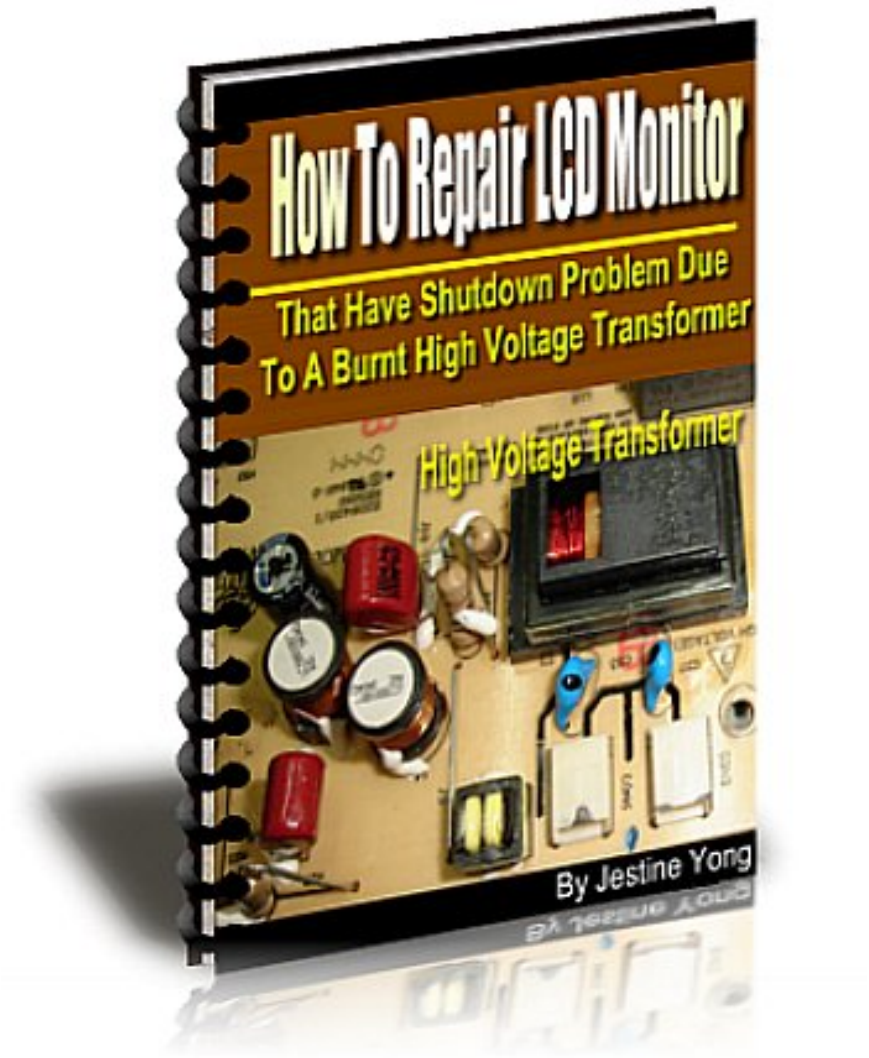
Bonus Report



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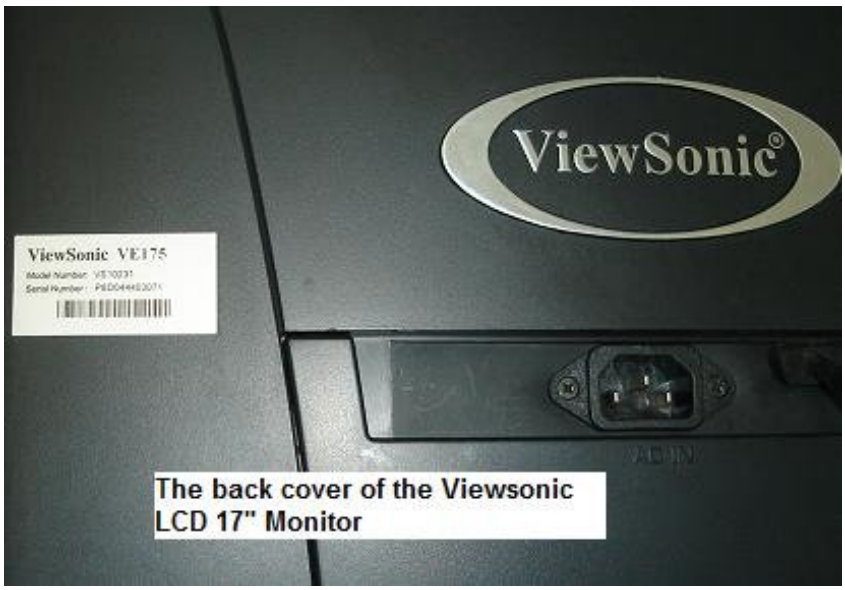
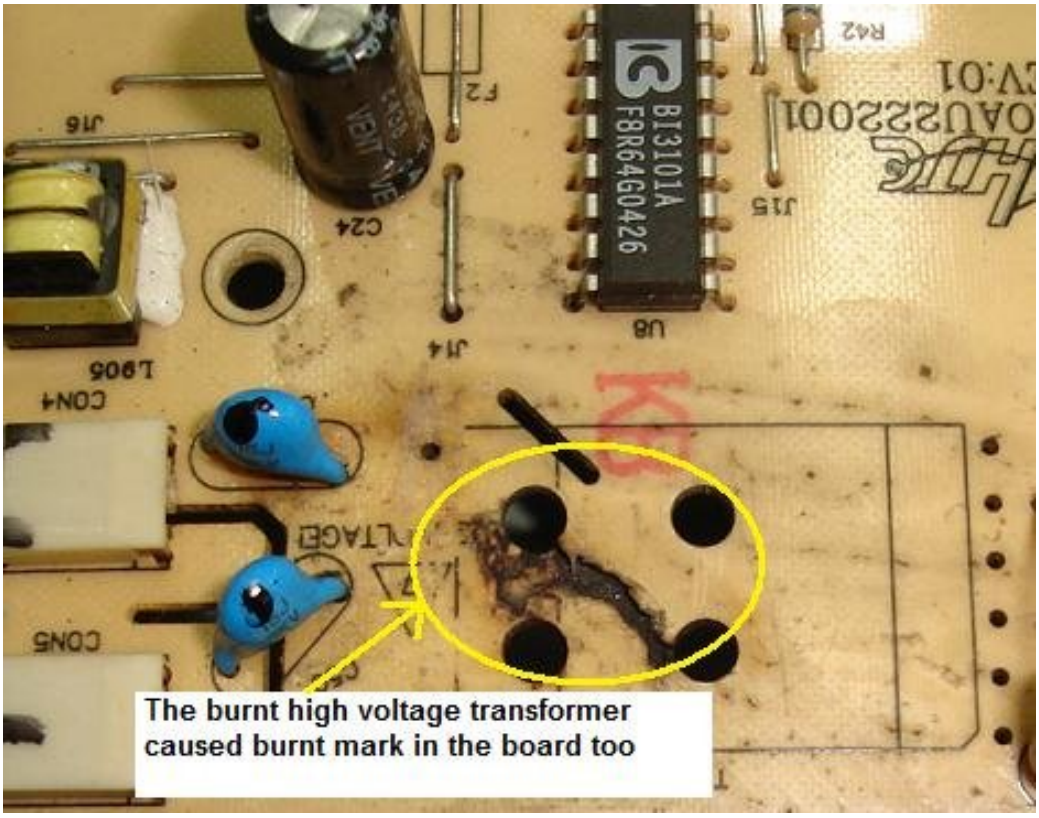
How To Repair LCD Monitor Shutdown Problem Due To A Burnt High Voltage Transformer



The complaint of this 17” LCD Monitor Viewsonic VE175 with the model of VS10231 was the display shutdown/cut off in less than few seconds. For your information, **display shutdown in LCD Monitor is very common** and mainly due to defective inverter circuit, high ESR capacitors in secondary side of power supply, bad Main board and also faulty lamp/backlight. In troubleshooting line, after guessing as which circuits or components are faulty we need to open the cover in order to find out and confirm the circuit is indeed faulty.

The moment the cover was removed, I saw some burnt mark at the side of the high voltage transformer. This high voltage transformer was part of the inverter circuit to power up the upper two lamps/backlights. Scanning the surrounding components didn’t reveal any other faulty components thus I conclude that it was only the burnt high voltage transformer that caused the display to shutdown.

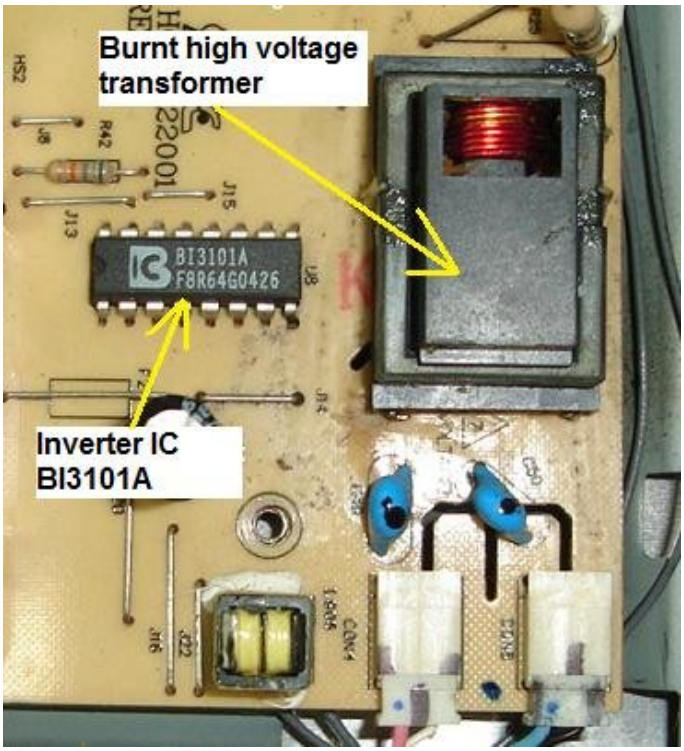

The power/inverter board of
Viewsonic VE175 17" LCD Monitor


BI3101A
F8R64G0426
The burnt high voltage transformer
caused burnt mark in the board too

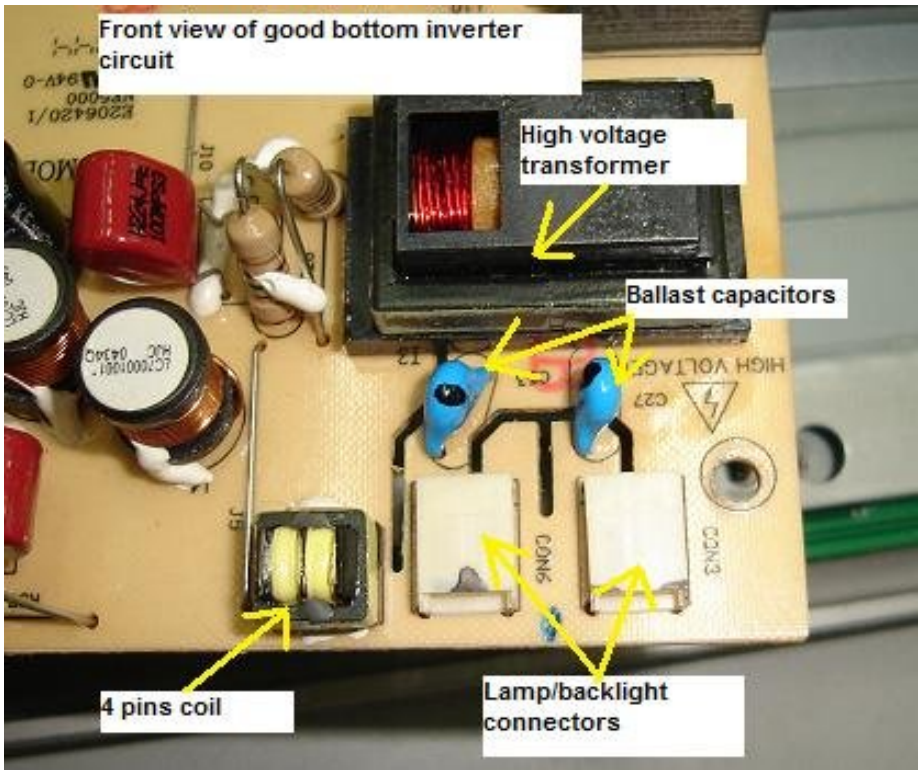
You could see the secondary winding have some burnt mark on it and when I checked with an ohmmeter, the winding shows open circuit. Not only the winding have burnt mark, it burnt the circuit board too as you can see it from the previous page photo. It is difficult to rewind this secondary winding as the wire diameter is as thin as our hair and it consist lots of loops (turns). The high voltage winding turns were done in the factory by machine and have a great precision in terms of the inductance value.

That means if the original winding have 1000 turns, after you had removed the burnt winding and try to rewind back with a good wire by hands, the most turns you can get is about may be 500 to 600 turns. Due to less winding in the transformer you would not get the desire inductance value and the inverter will shutdown. Time will be wasted and at the end you still can't repaired the LCD Monitor. The high voltage transformer also difficult to get from the market and even if you can get one the price would be very high and will eat up your profit margin. Why not think of some other ways on how to solve this kind of problem?

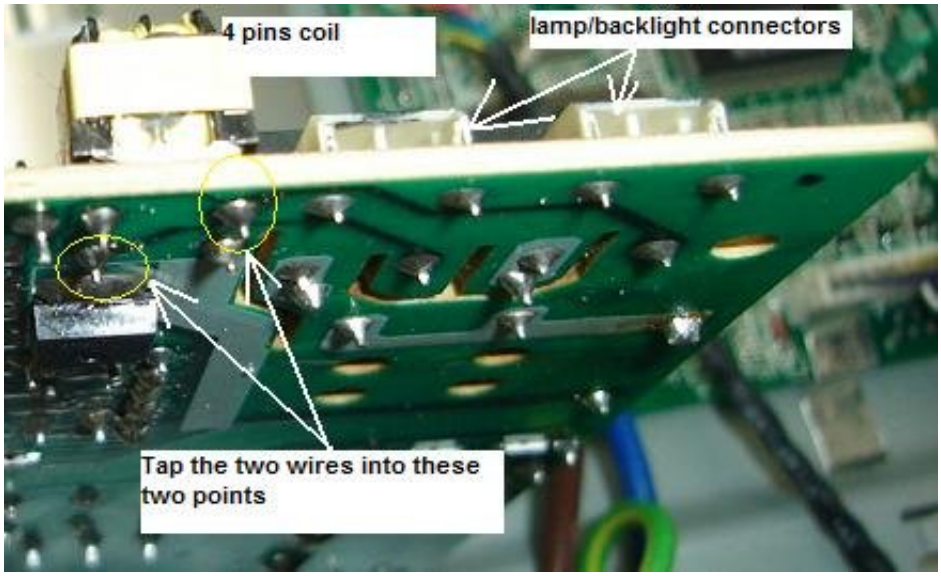
Here in this bonus report I will show you how you can do some modification so that the LCD Monitor will not shutdown anymore and at the same time still producing bright display. Let's begin!

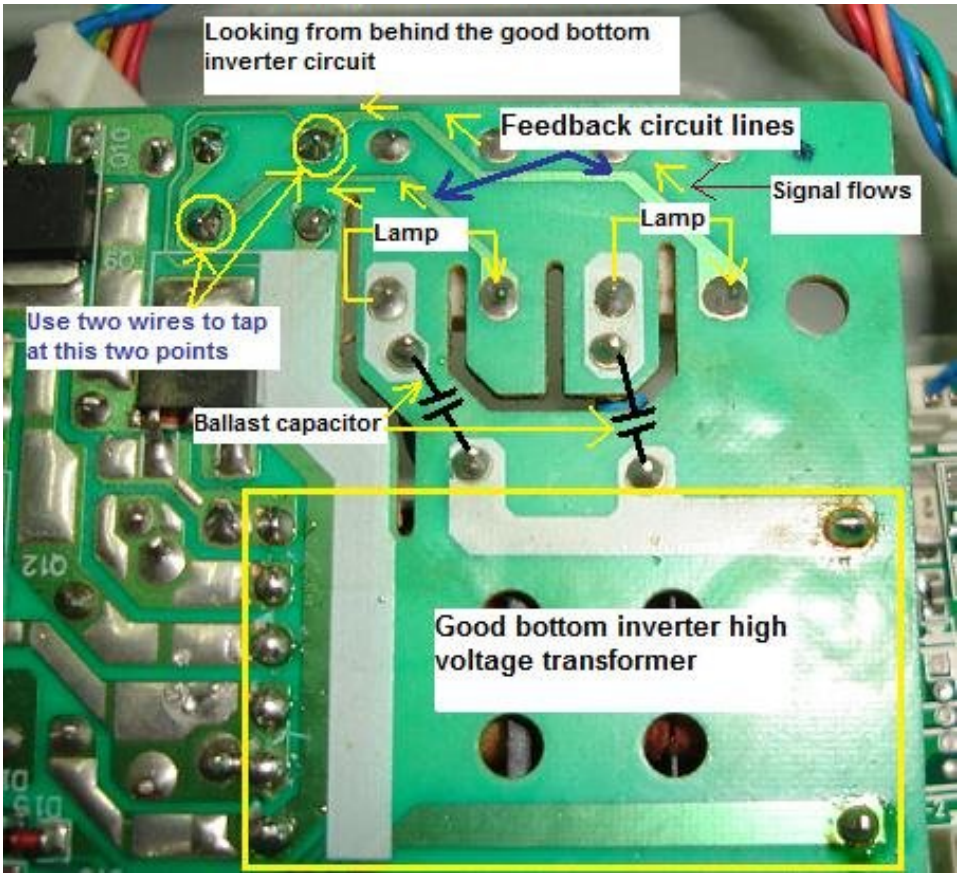


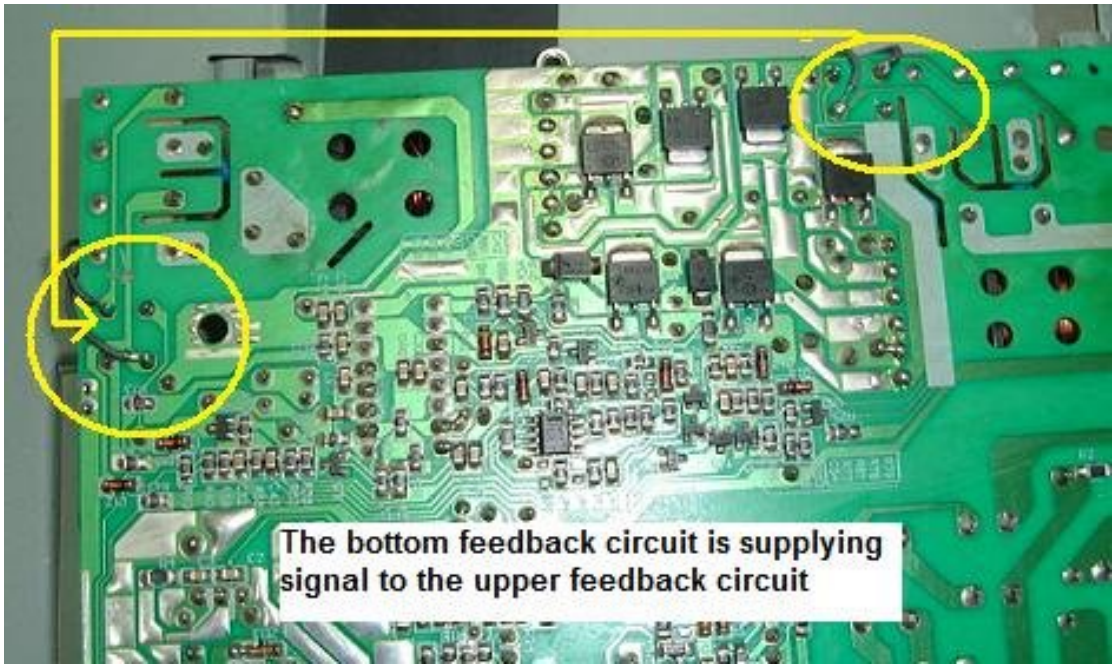
In this LCD Monitor design, the inverter board have two separate circuits; one is to control the bottom lamps while the other is for the upper lamps. Each circuit consists of a high voltage transformer to drive two separate lamps, two ballast capacitors and a feedback circuit. The function of the feedback circuit is to send signal back to the inverter IC (BI1301A) to shutdown the generator in the IC itself from producing output if the lamps are **weak (reddish), flicker or burnt out.** As mentioned above I saw the upper lamp high voltage transformer burnt (open transformer winding) causing no signal send to the inverter IC thus the IC shut itself off and the display shutdown. In other words the inverter IC need both feedback signal for continuous operation and if either one of the feedback signal missing, the IC will shutdown.

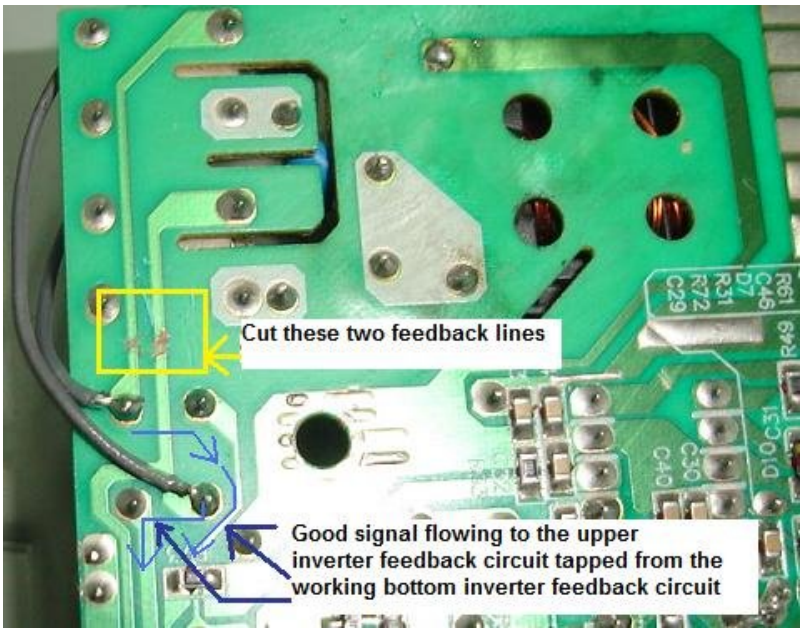


Now to successfully modify this circuit one needs to truly understand how this feedback circuit is connected so that you will know at where you can tap the good feedback signal. Carefully tap the two good feedback signals from the bottom lamp circuit and connect it to the upper lamp feedback circuit. Since the upper lamp feedback circuit is not working anymore (due to the open secondary winding), I just cut off both tracks to prevent signals from the good bottom lamp circuit to flows into it-see all the photos in the next page.


4 pins coil
lamp/backlight connectors
Tap the two wires into these two points


Looking from behind the good bottom inverter circuit
Feedback circuit lines
Signal flows
Lamp
Lamp
Use two wires to tap at this two points
Ballast capacitor
Good bottom inverter high voltage transformer

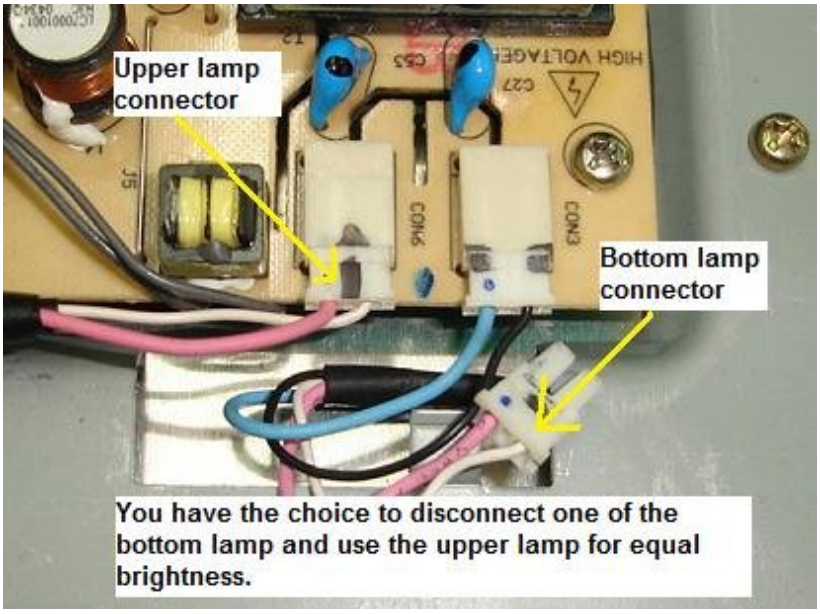




Once you have tapped the two feedback signals, it is time for you to switch “ON” the Monitor. Yes, it worked perfectly good without the display shutting down due to now there are feedback signals (which were tapped from the bottom lamp feedback circuit) flowing to the inverter IC. Even if the upper (top) lamps disabled (not connected) the inverter circuit is still functioning!

You may ask, what about the brightness in the top part of the LCD Monitor? Would it be slightly dim since the upper lamps have been disabled? The answer to you is the brightness remain still bright due to the **light guide plate** (refer to my book at page 59) played the role of **uniformly distribute light** from the backlights (bottom lamps). This same principle applies to some notebook that used only one lamp (usually located at the bottom) and yet the display is still looked bright! Assuming if the display dim a little bit, you can always increase the brightness by adjusting the brightness and contrast control through the On Screen Display (OSD) setting.

You have another option which is you can use one of the top lamp/backlight (make the wires longer) and connect it to the bottom connector. Yes of course you must remove one of the bottom lamps first. **With one lamp functioning at the bottom and one lamp at the top, there would be a balance in the brightness!**



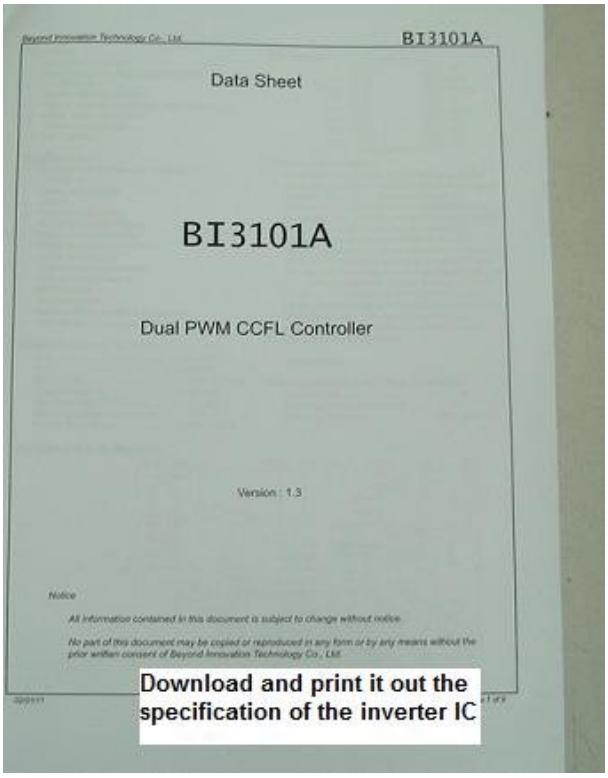
Note: I do not encourage you to modify the circuit with one high voltage transformer to power up four lamps (top and bottom) as this will overload the transformer and the related circuit.

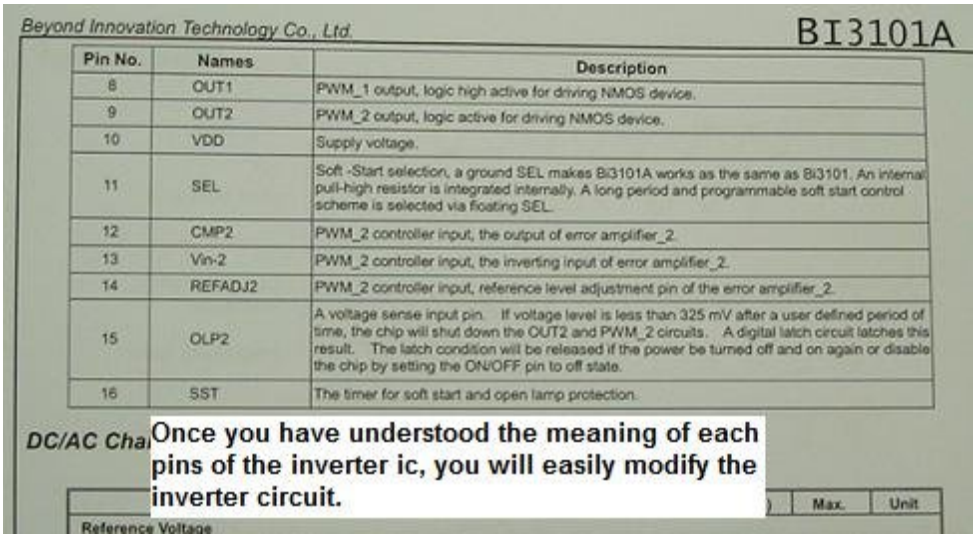
The advantage of this modification is that you have two additional unused lamps. That means in the future if the same LCD Monitor one of the lamp have problem, you can always use another spare lamp!

Important: This method of modification is just a guide to show you there is a possible way to solve shutdown problem due to a burnt high voltage transformer. The fact is that not all LCD Monitors in the market have the same design thus you must analyse the feedback circuit on your own in the particular LCD Monitor that you are repairing.

Refer back to my article again so that you will know at which points that you can tap the feedback signal and make the defective LCD Monitor work again.

Another way you can bypass the feedback circuit so that the inverter IC won't shutdown is to disable the feedback pins in the inverter IC. That means after you have disabled the feedback pins even though the lamps already weak, worn out or flicker the high voltage transformer would still energized. I personally do not encourage you to use this way to solve the display shutdown problem. Just imagine one of the backlight have problem and about to **burn** and the feedback circuit don't function anymore (due to you already disabled the feedback pins in the inverter IC), the high voltage transformer continue to energize and this **may cause fire** in the Monitor-so don't ever take this risk.





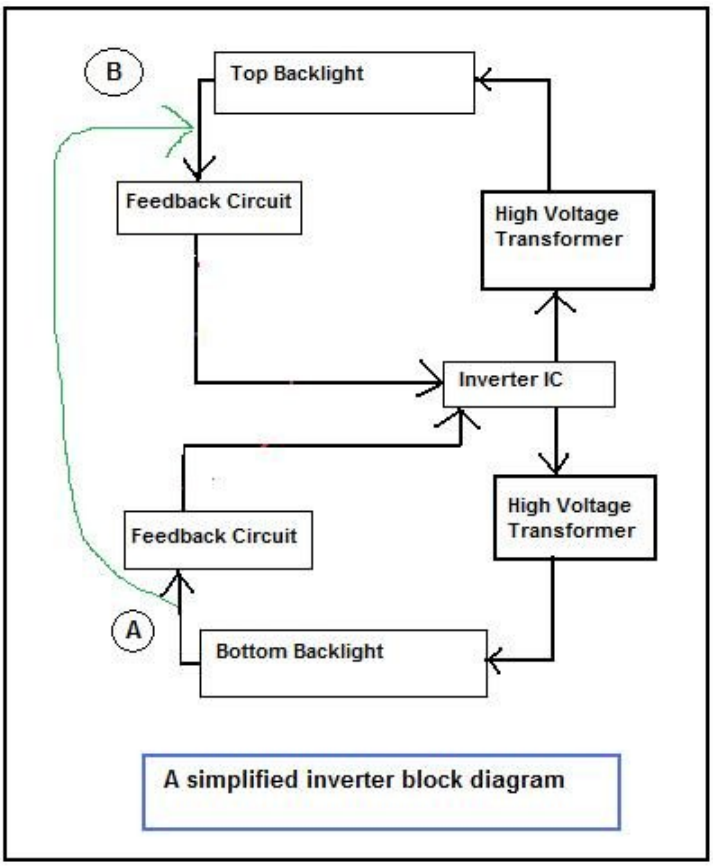
By downloading the inverter IC specification from the internet, you can clearly see as which pins is the feedback pins. From the information that I got for inverter IC BI1301A, pin 2 and pin 15 are the feedback pins (voltage sense input). If you disable both pins the LCD Monitor will not shutdown anymore. The reason I explain to you about this tip is to tell you that there is a possible way to disable the feedback circuit in the inverter IC. **PLEASE DO NOT USE THIS METHOD TO MODIFY THE DISPLAY SHUTDOWN PROBLEM.**

Conclusion-Take your time to find out the feedback signal pins so that you can modify any kind of LCD Monitor brand in the market. Do not uses short cut (by removing the feedback pins in the inverter IC) as this may cause fire to the LCD Monitor. Lastly, thanks for buying my LCD Monitor Repair EBook-have a great day!

Important Note: Many electronic repairers are facing LCD Monitor shutdown problem (display appears for few seconds and then shut down) and they can't confirm whether the backlight is faulty or the inverter board itself that have problem. They do not have any similar backlight for comparison thus making them have some difficulty to find out as to which parts that had caused the display to shut down after few seconds. Using the tips that I have explained in this report, you can actually determine which section is faulty. Let's begin!

In order to confirm if both the top and the bottom backlights are okay, you have to tap the feedback signal either from the top or from the bottom backlight circuit. Let's **disable the top back light** by disconnecting it from the backlight connector. If you power "On" now the LCD Monitor will definitely shutdown due to no feedback signal from the top backlight to the inverter IC. Now, connect a wire from point A to point B as shown in the diagram below where point A will supply a feedback signal from the bottom backlight to point B thus reaching the Inverter IC.

This configuration is like creating a dummy feedback signal to the Inverter IC so that it won't shutdown. **If after you have fixed the circuit as below and the LCD Monitor never go into shutdown, this clearly indicates that the backlight have problem.** Assuming after you have fixed the circuit below and the LCD Monitor still shutdown don't suspect the inverter circuit fault first until you have confirmed that you have done the similar test to the bottom backlight (disable the bottom backlight and connect the wire from point B to point A).



I know that it is a bit confusing about this configuration but once you have understood how this circuit work, you then can know whether the LCD Monitor display shutdown problem is caused by a faulty backlight or the inverter circuit itself.