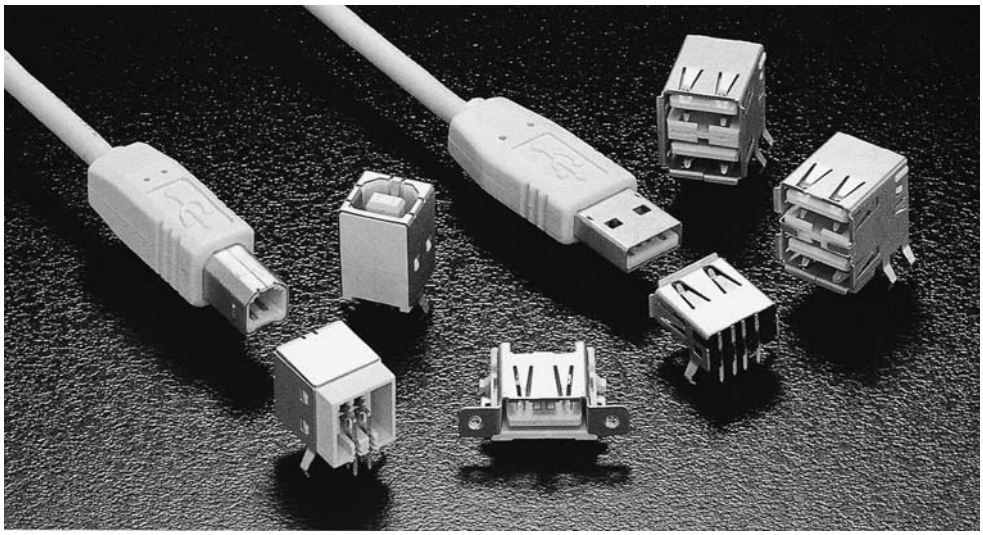
tyco Electronics

Connector System for Universal Serial Bus (USB)

AMP

Product Facts

- **Plug and Play capability**
- **Hot pluggable, permits attaching or detaching peripherals without power down or reboot**
- **Single 4-position connector, polarized for proper orientation**
- **Complete family of board-mount receptacles, including right-angle, thru-hole, thru-hole type B, side-by-side, and stacked**
- **Cable mount overmold plug kits for both standard and type B applications**
- **Consolidates serial parallel, keyboard, mouse and game ports**
- **Compatible with asynchronous and isochronous data transfer methods**



The Tyco Electronics Connector System will accommodate the two differentially driven data wires that provide bi-directional, simultaneous signals for full speed 12Mbps or for low speed 1.5Mbps used in Universal Series Bus (USB) Systems. The Tyco Electronics USB System is a complete interconnection technology for I/O devices, including: keyboards, mice, game port, serial port devices, digital audio, printers, scanners, modems, joy sticks, and other telecommunication devices. Designed for outside-of-box, user friendly applications, the Tyco Electronics system consists of a single 4-position boardmount receptacle and mating cable mount overmolded plug. Boardmount receptacles are available in standard, Type B, stacked and side-by-side configurations, adding to the system's versatility to meet all USB applications.

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RJ45 Over USB 19

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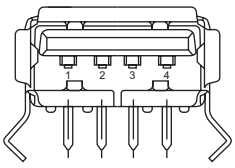
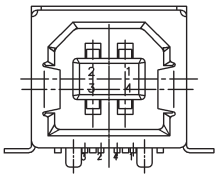
USB/IEEE Combo. 21

Part Matrix

Product	Series	Part Number	RoHS Compliant	Orientation	SMT/ Thru-Hole	Page Number
Header	A	787616-1	202303-1	Right-Angle	Thru-Hole	2
		440260-1	292336-1	Right-Angle	Thru-Hole	2
Header	A	353929-1	5353929-1	Panel Mount, RA	SMT	3
		353928-1	1734038-1	Panel Mount, RA	SMT	4
Header	A	787617-1	5787617-1	Double Stack, RA	Thru-Hole	5
Header	A	440448-1	1-1734181-2	Triple Stack, RA	Thru-Hole	6
Header	A	1470007-2	1-1734383-2	Quad Stack, RA	Thru-Hole	7
Header	A	1364428-1	1734366-1	Vertical	Thru-Hole	8
Plug	A	1470697-1	1734080-1	Edge Mount	SMT	9
		1470695-1	1734028-1	Edge Mount	SMT	9
Plug Kit	A	1364978-1	1734372-1	Cable Appl.		10
Header	B	787780-1	292304-1	Right-Angle	Thru-Hole	11
Header	B	787834-1	5787834-1	Vertical	Thru-Hole	11
Header	B	1734346-1	1734346	Right-Angle	SMT	12
Plug Shell	B	796007-2	796007-3	Cable Appl.		12
Plug Housing	B	796006-4	5796006-4	Cable Appl.		12



Series A



Series B

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Catalog 7-1773442-0
Issued 02-06

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UK: 44-141-810-8967

Series A Receptacle Assemblies

Right-Angle, Thru-Hole

Part Number
202303-1
Loose Piece

Performance Data

USB Connector System

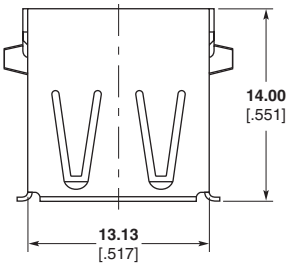
Voltage Rating — 30VAC (rms)
Current Rating — Signal application only, 1 amp per contact
Temperature Rating — –55 to 85˚C (unless limited by cable or overmold)
Termination Resistance — 30mq, max.
Insulation Resistance — 1,000 Mq, min.
Dielectric Withstanding Voltage — 750VAC
Capacitance — 2pf max.
Durability — 1,500 cycles
Mating Force — 35N per contact, max.
Unmating Force — 10N per contact, max.

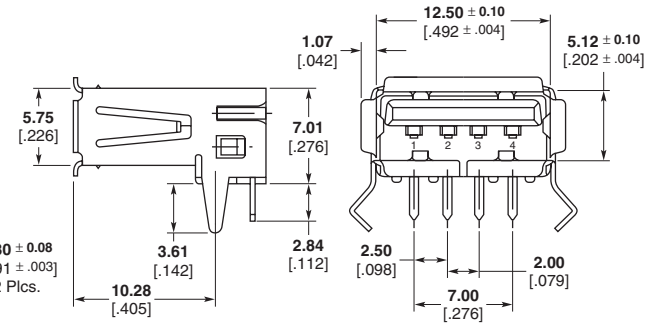
Universal Series Bus

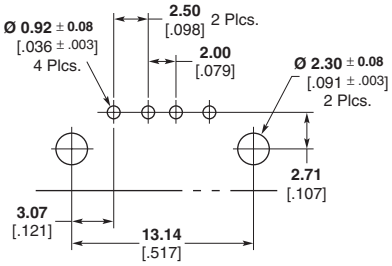
Speed — 12 Mb/s
Max. No. of Peripherals — 63
Max. Distance — 5m max.
Data Transfer — Asynchronous

Solder Tail Length — 2.84 [.112]
Recommended PCB Thickness — 1.57 [.062]

Product Specification
108-1586







Recommended PCB Layout

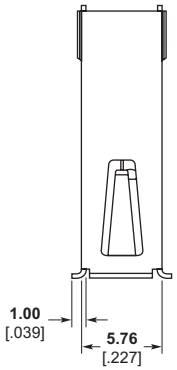
Right-Angle, Thru-Hole, Flag

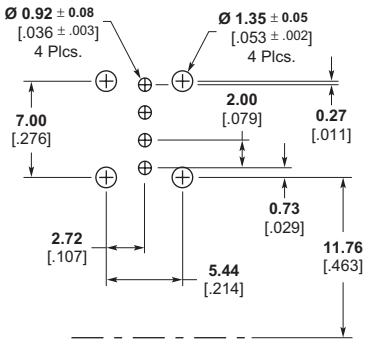
Part Number
292336-1

Loose Piece

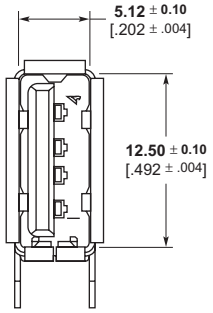
Solder Tail Length — 2.29 [.090]
Recommended PCB Thickness — 1.57 [.062]

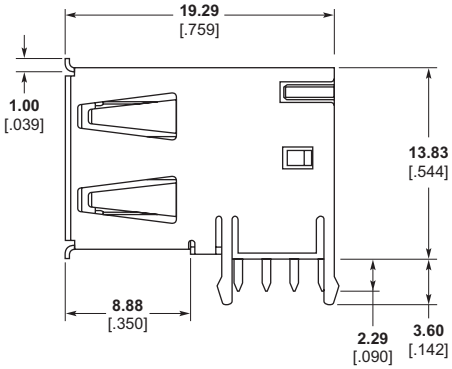
Product Specification
108-1586





Recommended PCB Layout





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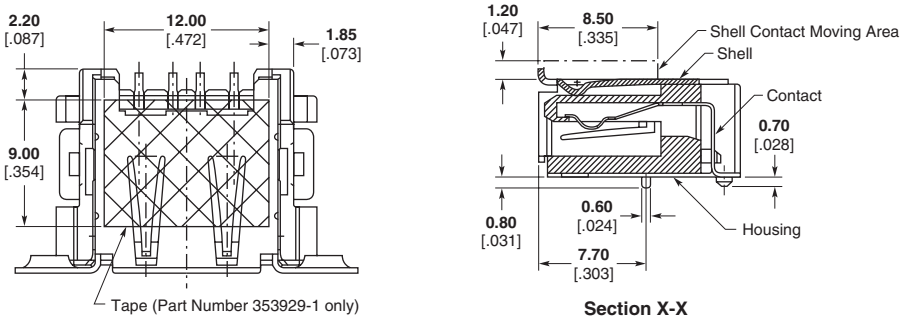
Series A Receptacle Assemblies (Continued)

Panel Mount Right Angle SMT Type

Part Number
5353929-1
Emboss Tape Mounted, ea. 350
Tape Width — 44.00 [1.732]

Part Number
353583-1
Tray Pack, ea. 55

Product Specification
108-5563



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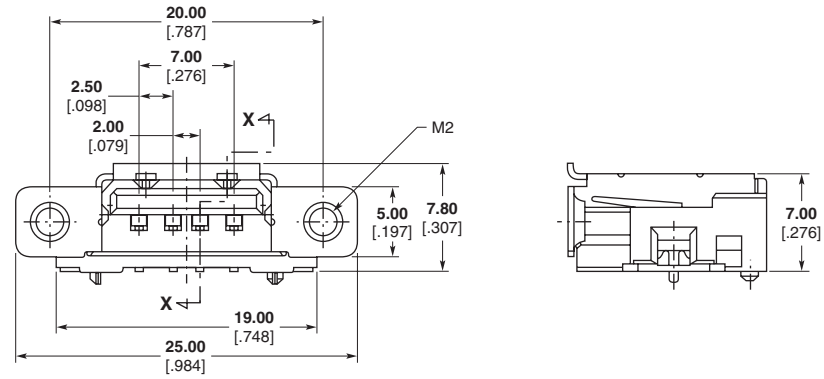
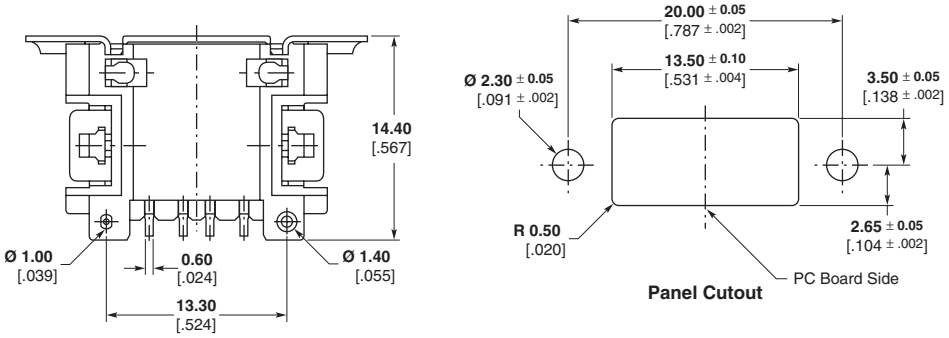
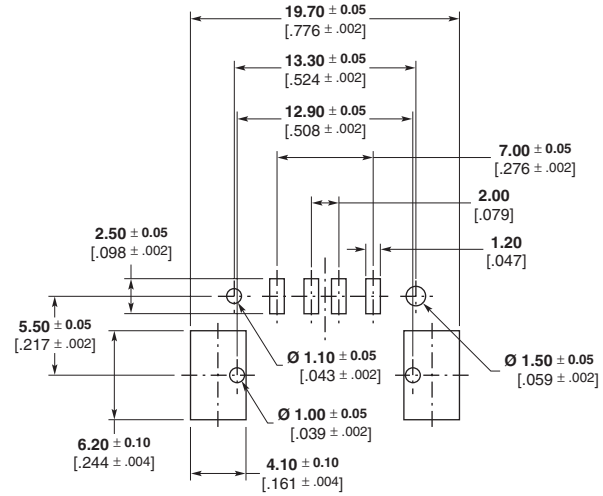




Panel Cutout



Recommended PCB Layout (Component Side)

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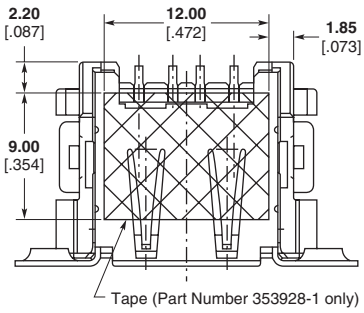
Series A Receptacle Assemblies (Continued)

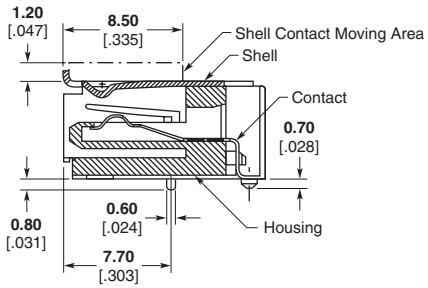
Panel Mount Right Angle SMT Type, Reverse Mating

Part Number
1734038
Emboss Tape Mounted, ea. 350
Tape Width — 44.00 [1.732]

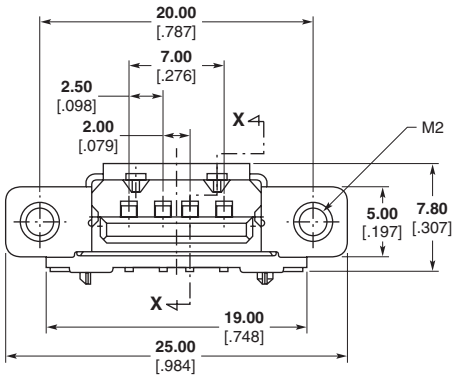
Part Number
353576-1
Tray Pack, ea. 55

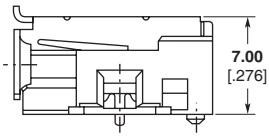
Product Specification
108-5563

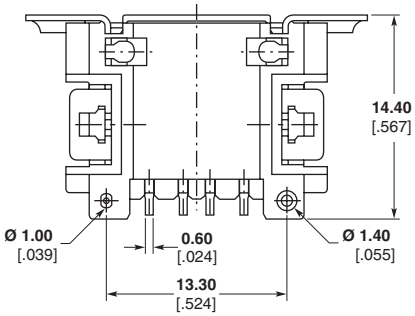


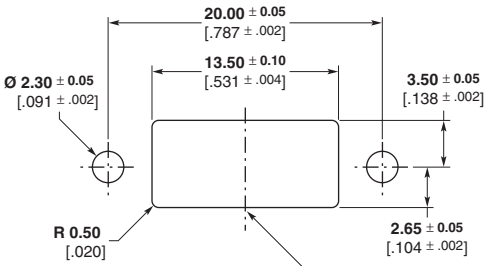


Section X-X

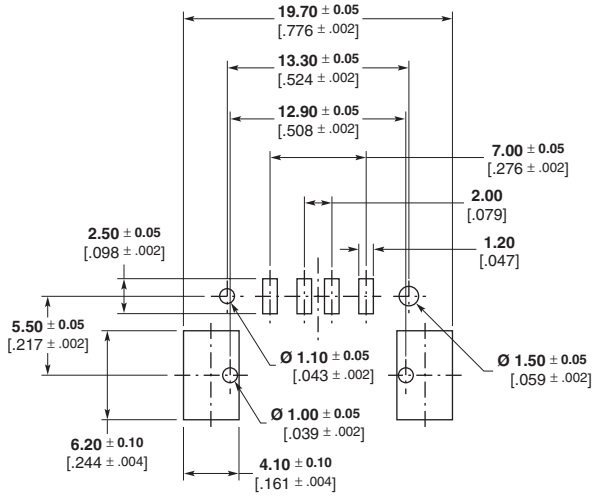








Panel Cutout



Recommended PCB Layout (Component Side)

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Series A Receptacle Assemblies (Continued)

Right Angle Stacked, Thru-Hole

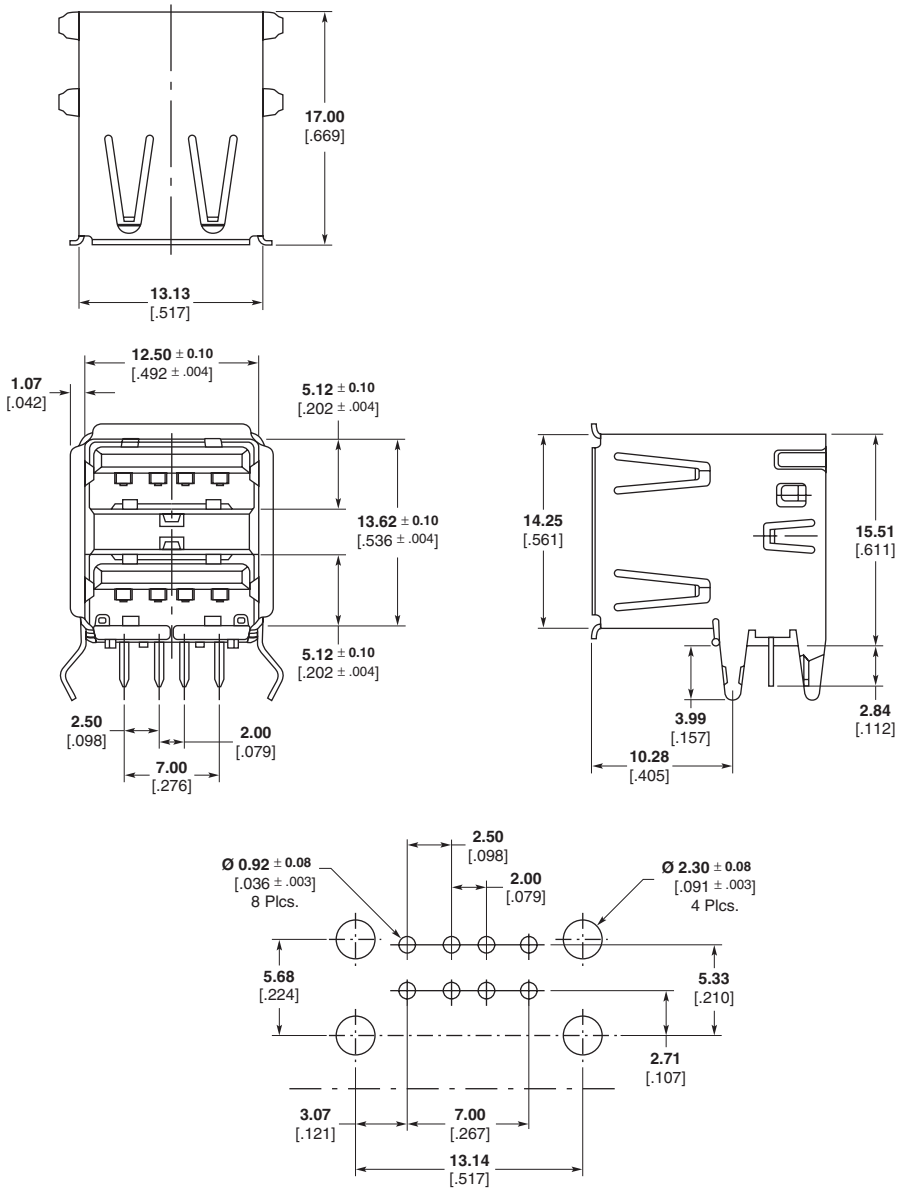
Part Number
5787617-1

Loose Piece

Solder Tail Length — 2.84 [.112]
Recommended PCB Thickness — 1.57 [.062]

Material and Finish

Housing — Thermoplastic, UL94V-0
Shell — Copper alloy, plated bright tin
Contacts — Copper alloy, plated 0.076µm min. gold over 0.76µm min. palladium-nickel on the mating end, 3.8µm min. tin lead on solder tails all over 1.27µm min. nickel underplating or 0.076µm min. Gold on the mating end, 3.8µm min. tin lead on solder tails all over 1.27µm min. nickel underplating.



Recommended PCB Layout

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Series A Receptacle Assemblies (Continued)

Right-Angle, Triple Stack Thru-Hole with Panel Grounds

Part Number
1-1734181-2

Material and Finish

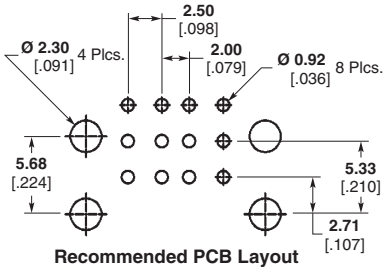
Housing — Thermoplastic, UL94V-0, white

Contact — Phosphor bronze, plated gold on contact area and tin on solder-tails, nickel underplated

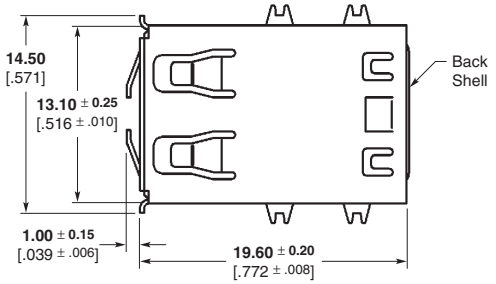
Front Shell — Brass, nickel plated, copper underplated

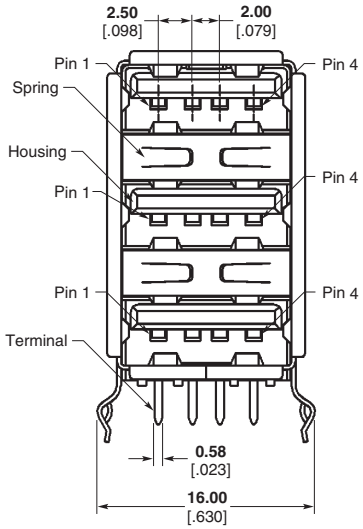
Back Shell — SPCC, nickel plated, copper underplated

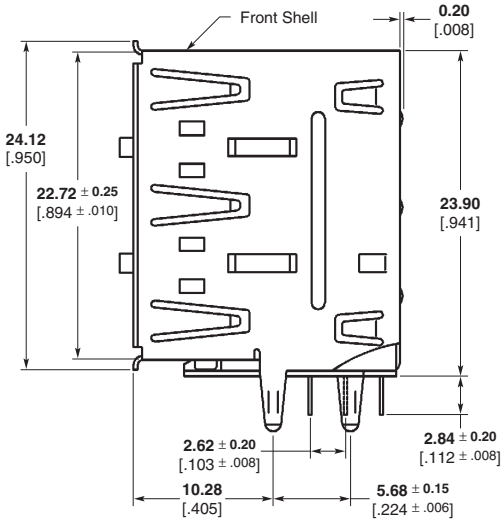
Product Specification
108-57113



Recommended PCB Layout







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Series A Receptacle Assemblies (Continued)

Right Angle, Quad Stack, Thru-Hole with Panel Grounds

Part Number
1-1734383-2

Material and Finish

Housing (1) — Thermoplastic with 30% G/F, UL94V-0, color black

Housing (2) — High temperature thermoplastic with 30% G/F, UL94V-0, color black

Contact — Phosphor bronze, gold plated in contact area, tin on solder tails, nickel underplated overall

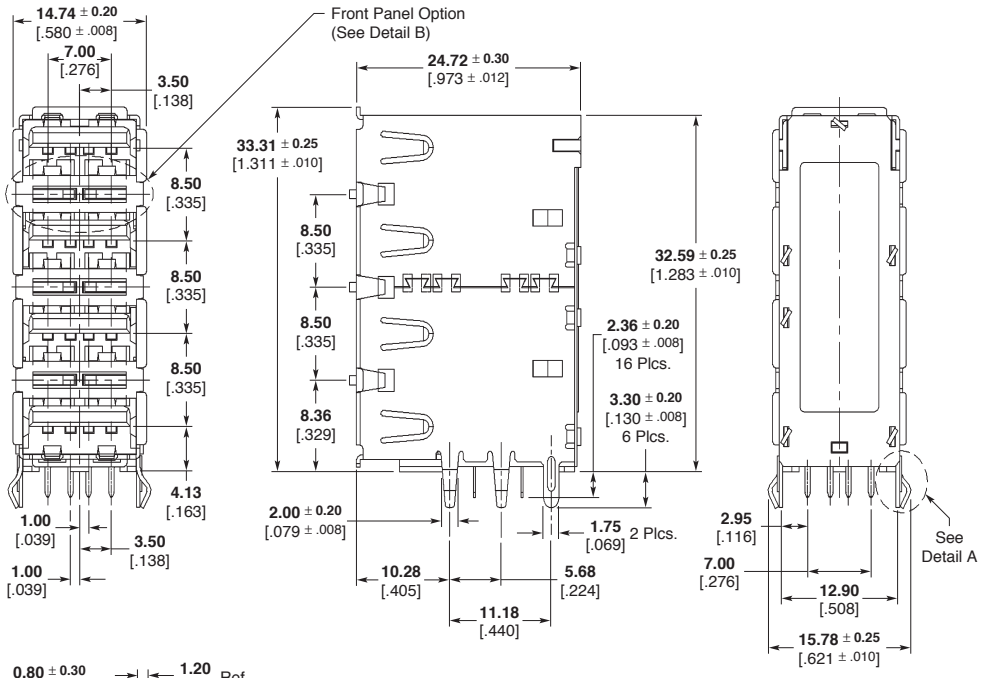
Front Shield — Brass, tin plated on entire, nickel underplated overall

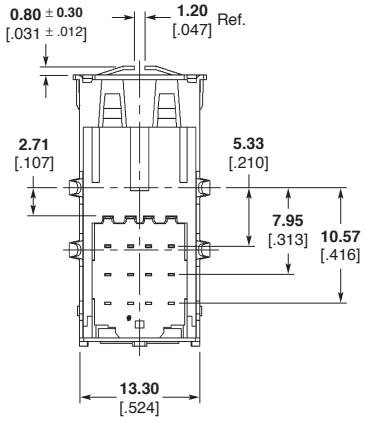
Rear Shield — Brass, nickel plated

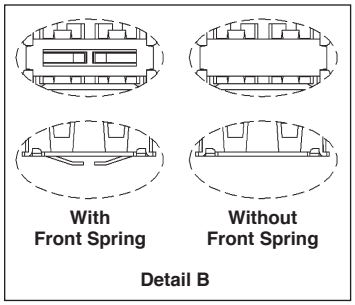
Ground Finger — Brass, tin plated on entire, nickel underplated overall

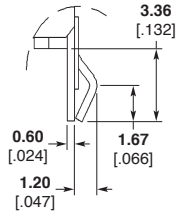
Recommended PCB Thickness — 1.60 [.063]

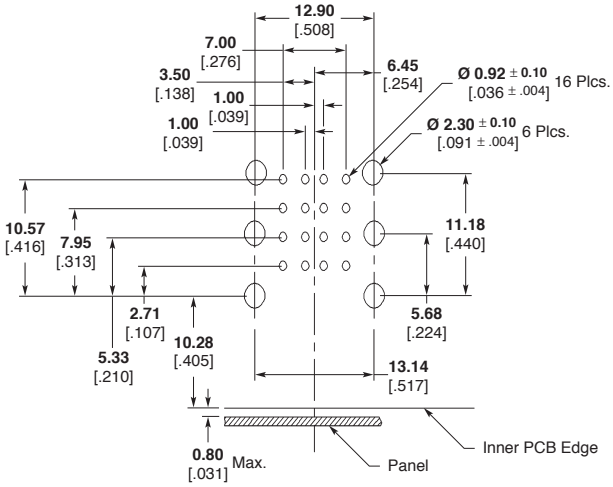
Product Specification
108-57391

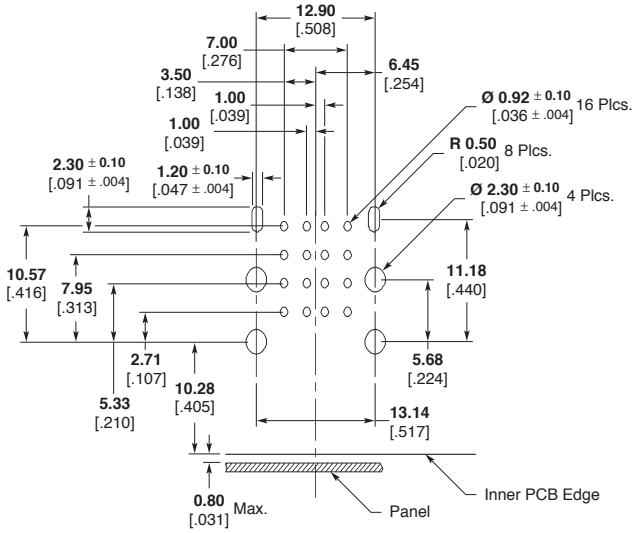












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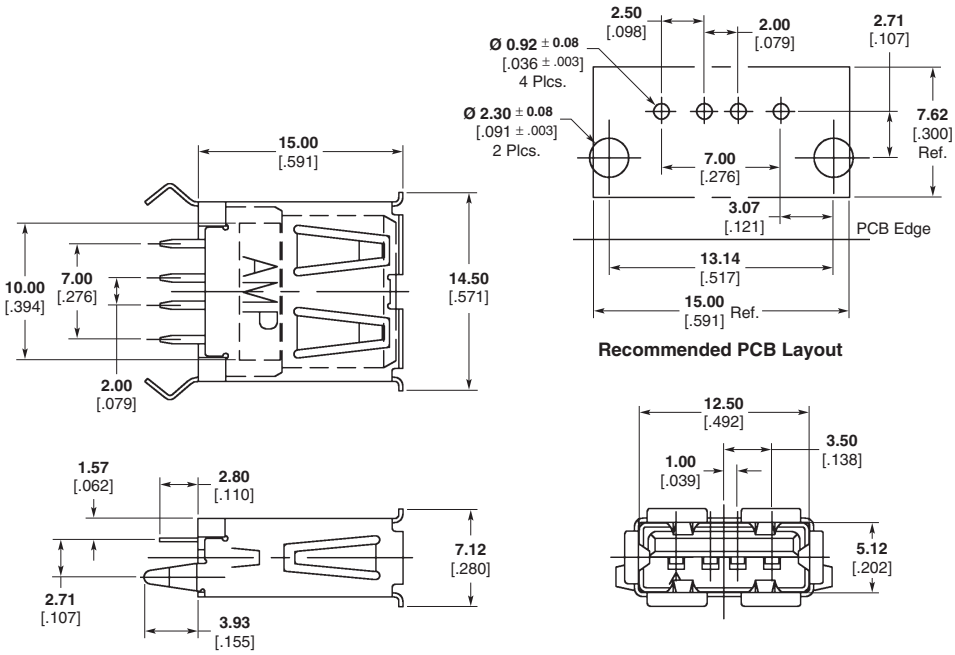
Series A Receptacle Assemblies (Continued)

Vertical, Thru-Hole

Part Number
1734366-1

Product Specification
108-57547



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Series A Plug Assemblies

Edge Mount, SMT

Part Number 1734080-1

Material and Finish

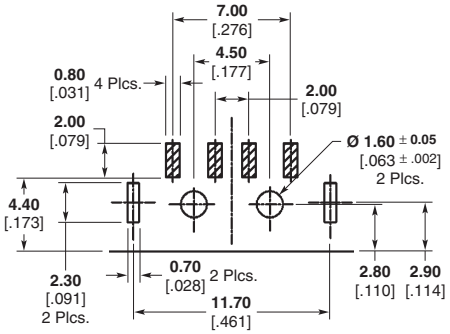
Housing — High temperature thermoplastic, UL94V-0, black or white

Contact — Brass, plated gold on contact area and tin-lead on soldertails, nickel underplated

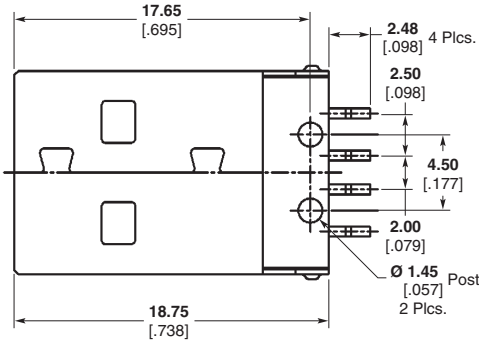
Shield — Steel, nickel plated, copper underplated

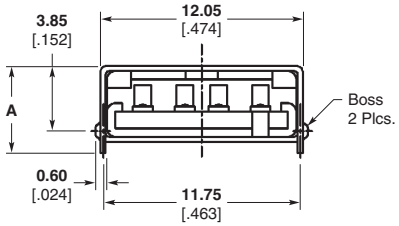
Product Specification 108-57304

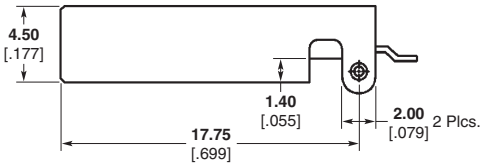
Dim. A	Part Number
5.85 .230	1470697-1 1470697-2 1-1470697-1 1-1470697-2
5.05 .199	2-1470697-1 thru 7-1470697-2



Recommended PCB Layout







Edge Mount, SMT

Part Number 1734028-1

Material and Finish

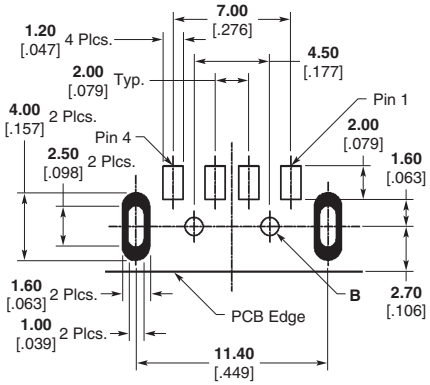
Housing — Thermoplastic, UL94V-0, black or natural

Contact — Brass, plated gold on contact area and tin-lead on soldertails, nickel underplated

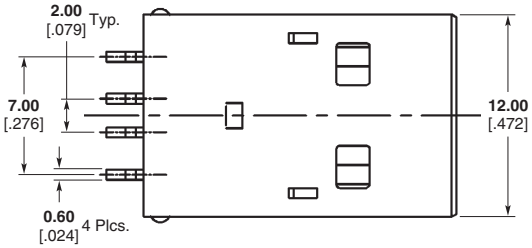
Shield — Steel, nickel plated, copper underplated

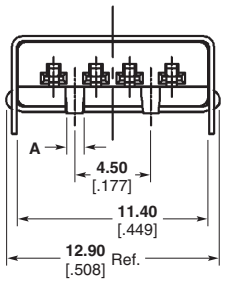
Product Specification 108-57306

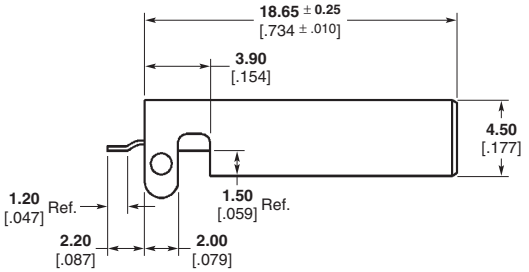
Dim. B	Part Number
1.10 .043	1734028-1
1.50 .059	1734028-2
1.10 .043	1734028-3
1.50 .059	1734028-4



Recommended PCB Layout







Catalog 7-1773442-0
Issued 03-06

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Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-141-810-8967

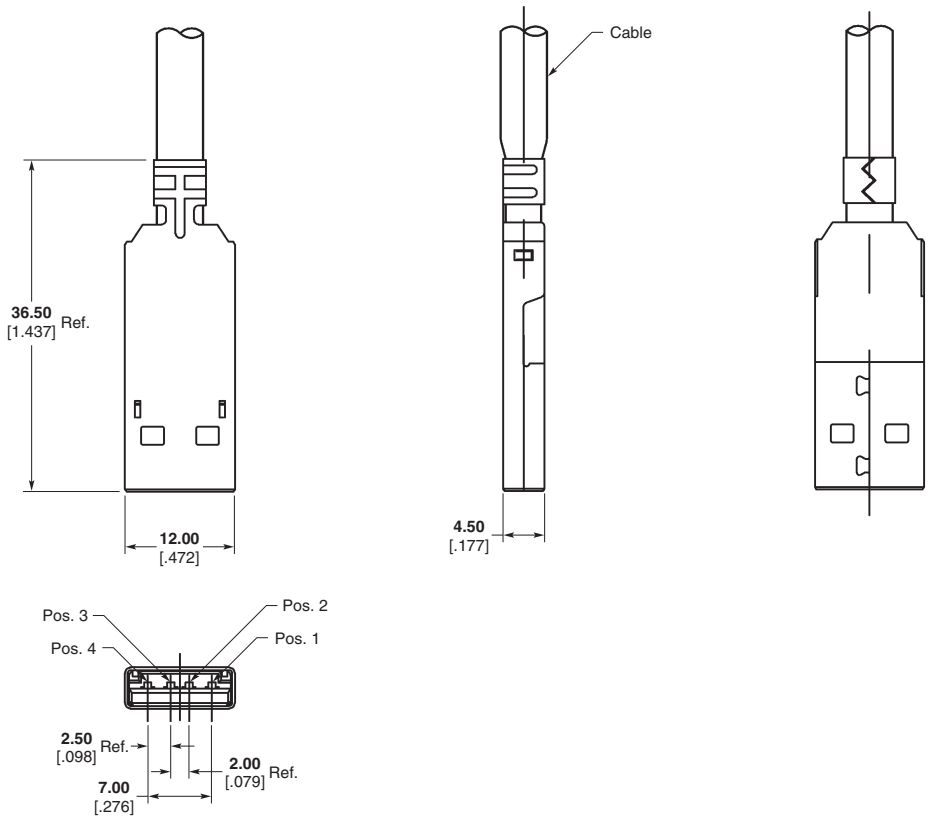
Series A Plug Assemblies (Continued)

Cable Plug

Kit includes HSG with contacts cover, front and back shells

Part Number
1734372-1

Product Specification
108-57547



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UK: 44-141-810-8967

Series B Receptacle Assemblies

Right Angle, Thru-Hole

Part Number
292304-1

Loose Piece

Material and Finish

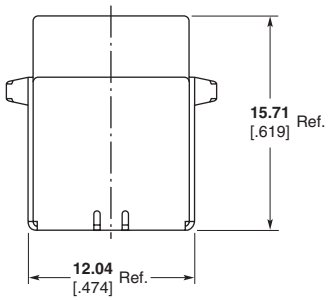
Housing — Thermoplastic, UL94V-0

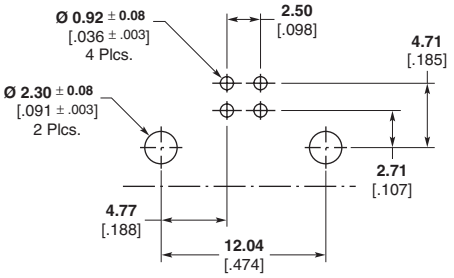
Shell — Copper alloy, plated bright tin

Contacts — Copper alloy, plated 0.076µm min. gold over 0.76µm min. palladium-nickel on the mating end, 3.8µm min. tin lead on solder tails all over 1.27µm min. nickel underplating or 0.076µm min. gold on the mating end, 3.8µm min. tin lead on solder tails all over 1.27µm min. nickel underplating.

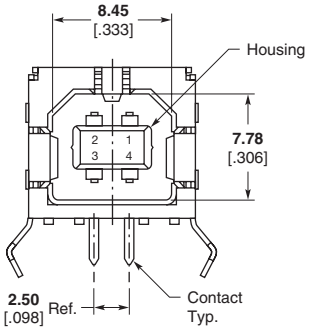
Recommended PCB Thickness — 1.57 [.062]

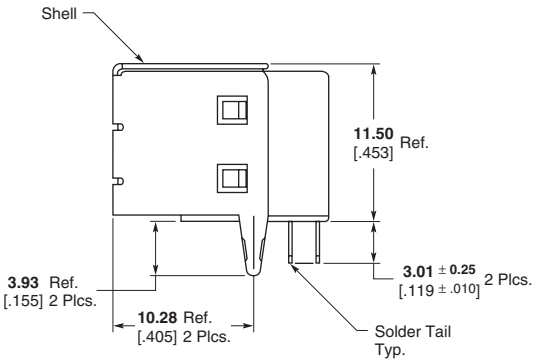
Product Specification
108-1586





Recommended PCB Layout





Vertical Thru-Hole

Part Number
5787834-1

Loose Piece

Material and Finish

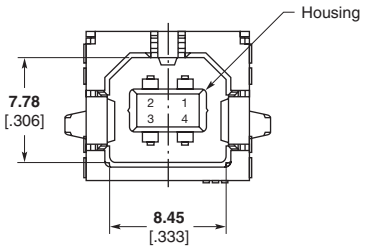
Housing — Thermoplastic, UL94V-0

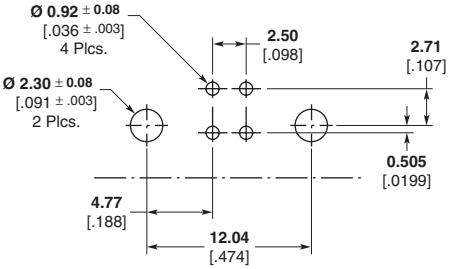
Shell — Copper Alloy, plated bright Tin

Contacts — Copper Alloy, plated 0.076µm min. Gold over 0.76µm min. palladium-nickel on the mating end, 3.8µm min. Tin lead on solder tails all over 1.27µm min. nickel underplating or 0.076µm min. Gold on the mating end, 3.8µm min. Tin lead on solder tails all over 1.27µm min. nickel underplating.

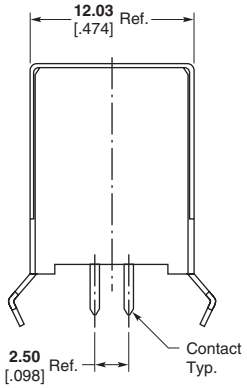
Recommended PCB Thickness — 1.57 [.062]

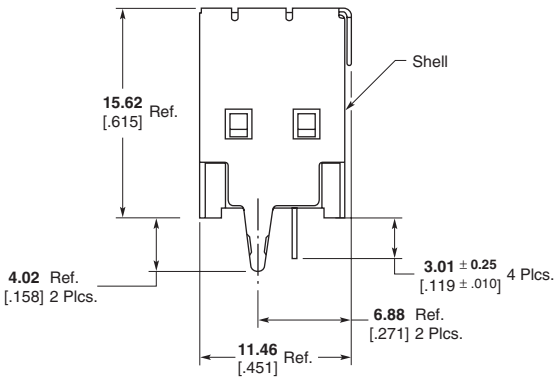
Product Specification
108-1586





Recommended PCB Layout





Catalog 7-1773442-0
Issued 03-06

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UK: 44-141-810-8967

Series B Receptacle Assemblies (Continued)

Right-Angle, SMT

Part Number
1734346

Material and Finish

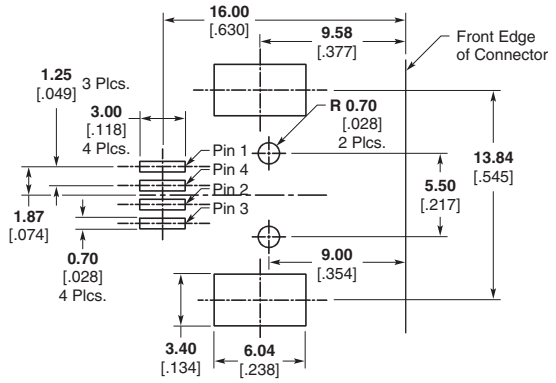
Housing — High temperature thermoplastic, UL94V-0, black

Contact — Phosphor bronze, plated gold on contact area and tin-copper on soldertails, nickel underplated

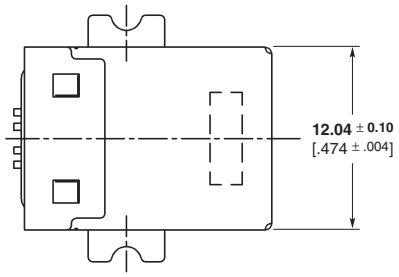
Front Shell — Phosphor bronze, nickel plated

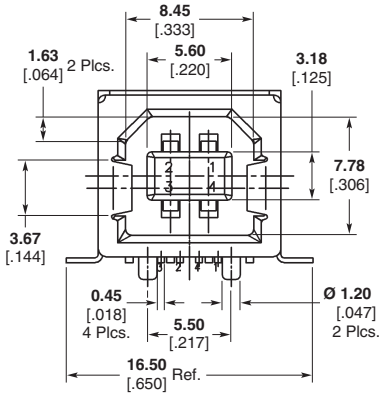
Back Shell — Stainless steel, nickel plated

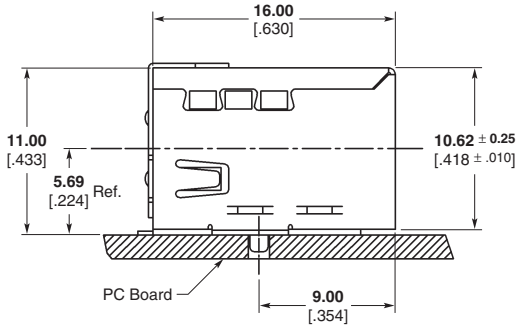
Product Specification
108-57538



Recommended PCB Layout







Series B Plug Assemblies

Cable Plug

Part Numbers
796007-3
796006-4

Plug Housing & Contact Assembly (Loose Piece)

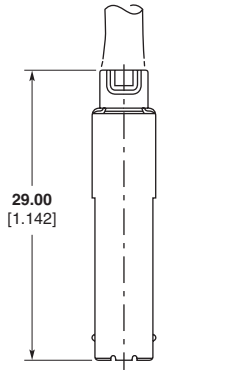
Material and Finish

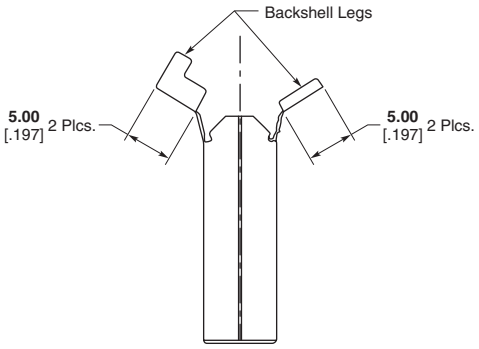
Housing — Thermoplastic, UL94V-0

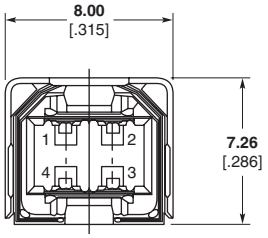
Shell — Copper alloy, plated bright tin

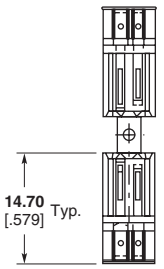
Contacts — Copper alloy, plated 0.076µm min. gold over 0.76µm min. palladium-nickel on the mating end, 3.8µm min. tin lead on solder tails all over 1.27µm min. nickel underplating or 0.076µm min. gold on the mating end, 3.8µm min. tin lead on solder tails all over 1.27µm min. nickel underplating.

Product Specification
108-1586









Catalog 7-1773442-0
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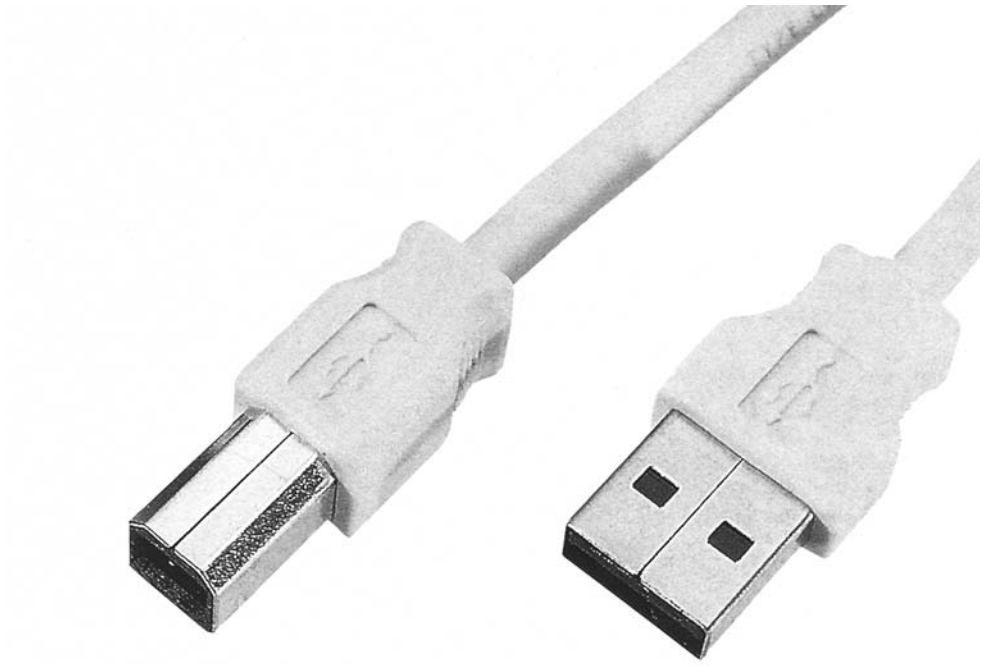
UK: 44-141-810-8967

USB Cable Plug Cable Assemblies

Product Facts

- **Support latest technology for personal computer "Plug and Play" peripheral connectivity**
- **Uses Serial Bus technology to connect USB equipped personal computer to keyboards, mice, printers, video camera, etc**
- **Requires personal computer equipped with an "A" receptacle, Universal Serial Port**
- **Larger wire sizes are required for longer lengths to meet USB specifications for maximum current load and milivolt drop**



Standard Universal Serial Bus (USB) Cable Assemblies Bus Extender Cable Assemblies

Cable Construction	Length* m [ft]	Part Number
2/AWG28 (0.08mm²), 2/AWG28 (0.08mm²), Shielded	500 [1,640]	1487594-1
2/AWG28 (0.08mm²), 2/AWG26 (0.15mm²), Shielded	250 [820]	1487594-2
2/AWG28 (0.08mm²), 2/AWG24 (0.20mm²), Shielded	162 [531]	1487594-3
2/AWG28 (0.08mm²), 2/AWG22 (0.40mm²), Shielded	310 [1,017]	1487594-4
2/AWG28 (0.08mm²), 2/AWG20 (0.60mm²), Shielded	4.0 [13]	974329-1
2/AWG28 (0.08mm²), 2/AWG20 (0.60mm²), Shielded	5.0 [16]	974329-2

Blunt End-Cut Assemblies for connecting to devices, such as keyboard, mice, etc.

Cable Construction	Length* m [ft]	Part Number
2/AWG28 (0.08mm²), 2/AWG28 (0.08mm²), Shielded	0.83 [2.7]	974538-1
2/AWG28 (0.08mm²), 2/AWG26 (0.15mm²), Shielded	1.0 [3.3]	974539-1
2/AWG28 (0.08mm²), 2/AWG24 (0.20mm²), Shielded	2.0 [6.6]	974540-1

*Indicates preferred lengths.

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Mini USB Connector and Cable Assemblies Input/Output

Product Facts

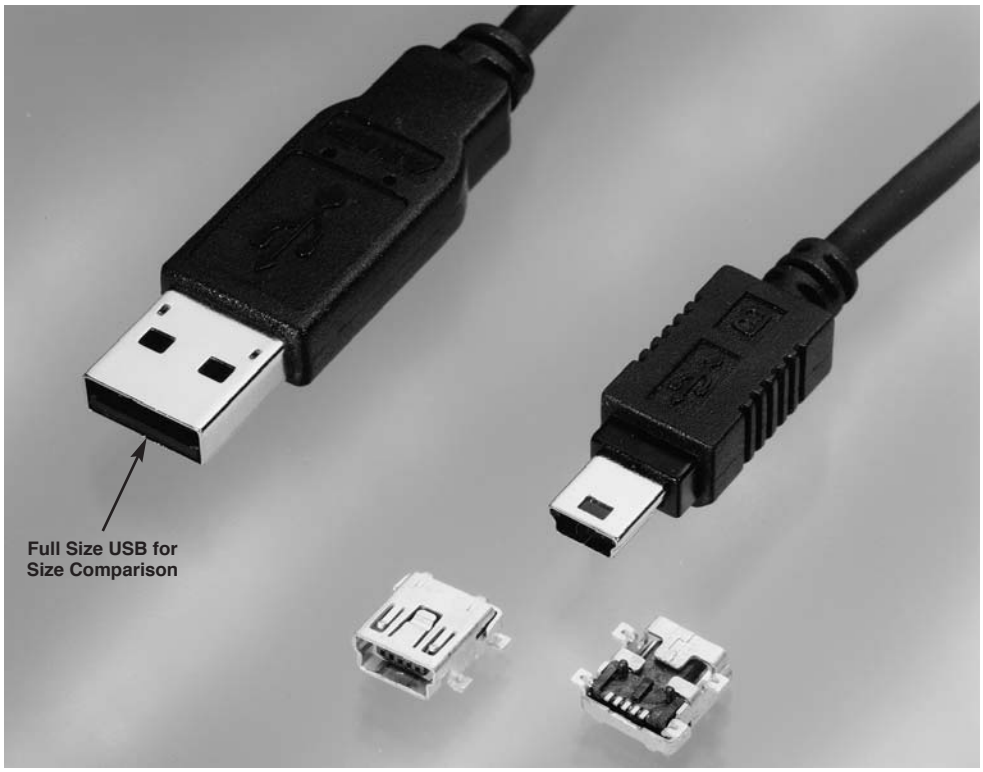
- Designed to meet the USB 2.0 specifications
- Single 5-Position (one ID pin) receptacle connector polarized for proper orientation
- Used in next generation high density computer peripherals, PDA's, palm tops and cell phones
- Designed for 480MB/s transfer rate

Mini USB Types

- High density design, allows for all the benefits of USB in a smaller package than traditional USB connectors
- **Mini-A** receptacle is keyed to allow a device to act as the host. It has four solder hold downs, which provide stability in mating and unmating by preventing stress on SMT connecter leads
- **Mini-B** receptacle is keyed to allow device to act as a peripheral
- **Mini-AB** receptacle is keyed for devices that can act as a host or peripheral

Applications

- Supports latest technology for personal computer "Plug and Play" peripheral connectivity
- Uses serial bus technology to connect USB personal computers to PDA's, cell phones, video cameras, scanners, printers, keyboard and mouse



Part Matrix

Product	Series	Part Number	RoHS Compliant	Packaging	Page Number
Header	Mini-A	440478-1	1734327-1	Tray	15
		440478-2	1734327-2	T/R	15
	Mini-B	440247-1	1734035-1	Tray	16
		440247-2	1734035-2	T/R	16
	Mini-AB	440479-1	1734328-1	Tray	15
		440479-2	1734328-2	T/R	15
Plug	Mini-A	440315	—	Loose Piece	17
	Mini-B	—	1734205-1	Loose Piece	17

Catalog 7-1773442-0
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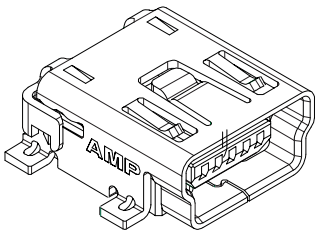
Mini USB Receptacle Assemblies (Continued)

Right Angle SMT



Part Numbers

Mini-A	1734327-1	Tray
	1734327-2	T/R
Mini-B	440247-1	Tray
	440247-2	T/R
Mini-AB	440479-1	Tray
	440479-2	T/R

Performance Data

Electrical

Dielectric Withstanding Voltage — 100 VAC

Current Rating — 1.5A @ 250VAC min.

Insulation Resistance — 100 megaohms min.

Contact Resistance — 50 milliohms max.

Contact Capacitance — 2pf max per contact

Safety Certification — Recognized under the Component Program of Underwriters Laboratories, Inc. File No. E81956

Mechanical

Durability — 5,000 cycles

Mating Force — 3.57 kg. max.

Unmating Force — .31 kg. min.

Recommended PCB Board Thickness — 1.57 [.062] and 0.80 [.031]

Materials

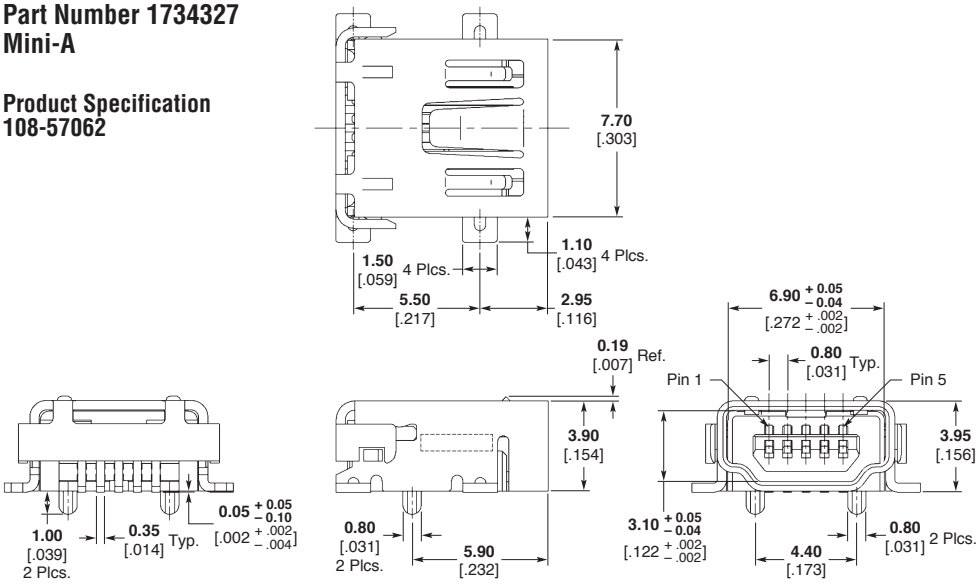
Housing — High temperature, thermoplastic glass filled; UL-94-V-0 rated; color black

Shell — Copper alloy

Contacts — .76 microns Au mating end, tin or tin/lead on solder tails as needed

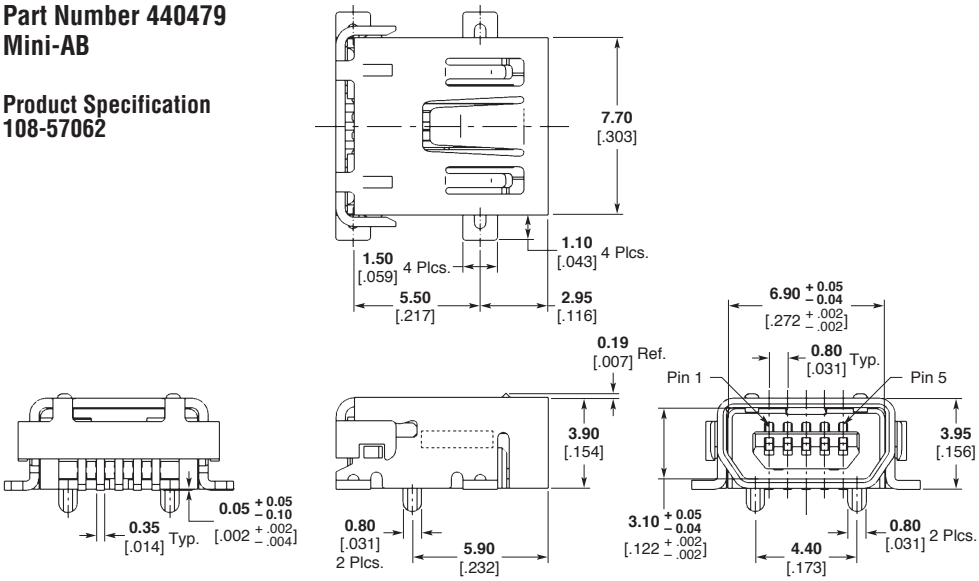
Part Number 1734327 Mini-A

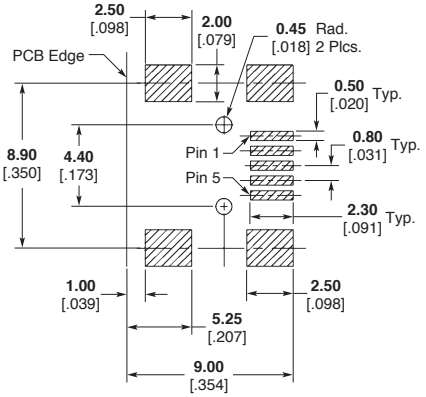
Product Specification 108-57062



Part Number 440479 Mini-AB

Product Specification 108-57062





Recommended PCB Layout (Mounting Side) for Part Numbers 440478 and 440479 Thickness 1.57 [.062]

Catalog 7-1773442-0
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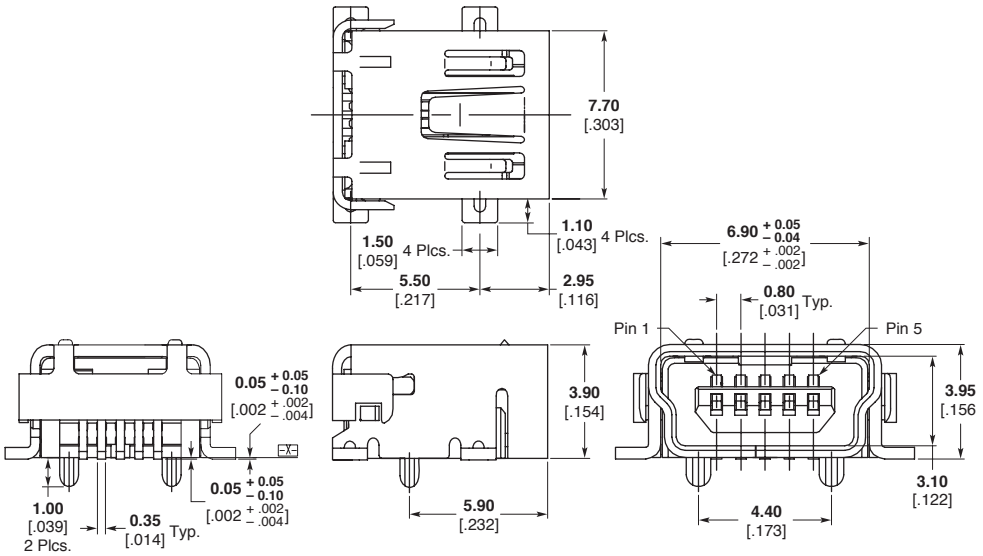
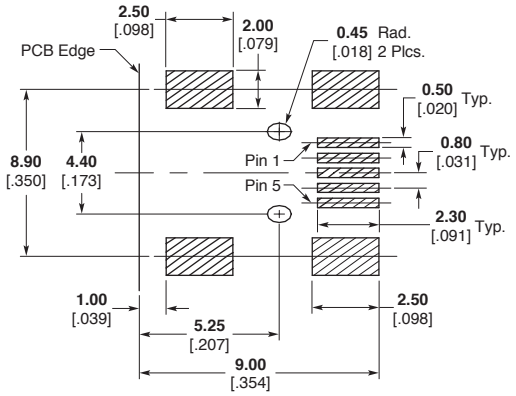
Mini USB Receptacle Assemblies (Continued)

Right Angle, SMT
Mini-B

Part Numbers: 440247
RoHS Compiliant: 1734035

Product Specification
108-57062





Recommended PCB Layout
(Mounting Side)
Thickness 1.57 [.062]

Catalog 7-1773442-0
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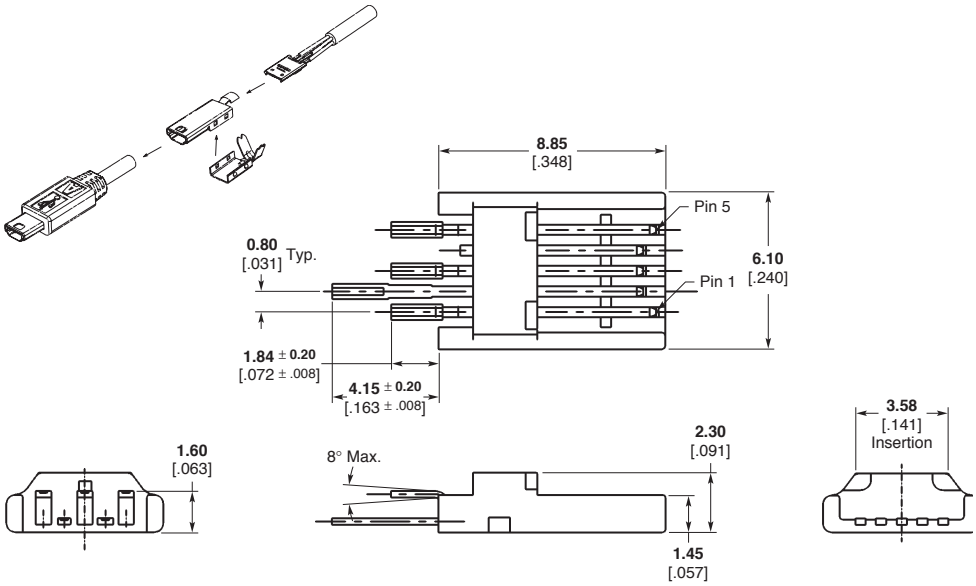
Mini USB Plug Assemblies

Cable Plug
Mini USB Type A

Part Number: 440315-1
Lower Shell: 440315-2
Upper Shell: 440315-3, & 1-440315-3

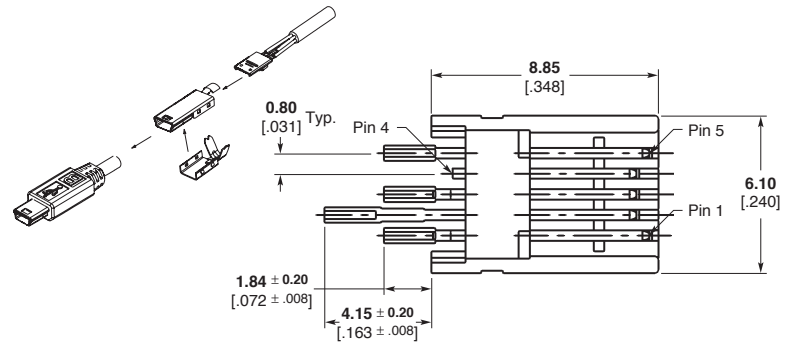
Product Specification
108-57062



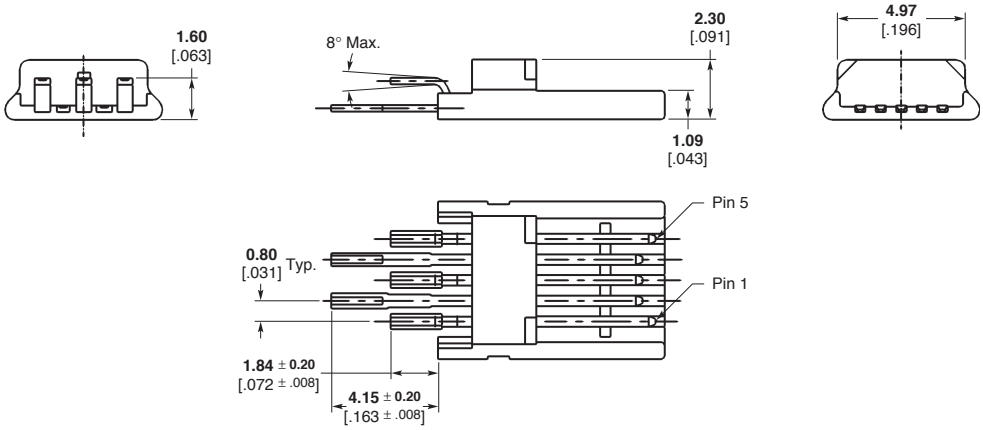
Cable Plug
Mini USB Type B

Part Number 1734205-1
Lower Shell and Upper Shell

Product Specification
108-57062



For Part Number 440180-1



For Part Number 1-440180-1

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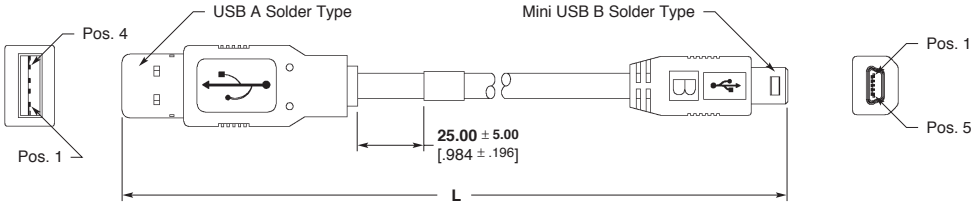
Cable Assembly

We currently offer a number of customer specials, but still only one standard cable assembly.



Part Number	Description	Dim. L (Cable Length)
1487586-1	Standard USB-A to Mini-B Assembly	0.500 m
1487586-2	Standard USB-A to Mini-B Assembly	0.250 m
1487586-3	Standard USB-A to Mini-B Assembly	0.162 m
1487586-4	Standard USB-A to Mini-B Assembly	0.310 m
1487587-1	Standard USB-A to Mini-B Assembly	1.000 m
1487587-2	Standard USB-A to Mini-B Assembly	1.300 m
1487587-3	Standard USB-A to Mini-B Assembly	0.830 m
1487588-1	Standard USB-A to Mini-B Assembly	2.000 m
1487588-2	Standard USB-A to Mini-B Assembly	1.500 m
1487588-3	Standard USB-A to Mini-B Assembly	1.829 m
1487589-1	Standard USB-A to Mini-B Assembly	3.000 m
1487589-2	Standard USB-A to Mini-B Assembly	2.500 m
1487590-1	Standard USB-A to Mini-B Assembly	4.000 m
1487590-2	Standard USB-A to Mini-B Assembly	5.000 m
1487591	Standard USB-A to NC Assembly	0.780 – 0.830 m
1487592	Standard USB-A to NC Assembly	0.950 – 1.000 m
1487593-1	Standard USB-A to NC Assembly	2.000 m
1487593-2	Standard USB-A to NC Assembly	1.500 m
1487594-1	Standard USB-A to Mini-B Assembly	0.500 m
1487594-2	Standard USB-A to Mini-B Assembly	0.250 m
1487594-3	Standard USB-A to Mini-B Assembly	0.162 m
1487594-4	Standard USB-A to Mini-B Assembly	0.310 m
1487595-1	Standard USB-A to Mini-B Assembly	1.000 m
1487595-2	Standard USB-A to Mini-B Assembly	1.300 m
1487595-3	Standard USB-A to Mini-B Assembly	0.830 m
1487596-1	Standard USB-A to Mini-B Assembly	2.000 m
1487596-2	Standard USB-A to Mini-B Assembly	1.500 m
1487596-3	Standard USB-A to Mini-B Assembly	1.829 m
1487596-4	Standard USB-A to Mini-B Assembly	1.000 m
1487597-1	Standard USB-A to Mini-B Assembly	3.000 m
1487597-2	Standard USB-A to Mini-B Assembly	2.500 m
1487597-3	Standard USB-A to Mini-B Assembly	3.500 m
1487598-1	Standard USB-A to Mini-B Assembly	4.000 m
1487598-2	Standard USB-A to Mini-B Assembly	5.000 m
1487599	Standard USB-A to NC Assembly	0.780 – 0.830 m
1487600	Standard USB-A to NC Assembly	0.950 – 1.000 m
1487601-1	Standard USB-A to NC Assembly	2.000 m
1487601-2	Standard USB-A to NC Assembly	1.500 m
1496476-1	Standard USB-A to Mini-B Assembly	1.000 m
1496476-2	Standard USB-A to Mini-B Assembly	1.500 m
1496476-3	Standard USB-A to Mini-B Assembly	2.000 m
1496476-4	Standard USB-A to Mini-B Assembly	3.000 m
1496476-5	Standard USB-A to Mini-B Assembly	5.000 m
1496476-6	Standard USB-A to Mini-B Assembly	12"

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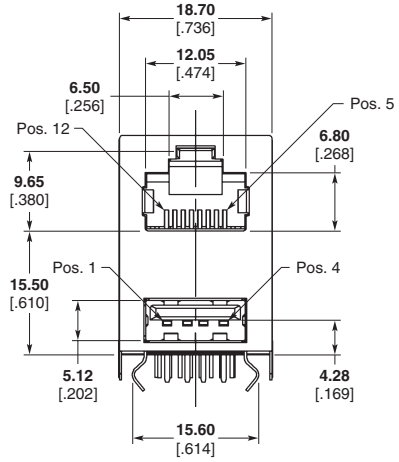
UK: 44-141-810-8967

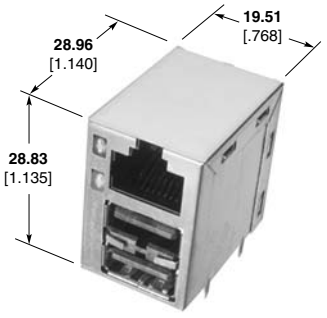
RJ45 Over USB Series A

Stacked, Thru-Hole

Product Facts

- **Meets or exceeds FCC Part 68 rules and regulations; REA PE-76; and UL 1863, Communication Circuit Accessories**
- **Meets 1000 volt dielectric requirement Contact to Contact**
- **20 dB shielding effectiveness from 30 MHz to 400 MHz**
- **Selectively gold plated contacts for lower cost**
- **All jacks are UL 94V-0 flame retardant polyester, standard color black, unless specified otherwise**
- **Listed by Underwriters Laboratories Inc., File No. E81956**
- **Certified by Canadian Standards Association, File No. LR 7189A**
- **Produced under a Quality Management System Certified to ISO 9001**
  A copy of the certificate is available upon request





Specifications

Electrical

Current Rating — 1.5 amp max. @ 25°C, derated to 0.2 amp max. @ 70°C ambient

Voltage Rating — 150 volts AC max.

Dielectric Withstanding Voltage — 1000 VAC, RMS, 60 Hz, 1 min. Contact to Contact

Mechanical

PC Board Retention — will not dislodge from pc board when subjected to 1 lb. [4.4N] pull before soldering and 10 lb. [44N] pull after soldering

Durability — 750 mating cycles

Material and Finish

Housing — Through-hole: Polyester (wave solder compatible), UL 94V-0 rated; Surface Mount: Polyphenylene Sulfide, or High Temp Nylon, UL 94V-0 rated

RJ45/2USB Contact — 0.36 [.014] thk. Phosphor bronze; plated 0.00127 [.000050] gold in contact area and 0.00381 [.000150] tin-lead on solder tails, over 0.00127 [.000050] nickel underplate

RJ45/1USB Contact — Gold flash plating on contact area and 0.00254 [.000100] tin on solder tails, over 0.00127 [.000050] nickel underplate

Technical Documents

Application Specifications
114-02048
114-6040

Product Specifications
108-01163
108-01163-1
108-01163-3
108-01163-4
108-01163-7

No. of Ports	Part Number	Positions/ Contacts	LEDs	Shielded	Performance	Panel Stops	Inverted	Ground Options
RJ45/1USB	1775855-1	8/8	Without	Yes	Cat 3	Without	No	PCB
RJ45/2USB	1116151-2	8/8	With	Yes	Cat 3	Without	No	PCB
RJ45/2USB	1116151-3	8/8	Without	Yes	Cat 3	Without	No	PCB
RJ45/2USB	1116640-2	8/8	With	Yes	Cat 3	Without	No	PCB

Note: Consult Tyco Electronics Customer Drawing for additional Part Numbers.

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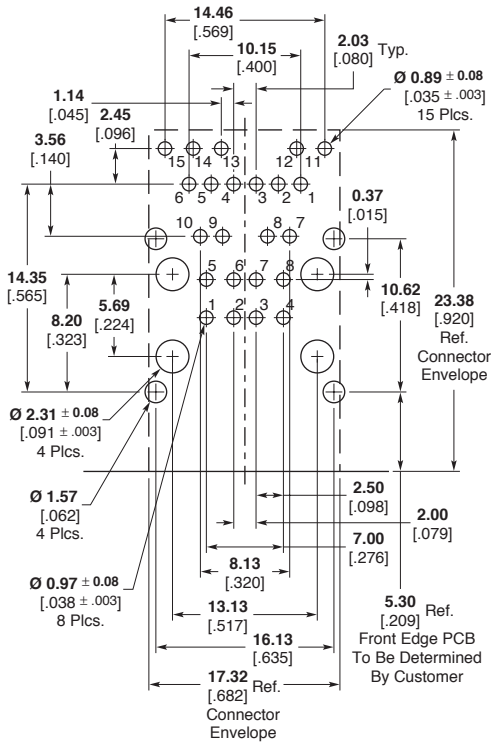
MAG45 Modular Jacks with Integrated Magnetics Over Stacked USB Series A

Stacked, Thru-Hole USB/RJ45 (10/100 Base-T or Gigabit)

Product Facts

- USB/RJ45 with integrated magnetics
- 10/100 or Gigabit applications
- Stacked USB type A included
- UL Recognized
- Available with LEDs
- IEEE 802.3 & ANSI X3.263 Compliant
- USB 2.0 Compliant
- Numerous circuit options available
- Supports all appropriate and available PHY Chips and applications
- For assistance in part selection, please refer to the Tyco Electronics E-Catalog
- Your Tyco Electronics Sales Representative or one of the Product Information Centers listed below are also available to assist



PCB Footprint

USB/RJ45*

	10/100 Base-T	10/100 PoE	Gigabit	Gigabit PoE
	✓	No	✓	No

*multiple LED colors with and without resistors available.

10/100	10/100 RoHS Compliant	Gigabit	Gigabit RoHS Compliant
1620004-1	6620004-1	1368162-1	6368162-1
1620002-1	6620002-1	1368472-1	6368472-1
1368532-1	6368532-1	1620009-1	6620009-1

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Japan: 81-44-844-8013
UK: 44-141-810-8967

IEEE Over Stacked USB Series A

Stacked, DIP Type

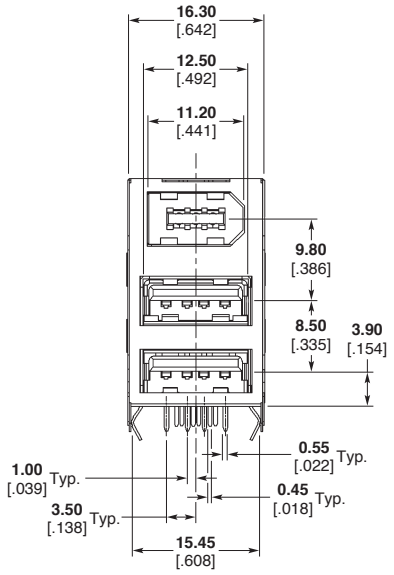
Part Number
1775813

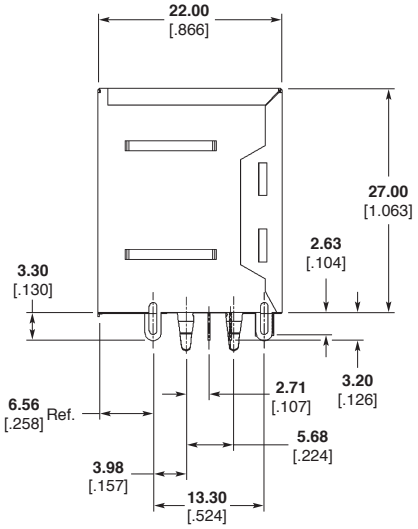
Material and Finish

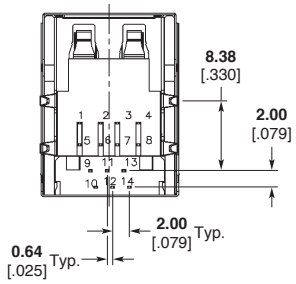
Housing/Cover/Frame —
High temperature thermoplastic, UL94V-0, color black

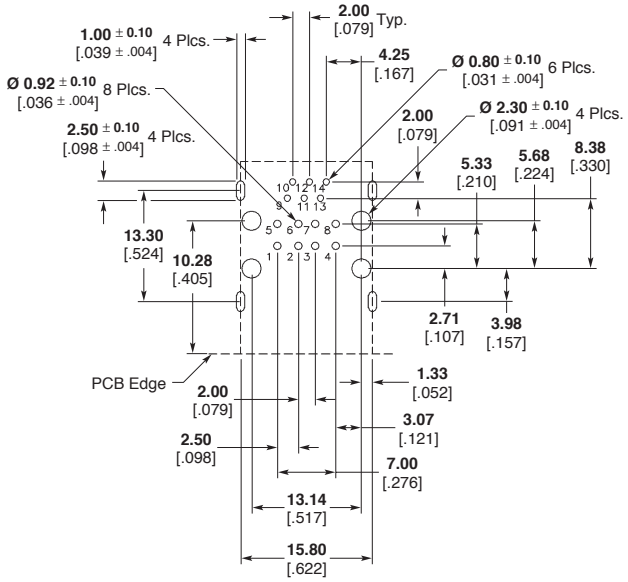
Contacts —
Shield — Brass with 100µ" min. nickel plating overall, tin hot dipped on solder area;
USB Contact — Phosphor bronze with gold flash plating on contact area, 150µ" bright tin plating on solder tail area, 50µ" min. nickel underplating overall;
USB Shell — Phosphor bronze with 120µ" min. bright tin plating overall, 50µ" min. nickel underplating overall;
USB Clip — Stainless steel;
IEEE1394 Shell — Phosphor bronze with 100µ" min. nickel plating overall;
IEEE1394 Contact — Phosphor bronze with 15µ" min. gold plating on contact area, 150µ" min. bright tin plating on solder tail area, 50µ" min. nickel underplating overall.

Recommended PCB Thickness —
1.57 [.062]









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