



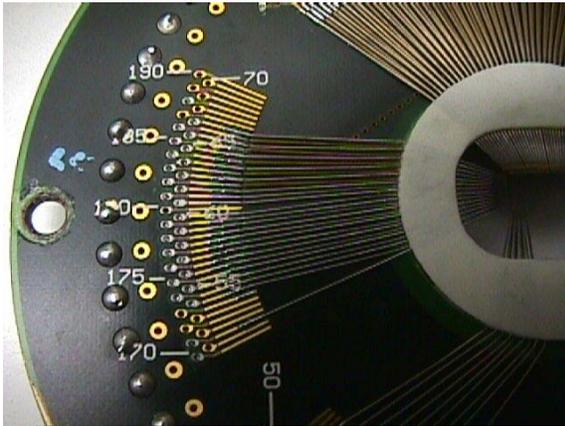
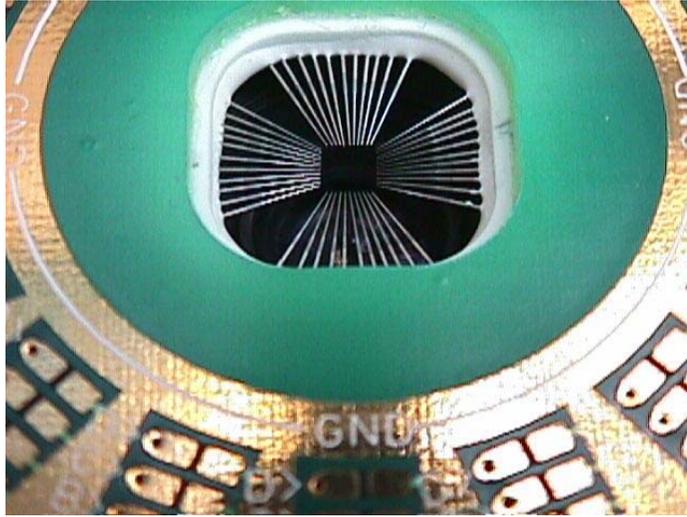
*Probing the World of Microelectronics*

## PROBE TIPS # 19

A Technical Bulletin for Probing Applications

### EPOXY RING PROBE ARRAY REPLACEMENT

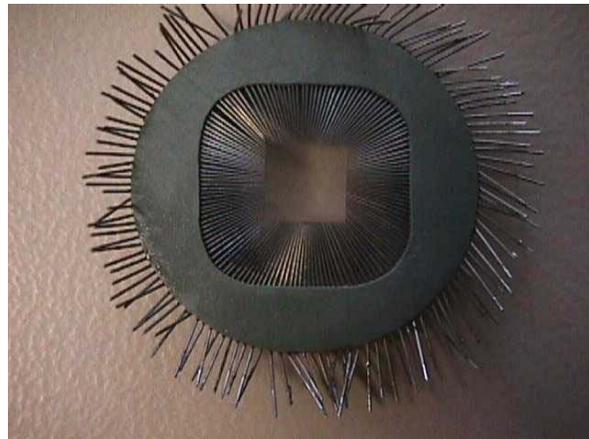
Epoxy Ring or Probe Ring, as they are called at Accuprobe, card assemblies represent a significant investment and can be repaired within certain practical limits. One level of repair relates to a probe array that damaged or is simply worn out from use. Typically the probe tips have worn beyond a useful diameter. As a rule of thumb the tip diameter should not exceed 75% of the bond pad which it is to contact. The appropriate repair method would be a complete replacement of the card or a replacement of the probe needle array on the existing card. Some probe cards represent a significant investment



for the P.C. card itself and components mounted on the card. In some instances cards may contain active and or passive components and possibly other hardware all possibly mounted on an expensive multi-layer PC board.

The first step to replace an entire probe array is to unsolder the probes from the probe lands being very careful to only use enough heat to lift the probe off the solder land. If excess heat is applied to the probe land, the metalization could delaminate from the PC board.

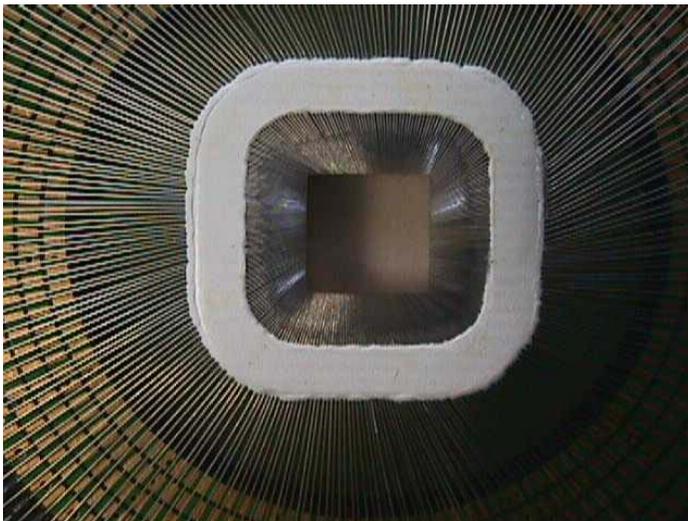
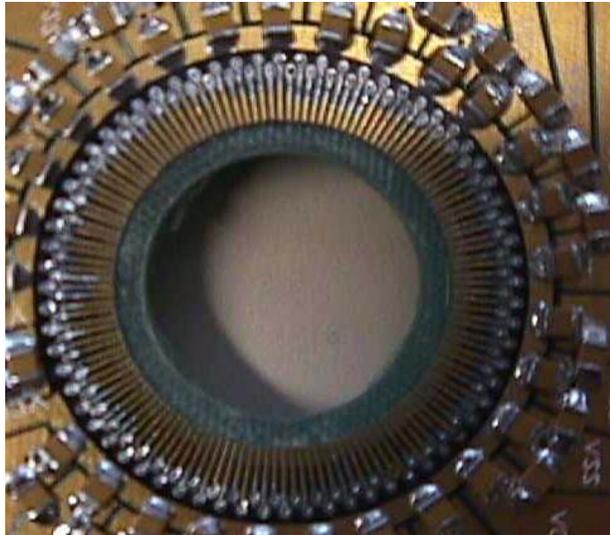
Once the probe array is unsoldered, the old probe array must be removed from the card. Most probe arrays are epoxied into place that the ring can usually be snapped out of the epoxy by prying it out with pliers or other tools to remove the ring. Be careful not to damage the PC mounting area for the probe array.



After the old probe array is removed, clean up the probe solder lands and clean the probe ring mounting area to insure that it is clean and flat and ready to receive the new probe array. Reflow the solder on the probe lands so they are ready for receive the new probes. Now is also a good time to perform a general visual inspection of the probe card and to give it a good cleaning.

Order your new probe array pre-sanded so that the probes are already sanded to the correct tip diameter and to a uniform probe to probe planarization.

Attach the new probe ring by placing the ring into a bed of "ring mount epoxy" that is mixed according to the manufacturer's specifications. If the probe card is not going to be subjected to high temperature, simple two part "5 minute" epoxy can be used. While the epoxy is still wet align the probe array by aligning over an alignment target on a probe card assembly machine or if a probe build station is not available perform a coarse alignment on a defective device. The objective is to reduce or eliminate any degree of theta error. Be sure to seat the ring fully on the card so that the replacement ring will be at the correct working depth. After theta alignment is complete, let the epoxy cure before handling the card.



The probes on the replacement array should line up with the probe lands to which they were originally soldered. If the probe array is not built on a radial pattern and is instead built in a tight "straight out" fashion, the probes tails will have to be fanned out over their respective probe lands before soldering the tips in place.

Please visit the Accuprobe Web Site  
[www.accuprobe.com](http://www.accuprobe.com)  
to access all other ProbeTips and other technical data.

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