Ultraminiature High-Resolution 2.4 cm (1.0-Type) 64K-Dot Reflective Color LCD for Digital Still Cameras

ACX711AKM

Sony is now releasing the world's first 2.4 cm (1.0-type) ultraminiature LCD panel for the digital still camera market, which is expected to continue to see further miniaturization and even lighter products.
To assure excellent viewability not only outdoors but indoors as well, Sony has adopted a reflective type device with a built-in front light.
The addition of this 1.0-type device strengthens the Sony lineup, which already includes the 1.5-type ACX306/ACX313 and the 1.8-type ACX312/ACX315 products.

- **Integral front light structure**
- **Ultrahigh precision pixels (70 × 70 μm)**
- **Number of dots: 64K dots (H293 × V220)**
- **High reflectivity: 25%**
- **Contrast ratio: 24 (with the front light off)**

Integral Front Light Structure

While most LCD panels with a front light adopt a structure that consists of two separate sections, one for the front light and one for the LCD itself, Sony has developed an integral front light structure as a result of striving for further miniaturization. Furthermore, by combining the front light flexible cable and the panel flexible cable, Sony was able to unify the connectors to a single connector as well. Sony also developed a front light with an ultra-narrow pitch prism light guide especially for this high-precision reflective LCD panel. This solves the problem of double images, the problem seen as the main demerit of front light systems, without lowering the viewability of the panel.

Ultrahigh Precision Pixels and High Reflectivity

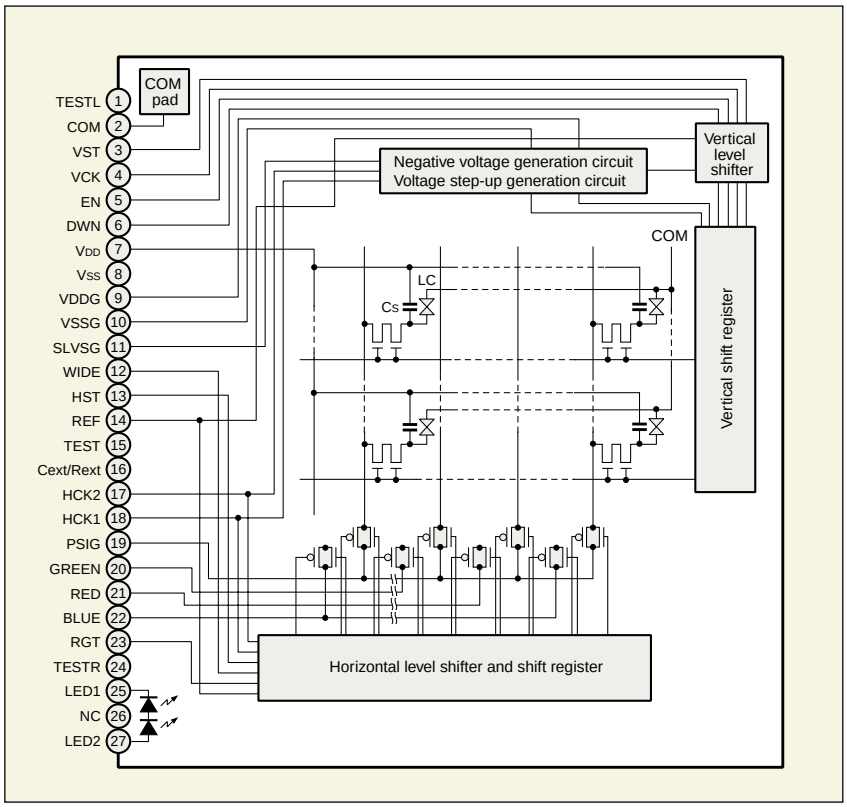
To respond to the critical picture quality demands of digital still camera users, Sony developed a high-precision delta arrangement pixel with a pixel size of 70 × 70 μm that takes advantage of the features of Sony's low-temperature polycrystalline silicon fabrication technology. This results in a beautifully smooth image with no jagged edges at boundaries in the image. Furthermore, since this panel achieves a reflectivity of 25%, it can provide fully adequate picture quality without the front light even indoors, and users can achieve lower power consumption by turning off the front light.

System IC

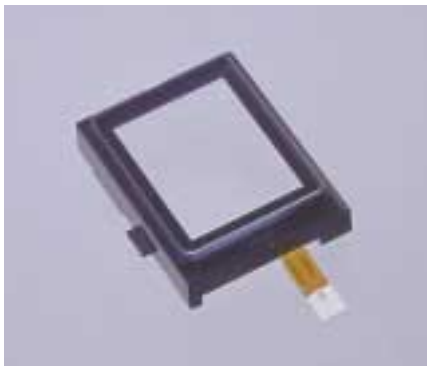
Sony is now developing a new system IC to drive the ACX711. This IC integrates a timing generator and RGB drivers on a single chip and adopts a simple structure that takes signals to which LCD γ-correction processing has already been applied to reduce power consumption even further.

V O I C E

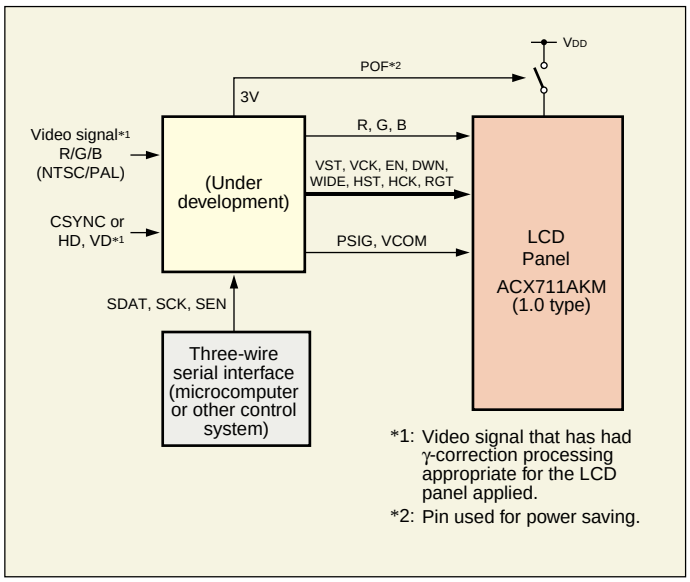
We are confident that the ACX711AKM, which was developed for use in ultraminiature digital still cameras, is one of the strongest products in our line of low-temperature polycrystalline silicon LCD products. We adopted reflective mode to achieve the product concept of "easy viewing wherever and whenever." I strongly recommend that you consider this device in any future digital camera you may develop.



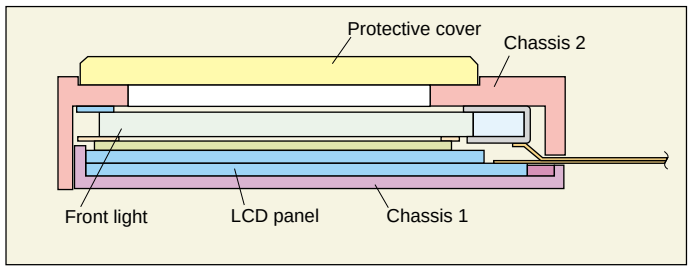
■ **Figure 1 ACX711AKM Block Diagram**



■ **Photograph 1 Front Light**



■ **Figure 2 ACX711AKM Drive System Block Diagram (Single-chip structure)**



■ **Figure 3 Integrated Front Light Structure**

■ **Table 1 LED Front Light Specifications**

[With the front light on] (Iled = 15 mA × 2 lights)

Item		Min.	Typ.	Max.	Unit
Brightness	25°C	23	32	–	cd/m²
Brightness uniformity	25°C	60	70	–	%
White chromaticity		0.260	0.315	0.360	–
		0.260	0.320	0.390	
Power consumption		–	105	–	mW