



How to find a short circuit on a pcb

Each D&R PCB has a kind of short-circuit resistors in series with the power supply.

These sit on the edge of the PCB and have values between the 4E7 and 10 ohms in they are usually burned when there is a short circuit. A safe recovery procedure is as follows.

1. Replace these resistors temporarily by long-legged 47kOhm high resistors and put them on the PCB in order to be able to measure on both sides of the resistor.
2. Remove all ICs on the PCB off their feet and note where they have been.
3. Turn the power back on and measured on both sides of the temporary high-ohm resistor of 47kOhm, or other high value that is available, (to 100kOhm).
4. On the supply side (voltage supplied by the power supply) would be 18 volts positive and / or must be negative. On the PCB side slightly less.
5. If this is not the case, disconnect one of the 0.1 uf capacitors, which is annoying because there are many parallel. They sit around each IC and have a value of 0,1uf 35volt.
6. If the power stays away without even one IC is in the feet, remove decoupling capacitors one by one until the cause is found.
7. With a very sensitive volt meter, the resistance of the power supply trace can be measured to ground. Where this value is the lowest, there is the short circuit, locating in this way saves a lot of soldering work.
8. If the cause is found turn the power on and start putting back the first ICs and measure the supply voltage after each placement. You will see that the voltage slowly drops with each additional placed IC. But you know that there is no longer a short.
9. If you placed all IC's you will notice that the voltage behind the 47K resistance is close to zero.
10. Replace the temporarily soldered 47k (or 100K) by a 4E7 (or 10 Ohm) and measures whether the supply voltage is back behind that (fuse) resistor.
11. If that is the case you have found the cause of the short and can start testing the pcb if all functions are back.