High Brightness/High Contrast Transmissive 6.97 cm (2.74-Type) LCD Panel for Cellular Phones Displays One-Seg Broadcast in Full Wide WQVGA

ACX359AKM

The ACX359AKM is a full wide resolution (240 × RGB × 432) transmissive LCD module that is capable of directly displaying one-seg broadcasts and other 16:9 video formats. The ACX359AKM's large viewing area makes it easier to read email and view still images on a cellular phone. Not only does this device achieve a wide viewing angle and high contrast, it adopts an ultrathin LCD glass with a total thickness of 0.4 mm and a unique Sony thin-form high-efficiency light guide plate to create a thin-form module only 1.75 mm thick without sacrificing the optical characteristics. Thus the ACX359AKM can contribute to thinner form factors in cellular phones.

- **Full wide display (240 × RGB × 432)**
- **Viewing angle of over 160 degrees in the up/down and/or left/right directions**
- **High contrast: 500:1**
- **LCD glass with a total thickness of 0.4 mm**
- **Unique Sony thin-form high-efficiency light guide plate**
- **Narrow frame system display**

Beautiful Full Wide Display

Due to the start of One-Seg digital TV broadcasts in Japan, wide-screen display is now desired in cellular phones as well as TV sets and monitors. Furthermore, due to improvements in cellular phone camera performance and the richer content available from Internet services, there are increasing needs for higher resolution image display. The ACX359AKM features a display resolution of 240 × RGB × 432, and can display 16:9 full wide images without changing the size. Since the pixel count has been increased by 35% over the earlier QVGA format, images and text can be seen more clearly. Furthermore, the ACX359AKM achieves both a viewing angle of over 160 degrees in the up/down and/or left/right directions and a high contrast in excess of 500:1 and provides truly beautiful image display.

Thin-Form Module

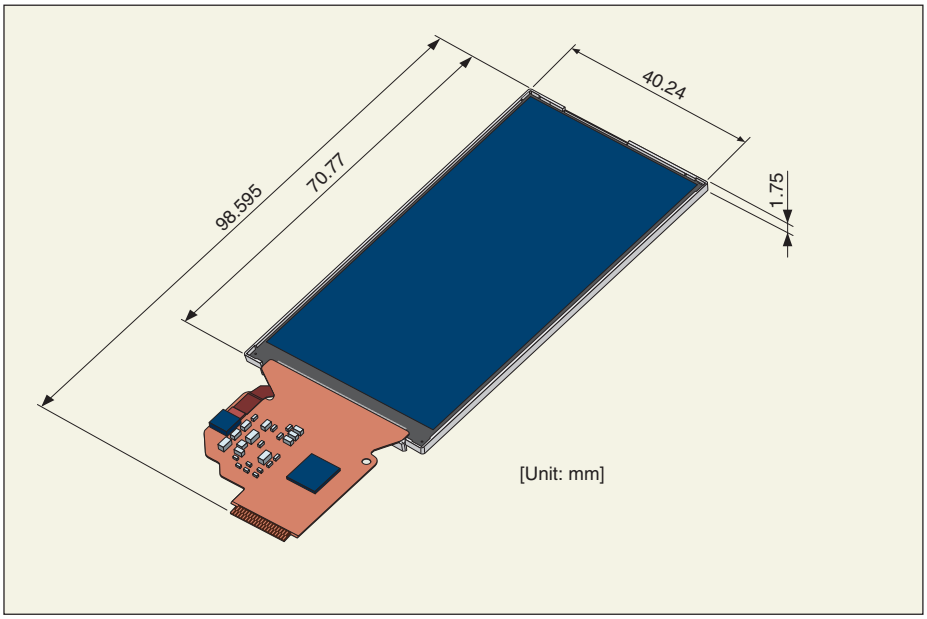
To contribute to thinner form factors in cellular phones, the LCD glass and the white LED backlight light guide plate are being made even thinner, and Sony has now reduced the overall thickness of the module to a mere 1.75 mm, including the backlight system. (This corresponds to a 12% reduction from earlier similar products.) Sony adopted a glass polishing method to reduce the thickness of the LCD glass and achieved a total thickness of 0.4 mm, a 50% reduction from earlier products. To reduce the thickness of the backlight light guide plate, Sony adopted a unique light guide geometry to reduce light leakage outside the light guide plate, and achieved the same brightness level as the earlier 0.45 mm thickness light guide plate with a 0.35 mm thick light guide plate, thus achieving a module surface brightness of 350 cd/m^2.

Narrow Frame System Display

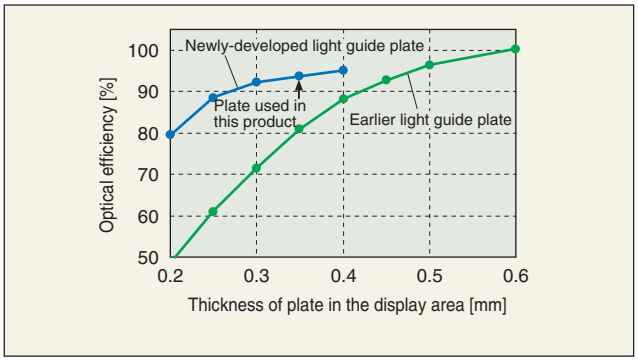
To contribute to further miniaturization of cellular phones, Sony has evolved their system display technology (technology for integrating drive circuits on the glass) inherited from earlier products even further and succeeded in reducing the FPC mounting side frame to 5.5 mm, a 20% reduction from earlier products. This allows the overall size of the cellular phone to be held to a minimum despite the larger display size.

V O I C E

In this new product, we responded to the challenges presented by every aspect of the design, from the optical characteristics and module thickness to the drive technique. Although it was a difficult birth, we created a product that we can present to our customers with confidence. I strongly recommend that you consider this device.



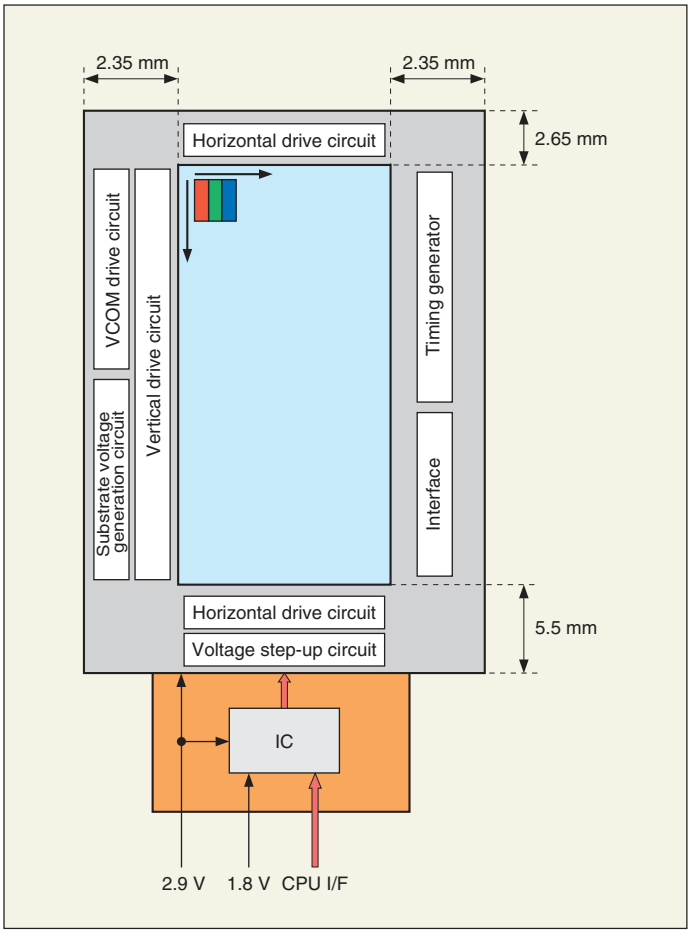
■ **Figure 1 Module External Dimensions**



■ **Figure 2 Optical Efficiency of the Newly-Developed Thin-Form Light Guide Plate**

■ **Table 1 Main Characteristics**

	ACX359
Number of pixels	240 × RGB × 432 (WQVGA)
Diagonal size	6.97cm (2.74 type)
Package dimensions	40.24 mm × 70.77 mm × 1.75 mm
Display mode	Transmissive mode wide viewing angle LCD
Number of colors	262,144 colors
Viewing angle	160 degrees or higher
Module surface brightness	350 cd/m^2
Interface	18, 16, 9, or 8-bit CPUs
Contrast (transmissive mode)	500:1
Power consumption	40 mW (excluding the backlight power consumption)



■ **Figure 3 LCD Panel System Block Diagram and Frame Dimensions**