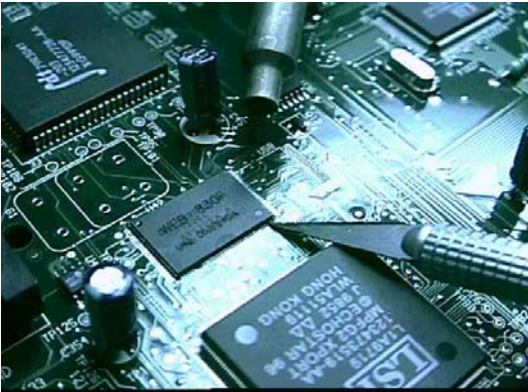
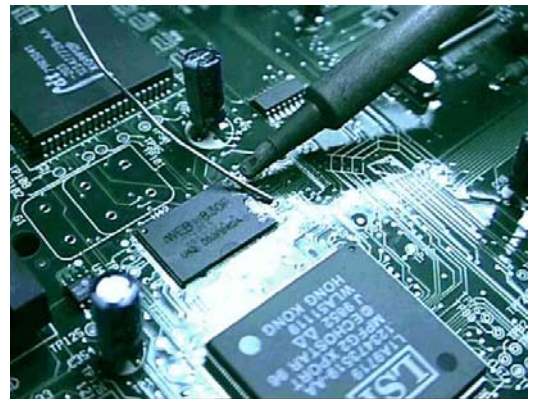
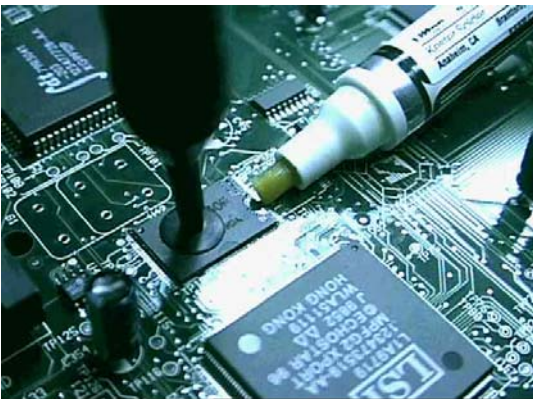


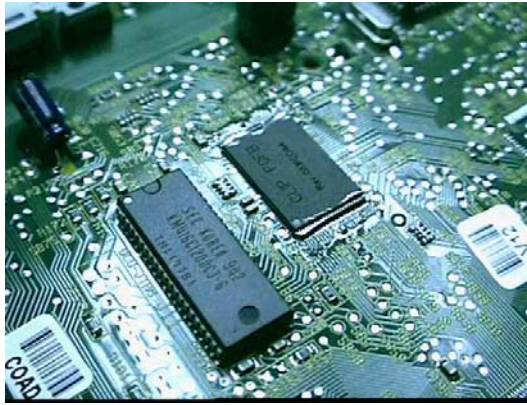
TSOP Chip Removal



The photographs above show a TSOP chip being removed from a satellite receiver with inexpensive hand tools. The heat source is a butane powered soldering torch producing hot air. This instrument is set to medium/high heat mode and is kept to within an inch of the pin area of the TSOP Flash Memory chip (Note: No flame is produced by this unit). An EXACTO blade is used to gently lift the chip away from the circuit board pads. It is important that the fragile pins on either side of the chip remain undistorted by this action. The correct shape of the pin array is essential to the re-installation of the device.

Pad Preparation & Chip Placement





PAD PREPARATION:

Prior to replacing the TSOP it is recommended that the main board pads be cleaned of old solder. Using flux from a syringe or pen (for example Kester #186) and de-soldering braid the pads should be restored to a clean flat surface. This will allow the array of pins on each side of the TSOP to sit flatly on the board.

CHIP PLACEMENT:

The vacuum hand tool viewed in the photograph may be used to manipulate and control the precise placement of the component. The chip should be placed such that the correct orientation is observed (dot on board with dot indentation on TSOP) and with the pins correctly aligned with their respective pads. The component should not be glued into place. A magnifying glass is recommended.

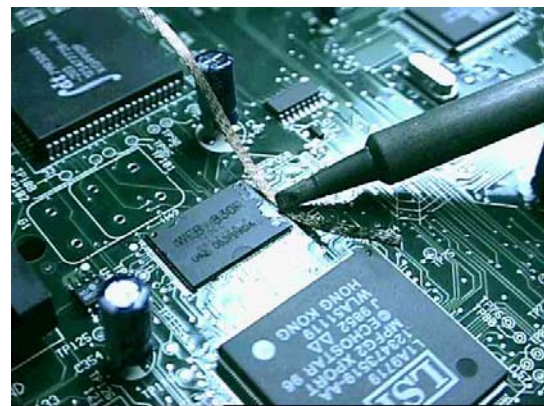
SECURING THE TSOP:

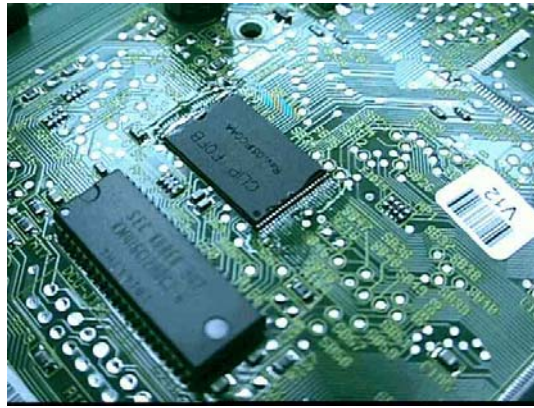
Flux should be liberally applied to the pad and pin area. A strand of rosin core solder should be placed near a corner of the TSOP. While holding the component in place with the vacuum tool in one hand, the other hand is free to direct a hot and wide soldering iron tip (for example 700 degree 3mm screwdriver tip) toward the solder strand. The particular objective being to tack the opposite corners of the chip with solder to hold the TSOP in place. It is perfectly acceptable to bridge the solder over several pins.

SOLDER BRIDGING THE PIN ARRAY:

A magnifying glass should be used to verify correct pin orientation and alignment. Hover the iron above a strand of solder directly above each row of pins and pads so that the molten product flows abundantly into the component footprint area. Bridge the solder completely across both rows of pins. Reapply flux to the area and reheat the pin and pad area. The bottom of the pins must receive an adequate supply of solder to ensure correct bonding.

Solder Bridging and Re-flowing





After the flux and solder have been heated and the molten product has been evenly dispersed in the footprint area, a bridge of solder is likely to be present across the two pin arrays. This, of course, was intentional at first but is no longer desirable. This excessive solder would destroy the circuitry if it was powered-up. The next objective, then, is to remove the solder bridge but leave the solder which has collected between the pins and pads.

In fact this is the 'trick' to this entire process.

Shorting some or all pins with solder and then removing the bridges with solder wick!

Using a generous application of flux (Kester #186) and a fresh length of de-soldering braid the excessive solder is removed leaving a perfectly attached TSOP.

To accomplish this, place a length of braid across the pin array. Gently touch the braid (solder wick) directly with the soldering iron tip (700 degree 3mm screwdriver). The solder will reflow at this point and become absorbed by the braid. Run the hot iron tip along the braid length so as to completely remove the solder bridge. It may be necessary to repeat this using fresh de-soldering braid. If solder-alloy breaks down and solder product remains, reapply fresh rosin core solder and repeat the flux/de-solder process. Care must be exercised not to damage the pins and the PC board pads. Do not 'push' the soldering tool and avoid excessive heat. This is a learned skill so practice is required.

Use a magnifying glass to inspect the pins for spittle, which may cause shorting or pin-to-pin bridging. It is prudent to clean the area with a flux remover. The cleaning fluid will evaporate but a clean absorbent cloth may help the process along.

When satisfied, a power-on test should be commenced. The unit should come to life as before. If nothing happens likely a pin or two is not making contact. If this is the case unplug the receiver and test the pins while looking through a magnifying glass and by using an EXACTO blade gently push each pin to confirm a soldered contact. As an alternative to this reflux the area and reapply solder. Bridge the area once again and use flux and de-soldering braid to remove the bridge. If required, repeat this process until all pins are correctly attached. THE TSOP PINS ARE VERY FRAGILE. SHOULD THEY BECOME DISTORTED AND CORRECTION BECOMES NECESSARY THEY MAY PROVE TO BE UNRELIABLE.

Once the unit comes to life when powered up it is wise to test board integrity. To do this press on the main board gently in the area around the TSOP. Often 'cold-soldering' causes the receiver to function intermittently.

Before mating the chassis to the cover it is wise to do a final and complete test by hooking the receiver to the dish and television monitor.

