

Figure 7-1. Probe Support Kit, HP Part Number 54100-69004.

SECTION 7A

7A-1. INTRODUCTION

The HP 54001A can be used in any of the three pod receptacles in the HP 54100A, or any of the four pod receptacles in the HP 54100D Digitizing Oscilloscopes. A knurled knob is provided to secure the pod in the receptacle.

WARNING

*The HP 54001A and HP 54100A/D have a common terminal at GROUND POTENTIAL (in accordance with OSHA requirements and the National Electrical Code). Exposed metallic surfaces of the HP 54001A and the HP 54100A/D **MUST BE GROUNDED**. Failure to ground the common terminal during certain applications, such as operating these instruments from an external battery, will expose the operator to an electrical shock hazard that could be lethal (depending on the electrical energy available).*

CAUTION

Power must be removed from the HP 54100A/D when the HP 54001A is removed or installed, or the active probe may be damaged.

7A-2. MAINTENANCE

Maintenance consists of cleaning, adjusting, and replacing a probe cable. The probe cable can be removed from the probe pod by following the procedure in paragraph 7A-9 step 3. The HP 54001A must be recalibrated if the probe cable assembly is replaced.

Other field repairs are not recommended. If a failure should occur, contact your nearest Hewlett-Packard Sales and Service Office for details on the Blue Stripe Exchange Program.

7A-3. ACCESSORIES AVAILABLE

The following accessories are available for use with the HP 54001A:

HP 10221A 50 Ω probing Tee. Requires an HP Part No. 54001-23203 probe adapter.

HP 10211A (24 pin) and HP 10024A (16 pin) IC clips.

HP Part No. 54001-23203 probe adapter. The 54001-23203 adapts the HP 54001A mini-probe tip (of other HP mini-probes) to the accessories included with the HP 10020A resistive divider probe kit, and to the 10221A probing Tee.

7A-4. SPECIFICATIONS

The list of specifications for the HP 54001A active probe when used with the HP 54100A/D is listed in table 7A-1 and in table 7A-2.

Table 7A-1. Specifications for HP 54001A Active Probe with HP 54100A/D.

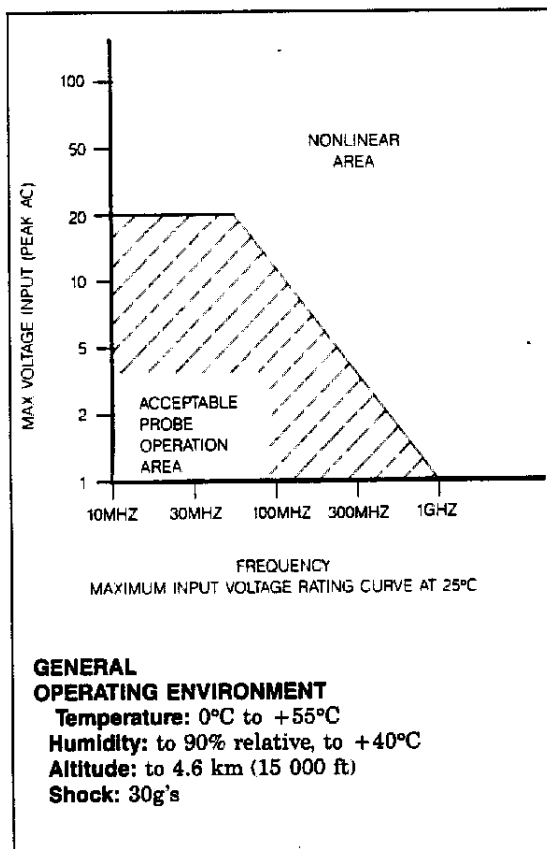
Approximate Overall Length Metres (Ft)	Approximate Propagation Delay	Bandwidth	Risetime	Probe Input C Approx.	Probe Input R	Division Ratio:
1.5 metres (5 feet)	7.6 ns	700 MHz	450 ps	2 pf	10 k Ω	10:1 \pm 3%

Voltage Rating vs Frequency

Maximum Voltage Range for linear operation is shown in the voltage vs frequency (table 7A-2) **DO NOT** exceed the voltage levels for a given frequency or the probe may be permanently damaged.

Table 1. Specifications (Cont'd)

Table 7A-2. Voltage vs Frequency Chart.



7A-5. REPLACEABLE PARTS

Replaceable parts are shown in Table 7A-3 through Table 7A-6. When ordering a part, address the order to the nearest Hewlett-Packard Sales and Service Office. Provide the model number, Hewlett-Packard part number, reference designator, check digit, quantity needed, and a complete description of the part.

7A-6. DIRECT MAIL ORDER

Within the USA, Hewlett-Packard can supply parts through a direct mail order system. Advantages of using the system are as follows:

- a. Direct ordering and shipment from Hewlett-Packard parts center in Mountain View, California.
- b. No maximum or minimum on any mail order (there is a minimum order amount for parts ordered through local Hewlett-Packard offices when orders require billing and invoicing).
- c. No invoices - to provide these advantages, check or money order must accompany each order.

Mail order forms and specific ordering information are available through your local Hewlett-Packard offices.

Table 7A-3. Replaceable Parts for HP 54001A Active Probe.

Reference Designation	HP Part Number	CD	Qty.	Description	Mfr Code	Mfr Part Number
A1	54001-62101	2	1	NOT ASSIGNED	28480	54001-62101
A2	54001-69501	0	1	10:1 PROBE	28480	54001-69501
A3				PROBE ACCESSORY KIT		
MP1-7	54001-90902	0	1	NOT ASSIGNED	28480	54001-90902
MP8	54001-94305	5	1	OPERATING NOTE	28480	54001-94305
MP9				ID LABEL		

Table 7A-4. Replaceable Parts for A2 Assembly HP 54001-62101

Reference Designation	HP Part Number	CD	Qty.	Description	Mfr Code	Mfr Part Number
A1	54001-61601	5	1	1 5 PROBE CABLE	28480	54001-61601
A2-3				NOT ASSIGNED		
A4	54001-66501	4	1	ACTIVE PROBE BOARD ASSEMBLY	28480	54001-66501
MP1	0624-0637	3	1	SCREW-TPG 2-28 375-IN-LG PAN-HD-TORX T8	28480	0624-0637
MP2	3030-0060	0	1	SCREW-SET 2-56 062-IN-LG SMALL CUP-PT	28480	3030-0060
MP3	5081-7683	6	1	HEX SHOULDER NUT	28480	5081-7683
MP4	54001-23201	1	1	ADAPTER SLEEVE	28480	54001-23201
MP5				NOT ASSIGNED		
MP6	54001-94303	3	1	PROBE POD LABEL	28480	54001-94303
MP7	54001-94304	4	1	PROBE POD TOP LABEL	28480	54001-94304
MP8-13				NOT ASSIGNED		
MP14	0510-0958	0	1	RETAINER-PUSH ON CIRC EXT 094-IN-DIA	28480	0510-0958
MP15	54001-22401	1	1	RETAINER SCREW	28480	54001-22401

Figure 7A-1. HP 54001A Active Probe Parts, 54001-69501.

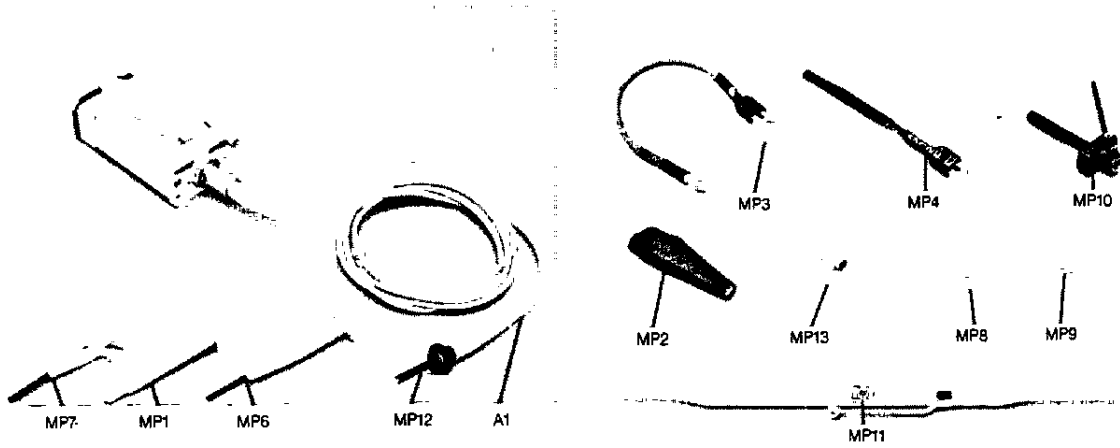


Table 7A-5. Replaceable Parts for A3, Accessory Kit, HP 54001-69501

Reference Designation	HP Part Number	CD	Qty.	Description	Mfr Code	Mfr Part Number
MP1	10017-67602	4	1	ASSY HOOK TIP	28480	10017-67602
MP2	5061-1258	7	1	CLIP ASSEMBLY	28480	5061-1258
MP3	54001-63201	5	1	CABLE ASSY GND	28480	54001-63201
MP4	54001-63202	6	1	LEAD ASSY-MIN PR	28480	54001-63202
MP5	5041-1484	9	1	GREEN WIRE MARKER	28480	5041-1484
MP6	10017-89501	6	1	GRABBER ASSEMBLY	28480	10017-89501
MP7	10230-82101	7	1	GRABBER ASSEMBLY	28480	10230-82101
MP8	1250-1737	4	1	SOCKET-COAXIAL 475 IN, BECU WTEFLON	28480	1250-1737
MP9	1250-1918	3	1	VERT COAX SKT	28480	1250-1918
MP10	54001-67602	8	1	ASSY-SPANNER TIP	28480	54001-67602
MP11	8710-1300	0	1	ALIGNMENT TOOL	28480	8710-1300
MP12	10017-63202	1	1	INSULATING SLEEVE	28480	10017-63202
MP13	54001-23203	3	1	PROBE ADAPTER	28480	54001-23203
MP14	5041-1485	0	1	YELLOW WIRE MARKER	28480	5041-1485
MP15	5041-1486	1	1	ORANGE WIRE MARKER	28480	5041-1486
MP16	5041-1487	2	1	RED WIRE MARKER	28480	5041-1487
MP17	1480-1476	3	1	SPRING-TRSN 17-IN-OD 57-IN-OA-LG MUW	28480	1480-1476
MP18	54001-64501	0	1	PROBE CASE WITH FOAM	28480	54001-64501

Table 7A-6. Replaceable Parts for A4, HP 54001-66501 PC Board.

Reference Designation	HP Part Number	CD	Qty.	Description	Mfr Code	Mfr Part Number
C1				NOT ASSIGNED		
C2	0160-3879	7	2	CAPACITOR-FXD 01UF ±20% 100VDC CER	28480	0160-3879
C3	0160-3879	7		CAPACITOR-FXD 01UF ±20% 100VDC CER	28480	0160-3879
C4				NOT ASSIGNED		
C5	0160-0573		1	CAPACITOR-FXD 4700PF	28480	0160-0573
C6	0160-3879		1	CAPACITOR-FXD 01 μ F	28480	0160-3879
C7	0121-0538	7	1	CAPACITOR-V TRMR-CER 5-2 5PF 250V	28480	0121-0538
C8	0180-3741	4	2	CAPACITOR-FXD 2.2UF ±20% 25VDC TA	28480	0180-3741
C9	0180-3741	4		CAPACITOR-FXD 2.2UF ±20% 25VDC TA	28480	0180-3741
C10	0160-4389	6	1	CAPACITOR-FXD 100PF ±5FF 200VDC CER	28480	0160-4389
C11	0160-0576	5	2	CAPACITOR-FXD 1UF ±20% 50VDC CER	28480	0160-0576
C12	0160-0576	5		CAPACITOR-FXD 1UF ±20% 50VDC CER	28480	0160-0576
C13	0160-6055	7	2	CAPACITOR-FXD 22UF ±5% 50VDC MET-POLYE	28480	0160-6055
C14	0160-6055	7		CAPACITOR-FXD 22UF ±5% 50VDC MET-POLYE	28480	0160-6055
E1	54001-26501	0	1	PROBE BD	28480	54001-26501
J1	1250-1947	8	1	CONNECTOR-RF SM-SLD FEM PC 50-OHM	28480	1250-1947
MP1	0380-1731	2	1	SPACER-PRESS-IN 1.70 MM LG 2.38 MM ID	46364	YC3-4564
MP2	0515-0659	8	1	SCREW-MACHINE ASSEMBLY M2 x 0.4 8MM-LG	28480	0515-0659
MP3	54001-29101	2	1	HYBRID SPRING	28480	54001-29101
MP4	54001-29102	3	1	HYBRID CLAMP	28480	54001-29102
MP5	54001-29104	5	1	GROUND SPRING	28480	54001-29104
MP6	54001-21101	6	1	HYBRID HEAT SINK	28480	54001-21101
P1	54001-67601	7	1	CONNECTOR ASSY	28480	54001-67601
R1	0698-7260	7	4	RESISTOR 10K 1% 05W F TC=0±100	24546	C3-1/8-T0-1002-F
R2	2100-2655	1	1	RESISTOR TRMR 100K 10% C TOP-ADJ 1-TRN	73138	82PR100K
R3	0698-7264	5	1	RESISTOR 100K 1% 05W F TC=0±100	24546	C3-1/8-T0-1003-F
R4	0698-7188	8	1	RESISTOR 10 1% 05W F TC=0±100	24546	C3-1/8-T0-10R-F
RE	0698-7260	7		RESISTOR 10K 1% 05W F TC=0±100	24546	C3-1/8-T0-1002-F
R6	0698-7276	5	1	RESISTOR 48.4K 1% 05W F TC=0±100	24546	C3-1/8-T0-4642-F
R7	0698-7260	7		RESISTOR 10K 1% 05W F TC=0±100	24546	C3-1/8-T0-1002-F
RB	0698-7253	8	1	RESISTOR 5.11K 1% 05W F TC=0±100	24546	C3-1/8-T0-5111-F
RB	0698-7260	7		RESISTOR 10K 1% 05W F TC=0±100	24546	C3-1/8-T0-1002-F
R10	0698-7846	5	1	RESISTOR 1.01K 1% 125W F TC=0±25	19701	5033R-1/8-T9-1011-B
R11	0698-7093	4	1	RESISTOR 48.5 1% 125W F TC=0±25	28480	0698-7093
R12	0698-7267	4	1	RESISTOR 19.6K 1% 05W F TC=0±100	24546	C3-1/8-T0-1962-F
R13	2100-2081	3	1	RESISTOR TRMR 200 10% C TOP-ADJ 1-TRN	73138	82PR200
U1	1826-1151	7	1	IC OP AMP PRCN DUAL 8-DIP-C PKG	06685	OP-220GZ
U2	1NB7-8031	0	1	HYBRID	28480	1NB7-8031

7A-7. HP 54001A CALIBRATION PROCEDURE

NOTE

The probe calibration should be performed in a properly calibrated HP 54100A/D.

7A-8. Recommended Calibration Test Equipment

The equipment recommended to adjust the HP 54001A probe is listed in table 7A-7.

Table 7A-7. Recommended HP 54001A Adjustment Test Equipment.

INSTRUMENT	CRITICAL SPECIFICATIONS	RECOMMENDED MODEL
Oscilloscope	No Substitute	HP 54100A/D or HP 54110D
Flat Pulse Generator	.5 Percent Flatness after 10 ns	Tek PG506
Fast Pulse Generator	70 ps risetime	Tek 284
ACCESSORIES		HP PART NUMBERS
Alignment Tool	In Probe Support Kit	8710-1300
Alignment Tool (Square tip)	In Probe Support Kit	8710-1515
Probe Extender	In Probe Support Kit	54100-63802
BNC to Probe Tip Adapter	In Probe Support Kit	1250-1454
Probing Tee	Traceable Cal only	10221A
50 ohm Termination	Traceable Cal only	909A option 12
GR874 to N-type (f)	Traceable Cal only	1250-0240
Probe Tip Adapter	Traceable Cal only	54001-23203

7A-9. Equipment Setup

NOTE

Before performing any adjustments, the HP 54100A/D must have completed a 15-minute warm up period. Additionally, both pulse generators must also undergo a 15-minute warm up period.

1. Before an HP 54001A probe is calibrated, a probe extender, HP part number 54100-63802, must be installed in the HP 54100A/D. To do this:
 - a. Turn oscilloscope off.
 - b. Remove two top rear feet on oscilloscope, then remove top cover.
 - c. Disconnect probe wiring harness and flexible coax from channel 1's sampling board (A5). Connect 54100-63802 probe extender in its place. Raising the PC board slightly will help facilitate these connections. Make sure board is reseated before continuing. Refer to figure 7A-2.



Figure 7A-2. Probe Extender Connections

2. To calibrate probe circuitry, the probe board must be removed from probe shell. To accomplish this, remove two torx screws from rear of pod (see figure 7A-3).
3. Remove probe cable assembly from pod by loosening two set screws at front of pod, and unscrewing cable connector from pod (see figure 7A-3).
4. Reconnect cable connector to PC board as shown in figure 7A-2.
5. Connect PC board to probe extender. This allows adjustment points to be exposed. Refer to figure 7A-2.
6. Turn flat pulser off.
7.
 - a. Insert probe lip into a BNC to probe tip adapter.
 - b. Connect adapter to a BNC cable with a BNC barrel and then connect this cable to flat pulser's fast rise output.
8. On oscilloscope, set vertical sensitivity on channel 1 to 100 mV/div, and offset to zero. Set oscilloscope to autosweep mode. Adjust R2, probe offset adjustment, on probe PC board so trace coincides with X-axis graticule line (see figure 7A-4).
9. Setup oscilloscope as follows:
 - Channel 1: On, Volts/div=100mV, offset= -300mV
 - Timebase: Sec/div=10 ms, delay=0, triggered sweep
 - Trigger: Mode=edge, source=chan 1, level= -300mV, slope=pos
 - Display: Mode=average, averages=4, split screen off, graticule=frame
 - Delta V: Markers on chan 1

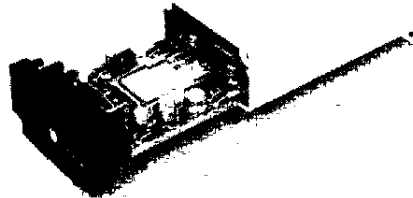


Figure 7A-3. Removal of Probe PC Board.

10. Turn pulse generator on, and set its output for a 600 mV square wave with a 100 ms pulse period.
11. Adjust R13 (figure 7A-4) for flattest pulse top possible.
12. Change oscilloscope's sweep speed to 5 ns/div.

NOTE

In applications where a traceable calibration to the National Bureau of Standards is required, use step 13. In applications where traceability is not a concern, step 14 is an easier and less costly way of doing the calibration without diminishing the quality of the waveforms. Typically, the oscilloscope will see about 1% more overshoot and a 10 ps degradation in system risetime. However, this will not interfere with the probe's performance verification. Slight adjustments to the oscilloscope's vertical sensitivity, or the generator's output amplitude, may be required due to varying adjustment procedure setups. This adjustment will not interfere with the performance verification.

13.
 - a. Disconnect probe tip from probe tip adapter.
 - b. Connect probing Tee to fast pulser's output.
 - c. Connect 50 Ω load on opposite end of Tee through a GR874 to N-type (f) adapter.
 - d. Insert probe tip adapter into probing connector on Tee.
 - e. Insert HP 54001A probe tip into probe tip adapter.
 - f. Set pulser's mode switch to pulse output mode.
 - g. Apply power to pulser.

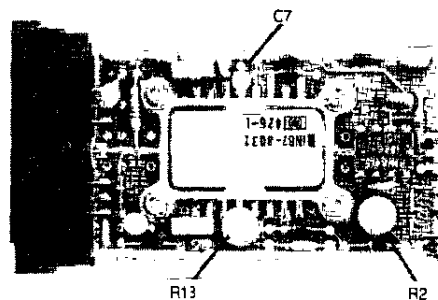


Figure 7A-4. HP 54001A Probe PC Board Adjustment Locations.

14. a. Connect a GR874 to BNC (f) to pulse output on fast pulser
- b. Connect a probe tip to BNC (m) adapter to GR874 connector.
- c. Connect probe tip to BNC (m) adapter.
- d. Ensure pulser's mode switch is set to pulse output mode.
- e. Apply power to pulser.

NOTE

On the Tek 284, the TD bias may need to be adjusted slightly to get the pulser to fire into the non-50 Ω system. The fine adjustment for the tunnel diode is on the pulser's front panel. The coarse adjustment can be located inside the instrument on the right side when the insides are pulled forward (a captive screw on the front panel releases the pulser's insides from the frame.) See the Tek 284 instruction manual for complete details on adjusting the TD bias.

15. Adjust C7 for flattest overall pulse response with alignment tool with square tip. The square tip of this alignment tool can be broken very easily.

NOTE

At this point, it is sometimes helpful to repeat steps 7 and 8 to minimize the possibility of power up offset drift errors.

7A-10. PERFORMANCE VERIFICATION

NOTE

Before performing this procedure, allow a 15 minute warm up period with the probe inserted into the pod slot. The best possible results are obtained when the pod has been adjusted to the input channel being tested. However, this is not a requirement.

7A-11. RECOMMENDED PERFORMANCE TEST EQUIPMENT

The test equipment recommended for use with the performance tests is listed in table 7A-8.

Table 7A-8. Recommended Performance Test Equipment.

INSTRUMENT	CRITICAL SPECIFICATION	RECOMMENDED MODEL
DC Power Supply	±1 V	HP 6115A
Digital Voltmeter	±3 Percent dc V	HP 3478A
Fast Pulse Generator	Risetime less than 70 ps	Tek 284
Power Meter	3 Percent Accuracy	HP 436A
Power Sensor		HP 8482A
Frequency Synthesizer	1000 MHz Sine Wave	HP 8656B
Oscilloscope	No substitute	HP 54100A/D or HP 54110D
Sweep Oscillator	sweeps from 10 MHz to 900 MHz	HP 8620A with a HP 86220C

Table 7A-8 is continued on next page.

Table 7A-8 (continued). Recommended Performance Test Equipment.

ACCESSORIES		HP PART NUMBERS
GR874 to BNC (f)		1250-0850
BNC (m) to Probe Tip Adapter		1250-1454
Probing Tee	Traceable Cal only	10221A
BNC Cable	48 inches	10503A
GR874 to N Type (f)	Traceable Cal, Two Required Non Traceable, One Required	1250-0240
50 ohm Load	Traceable Cal only	909A Option 12
Probe Tip Adapter	No Substitute	54001-23203
Power Splitter	Traceable Cal only	11667A
N Type (m) to BNC (f)		1250-0780
N Type (m) to N Type (m)		1250-1528
50 ohm Feedthrough		10100C
N type (m) to N type (m)	Traceable Cal only	1250-0778

7A-12. RISE TIME VERIFICATION

Equipment Setup:

1. Install HP 54001A into a calibrated oscilloscope.

NOTE

Use step 2a for a traceable calibration. Use step 2b for normal calibrations that do not need traceability to the National Bureau of Standards. Slight adjustments to the oscilloscope's vertical sensitivity, or the generator's output amplitude, may be required due to varying adjustment procedure setups. This adjustment will not interfere with the performance verification.

- 2a.
 - 1) Connect GR874 to N type (f) adapter to probing tee.
 - 2) Connect 50 Ω load to adapter.
 - 3) Remove black insulating sleeve on probe tip.
 - 4) Connect probe tip adapter to probing tee.
 - 5) Insert probe tip of HP 54001A into adapter.
 - 6) Connect entire assembly to pulse generator's fast rise output.
 - 7) Switch pulse generator's mode switch to fast rise output.
- 2b.
 - 1) Connect HP 54001A probe tip to pulse generator's fast rise output, through a GR874 to BNC (f) and a BNC to probe tip adapter.
 - 2) Switch pulse generator's mode switch to fast rise output.
3. Turn on pulse generator and oscilloscope.

Procedure:

1.
 - a. Press **Autoscale** on oscilloscope.
 - b. Adjust timebase to 1 ns/div.
 - c. Set display mode, averages to 8.
 - d. Check trigger slope, should be in positive slope.

2. Use delta V and delta T markers on oscilloscope to perform a risetime measurement as follows:
 - a. Press **Delta V** and turn markers on.
 - b. Press **Auto-Top-Base** and then **10%-90%**.
 - c. Press **Delta T** and turn markers on.
 - d. Select **Start** marker for first positive edge and **Stop** marker for first positive edge.
 - e. Press **Precise edge find** key.

3. The risetime result should be ≤ 455 ps.

7A-13. BANDWIDTH TEST

Instrument Setup:

Oscilloscope Setup:

Channel 1 - Mode - Normal
 & - VOLTS/DIV - 200 mV/div
 Channel 2 - OFFSET - 0 V

Timebase - SEC/DIV - 2 ms
 - Delay ref at - left
 - sweep - trg'd
 - delay - 0 s

Trigger - Mode - Edge
 - Source - Chan 1
 - LEVEL - +300 mV
 - Slope - pos
 - HOLDOFF Time - 21 ms

Display - Mode - Normal
 - DISPLAY TIME - 200 ms
 - Split Screen - Off

Delta V - Marker 1 at +564 mV
 - Marker 2 at -564 mV

Sweep Oscillator:

Start marker - .01 GHz
 Stop marker - .900 GHz
 CW marker - .700 GHz
 Power Level - +1 dBm
 Trigger - internal
 Time - 0.01
 Markers - AMPL
 Marker sweep - ON
 Trigger Mode - Auto

Procedure:

1. Connect HP 54001A probe pod to channel 1 input of oscilloscope, and turn oscilloscope on.

NOTE

Use step 2a if a National Bureau of Standards traceable calibration is required. Use step 2b if a National Bureau of Standards traceable calibration is not required. Step 2b will provide similar results without the added expense of buying probing Tees. Slight adjustments to the oscilloscope's vertical sensitivity, or the generator's output amplitude, may be required due to varying adjustment procedure setups. This adjustment will not interfere with the performance verification.

- 2a.
 - 1) Connect sweep oscillator's RF output to probing Tee through two adapters: N type (f) to GR874 and a N type (m) to N type (m).
 - 2) Connect 50 Ω load to probing Tee through a GR874 to N type (f) adapter.
 - 3) Connect probe tip adapter to probing Tee.
 - 5) Insert probe tip of HP 54001A into adapter.
 - 6) Turn channel 1 on and channel 2 off.
- 2b.
 - 1) Connect sweep oscillator's RF output to a type N (m) to BNC (f) adapter.
 - 2) Connect a BNC to probe tip adapter to the N type (m) to BNC (f) adapter.
 3. Connect probe tip of HP 54001A to probe tip adapter.
 4. Turn channel 1 on and channel 2 off.
3. Adjust sweep oscillator output level until displayed signal just fills 8 divisions vertically. (Use the Clear Display key to help see this.)
4. Adjust sweep oscillator time vernier until displayed waveform is 10 divisions in length.
5. Change oscilloscope DISPLAY time to Infinite.
6. **Press *Clear Display* key.**
7. The DELTA V markers show the 3 dB points and each horizontal division represents approximately 90 MHz. The sweep oscillator CW MARKER will show up as a dark line as the display area fills up. The waveform amplitude at the CW marker should be greater than the amplitude of the waveform at the delta V markers.
8. The approximate frequency where the waveform's amplitude crosses the Delta V markers should be ≥ 700 MHz.

7A-14. DC VOLTAGE MEASUREMENT ACCURACY VERIFICATION.

Equipment Setup:

1. Connect a HP 54001A to oscilloscope's channel 1 input.
2. Turn oscilloscope on.
3. Adjust dc power supply output to exactly 300 mV (use a DVM to measure output level).

NOTE

Use step 4a for a traceable calibration. Use step 4b for normal calibrations that do not need traceability to the National Bureau of Standards.

- 4a.
 - 1) Connect GR874 to N type (f) adapter to probing Tee.
 - 2) Connect 50 Ω load to adapter.
 - 3) Remove black insulating sleeve on probe tip.
 - 4) Connect probe tip adapter to probing Tee.
 - 5) Insert probe tip of HP 54001A into adapter.
 - 6) Connect entire assembly to dc source's output.
- 4b.
 - 1) Connect HP 54001A probe tip to dc source's output through three connectors: a GR874 to BNC (f), a BNC to probe tip adapter, and a 50 Ω load.
5. Adjust oscilloscope for following setup:

Split Screen	Off
Display Averages	32
Probe Attenuation	10:1
Trig Mode	Edge
Trig Source	Chan. 1
Trig Level	+300 mV
Trig Slope	Pos
Holdoff	70 ns
Sweep speed	1 ms/div
Mode	Auto Triggered
Delay	0
Delay Ref	Center
Chan Sensitivity	100 mV/div
Chan Offset	0
Channel not in use	Off

Procedure:

1. Measure input signal's voltage level using Delta V markers as follows:
(Be sure to let 32 acquisitions occur)
 - a. Press *Delta V* and turn markers on.
 - b. Press *Auto-Top-Base* followed by *50%-50%*.
 - c. The Delta V markers should be within 202 mV and 398 mV.
2. Change oscilloscope's offset to +300 mV.
3. Measure input signal's voltage level using procedure in step 1 above.
4. The Delta V markers should be within 244 mV and 356 mV.
5.
 - a. Change dc supply to -300 mV (verify with DVM).
 - b. Change trigger level to -300 mV.
 - c. Change oscilloscope offset to 0 V.
6. Measure input signal's voltage level using Delta V markers as follows:
(Be sure to let 32 acquisitions occur)
 - a. Press *Delta V* and turn markers on.
 - b. Press *Auto-Top-Base* followed by *50%-50%*.
 - c. The Delta V markers should be within -202 mV and -398 mV.
7. Change oscilloscope's offset to -300 mV.
8. Measure input signal's voltage level using procedure in step 1 above.
9. The Delta V markers should be within -244 mV and -356 mV.

- NOTES:**
- 1 GATES ARE SYMBOLIZED ACCORDING TO CIRCUIT FUNCTION
 - 2 UNLESS OTHERWISE NOTED, RESISTANCE IN OHMS, CAPACITANCE IN MICROFARADS, INDUCTANCE IN MICROHENRIES
 - 3 UNLESS OTHERWISE NOTED, LOGIC LEVELS ARE TTL:
 +2.0V TO +5.0V=LOGIC "1"
 0V TO +0.8V=LOGIC "0"

PARTS ON THIS SCHEMATIC CHASSIS	
C2, 3, 5-14	
R1	
R1-13	
U1, 2	

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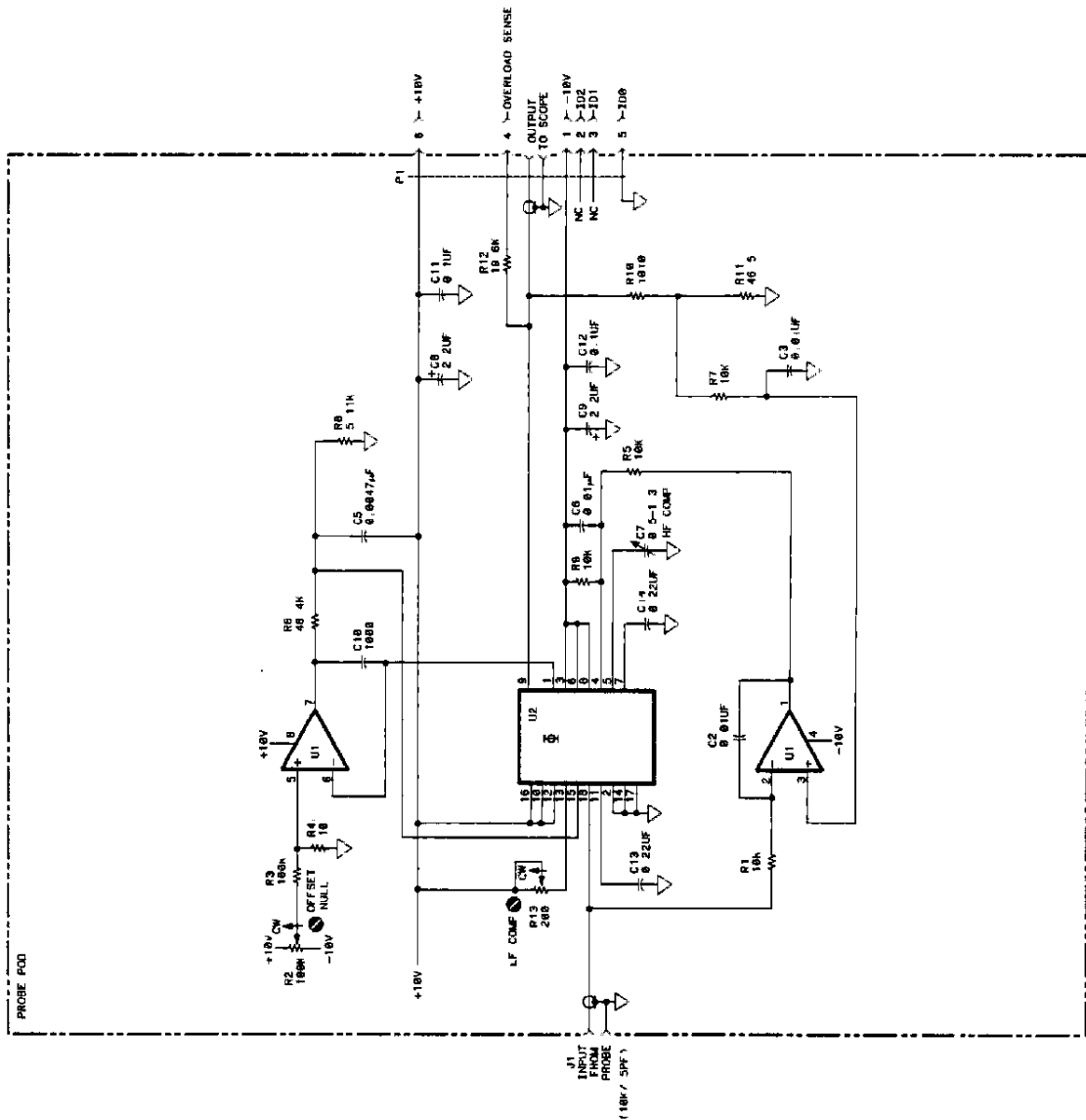
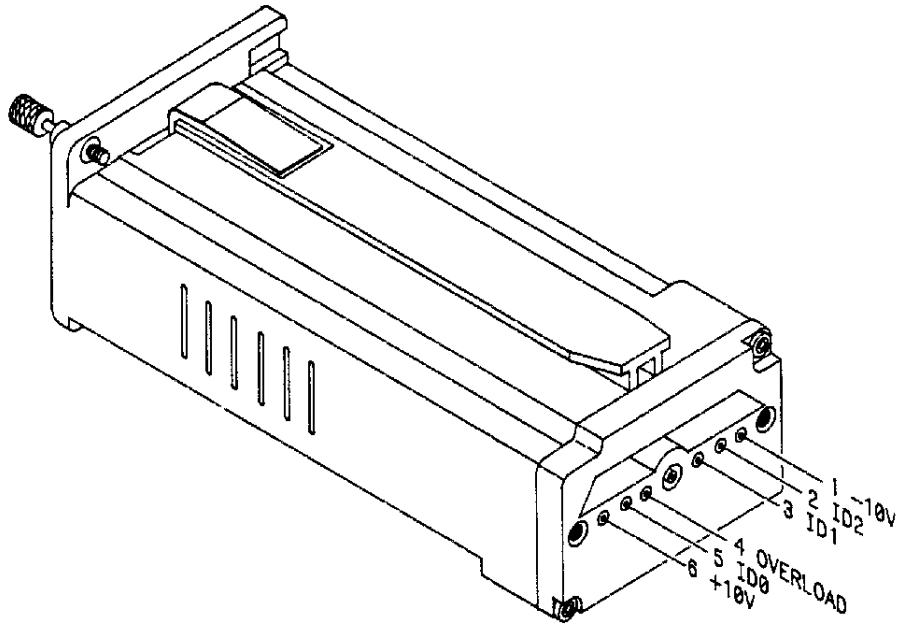
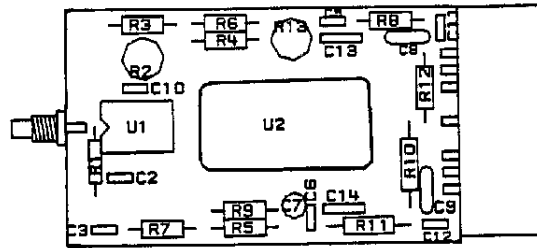


Figure 7A-5. Schematic diagram for HP 54001A Active Probe.



54100/ED01

Figure 7A-6. Rear view of pod depicting pinout.



54001/CL01

Figure 7A-7. Component locator for HP 54001A Active Probe.