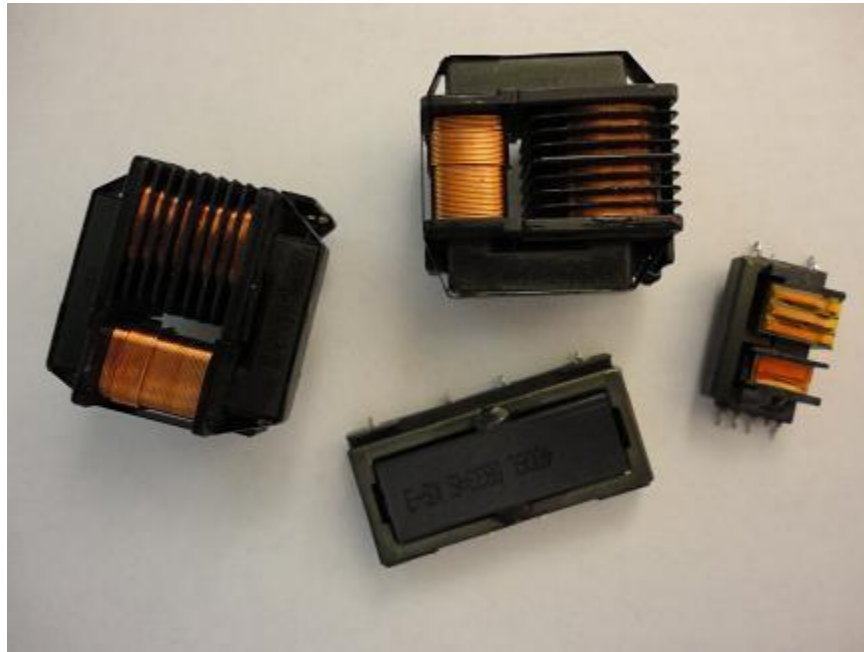
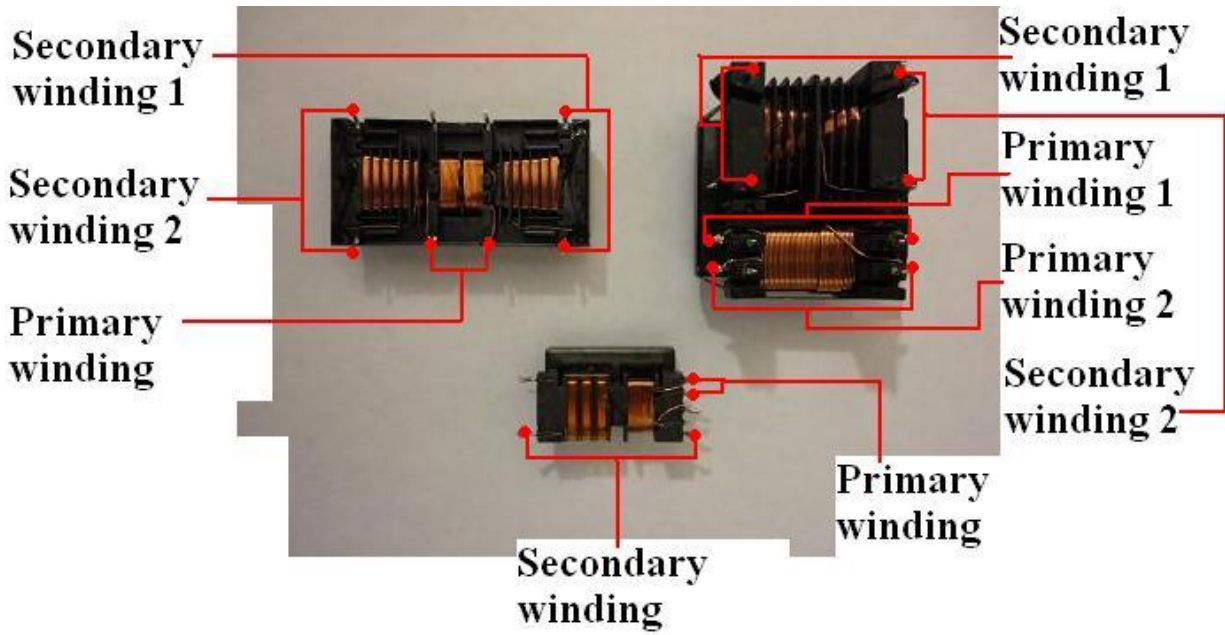


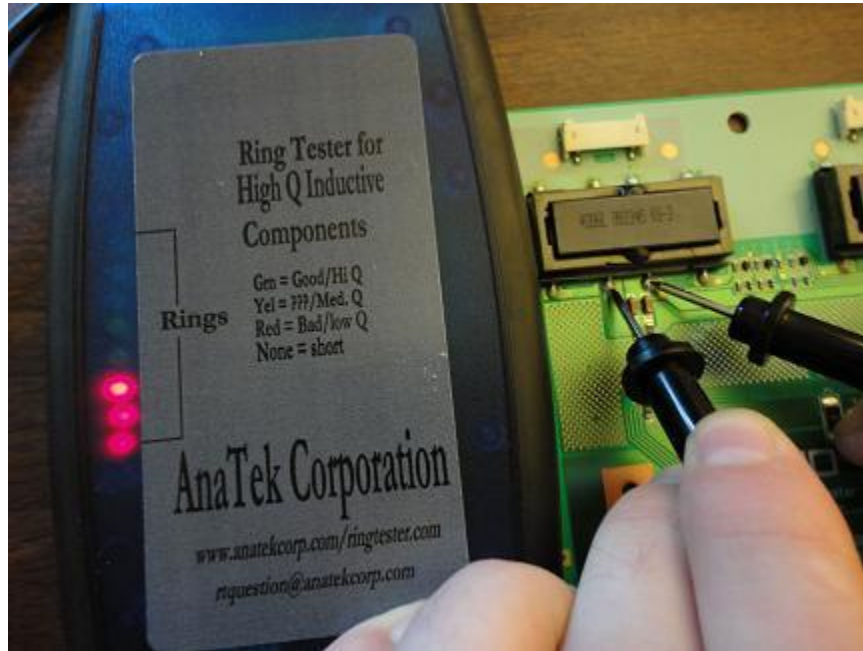
Testing HV Transformers from LCD TV inverter boards



In this Article I will show you how simple it is to check the HV(high voltage) transformers found in the majority of LCD TV inverter circuits. The first thing you will want to do is remove at least one of the HV transformers and verify which pins correspond to which windings.

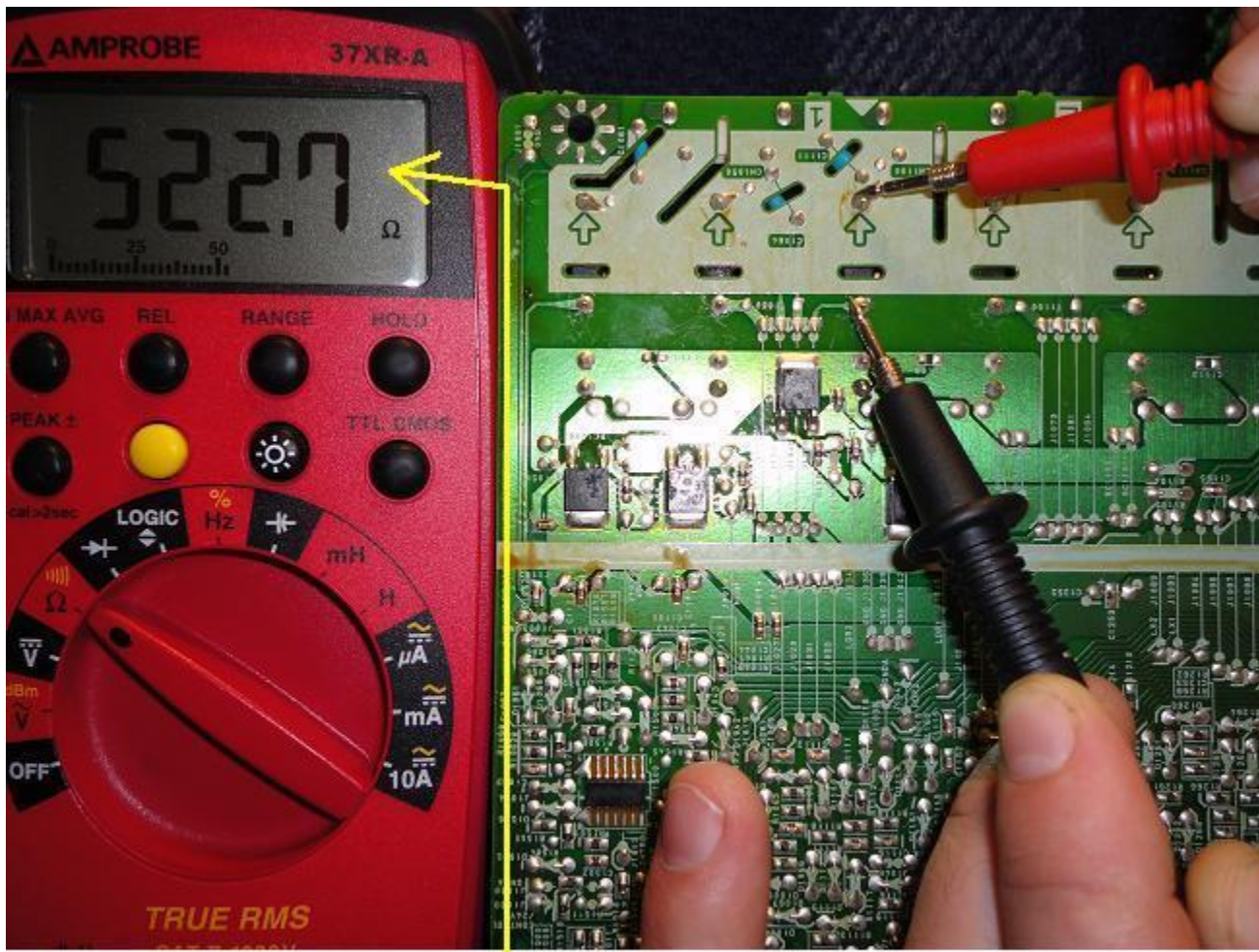


In the photos above you can see some of the different types of HV transformers you may encounter in LCD TVs depending on the inverter design and some of the various winding configurations. Once you have familiarized yourself with the HV transformers on the inverter board you are working on then you are ready to start testing. If you have a ring tester you can do a ring test on the primary windings of the HV transformers, most of the HV transformers in LCD TVs will light up 3-8 LEDs on the BLUE ring tester when checking the primary windings.

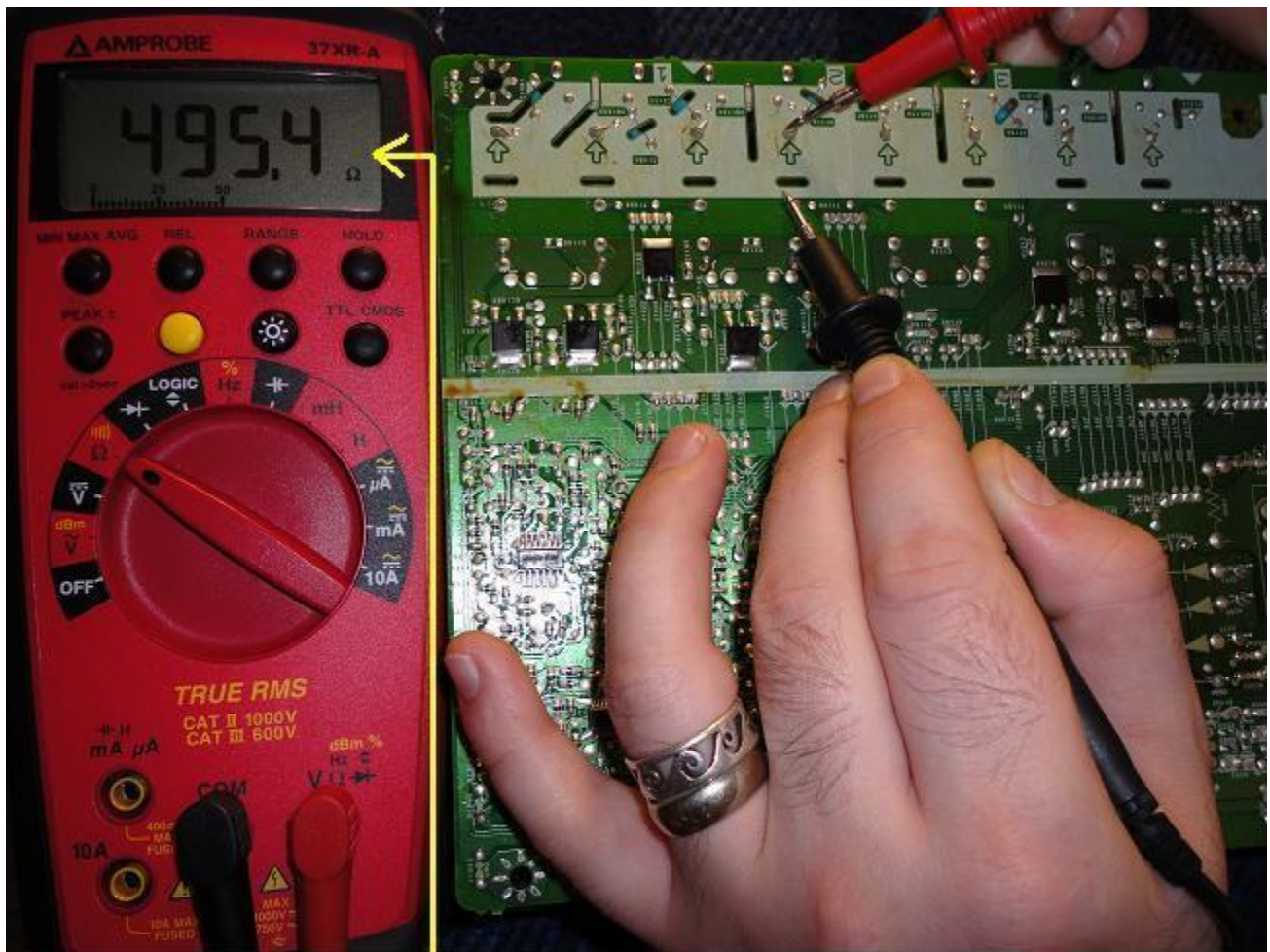


The great thing about testing the HV transformers is that there are typically multiple of the same transformer in the inverter circuit for you to compare test results against, so no matter how many rings for the primary winding is normal for the particular transformer you are testing there are multiple transformers to test and use for comparison and any that have test results that differ from the majority will be obvious. For instance if all the transformers primary windings display three rings(3 LEDs lit) but one displays none(no LEDs lit), the one that displays no rings most likely has shorted turns, if one was to give no response when measured(no change on the display, the first 1 or 2 LEDs blink continuously)than the primary winding may be open, verify with the resistance setting of your multimeter. A shorted or open primary winding is not very common with the HV transformers in LCD TVs but it is still a good idea to perform this test. Next you will want to test the secondary windings of the HV transformers. For testing the secondary windings you can also use the ring tester, but I prefer to use the resistance setting of my multimeter and compare the resistance values of the transformers secondary windings. The secondary windings have a high resistance typically 500-2k ohms depending on the design. When the resistance is low(around 500 ohms) the Q(quality factor, for an inductor= $X_L(\text{inductive reactance})/R_S(\text{series resistance})$) of the secondary winding will be higher and the ring tester will typically display around 4 or 5 rings and when the resistance of the secondary windings is higher(closer to 2k ohms)the Q will be much lower and the ring tester will usually not light up many LEDs typically only 1 or 2. Any secondary winding that gets less rings than the secondary windings of the other transformers in the inverter circuit, most likely has shorted turns and any that that give no response are most likely open. Always remove a questionable transformer from circuit and verify test results by testing the transformer again out of circuit.

Testing the secondary winding resistances of the HV transformers is very simple. Set your digital multimeter to the resistance setting and compare the resistances of all the transformers secondary windings. Any transformer secondary winding with an O.L. or infinite resistance reading is open and any that has a resistance that is significantly lower than the rest has shorted turns.

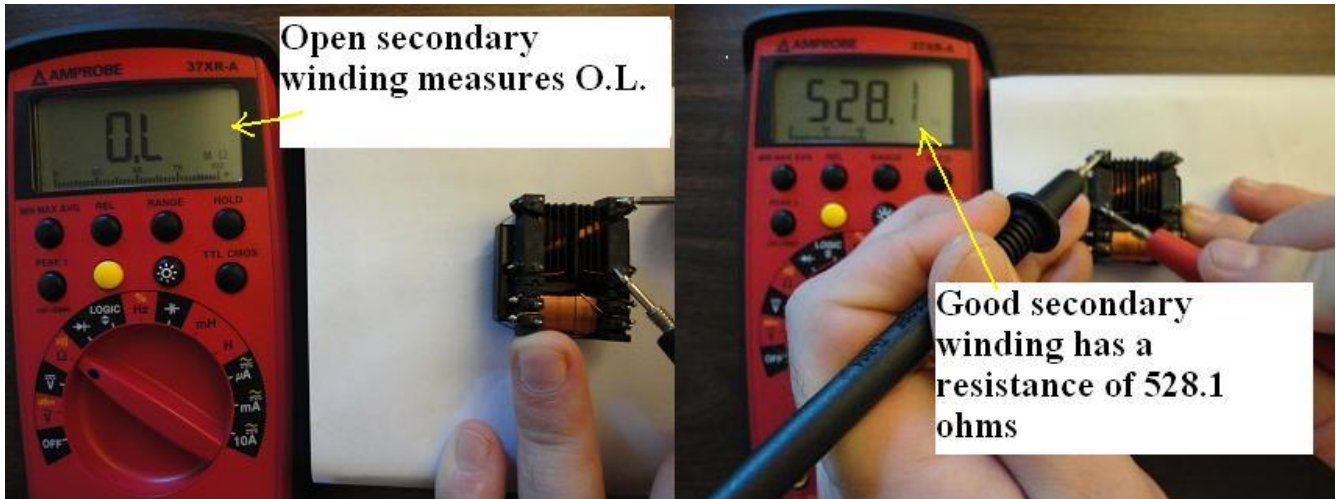


The resistance value of a good secondary winding is significantly higher than that of one with shorted turns



The resistance of a secondary winding with shorted turns is only 495.4 ohms

The previous two photos show test results on a particular HV transformer that had one shorted secondary winding.



This photo shows test results from a HV transformer that has one open secondary winding.

Hopefully this article has helped you to see the simplicity in testing HV transformers found in LCD TVs. If you have any questions about this article or any other electronics questions please don't hesitate to email me john@preher-tech.com and I will gladly help you with your questions.

The [BLUE ring tester](http://preher-tech.com) available at preher-tech.com
<http://preher-tech.com/ringtester.aspx>

The [BLUE ESR meter](http://preher-tech.com) available at preher-tech.com
<http://preher-tech.com/esr.aspx>

Replacement HV transformers:
http://store.lcdparts.net/Transformer_c_7.html

Tools and Test Equipment:
<http://preher-tech.com/toolsandtestequipment.aspx>

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