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GENERAL INFORMATION

1. INTRODUCTION

This operating note provides the information required for operation and maintenance of the Hewlett-Packard Model 16058A Test Fixture shown on the front cover. It covers DESCRIPTION, OPERATION, and MAINTENANCE of the 16058A. To order additional copies of this operating note, contact the nearest Hewlett-Packard Sales and Service Office and specify the part number given on the rear cover.

2. DESCRIPTION

The Model 16058A Test Fixture is designed for use with the Hewlett-Packard Model 4145A Semiconductor Parameter Analyzer. The 16058A holds the device to be tested with the 4145A, and provides all necessary connections to the test input/output terminals of the 4145A. For stable and accurate measurements at extremely low current levels, the 16058A is equipped with an electrostatic light-shielding cover. To facilitate testing various types of devices, eight interchangeable socket boards and three types of special plug leads are furnished with the 16058A. The accessories furnished are listed in Table 1, and a brief description of each is given in Table 3. Other specifications of the 16058A are also given in Table 1. Table 2 lists typical performance characteristics, which are not specifications but typical characteristics included as additional information for the operator.

Table 1. 16058A Specifications (Sheet 1 of 2)

FUNCTION: Test fixture for use with the Hewlett-Packard Model 4145A Semiconductor Parameter Analyzer. Connects DUT to the SMU, Vs and Vm channels of the 4145A.

ACCESSORIES FURNISHED:

HP Part Number	Accessory Name
16058-60003	Personality Board
16058-61603	Triaxial Cable (4)
16058-61604	System Cable
16058-60004	Teflon Blank Board
16058-60005	Socket Board (for transistors)
16058-60006	Socket Board (24 pin dual in-line socket)
16058-60007	Socket Board (18 pin dual in-line socket)
16058-60008	Socket Board (for diodes)
16058-60009	Socket Board (8 pin socket)
16058-60010	Socket Board (10 pin socket)
16058-60011	Socket Board (12 pin socket)
16058-61600	Connection Cable (miniature banana—pin plug)
16058-61601	Connection Cable (pin plug—pin plug)
16058-61602	Connection Cable (miniature clip—pin plug)
16058-60100	Carrying Case

WEIGHT: 4.35 kilograms (including all accessories furnished)

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Table 1. 16058A Specifications (Sheet 2 of 2)

DIMENSIONS : See figure below. (Unit : mm)

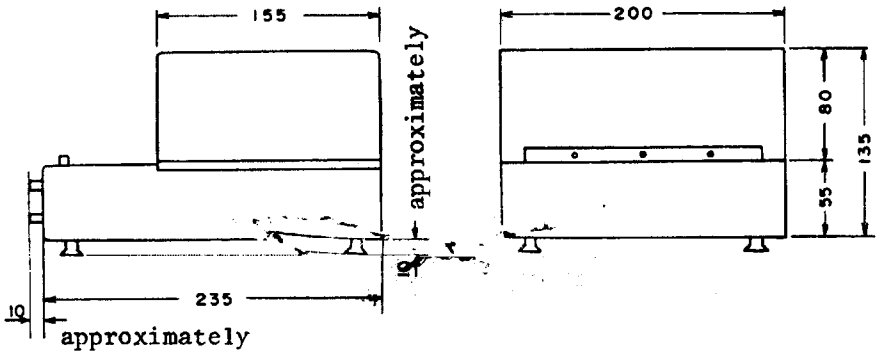


Table 2. 16058A Typical Performance Characteristics

The following characteristic data applies at operating temperatures of 23 °C±5 °C. Unless otherwise noted, the characteristic values are typical values under operation with the Personality Board and Socket Board installed.

1. Leakage Current
   - (1) SMU channel —other SMU channel : Less than 5pA at 100V
   - (2) SMU channel —COMMON : Less than 5pA at 100V
   - (3) SMU channel —COMMON (when using CONNECTION SWITCH) : Less than 40pA at 100V
2. Stray Capacitance
   - (1) SMU channel —COMMON : Less than 15pF
   - (2) SMU channel —COMMON (when using CONNECTION SWITCH) : Less than 30pF
   - (3) SMU channel --other SMU channels : Less than 3pF
   - (4) SMU channel —other SMU channels (when using CONNECTION SWITCH) : Less than 10pF
3. Residual Resistance
   - (1) Center conductor of triaxial cable : Less than 200mΩ
   - (2) Triaxial SMU terminal — DUT socket : Less than 100mΩ
   - (3) Triaxial SMU terminal — DUT socket (when using CONNECTION SWITCH) : Less than 200mΩ
4. Guard Capacitance
   - (1) SMU channel — Guard (per channel, inclusive of triaxial cable) : Less than 140pF

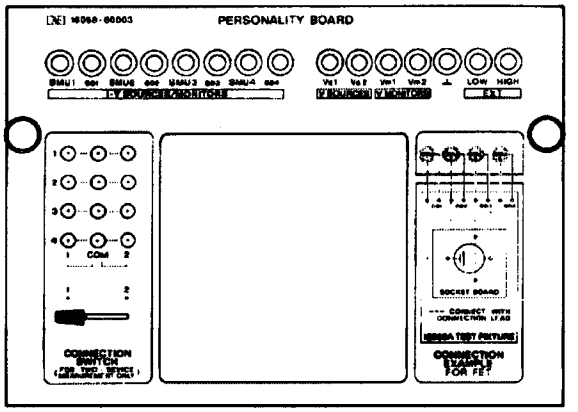
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Table 3. 16058A Furnished Accessories (Sheet 1 of 4)

16058-60003 :
Personality Board

Main test fixture board providing measurement connection terminals and Connection **Switch.**

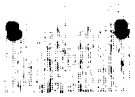
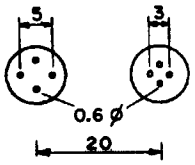
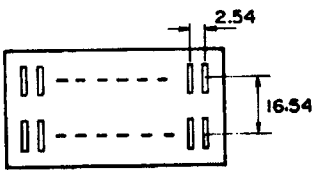
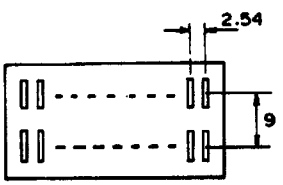
The board permits installation of one of the replaceable socket boards and construction of circuit connections necessary for the desired measurement. The Connection Switch allows selection of one of two different DUT connections (for two or three lead component measurements).



Accessory	Description
 Cable length : Approximately 1.5m	**16058-61603:** Triaxial Cable (lea.) The triaxial cable used to connect the 16058A to an SMU channel of the 4145A. Four cables are furnished. The triaxial cables ensure a complete shield against external noise interference.
 Cable length : Approximately 1.5m	**16058-61604 :** System Cable Cable assembly with 24 pin male connectors used to connect the Vm and Vs channels of the 4145A to the 16058A. The cable also enables the 4145A to detect whether the fixture lid (shield cover) is open or closed.

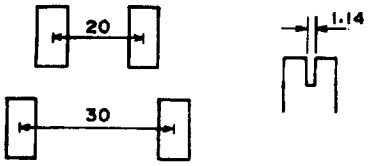
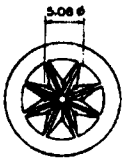
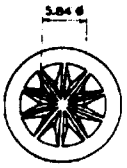
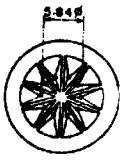
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Table 3. 16058A Furnished Accessories (Sheet 2 of 4)

Accessory	Description
	16058-60004 : Blank Teflon Board Insulation board used to minimize leakage current for extremely low-current measurements.
 	**16058-60005 :** **Socket Board (transistor sockets)** Socket Board with two transistor sockets for measurement of three lead or four lead bipolar transistors and FETs. Either of the devices connected to the sockets can be selected by the Connection Switch on the Personality Board. Dimensions of the sockets are shown in the figure.
 	16058-60006 : Socket Board (24-pin dual-in-line socket) Socket Board with a 24 pin dual-in-line socket. Dimensions of the socket are shown in the figure.
 	**16058-60007 :** **Socket Board (18-pin dual-in-line socket)** Socket Board installed with a 18 pin dual in-line socket. Dimensions of the socket are shown in the figure.

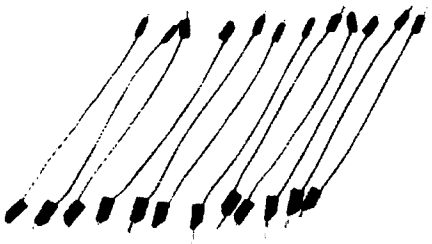
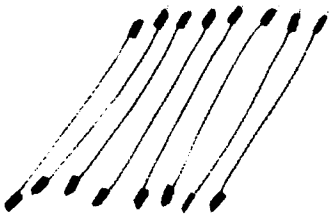
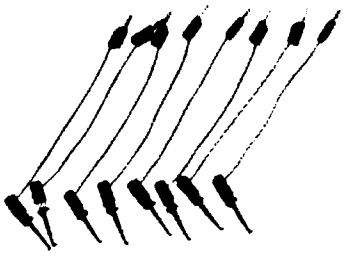
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Table 3. 16058A Furnished Accessories (Sheet 3 of 4)

Accessory	Description
 	16058-60008 : Socket Board (diode sockets) Socket Board with two pairs of contacts for measurement of two-lead devices (such as diodes). The NARROW and WIDE contacts fit devices shorter than 20mm and 30mm, respectively. Dimensions of the socket are shown in the figure.
 	16058-60009 : Socket Board (8-pin socket) Socket Board for measurement of 8-pin package devices. Dimensions of the socket are shown in the figure.
 	16058-60010 : Socket Board (10-pin socket) Socket Board for measurement of 10-pin package devices. Dimensions of the socket are shown in the figure.
 	16058-60011 : Socket Board (12-pin socket) Socket Board for measurement of 12-pin package devices. Dimensions of the socket are shown in the figure.

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Table 3. 16058A Furnished Accessories (Sheet 4 of 4)

Accessory	Description
 Cable length : Approximately 115mm	16058-61600: Connection Cable (1ea.) A miniature banana plug-pin plug lead for connecting measurement terminals to the Connection Switch on the Personality Board, or for connecting measurement terminals to the Socket Board. Twelve cables are furnished.
 Cable length : Approximately 115mm	16058-61601: Connection Cable (1ea.) A miniature pin plug-pin plug lead for connecting the Socket Board to the Connection Switch. Eight cables are furnished.
 Cable length : Approximately 115mm	16058-61602: Miniature Clip Lead (1ea.) A miniature pin plug-miniature clip lead for connecting a DUT to the measurement terminals on the Personality Board without using a DUT socket. The miniature clips permit connection of devices with non-standard shapes or lead arrangements. Eight leads are furnished.
	16058-60100: Accessory Case Carrying case for the Blank Teflon Board, six Socket Boards, and Connection Cables.

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