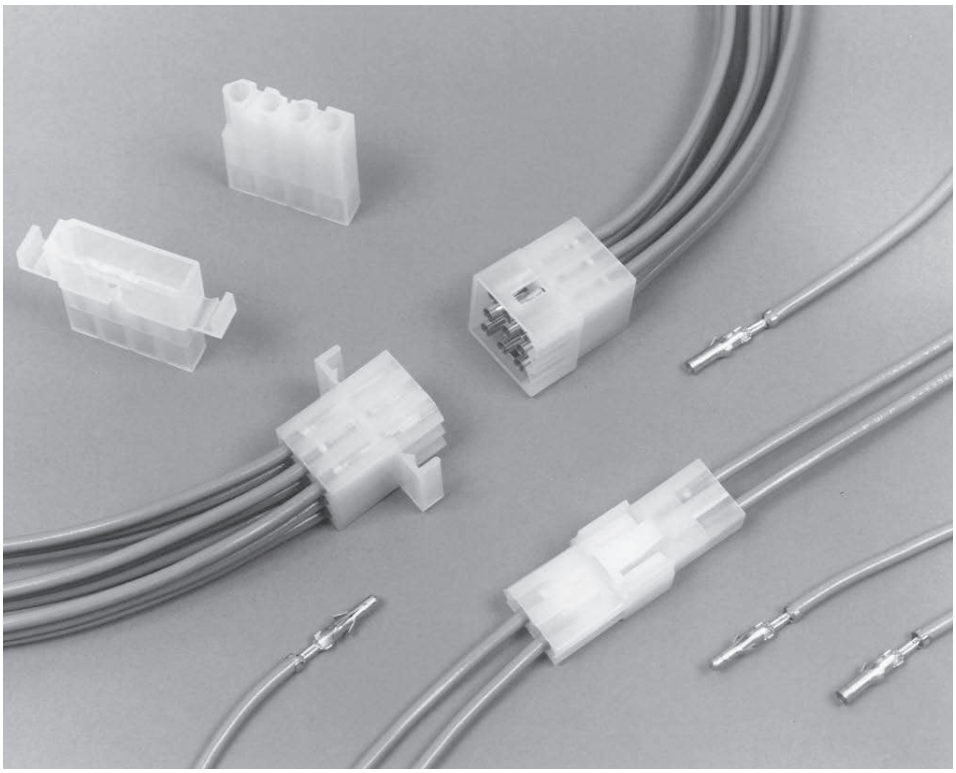
.093 [2.36] Commercial Pin and Socket Connectors

Product Facts

- Polarized
- Cavity identification
- Low contact-mating force
- Dual locking lances
- Detent and positive locking
- Contacts available in brass and phosphor bronze with tin and gold plating
- Panel mounting and free-hanging styles
- "F" crimp contacts
- Applicator and hand tool available
- Economical commercial-grade connectors
- Compatible with high-speed application machinery and competitive soft shells
- Wire range 24 to 14 AWG [0.2 to 2 mm^2]
- Accepts wires with insulation diameters as large as .180 [4.57]
- Housings available in 1 to 15 positions
- .093 plug and receptacle housings accept pin or socket contacts. The preferred convention is to use socket contacts with receptacle housings
- Not for interrupting current
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476
- Certified by Canadian Standards Association, File No. LR 7189



Performance Characteristics

The .093 Commercial Pin and Socket Connectors performance characteristics found on pages 143-144 are based on free-hanging and panel mount connectors, loaded with contacts crimped on stranded wire.

Thermal Shock— -55°C to +105°C

Temperature-Humidity Cycling—+25°C to +65°C at 90–95% RH

Corrosion—48 hr. at 5% salt concentration

Vibration—10-55-10 cycles per minute at .06 [1.52] total excursion

Physical Shock—18 shocks, 50 Gs sawtooth in 11 milliseconds

Durability—50 mating cycles

Dielectric Withstanding Voltage—1.0 kVAC

Insulation Resistance—1000 megohms min. initial

Voltage Rating—250 V AC or DC

Connector Mating—2.5 lb. [11.1 N] max. per contact

Connector Unmating—1.5 lb. [6.7 N] min. per contact

Contact Retention—10 lb. [44.5 N] min.

Technical Documents

Application Specification
114-49000 .093 Commercial Pin and Socket Connectors

Product Specification
108-1038 .093 Commercial Pin and Socket Connectors

Catalog 82181
Revised 4-08

www.tycoelectronics.com

Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752
Canada: 1-905-470-4425
Mexico: 01-800-733-8926
C. America: 52-55-1106-0803

South America: 55-11-2103-6000
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-8706-080-208

.093 [2.36] Commercial Pin and Socket Connectors (Continued)

Performance Characteristics (continued)

Maximum Current—Maximum current rating of .093 Commercial Pin and Socket Connectors is limited by the maximum operating temperature of the housings which is 105°C including the temperature rise of the contacts which is a maximum of 30°C. There are several variables which have a direct effect on this maximum current-carrying capability for a given connector and must be considered for each application. These variables are:

Wire Size—Larger diameter wire will carry more current since it has less internal resistance to current flow and thus generates less heat. Longer wire lengths also enhance current-carrying capabilities since the wire conducts heat away from the connector.

Connector Size—In general, the more circuits in a connector, the less current can be carried.

Ambient Temperature—The higher the ambient temperature, the less current can be carried in any given connector.

Related Product Data

Product Specification—108-1038

Current Rating Verification for 30°C Maximum Temperature Rise 100% Energized

Wire-to-Wire

.093 Commercial Pin and Socket Connectors — Calculated Current Table

Number of Circuits	Wire AWG					
	14	16	18	20	22	24
2	13.00	12.00	11.00	8.00	6.00	6.00
3	13.00	11.00	10.00	8.00	6.00	5.00
4 In-Line	11.00	10.00	9.00	7.00	5.00	4.00
4 Matrix	11.00	10.00	9.00	7.00	5.00	4.00
5	10.00	9.00	8.00	6.00	5.00	4.00
6	10.00	9.00	8.00	6.00	4.00	4.00
9	9.00	7.00	6.00	5.00	4.00	3.00
12	8.00	7.00	6.00	4.00	3.00	3.00
15	7.00	6.00	5.00	4.00	3.00	3.00

Values are based on initial Temperature Rise versus Current Testing and are intended to be a guide in the selection of a connector family. All applications should be tested by the end user. The values listed are per circuit for fully loaded housings being 100% energized. **Note:** All combinations were not tested and this chart contains interpolated and extrapolated values.

Minimum Wire Lengths for T-Rise vs. Current Testing

AWG	Min. Length (in.)	AWG	Min. Length (in.)
30	2.6	18	9.4
28	3.2	16	11.3
26	4.1	14	13.7
24	5.1	12	16.4
20	7.8	10	19.3

Note: If wire lengths used are less than those listed above, the current-carrying ability of the system will be reduced due to less heat being conducted away from the connector. The customer should fully test all applications.

Termination Resistance/Contact Crimp Tensile Force

Wire Size		Termination Resistance		Contact Crimp Tensile Force	
AWG	mm²	Test Current (Amps)	Resistance Milliohms (Max. Init.)	Force (Min.) lbs.	Force (Min.) N
24	0.2	2.0	4.0	8	35.6
22	0.3–0.4	3.0	4.0	10	44.5
20	0.5–0.6	4.5	4.0	15	66.7
18	0.8–0.9	6.0	3.5	25	111.2
16	1.25–1.4	8.0	3.5	25	111.2
14	2	10.0	3.0	30	133.4

Note: This is the total resistance between wire crimps of a mated pin and socket.

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.093 [2.36] Commercial Pin and Socket Connectors (Continued)

Contacts

Pin Diameter .093 [2.36]

Material

.010 [0.25] Stock Thickness

Pin and socket contacts can be used in either plug or receptacle housings.

Related Product Data

Product Specification—108-1038

Application Specification
114-49000

Performance Characteristics—pages 143-144

Housings

.198 [5.03] Centerline—pages 146-147

.250 [6.35] Centerline—pages 148-149

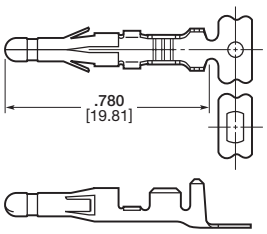
Panel Cutouts

.198 [5.03] Centerline Housings—page 147

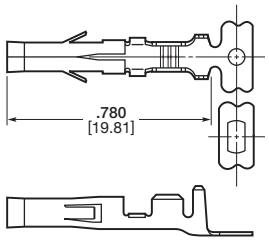
.250 [6.35] Centerline Housings—page 148

Technical Documents—pages 143 and 205-206

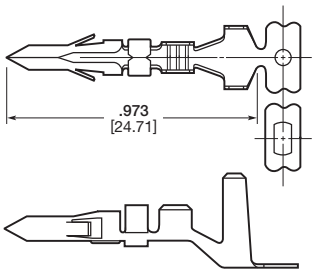
Application Tooling—pages 207-210



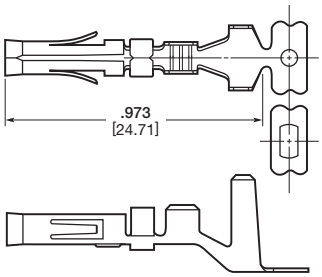
Pin



Socket



Pin
Part No. 770385-1



Socket
Part No. 770383-1

Wire Size AWG	Wire Size mm²	Ins. Dia.	Material & Finish	Contact Part Numbers Pin Strip Form	Pin Loose Piece	Socket Strip Form	Socket Loose Piece	HDM Applicator Part No.	Hand Tool Part No.
24–18	0.2–0.9	**.110** 2.79	Brass, Pre-tin	350418-1	770147-1	350417-1	770146-1	466656-1[5] 466656-2[5] 466656-3[5]	90872-1
			Brass, Gold[2]	—	—	350417-3[2]	770146-3[2]		
			Brass Select Gold[1]	350418-5[1]	770147-5[1]	350417-5[1]	770146-5[1]		
20–14	0.6–2	**.140** 3.56	Brass, Pre-tin	350416-1	770145-1	350415-1	770144-1	466878-1[5] 466878-2[5] 466878-3[5]	90871-1
			Brass, Select Gold[1]	350416-5[1]	770145-5[1]	350415-5[1]	770144-5[1]		
			Phos. Brz., Pre-tin	—	—	350415-6	770144-6		
		.180 4.57	Brass, Pre-tin	770530-1[4]	—	770529-1[4]	—	567337-3[6] 567337-4[6] 567337-6[6]	—
18–14 or 2 (18)	0.8–2 or 2 (0.8–0.9)	**.180** 4.57 (per wire)	Brass, Pre-tin	770385-1[3]	—	—	—	567273-2[7] 567273-3[7] 567273-4[7]	—
			Phos. Brz., Pre-tin	—	—	770383-1[3]	—		

[1]Select Gold — .000030 [.000762] min gold in mating area over .000050 [.00127] min nickel.
[2]Gold — .000030 [.000762] min gold in mating area, overall gold flash over .000050 [.00127] min nickel.
[3]These contacts have a .0125 [.318] stock thickness and accept two wires, each with maximum .180 [4.57] insulation diameters. They can be used only with the following housing part numbers: 770364-1, 770365-1, 770450-1, 770451-1, 770452-1, and 770453-1 (see page 143).
[4]Contact length is .875 [22. 23]
[5]HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -3 is used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.
[6]HDM Applicator part number ending in -3 is used on AMPOMATOR CLS Machine with T or G Terminators, -4 is used on AMP-O-LECTRIC Model K Machine, -6 is used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.
[7]HDM Applicator part number ending in -3 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -4 is used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.

Note: Phosphor bronze contacts should be used in high-temperature/humidity cycling applications.

Note: All part numbers are RoHS Compliant.

Contact Insertion Tool
(For Pins and Sockets)
Part No. 91002-1
IS 408-7347

Contact Extraction Tool
Part No. 318837-1
IS 408-4375

Catalog 82181
Revised 4-08

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.093 [2.36] Commercial Pin and Socket Connectors (Continued)

Housings

Free-Hanging or Panel Mount

.198 [5.03] Centerline spacing

Material

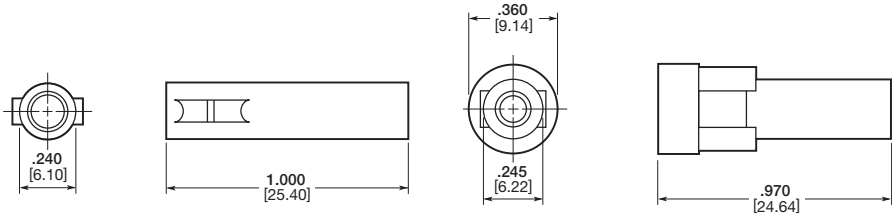
Housing—Nylon, natural color
Flammability Rating—UL94-V-2

Related Product Data

Contacts—page 145

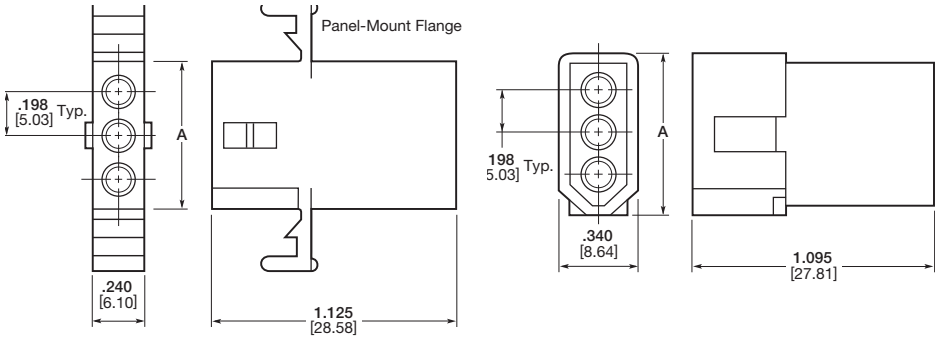
Product Specification—108-1038

1 Circuit



Receptacle **Plug**

2, 3, and 4 Circuit, In-Line



Receptacle **Plug**

No. of Circuits	A Dimension		Receptacle Part Numbers				Plug Part Numbers	
			Panel Mount		Free-Hanging			
	Receptacle	Plug	Without Detents	With Detents	Without Detents	With Detents	Panel Mount	Free-Hanging
1	—	—	—	—	—	770063-1	—	770064-1
2	**.540** 13.72	**.640** 16.26	—	770066-1[1,5]	—	770065-1[1,5] 770266[1,3,5]	770068-1[1]	770069-1[1]
3	**.670** 17.02	**.770** 19.56	—	770071-1	—	770070-1 770264-1[3]	770073-1	770074-1
4 (In-Line)	**.870** 22.10	**.970** 24.64	—	770076-1	—	770075-1	770077-1	770078-1
4 (Matrix)	**.443** 11.25	**.540** 13.71	—	—	—	770843-1	—	770842-1
5	**1.070** 27.18	**1.170** 29.72	—	—	—	770083-1 794015-1[3]	—	770084-1
6 (In-Line)	**1.268** 32.21	**1.378** 35.00	—	—	—	770782-1[4]	—	770892-1[4]
6 (Matrix)	**.435** 11.05	**.535** 13.59	770085-1	770087-1	770088-1	770086-1	770089-1	770090-1
9	**.670** 17.02	**.770** 19.56	770091-1	770093-1	770094-1	770092-1	770095-1[2] 770108-1	770096-1
12	**.870** 22.10	**.970** 24.64	770097-1	770099-1	770100-1	770098-1	770101-1	770102-1
15	**1.070** 27.18	**1.170** 29.72	770103-1	—	770105-1	—	770106-1	770107-1

[1].248 [6.30] centerline.
[2]Mounting ears at wire end.
[3]Tool removable.
[4]Positive lock.
[5]600 V AC or DC

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

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.093 [2.36] Commercial Pin and Socket Connectors (Continued)

Housings

Free-Hanging or Panel Mount

.198 [5.03] Centerline spacing

Material

Housing—Nylon, natural color

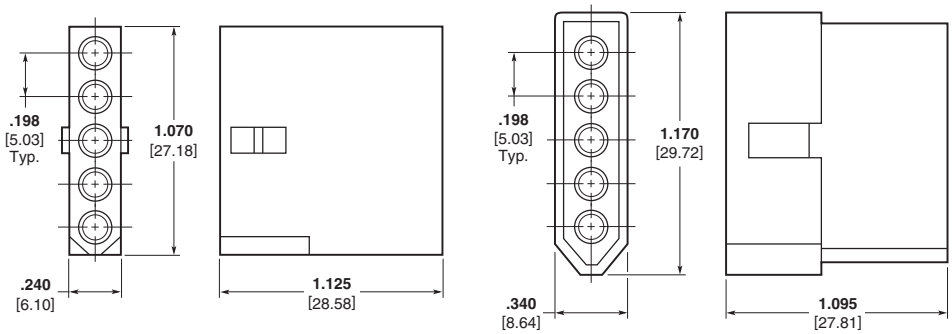
Flammability Rating—UL94V-2

Related Product Data

Contacts—page 145

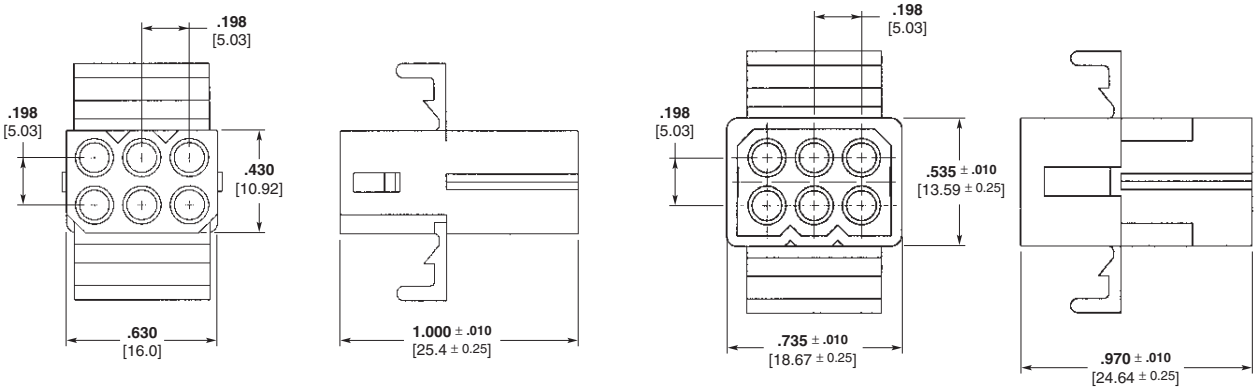
Product Specification—108-1038

5 Circuit, In-Line



Receptacle (Free-Hanging) **Plug (Free-Hanging)**

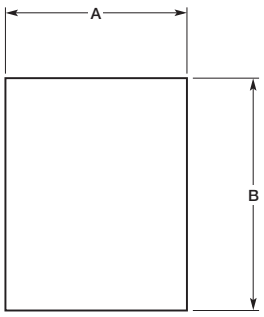
4, 6, 9, 12, and 15 Circuit, Matrix



Receptacle **Plug**

Recommended Panel Cutouts

Maximum panel thickness is .090 [2.29].



No. of Circuits	Panel Cutout Dimensions			
	Receptacle		Plug	
	A	B	A	B
2	**.312** 7.92	**.725** 18.42	**.375** 9.53	**.800** 20.32
3	**.312** 7.92	**.840** 21.34	**.375** 9.53	**.933** 23.70
4 (In-Line)	**.312** 7.92	**1.038** 26.37	**.375** 9.53	**1.131** 28.73
6	**.600** 15.24	**.718** 18.24	**.695** 17.65	**.750** 19.05
9	**.725** 18.42	**.828** 21.03	**.660** 16.76	**.937** 23.80
12	**.725** 18.42	**1.050** 26.67	**.760** 19.30	**1.155** 29.34
15	**.655** 16.64	**1.240** 31.50	**.760** 19.30	**1.343** 34.11

Note: The panel should be punched so that the housing enters in the same direction as the punch.

Catalog 82181
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.093 [2.36] Commercial Pin and Socket Connectors (Continued)

Housings

Free-Hanging or Panel Mount

.250 [6.35] Centerline spacing

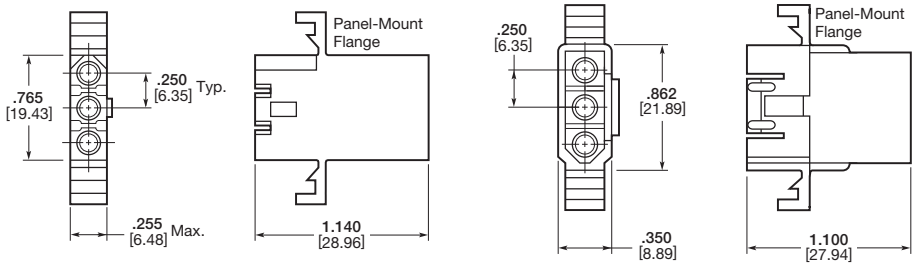
Material

Housing—Nylon, natural color
Flammability Rating—UL94V-2
Voltage Rating—600 V AC or DC

Related Product Data

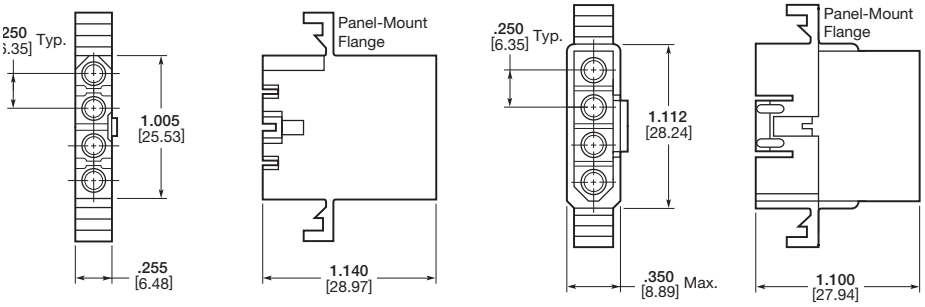
Contacts—page 145
Product Specification—108-1038

3 Circuit, In-Line



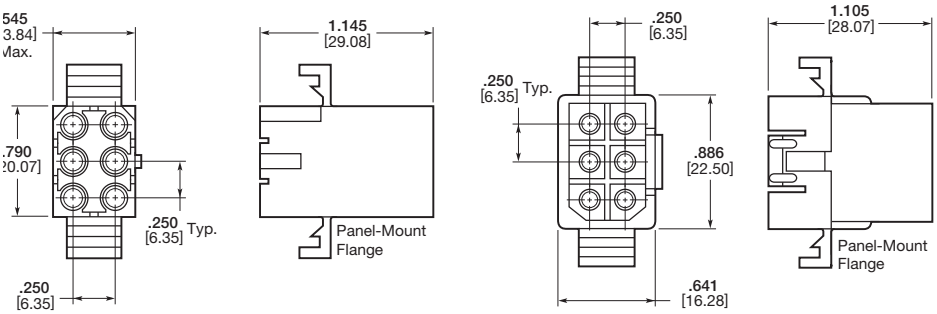
Receptacle **Plug**

4 Circuit, In-Line



Receptacle **Plug**

6 Circuit, Matrix

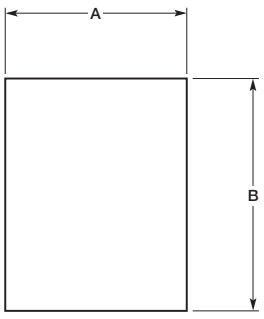


Receptacle **Plug**

Recommended Panel Cutouts

Maximum panel thickness is .062 [1.57].

Note: The panel should be punched so that the housing enters in the same direction as the punch.



No. of Circuits	Receptacle Part Numbers		Plug Part Numbers	
	Panel Mount	Free-Hanging	Panel Mount	Free-Hanging
3	770269-1 770771-1[1]	770339-1	770338-1	770276-1
4	770329-1	770337-1	770330-1	770336-1
6	770372-1	770360-1	770373-1	770361-1

[1]Pre-bent mounting ears.

No. of Circuits	Panel Cutout Dimensions			
	Receptacle		Plug	
	A	B	A	B
3	**.310** 7.87	**.920** 23.37	**.365** 9.27	**1.022** 25.96
4	**.310** 7.87	**1.168** 29.67	**.365** 9.27	**1.270** 32.26
6	**.608** 15.44	**.946** 24.03	**.658** 16.71	**1.048** 26.62

Note: All part numbers are RoHS Compliant.

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.093 [2.36] Commercial Pin and Socket Connectors (Continued)

Housings

Free-Hanging or Panel Mount

.250 [6.35] Centerline spacing

Material

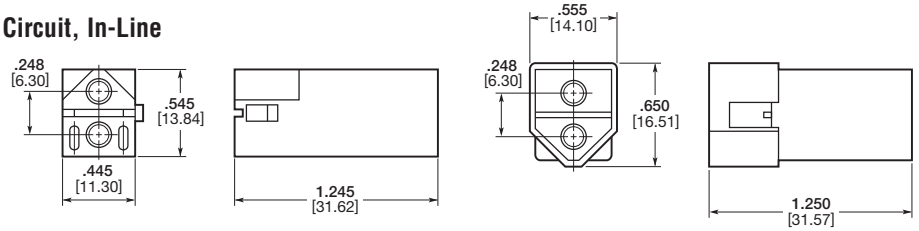
Housing—Nylon, natural color
Flammability Rating—UL94V-2
Voltage Rating—600 V AC or DC

Related Product Data

Contacts—page 145
Product Specification—108-1038

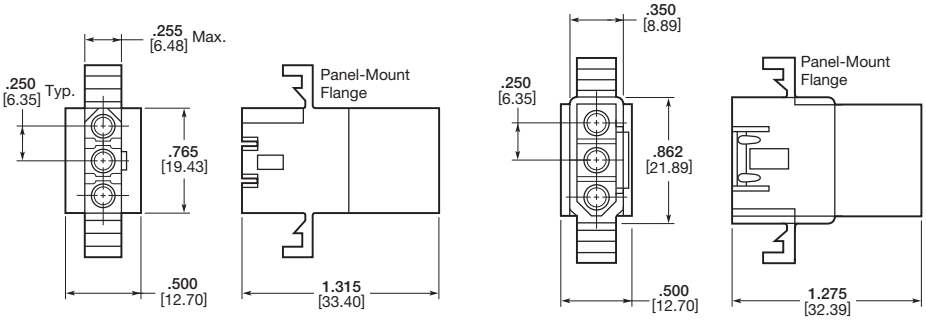
Dual Wire

2 Circuit, In-Line



Receptacle **Plug**

3 Circuit, In-Line



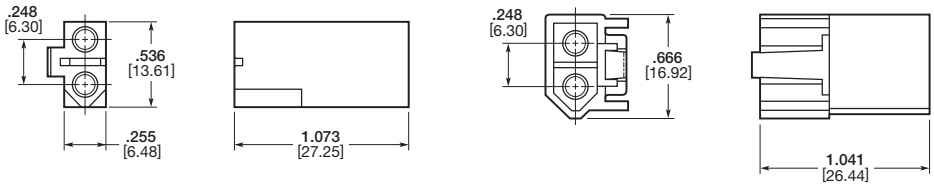
Receptacle **Plug**

No. of Circuits	Receptacle Part Numbers		Plug Part Numbers	
	Panel Mount	Free-Hanging	Panel Mount	Free-Hanging
2	—	770364-1[1]	—	770365-1[1]
3	770453-1[2]	770451-1	770452-1[2]	770450-1

[1].248 [6.30] centerline.
[2]See panel cutout dimensions on page 58.

Positive Lock

2, 3 and 4 Circuit, In-Line



Receptacle **Plug**

No. of Circuits	Receptacle Part Numbers	Plug Part Numbers
	Free-Hanging	Free-Hanging
2	770424-1[1]	770425-1[1]
3	770785-1	770783-1
4	770784-1	770810-1

[1].248 [6.30] centerline.

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

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