

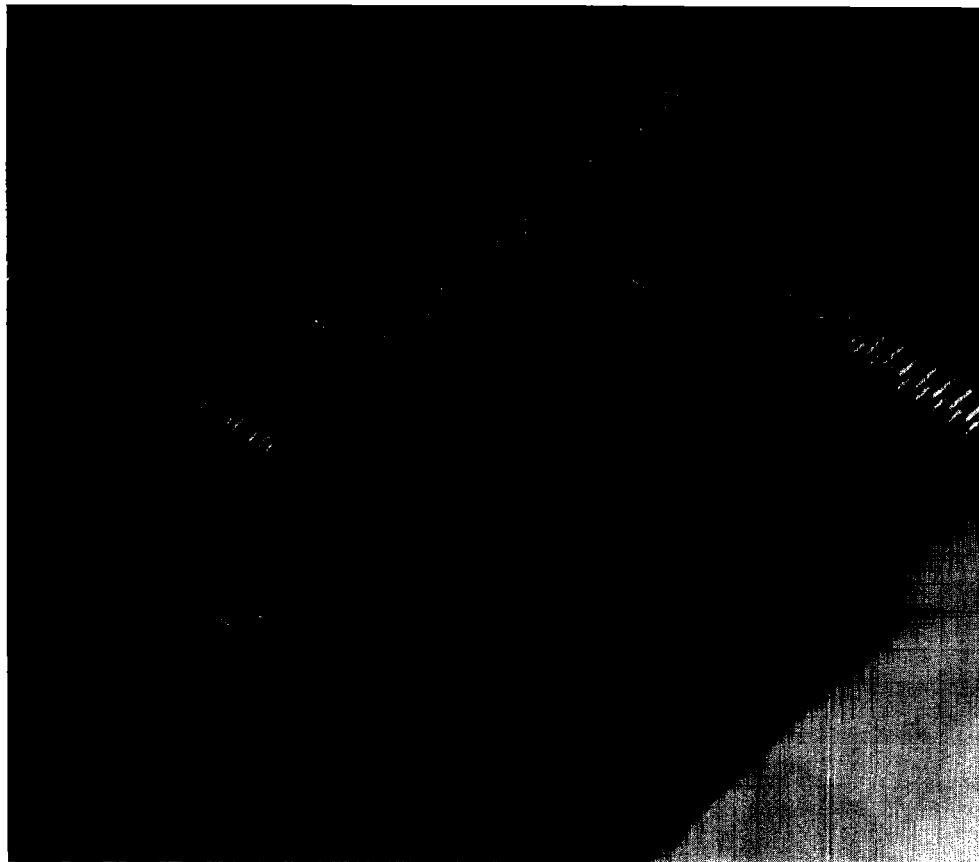
AMPMODU 2 mm Connectors (Board-to-Board)

METRIC

Product Facts

- 2.0 x 2.0 [.08 x .08] centerline spacing
- Two-piece, double-row connector system
- Unshrouded header styles include: breakaway, wide body and surface-mount
- All headers with 0.5 [.02] square posted contacts
- Surface-mount right-angle headers available in four mating pin-to-pc board dimensional relationships
- Surface-mount right-angle headers compatible with standard surface-mount processing (VPR, IR)
- Closed top-entry receptacle assemblies include: vertical mount, raised vertical mount and right-angle
- Receptacle contacts employ dual cantilever beams for two-point electrical stability
- Duplex (gold/tin-lead) plated posted contacts and receptacle contacts
- Low cost alternative gold/palladium duplex plating available on surface-mount headers
- Thermoplastic housing material, 94V-0 rated
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476
- Certified by Canadian Standards Association, File No. LR7189
- Produced under a Quality Management System certified to ISO 9001

A copy of the certificate is available upon request.



AMPMODU 2 mm connectors reliably and economically meet the packaging and interconnection requirements of today's miniature sophisticated electronics. They are ideal for "Lap Top" and "Note Book" personal computers and disk drive applications.

This versatile double-row connector system is comprised of various straight and right-angle posted headers for thru-hole and surface mounting and several closed top-entry receptacle assemblies for vertical and horizontal mounting. Headers and receptacle assemblies are available in selected sizes ranging from 4 through 64 positions.

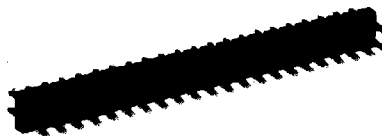
Thru-hole breakaway headers feature brass straight or right-angle posts with a post length of 4.0 [.16] and lead lengths of 1.5 [.06], 1.8 [.07] and 2.6 [.10]. The thru-hole wide body headers use copper alloy right-angle posts with a post length of 4.0 [.16] and lead lengths of 1.5 [.06] or 2.6 [.10].

Surface-mount right-angle headers are designed to allow low profile or mid-mount pc board orientation for customer low profile applications. Four mating pin-to-pc board dimensional relationships are offered.

These headers are available with 0.00076 [.000030] gold or gold flash over palladium-nickel plating options. Also, two metallic spring hold-downs on

each side of the header work with the plastic location features for pc board retention prior to solder reflow. The header housings are made of a high temperature material compatible with standard surface-mount processing (VPR and IR).

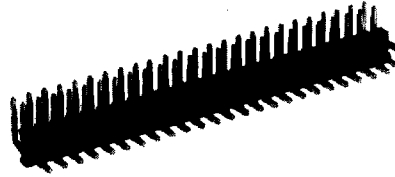
The receptacle assemblies employ phosphor bronze contacts with dual cantilever beams and built-in anti-overstress. This feature, coupled with duplex (gold/tin-lead) plating of the header posts and receptacle contacts, provide superior electrical performance as well as excellent solderability.

**Breakaway Headers,
Unshrouded, Double Row,
Thru-Hole Mount****METRIC****0.5 [.02] Square
Straight Posted Contacts****Material and Finish****Housing**—Black thermoplastic,
94V-0 rated**Posted Contacts**—Brass, duplex plated
as follows:**A**—0.00020 [.000008] min. gold on
contact area, 0.00100 [.000039] min.
tin-lead on solder area, with entire
contact underplated 0.00130
[.000051] min. nickel**B**—0.00076 [.000030] min. gold on
contact area, 0.00100 [.000039] min.
tin-lead on solder area, with entire
contact underplated 0.00130
[.000051] min. nickel**Mates with**— Receptacle Assemblies,
Vertical Mount; Receptacle Assemblies,
Vertical Mount, Raised (6.0 [.24]) Stack
Height; and Receptacle Assemblies with
Hold-downs, Right-Angle Mount**Note:** 24 Pos. Housing Dim. (Typ.)—24.0 [.94] L x 4.2 [.17] W

No. of Positions	Header Part Numbers			
	Lead Length 1.5 [.06]**		Lead Length 2.6 [.10]**	
	Contact Plating		Contact Plating	
	Duplex A	Duplex B	Duplex A	Duplex B
4	178751-1	2-178751-5	176264-1	1-176264-6
6	178751-2	2-178751-6	176264-2	1-176264-7
8	178751-3	2-178751-7	176264-3	1-176264-8
10	178751-4	2-178751-8	176264-4	1-176264-9
12	178751-5	2-178751-9	176264-5	2-176264-0
14	178751-6	3-178751-0	176264-6	2-176264-1
16	178751-7	3-178751-1	176264-7	2-176264-2
18	178751-8	3-178751-2	176264-8	2-176264-3
20	178751-9	3-178751-3	176264-9	2-176264-4
22	1-178751-0	3-178751-4	1-176264-0	2-176264-5
24	1-178751-1	3-178751-5	1-176264-1	2-176264-6
26	1-178751-2	3-178751-6	1-176264-2	2-176264-7
28	1-178751-3	3-178751-7	1-176264-3	2-176264-8
30	1-178751-4	3-178751-8	1-176264-4	2-176264-9
32	1-178751-5	3-178751-9	1-176264-5	3-176264-0
34	—	—	3-176264-1	4-176264-0
36	—	—	3-176264-2	4-176264-1
38	—	—	3-176264-3	4-176264-2
40	—	—	3-176264-4	4-176264-3
42	2-178751-0	4-178751-4	3-176264-5	4-176264-4
44	—	—	3-176264-6	4-176264-5
46	2-178751-2	4-178751-6	3-176264-7	4-176264-6
48	—	—	3-176264-8	4-176264-7
50	2-178751-4	4-178751-8	3-176264-9	4-176264-8

**1.5 [.06] lead length for use with 0.5 [.02] thick Pc boards; 2.6 [.10] lead length for use with 1.6 [.062] thick Pc boards.

Note: Post length is 4.0 [.16]

**Breakaway Headers,
Unshrouded, Double Row,
Thru-Hole Mount
(Continued)****METRIC****0.5 [.02] Square
Right-Angle Posted
Contacts**

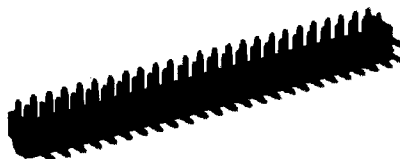
Note: 24 Pos. Housing Dim. (Typ.)— 24.0 [.94] L x 4.2 [.17] W

Material and Finish**Housing**—Black thermoplastic,
94V-0 rated**Posted Contacts**—Brass, duplex plated
as follows:**A**—0.00020 [.000008] min. gold on
contact area, 0.00100 [.000039] min.
tin-lead on solder area, with entire
contact underplated 0.00130
[.000051] min. nickel**B**—0.00076 [.000030] min. gold on
contact area, 0.00100 [.000039] min.
tin-lead on solder area, with entire
contact underplated 0.00130
[.000051] min. nickel**Mates with**— Receptacle Assemblies,
Vertical Mount; Receptacle Assemblies,
Vertical Mount, Raised (6.0 [.24]) Stack
Height; and Receptacle Assemblies with
Hold-downs, Right-Angle Mount

No. of Positions	Header Part Numbers			
	Lead Length 1.8 [.07]**		Lead Length 2.6 [.10]**	
	Contact Plating		Contact Plating	
	Duplex A	Duplex B	Duplex A	Duplex B
4	178698-1	2-178698-5	176837-1	2-176837-5
6	178698-2	2-178698-6	176837-2	2-176837-6
8	178698-3	2-178698-7	176837-3	2-176837-7
10	178698-4	2-178698-8	176837-4	2-176837-8
12	178698-5	2-178698-9	176837-5	2-176837-9
14	178698-6	3-178698-0	176837-6	3-176837-0
16	178698-7	3-178698-1	176837-7	3-176837-1
18	178698-8	3-178698-2	176837-8	3-176837-2
20	178698-9	3-178698-3	176837-9	3-176837-3
22	1-178698-0	3-178698-4	1-176837-0	3-176837-4
24	1-178698-1	3-178698-5	1-176837-1	3-176837-5
26	1-178698-2	3-178698-6	1-176837-2	3-176837-6
28	1-178698-3	3-178698-7	1-176837-3	3-176837-7
30	1-178698-4	3-178698-8	1-176837-4	3-176837-8
32	1-178698-5	3-178698-9	1-176837-5	3-176837-9
34	—	—	1-176837-6	4-176837-0
36	—	—	1-176837-7	4-176837-1
38	—	—	1-176837-8	4-176837-2
40	—	—	1-176837-9	4-176837-3
42	2-178698-0	4-178698-4	2-176837-0	4-176837-4
44	—	—	2-176837-1	4-176837-5
46	2-178698-2	4-178698-6	2-176837-2	4-176837-6
48	—	—	2-176837-3	4-176837-7
50	2-178698-4	4-178698-8	2-176837-4	4-176837-8

**1.8 [.07] lead length for use with 0.8 [.03] thick Pc boards; 2.6 [.10] lead length for use with 1.6 [.062] thick Pc boards.

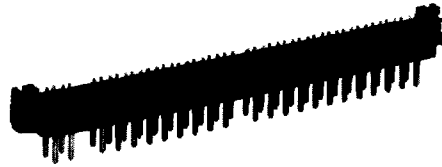
Note: Post length is 4.0 [.16]

**Wide Body Headers,
Unshrouded, Double Row,
Thru-Hole Mount****METRIC****0.5 [.02] Square
Right-Angle Posted
Contacts****Material and Finish****Housing**—Black thermoplastic,
94V-0 rated**Posted Contacts**—Copper
alloy, duplex plated as
follows:**A**—0.00076 [.000030] min. gold on
contact area, 0.00100 [.000039] min.
tin-lead on solder area, with entire
contact underplated 0.00130
[.000051] min. nickel**B**—0.00038 [.000015] min. gold on
contact area, 0.00100 [.000039] min.
tin-lead on solder area, with entire
contact underplated 0.00130
[.000051] min. nickel**Mates with**— Receptacle Assemblies,
Vertical Mount; Receptacle Assemblies,
Vertical Mount, Raised (6.0 [.24]) Stack
Height; and Receptacle Assemblies with
Hold-downs, Right-Angle Mount**Note:** 32 Pos. Housing Dim. (Typ.)—32.0 [1.26] L x 4.0 [.16] W x 4.2 [.17] H

No. of Positions	Header Part Numbers			
	Lead Length 1.5 [.06]**		Lead Length 2.6 [.10]**	
	Contact Plating		Contact Plating	
	Duplex A	Duplex B	Duplex A	Duplex B
4	84023-1	84022-1	84025-1	84024-1
6	84023-2	84022-2	84025-2	84024-2
8	84023-3	84022-3	84025-3	84024-3
10	84023-4	84022-4	84025-4	84024-4
12	84023-5	84022-5	84025-5	84024-5
14	84023-6	84022-6	84025-6	84024-6
16	84023-7	84022-7	84025-7	84024-7
18	84023-8	84022-8	84025-8	84024-8
20	84023-9	84022-9	84025-9	84024-9
22	1-84023-0	1-84022-0	1-84025-0	1-84024-0
24	1-84023-1	1-84022-1	1-84025-1	1-84024-1
26	1-84023-2	1-84022-2	1-84025-2	1-84024-2
28	1-84023-3	1-84022-3	1-84025-3	1-84024-3
30	1-84023-4	1-84022-4	1-84025-4	1-84024-4
32	1-84023-5	1-84022-5	1-84025-5	1-84024-5
34	1-84023-6	1-84022-6	1-84025-6	1-84024-6
36	1-84023-7	1-84022-7	1-84025-7	1-84024-7
38	1-84023-8	1-84022-8	1-84025-8	1-84024-8
40	1-84023-9	1-84022-9	1-84025-9	1-84024-9
42	2-84023-0	2-84022-0	2-84025-0	2-84024-0
44	2-84023-1	2-84022-1	2-84025-1	2-84024-1
46	2-84023-2	2-84022-2	2-84025-2	2-84024-2
48	2-84023-3	2-84022-3	2-84025-3	2-84024-3
50	2-84023-4	2-84022-4	2-84025-4	2-84024-4
52	2-84023-5	2-84022-5	2-84025-5	2-84024-5
54	2-84023-6	2-84022-6	2-84025-6	2-84024-6
56	2-84023-7	2-84022-7	2-84025-7	2-84024-7
58	2-84023-8	2-84022-8	2-84025-8	2-84024-8
60	2-84023-9	2-84022-9	2-84025-9	2-84024-9
62	3-84023-0	3-84022-0	3-84025-0	3-84024-0
64	3-84023-1	3-84022-1	3-84025-1	3-84024-1

**1.5 [.06] lead length for use with 0.3 [.01] max. thick Pc boards; 2.6 [.10] lead length for use with 1.6 [.062] thick Pc boards.

Note: Post length is 4.0 [.16]

**Horizontal Headers with
Hold-downs, Unshrouded,
Double Row,
Surface-Mount****METRIC****1.25 [.050] Mating
Pin-to-Pc Board
Dimension**

Two metallic spring hold-downs on each end of surface-mount right-angle header work with plastic location features for Pc board retention prior to solder flow.

Material and Finish

Housing—Black polyphenylene sulfide, 94V-0 rated

Plated Contacts—Copper alloy, duplex plated as follows:

A—Gold flash over 0.00076 [.000030] min. palladium-nickel on contact area, 0.00508 [.000200] min. tin-lead on solder area, with entire contact underplated 0.00130 [.000051] min. nickel

B—0.00010 [.000004] min. gold on contact area, 0.00508 [.000200] min. tin-lead on solder area, with entire contact underplated 0.00130 [.000051] min. nickel

Mates with— Receptacle Assemblies, Vertical Mount; Receptacle Assemblies, Vertical Mount, Raised (6.0 [.24]) Stack Height; and Receptacle Assemblies with Hold-downs, Right-Angle Mount

Note: 50 Pos. Housing Dim. (Typ.)—56.2 [2.21] L x 3.73 [.147] W x 4.50 [.177] H

No. of Positions	Header Part Numbers Contact Plating		Posts Omitted
	Duplex A	Duplex B	
50	84094-1	—	24, 41, 42
	84094-2	84094-5	25, 45, 46
	84094-3	84094-6	5, 6, 26
	84094-4	—	9, 10, 27

**1.25 [.050] Mating
Pin-to-Pc Board
Dimension**

Two metallic spring hold-downs on each end of surface-mount right-angle header work with plastic location features for Pc board retention prior to solder flow.



Mates with— Receptacle Assemblies, Vertical Mount; Receptacle Assemblies, Vertical Mount, Raised (6.0 [.24]) Stack Height; and Receptacle Assemblies with Hold-downs, Right-Angle Mount

Note: 12 Pos. Housing Dim. (Typ.)—18.20 [.717] L x 3.73 [.147] W x 4.50 [.177] H

No. of Positions	Header Part Number	Posts Omitted
12	84104-1	None

Horizontal Headers with Hold-downs, Unshrouded, Double Row, Surface-Mount (Continued)

METRIC

1.00 [.039] Mating Pin-to-Pc Board Dimension

Two metallic spring hold-downs on each end of surface-mount right-angle header work with plastic location features for Pc board retention prior to solder flow.

Mates with— Receptacle Assemblies, Vertical Mount; Receptacle Assemblies, Vertical Mount, Raised (6.0 [.24]) Stack Height; and Receptacle Assemblies with Hold-downs, Right-Angle Mount

0.66 [.026] Mating Pin-to-Pc Board Dimension

Two metallic spring hold-downs on each end of surface-mount right-angle header work with plastic location features for Pc board retention prior to solder flow.

Mates with— Receptacle Assemblies, Vertical Mount; Receptacle Assemblies, Vertical Mount, Raised (6.0 [.24]) Stack Height; and Receptacle Assemblies with Hold-downs, Right-Angle Mount

0.32 [.013] Mating Pin-to-Pc Board Dimension

Two metallic spring hold-downs on each end of surface-mount right-angle header work with plastic location features for Pc board retention prior to solder flow.

Material and Finish

Housing—Black polyphenylene sulfide, 94V-0 rated

Plated Contacts—Copper alloy, duplex plated as follows:

A—Gold flash over 0.00076 [.000030] min. palladium-nickel on contact area, 0.00508 [.000200] min. tin-lead on solder area, with entire contact underplated 0.00130 [.000051] min. nickel

B—0.00076 [.000030] min. gold on contact area, 0.00508 [.000200] min. tin-lead on solder area, with entire contact underplated 0.00130 [.000051] min. nickel

Mates with— Receptacle Assemblies, Vertical Mount; Receptacle Assemblies, Vertical Mount, Raised (6.0 [.24]) Stack Height; and Receptacle Assemblies with Hold-downs, Right-Angle Mount

SOURCE: Catalog 82771

Note: 20 Pos. Housing Dim. (Typ.)—26.03 [1.025] L x 4.00 [.157] W x 3.72 [.146] H

No. of Positions	Header Part Numbers	Posts Omitted
18	84108-6	7, 8, 18
	84108-4	None
20	84108-5	None
34	84108-3	14
50	84108-2	25, 45, 46
	84108-1	24, 41, 42

Note: 20 Pos. Housing Dim. (Typ.)—26.03 [1.025] L x 4.00 [.157] W x 4.80 [.189] H

No. of Positions	Header Part Numbers	Posts Omitted
6	84110-5	3
20	84110-4	13
50	84110-3	5, 6, 26
	84110-2	25, 45, 46
	84110-1	24, 41, 42

Note: 32 Pos. Housing Dim. (Typ.)—38.03 [1.497] L x 4.00 [.157] W x 4.80 [.189] H

No. of Positions	Header Part Numbers		Posts Omitted
	Contact Plating		
	Duplex A	Duplex B	
24	84156-3	—	11, 12, 17, 18
	—	84156-2	9
	—	84156-1	1, 2, 9
32	—	84156-4	1, 2, 9
	—	84156-5	9

Receptacle Assemblies,
Double Row, Vertical
Mount**METRIC**

Closed Top Entry



Material and Finish

Housing—Black thermoplastic,
94V-0 rated

Receptacle Contacts—Phosphor
bronze, duplex plated as follows:

A—0.00020 [.000008] min. gold on
contact area, 0.00100 [.000039] min.
tin-lead on solder area, with entire
contact underplated 0.00130
[.000051] min. nickel

B—0.00076 [.000030] min. gold on
contact area, 0.00100 [.000039] min.
tin-lead on solder area, with entire
contact underplated 0.00130
[.000051] min. nickel

Mates with—Breakaway Headers,
Wide Body Headers, and Horizontal
Headers with Hold-downs

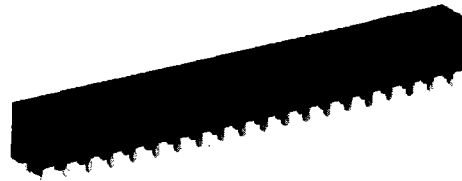
Note: 28 Pos. Housing Dim. (Typ.)—28.0 [1.10] L x 4.0 [1.6] W x 4.5 [1.8] H

No. of Positions	Receptacle Assembly Part Numbers			
	Lead Length 1.2 [.05]**		Lead Length 2.6 [.10]**	
	Contact Plating		Contact Plating	
	Duplex A	Duplex B	Duplex A	Duplex B
4	176135-1	2-176135-5	1-176135-3	3-176135-7
6	4-176135-9	5-176135-5	5-176135-2	5-176135-8
8	176135-2	2-176135-6	1-176135-4	3-176135-8
10	176135-3	2-176135-7	1-176135-5	3-176135-9
12	176135-4	2-176135-8	1-176135-6	4-176135-0
14	176135-5	2-176135-9	1-176135-7	4-176135-1
16	176135-6	3-176135-0	1-176135-8	4-176135-2
18	176135-7	3-176135-1	1-176135-9	4-176135-3
20	176135-8	3-176135-2	2-176135-0	4-176135-4
22	176135-9	3-176135-3	2-176135-1	4-176135-5
24	1-176135-0	3-176135-4	2-176135-2	4-176135-6
26	1-176135-1	3-176135-5	2-176135-3	4-176135-7
28	5-176135-0	5-176135-6	5-176135-3	5-176135-9
30	5-176135-1	5-176135-7	5-176135-4	6-176135-0
32	1-176135-2	3-176135-6	2-176135-4	4-176135-8
34	6-176135-1	6-176135-7	6-176135-4	7-176135-0
36	7-176135-3	8-176135-5	7-176135-9	9-176135-1
38	7-176135-4	8-176135-6	8-176135-0	9-176135-2
40	6-176135-2	6-176135-8	6-176135-5	7-176135-1
42	7-176135-5	8-176135-7	8-176135-1	9-176135-3
44	7-176135-6	8-176135-8	8-176135-2	9-176135-4
46	7-176135-7	8-176135-9	8-176135-3	9-176135-5
48	7-176135-8	9-176135-0	8-176135-4	9-176135-6
50	6-176135-3	6-176135-9	6-176135-6	7-176135-2

**1.2 [.05] lead length for use with 0.3 [.01] max. thick Pc boards; 2.6 [.10] lead length for use with 1.6 [.062] thick Pc boards.

Receptacle Assemblies, Double Row, Vertical Mount

METRIC



Closed Top Entry with Keying

Material and Finish:

Housing—Black glass-filled nylon,
94V-0 rated

Receptacle Contacts—Phosphor
bronze, duplex plated as follows:

A—0.00020 [.000008] min. gold on
contact area, 0.00100 [.000039] min.
tin-lead on solder area, with entire
contact underplated 0.00130
[.000051] min. nickel

B—0.00076 [.000030] min. gold on
contact area, 0.00100 [.000039] min.
tin-lead on solder area, with entire
contact underplated 0.00130
[.000051] min. nickel

Note: 14 Pos. Housing Dim. (Typ.)—14.0 [.55] L x 4.0 [.16] W x 4.5 [.18] H

No. of Positions	Lead Length**	Receptacle Assembly Part Numbers Contact Plating		Keyed Positions (See Note)
		Duplex A	Duplex B	
8	1.2 [.05]	—	1-176136-3	1, 6
10	1.2 [.05]	176136-1	176136-3	3, 8
	2.6 [.10]	176136-2	176136-4	3, 8
12	2.0 [.08]	1-176136-0	—	3
		1-176136-1	—	4
		1-176136-5	—	2
14	2.0 [.08]	176136-5	176136-7	2
	2.6 [.10]	176136-6	176136-8	2
40	1.2 [.05]	—	2-176136-1	17
	2.6 [.10]	—	2-176136-3	17
44	1.2 [.05]	1-176136-6	—	20
	1.5 [.06]	2-176136-5	—	20
	2.6 [.10]	1-176136-7	—	20
50	2.6 [.10]	1-176136-8	—	26
		—	2-176136-4	27

**1.2 [.05] lead length for use with 0.3 [.01] max. thick Pc boards; 1.5 [.06] lead length for use with 0.6 [.02] max. thick Pc boards;
2.0 [.08] lead length for use with 1.0 [.040] thick Pc boards; 2.6 [.10] lead length for use with 1.6 [.062] thick Pc boards.
Note: Keyed circuits contain contact with mating face molded shut.

Closed Top Entry, Sealed with Solder Barrier Tape

Note: Solder Barrier Tape provides
protection for special applications,
such as upside-down hand soldering

Mates with— Breakaway Headers,
Wide Body Headers, and Horizontal
Headers with Hold-downs

Closed Top Entry, Raised (6.0 [.24]) Stack Height



**28 Positions
Part Number 84129-1**

Note: 28 Pos. Housing Dim. (Typ.)—
28.0 [1.10] L x 4.0 [.16] W
x 4.7 [.185] H
2.6 [.10] lead length for use with 1.6
[.062] thick Pc board.

Mates with— Breakaway
Headers, Wide Body Headers,
and Horizontal Headers with
Hold-downs

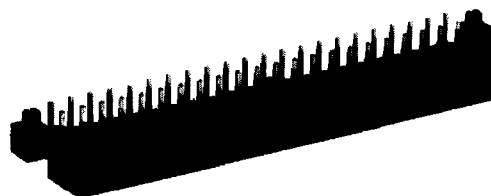


**50 Positions
Part Number 84198-1**

Note: 50 Pos. Housing Dim. (Typ.)—
53.90 [2.122] L x 4.0 [.16] W
x 6.0 [.24] H
2.8 [.11] lead length for use with 2.0
[.08] thick Pc board.

Receptacle Assemblies with Hold-downs, Double Row, Right-Angle Mount

Closed Top Entry with Hold-downs



Note: 44 Pos. Housing Dim. (Typ.)—49.8 [1.96] L x 7.4 [.29] W x 6.13 [.241] H

No. of Positions	Receptacle Assembly Part Numbers
14	84140-2
44	84140-1
50	84140-3

Note: Lead length 1.37 [.054]

Mates with— Breakaway Headers,
Wide Body Headers, and Horizontal
Headers with Hold-downs