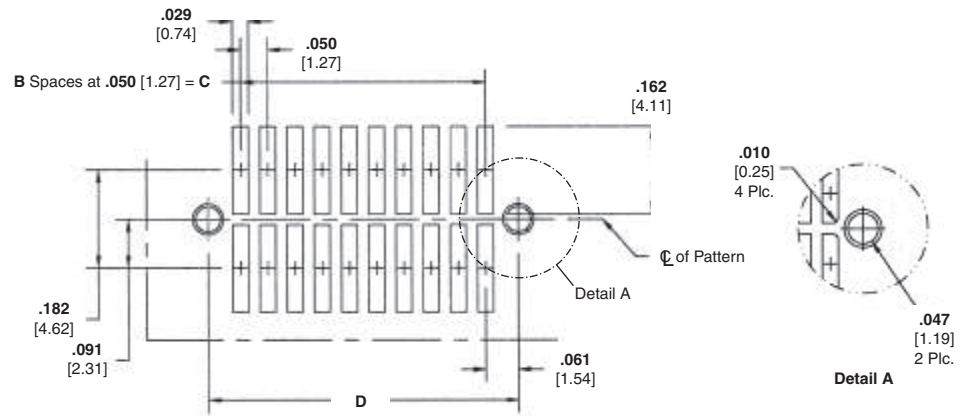
No. of Pos.	Dimension A	Header Part Numbers								
		.250 [6.35] Mated Height			.320 [8.13] Mated Height		.390 [9.91] Mated Height			
		Tubes	Tape & Reel*		Tubes	Tape & Reel*	Tubes		Tape & Reel*	
		Hold Down	No Hold Down			Hold Down	No Hold Down			
10	.372 [9.44]	5-104655-1	5-147381-1	5-147121-1	5-104656-1	5-147382-1	5-104693-1	—	5-147383-1	
20	.622 [15.79]	5-104655-3	5-147381-2	5-147121-2	5-104656-2	5-147382-2	5-104693-2	—	5-147383-2	
30	.872 [22.14]	5-104655-4	5-147381-3	—	5-104656-3	5-147382-3	5-104693-3	—	5-147383-3	
40	1.122 [28.49]	5-104655-5	5-147381-4	—	5-104656-4	5-147382-4	5-104693-4	—	5-147383-4	
50	1.372 [34.84]	5-104655-6	5-147381-5	—	5-104656-5	5-147382-5	5-104693-5	—	5-147383-5	
60	1.622 [41.19]	5-104655-7	5-147381-6	—	5-104656-6	5-147382-6	5-104693-6	—	5-147383-6	
70	1.872 [47.54]	5-104655-8	5-147381-7	—	5-104656-7	5-147382-7	5-104693-7	—	5-147383-7	
80	2.122 [53.89]	5-104655-9	5-147381-8	—	5-104656-8	5-147382-8	5-104693-8	—	5-147383-8	
90	2.372 [60.24]	—	—	—	5-104656-9	—	5-104693-9	—	—	
100	2.622 [66.59]	6-104655-1	5-147381-9	—	6-104656-0	5-147382-9	6-104693-0	5-147503-1	5-147383-9	

\*Parts packaged in tape and reel have vacuum pick and place cover. See PC Board Layout on page 22.

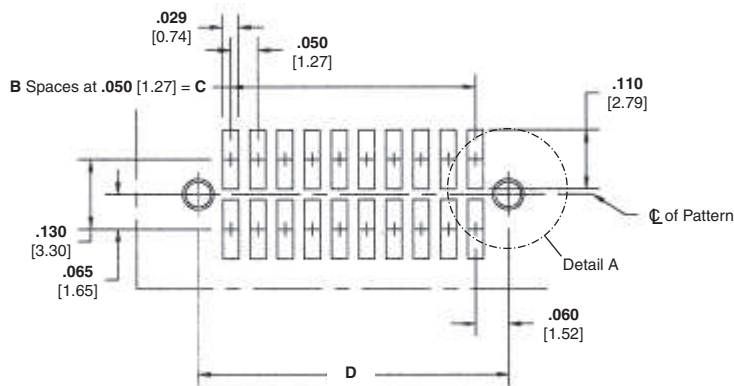
**Note:** All part numbers are RoHS compliant.

## Recommended PC Board Layouts for Vertical Connectors

### Headers



### Receptacles



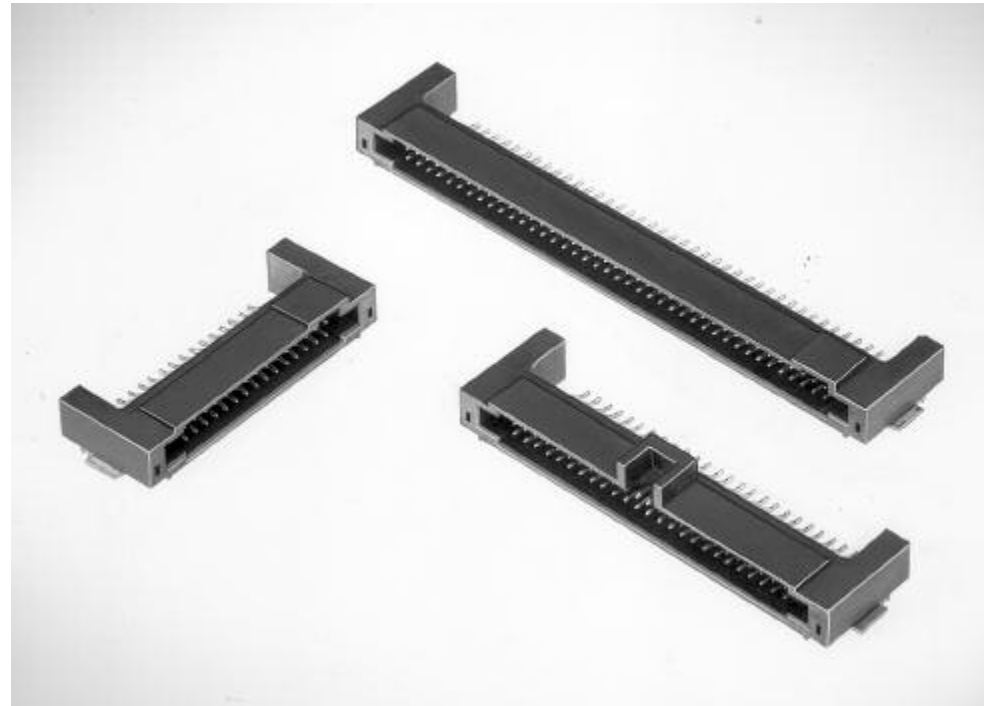
No. of Pos.	Receptacle Dimensions			Header Dimensions		
	B	C	D	B	C	D
10	4	.200 [5.08]	.320 [8.12]	4	.200 [5.08]	.322 [8.17]
20	9	.450 [11.43]	.570 [14.48]	9	.450 [11.43]	.572 [14.52]
30	14	.700 [17.78]	.820 [20.83]	14	.700 [17.78]	.822 [20.87]
40	19	.950 [24.13]	1.070 [27.19]	19	.950 [24.13]	1.072 [27.22]
50	24	1.200 [30.48]	1.320 [33.53]	24	1.200 [30.48]	1.322 [33.57]
60	29	1.450 [36.83]	1.570 [39.88]	29	1.450 [36.83]	1.572 [39.92]
70	34	1.700 [43.18]	1.820 [46.23]	34	1.700 [43.18]	1.822 [46.27]
80	39	1.950 [49.53]	2.070 [52.58]	39	1.950 [49.53]	2.072 [52.62]
90	44	2.200 [55.88]	2.320 [58.93]	44	2.200 [55.88]	2.322 [58.97]
100	49	2.450 [62.23]	2.570 [65.28]	49	2.450 [62.23]	2.572 [65.32]

**Note:** Refer to TE Customer Drawings for additional PC board layout information and dimensional tolerances.

## Board-to-Board Right-Angle Headers

### Product Facts

- Surface-mount products for right-angle board-to-board and cable-to-board applications
- Double-row, right-angle shrouded headers
- High density .050 x .050 [1.27 x 1.27] centerline grid
- Latching and non-latching versions available
- Non-protrusive metallic holddowns
- Metallic tabs, when soldered to PC board pad, provide added mechanical support
- Duplex plated post contacts; gold plated on mating area, tin plated on tails
- Compatible with standard surface-mount processing (VPR and IR)
- Standoffs on header housings allow for drainage of processing fluids
- All headers are polarized
- Sizes of 10, 20, 30, 40, 50, 60, 70, 80 and 100 positions
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476
- Certified by Canadian Standards Association File No. LR7189



AMPMODU 50/50 Grid Right-Angle Headers will accommodate a variety of high density packaging applications; right-angle board-to-board applications when mated with vertical receptacles (page 20) and right-angle cable-to-board applications when mated with cable connectors (page 26). The small .050 x .050 [1.27 x 1.27] centerline contact spacing allows efficient use of the PC board area.

Mechanical support of the headers to the PC board is provided by non-protrusive metallic holddowns designed for .062 [1.57] or thicker PC boards. These holddowns are of the same

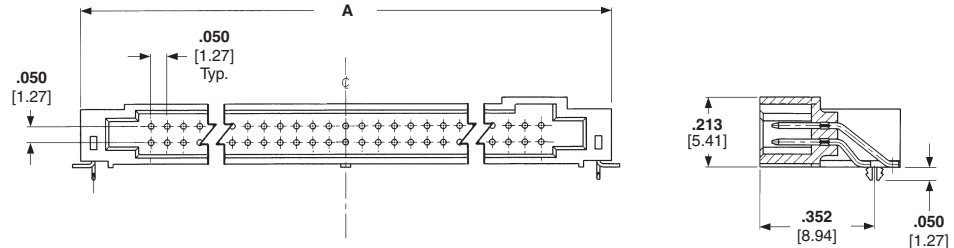
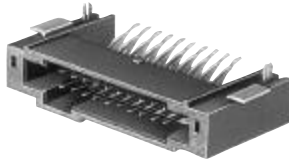
design as those used in the vertical headers (page 21) and receptacles (page 20). There are also metallic tabs that are soldered to the surfaces of the PC board pads for added support.

AMPMODU 50/50 Grid Right-Angle Headers are available in double-row, in either latching or non-latching versions, and in sizes ranging from 10 through 100 positions (in 10 position increments). The latching version provides positive retention when mated with the latching cable connector (page 26). All headers feature polarization to help prevent misalignment during mating.

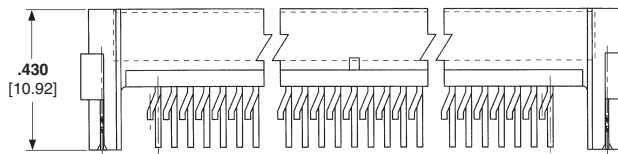
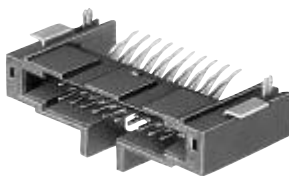


## Board-to-Board Right-Angle Headers, Double Row, .050 x .050 [1.27 x 1.27] Centerline

### Non-Latching Header



### Latching Header



### Material and Finish

**Housing** — Liquid crystal polymer, black, 94V-0 rated

**Contacts** — Copper alloy; duplex plated .000030 [0.00076] gold in mating area, .000150 [0.000381] tin on solder tail, with entire contact under-plated .000050 [0.00127] nickel

**Holddown** — Copper alloy; plated .0000150 [0.00381] tin over .000050 [0.00127] nickel

### Related Product Data

**Mating Receptacles** — pages 20 and 26

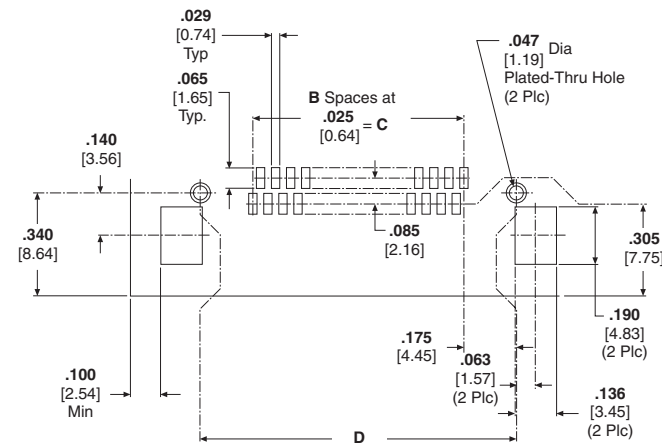
**Performance Specifications** — page 29

**Technical Documents** — page 29

**Product Specification** 108-1443

**Application Specification** 114-7010

**Packaging** — Tube



Recommended PC Board Layout



**Note:** Refer to TE Customer Drawings for additional PC board layout information and dimensional tolerances.

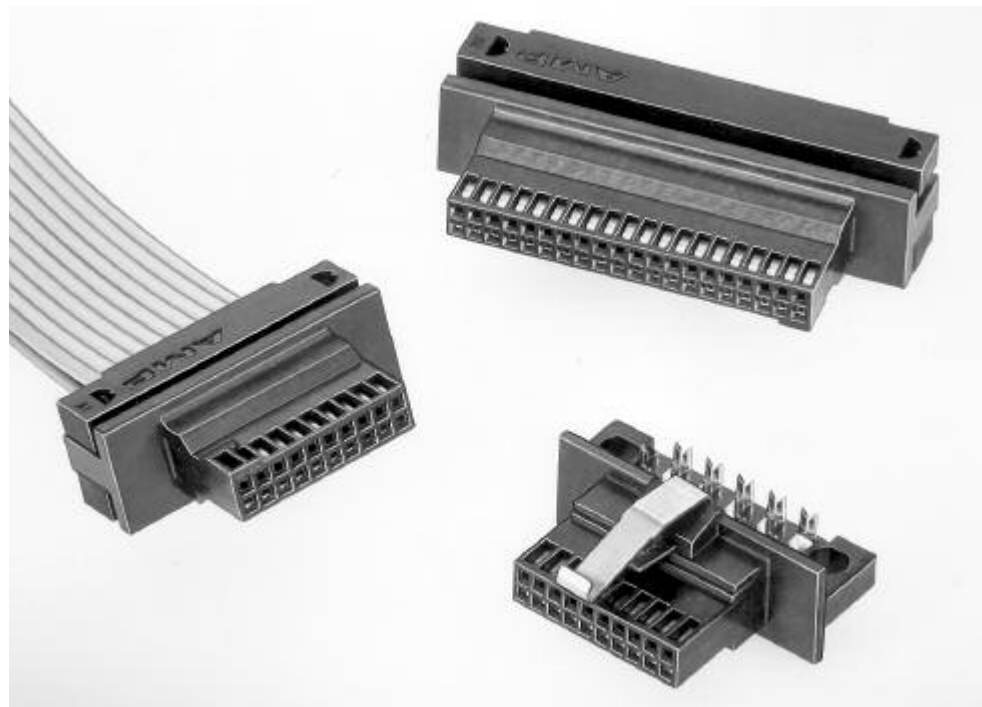
No. of Pos.	Dimensions				Header Part Numbers	
	A	B	C	D	Latching	Non-Latching
10	.630 [16.00]	9	.225 [5.72]	.550 [13.97]	5-104895-1	5-104894-1
20	.880 [22.35]	19	.475 [12.07]	.800 [20.32]	5-104895-2	5-104894-2
30	1.130 [28.70]	29	.725 [18.42]	1.050 [26.67]	5-104895-3	5-104894-3
40	1.380 [35.05]	39	.975 [24.77]	1.300 [33.02]	5-104895-4	5-104894-4
50	1.630 [41.40]	49	1.225 [31.12]	1.550 [39.37]	5-104895-5	5-104894-5
60	1.880 [47.75]	59	1.475 [37.47]	1.800 [45.72]	5-104895-6	5-104894-6
70	2.130 [54.10]	69	1.725 [43.82]	2.050 [52.07]	5-104895-7	5-104894-7
80	2.380 [60.45]	79	1.975 [50.17]	2.300 [58.42]	5-104895-8	5-104894-8
100	2.880 [73.15]	99	2.475 [62.87]	2.800 [71.12]	6-104895-0	6-104894-0

**Note:** All part numbers are RoHS compliant.

## Cable-to-Board Connectors

### Product Facts

- Double-row receptacle connectors provide cable-to-board connection capabilities for vertical headers (non-latching) and right-angle headers (latching and non-latching)
- IDC (Insulation Displacement Crimp) mass termination of solid or stranded round conductor .050 [1.27] centerline ribbon cable with PVC or polyethylene insulation
- Accommodates ribbon cable conductor sizes of 28 AWG [0.08-0.09 mm<sup>2</sup>] and 30 AWG [0.05 mm<sup>2</sup>] and insulation diameters up to .036 [0.91] maximum
- Reliable single beam receptacle contact design
- Duplex plated receptacle contacts; gold plated in mating area, tin in termination area
- Terminating covers (sold separately) provide both strain relief and protection to the termination area
- Sizes of 10, 20, 30, 40, 50, 60, 70, 80 and 100 positions
- Connectors available with or without metal latch
- Connectors without latches are polarized to help prevent mismatching
- Recognized under the Component Program of Underwriters Laboratories Inc.,  File No. E28476
- Certified by Canadian Standards Association  File No. LR7189



These double-row cable connectors, with a .050 x .050 [1.27 x 1.27] centerline contact spacing, provide cable-to-board connection capabilities for the AMPMODU 50/50 Grid Connector System. Cable connectors without a latch will mate with the vertical headers (page 21), while cable connectors with or without a latch can be used to mate with the right-angle headers (page 24).

The cable connectors feature reliable single-beam IDC (insulation displacement crimp) contacts which are duplex plated with .000030 [0.00076] gold. These contacts can be mass terminated to either solid or

stranded round conductor ribbon cable with conductor sizes of 28 AWG [0.08-0.09 mm<sup>2</sup>] and 30 AWG [0.05 mm<sup>2</sup>] and a maximum insulation diameter of .036 [0.91]. During termination, the terminating covers, which must be purchased separately, assist in guiding the wire into the IDC contacts, then provide strain relief when fully seated. Actual termination is accomplished with the TE manual tooling shown on page 28.

The latching version of the cable connector is equipped with a metal latch which provides positive retention of the receptacle cable connector when mated with a surface-

mounted right-angle header. The cable connector without a metal latch features polarization to help prevent mismatching. All connectors are available in sizes ranging from 10 through 100 positions (in 10 position increments).