

## **Hitachi Releases Industry's Smallest High-Picture-Quality CMOS Sensor Camera Module for Portable Devices**

— Only 4.9 mm thick, and less than half the size of the previous Hitachi model —

Tokyo, February 18, 2002— Hitachi, Ltd. (TSE: 6501) today announced the HAM49002 1/7-inch, 110,000-pixel CMOS sensor\* camera module for use in products such as mobile phones and portable information terminals, featuring the industry's smallest and thinnest dimensions of 7.0 × 7.6 × 4.9 (mm). Sample shipments will begin in May 2002 in Japan.

The HAM49002 employs high-integration module technology to provide a CMOS sensor and camera signal processing LSI in a single compact package, while offering a high sensitivity of 5-lux minimum field illuminance.

### **[Background]**

Mobile phones, portable information terminals, toys, and other products with a built-in camera function are becoming increasingly popular, and demand is growing for camera modules offering small size, high picture quality, and low power consumption. Hitachi has previously released the high-picture-quality HAM49001 as its initial CMOS sensor camera module, offering precise and varied image adjustment capability through the incorporation of a camera signal processing LSI, in addition to compact dimensions and low power consumption. Hitachi is now following up this initial product with the release of the HAM49002 featuring an even smaller package and higher sensitivity.

### **[About these Products]**

The HAM49002 is a 1/7-inch, 110,000-pixel CMOS sensor camera module that supports the CIF (Common Immediate Format: 352 (H) × 288 (V)) worldwide common video format.

Major features of the HAM49002 are summarized below.

(1) Industry's smallest, thinnest package

The use of high-integration module technology has made it possible to incorporate a CMOS sensor and a camera signal processing LSI with a built-in 16-bit microcomputer in the industry's smallest and thinnest package size of 7.0 × 7.6 × 4.9 (mm). This is less than half the cubic size of Hitachi's previous HAM49001 (10.0 × 10.0 × 5.8 (mm)), enabling mobile phones and similar products incorporating a camera function to be made smaller, lighter, and slimmer.

(2) High picture quality

- a. Optimized design between the CMOS sensor and camera signal processing LSI has resulted in a minimum field illuminance of 5 lux, half that of Hitachi's previous HAM49001, allowing photography in dim lighting.
- b. As in the previous model, the provision of a high-precision A/D converter built into the CMOS sensor, and maximum exploitation of image processing technology and control technology, developed over many years of CCD (Charge Coupled Devices) camera signal processing IC design, have resulted in the achievement of good color reproduction and high-quality image processing.
- c. The incorporation of a 16-bit single-chip microcomputer in the camera signal processing LSI --a hallmark of Hitachi's CMOS sensor camera modules--allows precise handling of complex and varied image adjustment functions such as exposure control, and smooth image processing in response to changes of scene. Various functions can be controlled from an IIC bus, making it possible to shorten the time required by the user for development of a camera system.
- d. Up side down reverse and left/right reverse functions

The HAM49002 also offers low power consumption of 48 mW (at 15 frames per second).

Future plans include extension of the product lineup with a higher-performance version of this CIF sensor module and a module offering VGA sensor compatibility.

Note: \* CMOS sensor: An image sensor incorporating photoreceptor elements using a CMOS process together with analog circuitry.

#### < Typical Applications >

Mobile phones, portable information terminals, PC cameras, door phones, monitoring cameras, toys

#### < Prices in Japan >(For Reference)

Product Code	Sample Price (Yen)
HAM49002	5,000

#### < Specifications >

Item	HAM49002 Specifications
Optical system size	1/7" CMOS image sensor
Image format	352 (H) × 288 (V)
Minimum field illuminance	5 lux
Frame rate	15 fps / 7.5 fps
Output format	YUV 8 bit 4 : 2 : 2
Flicker	Auto ( 50 / 60 Hz change: Manual)
White balance	Auto
Control bus	IIC
Power supply voltage	2.55 V to 3.1 V
Power consumption	48 mW @ 15 fps, @ 25°C
Module size	7.0 mm (W) × 7.6 mm (D) × 4.9 mm (H)
Other features	Up side down reverse and left/right reverse functions