Agilent U1818A/B Active Differential Probe

Operating and Service Manual

Agilent Technologies

Notices

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1
Introduction

This chapter provides you the overview of Agilent U1818A/B Active Differential Probe.

Product Overview

The Agilent U1818A/B active differential probes provides high differential input impedance from 100kHz to 7 or 12GHz. The new probes are designed to be directly compatible with Agilent's network, spectrum and signal source analyzers. The U1818A/B probes provide high- frequency probing solution for R&D and quality assurance engineers performing RF/Microwave and high- speed digital design and validation in the wireline, wireless communications and aerospace/defence industries.

Figure 1-1 Agilent U1818A/B Active Differential Probe

Key Features of Agilent U1818A/B Active Differential Probes

- Broad bandwidth with flat frequency response, +/- 1.5dB, which ensures excellent measurement accuracy and helps users achieve the best product apecifications
- Low noise floor, less than - 130dBm/Hz at 10MHz to 12GHz, which allows measurements to be made at a low signal amplitude
- Convenient biasing from Agilent's RF and microwave instruments probe power port or bench top power supply for user flexibility

Options

There are two DC power supply cable options available for Agilent U1818A/B.

- Option 001 - Power probe bias cable
- Option 002 - Banana plug cable

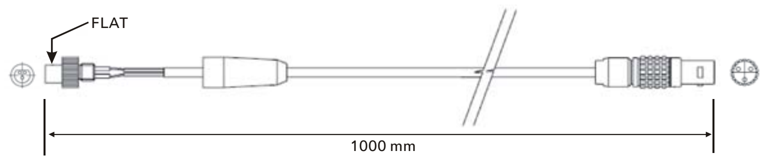


Figure 1-2 Power probe bias cable

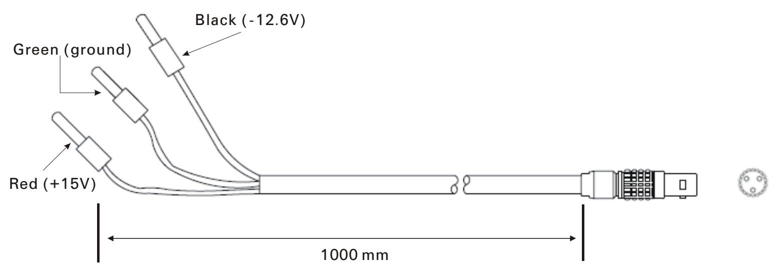
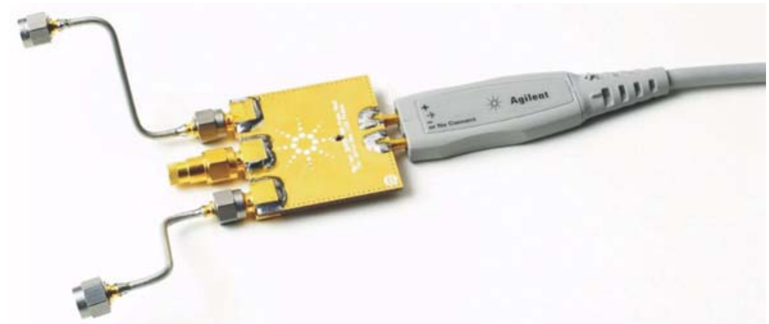


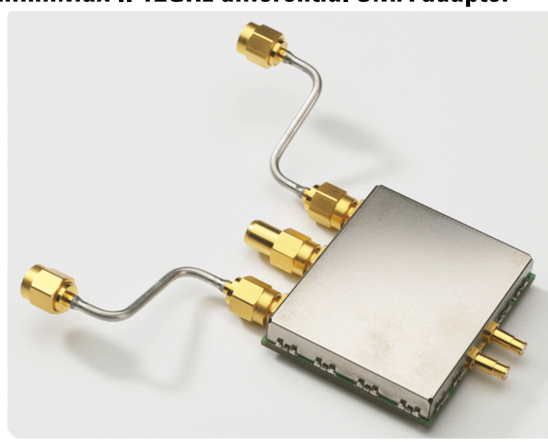
Figure 1-3 Banana plug cable

There are five probe head options available for Agilent U1818A/B.

E2695A differential SMA probe head for InfiniiMax probe



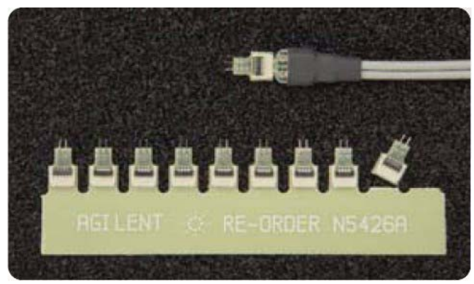
N5380A InfiniiMax II 12GHz differential SMA adapter



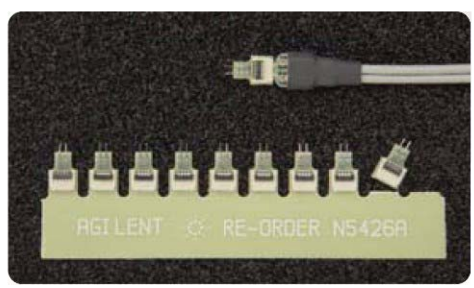
N5381A 12GHz InfiniiMax differential solder-in probe head and accessories

N5382A InfiniiMax II 12GHz differential browser

N5425A 12GHz InfiniiMax ZIF solder-in probe head



N5426A 12GHz InfiniiMax ZIF Tip - kit of 10



2
Specification

This chapter provides an overview specifications of Agilent U1818A/B Active Differential Probe.

Product Specifications

Specifications refer to the performance standards or limits against which the active differential probe is tested.

Typical characteristics are included for additional information only and they are not specifications. These denoted as "typical", "nominal" or "approximate" and are printed in italic.

	U1818A/B with N5381A	*U1818A/B with N5380A (Typical)*	*U1818A/B with N5382A(Typical)*	*U1818A/B with N5425A(Typical)*
Bandwidth	**100kHz - 7 or 12GHz**	*100kHz - 7 or 12GHz*	*100kHz - 7 or 12GHz*	*100kHz - 7 or 12GHz*
Frequency Response 3dB BW*	**7 or 12GHz**	*7 or 12GHz*	*7 or 12GHz*	*7 or 12GHz*

* Normalized 3dB BW to 100kHz

Supplementary/ Typical performance	*U1818A/B with N5381A*	*U1818A/B with N5380A*	*U1818A/B with N5382A*	*U1818A/B with N5425A*
Maximum Input Power	*16dBm*	*14dBm*	*16dBm*	*16dBm*
DC Biasing Characteristic	*+15V at 142mA and -12.6V at 12mA*			
Maximum Input DC Voltage	*+/-10V*			
Output Impedance (Nominal)	*50Ohm*			
Single Ended Mode Input Impedance @1MHz	*25kOhm*	*N/A*	*25kOhm*	*25kOhm*
Differential Mode Input Impedance @1MHz	*50kOhm*	*N/A*	*50kOhm*	*50kOhm*
Model Capacitance between tips, Cm	*0.09pF*	*N/A*	*0.09pF*	*0.13pF*

Model Capacitance between tip and Ground, Cg	*0.26pF*	*N/A*	*0.26pF*	*0.40pf*
Differential Mode Capacitance, Cdiff (Cm + Cg/2)	*0.21pF*	*N/A*	*0.21pF*	*0.33pF*
Single Ended Mode Capacitance, Cse (Cm + Cg)	*0.35pF*	*N/A*	*0.35pF*	*0.53pF*
Nominal Probe Attenuation	*-10dB*	*-6.9dB*	*-10dB*	*-10dB*
Output Return Loss	*100kHz - 7GHz: =< -13dB* *7GHz - 12 GHz: =< -8dB*			
Common Mode Rejection	*<2GHz: 35dB* *2 - 12GHz: <30dB*	*<2GHz: 25dB* *2 - 12GHz: <15dB*	*<2GHz: 35dB* *2 - 12GHz: <30dB*	*<2GHz: 35dB* *2 - 12GHz: <30dB*
Noise Spectral Density[*]	*100kHz - 10MHz: <-120dBm/Hz* *10MHz - 1GHz: <-130dBm/Hz* *1GHz - 12GHz: <-145dBm/Hz*			
Noise Figure[†]	*100kHz - 10MHz: <54dB* *10MHz - 1GHz: <44dB* *1GHz - 12GHz: <29dB*			
Spurious[‡]	*<2MHz: -75dBm* *Refers to Figure 2-1 for more details*			
Harmonic Distortion (dBc)[**]	*<-40dBc @ +10dBm input power for frequency <5GHz*	*<-35dBc @ +10dBm input power for frequency 2GHz* *<-35dBc @ +4dBm input power for frequency 4GHz* *<-35dBc @ +2dBm input power for frequency 5GHz*	*<-40dBc @ +10dBm input power for frequency <5GHz*	*<-40dBc @ +10dBm input power for frequency <5GHz*
P1dB Compression	*Input power >10dBm @ frequency <7GHz Refer to Figure 2-2 for more details*	*Input power >10dBm @ frequency <=2GHz Refer to Figure 2-3 for more details*	*Input power >10dBm @ frequency <7GHz Refer to Figure 2-2 for more details*	*Input power >10dBm @ frequency <7GHz Refer to Figure 2-2 for more details*

*Phase Noise @ +5dBm input power***	*Fc = 2GHz @ 1MHz offset <-140dBc/Hz*			
*Phase Noise @ +10dBm input power***	*Fc = 100MHz @ 1MHz offset <135dBc/Hz*	*Fc = 100MHz @ 1MHz offset <-140dBc/Hz*	*Fc = 100MHz @ 1MHz offset <135dBc/Hz*	*Fc = 100MHz @ 1MHz offset <135dBc/Hz*
Calculated Jitter: Fc = 2GHz @ +5dBm Input Power††	*5kHz - 20MHz: 31fs*	*5kHz - 20MHz: 25fs*	*5kHz - 20MHz: 31fs*	*5kHz - 20MHz: 31fs*
Calculated Jitter: Fc = 100MHz @ +10dBm Input Power††	*5kHz - 20MHz: 1100fs*	*5kHz - 20MHz: 601fs*	*5kHz - 20MHz: 1100fs*	*5kHz - 20MHz: 1100fs*

** Measured using "Noise Marker function" of Agilent PSA E4440A opt 110 with pre-amp on*

† Noise Figure reading is derived from Noise Spectral Density

‡ No spurious signal detected >2MHz

***The signal source used is Agilent PSG*

††The jitter value depends on the Agilent PSG and the U1818A/B probe. At close-in offset frequency, the residual noise of the probe is better. The Agilent PSG calculated jitter is 23fs.

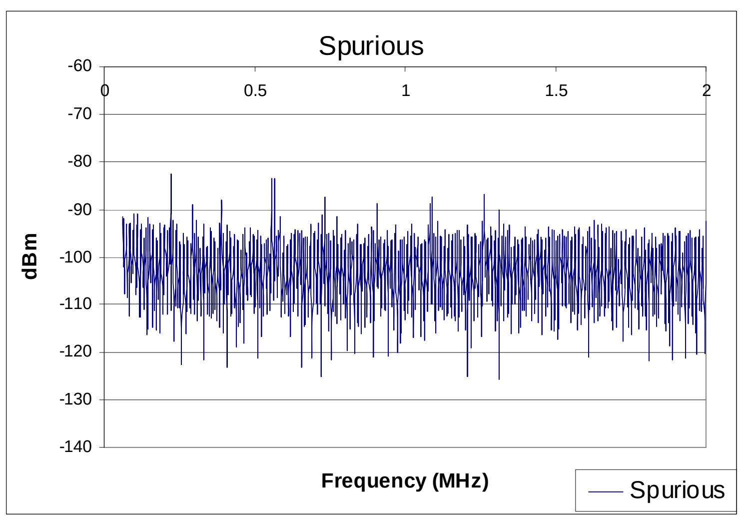


Figure 2-1 Typical spurious plot

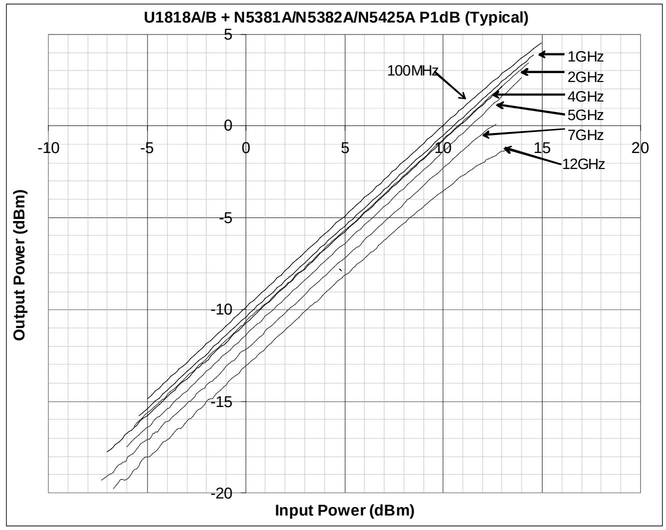


Figure 2-2 Typical P1dB plot with N5381A, N5382A and N5425A

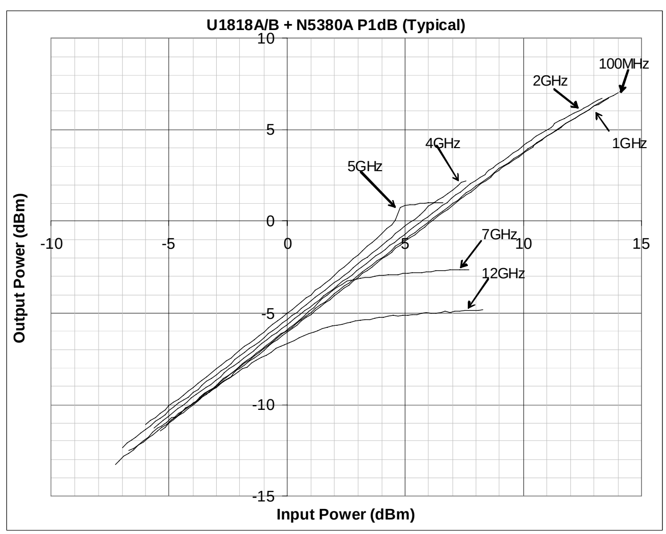


Figure 2-3 Typical P1dB plot with N5380A

Physical Specifications

	U1818A/B
Mechanical Dimensions	Figure 2-4
Weight	0.170kg (0.375lb)
Shipping Weight	1.135kg (2.502lb)
Output Connector	N-type (male)

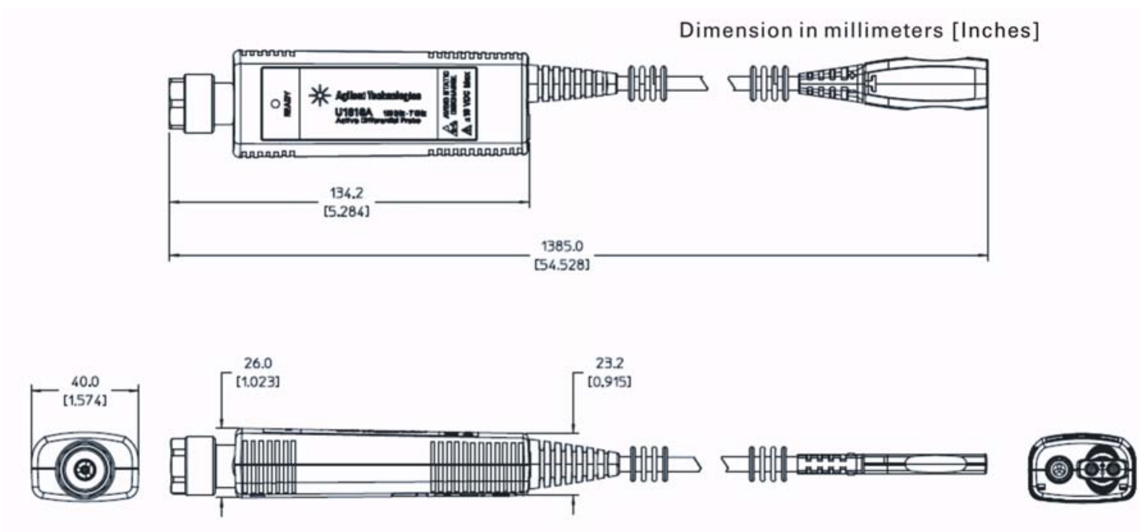


Figure 2-4 Mechanical Dimension of U1818A/B

Pin Depth Specification

	U1818A/B
N-type (male) connector pin depth	-.207″ to -.211″

Environmental Specifications

Agilent U1818A/B are designed to fully comply with Agilent Technologies's product operating environment specifications. The following are the summarized environmental specifications for these product.

Temperature	
• Operating	0°C to +50°C
• Storage	-40°C to +70°C
• Cycling	-55°C to +85°C, 10 cycles
Relative Humidity	
• Operation	50% to 95% RH at 40°C
• Storage	90% RH at 65°C
Shock	
• End-use handling shock	Half-sine wave form, 2-3ms duration, 60 in/s (1.6ms) delta-V
• Transportation shock	Trapezoidal wave form, 18-22ms duration, 337 in/s (8.56ms) delta-V
Vibration	
• Survival	Random: 5-500Hz, 2.09grms, 10min/axis
Altitude	
• Operating	< 4,572 meters (15,000 feet)
• Storage	< 15,000 meters (50,000 feet)
ESD immunity:	
• Air discharge	8 kV from 150pF, 330Ω HBM

CAUTION This device is sensitive to electrostatic discharge. Do not subject the device to direct contact by the probe head wires.

Regulatory Markings

CE	The CE mark shows that the product complies with all the relevant European Legal Directives.
ICES/NMB-001	ICES/NMB-001 indicates that this ISM device complies with Canadian ICES-001. Cet appareill ISM est conforme a la norme NMB-001 du Canada.
ISM GRP.1 CLASS A	This is the symbol of an Industrial Scientific and Medical Group 1 Class A product.
N10149	The C-Tick mark is a registered trademark of the Spectrum Management Agency of Australia. This signifies compliance with the Australian EMC Framework Regulations under the terms of the Radio communications Act of 1992.

3
Operating and Service

This chapter provides you the operating instructions, service information and handling guide.

Operating Instructions

To power up the probe, user can either use power probe cable or banana plug cable. When the probe is ON, you will see the green LED will lights up to indicate the probe is ready to be used.

Power probe cable

Connect the power probe bias cable to the probe power port of Spectrum Analyzer, Signal Source Analyzer or Network Analyzer.

Banana plug cable

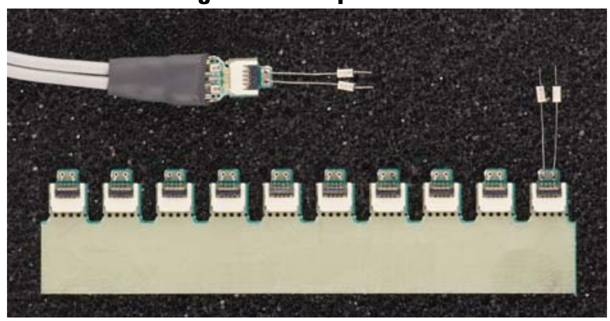
Connect the banana plug cable to power supply with below configuration:

- Red - > +15V
- Black - > - 12.6V
- Green - > Ground

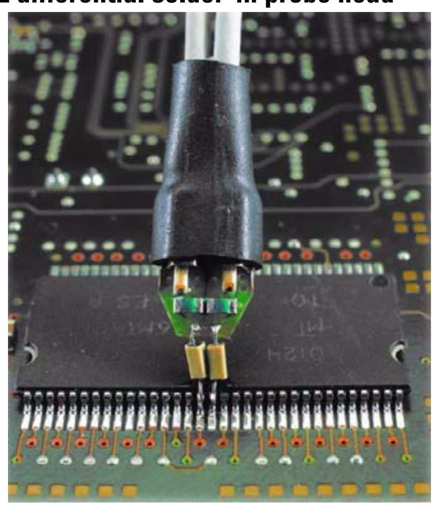
Other Probe Heads

Besides stadard probe head options, below are some other probe heads that can be used with U1818A/B (with limitations).

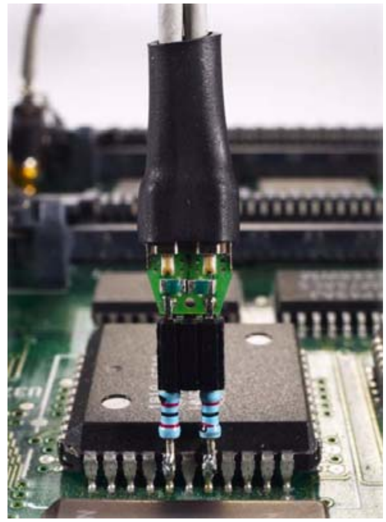
N5451A Differential long wire ZIF tip



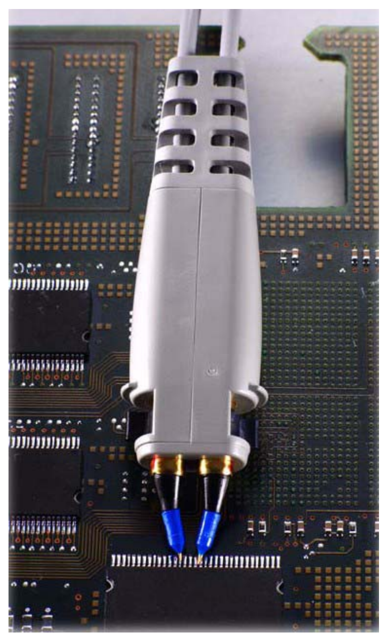
E2677A 12 GHz differential solder-in probe head



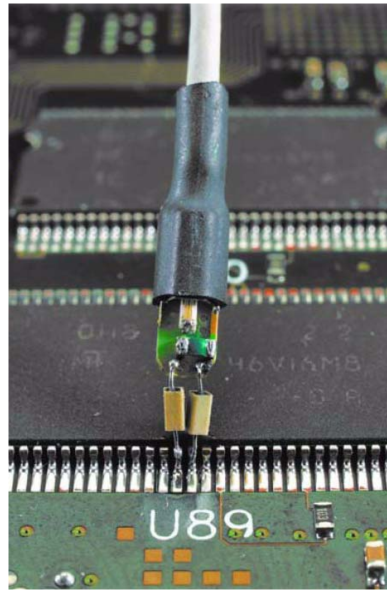
E2678A Single-ended/differential socketed probe head



E2675A Differential browser kit

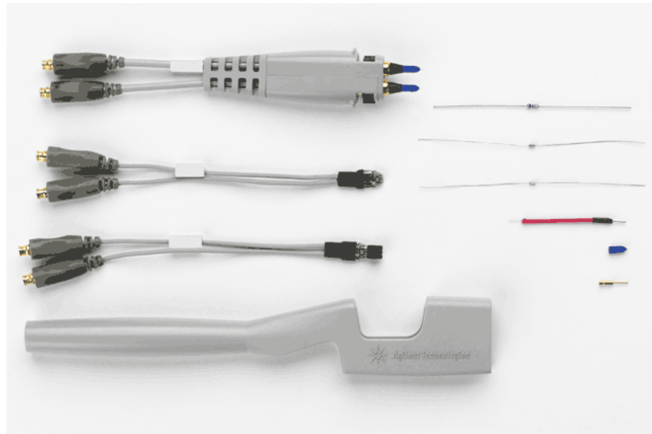


N2679A Single-ended solder probe head

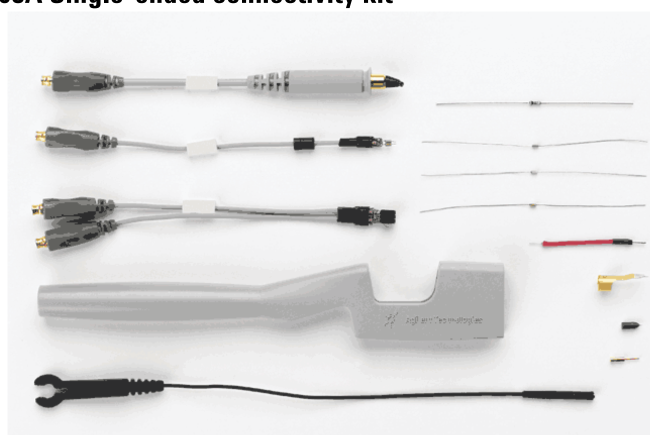


N2676A Single-ended browser probe head

N2669A Differential connectivity kit



N2668A Single-ended connectivity kit



Other Available Accessories

There are more accessories that you can get from Agilent to work with U1818A/B.

E2880A In-line attenuator kit

N2881A DC blocking capacitor

11852B Minimum loss attenuator pad

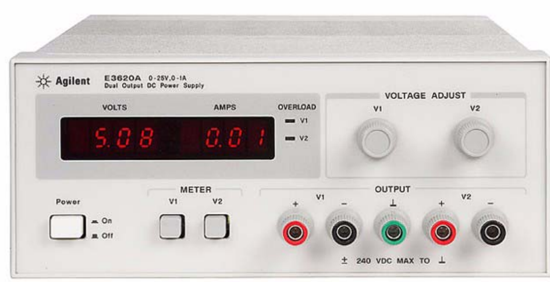
N2784A 1-arm probe positioner

N2785A 2-arm probe positioner

N2787A 3D probe positioner

N5450A InfiniiMax extreme temperature cable extension

E3620A 50W Dual Output Power Supply, Two 25V, 1A



Handling Guide

This probe has been designed to withstand a moderate amount of physical and electrical stress. However, with an active probe, the technologies necessary to achieve high performance, do not allow the probe to be unbreakable. You should treat the probe with care. It can be damaged if excessive force is applied to the probe tip. This damage is considered to be abuse and will void the warranty when verified by Agilent Technologies service professionals.

This section will assist you in properly handling your Active Differential probes to maximize their lifetime of operation and maintain their high performance.

Connecting/Disconnecting Probe Heads

When disconnecting a probe head from an amplifier, pull the probe head connectors straight out of the socket as shown in Figure 3- 1. When removing or disconnecting a probe head, hold the amplifier by grasping the indentations located on the sides of the amplifier (as shown in Figure 3- 1). There are also indentations on many of the probe head sockets so you have a convenient place to grasp there as well. When connecting a probe head to an amplifier, push straight in also.

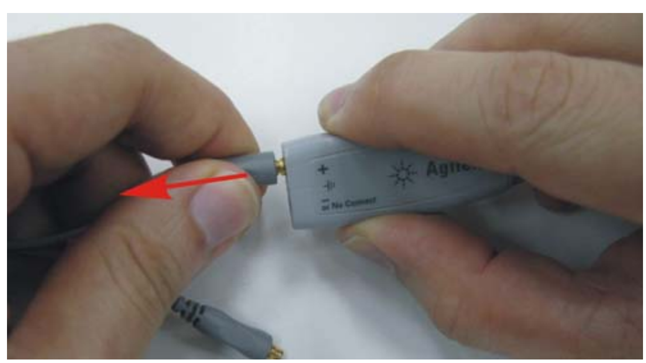


Figure 3-1 Pull the probe head straight out to disconnect it from the amplifier.

Never bend the probe head in order to “pop” it loose from the amplifier. Also, do not wiggle the probe head up and down or twist it to remove the connectors from the sockets. This can damage the pins in the amplifier or the probe head itself. Figure 3-2 is an example of an improper way to disconnect the probe head.

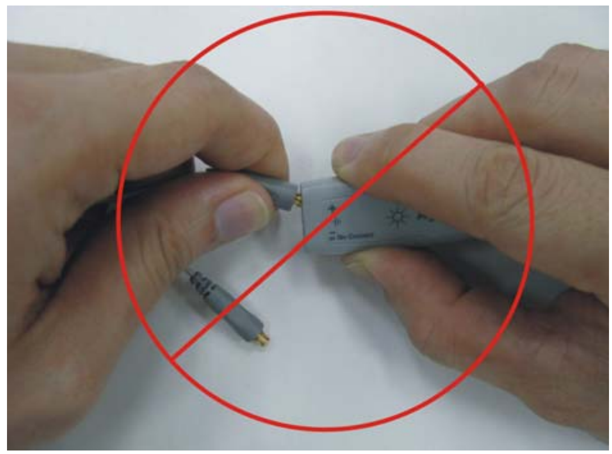


Figure 3-2 An improper way to disconnect a probe head from an amplifier

To see if the pins in the probe amplifier are bent, visually inspect them by looking in the sockets on the amplifier. Notice in Figure 3-3 that the pins are straight (as they should be).

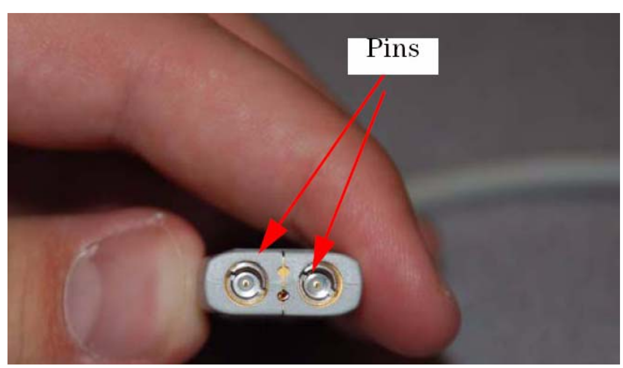


Figure 3-3 Straight pins in an amplifier

If you connect and disconnect probe heads using the appropriate method, these pins should not bend. Always remember to apply enough force to pull the probe head straight out or push it straight in. Do not wiggle, twist, or bend it in any way.

Handling the Probe Cable

In general, you need to be careful not to kink the cable, twist it, or bend it too much.

For example, slamming a drawer or dropping a heavy item on a cable can kink it and significantly degrade the probe's performance.

Also, when a probe is attached to instrument, you need to be careful not to let a chair or other object crash into the face of the instrument because it will hit the probe cable where it exists the probe amplifier and bend it well beyond its limit.

When storing the probe, it is best to coil the cable in a large radius and avoid a net twist in the cable during the process. This can be done in a similar manner to how garden hoses or extension cords are typically coiled.

You can start by wrapping the cable around your thumb (Figure 3- 4 - first picture). Then continue to circle your thumb, but provide a slight twist with each rotation. This will allow the cable rotations to lie flat against each other and will eliminate the net twisting of the cable in the end.

Note that the radius of the coil must be fairly large so it does not induce kinking or bending.

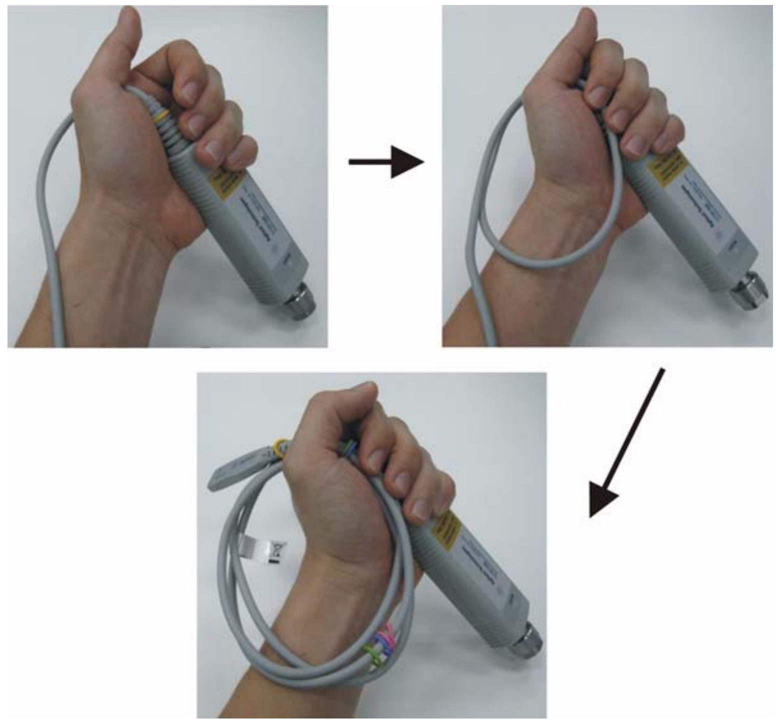


Figure 3-4 The recommended way to coil and store your probe

Handling the Probe Amplifier

The probe amplifier contains a delicate circuit board. You, therefore, need to treat it carefully and take standard precautions (for example, not dropping it repeatedly or from large heights, not getting it wet, not smashing it with heavy objects, etc.).

CAUTION These probes are sensitive ESD devices so standard precautions need to be used to not ruin the probe from the build-up of static charges.

Handling the Differential Browsers with Ergonomic Handle

Because of their small size, it can be difficult to hold the differential browsers for extended periods of time. The ergonomic handle can be used to more comfortably hold the browser. Figure 3-5 shows how to mount the browser in the ergonomic handle and Figure 3-6 shows how to remove the browser from the ergonomic handle.

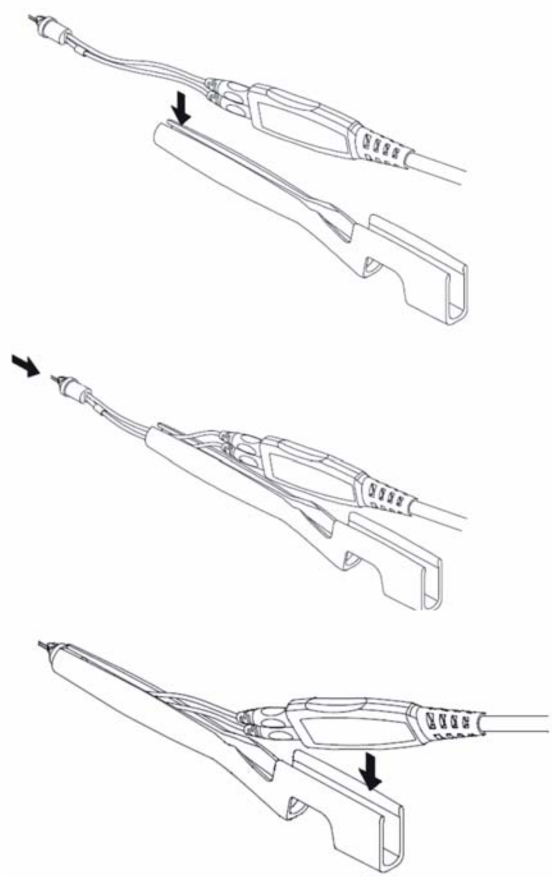


Figure 3-5 Steps to mount the browser in the ergonomic handle

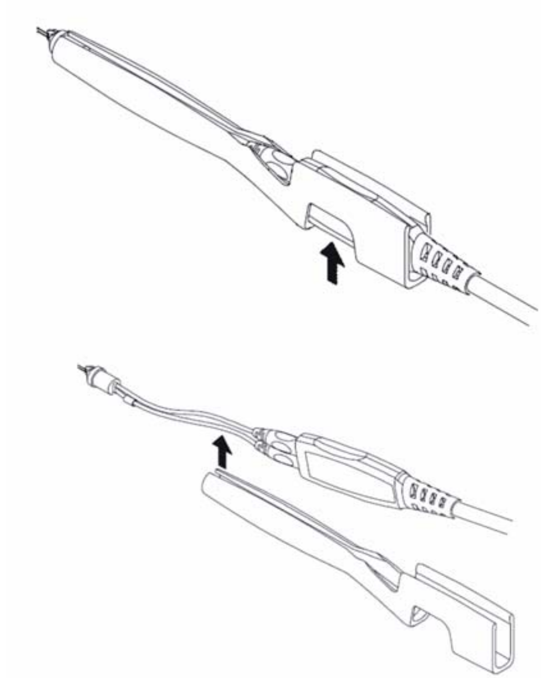


Figure 3-6 Steps to remove the browser from the ergonomic handle

Handling SMA Probe Heads

The U1818A/B probe amplifier can become damaged when used with the N5380A or E2695A SMA probe heads. Use the Agilent N5380- 64701 SMA Head Support to prevent damage. Make sure to plug the probe amplifier into the SMA head before installing the SMA Head Support and do not attempt to plug or unplug the SMA head from the probe amplifier while it is in the SMA Head Support housing. Figure 3- 7 shows how to attach the SMA Head Support using two provided screws.

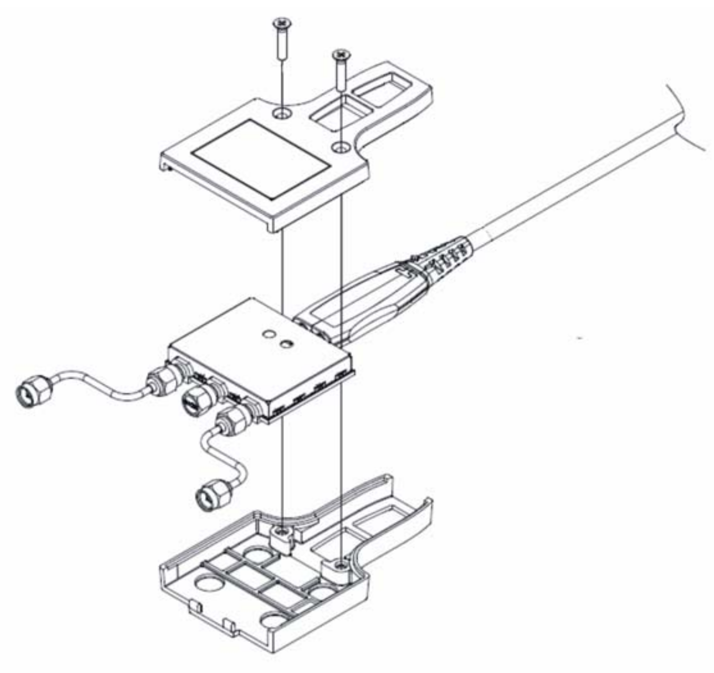


Figure 3-7 Attaching the SMA Head Support

Temperature Rating

U1818A/B probe amplifier have a specified operating temperature range of 0°C to +50°C. However, the probe heads can be operated over a much larger range of temperatures. If you need to make measurements at temperatures outside the range of the amplifier, the N5450A Extreme Temperatures Cable Extension Kit is your solution.

These cables can used to physically separate the amplifier from the probe head to allow you to operate the prode head inside a temperature chamber while the probe amplifier remains outside the chamber.

Securing Probe Heads and Amplifiers to Your DUTs

When soldering a probe to a circuit, you should first provide some strain relief by using low temperature hot glue (use as little as possible) or non- conductive double- sided tape. Do not use super glue and do not get the low temperature hot glue on the actual probe head tip as this can damage the precision components of your probing system (only use the low temperature hot glue on the probe head cables). The provided velcro pads can be used to secure your probe amplifier casing to the board.

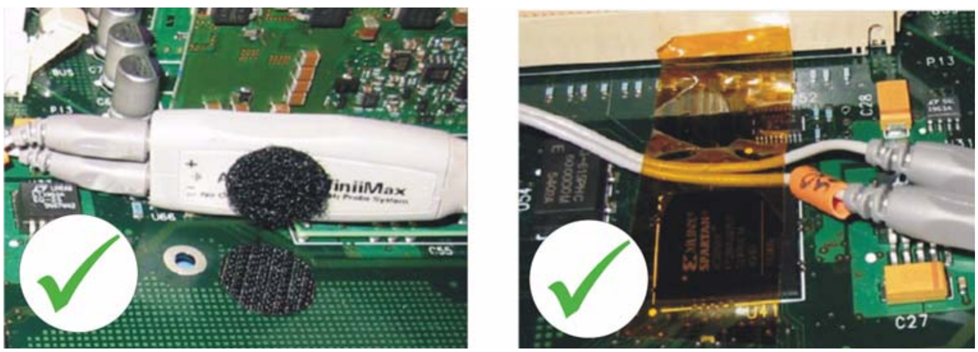


Figure 3-8 Correct securing methods

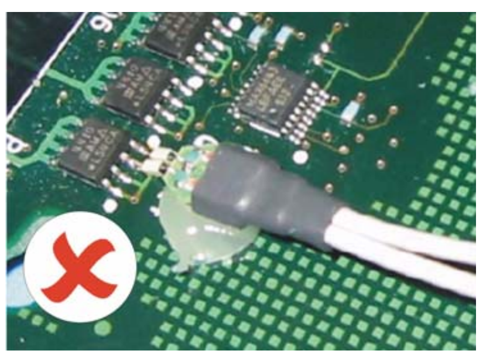


Figure 3-9 Incorrect securing method because glue is placed on the probe head tip

Maintenance

If the probe requires cleaning, disconnect it from the instrument and clean it with a soft cloth dampened with a mild soap and water solution. Make sure the probe is completely dry before reconnecting it to the instrument.

Service Instructions

Adjustment

The probe amplifiers do not have internal adjustments and should not be opened.

Repair

The U1818A/B contain no user serviceable parts (with the exception of the probe head). If service or repair is required, contact your nearest Agilent Technologies Service Center. Refer to "Contacting Agilent" on page 4.

Replacing the Wires on N5381A and N5382A Probe Heads

When the wire leads of the N5381A and N5382A probe heads become damaged or break off due to use, the wires can be replaced. Use the appropriate wire for each probe head as follows:

- The N5381A uses the 0.005 inch tin- plated nickel wire. (01169- 21306) or 0.007 inch tin- plated nickel wire. (01169- 81301)
- The N5382A uses the 0.005 inch tin- plated steel wire. (01169- 21304)

Recommended Equipment

Below lists the equipment required to replace the wires. Equipment other than the recommended can be used, provided minimum specifications are satisfied.

- Vise or clamp for holding tip
- Metcal STTC-022 (600°C) or STTC-122 (700°C) tip soldering iron or equivalent. The 600°C tip will help limit burning of the FR4 tip PC board.
- 0.381mm (0.015in) diameter RMA flux standard tin/lead solder wire
- Fine stainless steel tweezers
- Rosin flux pencil, RMA type (Kester #186 or equivalent)
- Flush cutting wire cutters
- Magnifier or low power microscope
- Agilent supplied trim gauge (01169-23801)
- Ruler

Recommended Procedure

1 Use the vise or clamp to position the tip an inch or so off the work surface for easy access. If using a vise, grip the tip on the sides with light force. If using a tweezers clamp, grip the tip either on the sides or at the top and bottom. See Figure 3-10.

CAUTION When tightening the vise, use light force to avoid damaging the solder-in probe head.

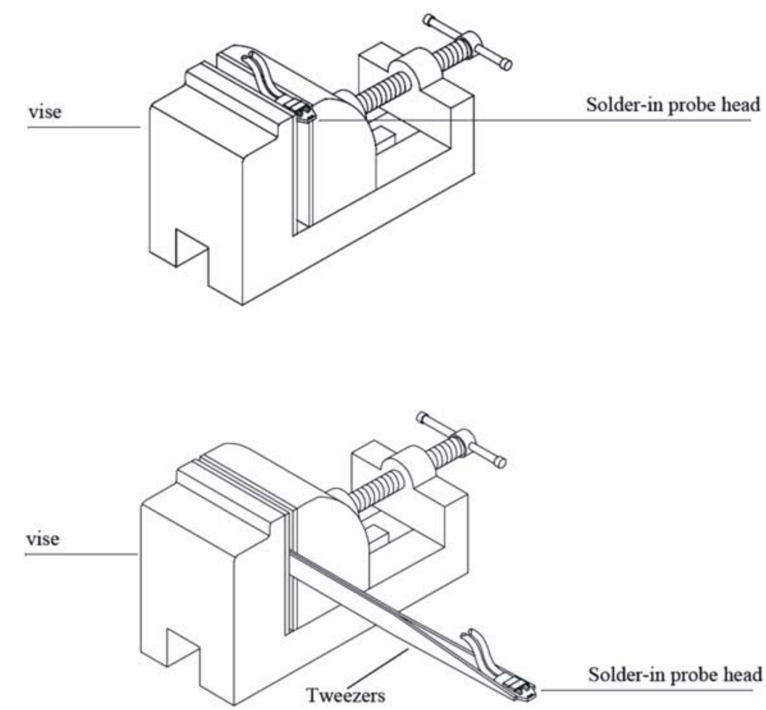


Figure 3-10 Holding tip with vise

2 Make sure soldering iron tip is free of excess solder. Grab each wire lead with tweezers and pull very gently up. Touch the soldering iron to solder joint just long enough for the wire to come free of the probe head tip. Do not keep the soldering iron in contact with the tip any longer than necessary in order to limit burning and damage to the PC board. This solder joint has very low thermal mass so it should not take very long for the joint to melt and release.

3 Prepare the mounting hole(s) for new wire(s) by insuring that the holes are filled with solder. If they are not, use the soldering iron and solder to fill the holes. Again, do not leave the iron in contact with the tip any longer than necessary. When the hole(s) are filled with solder use the flux pencil to coat the solder joint area with flux.

4 Cut two wires to a length of about 12.7mm (0.5inches).

5 Using tweezers, put 90 degree bend at the end of the wire. Leave enough wire at the bend such that it will protrude through the board when the wire is installed.

6 Holding the wire in one hand and the soldering iron in the other hand, position the end of the wire lead over the solder filled hole. Touch the soldering iron to the side of the hole. When the solder in the hole melts, the wire lead will fall into the hole. Remove soldering iron as soon as lead falls into the hole. Again, the thermal mass of the joint is very small, so extra dwell time is not needed with the soldering iron to insure a good joint.

7 Cut the wires that protrude on the bottom side of the probe head board even with the solder pad.

8 Place the wires through the hole in the trim gauge with the probe head perpendicular to the trim gauge. Refer to Figure 3- 11.

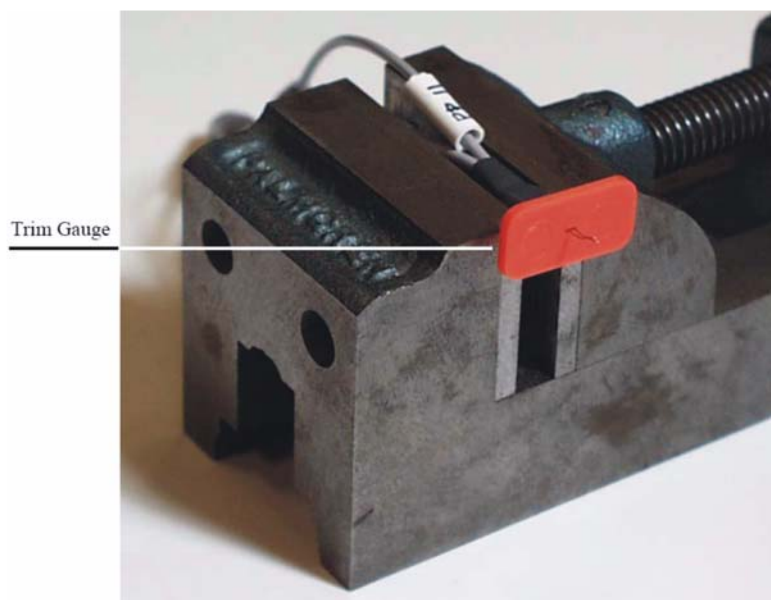


Figure 3-11 Use trim gauge to gauge the wire

9 Cut the wires even with the trim gauge on the side opposite of the probe head.

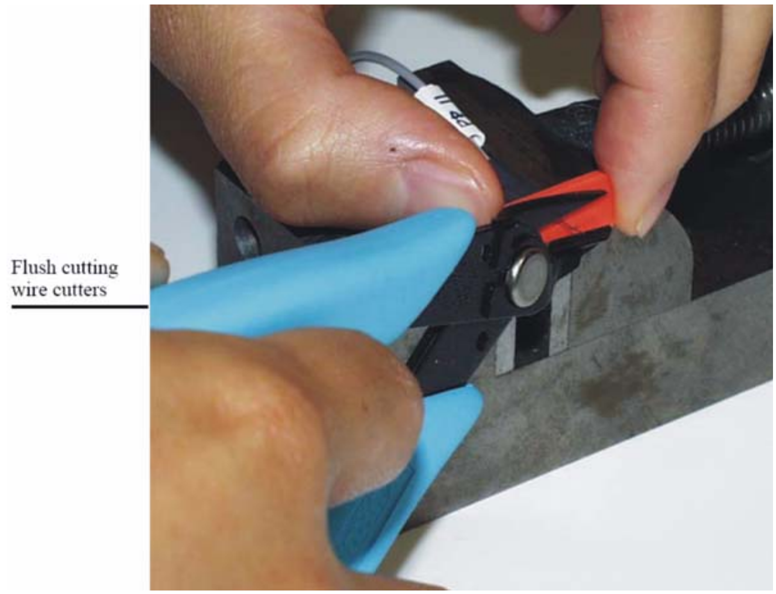


Figure 3-12 Cut the wires even with the trim gauge

10 When replacing wires on the N5382A Browser, bend the wires down at about 30 degree angle.

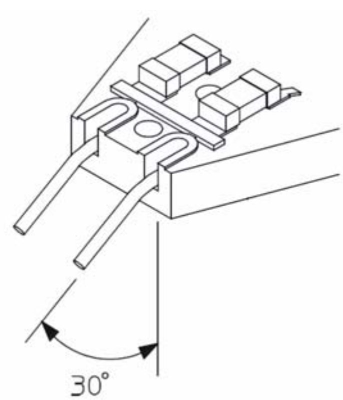


Figure 3-13 N5382A wire bend down at about 30 degree

Tips for Using Browser Probe Heads

- Spring steel wires will last longer if the span is set by grabbing the lead near the PC board edge and twisting instead of just pulling or pushing the wires apart or together.

Tips for Using Solder-in Probe Heads

- When soldering in leads to DUT always use plenty of flux. The flux will insure a good, strong solder joint without having to use an excessive amount of solder.
- Strain relieves the micro coax leading away from the solder- in tips using hook- and- loop fasteners or adhesive tape to protect delicate connections.
- Note that for the differential solder- in probe head, the + and - connection can be determined when the probe head is plugged into the probe amplifier, therefore, it does not matter which way the tip is soldered.

Procedures and Soldering Tips for Using N5425A InfiniiMax ZIF Probe Heads

The InfiniiMax ZIF (Zero Insertion Force) Probe Heads system is a way to use a less expensive connection accessory (ZIF tip) that can be installed at many locations on a device under test, to connect to a probe head (5426A) that transports the signal to the probe amplifier. The advantages of this system are that the ZIF tip is very small and connects to the probe head using a zero insertion force feature allows connection without compressing the delicate wires which cannot support this compression.

A close- up of the ZIF tip and the ZIF probe head before the probe head is inserted into the ZIF tip is shown in Figure 3- 14. Note that lever on the ZIF tip is shown in the open position (pointed up) which allows the insertion of the probe head contacts into the ZIF tip with zero insertion force.

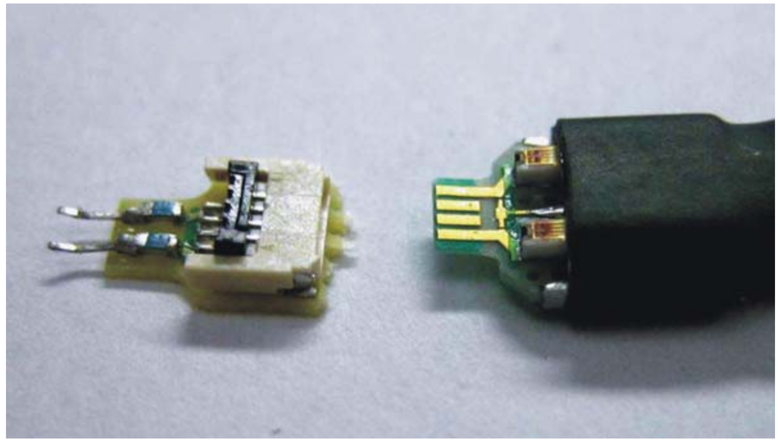


Figure 3-14 ZIF tip (open position) and ZIF probe head

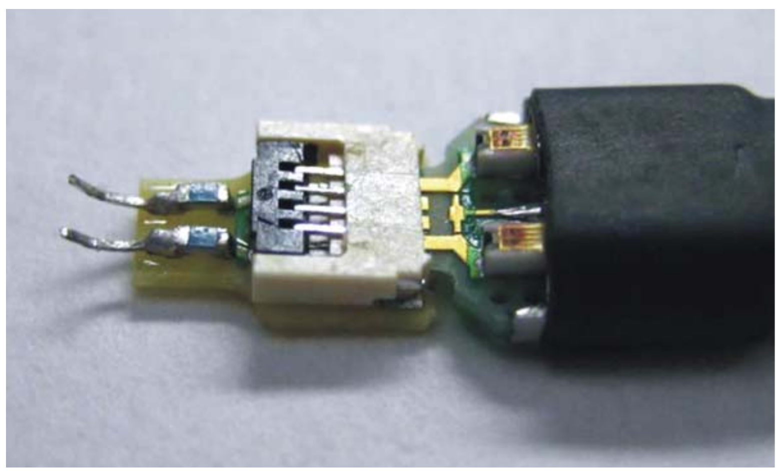


Figure 3-15 ZIF tip (closed position) with ZIF probe head inserted

A close- up of the ZIF probe head inserted into the ZIF tip is shown in Figure 3- 15. Note that now the lever on the tip is in the closed position (down, rotated 90 degree to the left) which closes the contacts of the ZIF connector.

Soldering the tip into a DUT is straighforward, but some of the traditional soldering techniques that are typically used on larger components will not work well here. Holding the leads on the ZIF tip in place while applying the soldering iron and adding solder requires the use of three hands.

The following is an overview of the recommended soldering techniques:

1 Add some solder to the DUT connection points. There should be enough solder to provide a good fillet around the ZIF tip leads, but not so much as to create a big solder ball. A fine MetCal (or equivalent) soldering tip should be used along with some 11 or 15mil solder.
2 Using a rosin flux pen, coat the solder points with flux. The flux core solder does not provide enough flux for this small scale soldering. Also, put flux on the tips of the leads of the ZIF tip.
3 Clean the soldering tip well, then add a little bit of solder to the tip. It may take several tries to get just a little bit of solder right at or near the tip of the soldering iron. The solder on the tip keeps the soldering iron tip from pulling solder on the DUT connection points.
4 Position a lead of the ZIF tip on top of one of the target points, then briefly touch the soldering iron tip to the joint. The thermal mass of this joint is very small, so you don't need to dwell on the joint for very long. The flux that was added to the joint should produce a good, clean solder joint. If you do not get a good, shinny, strong solder joint, then there was either not enough flux or the joint was heated too long and the flux boiled off.
5 Repeat step 4 for the other lead of the ZIF tip.
6 There is a possibility that if a lead of the ZIF tip is inserted into a large ball of solder that is heated excessively with a soldering iron, the solder joint holding the lead onto the ZIF tip PC board could flow and the lead would come off destroying the ZIF tip. Only the first third of the lead or so needs to be soldered to the target point.

Illustrated Procedure of Recommended Soldering Techniques

An illustrated example of the installation of a ZIF tip and connection to a ZIF probe head is shown below. Figure 3- 16 shows a IC package which we will attach a ZIF tip to the first two package leads. The target could also be via pads or signal traces.

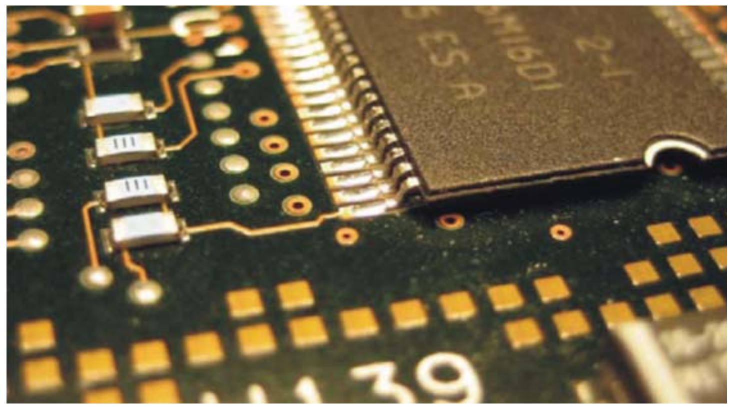


Figure 3-16 IC package for example ZIF tip installation

1 Add some solder to the target points in the DUT. Figure 3- 17 shows extra solder added to the pads for the first two pins on an IC package.

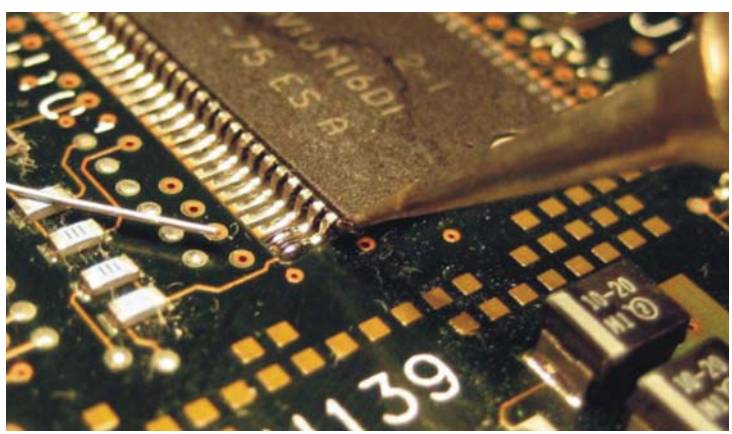


Figure 3-17 Solder added to target points

2 Use flux pen to add flux to the target points. Also, flux the tip of the lead on the ZIF tip at this time.

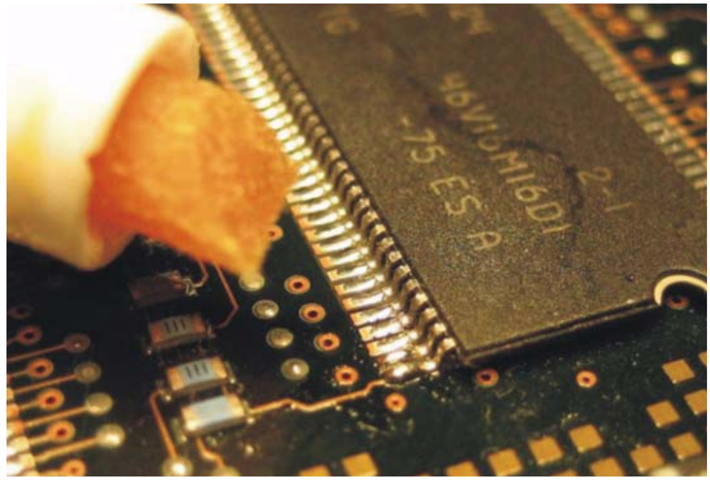


Figure 3-18 Fluxing of the target points

3 Clean the soldering iron tip and add a small amount of solder to the very tip. This may take a few tries because the solder may tend to ball up and move away from the tip. Figure 3- 19 shows a small amount of solder on the tip of the soldering iron.

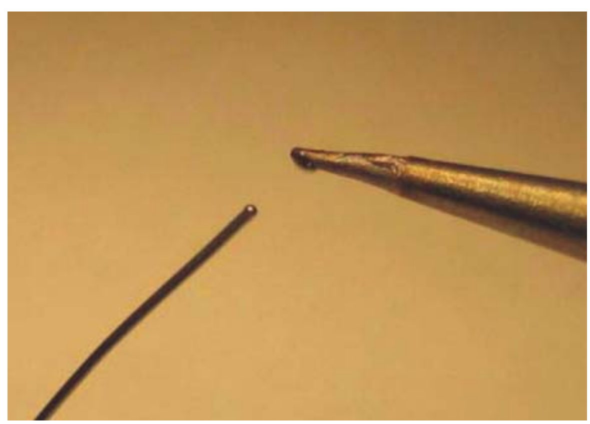


Figure 3-19 Small amount of solder added to ZIF Tip of soldering iron

4 Installation of ZIF tip. Connect the ZIF tip to the ZIF probe head as shown in Figure 3- 14 and Figure 3- 15. This allows the probe to be used as a handle for the ZIF tip to allow positioning in the DUT. Position the lead wires on the target points and then briefly heat the solder joints. There should be enough solder to form a good fillet and enough flux to make the joint shinny. There should not be so much solder that the big solder ball is formed that could cause a solder bridge or overheat the leads on the ZIF tip. This is shown in Figure 3- 20.

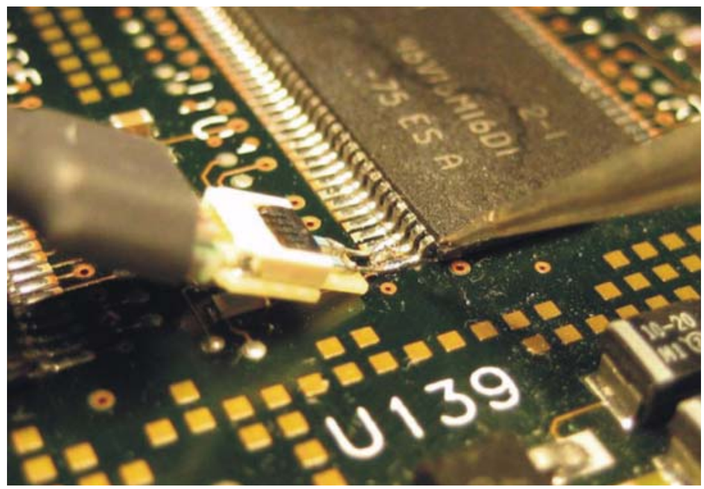


Figure 3-20 ZIF tip positioned and soldered in place

5 Remove ZIF probe head and leave ZIF tip behind for future connection. It is best to use a non- conductive, pointed object such as a tooth pick or plastic tool. Hold on the heat- shrink part of the probe head to support the ZIF tip while releasing the latch. Figure 3- 21 shows a toothpick releasing the latch on the ZIF connector and Figure 3- 22 shows the ZIF tip left behind in the DUT with the latch open, ready for future connections.

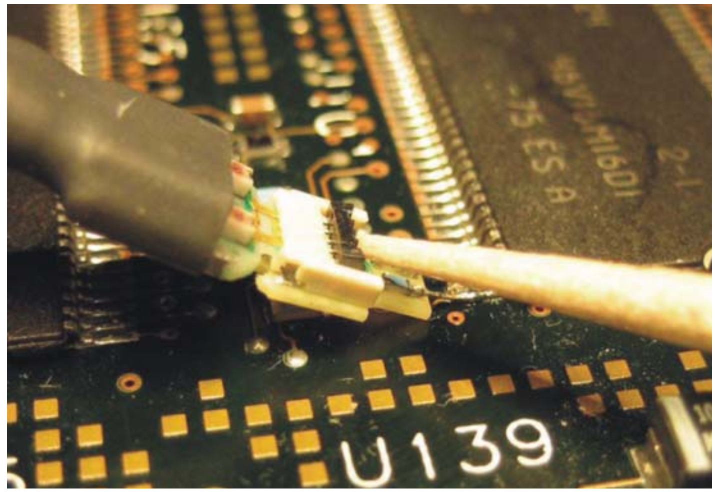


Figure 3-21 Using non-conductive tool to open the ZIF connector

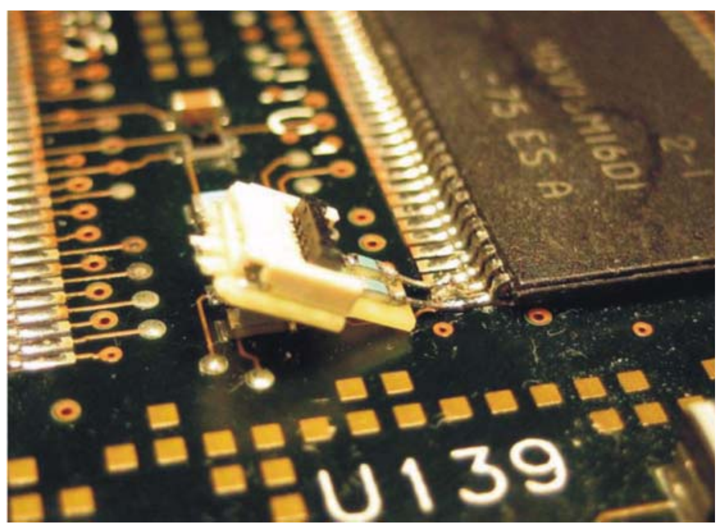


Figure 3-22 ZIF Tip left behind in DUT with ZIF latch open

6 Connect ZIF probe head to ZIF tip desired for measurement. When you need to make a measurement at a point where you’ve previously installed a ZIF tip, insure the latch on the ZIF tip is open, insert the contacts on the probe head into the ZIF socket, and then close the ZIF latch with a non- conductive tool. Depending on the positioning of the ZIF tip, you may need to support the body of the ZIF tip while closing the latch. This can be done by tweezers or other suitable tool by grabbing the PC board at the tip while the latch is being closed. If the circuit is live and there is concern about shorting anything out, use plastic or non- conductive tweezers. See Figure 3- 23.

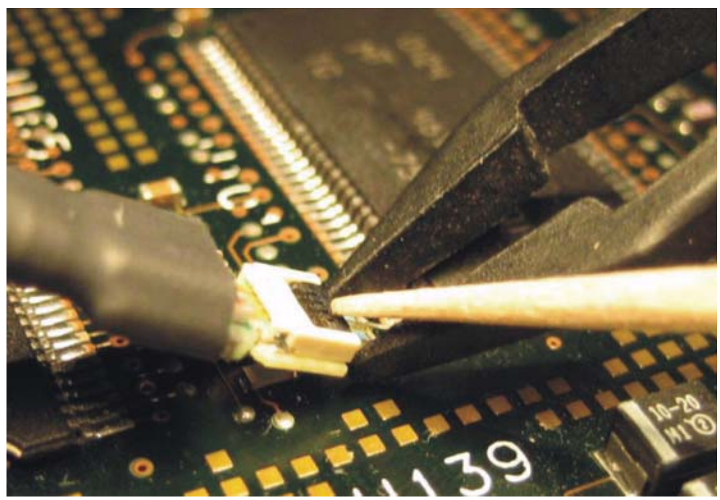


Figure 3-23 Use non-conductive tool to close the latch