

Hitachi Releases HD66776/HD667P10 LSI chipset for Low-Temperature Polysilicon TFT Color Liquid Crystal Display System using for Mobile Phones

— Supporting low-temperature polysilicon TFT color liquid crystal displays capable of 256 × 320-pixel high-definition display with a 2-inch screen size, and offering 262,144-color display capability —

Tokyo, July 25, 2002— Hitachi, Ltd. (TSE: 6501) today announced the HD66776/HD667P10 chip set LSIs supporting a 256 × 320-pixel high-definition screen and 262,144-color display, as low-temperature polysilicon TFT color liquid crystal display system for equipped in products such as digital mobile phones. Sample shipments will begin in August 2002 in Japan.

This chip set supports low-temperature polysilicon TFT color liquid crystals that enable 256 × 320-pixel high-definition display with a 2-inch screen size, and offers 262,144 display colors capability, for realistic moving-picture display. A high-speed moving-picture interface is also incorporated, enabling fast writing of MPEG-4 and similar moving-picture data that provides smooth moving-picture display capability. In addition, power consumption during still-picture display is a low 6 mW, making this chip set ideal for use in next-generation mobile phones featuring high-definition, high-quality displays.

Screen size of digital mobile phones has grown larger as the volume of display information, including image data, has continued to increase. The trend in next-generation mobile phones will be one of a constantly growing volume of screen display information to meet the need for more versatile displays as models become more sophisticated and user-friendly, to include TV-phone functions and PDA-like features, as well as amusement features and detailed map displays etc.

However, the presently most popular 2-inch screen size is virtually the largest possible size for current mobile phone designs, and increasing the screen size would entail a corresponding increase in the size of the phone itself.

Consequently, attention has been focused on achieving higher display pixel densities, and progress has been made in developing elements that enable greater amounts of information to be displayed on the same size of screen, with low-temperature polysilicon TFT being one such type of element. The density of low-temperature polysilicon TFT display pixels is around 200 ppi (pixels per inch), approximately twice that of current mainstream amorphous TFT displays, making it possible to achieve a high-definition display with approximately 4 times as many pixels in the same screen size. With the ability to achieve such a clear, high-quality display, there is a strong demand for LSIs capable of handling low-temperature polysilicon TFT color liquid crystal displays.

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In response to this market need, Hitachi is releasing the HD66776 and HD667P10 LSI chipset, with 256 × 320-pixel support capability, as a low-temperature polysilicon TFT color liquid crystal display system.

The HD66776 is an LSI incorporating a 256-output source driver together with display buffer memory and a display controller supporting 262,144 colors in a single chip, while the HD667P10 is an LCD power supply LSI incorporating a gate interface level-shifter circuit. Major features of this chip set are summarized below.

< Features of the Chip Set >

1. Clear and realistic display provided by 256 × 320-pixel high-definition capability and 262,144 display colors.
This chip set supports a low-temperature polysilicon TFT liquid crystal display with 256 × 320-pixel display capability, equivalent to the display size of current PDA models, and enables 262,144-color display, equivalent to the number of display colors of a PC. This makes it possible to achieve a clear and realistic display of photographs and moving-pictures, as well as high-definition information display for such features as schedule management functions equivalent to those of a PDA.
2. Smooth moving-picture display capability provided by a high-speed moving-picture interface
The HD66776 includes a high-speed moving-picture interface capable of receiving RGB signals, and offers a 50 ns data write cycle. This enables high-speed display of moving-picture data through direct reception of RGB signals from an MPEG-4 or similar graphics processing LSI, for smooth moving-image display.
3. Achievement of high-definition display with an approximately quadrupled pixel count, while limiting power consumption to an increase of approximately 50%, together with an 8-color display function for lower LCD system power consumption.
This chip set supports a high-definition display with approximately 4 times the 120 × 160 pixel count that is the current norm for 2-inch screens, while limiting the increase in power consumption to approximately 50% through the use of sophisticated designed circuit. This has made it possible to achieve low power consumption figures, including the panel, of 10 mW for 260,000-color moving-picture display at 15 fps (frames per second), and 6 mW for 260,000-color still-picture display. In addition, an 8-color function for primary color display is incorporated as a power-saving feature. This provides a mode in which current dissipation is reduced by halting power supplies for gradation levels not required in 8-color display, resulting in low power consumption of 1.7 mW. Use of this mode enables the power consumption of liquid crystal display systems to be significantly decreased.

The HD66776 and HD667P10 are shipped as chips with gold bumps, with COG*¹ supported as the mounting mode for the HD66776, and COF*² for the HD667P10.

Hitachi plans further extension of the product lineup in the future, including the development of products supporting even higher definition.

- Notes: 1. COG (Chip On Glass): A mounting method in which a chip with gold bumps is directly mounted face-down on the LCD glass.
2. COF (Chip On Film): A mounting method in which a chip with gold bumps is directly mounted face-down on a flexible film substrate.

< Typical Applications >

- Mobile phones handling e-mail and WWW content services
- Mobile phones supporting high-speed data transfer (W-CDMA, GPRS, etc.)
- Small PDAs, handheld GPS terminals, handheld POS devices

< Prices in Japan >(For Reference)

Product Code	Shipment Form	Sample Price (Yen)
HD66776 (HCD667B76BP)	Chip with gold bumps (for COG mounting)	1,600
HD667P10 (HCD667P10BP)	Chip with gold bumps (for COF mounting)	300

< Specifications >

(1) HD66776

Item	HD66776 Specifications
Display size	256 × 320 pixels, 262,144 colors
Number of outputs	256 source outputs
Display RAM size	184,320 bytes
Display functions	<ul style="list-style-type: none">Window address function (rectangular RAM address area writing)Dual-screen partial display function (screen division at arbitrary line)
Liquid crystal drive duty	1/16 to 1/320 (programmable in 16-line units)
Interfaces	<ul style="list-style-type: none">80-type interface: 8/9/16/18-bit busHigh-speed moving-picture interface: 6/16/18-bit busSynchronous serial interface supportGate/Power supply dedicated serial interface
Write cycle	50 ns (3V power supply voltage)
Logic power supply voltage	1.7 V to 3.3 V
Liquid crystal drive voltage	4.0 V to 5.5 V
Shipment form	Chip with gold bumps (for COG mounting)

(2) HD667P10

Item	HD667P10 Specifications
Interface	Dedicated serial interface
Logic power supply voltage	1.7 V to 3.3 V
Source power supply output	4.0 V to 5.5 V
Gate power supply output	6 V to 16.5 V / -4 V to -16.5 V
Shipment form	Chip with gold bumps (for COF mounting)

Information contained in this news release is current as of the date of the press announcement, but may be subject to change without prior notice.
