

ECX331A, ECX332A

The Industry's First Ultra-Small High-Definition Color OLED Displays



The ECX331A and the ECX332A are the industry's first*¹ ultra-small, high-definition color OLED displays. Sony's unique expertise in both OLED display and semiconductor silicon drive technologies have made available the wide color gamut, high contrast and fast response of OLED displays in a diagonal 0.5-type XGA version and a 0.7-type high-definition version. Its overwhelming color reproduction, contrast and high definition produce a realistic image that makes it ideal in electronic viewfinders (EVF) in digital single-lens cameras or head-mounted displays and other ultra-small and high-definition display applications.

*1: As of July, 2011 (based on Sony's research)

- Ultra-small high-definition color OLED display
- Wide color gamut, high contrast and fast response
- Built-in drivers
All in one package

Ultra-Small High-Definition Color OLED Display

Ultra small and high definition, the ECX331A and the ECX332A are only 12.7 mm (0.5 type) and 18.0 mm (0.7 type) diagonally in the XGA and high-definition version, respectively. (See table 1.) As a consumer EVF, it has the industry's highest resolution while also boasting the industry's smallest pixel size in an OLED display. The smallest pixel size is $3.3 \mu\text{m} \times 9.9 \mu\text{m}$, which is approximately 1/20 the size of pixels in existing OLED displays. An ultra-small high definition display was achieved by forming a color filter (CF) on the white organic EL layer. (See figure 1.)

Wide Color Gamut, High Contrast and Fast Response

Both the ECX331A and the ECX332A are ultra small but generate 90% NTSC color gamut with a maximum contrast ratio of 10,000:1 and a fast response of 0.01 ms or less. (See table 2.) The wide color gamut, high contrast and fast response provide more natural color reproduction, smoother gradation properties and superior moving picture quality especially as EVFs in digital single-lens cameras during shooting or for greater audio-visual impact in viewing 3D video using a head-mounted display.

Built-in Drivers All in One Package

This is an all-in-one package configuration that provides all the required D/A converters, timing controllers and temperature correction for driving it. (See figure 2.) As a stand-alone display, it is easy to handle and saves space when placed on an electrical board.

The Result of Sony's Unique Technology

Decreasing subpixel size normally causes

light to spill over onto adjacent pixels leading to current leaks and lower image quality and image properties. The ECX331A and the ECX332A are the result of high precision alignment using semiconductor assembly technology of silicon drive substrate and CF substrates configured using semiconductor high voltage processing and high-definition CF processing. This high precision alignment technology combined with optimization in light shielding configuration have minimized deterioration in image quality and image properties caused by alignment displacement and repeated reflections of stray light. In addition, electrode (anode) configuration and material have been optimized to control light-generating areas and leak current. The composition of materials used in the emission light (EL) layer and film structure have been optimized to improve the tolerance to current leaks that degrade image quality and image properties.

V O I C E

Sony's new OLED display combines ultra-small size with high image quality that will provide a visual experience of an entirely different dimension.

Table 1 Main Specifications

Item	ECX331A	ECX332A
Panel size	Diagonal 12.7mm (0.5 type)	Diagonal 18.0mm (0.7 type)
Resolution Number of dots	XGA 2.4M dots (1024 × RGB × 768)	720p 2.8M dots (1280 × RGB × 720)
Pixel size	3.3 μm RGB × 9.9 μm	4.0 μm RGB × 12.0 μm
Frame rate	60 Hz/50 Hz supported	
Input data format	Digital 8 bits × RGB parallel input	
Configuration	Outer frame, cover glass, FPC (61 pins)	Outer frame, FPC (81 pins)
Maximum external dimensions	18 mm × 15 mm × 6 mm	27 mm × 27 mm × 2 mm

Table 2 Basic Characteristics (For reference purposes)

Item	Characteristics
Color gamut	
Contrast	Maximum 10,000:1
Brightness	Maximum 200 cd/m ²
Response	0.01 ms or less

Figure 1 Comparison of Cross-Sectional Composition

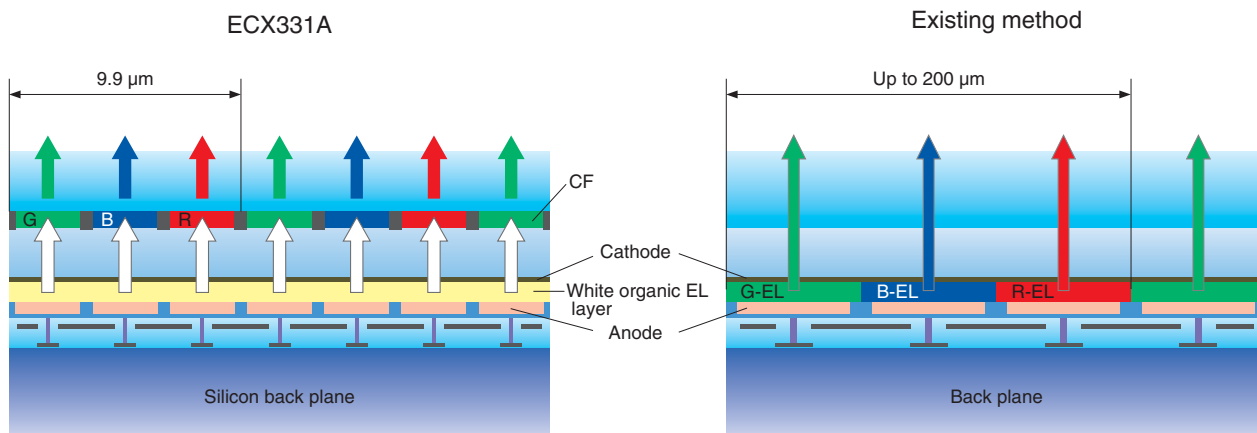


Figure 2 System Configuration

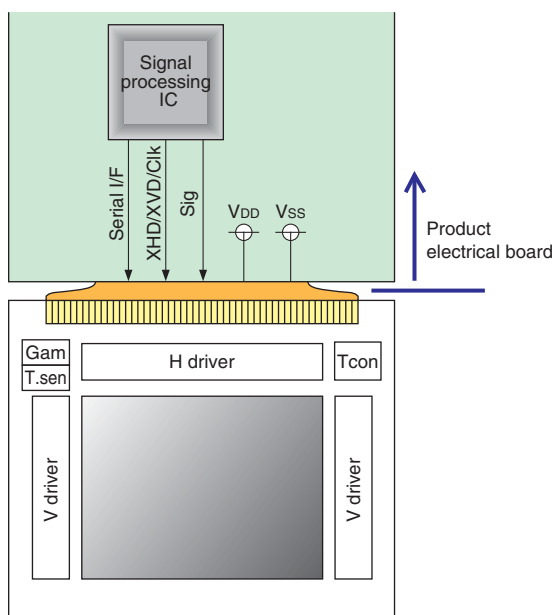


Figure 3 Four Core Technologies

