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Agilent Technologies

HP E5346A and E5351A High Density Adapters

Technical Specification

High Density Connection for HP Logic Analysis Equipment

The HP E5346A and E5351A high-density adapters provide a convenient and easy way to connect an HP logic analyzer to the signals on your target system for difficult packages to probe, such as BGA.

The HP high-density adapters provide a connection strategy to route your important signals to the HP logic analyzer. Simply design

the AMP Mictor connectors onto the board for the critical signals you need such as address, data, and status bits. This process consumes a minimal amount of board space with the AMP Mictor connectors. Each Mictor connector provides 32 channels of logic analysis per connector with 2 clocks.

AMP Mictor connectors may be purchased directly from AMP or Hewlett-Packard.

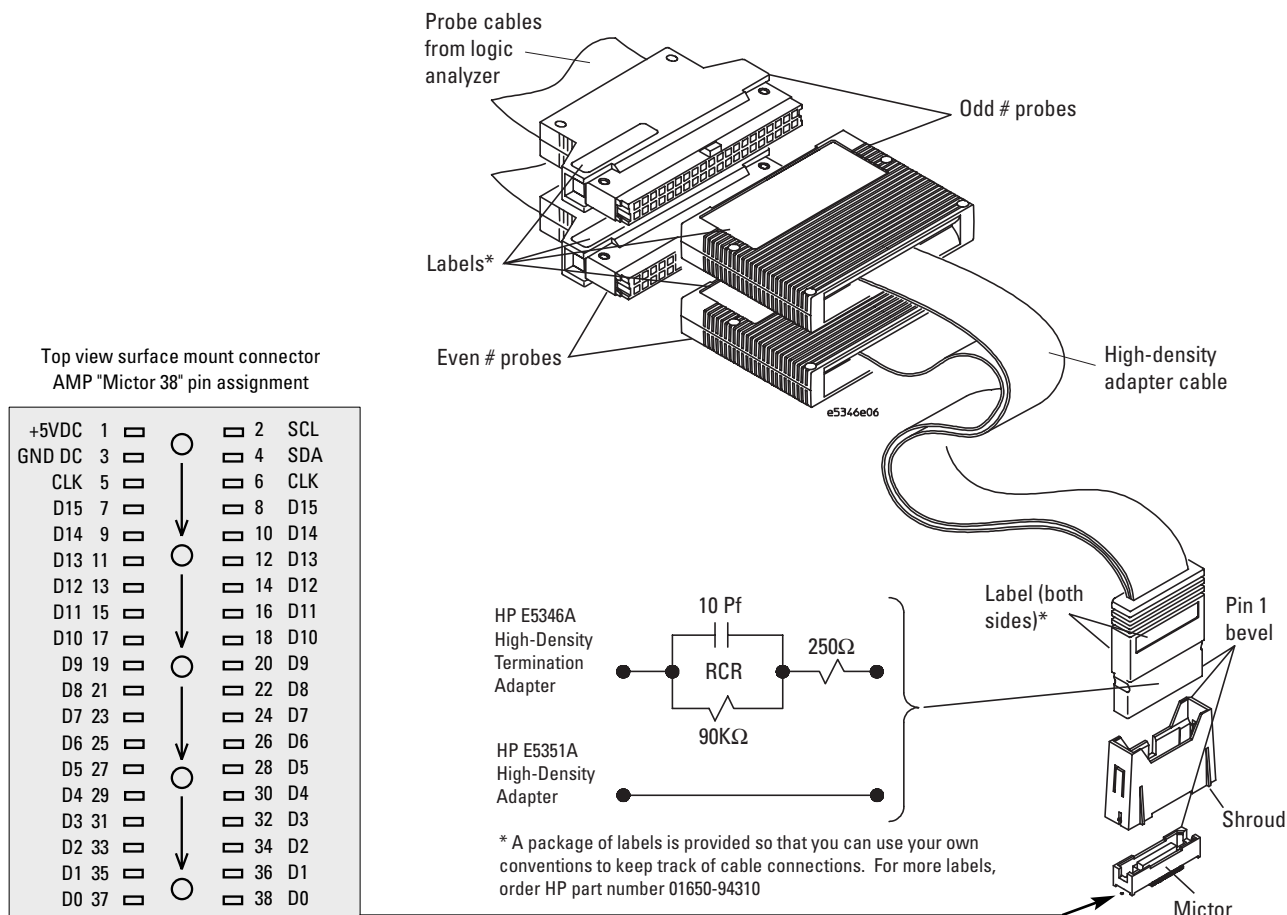


Figure 1: AMP Mictor Pin-Out Information / AMP P/N 2-767004-2

HP E5346A High-Density Termination Adapter

The HP E5346A includes the required termination for logic analysis right at the probe tip for easy application and use as shown in figure 2. The HP E5346A may be used if the Mictor connector can be located close enough to the target so the stub length created is less than $1/5$ the T_r (bus risetime). For PC board material ($\epsilon_r=4.9$) and Z_o in the range of $50\text{-}80\Omega$, use a propagation delay of 160 ps/inch of stub.

HP E5351A High-Density Adapter

The HP E5351A does not include the required termination in the probe tip. Termination for the signals must be designed into your target system.

The HP E5351A is designed for applications where the HP E5346A cannot be used because of system constraints. When using the HP E5351A, place the probe tip networks (Skyline 5062-7396 surface mount termination network or equivalent discrete components) near the target, ensuring the stub length between the target and the probe tip is short, as shown in figure #3. The transmission line from the tip networks to the Mictor connector should be designed for an impedance in the range of $80\text{-}100\Omega$ (Higher is better). The length should not exceed 3-4 inches.

Each Skyline Electronics 5062-7396 surface mount termination network includes six channels of logic analysis. The size of the part allows you to repeat the pattern in figure 4 to accommodate multiple parts stacked end to end to cover the number of channels needed in your application. Skyline Electronics 5062-7396 surface mount termination network components are available exclusively from:

Skyline Electronics, Inc.
2845 Delta Drive
Colorado Springs, CO 80910-1012
Phone: (719) 390-4200
Fax: (719) 390-9425

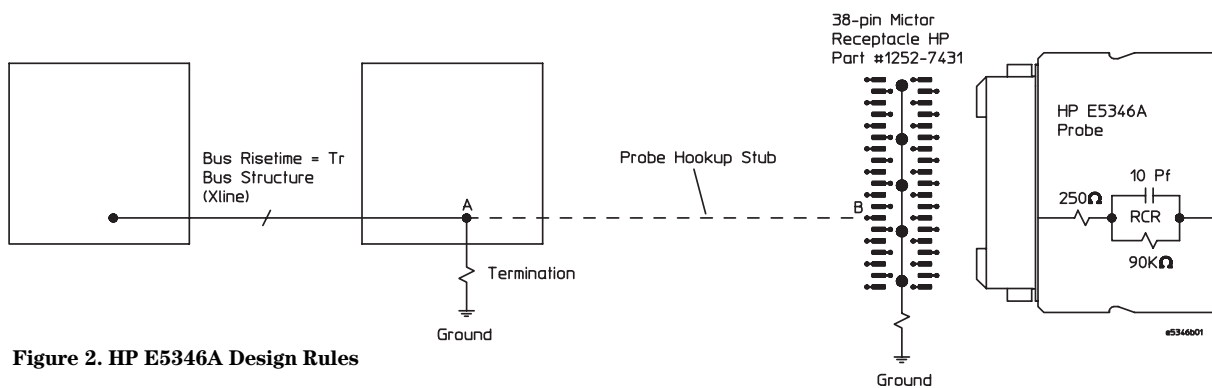


Figure 2. HP E5346A Design Rules

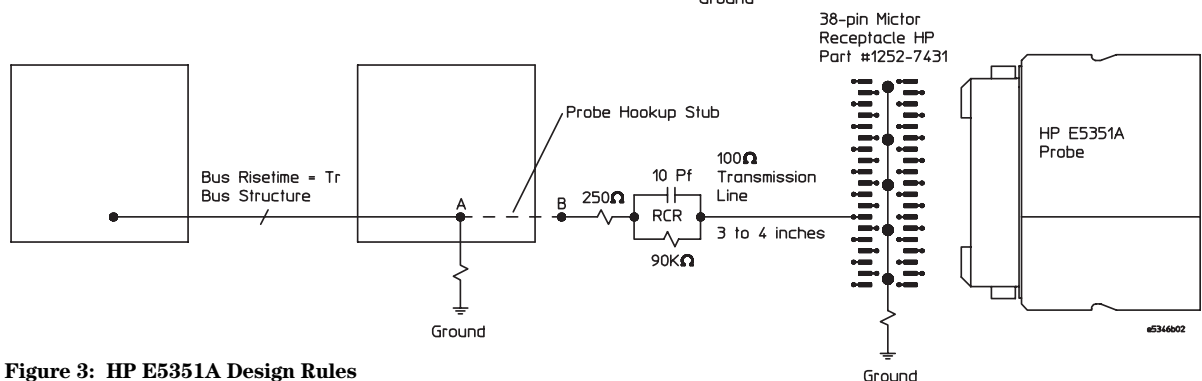


Figure 3: HP E5351A Design Rules

Signal Line Loading

Any probed signal line must be able to supply a minimum of 600 mV to the probe tip and handle a minimum loading of 90 K Ω shunted by 10 pF. The maximum input voltage for the logic analyzer is +/- 40 volts peak.

Pin Assignments

Each adapter is used with two logic analyzer pods. The odd-numbered pod corresponds to the even-numbered signal pins on the AMP Mictor connector as shown in figure #1. The clock signal and data signals for each logic analyzer pod are also shown. The signals +5VDC, SCL and SDA are not used for probing and should not be connected to the target system. The AMP Mictor connectors should be placed as close as possible to the source of the signal to minimize stub length and make a more reliable measurement.

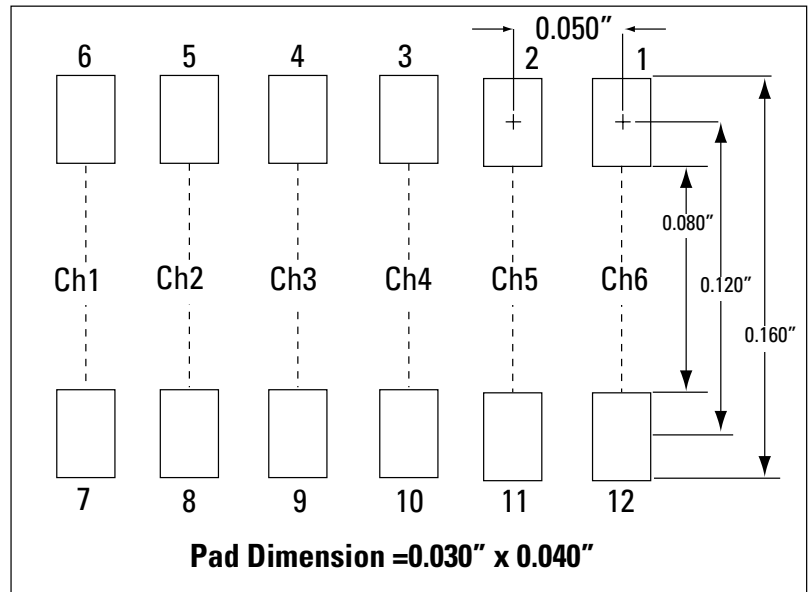


Figure 4: Recommended PC board pattern for surface mount termination RC network.

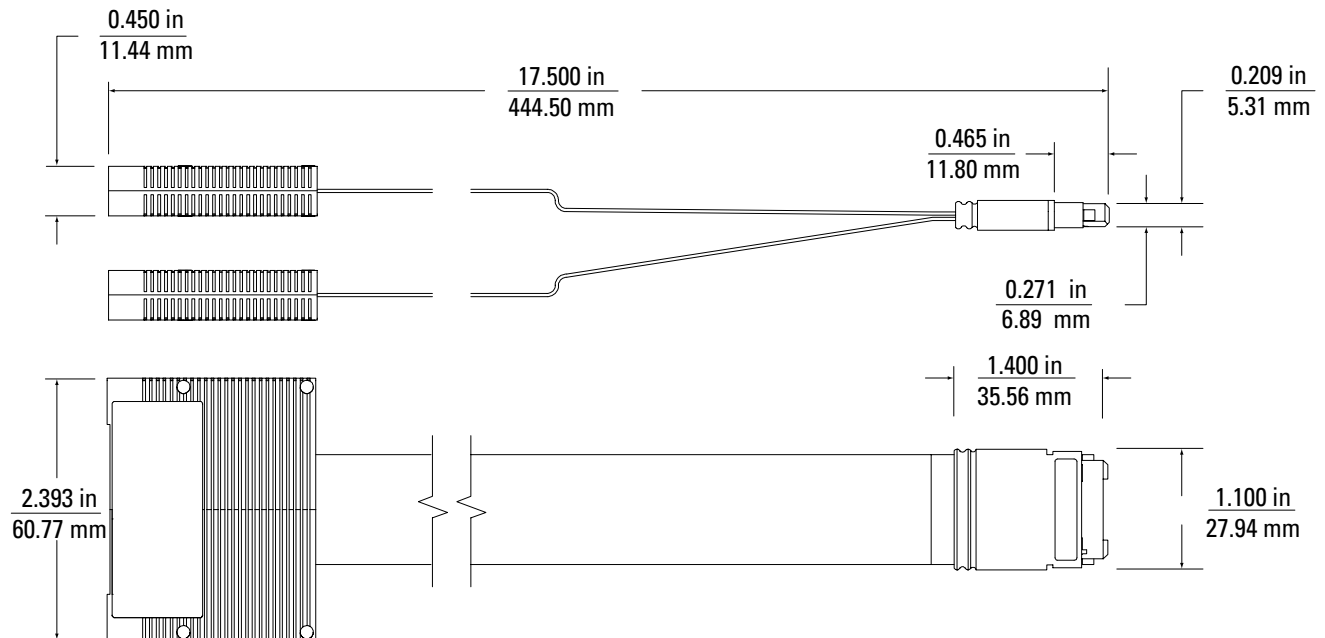


Figure 5. HP E5346A/E5351A Mechanical Specifications

Accessories

Support Shroud

A Support Shroud (HP E5346-44701) is recommended to provide additional strain relief between the HP E5346A/E5351A and the AMP Mictor connector as shown in figure #6. The shroud fits around the AMP Mictor connector and requires two through-hole connections to the target board. Five shrouds are included with five AMP Mictor connectors in the HP E5346-68701 kit. The shroud is mounted directly to the board and fits around the AMP Mictor connector. Two holes are required in the PC board as shown below, to provide a rugged mechanical connection for the shroud.

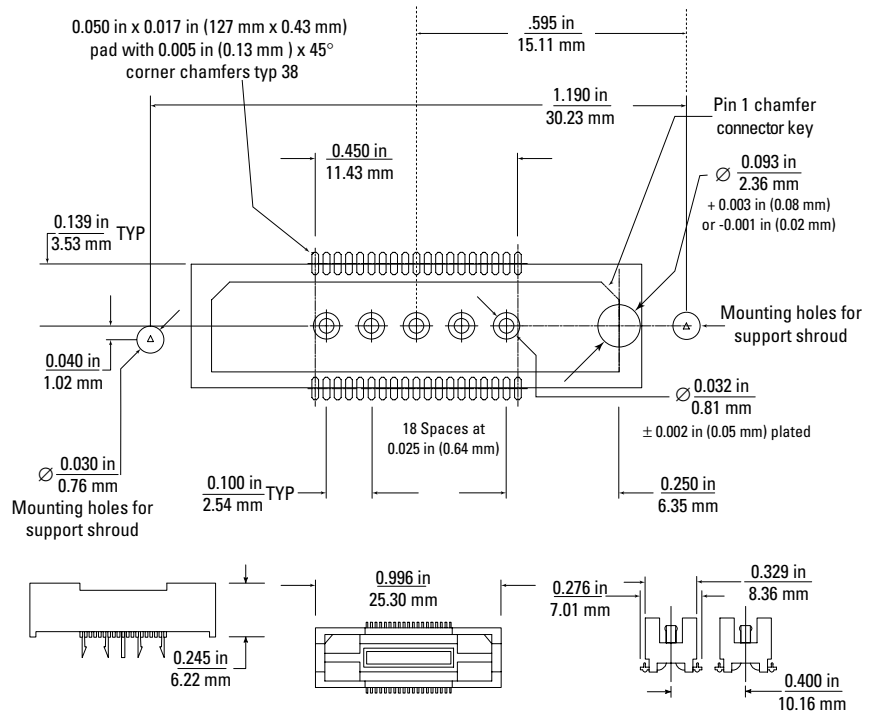


Figure 6. AMP Mictor Mechanical Specifications

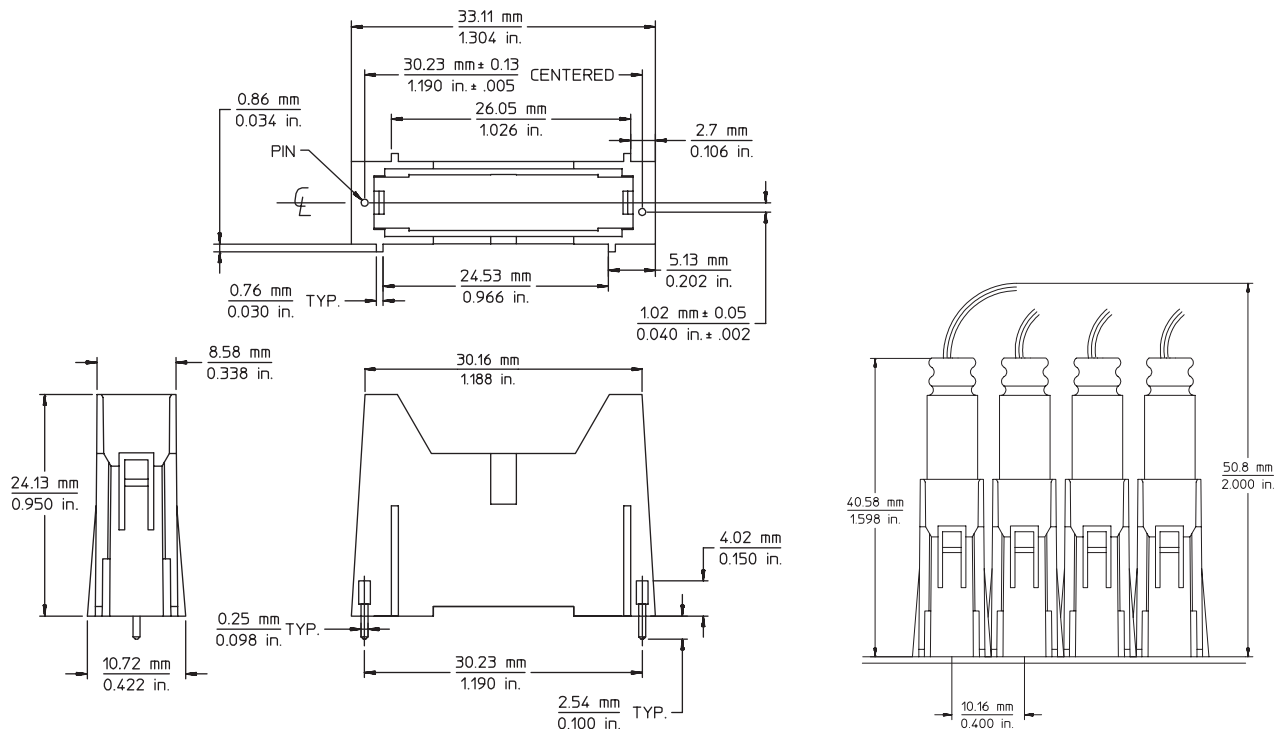


Figure 7. HP E5346-44701 Support Shroud Mechanical Information

High Speed Mictor Adapter

Signals routed out to the AMP Mictor connectors may also be accessed by other test equipment such as an oscilloscope or the HP 16517A high speed state/timing analyzer. The HP E5346-60002 plugs directly into the Mictor connector and brings all 32 signals out to standard connector pins through flex circuits as shown in figure 8.

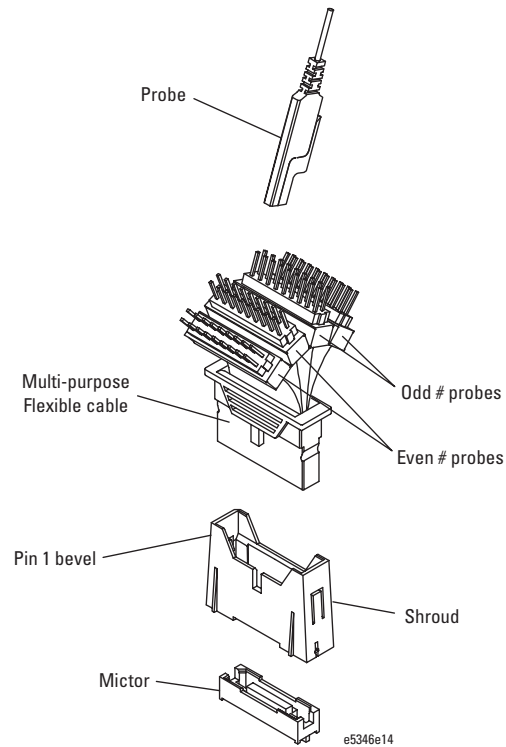


Figure 8. HP E5346-60002 High Speed Mictor Adapter

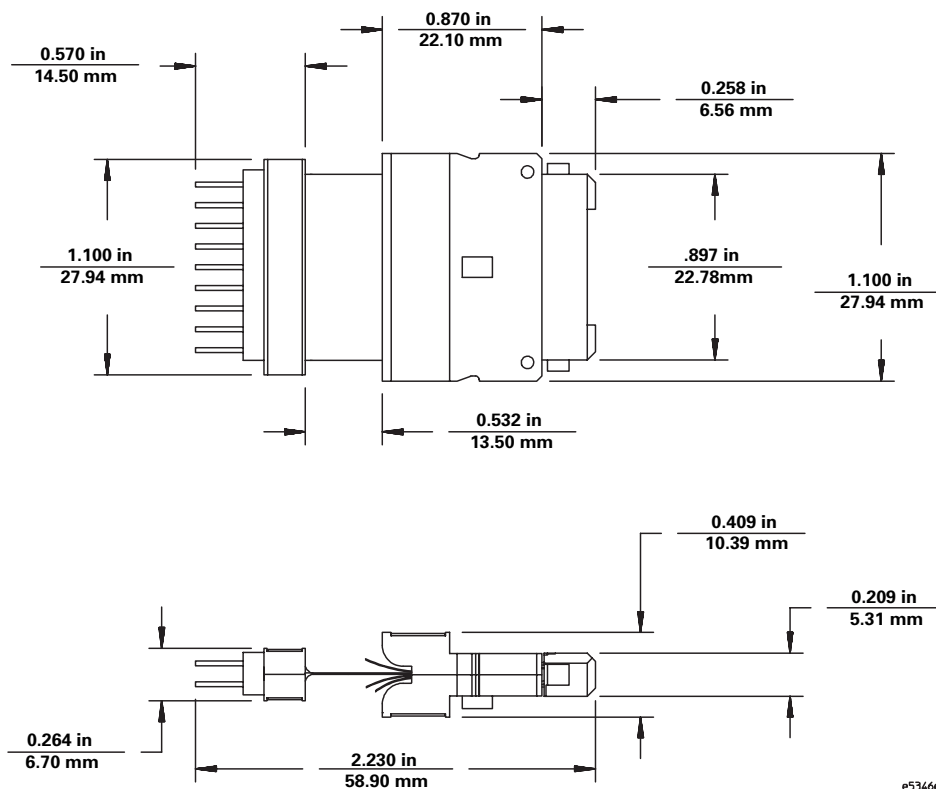


Figure 9. HP E5346-60002 Mechanical Specifications

Right Angle Mictor Adapter

For system constraints above the Mictor Connector, HP offers a right-angle adapter as shown in the figure below. The HP E5346-63201 adapts from the AMP Mictor connector to the high-density adapters. AMP Mictor connectors must be placed side by side on the target system in order to use the right-angle adapters. Support shrouds cannot be used with the right-angle adapter.

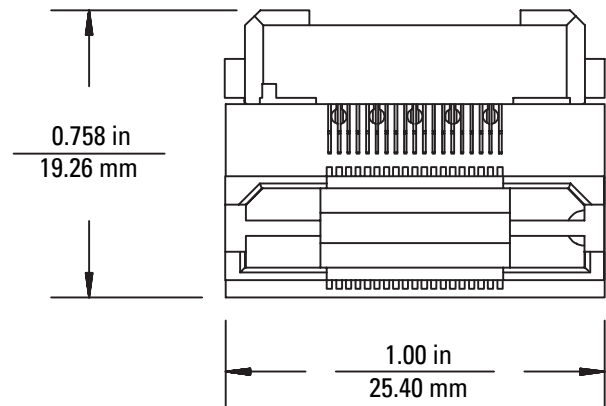
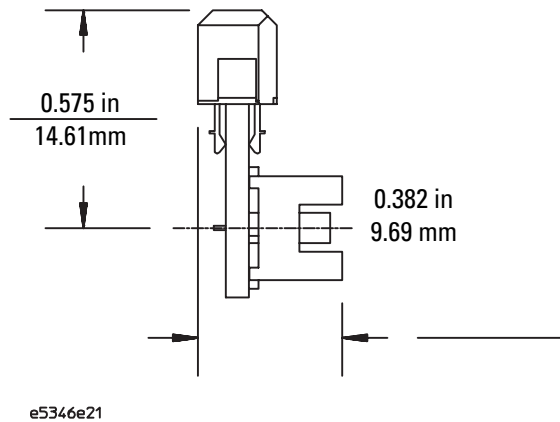
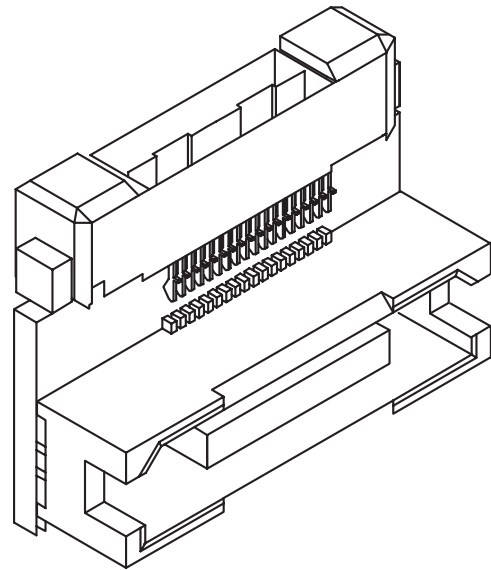


Figure 10. HP E5346-63201 Right Angle Mictor Adapter

Ordering Information:

HP E5346A High-Density Termination Adapter
HP E5351A High-Density Adapter
HP E5346-44701 Support Shroud
HP E5346-68701 Five Mictor Connectors with Five Support Shrouds
HP E5346-60002 High-Speed Mictor Adapter
HP E5346-63201 Right-Angle Adapter

AMP Mictor Connector 2-767004-2
AMP General Information
Phone: (800) 522-6752
Price and Availability
Phone: (888) 649-1925
Fax: (717) 986-3611

Skyline Electronics, Inc.
2845 Delta Drive
Colorado Springs, CO 80910-1012
Phone: (719) 390-4200
Fax: (719) 390-9425

Related HP Literature

Minimizing Intrusion Effects when Probing With a Logic Analyzer
.....Pub#: 5962-8620E

MPC 860 App Note
Passively Probing a Motorola MPC860/821 BGA Target System
with HP E5346A High-Density Termination Adapters
.....Pub#: 5965-8541E

PPC 603 App Note:
Passively Probing a PPC603/604 BGA Target System with
HP E5346A High-Density Termination Adapters
.....Pub#: 5965-9024E

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Technical data is subject to change

Printed in U.S.A. 02/99
5965-5475E