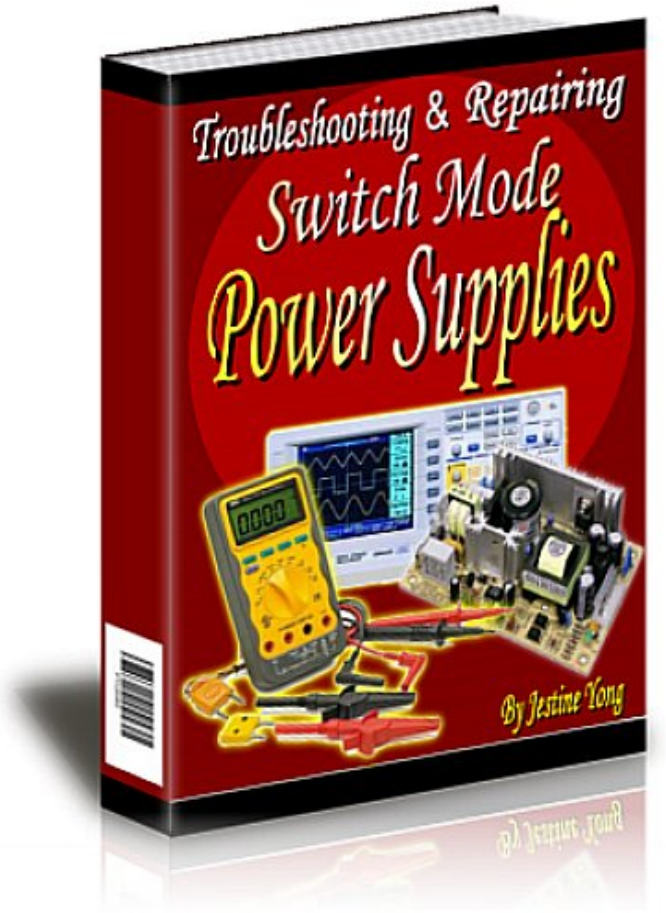
Troubleshooting & Repairing Switch Mode Power Supplies



Brought to you by Jestine Yong

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2) Identifying Electronic Components In Different Types Of SMPS With The Help Of Photos

I will expose to you different types of SMPS with the help of photos so that you can be familiar with the section and components used in SMPS. With the information provided in the photos, I'm sure you will be well prepared in troubleshooting and repairing SMPS in the future.

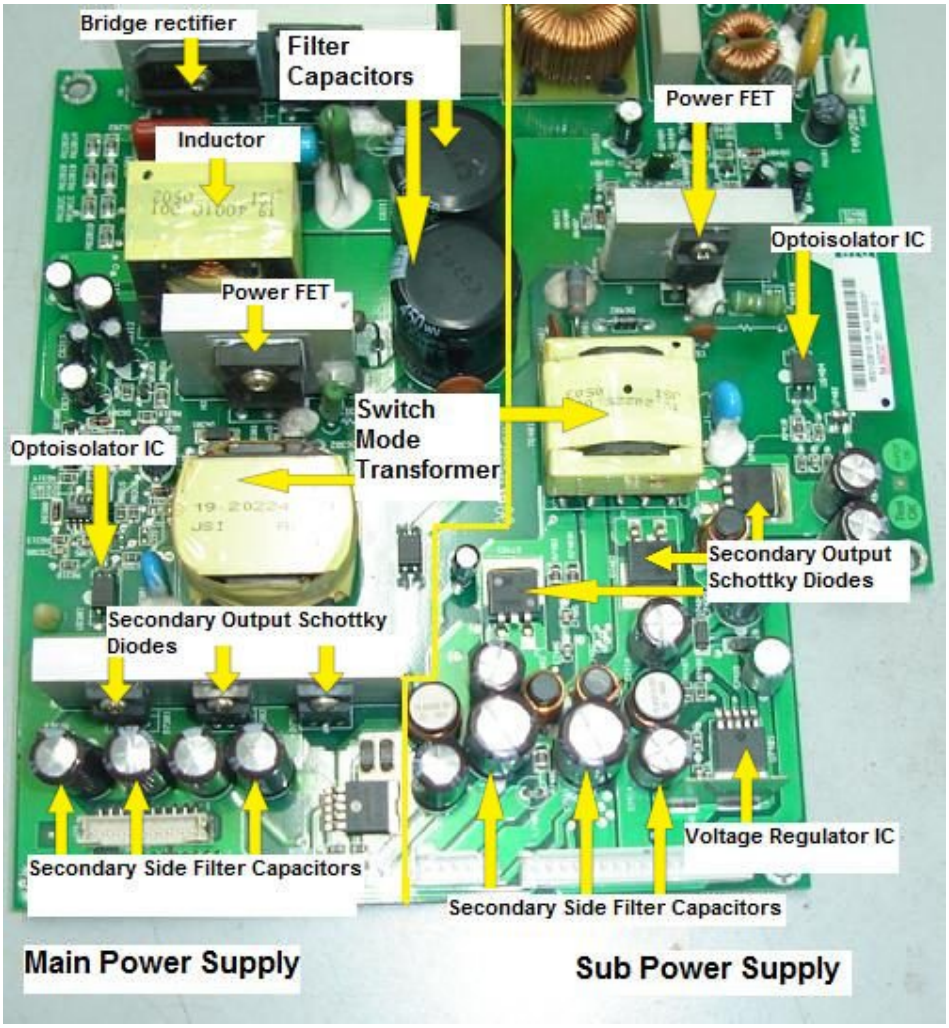

Figure 2.1- A Typical LCD TV SMPS

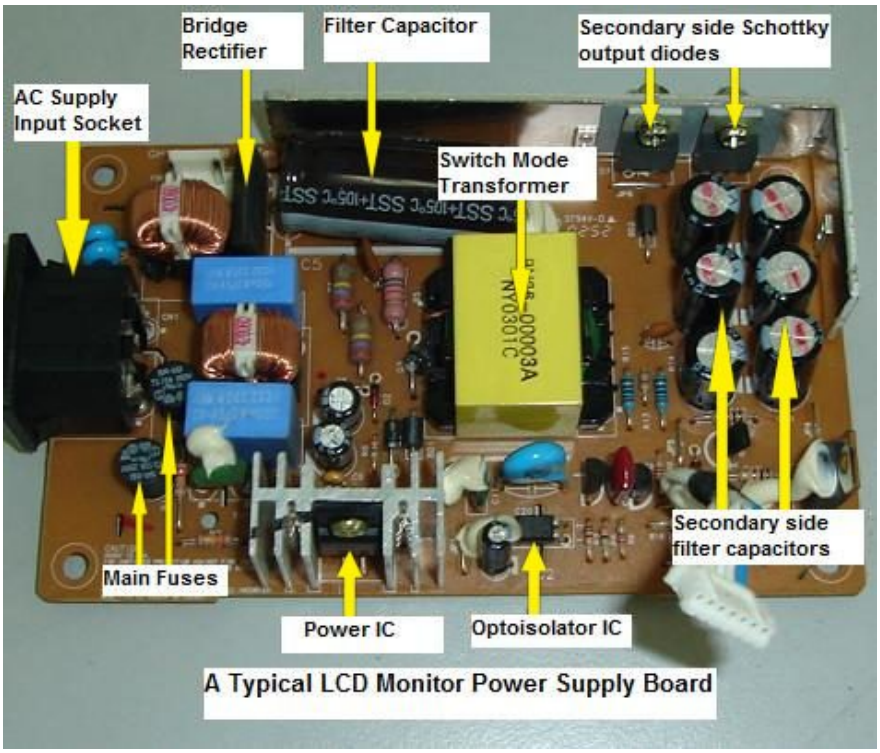

Figure 2.2- A 15" Samsung LCD Monitor SMPS

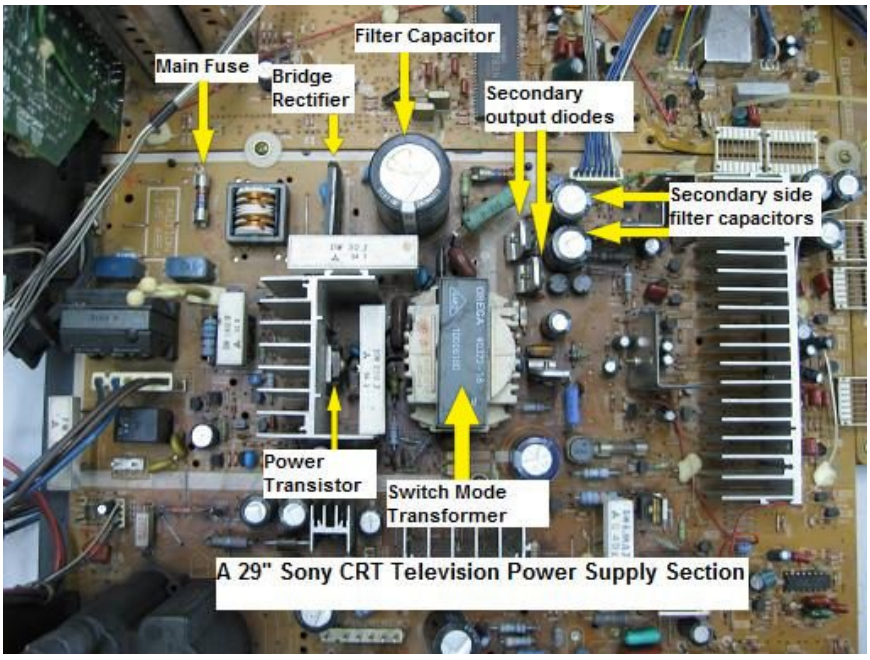

Figure 2.3- A 29" Sony CRT Television SMPS (Primary Side)

If you have seen all the photos, you will notice that almost all of the power supplies ……..

4.2) The Bridge Circuit

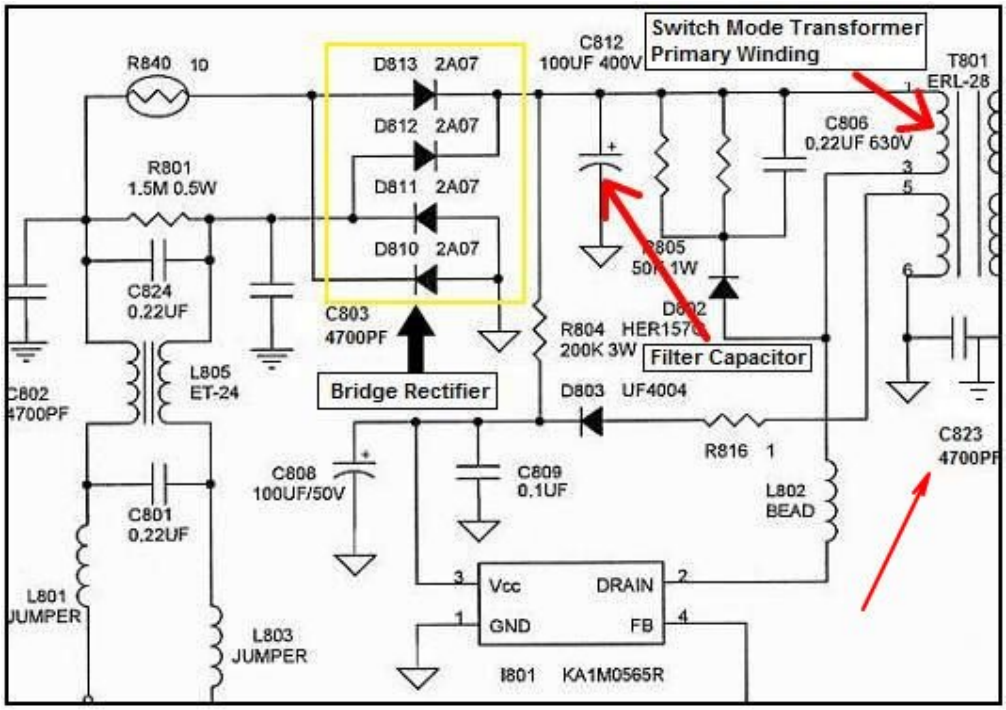

Figure 4.3- The Bridge circuit

The bridge circuit consists of a bridge rectifier (either 4 individual diodes or a single package rectifier) and a filter capacitor. The function of the bridge rectifier is to convert the incoming AC voltage into DC voltage and the filter capacitor (usually have the value of 220uf 400Volt) to remove the ripples and this will provide a nice DC voltage source to the primary winding of switch mode power transformer. For countries that use the 220 to 240 VAC, the DC voltage that you will get is about 300VDC and for countries that use 110-120VAC, the DC voltage that you will get is about 150 to 160 VDC. The DC voltage that you get is measured across the two pins of the filter capacitor using a multimeter. You may refer to chapter 11 on "**How to easily perform voltage testing on SMPS circuit**".

In some power supply design, you could see that there are capacitors connected across each diode in the bridge rectifier as seen from figure 4.4. The function of the capacitors is to suppress the RFI signals generated by the rectifier diodes.

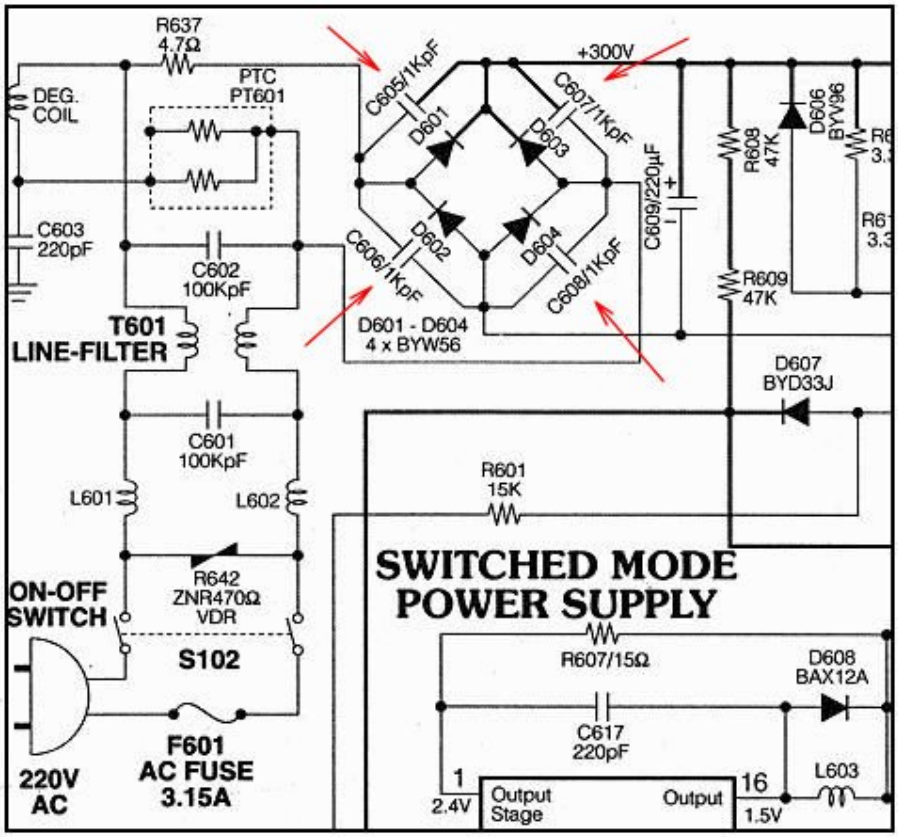

Figure 4.4- Capacitors Connected Across Each Diode In The Bridge Rectifier

If the bridge rectifier is shorted, then the .....

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2 Flickering Method

This method is used to find out whether the primary or the secondary section is the cause of the problem. Sometimes in SMPS repair, you just don't know where the problem lies. You might have checked many of the major components like power FET, secondary output diodes, Horizontal output transistor (HOT), FLYBACK, Yoke coils, B+ coils and etc and all seemed to be good. You need an absolute way to find out which section is actually given you the problem. Once you know which section is having problem then it will be easy for you to spend all your time on that section so that **you can easily nailed down the culprit.**

The first thing that you need to do is to follow the steps below:

1 Remove the SMPS transformer from the circuit (refer to figure 14.4)
2 Set the analogue multimeter to 50 VDC
3 Place the…….