

Miniature High-Precision 4.6 cm (1.8-type) 118K-Dot Digital Still Camera Color LCD  
Features a Viewing Area Ratio of 100%

# ACX312AK

The 1.8-type color LCD panel is widely used as the monitor in digital still cameras.

Sony has already released the ACX306AK low-temperature polycrystalline silicon TFT LCD as a 1.5-type 118K-Dot miniature high-precision model.

Sony has now added the 1.8-type ACX312AK, which provides the same functionality with the same number of dots, to their product line, expanding the Sony lineup of products for use in digital still cameras.

- 4.6 cm (1.8-type) 118K dots
- Complete 100% viewing area ratio with 0% overscan
- High contrast (200:1) and high optical transmittance (8.6%) despite miniaturization
- Power saving function provides even lower power consumption during standby mode
- Up/down and/or right/left inversion functions
- Supports NTSC and PAL

## ■ Viewing Area Ratio of 100%

The ACX312AK achieves a viewing area ratio of 100% by setting the overscan to 0%. This allows all of the image taken by the CCD to be displayed with nothing missing to prevent the loss of critical images.

## ■ Full Complement of Functions Despite Miniaturization

By adopting Sony's TFT polycrystalline silicon technology developed over many years, the ACX312AK manages to provide all of the functions of the conven-

tional ACX300 Series products (2.0 type to 3.5 type) despite its ultrasmall form. In particular, it includes up/down and/or right/left inversion functions to increase the degrees of freedom available in end product design. Furthermore, it achieves high contrast (200:1) and high transmittance (8.6%), and is at the top level of number of effective pixels per unit area (115.4 dots/mm<sup>2</sup>) in the ACX300 Series. As a result, it provides smooth fine-grained images with no apparent dots and a high picture quality. At the same time it can contribute to reduced overall power consumption in end product designs.

## ■ System IC

Sony provides the new CXA3572R system IC, which was developed along with the ACX312AK. This system IC integrates the timing generator and the RGB drivers on a single chip. The CXA3572R supports both NTSC and PAL, and accepts either Y/color difference or RGB signals as input. It includes up/down and/or right/left inversion functions to take advantage of the panels' features. Furthermore, it includes power saving functions to reduce power consumption in standby mode even further. (See figures 2 and 3.)

## ■ Improved Ease of Use

The CXA3572R provides many advantages over the conventional CXA3522R. (See table 2.) First, the package has been reduced in size from a 72-pin LQFP to a 48-pin LQFP, thus cutting in half the space taken by the IC on the printed circuit board. This increases the degrees of freedom available in end product design. Second, the VCO has been integrated on the chip, obviating the need for an external oscillator circuit and reducing the number of external components required. The previously required PSIG buffer is planned to be integrated as well, allowing a further parts count reduction. Furthermore, since this 1.8-type device has the same number of dots as the conventional 1.5-type device, the same printed circuit board can also be used for end products that use a 1.5-type device, thus contributing to reduced design costs when creating a line of end products.

## V O I C E

Of our low-temperature polycrystalline silicon LCD products, the ACX312AK aims to become a de facto standard due to its specialization for use in digital still cameras. This LCD represents the crystallization of efforts and technologies contributed by many engineers, and we are convinced that this device is superior to other manufacturers' LCDs, both in performance and quality. I hope many digital still camera developers will adopt this product.



New Products

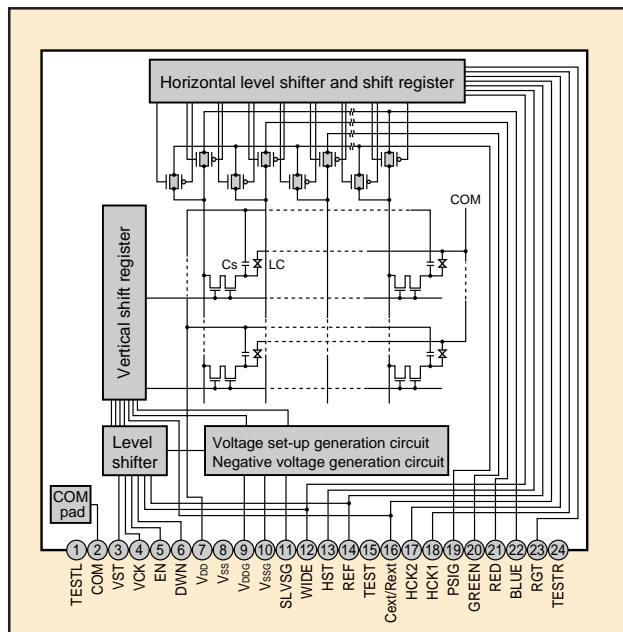


Figure 1 ACX312AK Block Diagram

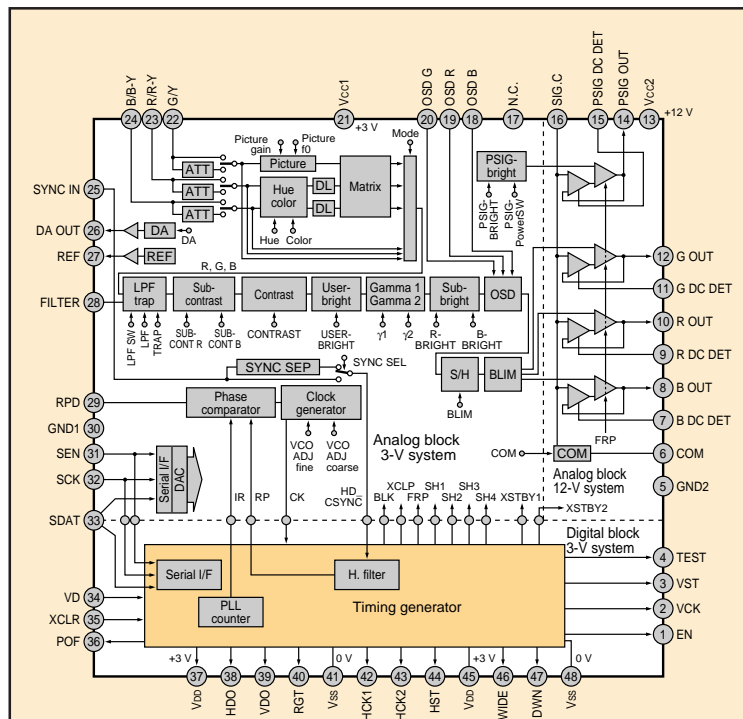


Figure 3 CXA3572R Block Diagram

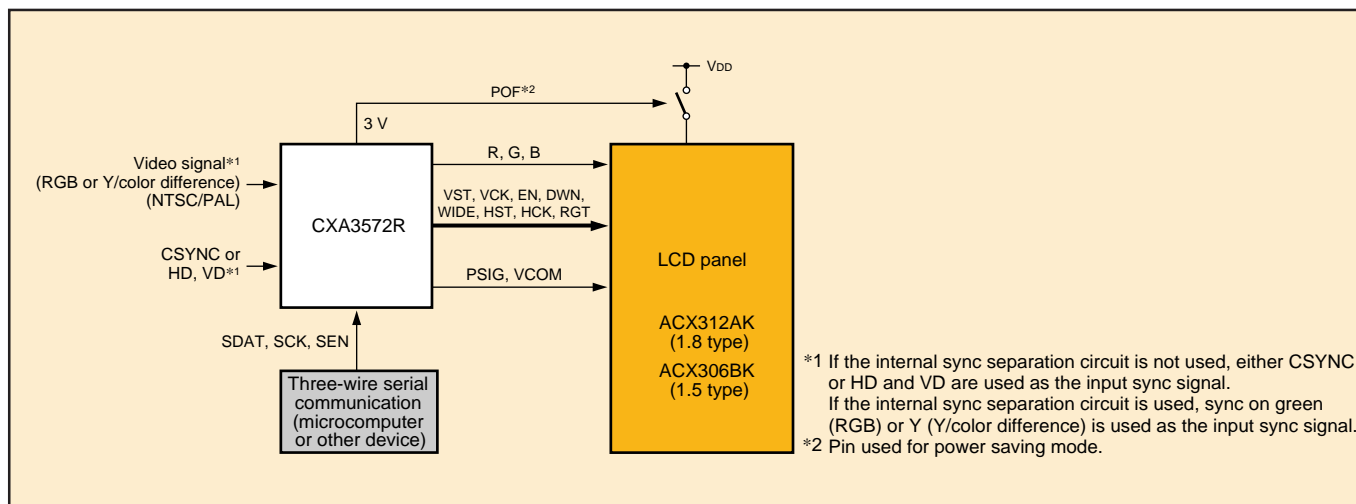


Figure 2 ACX312AK/306BK Drive System Block Diagram (single-chip structure)

Table 1 Digital Still Camera LCD Specifications Comparison

| Model                             | ACX306AK              | ACX306BK              | ACX312AK              |
|-----------------------------------|-----------------------|-----------------------|-----------------------|
| Screen size                       | 3.8 cm (1.5 type)     | 3.8 cm (1.5 type)     | 4.6 cm (1.8 type)     |
| Number of active dots (H × V)     | 118K dots (490 × 240) | 118K dots (490 × 240) | 118K dots (490 × 240) |
| Pixel arrangement                 | RGB delta             | RGB delta             | RGB delta             |
| Optical transmittance (%)         | 6.5                   | 7.5                   | 8.6                   |
| Contrast ratio                    | 200 : 1               | 200 : 1               | 200 : 1               |
| Supply voltage (V)                | 12                    | 12                    | 12                    |
| Display method                    | NTSC/PAL              | NTSC/PAL              | NTSC/PAL              |
| Panel dimensions (W × H × t (mm)) | 38.0 × 32.6 × 2.06    | 38.0 × 32.6 × 2.06    | 43.6 × 35.9 × 2.06    |
| Power consumption (mW)            | 43                    | 43                    | 43                    |
| Number of colors                  | Analog full color     | Analog full color     | Analog full color     |
| System IC                         | CXA3572R              | CXA3572R              | CXA3572R              |

Table 2 Drive System IC Specifications Comparison

| Model          | CXA3522R                  | CXA3572R                        |
|----------------|---------------------------|---------------------------------|
| Package        | 72-pin LQFP               | 48-pin LQFP                     |
| Input method   | Y/color difference or RGB | Y/color difference or RGB       |
| Display method | NTSC/PAL                  | NTSC/PAL                        |
| Supply voltage | 3 V and 12 V              | 3 V and 12 V                    |
| VCO            | External                  | Internal                        |
| PSIG buffer    | External                  | Planned to be provided built in |
| INPUT SEL*1    | Not available             | Available                       |
| SYNC SEL*2     | Not available             | Available                       |

\*1: Input signal level setting in RGB mode

\*2: On/off setting for the internal sync separation circuit