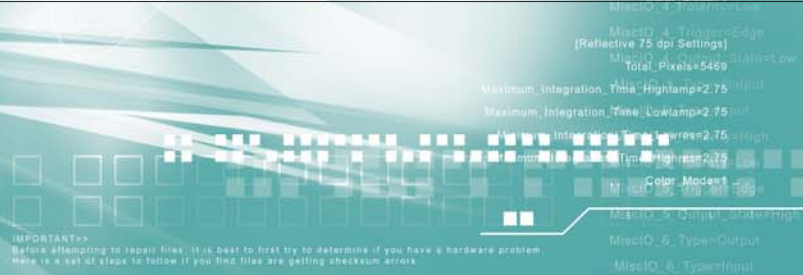


TFT LCDs

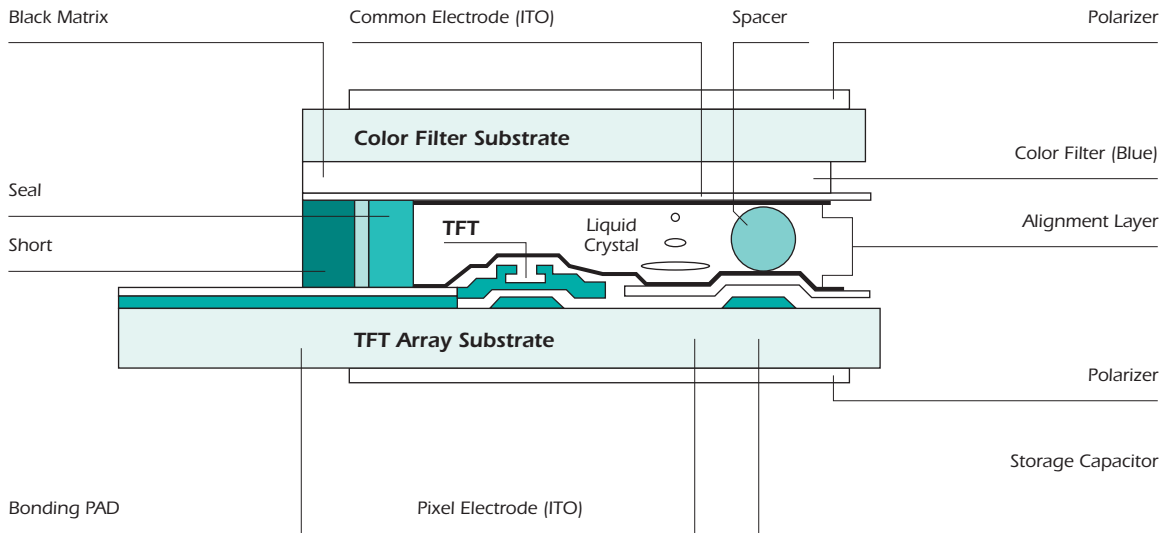


TFT (thin film transistor) is a type of LCD flat-panel display technology. Compared to other types of LCD technology, TFT features excellent image quality and response time, but uses more power, and is more expensive.

TFT technology is an active-matrix technology, meaning that a tiny circuit (a transistor) controls or drives each pixel, allowing the pixel to be turned on and off individually. In active-matrix technology, the display is refreshed frequently because the pixels store a charge, resulting in the ability to show real-time video. This permits faster response time and greater contrast compared to passive-matrix technology.

The TFT-LCD Structure

It uses liquid crystal to control the passage of light. The basic structure of a TFT-LCD panel may be thought of as two glass substrates sandwiching a layer of liquid crystal. The front glass substrate is fitted with a color filter, while the back glass substrate has transistors fabricated on it. When voltage is applied to a transistor, the liquid crystal is bent, allowing light to pass through to form a pixel. A light source is located at the back of the panel and is called a backlight unit. The front glass substrate is fitted with a color filter, which gives each pixel its own color. The combination of these pixels in different colors forms the image on the panel.



Manufacturing TFTs

The process of manufacturing a TFT is similar to the process used to manufacture a silicon IC. Extremely thin insulators, conductors and transistors must be laid into a glass substrate, which becomes the lower glass of the LCD. Photolithography is used to accomplish this. In this process, metal and silicon are progressively added and etched away from the substrate, forming a matrix of wires, transistors and insulators.