

Hitachi Releases 384-Output and 256-Grayscale TFT Driver Incorporating low EMI RSDS™-Compliant Interfaces for Wide View TFT LCD Panels

— The Lessening of EMI results in reduction of EMI noise handling parts, enabling to lower cost of LCD panels —

Tokyo, February 21, 2002 — Hitachi, Ltd. (TSE: 6501) today announced the 256-grayscale TFT LCD driver HD66356 with the interfaces complying with RSDS™⁴ that achieves low EMI³ as a driver for driving data lines of high-definition TFT LCD panels of XGA¹ and SXGA² sizes. And HD66356 generates high LCD driving voltage of 13.5V for wide view TFT LCD panels. Sample shipments will begin in March 2002 in Japan.

TFT LCD panels that are recently installed in notebook type personal computers and compact desktop personal computers, and monitors are becoming larger and higher definition. As a result, the amount of information displayed on a screen is increasing and the data interface frequency between CPU and LCD driver is a trend toward higher. However, since the data interface frequency is higher than that of the LCD driving signal output, with speeding up, the influence of EMI noise generated at change of signal levels increases. In addition, the demand for the TFT LCD panels of a wide view is increasing as panels of high-quality display picture and there is demand for LCD drivers that generate a high LCD driving voltage for achieving wide view as well as EMI noise reduction.

To respond to such demand, Hitachi is continuously developing TFT LCD drivers for driving data lines incorporating small amplitude differential interfaces complying with RSDS™ that can achieve low EMI. Hitachi has released HD66336 with the specification of 384-output and 64-grayscale and HD66335 with the specification of 420-output and 64-grayscale for XGA and SXGA+⁵ under LCD driving voltage of 10 V. This time, Hitachi announces release of HD66356 with specification of LCD driving voltage of 13.5 V, 384-output, and 256-grayscale for wide view TFT LCD panels of XGA and SXGA.

This product uses small amplitude differential interfaces complying with RSDS™. Since the voltage amplitude is smaller (0.4 V) than the voltage amplitude (about 3 V) of the conventional CMOS level interfaces, the EMI noise generated at change of signal levels can be lowered, thereby reducing the parts required for handling noise such as shielding components and condenser. The number of data interfaces was halved from 48 in the CMOS level interface mode to 24, thereby reducing the wiring area size of a substrate and reducing the cost of the TFT LCD panel. By increasing the LCD driving voltage to 13.5 V, the product can be applied to wide view TFT LCD panels.

This product is also a data line driver suitable for high definition color TFT LCD of XGA and SXGA. It receives digital data of 8 bits per pixel, generates output voltages of 256-grayscale through a D/A converter, and achieves high picture quality of 16.77 million colors. The number of data line driving outputs is 384. XGA consists of 8 chips and SXGA consists of 10 chips, enabling panel design without waste using all the pins. The product uses COF⁶ and TCP⁷ as the package.

Hitachi will continuously expand the lineup by applying the interface technology employed this time to the products corresponding to larger screens and finer UXGA⁸.

- Notes: *1. RSDS™ (Reduced Swing Differential Signaling): One of the interface technologies). RSDS refers to the small amplitude differential interface advocated by the National Semiconductor Corporation of the U.S.A and its trademark.
- *2. EMI (Electro-Magnetic Interference): Generic term of emission phenomena such as electromagnetic interruption and interference emitted outside of electronic equipment
- *3. XGA (Extended Graphics Array): One of the display definition standards. XGA is a trademark of IBM Corporation of the U.S.A and the number of dots is 1,024 × 768.
- *4. SXGA (Super Extended Graphics Array): A display definition standard. The number of dots is 1,280 × 1,024.
- *5. SXGA+ (Super Extend graphics Array Plus): A display definition standard. The number of dots is 1,400 × 1,050.
- *6. COF (Chip on Film): Package mounted on the thin-film tape of 1mm or less in thickness that allows super-thin mounting and can be bent
- *7. TCP (Tape Carrier Package): Package mounted on a thin-film tape of 1mm or less in thickness that allows super-thin mounting
- *8. UXGA (Ultra extend Graphics Array): A display definition standard. The number of dots is 1,600 × 1,200.

< Typical Applications >

TFT LCD panel (desktop monitor, space-saving PCs, and notebook type PCs)

< Prices in Japan > (For Reference)

Product Code	Package	Sample Price (Yen)
HD66356C	COF	850
HD66356T	TCP	850

< Specifications >

Item	Specifications
Function	256-grayscale TFT data line driver
Power supply voltage	2.7 V to 3.6 V (logic) 9.0 V to 13.5 V (analog)
Operation temperature	- 20 to + 75 °C
Data input	Total 24 (P/N 12-pair input) (8 bits × RGB)
Number of LCD driving outputs	384 outputs
Output voltage precision	± 2 mV (at offset cancellation operation)
Clock frequency	85 MHz (V _{CC} = 3.0 V to 3.6 V) 75 MHz (V _{CC} = 2.7 V to 3.0 V)
Other functions	Offset cancellation Dot inversion function N-line inversion function Data inversion function
Package	442-pin COF, TCF