

I'm not robot!

Updated: January 1, 2022 Home » Firmware and Software ReviewsThe first thing you do when you purchase a new smartphone, laptop or LCD TV monitor is to check for dead pixels. More often than not, if you purchase a branded product such as Dell Monitor or Asus Laptop or Samsung Smartphone, you are guaranteed a 1 for 1 exchange during the warranty period. This cannot be said if the said item is of generic brand. Without further ado, here are 6 free tools to detect and fix dead or stuck pixels. ☹️ ☹️ ☹️ 10 Free Screen Capturing Tools For Windows, Mac & LinuxStuck (Fixable) vs. Dead Pixels (Not Fixable)A stuck pixel is a bright dot of colour that fails to update when neighbouring pixels change. Stuck pixels are most noticeable when the rest of the screen is black. Stuck pixels are different from dead pixels. A stuck pixel is a single color – red, green, or blue – all of the time. A dead pixel is black instead. While it's often possible to "unstuck" a stuck pixel, it's much less likely that a dead pixel will be fixed. While a dead pixel may simply be stuck at black, it's possible that the pixel isn't receiving power at all. A faulty pixel displaying the color white all of the time is known as a "hot pixel." 1 01 – DeadPix [ Fixer ] | Windows | Android DeadPix is an application that can help you fix pixels that are stuck on your screen. You can download the installer or download the portable version below. It's also completely free! It can fix stuck pixels by rapidly cycling the color value of the stuck pixel. Please note that this tool does not provide a 100% success rate. 1 02 – PixelHealer [ Fixer ] | WindowsTry to fix dead, stuck or hot pixels by yourself, before running back to the store! PixelHealer uses the already tested concept that flashing RGB colors over a dead or stuck pixel will revive it. PixelHealer can help you try to fix dead pixels by yourself, before running back to the store! You can use it to fix dead, stuck or hot pixels on LCD or TFT screens, on desktop monitors, laptops or tablets.First of all, use our own free InjuredPixels portable app to check your screen or tablet for dead, stuck or hot pixels. Then, download and run PixelHealer without installation, cover the dead pixel with the colored repair window, and click Start Flashing. PixelHealer uses the already tested concept that flashing RGB colors over a dead or stuck pixel will revive it. So let the repair window run for a while, then check to see if the dead pixel has been fixed or revived. And repeat the process if necessary.Continue Reading 4 Free Boot Managers - Dual Boot Windows And LinuxPixelHealer has an intuitive interface and it is very easy to use. Use the mouse or your finger to move or resize the repair window. Open the intuitive Settings window to change the flashing colors, the flashing interval, or to automatically close the app after a certain period of time. 1 03 – InjuredPixels [ Detector ] | WindowsInjuredPixels allows you to easily check for defective (hot, dead or stuck) pixels on LCD monitors. InjuredPixels can be used to test a new LCD monitor before purchasing, or an already purchased monitor during the warranty period (as you may get a replacement according to the manufacturer's dead pixel policy). InjuredPixels fills the entire screen with a primary or custom color, allowing you to inspect the screen for pixels that do not match the selected color.The program is easy to use: click or use the arrow keys to cycle through colors or right-click to get the menu with the main commands. InjuredPixels can be run directly without having to install it on your computer; just download the portable version and run. 1 04 – JScreenFix [ Fixer ] | All HTML5 BrowsersThe JSscreenFix pixel fixing algorithm has been applied to over four million screens and is the most effective software solution available for repairing defective pixels. JSscreenFix is a web app that's very similar to PixelHealer, except that you don't need to download anything to use it. That makes it suitable for a wide variety of platforms, and it's notably the best solution for iOS and Mac devices at the moment. Works great on Microsoft's Windows 10 and Apple's macOS.Fixes most screens – Suitable for LCD and OLED. >60% success rate.No install – Nothing to install. Uses HTML5 and JavaScript in your web browser. 1 05 – LCD DeadPixel Test [ Detector ] | All BrowsersThis is a simple test designed to make it easier to detect LCD "dead pixels" (pixels that are either stuck-ON or stuck-OFF) by displaying a series of solid background color pages for contrast. 1 06 – Dead Stuck Pixel Screen Fix [ Fixer ] | All BrowsersHave dead or stuck pixels on your laptop screen or retina display? Keep replaying this video until the dead pixel or stuck pixel has been repaired/unstuck. This video fixed the stuck pixels on my MacBook Pro's Retina display (UHD 4K). Though he warned it can take hours depending on the pixel.If this method doesn't work for you, Google the pen tip pixel method or contact the manufacturer of your display. This video should also work on smartphones, iPhone, iPad and tablets! Seizure warning – Do not watch the screen! Turn the screen away from you if possible and allow the video to run to the end, repeat the video if necessary. 1 07 – Fix Dead Pixel Test [ Fixer ] | All BrowsersPixel combines two methods, "pix" (picture) and "el" (elements). Pixels can be referred to as "dots" or squares, and these are the basic building blocks of a digital image. When lots of these tiny dots/squares are put together, they form a digital image. Every single pixel has three sub-pixels in red, green, and blue color. Transistors carry electric current to the sub-pixels; this current is why the change of color changes in pixels.Pixels compose the images displayed on the computer screen, television, laptop, video games, smartphones, and the list goes on. A pixel is the smallest controllable element of an image or display that a computer can print or display. 1 08 – Dead Pixel Buddy [ Discontinued ] | All BrowsersThe way the app works is quite simple: it basically fills the screen with the color selected by you, thus making any dead or stuck pixel clearly visible. It is recommended to experiment with several colors, as you might not notice the broken pixels from the first attempt – you can go with one of the default colors (black, white, red, green or blue) or you can specify a custom one. You can also set Dead Pixel Buddy to automatically switch between colors as often as you like – just modify the Time Cycle value and you are set. We believe everything in the internet must be free. So this tool was designed for free download documents from the internet. We are not associated with any website in anyway. We are not responsible for the content. You are self-responsible for your download. Lcd monitor repair pdf Most common questions have been asked by Lcd Monitor repairers / technicians regarding the basic step by step Lcd monitor repair guide. The questions sound like the following. No much lcd monitor repair book or Lcd Monitor Repair Pdf has compiled these questions. 1) how repair lcd monitor with no power problem, 2) how trouble shoot lcd monitor with LED power blink problem, 3) have display but then shutdown problem on lcd monitor, 4) how to solve intermittent no power problem for lcd monitor, 5) how to fix discolor lcd screen problem, 6) how lcd monitor problem white lcd screen, 7) how trouble shoot vertical bars lines for lcd monitor, 8 ) how to solve single horizontal line on lcd monitor, 9) how to fix lcd monitor dim display problem, 10) how fix white & black horizontal bar across your lcd monitor and many questions kept going on ... The rule of thumb of repairing faulty lcd monitors is to study, understand and remember the working principle of the lcd monitor circuits. Study the lcd monitor block diagram and lcd monitor architecture, which consists of a power supply board, main board, inverter board, backlight / cold cathode fluorescent tube circuit, lcd panel and etc. For example, when a lcd monitor has no power problem, you will trouble shoot the power supply board directly. You won't check other circuit boards. However, if you don't understand the function of circuit boards, you will waste time and energy to fault finding on lcd monitor. Learn your knowledge on studying the lcd monitor schematic, go deeper to the power supply board, you will find the switch mode power supply ( smps ). S.M.P.S. is a 50/60Hz mains input supply, rectifies the ac supply first, and then the input reservoir capacitor filters to produce a rough dc input voltage. Due to variations in the main input supply, the dc level will fluctuate widely and feed the unregulated dc directly to the high frequency power switching section which is the central block of the s.m.p.s. In this section consists of fast switching on and off power semiconductor devices, such as MOSFETs and Bipolar transistors and switch the input voltage across the primary of the power transformer. The driven pulses are usually 20kHz to 200kHz with variable duty cycle. In the transformer secondary will generate a voltage pulse train with varying magnitude and duty ratio. This voltage pulse train will be rectified appropriately, and then smoothed by the output filter ( inductor / capacitor ). Finally, the clean dc voltages will be distributed to all sections of the main board, inverter board, starting circuit, backlight / cold cathode fluorescent tube circuit, lcd panel and etc. Now, you got the idea of the lcd monitor repair with mastering the working principle of lcd monitor circuits. fix lcd no power problem philips 170B systematically A customer put a 17" lcd monitor in my PC repair shop last weekend. The indication of the monitor is no power and blank screen even though the external power supply is plugged in. After I have listened to his words, I do a quick test on the monitor in front of him to double-check the problem. Exactly, the monitor has no led power lit when switch on the power supply. He requests me to repair the monitor as soon as possible because this monitor brings him lots of winning on stock trading. He wishes to use the same setting so that he can win the trade in the stock market. I reply to him confidently that he will be able to receive his monitor next 2 days or early. Then, he walks away happily. how to analyze and repair LCD monitor no power in simple and quick way Why am I having such confident promising customer? Because, I have similar experience on the same model of the monitor and good understanding of circuit operation especially on the switching mode power supply. There is a systematical method I will tell you right here on how to analyze and repair LCD monitor no power in simple and quick way. Is the fuse blown? Immediately, I unscrew the outer and inner covers of LCD monitor. Please ensure no power connected to the monitor. The first place to be checked is on the power supply board. I measure the continuity of the fuse 1103 and 9101. Both of them are in good resistance. After that, I inspect all capacitors, resistors, inductors, diodes and ICs are in good shape. For a quick test, I plug in the power cord and switch on the monitor to do the voltage testing. I use the voltmeter to measure the 12 Vdc output of the secondary transformer 5103. Guess what do I find out? No DC voltage is measured right here. This means the primary section of transformer is not functioning which there is no pulse in provided by the power IC 7101 to the transistor 7102 and followed by the rapid switching of the transistor to induce the transformer 5103 in normal operating condition. This rapid switching of transistor 7102 will produce a stable voltage to Main Controller and other circuits, is rectified and filtered by the diode 1115 and capacitors 2116/2117 on the secondary side of the transformer 5103. I guess a high probability fault on primary circuit of power supply board. Download the guide on the theory of the switched mode power supply for your reference. Click here Guide on the theory of Switched Mode Power Supply. Now, I will check two important voltage test points on the primary circuit which are the big filtered capacitor 2106 and Power IC 7101, pin 1. I got reading 30V volts on 2106 in good condition but the input voltage to IC 7101 pin 1 is 6 volts only. In normal operating condition of IC 7101, the input voltage must be at least 11 Volts or above to start up and oscillate itself internally. Then, I trace the line of pin 1 all the ways up to diode 6102 and resistors 2137/ 3138 which step down 220 Vac to 16 Vdc. Surprisingly, the voltage across the resistors has fallen to half value of 16Vdc. I switch off the power supply immediately and de-solder the resistors and diode from the circuit board. I got the resistance value changed to 1600K ohms each resistors and the diode is ok. According to Ohm law, the resistance that increases will result the voltage drop. I have the spare resistors and replace the resistors in same specification properly. Within my expectation, the LCD monitor now is returned to normal condition. I leave it run for few hours. Finally, I call the customer to collect the monitor next morning. He receives the monitor happy and gives his appreciation to me. The whole process of the testing and replacement is only taking 1 hour approximately. I can earn 100 dollar in the short period based on my experience and good knowledge of the working principle on LCD monitors. Now, you can grab this opportunity to learn the systematical method from this book which compiles a step-by-step and head-to-toe practical guidance in photos for smps repairing of LCD monitors. You too can become a professional repairer and earn lots of money from this kind of repair. diy lcd monitor repair Is it possible to do it yourself fixing the faulty lcd monitor? The answer is always yes with you invest your time and energy to learn the knowledge of basic electronic component testing and learn the working principle of the lcd monitor circuits and stay focus in Lcd monitor repairing. Before opening the lcd monitor casing, beware of electrical safety concerns to avoid electric shocks on the section of the AC main supply, the energy charged capacitor, the secondary output of the high voltage transformer to the lcd backlights / cold cathode fluorescent tubes. Always remember your safety first. To become a successful lcd monitor repairer, you must study the knowledge of the electronic component testing and its characteristic such as various type of fuses, resistors, capacitors, inductors, diodes, transistors, integrated circuits and etc. This is a very important step to analyze which electronic components incurred in the lcd monitor fault. The wrong analysis of the electronic component testing will waste your time and energy. But, prior to testing the electronic components, you must know the basic electronic component coding which is an essential and initial part for the correct interpretation of measurement and testing on Lcd monitor. For example, to identify a particular Surface Mounted Device ( in abbreviation, SMD ) Resistor Coding. SMD Resistors are usually coded with a numerical equivalent of the familiar three band color code. In the same way as wire ended components, precision resistor (1% or better) may be marked with a four digit code. The first two (or 3) digits are the first two (or 3) digits of the resistance in ohms, the third( or 4th) is the number of zeros to follow the „multiplier“. Resistances of less than 10 ohms have a „R“ to indicate the position of the decimal point. Some examples of SMD Resistors will make this clearer: Three Digit Examples of SMD Resistors 105 is 100000 ohms, or 1 Mohm 8R2 is 8.2 ohms 6B3 is 68000 ohms, or 68 kohm 221 is 220 ohms 330 is 33 ohms – not 330 ohms Four Digit Examples of SMD Resistors 16234 is 162000 ohms, or 162 kohm 1000 is 100 ohms – not 1000 ohms 4992 is 49900 ohms, or 49.9 kohm 0R56 or R56 is 0.56 ohms Another example, to identify the smd capacitor coding. SMD ceramic capacitors are sometimes marked with a code, consisting of one or two letters and a digit. The first letter if present is a manufacturer code (i.e P for Philips, etc.), the second letter the mantissa and the digit the exponent (multiplier) of the capacitance in pF. For example S3 is a 4.7nF (4.7 x 10<sup>3</sup> pF) capacitor. For SMD electrolytic capacitors are often marked with their capacitance and working voltage, e.g. 10 6V is 10 µF 6V. Sometimes a code is used instead, which normally consists of a letter and 3 digits. The letter indicates the working voltage and the 3 digits (2 digits and multiplier) give the capacitance in pF. Below example of SMD Capacitors will make this clearer. The band or stripe indicates the positive terminal. For example, a capacitor marked A475 is a 4.7m F 10V unit. 475 = 47 x 105 Farads 475 = 4.7 x 106 Farads 475 = 4.7m Farads You always can check the specification of the electric component with the electronic suppliers such as Farnell, RS component or other electronic retailers, for useful information. backlight inverter board lcd-monitor-inverter-board The backlight inverter board comprises analog circuits consisting of a ballast capacitor, a tuning capacitor, a Mosfet switch, a coil, a driver circuit, a and a transformer. The purpose of the analog circuits in the inverter is to transform a DC voltage input into an AC voltage at the output. The inverter is linked to a lamp circuit consisting of a fluorescent lamp, a potentiometer, a current sense resistor and a rectifier diode terminal of the potentiometer is connected to the inverter controller, which is also part of the lamp circuit. In the design of Royer regulator, the lamp ballast capacitor is usually in the range of 12 to 22 pico Farad in order to drop excess transformer output voltage after the lamp has ignited. A micro-controller Unit (MCU) will carry out the control of the lamps. The MCU allows the same inverter circuit to drive multiple lamps while each lamp with the individual dimming control is reserved. The result is creating an unity lamp brightness for systems such as LCD displays that require multiple lamps and where all lamps must produce the same level of intensity. The inverter controller receives the current sense and dimming input signals and generates an appropriate output for the inverter to produce the required AC voltage needed to drive the lamp. For the backlight inverter board with Direct Drives, the main advantages of the pushpull transformer are its dual primary winding construction which the voltage impressed across the primary in Direct Drive modules which are twice the supply voltage. Direct Drive topology also enables efficient inverters that can run directly from 3.3 and 5V logic supplies now common in LCD panels. This is equivalent to a 4 transistor full or H-bridge drive configuration and makes for very efficient operation at low voltages. Unlike the implementation of Royer regulator, new approach of Direct Drive for lamp strike voltage generation relieves the transformer from operating continuously at full lamp strike voltage once the lamp is ignited. Direct Drive transformers will optimize for normal operation where they spend most of their life. Small transformers can be used while system a CFL is only present for the instant it is required. Gradually destroying the insulation material, high voltage corona discharge can be more easily avoided with Direct Drive designs. With the new transformers and IC controller, the backlight inverter board of Direct Drive has been developed completely which the first two are 6 watt units that can drive lamps having strike voltages of up to 1800Vrms. A two lamp magnetic now in deployment will support up to 2500Vrms strike and 12W operating power. Said another way, the Direct Drive transformer needs to develop only 6% more output than maximum lamp voltage, while the Royer design must develop 31% more! Clearly, strike capability is enhanced while transformer size and reliability are improved. In big picture, Direct Drive designs reduce transformer output voltage after ignition, permitting ballast capacitance values to be much larger. Now you have learned the direct drive's backlight inverter board. You will be more familiar with the inverter board when you have chances to open out the LCD monitor's casing and observe it yourself. cfl inverter voltage Inverter circuits provide high voltages and current required for the cold cathode fluorescent lamp (in abbreviation , cfl). Inverters must accept the dc input voltages, typically 12V, and provide a number of outputs of 800 to 1000 V to run the lamps. To ignite CFL lamps, these circuits must supply short strike voltages that typically are double that of their working voltages. Numerous applications also expect efficient dimming capabilities to let lamp output to match surrounding light conditions and so extend the lifetime of lamp. It depends on the outputs of cfls are used, inverter circuits combine with single, dual or quad high voltage transformer to generate the high voltage required for cfls. For cfl inverter voltage generation, the inverter circuit with the buck regulator consists of two power semiconductors, one power inductor, a PWM regulator IC, and a high current capacitor. It provides a healthy secondary power source from the primary power source. The Royer oscillator consists of two transistors, a high-current resonance capacitor, a high-voltage transformer, and a ballast capacitor in series with the lamp. It provides an alternating current source to drive the lamp. The current amplitude is controlled by the ballast capacitor through the lamp's negative impedance which dropping an approximately equal voltage across its positive impedance. In theory, the lamp current will be the total transformer output voltage minus the lamp voltage (lamp voltage is inversely proportional to current) divided by the capacitor's impedance. The total power and the required strike voltage will limit the minimum size of this transformer. Because it works the normal lamp running voltage all the time, its size must support full strike power and voltage, even after the lamp is ignited. Knowing the good cfl inverter voltage is critical to troubleshooting LCD Monitor. cd monitor backlight replacement How do identify a backlight is in good condition? You can use the spare backlight from another working LCD Monitor. This is important method to test the backlight. Otherwise, you will waste time and money if the fault is on the inverter circuit or dry soldering and etc. Normally, the backlight fault will be suspected when you found the display is flickering or discoloring. Double check any dark end on cold cathode tube. Replace new tube if you discover the dark end of lamp tube. To replace the backlight successfully, you must pull out the backlight gently together with its casing. Some backlight can be easily removed while some were tough. For totally sealed type backlight, you must be careful when removing the backlight. Once you tear off the backlight's tape automatic bonding accidentally, the panel of LCD monitor is damaged and no longer operate in good condition. Because, the LCD monitor's display will show a thick black bar on the LCD screen side. Always bear in mind, the tape automatic bonding is very fragile before you pull out the cold cathode tube. Be careful and good luck for your lcd monitor backlight replacement. lcd backlight replace or not? Here is a typical lcd backlight replacement which the faulty lcd monitor is turning on and off cyclically then off permanently. You can see brief OSD setup menu image appeared for while and black out. 1) Above lcd monitor symptom tell us the lcd backlight is working perfectly. No cfl replacement is required. 2) Make sure the video signal is good. You may plug it to another good lcd monitor to ensure your cpu is in good condition. 3) Suspect the power supply is faulty when no power symptom on LCD monitor is a good starting. 4) Open the monitor back and check the backlight inverter board and use ohmmeter to measure the fuse. If the fuse is blown, trace the circuit lines and went to the high voltage part of the PCB. Suspect some parts went wrong over there. 5) Observe any dry joints on the high-voltage inverter power driver. Found the dry joint at one of the PNP BJT power transistors. 6) Do a rough check with multimeter that the PNP transistor Collector and Emitter terminals are shorted. Confirm it with Atlas component analyzer to avoid wrong measurement. 7) Desolder the transistor from the inverter board. Notice the transistor was shifted from its original position. The culprit is the back heatsink (Collector) has been shorted to the line that connects to the Emitter. Probably, the smd transistor is overheated and melted is the root cause. The adjacent NPN transistor next to it also was a bit shifted. 8) The monitor has dual fluorescent lamps on the top and bottom LCD monitor with each pair connecting to a power inverter driver. The circuit is divided at the left and right of the inverter board. 9) Try to turn it on again and similar back out symptom happen. Check other circuit transistors and it is quite warm. I turn 10) Check its terminal voltages, display 20Vdc @ Emitter and 19Vdc @ Base. 11) Desolder and test the PNP transistor with the atlas component analyzer. Confirm the transistor is faulty too. 12) Remove the remaining tape and shielding from one of the power drivers and found a SMD power resistor 390ohm bias resistor terminal is loose from the board. 13) Double check the other power driver and the same exact resistor terminal loose from the board too. 14) Resolder back the resistor and replace new transistor to the circuit. 15) Re-assemble all parts that removed previously. Finally, LCD monitor is switched on and working properly. How to solder lcd monitor circuit board 1) Tools for soldering 2) Soldering safety and health 3) Photos for soldering dry joints on circuit boards 4) Basic soldering technique 5) Advanced Smd soldering technique 6) Quick and inexpensive soldering station how to solder lcd monitor circuit board Last month, I had received approximate 2–5 nos of faulty lcd monitors everyday from customers lived in a residential area occupied by 20000 people. I have never got such a good harvest indeed. How much wages do I get from lcd monitor repair only? Unbelievable! It is \$6400 roughly which calculates from average \$80 x 80 nos lcd monitor. I can tell you that approximately 40 percent of total faulty lcd monitors are easy to be repaired normally and the rest is a bit time consuming but it is worth to perform electronic component analyzing, testing and replacement. Once you got the culprit, you solder it out and replace the new part and solder it back on the lcd monitor circuit board. One of the most important and essential techniques in servicing lcd monitor is the SOLDERING technique which will bring you fast dollars easily and quickly. I believe most lcd monitor repairers will agree with me. Let take few real soldering examples as follows: Case 1: Compaq lcd monitor FP731 shutdown from few seconds to few minutes Solution 1: Re-solder the feedback circuit of the cfl inverter section C215, C216, D201, R215, R246, R218, D206, C242, D210, R234, R243 Case 2: BenQ 17005 lcd monitor got display shutdown after power on for few second Solution 2: Solder out 4 nos. shorted C5707 transistors and solder new transistors back. Case 3: Dell e151fp lcd monitor ( equivalent to Acer FP553 Chassis ) No power or power on then shutdown shortly Solution 3: Solder out the faulty C605, C707, C703 capacitor, the faulty power ic UC3842B, faulty resistors R613, R623, R615, faulty transistor Q601, faulty diode D604= 1N4148 and fuse F601. Solder the new parts back into the circuit. From above examples, no matter how severe fault level of lcd monitor, the soldering work is always involved in repairing lcd monitor. In the following sections explains the basic soldering to advance soldering technique of the surface mounted devices (SMD). Tools for soldering 1.1) Soldering gun Function: a type of heater to melt the soldering iron on high temperature directly which joins two metals together. There are two types of soldering gun which are the fixed temperature soldering gun and the variable temperature soldering gun. Fixed temperature soldering gun surface gun Variable temperature soldering gun Soldering station Solder work solder work 1.2) Soldering iron wires Function: a kind of metallic filler to make good joints for two metals. Prefer to use the soldering iron labeled with RoHS ( Restriction of Hazardous Substance Directive ) giving your protection on safety, health and environment aspects. soldering wires For detail of RoHS refers to 1.3) Soldering stand Function: a temporarily holder for the soldering gun and usually come along with a yellow sponge for cleaning the tip of soldering gun. soldering stand 1.4) No clean liquid solder flux Function: a useful and costly liquid to clean the residual soldering surface and very useful in surface mount soldering. Suitable for large volume of circuit board repair. no clean liquid solder flux solder flux pen 1.5) Solder pump Function: a manual tool to suck the soldering iron after melting. Soldering safety and health your soldering safety first! 1.1) Do not touch the tip and heating element of the soldering iron gun. The temperature of the heating element is about 200°C to 480°C. 1.2) Always place the solder gun to the soldering stand when not in use temporarily. Never put the soldering on your workbench which may cause a fire! 1.3) Work in a well-ventilated area, when melting the solder iron, a smoke will be formed mostly from the flux. Use table fan to blow the smoke away and choose your soldering place adjacent to window. Thus, the smoke can flow out the window easily. 1.4) Wash your hand after soldering. Non RoHS solder contains harmful substance to our health, safety and environment. Always RoHS certified solder iron. RoHS means Restriction of Hazardous Substances. Refer to RoHS website here, use RoHS product for your health & environment concern! 1.5) Read the manufacturer manual for your soldering tools at very first time before starting the solder work. 1.6) If minor burns take place, keep the affected portion under the running water for 5 minutes and seek consultation from doctor. 1.7) Remember to switch off the soldering gun whenever you are away from soldering place. photos for soldering dry joints on circuit boards Some photos will be displayed on how the solder dry joints look like. These dry joints will create a lot of intermittent problems on lcd monitor, lcd tv, crt tv, crt monitor and any electronic equipment. dry solder joints dry joint solder dry joint solder basic soldering technique soldering 4.1) Insert the soldering gun in the holder of soldering stand. 4.2) Switch on the soldering gun and take a few minutes to reach its operating temperature of about 200 – 300°C. 4.3) Wet the yellow sponge on the base of soldering stand. Squeeze the sponge to remove excessive water. 4.4) Check the readiness of solder gun by trying to melt a little solder on the tip. 4.6) Clean the tip of the soldering gun on the wet sponge. 4.7) Melt a little solder on the tip of the soldering at least two times whenever after placing the soldering gun on its stand and after wiping the tip on the sponge. 4.9) Start soldering now by holding the handle of the soldering gun. Do not touch the heater element. 4.10) Touch the soldering wire on the pin of electronic component to be soldered directly. 4.11) Ensure both the pin of electronic components and the soldering wire are in contact for few seconds and the soldering iron will flow smoothly onto the gap between the component pin and circuit to form a " mountain " shape. 4.13) Remove the solder wire, then the soldering gun while let the joint still. Let the joint cool down itself. 4.14) Inspect the solder joint closely. Good solder joint looks shiny and have a " mountain " shape. If not, resolder it and feed a little more solder. advanced SMD soldering technique 5.1) Prepare useful tools such as fine tip tweezers, a rosin based flux pen, rosin core solder (prefer 0.025" diameter) and a solder gun with a small clean tip. 5.2) Start with positioning the surface mount device (smd 5.2) Apply a sufficient amount of liquid flux using a flux pen to both ends of the smd. 5.3) Preheat the tinned pads of printed circuit board using solder gun. The tinned pads are the connection point of the lead of surface mounted device (smd) and the circuit. 5.4) Melt solder wire onto the tinned pad and slide down the smd against the tinned pad on circuit board and align the smd simultaneously when the connection is molten. solder pads 5.5) Remove the solder wire and allow the solder to cool. 5.6) Inspect the solder in the sloping shape fillet. Watch video for the surface mount soldering work for clearer picture. quick and inexpensive soldering station A soldering station is merely a quick and inexpensive soldering setup with temperature control solder gun. Setup the soldering station once and use for all times. The main advantage of the soldering station is to avoid overheating the surface mount device when soldering at the temperature below critical level specified by smd manufacturer. 6.1) For the yellow sponge setup, dampen the small cleaning sponge with water and then squeeze it dry. 6.2) Place the sponge in the openings of the solder gun holder base. 6.3) Add water to adequate level 1/3 height of the opening. The small sponge will absorb water to keep the larger sponge above it wet at all times. 6.4) For the cable connections, plug in the cord connector of the solder gun to receptacle and turn clockwise firmly. 6.5) Plug in the power cord into the AC power supply. Ensure to ground the unit on the 3 pin plug for your safety purpose. 6.6) For temperature setting, turn the temperature control knob to the desired temperature from 200°C to 480°C ( from 392° F to 896° F). 6.7) Lock the knob using hex key. 6.8) Turn on the power switch 6.9) Wait for the heater lamp blinks on and off when the tip temperature reaches the set temperature. 6.10) Now the soldering station is ready to perform soldering work. backlight inverter circuit In brief, an inverter is an electronic component that converts direct current (DC) to alternating current (AC); the converted AC can be at any required voltage and frequency with the use of appropriate transformers, switching, and control circuits. Same application applies to LCD Monitor, the backlight inverter circuits supply high voltages and current required for the cold cathode fluorescent lamp (in abbreviation , cfl). Inverters must accept the dc input voltages, typically 12V, and provide a number of outputs of hundreds volts to run the lamps. In another article has explained Buck/Royer inverters. There is other new inverters are called the direct drive where it is desirable to electrically isolate the Primary and Secondary grounds too. With the advent of new inverter design, the Direct Drive offers distinct advantages over conventional Buck/Royer inverters. Direct Drive refers to the ability of the new architecture to eliminate the inductor and resonant capacitors necessary to implement a conventional Royer oscillator based inverter solution. Instead, Direct Drive topology uses a fixed frequency PWM control circuit connected directly to a high voltage transformer primary via a pair of N-FET drivers. Removing these costly and power-hungry components simultaneously improves module cost, efficiency and size. Instead of bipolar, a dual transistor N channel drive scheme was selected and complementary P/N channel FET drives for 3 main advantages: 1) In small surface mount packages, Dual N-FETs are readily at reasonable prices that compete favorably with the installed cost of bipolar transistors and their required additional circuit components. 2) In conjunction with push-pull transformer operation using ground referenced transistors permits the IC to be implemented with a low cost 5V fabrication process such as CMOS. This process permits the smallest die size, very high performance, and direct compatibility with 5V and 3.3V system power buses. The IC can interface through external N-FETs to any system voltage desired by simply changing the high voltage transformer turns ratio. Thus, an operating input voltage range for the module from 2V to more than 50V is possible. 3) More efficient switches than bipolar transistors or P-FETs of equal size and cost. Understand the dual N-FETs in the surface mount package is useful when you trouble-shoot the faulty backlight inverter circuit of LCD monitor. In fact, you can use the atlas component analyzer to measure the dual N-FETs with referring to its datasheet. This will save your time without guessing which component is breakdown. inverter for cfl One of most common types of 4channel cfl inverter ic is used for cold-cathode fluorescent lamps (CFLs) that backlight liquid crystal displays (LCDs) in PC monitor applications. The 4-channel cfl inverter ic can drive the lamp bursts from each of the four channels. This allows scanning backlight schemes to improve the video quality using a single CFL Inverter IC which makes it very simple to be implemented. Driving the lamp bursts from each channel can be used to reduce current ripple on the display power supply, which is especially important for larger LCD monitors. The 4-channel cfl inverter ic uses a push-pull drive scheme to convert a DC voltage (5V to 24V) to the high-voltage (600VRMS to 1200VRMS) AC waveform that is required to power the CCFs. The push-pull drive scheme also provides an efficient DC-to-AC conversion and produces near sinusoidal waveforms. Two n-channel MOSFETs that are connected between the ends of a step-up transformer and ground will be driven by each cfl inverter ic channel. The primary side of the center tapped transformer is connected to a DC voltage supply. The cfl inverter ic alternately turns on the two MOSFETs to create the high-voltage AC waveform on the secondary side. The cfl inverter ic is able to accurately control the amount of current flowing through the CFLF by varying the duration of the MOSFET turn-on times. To enable current monitoring, a resistor in series with the CCFL's ground connection. The voltage across this resistor is supplied to the lamp current monitor (LCM) input on the cfl inverter. The cfl inverter compares the peak resistor voltage against an internal reference voltage to determine the duty cycle for the MOSFET gates. Each CCFL receives independent current monitoring and control which results in equal brightness across all of the lamps and maximizes the lamp's brightness and lifetime. The basic functions of single cfl inverter ic are as follows: 1) to provide efficient and precise lamp dimming using a digital pulse-width modulated (DPWM) signal (2.5Hz to 440Hz) . 2) to use an I2C-compatible serial interface for communication with the on-board EEPROM configuration registers and user memory. 3) to integrate the Burst dimming trigger (BDS) functionality into the burst dimming controller. BDS is useful to reduce the current ripple on the DC supply as well as improve the visual motion response of the LCD panel. 4) to control Lamp Strike Frequency Boost (20kHz to 40kHz or 40kHz to 80kHz) which the frequency is increased during lamp strike. 5) to provide a soft-start that slowly increases the MOSFET gate-driver duty cycle. 6) to monitors both the transformer's DC supply and its own VCC supply to ensure that both voltage levels are adequate for proper operation. 7) to provides extensive fault monitoring for each channel. It can detect open-lamp, lamp overcurrent, failure to strike, and overvoltage conditions. Another way saying, it will isolate the fault-individualy and let lcd monitor operate. In conclusion, 4-channel cfl inverter ic is very robust and seldom fail. Understand the cfl inverter's features is crucial to trouble-shoot the faulty lcd backlight inverter circuit.







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