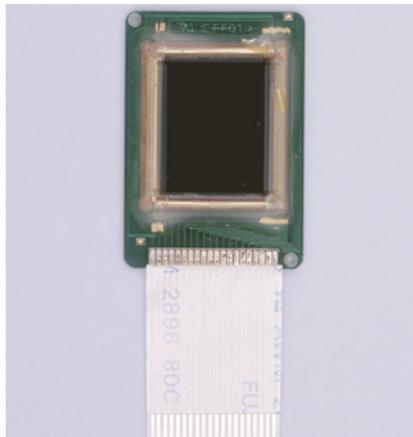


EVF Liquid Crystal Panel Module

August 1988



Liquid crystal panel: Polysilicon TFT active-matrix panel with integrated driver circuits

Display: Full color
Screen size: 14.3 mm x 19.2 mm (0.94 inch)
Pixels: 70,400 (220 high x 320 wide)
Contrast ratio: 100:1
Resolution: 200 TV lines horizontal /
200 TV lines vertical

Product Features

In August 1988, the EVF Liquid Crystal Panel Module became the world's first commercially produced, ultra-compact, full-color liquid crystal panel module for video camera viewfinders. The product triggered a huge response around the world. Whereas earlier video camera viewfinders were monochrome and used a cathode-ray tube, this viewfinder was the first on the market to display color and use a liquid crystal panel. This panel made it easy to check and discriminate between colors during taping. The use of a liquid crystal panel allowed engineers to design viewfinders that were smaller, lighter, and consumed less power than the traditional cathode-ray tube type. In addition, the polysilicon TFT technology used in the module enabled even greater reductions in viewfinder size and weight, because for the very first time the circuits used to drive the liquid crystal could be fabricated concurrently with the pixels on the glass substrate. In addition, by setting new liquid crystal conditions and using a new liquid crystal material, Epson engineers were able to achieve a contrast ratio of 100:1 and a high color gamut. The EVF Liquid Crystal Panel Module came together as the culmination of the company's liquid crystal, TFT, microfabrication and assembly technologies.

Background

Development of active-matrix liquid crystal panels began in 1977. In 1982, by developing a single-silicon transistor system, Epson succeeded in commercializing the world's first television watch equipped with a liquid crystal display. Later on, the direction of development shifted to polysilicon TFT systems, which promised to sweep away picture quality and size issues. In May 1983, the development of a TFT liquid crystal color display was announced at a meeting of the International SID (Society for Information Display), and the following year the world's first pocket-sized color television, the ET-10, was commercialized. Then, in August 1988, putting the unique advantages of polysilicon TFT technology to good use, Epson created the EVF Liquid Crystal Panel Module.

Impact

Traditional video camera viewfinders captured images only in monochrome. Camera users were therefore unable to see the colors of a subject during taping. They had to check the colors when they played the tape. Or, they had to attach a separate monitor to the video camera. There was a demand for color viewfinders: users like to see the color of a subject when they peer into a camera. The emergence of this color viewfinder thus triggered a huge response. As time passed, color viewfinders migrated to smaller sizes and higher pixel densities in line with market trends. They became a core product of Epson's TFT display business, growing market share and driving a higher rate of color panel adoption in the market. The engineering expertise honed during their development would come in very handy in later years, when the company set out to develop liquid crystal panels for projectors.