

Hitachi Releases 384-Output, 64-Grayscale TFT LCD Driver Incorporating Low-EMI RSDS™-Compliant Interface

— Suitable for XGA and SXGA applications, enabling lower LCD panel cost

through use of fewer EMI noise suppression parts—

Tokyo, October 25, 2001 — Hitachi, Ltd. (TSE: 6501) today announced the 64-grayscale HD66336 TFT LCD driver incorporating an RSDS™^{*1}-compliant interface offering low EMI^{*2}, as a data line driver for XGA^{*3}, and SXGA^{*4} size high-definition TFT LCD panels. Sample shipments will begin in November 2001 in Japan.

TFT LCD panels mounted in monitors, space-saving desktop PCs, and notebook PCs, are becoming available in larger screen sizes and with higher definition. With the increasing volumes of screen display information that this involves, there is a trend toward higher speeds on the interface between the CPU and LCD driver. However, since the data interface frequency is higher than that for LCD drive signal output, higher speeds mean increased effects of EMI noise caused by changes in signal level. Suppression of EMI noise is therefore a major concern in LCD panel system design, and there is strong demand for LCD drivers that enable EMI noise to be reduced.

In response to this need, Hitachi has been engaged in the development of TFT LCD drivers for data line drive incorporating an RSDS™-compliant small amplitude differential interface that enables a low EMI level to be achieved. The initial product developed was the 384/420-output HD66335 for XGA and SXGA+^{*5}, and the lineup has now been enhanced with the development of the dedicated 384-output HD66336, designed for lower cost, for XGA and SXGA applications.

The HD66336 employs an RSDS™-compliant small amplitude differential interface. The voltage amplitude has been reduced to 0.4 V (± 0.2 V) compared with the approximately 3 V of a conventional CMOS level interface, enabling EMI noise due to signal level changes to be decreased and also making it possible to reduce the number of parts necessary for noise suppression, such as shielding components and capacitors. Moreover, the number of data interface lines has been halved to 18 from the 36 lines of a CMOS level interface, enabling the board wiring area to be reduced and LCD panel costs to be cut.

The HD66336 is a data line driver suitable for use with XGA and SXGA high-definition color TFT LCDs. It receives 6-bit digital data per pixel and generates voltages for 64-grayscale by means of D/A converters, providing 260,000-color display. With 384 data line drive outputs, XGA display can be handled by eight chips and SXGA by ten, allowing efficient LCD panel design that uses all the pins.

The HD66336 is available in a COF^{*6} or TCP^{*7} package.

Future plans call for further extension of the lineup of TFT LCD drivers incorporating an RSDS™-compliant interface, including the development of products supporting 256-grayscale and the larger-screen UXGA*⁸ standard.

- Notes: 1. RSDS™ (Reduced Swing Differential Signaling): An interface technology. RSDS is a small amplitude differential interface technology proposed by National Semiconductor Corporation of the U.S.A., and its trademark.
2. EMI (Electro Magnetic Interference): Generic term for emission phenomena including electromagnetic interference emitted outside of an electronic device.
3. XGA (Extended Graphics Array): A display definition standard. XGA is a trademark of IBM Corporation, indicating a display comprising 1,024 × 768 dots.
4. SXGA (Super Extended Graphics Array): A display definition standard. The display comprises 1,280 × 1,024 dots.
5. SXGA+ (Super Extended Graphics Array plus): A display definition standard. The display comprises 1,400 × 1,050 dots.
6. COF (Chip On Film): A package mounted on an ultra- thin-film tape allowing bending of 1 mm or less, .
7. TCP (Tape Carrier Package): A package mounted on a thin-film tape, allowing ultra-thin type mounting (1 mm or less).
8. UXGA (Ultra Extended Graphics Array): A display definition standard. The display comprises 1,600 × 1,200 dots.

< Typical Applications >

TFT LCD panels (notebook PCs, space-saving desktop PCs, monitors)

< Prices in Japan >(For Reference)

Product Code	Shipment Form	Sample Price (Yen)
HD66336C	COF	550
HD66336T	TCP	550

< Specifications >

Item	Specification
Function	TFT data line driver of 64-grayscale
Power supply voltage	2.7 V to 3.6 V (logic circuits) 6.5 V to 10 V (analog circuits)
Operating temperature	-20°C to +75°C
Data input	Total of 18 (9 P/N input pairs) (6 bits × 3 pixels × double edge)
Liquid crystal display drive outputs	384
Output voltage precision	±2 mV (offset cancellation operating)
Clock frequency	85 MHz (V _{cc} = 3.0 V to 3.6 V) 65 MHz (V _{cc} = 2.7 V to 3.0 V)
Other functions	Offset cancellation Dot inversion function n-raster-row inversion function Data inversion function
Packages	424-pin COF and TCP