

ACX343/ACX350/ACX351

The existing needs for direct digital interfacing and even lower power have become more pressing in the digital still camera area. The ACX343, ACX350, and ACX351 integrate all the circuits required for LCD drive on the LCD panel glass itself using Sony's low-temperature polycrystalline silicon TFT technology, and require no additional external ICs.

Additionally, these displays adopt a direct digital interface method that allows them to be connected directly to the system DSP.

At the same time as achieving a significant reduction in peripheral components, these displays can also contribute to reduced power consumption in end products.

We strongly recommend that you look into these display devices, which inherit the high picture quality of conventional Sony displays and take full advantage of the merits of Sony's low-temperature polycrystalline silicon LCD technology.

These devices all support 100% coverage display of the captured image.

- Integrated drive circuit LCD panels implemented with system-on-glass technology
- Support for direct digital interfacing (6.75 MHz serial RGB interface)
- Built-in serial communication circuit
- High brightness: 250 cd/cm²
- High contrast: 300:1
- Low power consumption
- RGB delta array for smooth images
- Up/down and/or right/left inversion function
- Narrow frame
- 100% coverage

■ System-on-Glass Technology

The ACX343, ACX350, and ACX351 are LCD modules that are implemented using Sony's independently developed system-on-glass technology, which makes it possible to form, as an integral unit, all the LCD drive circuits on the LCD panel itself by using Sony's high-performance/high-reliability low-temperature polycrystalline silicon TFT technology. This technology is being deployed for the first time in a product line for digital still cameras.

■ Driver IC and COG Free

The serial interface circuit, timing generator, reference driver, VCOM driver, DD converter, D/A converter, and other circuits are all formed directly on the glass using low-temperature polycrystalline sili-

con TFT technology. (See figure 1.) This means that no driver ICs, and no COG mounted ICs, are required. This obviates the need for driver ICs, including COG mounted ICs, and contributes to improving reliability by reducing the mounting surface area and reducing the number of connections.

■ Digital Interface Support

Since the interface in these displays has been made completely digital, there is no need for D/A converters in the product itself, and this also results in the advantages of reduced noise and adjustment-free manufacturing of the end product.

■ Low Power

In these displays, Sony located the driver IC functionality on the LCD glass and fabricated those devices using optimized process rules to achieve reduced power consumption. One of these panels (the ACX343), for example, achieves an approximately 34% reduction in power consumption compared to that of similar conventional LCD panels when the driver ICs are included.

Furthermore, the combination of these high transmittance LCD panels and the adoption of high-brightness LEDs made it possible to reduce the number of LEDs in the ACX343 and ACX351 to one LED, and to reduce the number of LEDs in the

ACX350 to two LEDs. This contributes to reducing the module's total power consumption. (See table 1.)

■ Extensive Product Line

While the products in this release form a product line including 1.8, 2.0, and 2.5-type panels, Sony is planning on expanding this lineup even further in the near future.

■ 100% Coverage

When using a digital still camera, it is necessary to verify all the pixels in the image, leaving none out. All of these panels support 100% coverage display of digital still camera images.

■ High Color Purity

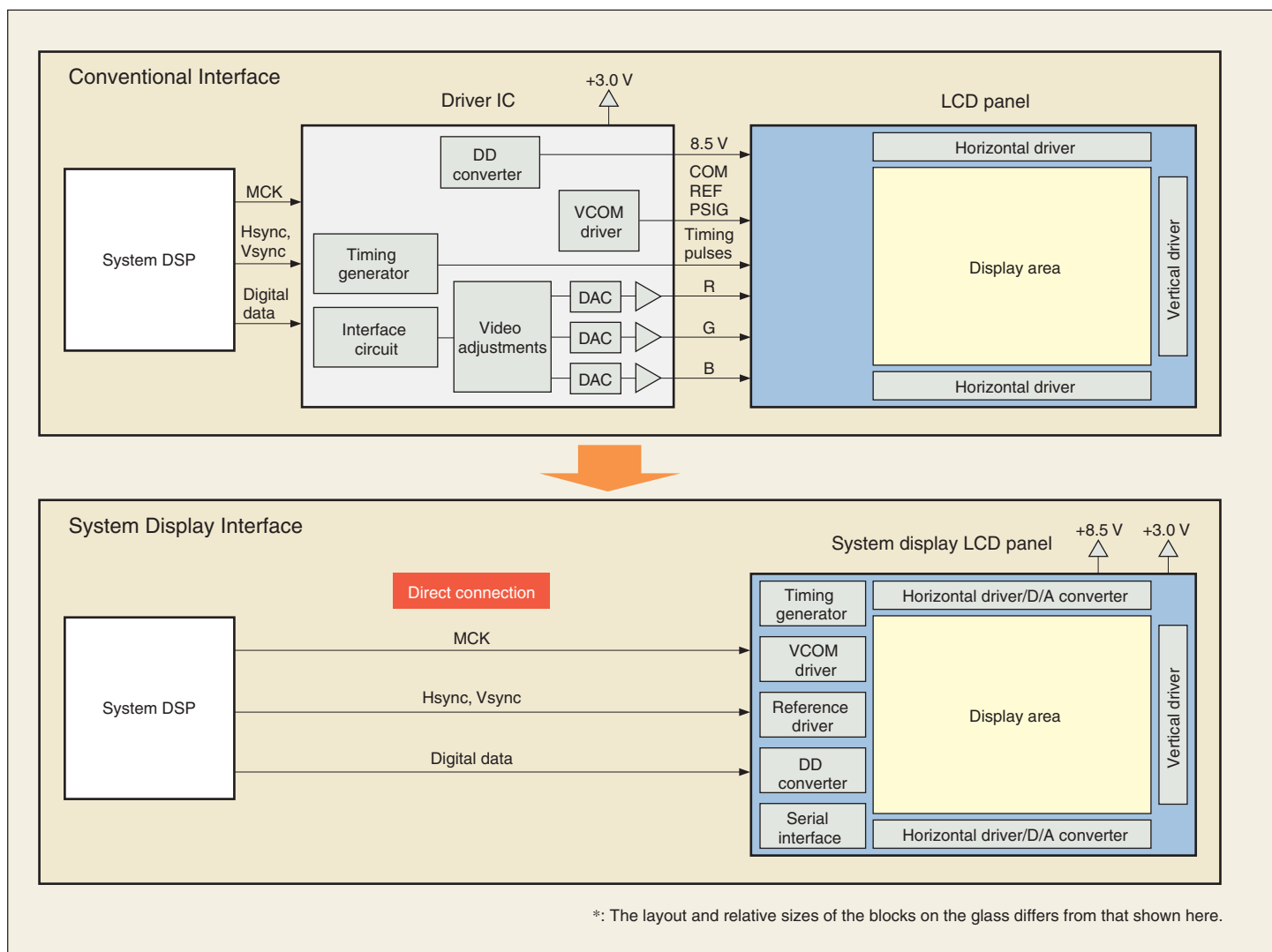
By optimizing the colors of the color filters, Sony achieved both high transmittance (brightness) and high color purity. (See photograph 1.)

■ Up/Down and/or Right/Left Inversion Function

Since there are now digital still cameras in which the monitor can be rotated and/or flipped, the ability to perform up/down and/or right/left inversions under serial signal control provided by these panels provides a high degree of flexibility in end product designs.

V O I C E

It is truly groundbreaking that all the drive circuits can be formed on the glass and that the device can be mass produced in this way. Although the device appears simple on the outside, we have incorporated Sony's leading edge low-temperature polycrystalline silicon LCD technology unstintingly. I strongly recommend that you look into Sony's Slim & Beauty panels.



■ Figure 1 Block Diagram Comparison

■ Table 1 Main Characteristics

Item	ACX343	ACX350	ACX351
Number of pixels	320 × 240	354 × 240	354 × 240
Diagonal size	4.48 cm (1.8 type)	6.3 cm (2.5 type)	5.0 cm (2.0 type)
Display mode	Transmissive mode		
Interface	Serial RGB interface		
Brightness	270 cd/cm ²	260 cd/cm ²	250 cd/cm ²
Contrast	300:1		
Power consumption (Backlight on)	148 mW	200 mW	142 mW

■ Photograph 1 Display Example

